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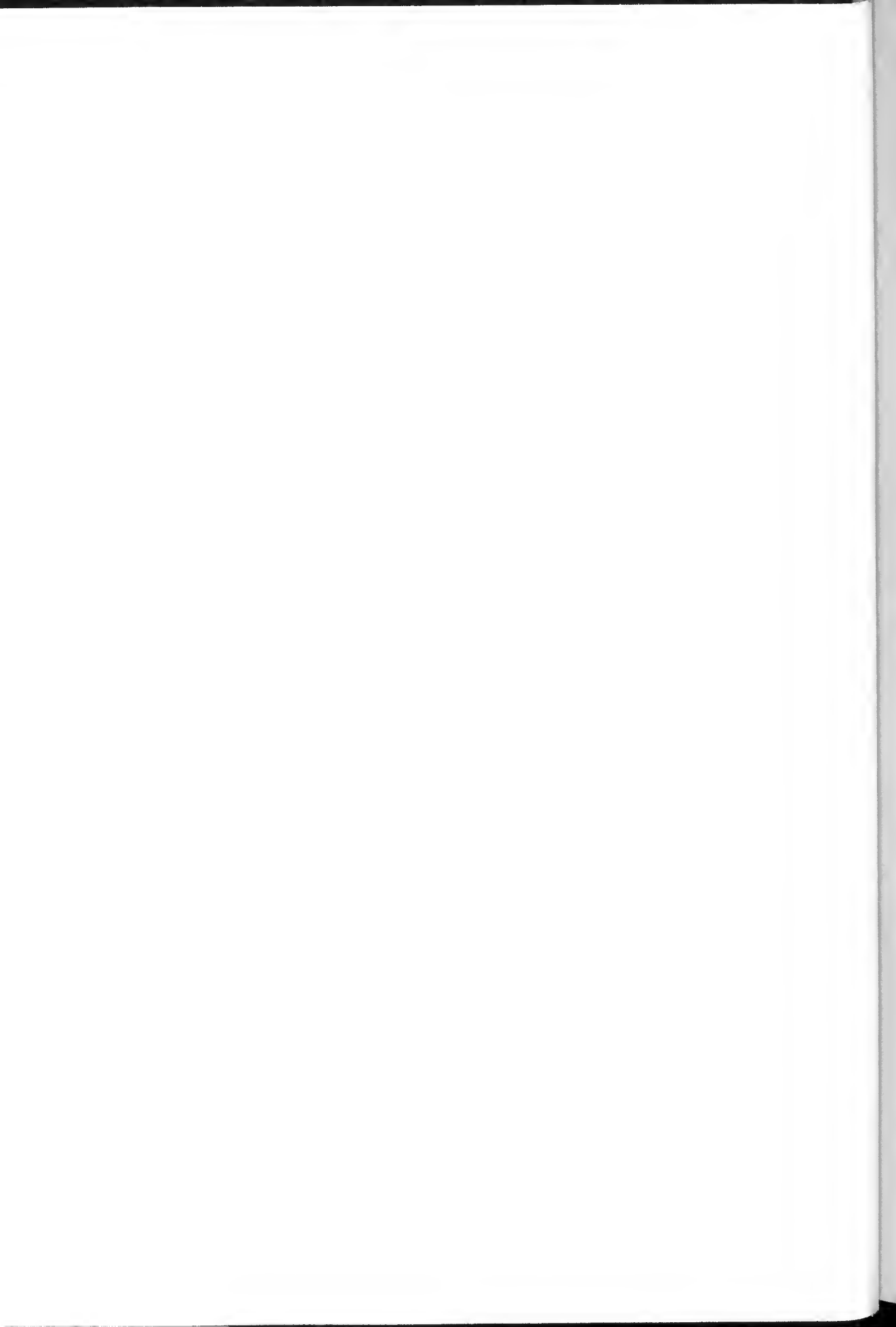
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NEW OR NOTEWORTHY PHILIPPINE ORCHIDS, I

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SIXTEEN PLATES

Incidental to the preparation of a popular treatise on the orchids of the Philippines, the junior author has encountered several new species and varieties, descriptions of which seemed best to publish in a separate paper, together with notes on species that, though represented in other parts of the eastern Tropics, have not heretofore been recorded as natives of the Philippines. As a popular book is hardly the proper medium for the announcement of scientific discoveries, it is planned to publish in the Philippine Journal of Science a series of papers dealing with the new orchids now in hand and with the new or noteworthy species that are constantly being discovered through intensive exploration. Of the proposed series the present paper is the first number.

With very few exceptions, every Philippine orchid that has been illustrated in scientific publications in the last quarter of a century has been reconstructed from dead material in which the delicate structures of the flowers had been altered by desiccation. In the present series of papers it is proposed to issue plates that will portray the species discussed from living plants and will clearly represent diagnostic structures.

With the increasing interest that is being taken in the orchids of the Philippines by owners of gardens in the vicinity of Manila, there has developed a pressing need for critical studies of the horticultural forms which are commanding attention. The time has come when the study of living material should be undertaken more and more intensively, not only to solve horticultural problems, but to verify and amplify the results of the investigations through which our present knowledge of the Philippine orchid flora has been gained.

The types of the new species and varieties herein described have been deposited in the herbarium of the Bureau of Science and are represented by isotypes in the herbarium of Oakes Ames. Available isotypes will be distributed to American and European herbaria. All of our descriptions in the following pages have been prepared from living material with the exception of the one devoted to *Bulbophyllum ornatissimum*. All illustrations are by Mr. José M. Salazar, draftsman of the division of botany, Bureau of Science. The color terms used are mostly from Ridgway's Color Standards and Color Nomenclature (1912).

The present paper contains the descriptions of four species and one variety that appear to be new to science. Several previously described species are also included, together with notes and descriptions. *Haemaria* is included as a genus new to the Philippines.

The authors are under obligation to Dr. William H. Brown, Director of the Bureau of Science, who has given enthusiastic support and encouragement to the study of Philippine orchids.

Genus ADENOSTYLIS Blume

ADENOSTYLIS MERRILLII sp. nov. Plates 1, 3, and 7.

Affinis *Adenostylis luzonensis* Ames. Caules teretes, erecti, 10 ad 14 cm alti, 3 ad 4 mm in diametro, succulenti, supra folia longe villosi, pilis albidis. Folia prope medium caulium conferta, basibus petiolorum vaginantibus; lamina ovata ad ovato-lanceolata, acuta, plus minusve obliqua, 2.5 ad 4.5 cm longa, 1.4 ad 2.7 cm lata, membranacea. Bractee inflorescentiae membranaceae, anguste lanceolatae, longe acute acuminatae, 8 ad 18 mm longae, sparsim pubescentes. Racemi 7.5 ad 8 cm longi, villosi. Flores in racemo laxo dispositi, albi, pedicello cum ovario dense villosi, cylindrico, anguste obovoideo, circiter 10 mm longo. Sepalum dorsale concavum, ovatum, circiter 9 mm longum, 5 mm latum, 5-nerviium, extus villosum, petalis adha-

rens. Sepala lateralia extus pubescentia, oblongo-lanceolata, obtusa, circiter 9 mm longa, 3 mm lata, 3-nervia. Petala obliquissime oblanceolata, glabra, alba, obtusa, 3-nervia. Labellum cuneato-oblanceolatum, circiter 9.5 mm longum, 5 mm latum, concavum, prope apicem leviter trilobatum. Columna brevis, circiter 6 mm longa; rostellum erectum, bipartitum. Pollinia globosa, caudicula gracili affixa; glandula oblonga, alba.

Terrestrial, succulent herb. Stems terete, erect, sometimes with decumbent base, 10 to 14 cm high, 3 to 4 mm in diameter, long villose above the leaves, the hairs white. Leaves crowded above the middle of the stem with bases vaginate, the lamina ovate to ovate-lanceolate, acute, somewhat asymmetrical, 2.5 to 4.5 cm long, 1.4 to 2.7 cm wide, membranaceous, light green, reticulations distinct dark green. Bracts membranaceous, narrowly lanceolate, long and acutely acuminate, 8 to 18 mm long, sparsely pubescent. Racemes 7.5 to 8 cm long, villose. Flowers laxly arranged, white; the pedicel and ovary villose, cylindrical; narrowly obovoid, about 10 mm long, grass green to kildare green. Dorsal sepal concave, ovate, buff-pink, about 9 mm long, 5 mm wide, villose on the outside, 5-nerved, the petals adhering. Lateral sepals white, buff-pink at the apex, the central nerve greenish, villose outside, oblong-lanceolate, obtuse, about 9 mm long, 3 mm wide, 3-nerved. Petals white, glabrous, obtuse, 3-nerved. Labellum white with a coral red line at the center and greenish at the base, cuneate-oblanceolate, about 9.5 mm long, 5 mm wide, concave, slightly trilobed near the apex. Column short, about 6 mm long; the rostellum erect, bipartite. Pollinia globose, the glands oblong, white.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78918 *Quisumbing*, March 10, 1930. The living plants from Baguio, Mountain Province, were collected by Mrs. K. B. Day, who found them growing on moss-covered decayed logs and in mossy ground, at about 1,600 meters altitude.

This species is closely allied to *Adenostylis luzonensis* Ames, from which species it differs conspicuously in its subentire labellum and lower stature.

Genus HAEMARIA Lindley

HAEMARIA DISCOLOR Lindl. Plates 1 and 8.

Haemaria discolor LINDL., Gen. and Spec. Orch. (1840) 490; SCHLECHTER, Die Orchideen (1927) 118, fig. 22.

Goodyera discolor KER in Bot. Reg. (1818) t. 271; Lodd. Bot. Cab. (1817?) 148, Bot. Mag. (1819) t. 2055.

Ludisia discolor A. RICH. in Blume Fl. Jav. Orch. (1858) 95, t. 42, fig. D.

Ludisia furetii BLUME, Fl. Jav. Orch. (1858) 96, t. 34, fig. 3.

Ludisia odorata BLUME, Fl. Jav. Orch. (1858) 95, t. 34, fig. 2.

Stems succulent, naked, procumbent, glabrous below the leaves, brownish purple, ascending, 7 to 10 mm in diameter. Leaves alternate, approximate, ovate to elliptic, acute or apiculate, 3.5 to 7.5 cm long, 2 to 3.5 cm wide, the petioled base vaginate, upper surface velvety green to nearly black, with five prominent coral red lateral nerves (sometimes the venation reticulated; reticulations when present coral red), lower surface 3-nerved, the nerves vernonia-purple. Scape erect, terete, pale green, pubescent, 15 to 20 cm long; the inflorescence few-flowered; the bracts broadly lanceolate, shorter than the ovary. Flowers sessile, white except the sulphur yellow gynostemium, loosely arranged, odorless, 17 to 19 mm across. Ovary somewhat spirally twisted, white-pubescent, striped with green, about 15 mm long. Dorsal sepal cucullate, broadly ovate, obtuse, about 9 mm long, 7 mm wide. Lateral sepals slightly twisted, similar to the dorsal sepal. Petals lanceolate-linear, obtuse, adherent to the dorsal sepal. Labellum unguiculate, twisted, abruptly 2-lobed at the apex, lobes oblong, spreading. Gynostemium clavate, twisted. Anther horizontal, ovoid, acuminate, point slightly twisted; locules 2, parallel. Pollinia 2, clavate.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78902 *Quisumbing*, February 20, 1930. Cultivated in Mrs. George Fairchild's gardens at Pasay, Rizal Province. Of Philippine origin, but the locality and province unknown. This orchid is often classified among the "jewel orchids," and is easily cultivated in pots, and reproduced by cuttings of the stem. It needs plenty of water. The plants flower during January and February.

This species has not heretofore been recorded from the Philippines, although it is known to be a native of the Malay Peninsula and China. According to the shape and color of the leaves several varieties were recognized.

Genus DENDROBIUM Swartz

DENDROBIUM CHAMELEON Ames. var. OVATILABIUM var. nov. Plates 1, 5, and 9.

A specie labelli lamina ovata solum differt.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 77227 *Quisumbing*, August 12, 1929. The living specimens

collected in Floridablanca, Pampanga Province, hanging on trees, at medium altitudes. The leaves appear about December.

This variety differs conspicuously from *Dendrobium chameleon* Ames in its ovate labellum and in the color of its flowers.

Forma ALBA forma nov.

Species similis differt floribus colorem.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 77227a *Quisumbing*, August 16, 1929. Living plants from Floridablanca, Pampanga Province, hanging on trees, at medium altitudes.

This form is identical with the species in every respect except that the flowers are pure white with a cream-colored spur.

DENDROBIUM MIYASAKI sp. nov. Plates 1, 4, and 9.

Species *D. victoriae-reginae* Loher affinis, floribus multo majoribus differt. Caules sulcati, pauci et gracile, superne pauciramosi, usque ad 75 cm alti, 4 mm in diametro, internodia plerumque 1 ad 4.5 cm longa. Folia lineari-lanceolata, acuta, 6 ad 8.5 cm longa, 0.5 ad 1.1 cm lata, subcoriacea, in basi amplectentia. Pedunculus circiter 5 mm longus. Flores singuli, 4 ad 5.5 cm longi, 4 ad 5.5 cm lati; ovarium cum pedicello tenue, 2.5 ad 3 cm longum. Sepalum dorsale oblongo-lanceolatum, obtusum, 2.3 ad 2.5 cm longum, 0.9 ad 1.1 cm latum. Sepala lateralia triangulari-lanceolata, obtusa, in mentum obtusum producta, 4.2 ad 4.5 cm longa, 1.3 ad 1.4 cm lata; mentum 2.1 ad 2.4 cm longum. Petala elliptica vel elliptico-ovata, obtusa vel rotundata vel leviter retusa, 2.1 ad 3 cm longa, 1.4 ad 1.8 cm lata, margine anteriore minutissime crenulato. Labellum simplex, breviter unguiculatum, e basi cuneata, obovatum vel oblanceolatum, 3.5 ad 4.3 cm longum, antice dilatatum, 1.6 ad 2.5 cm latum, in apice retusum. Gynostemium lobulatum.

Stems erect, sulcate, few and slender, up to 75 cm high, 4 mm in diameter, dark purple; branches few, rooting at the nodes, greenish, about 2 mm in diameter. Leaves linear-lanceolate, acute, 6 to 8.5 cm long, 0.5 to 1.1 cm wide, the uppermost ones about 2.5 cm long, subcoriaceous when dry, clasping at base. Peduncles about 5 mm long. Flowers solitary at the end of the branches, pendulous, not fragrant, 4 to 5.5 cm long, 4 to 5.5 cm across; pedicellate ovary slender, 2.5 to 3 cm long. Sepals white, suffused with mallow pink half way to the apex. Dorsal sepal oblong-lanceolate, obtuse, 2.3 to 2.5 cm long, 0.9 to 1.1 cm wide. Lateral sepals triangular-lanceolate, obtuse, with the spur

4.2 to 4.5 cm long, 1.3 to 1.4 cm wide; spur 2.1 to 2.4 cm long, white with obtuse grass green tip. Petals elliptic to elliptic-ovate, obtuse, rounded or somewhat retuse, 2.1 to 3 cm long, 1.4 to 1.8 cm wide, the anterior margins minutely crenulate, mallow pink to light mallow purple, white at the base. Labellum simple, obovate to oblanceolate, somewhat unguiculate, narrowed at the cuneate base, 3.5 to 4.3 cm long, 1.6 to 2.5 cm wide, the apex retuse, the expanded portion minutely crenulate, mallow purple, with three true purple lines extending on the narrowed portion to the base. Gynostemium lobulate, white, with purple markings on the margins.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78823 *Quisumbing*, December 29, 1929. The living specimens collected from Pampanga Province, on rocks on the hills back of Floridablanca. Flowers during December to March.

A previous collection referable to this species, was made in Zambales Province, on rocks of Mount Tapolao at 2,000 feet altitude, November-December, 1924, *Bur. Sci.* 44715 *Ramos and Edaña*. The flowers were described by the collectors as being pink and white.

A species closely allied to *Dendrobium victoriae-reginae* Loher but differing radically in its habit and in its much larger flowers. The species is dedicated to Mr. S. Miyasaki, enthusiastic orchid grower in Manila, in whose garden the junior author has enjoyed every facility for the study of orchids and to whom he is under many obligations.

Genus ERIA Lindley

ERIA APOROIDES Lindl.

Dendrobium aporoides (Lindl.) Merr. *MERR.*, Sp. Blancoanae (1918) 113, *Enum. Philip. Fl. Pl.* 1 (1924) 345.

Upon critical examination of numerous living Philippine plants of this species it has been found that the pollen masses are eight in number. The species is therefore indubitably a member of the genus *Eria* as J. J. Smith has indicated, as a result of additional research, in *Bull. Jard. Bot. Buit. Ser.* 3, 8. *Liv.* 1 (1926) 49.

ERIA LONGISSIMA sp. nov. § *Cylindrolobus*. Plates 1, 5, 10, and 11.

Habitu *E. perspicabili* Ames similis. Caulis simplex, ad basi teres, superne leviter complanatus, foliosus, 50 ad 100 cm longus, 0.8 ad 1.3 cm in diametro, internodii 2 ad 3.5 cm longis. Folia lineari-lanceolata, glabra, in sicco subcoriacea, nervosa, attenuata, 9.5 ad 20 cm longa, 2 ad 4 cm lata, in apice inaequaliter

bilobulata, basi vaginanti. Inflorescentiae oppositifoliae, 2- ad 4-florae, cum pedunculo circiter 4.5 cm longae; pedunculus usque ad racemum brevis, circiter 1.5 cm longus. Bractae 5 vel 6, conspicuae, glabrae, oblongo-lanceolatae vel lanceolatae, sub-acutae, 19 ad 21 mm longae, 5 ad 7 mm latae, in basi cordatis. Flores circiter 1.5 cm longi; pedicellus glaber, cum ovario, 1.3 ad 2 cm longus. Sepalum dorsale oblongum, obtusum, circiter 15 mm longum, 6 mm latum. Sepala lateralia triangulari-lanceolata, obtusa, circiter 15 mm longa, 6.5 mm lata, subfalcata, mentum brevem formantia; mentum circiter 6 mm longum. Petala leviter oblique-oblonga, valde obtusa, circiter 13 mm longa, 5 mm lata, membranacea, marginibus aliquando inaequaliter et leviter irregularibus. Labellum in circuitu suborbiculare, prope apicem 3-lobatum, circiter 9 mm longum, in basi breviter unguiculatum; lobi laterales breves, obtusi, circiter 1.5 mm longi; lobus medius late ovatus, obtusus, incrassatus, circiter 3 mm longus, margine subcrispato. Discus per medium carinis 3 humilibus percursus quae in lobo medio confluunt, carinis in basi utrinque dilatatis. Gynostemium circiter 8 mm longum, crassum, apice bilobatum, in pedem 3 mm longum productum.

An epiphyte with much the habit of *Eria perspicabilis* Ames. Stems simple, terete at the base, somewhat complanate above, foliose, 50 to 100 cm long, 0.8 to 1.3 cm in diameter; the internodes 2 to 3.5 cm long. Leaves linear-lanceolate, glabrous, somewhat firm in living condition, subcoriaceous when dry, nervose, light green, 9.5 to 20 cm long, 2 to 4 cm wide, narrowed to the unequally bilobed apex, the base clasping and sheathed. Racemes opposite the leaves, 2- to 4-flowered, with the peduncle about 4.5 cm long; the peduncles up to the raceme about 1.5 cm long. Bracts citron yellow, 5 or 6, conspicuous, glabrous, oblong-lanceolate to lanceolate, obtuse, 19 to 21 mm long, 5 to 7 mm wide, the apex minutely apiculate, the base cordate. Flowers fragrant, recalling the odor of *Jasminum sambac*, conspicuous, white, about 1.5 cm long; the pedicels with the ovary glabrous, citron yellow, 1.3 to 2 cm long. Sepals and petals pure white with bases naphthalene yellow, the spur naphthalene yellow. Dorsal sepal oblong, obtuse, about 15 mm long, 6 mm wide. Lateral sepals triangular-lanceolate, obtuse, about 15 mm long, 6.5 mm wide, subfalcate, forming a rather short spur, which is about 6 mm long. Petals obliquely oblong or elliptic-oblong, broadly obtuse, about 13 mm long, 5 mm wide, membranaceous, margins sometimes slightly irregular. Labellum white without, cream-buff within, suborbicular in outline, 3-lobed near

the apex, about 9 mm long, shortly unguiculate at base; lateral lobes short, obtuse, about 1.5 mm long; middle lobe broadly ovate, obtuse, about 3 mm long, rather thickened, margin sub-crenate. Disc traversed through the middle by 3 low keels which come together on the middle lobe, keels at base on each side dilated. Gynostemium about 8 mm long, rather thick, the apex bilobed, the foot about 3 mm long.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 77242 *Quisumbing*, June 1, 1929. The living plants were collected from the mossy forests of Mount Maquiling, Laguna Province, Luzon.

This species has the appearance of *Eria perspicabilis* Ames but is most closely allied to *E. brachystachya* Reichb. f. and to *E. albolutea* Rolfe. It is larger throughout than *E. brachystachya* with a rather different lip. It has much larger leaves, fewer-flowered racemes, and apparently wider perianth parts than *E. albolutea* Rolfe.

Genus BULBOPHYLLUM Thouars

BULBOPHYLLUM BIFLORUM Teijsm. and Binn. Plates 2 and 12.

Bulbophyllum biflorum TEIJSM. and BINN., Nat. Tijdschr. Ned. Ind. 3 (1855) 397; J. J. SM., Fl. Buitenz. 6 (Orch. Jav.) (1905) 469, Fig.-Atlas (1911) fig. 359; MIQ., Fl. Ind. Bat. 3 (1859) 647; REICHB. f., Walp. Ann. Bot. Syst. 6 (1861) 262; NAVES, Novis. App. (1882) 234; AMES in Merr. Enum. Philip. Fl. Pl. 1 (1925) 390.

Cirrhopetalum biflorum J. J. SM., Ic. Bog. 2 (1903) 104, t. 120 B; SCHLTR., Die Orchideen (1927) 329; Sanders' Orchid Guide (1927) 113.

Phyllorchis biflora OK., Rev. Gen Pl. 2 (1891) 677.

Epiphyte. Pseudobulbs 4-angled, one-leafed, ovoid, 2.5 to 3.5 cm long, 1.3 to 2 cm wide. Leaves at the top of the pseudobulbs, oblong-elliptic, 7 to 11 cm long, 2.5 to 3.5 cm wide. Inflorescence arising from the base of the pseudobulb, two-flowered; the peduncle slender, about 8 cm long; bracts membranaceous. Flowers about 9.5 cm long, emit a peculiar odor, pedicel and ovary slender, about 1.5 cm long. Dorsal sepal elliptic with a filament, about 2.5 cm long, very pale pink to almost white striped and spotted with pomegranate purple, 5-nerved. Lateral sepals joined or free, greatly elongated into very slender filaments, 7.5 to 8 cm long, 0.6 to 0.65 mm wide, very pale pink to almost white, spotted and striped with pomegranate purple, the tips tawny purple, 5-nerved. Petals much smaller, about 6 mm long, 3.5 mm wide, with a minute apicule about 1 mm in length, 3-nerved. Labellum oblong-ovate, fleshy, recurved, yel-

lowish brown, spotted with dark purple, about 5 mm long. Column somewhat fleshy, about 4 mm long, with the foot about 7 mm long.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78844 *Quisumbing*, May 28, 1929. Living plants collected from Mount Banahao, Tayabas Province, growing on tree trunks at medium altitudes. A native of Java.

A very interesting species characterized by its two-flowered inflorescences. Originally known from Java, now for the first time authentically reported from the Philippines.

BULBOPHYLLUM EMILIORUM sp. nov. Plates 2, 6, and 13.

Affine *B. copelandii* Ames. Rhizoma repens, circiter 5 mm in diametro, radicibus numerosis simplicibus vel ramosis. Pseudobulbi 1.8 ad 2 cm longi, 1.2 ad 1.3 cm in diametro, monophylli, 8 ad 10 cm distantes. Folia elliptico-oblonga, obtusa, coriacea, rigida, 19 ad 21 cm longa, 6 ad 6.5 cm lata. Pedunculus gracilis, circiter 1 cm longus, florem singulum speciosum gerens, pedicello cum ovario 4.5 ad 5.5 cm longo, bracteis membranaceis. Sepalum dorsale oblongo-lanceolatum, tenuiter acute acuminatum, circiter 3.5 cm longum, 1.2 cm latum. Sepala lateralia sigmoideo-lanceolata, tenuiter acuminata, circiter 3.2 cm longa, prope basim 1.3 cm lata. Petala anguste lanceolata, acuminata apice recurvata, fastigiata, circiter 3 cm longa, 0.8 cm lata. Labellum cum pede elongato columnae articulatum, recurvatum, carnosum; lobi laterales breves, rotundati, obtusi, circiter 2 mm longi; lobus medius lineari-lanceolatus, acutus, circiter 8 mm longus, 3.5 mm latus, recurvatus, carnosus, rigidus. Columna crassa, brevissima, erecta, circiter 4 mm longa et lata, basis lata in pedem 9 mm longum transiens.

Rhizomes creeping, about 5 mm in diameter; roots numerous, simple or branching. Pseudobulbs 1.8 to 2 cm long, 1.2 to 1.3 cm in diameter, monophyllous, 8 to 10 cm distant. Leaves elliptic-oblong, obtuse, coriaceous when dry, rather thick when fresh, rigid, 19 to 21 cm long, 6 to 6.5 cm wide. Inflorescence one-flowered; the peduncles slender, rather short, about 1 cm long; pedicel and ovary 4.5 to 5.5 cm long; bracts membranaceous. Dorsal sepal oblong-lanceolate, slenderly and acutely acuminate, about 3.5 cm long, 1.2 cm wide. Lateral sepals sigmoid-lanceolate, slenderly acuminate, about 3.2 cm long, 1.3 cm wide near the base. Petals narrowly lanceolate, acuminate with recurved apex, fastigate, about 3 cm long, 0.8 cm wide. Lip hanging on a very slender foot; lateral lobes short, rounded,

spreading, obtuse, about 2 mm long; middle lobe linear-lanceolate, acute, about 8 mm long, 3.5 mm wide, recurved, fleshy, rigid. Column thickened, very short, erect, about 4 mm long and broad, the foot about 9 mm long. Pollinia triangular.

MINDANAO, Agusan Province, Butuan, Barrio Guadalupe, *Emilio Quisumbing, s. n., July 1929*, on tree trunks in thick forests at low altitudes. Flowers fragrant, recalling the odor of *Dendrobium anosmum* Lindl. Peduncles pinard yellow; lateral sepals and dorsal sepal wax yellow on the back, mottled with amaranth purple, the apices suffused with bordeaux; the bases of the dorsal sepal and petals suffused with amaranth purple within; the petals white on the back; lip bordeaux half-way to the apex and pinard yellow at the base; column and foot pinard yellow.

A species closely allied to *Bulbophyllum copelandii* Ames, differing in its much larger leaves and flowers and in its differently shaped dorsal and lateral sepals, petals and labellum. The species is dedicated to Mr. Emilio Quisumbing, civil engineer, who collected the living specimens.

BULBOPHYLLUM ANTENNIFERUM (Lindl.) Reichb. f. Plates 2 and 14.

Bulbophyllum antenniferum (Lindl.) Reichb. f. in (Ames) Merr. Enum. Philip. Fl. Pl. 1 (1925) 379.

Rhizome creeping, 4 to 5 mm in diameter. Pseudobulbs one-leaved, 4-angled, ovoid, 1.5 to 2.5 cm long, 1.3 to 1.6 cm in diameter, 1 to 2 cm distant. Leaves rather thick, oblanceolate, elliptic-lanceolate or oblong-oblancheolate, rounded at the apex, subretuse, 8 to 15 cm long, 3 to 4.8 cm wide. Inflorescences usually one-flowered, very seldom two-flowered, conspicuous; peduncles 9 to 13.5 cm long, green. Bracts sheathing, about 1.5 cm long. Pedicel and ovary 4 to 5 cm long. Dorsal sepal large, ovate-lanceolate to lanceolate, somewhat fleshy, 9-nerved, carinate, 4 to 6.5 cm long, 1.2 to 1.5 cm wide, corinthian purple on the back, reed yellow in front, suffused with some corinthian purple and spotted with transparent white. Lateral sepals connate, smaller than the dorsal sepal, individually 6- or 7-nerved, narrowly lanceolate, falcate, 3.5 to 5 cm long, 0.7 to 0.8 cm wide, citron green and corinthian purple at the base. Petals very much smaller than the sepals, ovate-lanceolate, with prolonged filiform apex, terminating in a pyriform tip, pale grass green, striped with light purple, 3-nerved, 12 to 13 mm long, 2.5 to 3.5 mm wide. Lip recurved, fleshy, pilose above, corinthian purple at the apex, 4 to 5 mm long. Gynostemium 3-toothed, about 3 mm long. Pollinia yellow, somewhat ovoid.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78847 *Quisumbing*, September 24, 1929, living plants collected in Paete, Laguna Province; *Bur. Sci.* 78845 *Quisumbing*, December 11, 1929, living plants collected on Mount Mariveles, Bataan Province, creeping on tree trunks at low and medium altitudes.

BULBOPHYLLUM EBRACTEOLATUM Kränzl. Plates 2, 3, and 15.

Bulbophyllum ebracteolatum KRÄNZL. in Ann. k. k. Nat. Hofmus. Wien 30 (1916) 58; AMES in Merr. Enum. Philip. Fl. Pl. 1 (1925) 382.

Rhizomes creeping, 3.5 to 7 mm in diameter. Pseudobulbs one-leafed, remote, 4- or 5-angled, ovoid to ovoid-lanceolate, 3 to 4.5 cm long, 1.4 to 2 cm in diameter, 1.4 to 2 cm distant; the base of the pseudobulbs covered by two brown, membranaceous sheaths, 1.5 to 3.2 cm long, the lower one smaller. Leaves linear, 10 to 17 cm long, 1.7 to 2.5 cm wide, narrowed at both ends, the apex acute; petioles very short. Scape arising at the base of the pseudobulb, 5 to 8.5 cm long including the peduncles; the peduncles white flushed with some purple, pubescent with minute white hairs, 2 to 2.5 cm long, fleshy; the rachis fleshy, white, flushed with some purple, pubescent with minute white hairs, 5 to 6 mm in diameter. Basal sheaths two, brown, membranaceous, 8 to 10 mm long. Flowers odorless, minutely pubescent, 4.5 to 5 mm long, spirally arranged on the rachis, rather remote, the side view giving the appearance of a snake's head. Floral bracts covering the pedicels and ovaries cucullate, greenish or light purple, ovate, obtuse, 3 to 4 mm long. Pedicel and ovary very short, 1 to 2 mm long, purple, pubescent. Dorsal sepal cucullate, ovate, obtuse, 4 to 5 mm long, 2.5 to 3 mm wide, marguerite yellow to almost white, 3-nerved, the nerves pansy purple. Lateral sepals cucullate, connate, oblong, broadly obtuse to rounded, 4.5 to 5.5 mm long, 3 to 4 mm wide, marguerite yellow to almost white, 7-nerved, the nerves pansy purple. Petals very much smaller than the sepals, lanceolate, acutely acuminate, about 2 mm long, 1 mm wide, marguerite yellow to almost white, 1-nerved, the central nerve and smooth margins pansy purple. Lip fleshy, 3-lobed, about 3.5 mm long; the lateral lobes rather inconspicuous, minute, obtuse, up to 0.5 mm long, madder brown; the middle lobe oblong, rounded, lime green, pompeian red at the base. Foot slender, somewhat flattened, flesh color, about 1 mm long. Column white, fleshy, about 2 mm long, the apex pubescent, the arms two, bicuspidate. Pollinia ivory yellow, suborbicular.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78924 *Quisumbing*, February 27, 1930. Living plants collected

from Mount Banahao, Laguna Province, as an epiphyte, at medium altitudes.

A species manifestly belonging in the group with *Bulbophyllum crassifolium* (Blume) J. J. Sm. and strongly characterized by its fleshy rachis, subsessile flowers, smooth-margined petals and by the bicuspidate wings or arms of the apex of the column.

BULBOPHYLLUM ORNATISSIMUM (Reichb. f.) J. J. Sm. Plate 16.

Bulbophyllum ornatissimum (Reichb. f.) J. J. SM. in Bull. Jard. Bot. Buit. 8 (1912) 26.

Cirrhopetalum ornatissimum REICHB. f. in Gard. Chron. 2 (1882) 424; KING and PRANTL, Ann. Roy. Bot. Gard. Calcutta 8 (1898) 95, t. 133; WARNER, Orch. Album 8 (1889) t. 369; HOOK. f., Fl. Brit. Ind. 5 (1890) 773; Sanders' Orch. Guide (1927) 116; SCHLECHT., Die Orchideen (1927) 331.

Creeping, the rhizome 2 to 2.5 mm in diameter. Pseudobulbs ellipsoid, 1.5 to 2 cm long, 2 to 3 cm distant, olive-green, bearing a single leathery leaf. Leaves oblong or elliptic-oblong, sessile, apex obtuse and slightly notched, 6 to 8 cm long, 1.3 to 1.7 cm wide. Scape one-flowered, arising from the base of the pseudobulb; peduncle about 10.5 cm long, bearing 2 or 3 sheathing bracts. Flower about 14 cm long. Pedicel and ovary about 13 mm long. Floral bract membranaceous, lanceolate, about 8.5 mm long. Dorsal sepal ovate, about 2 cm long, erect, 3-nerved, the apex extended into a long drooping filiform appendage bearing hairs on its edges in its lower part and paleæ in its apical portion. Lateral sepals lanceolate with filiform tails, about 12 cm long, the tips twisted, free at the base and apex, otherwise coherent. Petals lanceolate, falcate, about 1.5 cm long, 1-nerved, with filiform palea-bearing apices like the dorsal sepal. Lip oblong, obtuse, recurved from a very concave base, with three raised lines. Column broad with hooked decurved apical teeth which are dentate at their bases; foot curved, tapering. Anther pubescent in front. Pollinia attached to a viscous, oblong, compressed disc.

LUZON, Zambales Province, Mount Marayap, *Bur. Sci.* 44806 Ramos and Edaña, December 12, 1924, on tree trunks in the mossy forests, altitude about 400 meters. The flowers pale yellowish green with purple-brown markings, the paleæ and lip are crimson purple.

A unique species characterized by its greatly elongated lateral sepals and paleæ on the dorsal sepal and petals. A species otherwise known only from Assam and Sikkim.

ILLUSTRATIONS

PLATE 1

- FIG. 1. *Dendrobium chameleon* Ames var. *ovatilabium* var. nov., side and front views of flower, $\times 1$.
2. *Dendrobium chameleon* Ames forma *alba* forma nov., front view of flower, $\times 1$.
3. *Haemaria discolor* Lindl., side view of flower, $\times 1$.
4. *Haemaria discolor* Lindl., front view of flower, $\times 1$.
5. *Dendrobium miyasakii* sp. nov., front view of flower, $\times 1$.
6. *Dendrobium miyasakii* sp. nov., side view of flower, $\times 1$.
7. *Adenostylis merrillii* sp. nov., side view of flower, $\times 2$.
8. *Adenostylis merrillii* sp. nov., front view of flower, $\times 2$.
9. *Eria longissima* sp. nov., portion of a flowering stem showing typical clusters of flowers, $\times 1$.

PLATE 2

- FIG. 1. *Bulbophyllum emiliorum* sp. nov., front view of flower, $\times 1$.
2. *Bulbophyllum emiliorum* sp. nov., side view of flower, $\times 1$.
3. *Bulbophyllum ebracteolatum* Kränzl, side view of flower, $\times 4$.
4. *Bulbophyllum ebracteolatum* Kränzl, front view of flower, $\times 4$.
5. *Bulbophyllum biflorum* Teijsm. and Binn., two flowers, $\times 1$.
6. *Bulbophyllum antenniferum* (Lindl.) Reichb. f., front view of flower, $\times 1$.
7. *Bulbophyllum antenniferum* (Lindl.) Reichb. f., side view of flower, $\times 1$.

PLATE 3

ADENOSTYLIS MERRILLII SP. NOV.

- FIG. 1. Petal, $\times 6$.
2. Dorsal sepal and petals attached from back, $\times 6$.
3. Lateral sepal from back, $\times 6$.
4. Labellum, $\times 6$.
5. Side view of column, $\times 6$.

BULBOPHYLLUM EBRACTEOLATUM KRÄNZL.

- FIG. 6. Habit, $\times 0.5$.
7. Dorsal sepal, $\times 6.5$.
8. Petal, $\times 6.5$.
9. Lower view of confluent lateral sepals, $\times 6.5$.
10. Upper view of confluent lateral sepals, column, and lip, $\times 6.5$.
11. Upper view of column, $\times 7.5$.
12. Side view of column, $\times 7.5$.
13. Pollinia, $\times 25$.
14. Labellum, $\times 7.5$.

PLATE 4

DENDROBIUM MIYASAKII SP. NOV.

- FIG. 1. Stem and branch, showing typical leaves, $\times 0.5$.
 2. Dorsal sepal, $\times 1$.
 3. Lateral sepal and spur, $\times 1$.
 4. Petal, $\times 1$.
 5. Labellum, $\times 1$.
 6. Front view of column, $\times 1$.
 7. Front and back views of anther cap, $\times 3$.
 8. Pollinia, $\times 5$.

PLATE 5

DENDROBIUM CHAMELEON AMES VAR. OVATILABIUM VAR. NOV.

- FIG. 1. Branch, $\times 0.5$.
 2. Portion of stems and flowers, approximately $\times 0.5$.
 3. Dorsal sepal, $\times 1$.
 4. Lateral sepal and spur, $\times 1$.
 5. Petal, $\times 1$.
 6. Labellum, $\times 1$.
 7. Front view of column, $\times 2.5$.
 8. Back view of anther cap, $\times 2.5$.

ERIA LONGISSIMA SP. NOV.

9. Back and front views of a bract, $\times 1$.
 10. Dorsal sepal, $\times 1$.
 11. Lateral sepal, $\times 1$.
 12. Petal, $\times 1$.
 13. Side view of column, lip, pedicel, and ovary, $\times 2$.
 14. Front view of labellum, $\times 2$.
 15. Front view of column, $\times 2$.
 16. Back and front views of anther cap, $\times 7$.

PLATE 6. BULBOPHYLLUM EMILIORUM SP. NOV.

- FIG. 1. Habit, $\times 0.5$.
 2. Column, foot, and attachment of lateral sepal, $\times 3.25$.
 3. Petal, $\times 1.625$.
 4. Labellum from side, $\times 3.25$.
 5. Dorsal sepal, $\times 1.625$.
 6. Lateral sepal, front and back views, $\times 1.625$.
 7. Anther cap, $\times 6.5$.
 8. Pollinia, $\times 6.5$.

PLATE 7

Adenostylis merrillii sp. nov.; habit, reduced.

PLATE 8

Haemaria discolor Lindl.; habit, reduced.

PLATE 9

- FIG. 1. *Dendrobium chameleon* Ames var. *ovatilabium* var. nov.; habit, very much reduced.
 2. *Dendrobium miyasakii* sp. nov.; habit, very much reduced.

PLATE 10

Eria longissima sp. nov.; habit, very much reduced.

PLATE 11

Eria longissima sp. nov.; flowering stem, natural size.

PLATE 12

Bulbophyllum biflorum Teijsm. and Binn.; habit, reduced.

PLATE 13

Bulbophyllum emiliorum sp. nov.; habit, reduced.

PLATE 14

Bulbophyllum antenniferum (Lindl.) Reichb. f.; habit, reduced.

PLATE 15

- FIG. 1. *Bulbophyllum ebracteolatum* Kränzl.; habit, much reduced.
2. *Bulbophyllum ebracteolatum* Kränzl.; closer view showing scape and some pseudobulbs. Slightly reduced.

PLATE 16

Bulbophyllum ornatissimum (Reichb. f.) J. J. Sm.; habit, reduced. (A photograph of the herbarium specimen.)

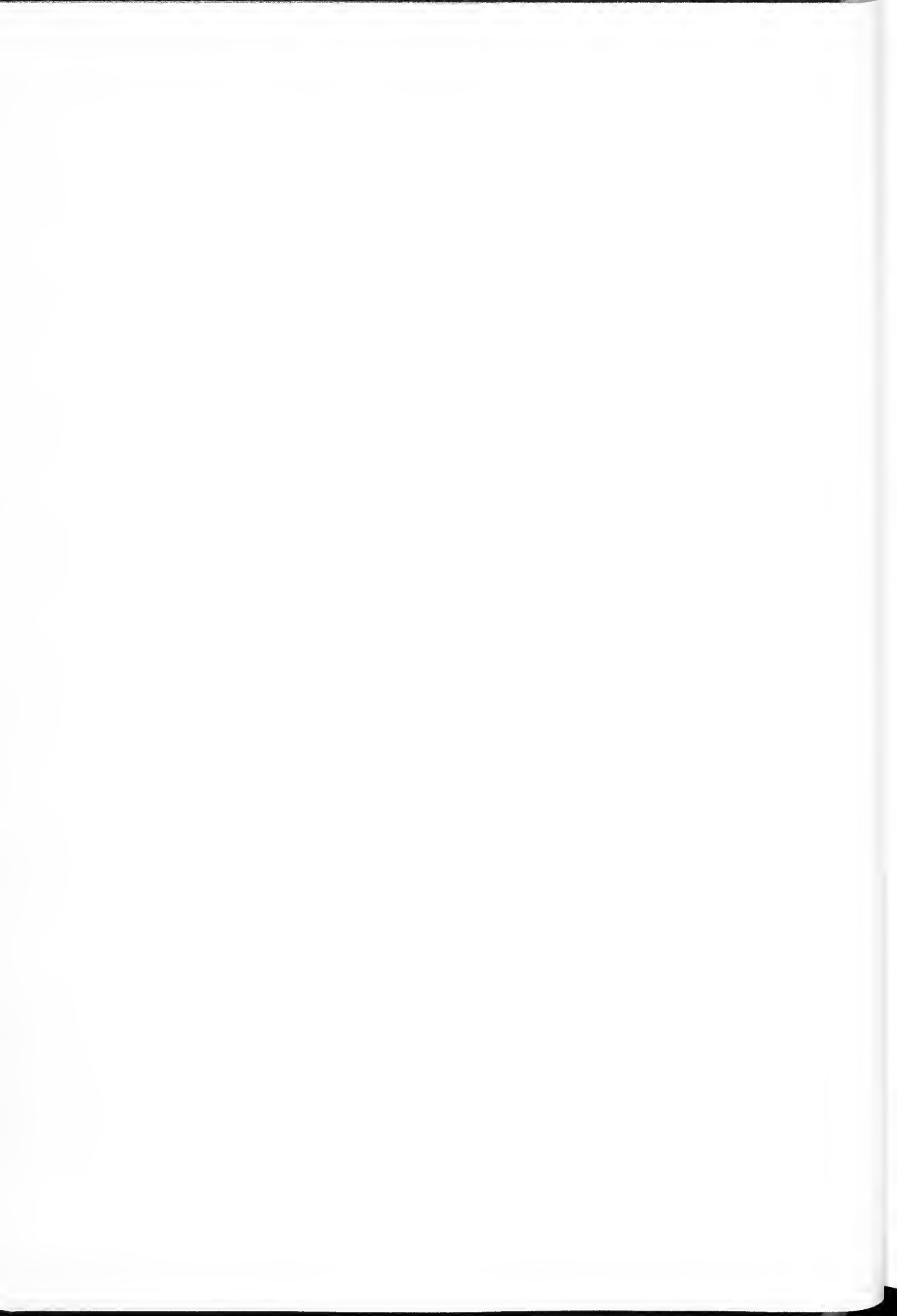




PLATE 1.



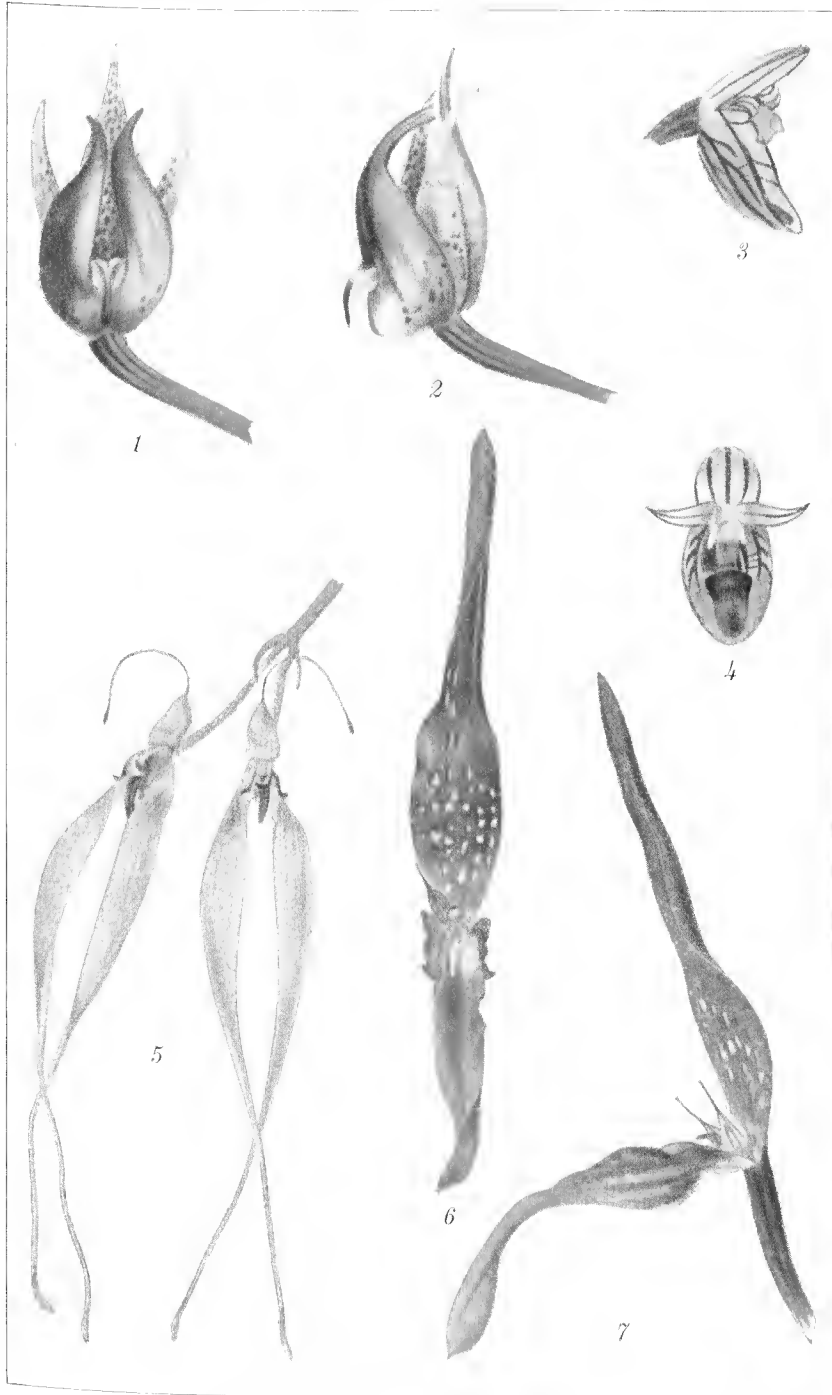


PLATE 2.



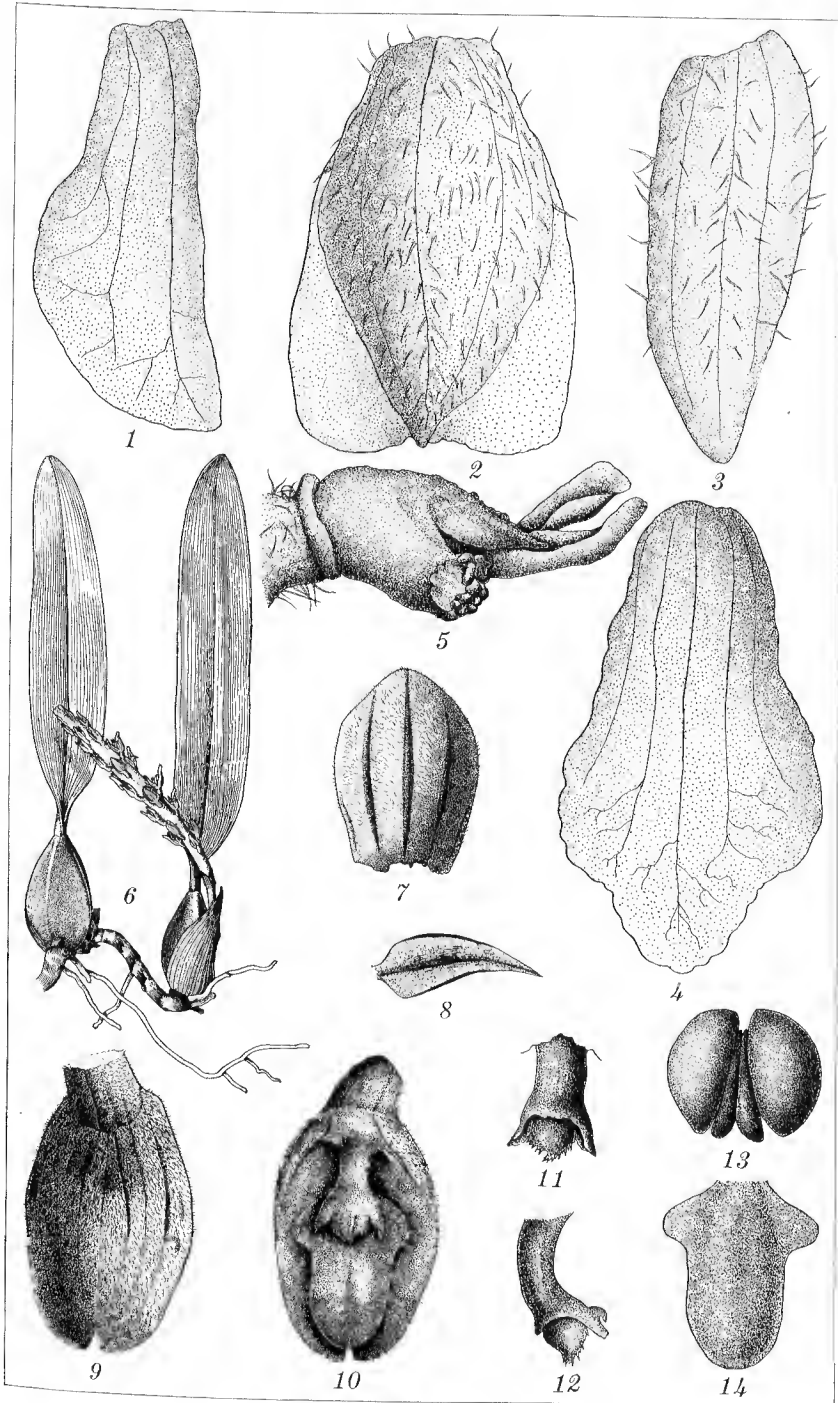


PLATE 3



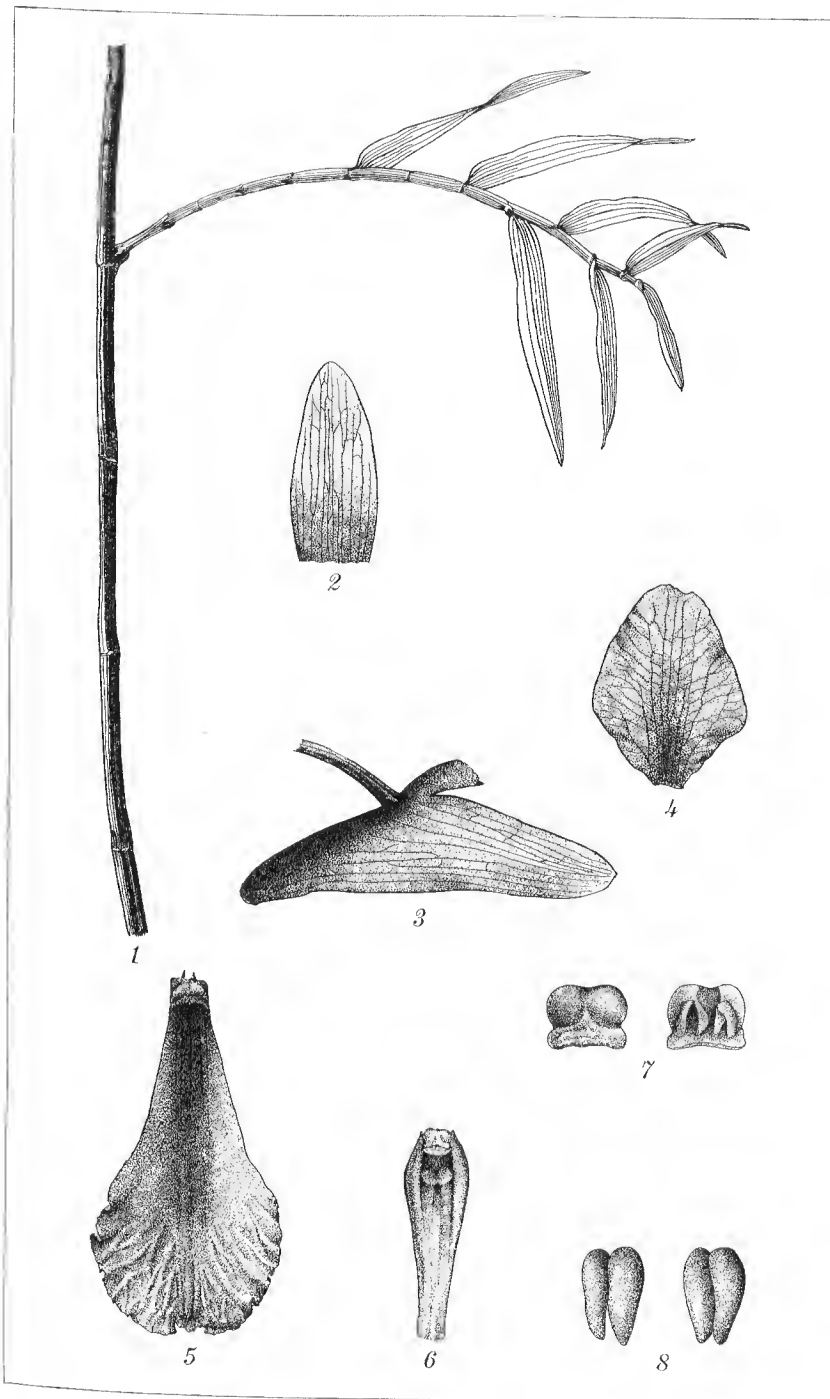


PLATE 4.



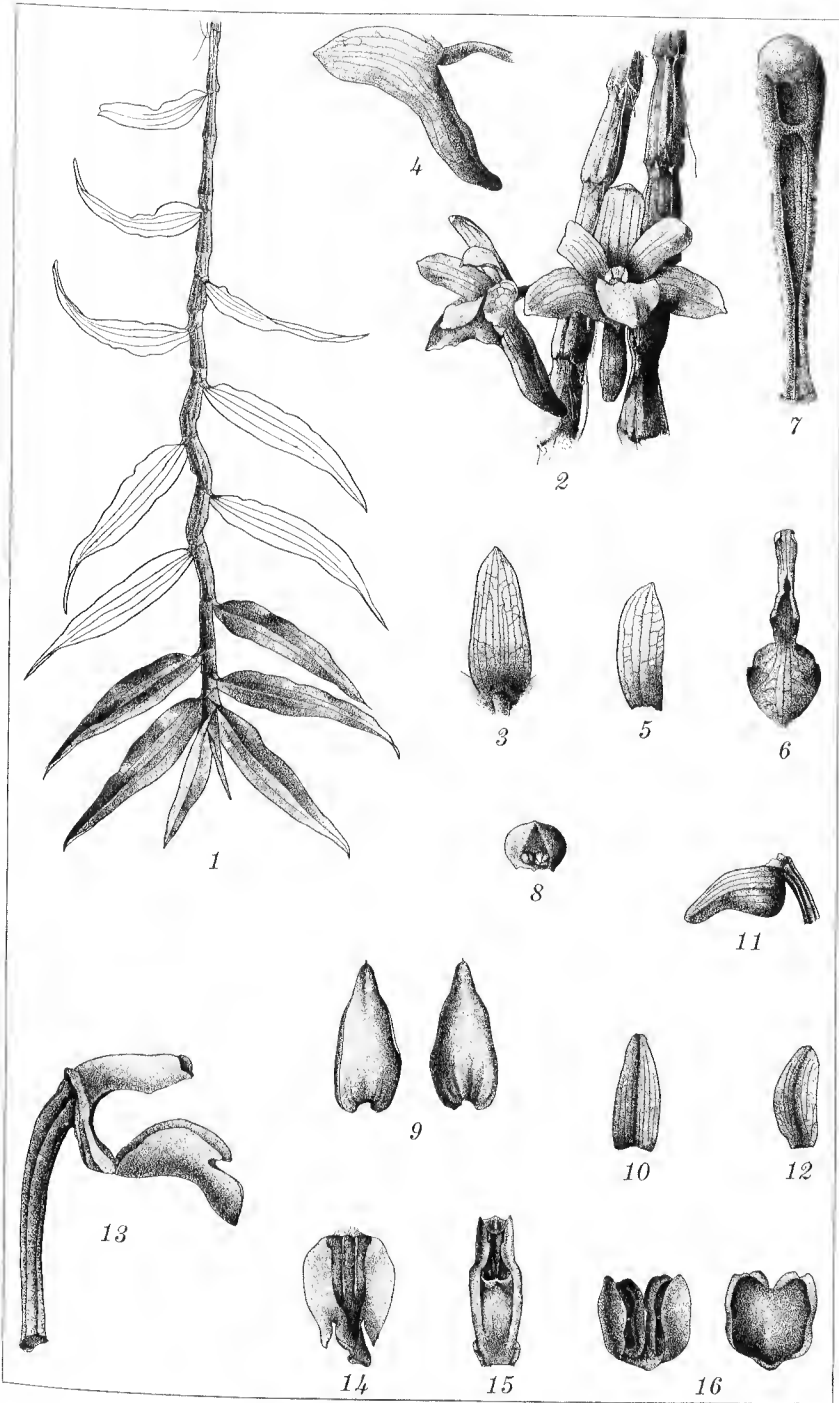


PLATE 5.



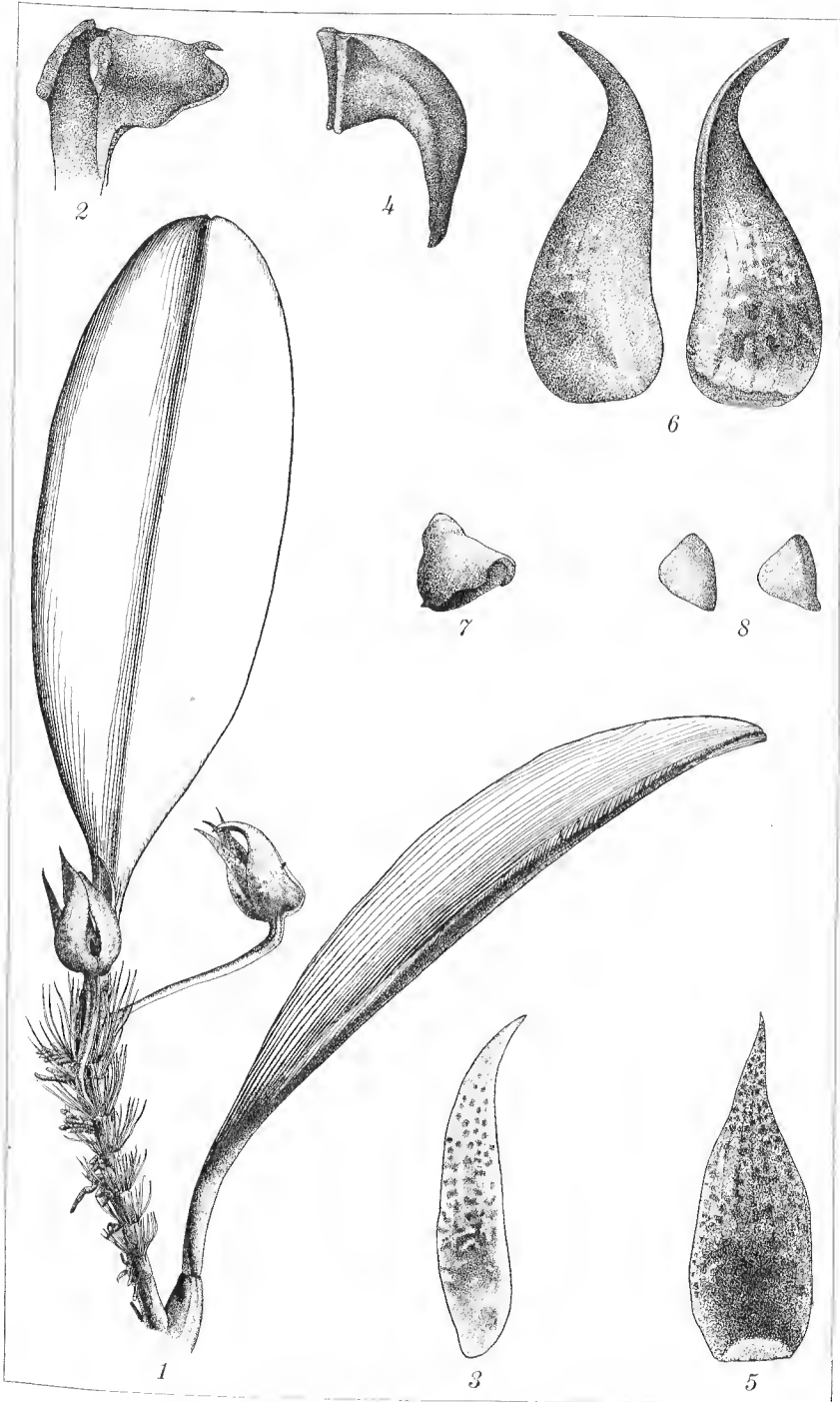


PLATE 6.





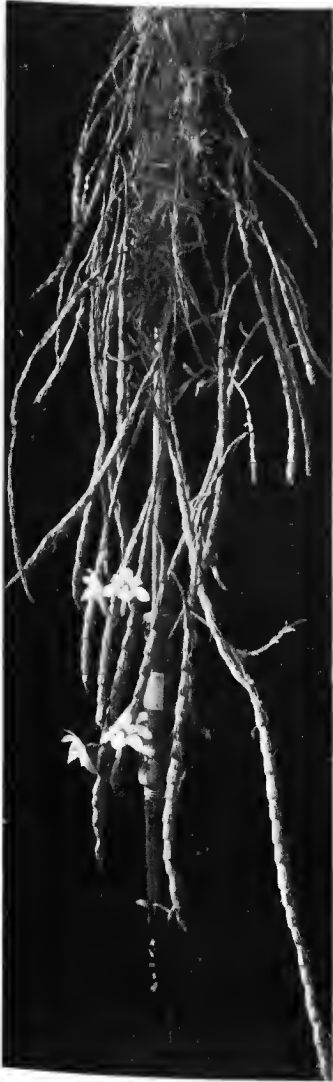
PLATE 7.





PLATE 8.





1



2



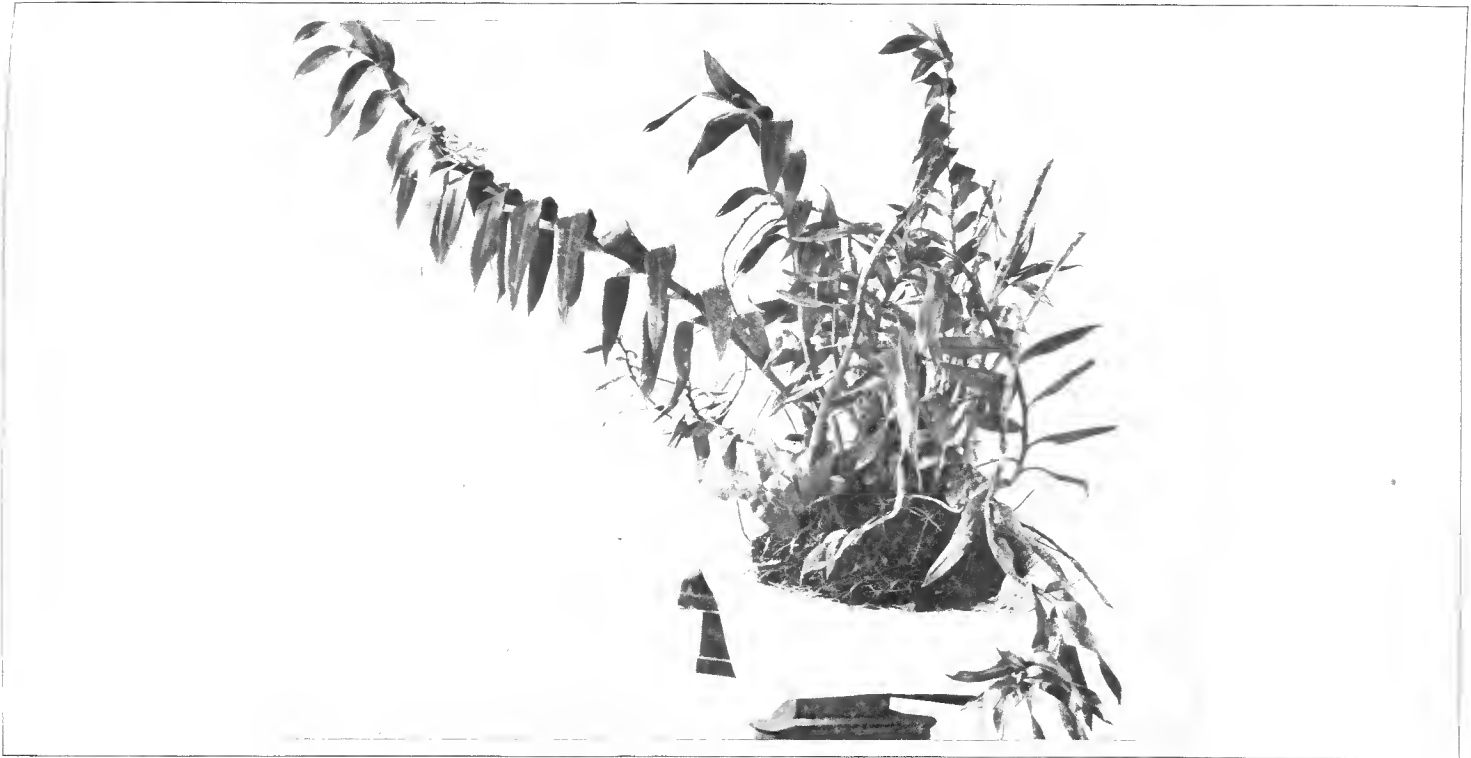


PLATE 10.





PLATE 11.





PLATE 12.

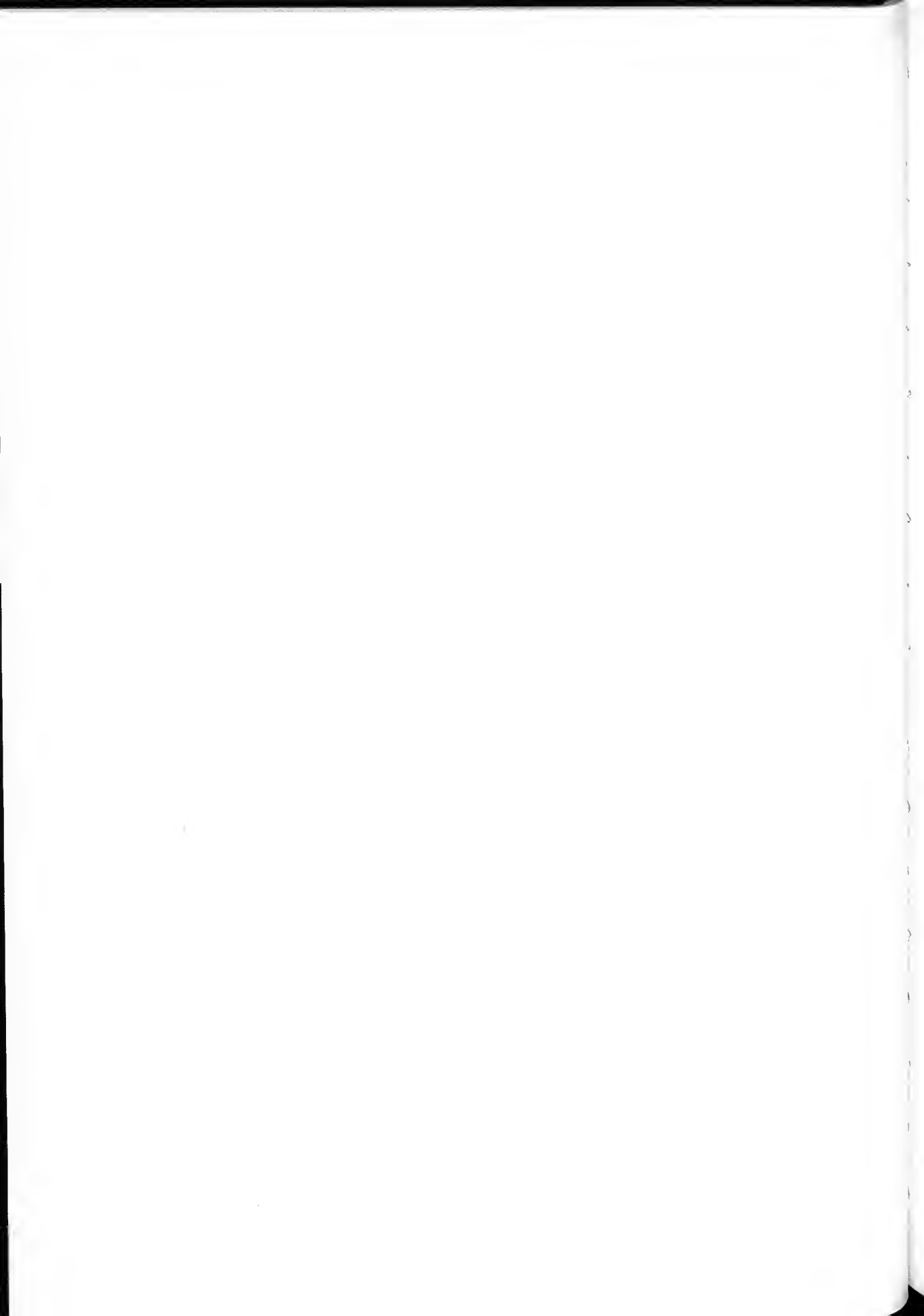




PLATE 13.

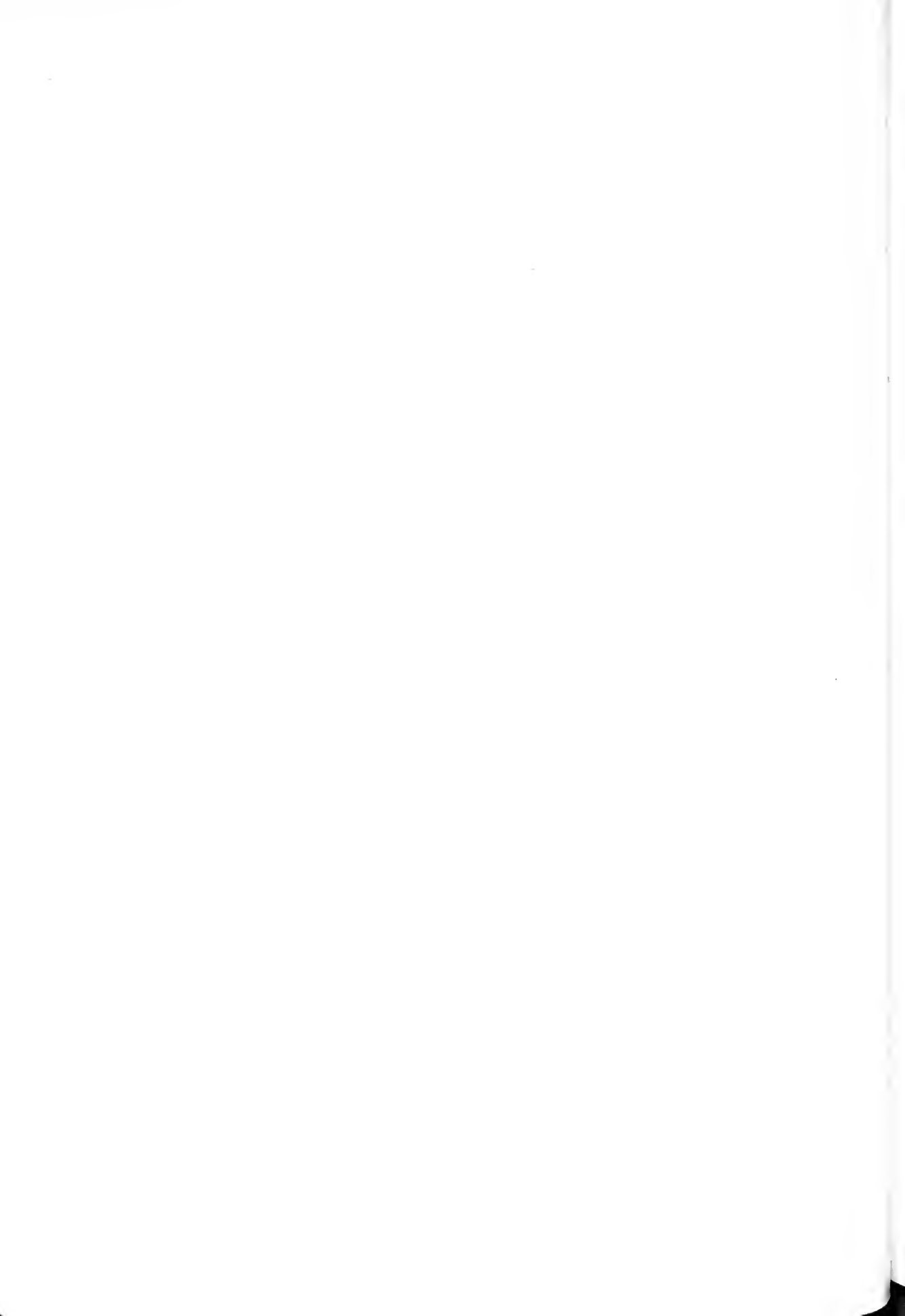
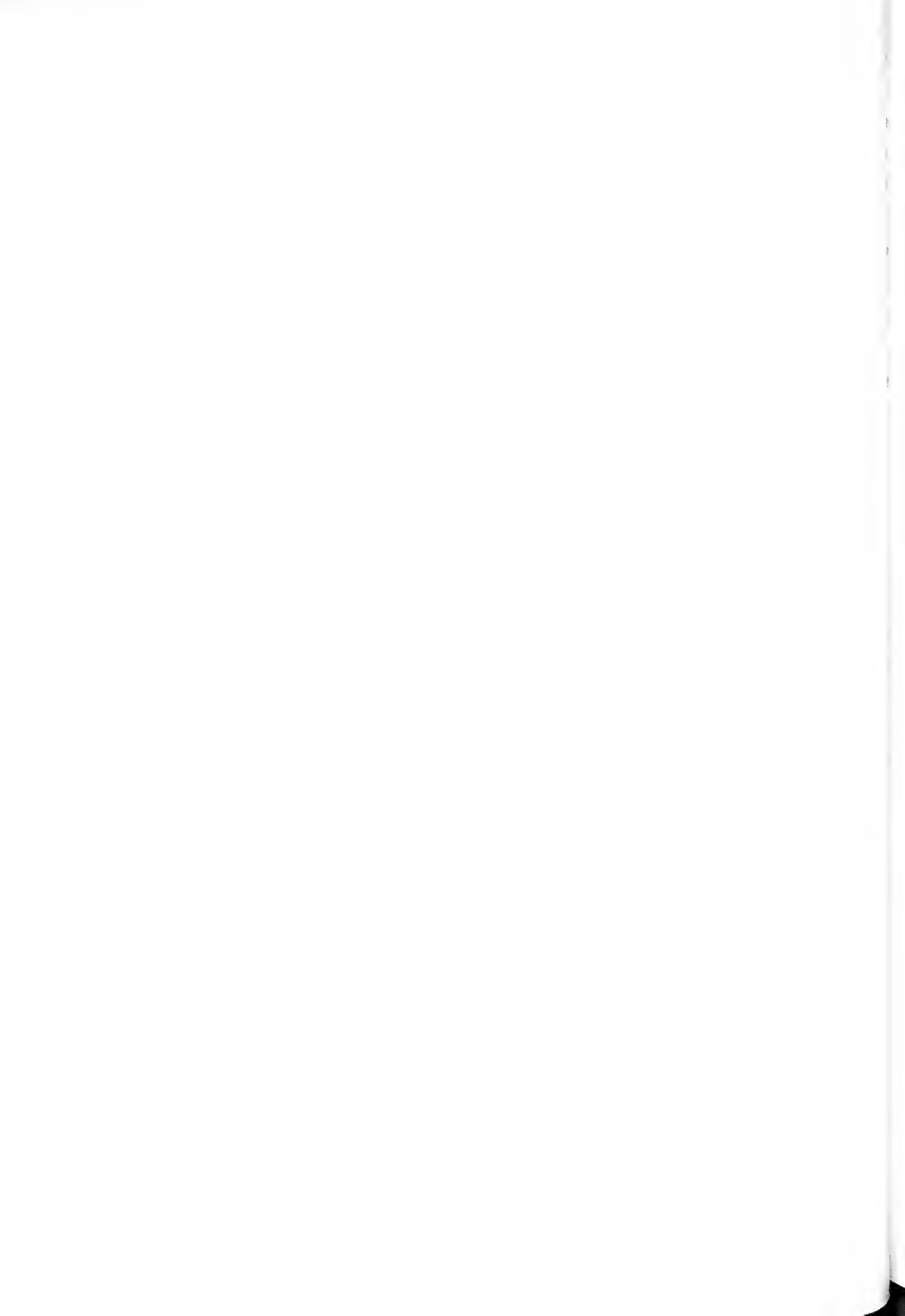




PLATE 14.





1



2

PLATE 15.

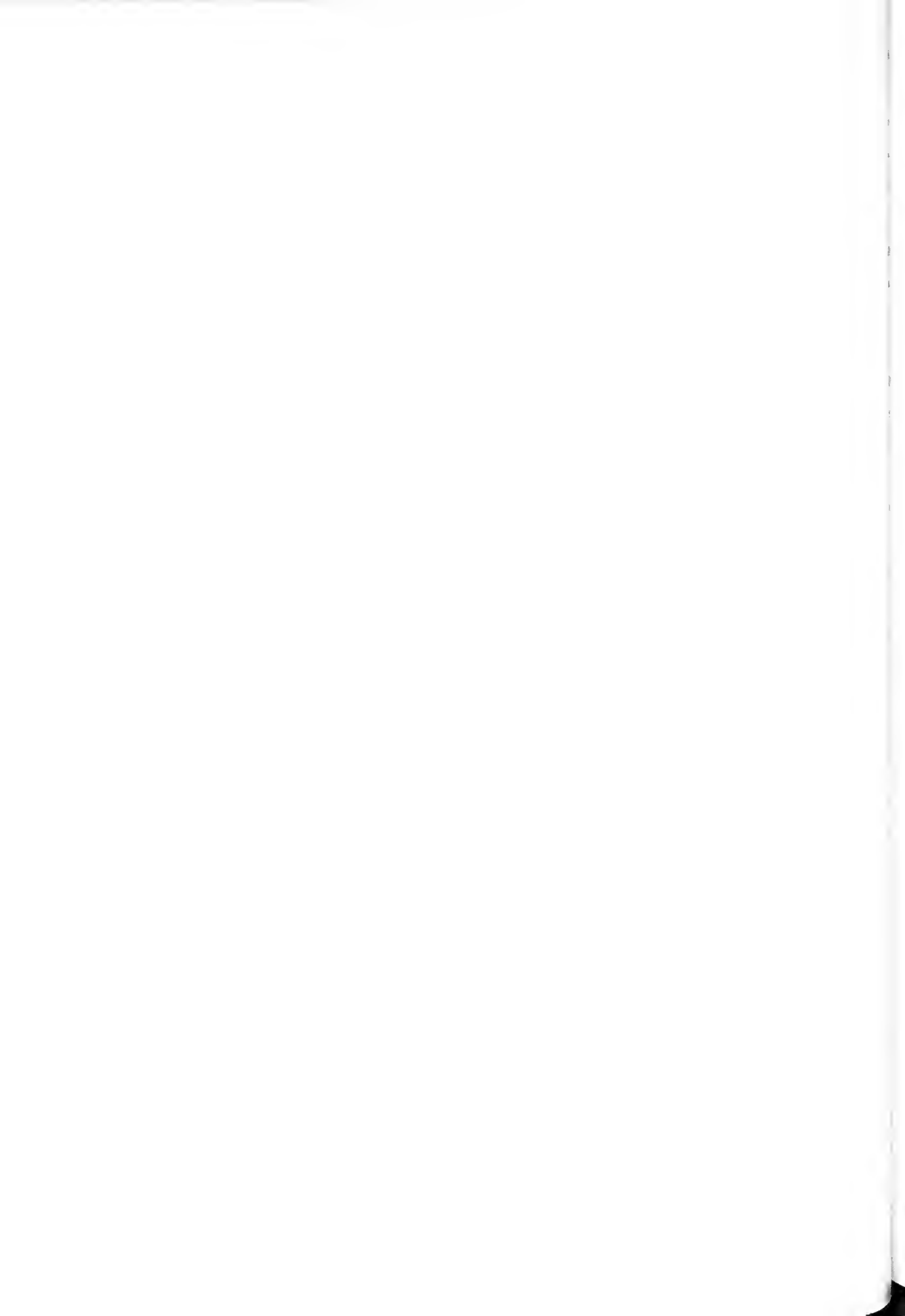
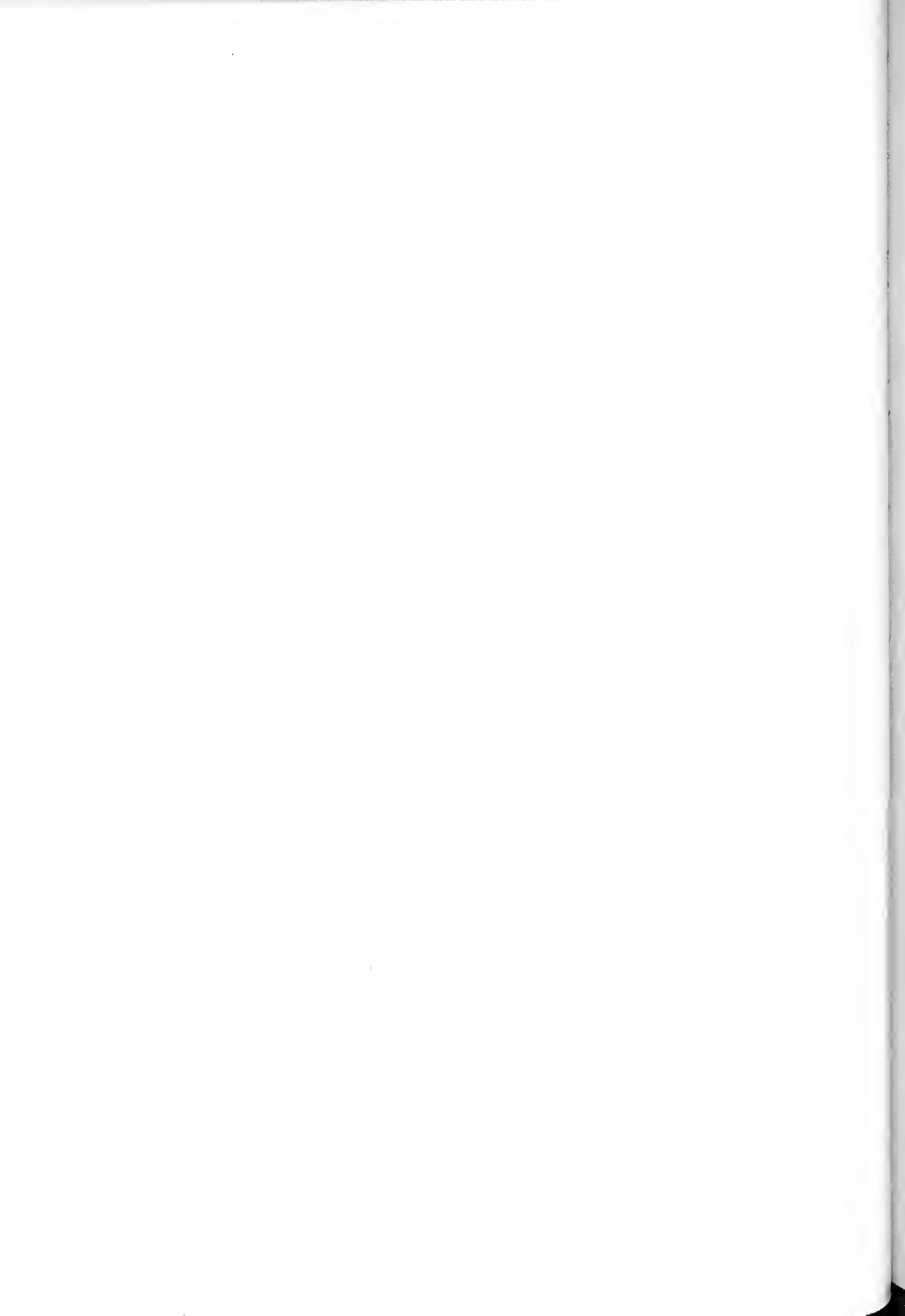




PLATE 16.



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NEW OR NOTEWORTHY PHILIPPINE ORCHIDS, II

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and

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TWENTY-NINE PLATES

The present contribution is, like the preceding one,¹ the result of further studies of those orchids in the Philippines that appear to deserve recognition as being new. Five species, which have been described previously, are here recorded and redescribed, one of these from the Archipelago for the first time. Five species and two varieties are here proposed as new. The arrangement of the genera follows the sequence proposed by Pfitzer in Engler and Prantl's "Die natürlichen Pflanzenfamilien." All the illustrations and descriptions have been prepared from living specimens. The colored illustrations and ink sketches were made by Messrs. J. M. Salazar and P. Ramos, draftsmen of the division of botany, Bureau of Science. Unless otherwise indicated in the text, the types of the new species and varieties have been deposited in the herbarium of the Bureau of Science, with the isotypes in the herbarium of the senior author.

Genus AGROSTOPHYLLUM Blume

AGROSTOPHYLLUM LUZONENSE sp. nov. Plates 1, 4, 13, and 14.

Herba epiphytica, caules 21 ad 40 cm longi, ad basim 2 ad 2.5 mm in diametro, fasciculati, teretes, erecti, superne vaginis

¹ Philip. Journ. Sci. 44 (1931) 369.

foliorum haud dilatati; vaginae foliorum imbricatae, persistentes, nitidae, stramineae, prope apicem caulis haud inflatae (in vivo et in sicco), marginibus flavidis; nodi 1 ad 2 cm distantes. Folia usque ad 9 cm longa, prope basim 5 ad 6 mm lata, linearia, acute acuminata, ad basim torta. Inflorescentia terminalis capitata, multiflora, 1.5 ad 2 cm in diametro. Bracteae exteriores inflorescentiam amplectentes, rigidae, lanceolatae, floribus longiores; bracteae florales obtusae, floribus breviores, glumaceae. Pedicelli cum ovario 6 ad 7 mm longi. Sepala lateralia ovato-lanceolata, tenuiter acuminata, obliqua, trinervia, circiter 6 mm longa, ad basim 3 mm lata. Sepalum dorsale simile. Petala lineari-lanceolata, circiter 5 mm longa, ad basim 1.5 mm lata. Labellum carnosum, ad basim leviter saccatum, saccus antice in laminam retusam productus, 7 mm longum; epichilium deltoideo-ovatum, circiter 5 mm longum, 4.5 mm latum, acutum, margine involutum, leviter apiculatum, expansum minute trilobatum. Gynostemium circiter 5 mm longum, rostellum ovatum, sulcatum. Pollinia 8.

An epiphyte; the roots very numerous, 1.5 to 2 mm in diameter. Stems tufted, erect, terete, slender, 21 to 40 cm long, 2 to 2.5 mm in diameter at the base, forming large clumps up to 30 cm in diameter; the nodes 1 to 2 cm distant, light green and entirely covered by the straw-colored persistent leaf sheaths. The leaf sheaths not inflated above both in the living and in the dried specimens, the margins yellowish. Leaves restricted to the upper portion of the stems, distichous, the bases twisted, linear, acutely acuminate, up to 9 cm long, 5 to 6 mm wide at the base, the very apex sharply triapiculate. Inflorescences terminal, capitate, many-flowered, not very dense, composed of short spikes, 1 to 2 cm in diameter; flowers 1 to 3 on a spike, opening simultaneously, about 1 cm across. Peduncles about 5 mm long. Exterior bracts sheathing the inflorescence, rigid, lanceolate, longer than the flowers, the floral ones glumaceous, obtuse, shorter than the flowers. Pedicellate ovary 6 to 7 mm long. Lateral sepals ovate-lanceolate, oblique, sharply and acutely acuminate, three-nerved, about 6 mm long, 3 mm wide at the base. Dorsal sepal similar to the lateral ones. Petals linear-lanceolate, three-nerved, acute, about 5 mm long, 1.5 mm wide at the base. Labellum fleshy, constricted near the middle, the basal part saccate, about 7 mm long; the epichile deltoid-ovate, acute, about 5 mm long, 4.5 mm wide, the margins involute, minutely trilobed at the apex when expanded. Column short and broad, abruptly constricted in the middle with a fleshy

semiorbicular process in the basal half, narrowly bialate above, about 5 mm long, foot short but distinct. Pollinia clavate, 8.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 80833 *Quisumbing*, August 25, 1930. The living plants were collected from the mountains between Siain and Atimonan, Tayabas Province, growing at medium altitudes on tree trunks. They thrive best in wooden baskets. The flowers are marguerite yellow² except the purple marginal wings of the column.

This species is manifestly allied to *Agrostophyllum malindangense* Ames, which it closely resembles in vegetative characters. It differs notably in its leaf sheaths not being inflated and expanded, particularly at the apical portion of the stem, its inflorescences not being densely capitate, and in having much larger flowers and differently shaped flower parts.

In the herbarium of Oakes Ames are two plants, with mature flowers, that must be referred to this species. The data are Nueva Vizcaya Province, Luzon, *J. de Veyra*, September 25, 1916, and the plants are said to be tufted and epiphytic.

Genus SPATHOGLOTTIS Blume

SPATHOGLOTTIS PLICATA Blume var. PARSONSII var. nov. Plates 1, 15, and 17, fig. 1.

Pseudobulbi ovoidei, 5 ad 7 cm longi, prope basim 3.5 ad 5 cm in diametro, valde rugosi. Folia lanceolata vel elliptico-lanceolata, acuminata, 57 ad 70 cm longa, 9 ad 13.5 cm lata, in sicco conspicue nervosa. Pedunculus 50 ad 70 cm longus, erectus vel arcuatus, superne minute tomentosus. Flores 4.5 ad 5 cm in diametro. Labellum spici simile, circiter 2 cm longum, apicem retusum.

A variety resembling the species in habit. Pseudobulbs large, ovoid, 5 to 7 cm long, 3.5 to 5 cm in diameter at the widest portion, conspicuously rugose. Leaves lanceolate or elliptic-lanceolate, acuminate, 57 to 70 cm long, 9 to 13.5 cm wide, the nerves very prominent, particularly when dried. Peduncles 50 to 70 cm high, rigid, erect, sometimes curved, minutely white-tomentose. Flowers 4.5 to 5 cm across, pale ochraceous-salmon or salmon-orange, flushed with mallow pink or pale rosolane purple. Sepals ovate-lanceolate, obtuse, 1.9 to 2 cm long, 9 to 10 mm wide, pubescent on the outer surface. Petals elliptic-ovate or oval, obtuse, 2 to 2.2 cm long, 1.4 to 1.5 cm wide. Pedicellate ovary tomentose, chrysolite green. Labellum about 2 cm long, three-lobed; lateral lobes oblong-obovate, broadly rounded,

²The color terms used are mostly from Ridgway's Color Standard and Color Nomenclature (1912).

oblique, the front lobe approaching that of *Spathoglottis plicata* in form, trilobulate, reniform and retuse at the apex with a long cuneate claw, straw-yellow or light salmon-orange, splashed at the middle with old rose or flame scarlet, the claw lemon chrome, the pair of side lobules at the base lemon chrome spotted with old rose, pubescent, white, triangular-acute, callus between the lobules lemon chrome or empire yellow and grenadine red, glabrous.

LUZON, Rizal Province, Pasay, Mrs. Geo. H. Fairchild's gardens, *Bur. Sci.* 79663 *Quisumbing*, August 22, 1930. The living plants were originally collected by Mr. Emilio Ermitaño, an orchid grower and dealer of Manila, from the grasslands below the Cañon Road, Baguio, Mountain Province, in February, 1929, and sold to Mr. W. Parsons, who has the plants now in his gardens at Geneva, Switzerland. The same variety was again collected by Mr. Ermitaño from about the same locality, in February, 1930, and sold to Mrs. Geo. H. Fairchild.

The new variety appears to be a natural hybrid between the light purple *Spathoglottis plicata* Blume and the yellow *Spathoglottis vanoverberghii* Ames. The floral structure and form resemble those of *S. plicata* Bl. The pubescence of the peduncles, pedicels, and outer surface of the sepals, however, is a feature of *S. vanoverberghii* Ames. The variety is readily distinguished from the two species by the color of the flowers. This variety is named in honor of Mr. W. Parsons, who, during his residence in Manila, courteously placed the facilities of his orchid collection at the disposal of the junior author. Mr. Parsons, at his home in Genthod, near Geneva, has now the best and largest collection of Philippine orchids in Switzerland.

Genus DENDROBIUM Swartz

DENDROBIUM BATANENSE sp. nov. Plates 1, 5, 16, and 17, fig. 2.

Caulis aggregati, elongati, 9 ad 24 cm alti, supra graciles, vaginis foliorum obtecti. Pseudobulbi teretes, angulati; internodia plerumque 2 vel 3, 10 ad 21 mm longi. Folia disticha, ensiformia, lineari-lanceolata, valde complanata, acuta, 4 ad 6.5 cm longa, 3.5 ad 6 mm lata, 1.5 ad 3 cm inter se distantia. Flores albidii, circiter 2.5 cm longi, 2.5 cm in diametro. Sepala lateralia oblique oblongo-lanceolata, acuta vel obtusa, circiter 19 mm longa, 5 mm lata, 7-nervia, mentum obtusum, circiter 7 mm longum, formantia. Sepalum dorsale anguste oblongo-lanceolatum, subacutum, circiter 13 mm longum, 5 mm latum, 7-nervium. Petala anguste-oblancoolata vel elliptico-lanceolata, obtusa vel

acuta, circiter 12 mm longa, 4 mm lata, 3-nervia. Labellum a basi cuneata, trilobatum, circiter 16 mm longum; lobi laterales triangulares, obtusati vel acuti, trans apicem circiter 3 mm lati; lobus intermedius in circuitu suborbicularis, circiter 1 cm longus, margine fimbriato. Lineae 3 elevatulae per discum et ultra medium callus cristatus pubescens. Gynostemium sectionis. Capsula anguste ellipsoidea, circiter 3 cm longa, 6 mm in diametro.

The stems aggregated, elongate, 9 to 24 cm long, concealed by leaf sheaths. Pseudobulbs terete, angled; internodes usually 2 or 3, 10 to 21 mm long. Leaves distichous, linear-lanceolate, acute, flattened, 4 to 6.5 cm long, 3.5 to 6 mm wide. Flowers produced along the naked termination of the stems, white, very fragrant, about 2.5 cm long, 2.5 cm across. Lateral sepals obliquely oblong-lanceolate, acute or obtuse, about 19 mm long along the anterior margin, 5 mm wide, 7-nerved, forming an obtuse mentum about 7 mm long. Dorsal sepal narrowly oblong-lanceolate, subacute, about 13 mm long, 5 mm wide, 7-nerved. Petals narrowly oblanceolate or elliptic-lanceolate, obtuse or acute, about 12 mm long, 4 mm wide, 3-nerved. Labellum cuneate at the base, about 16 mm long, trilobed; lateral lobes triangular, obtuse or acute, about 3 mm wide across the apex, lined within with purple; the middle lobe suborbicular in outline, about 1 cm long, the margins conspicuously fringed like the labellum of *Dendrobium polytrichum* Ames. The throat deep chrome at the base, the pubescent disc with three elevated lines. Gynostemium white, about 10 mm long, tridentate at the apex. Capsule narrowly ellipsoid, about 3 cm long, 6 mm in diameter, subterete, one side somewhat flattened, with three distinct longitudinal ribs.

BATAN ISLAND, Batanes Province, Mount Iraya, *Bur. Sci.* 79934 Ramos, April 29, 1930, growing on tree trunks, altitude about 700 meters.

Living plants brought to Manila by Mr. M. Ramos, botanical collector, Bureau of Science, are now growing in the Bureau of Science orchid house and flower throughout the year. The plants when first brought to Manila flowered twice in September, 1930, and have flowered monthly since, and sometimes even twice a month.

In general habit this species has several close allies, particularly *Dendrobium polytrichum* Ames and *Dendrobium carinatum* (L.) Willd., but it differs from both species in details of the lip.

DENDROBIUM FAIRCHILDIAE sp. nov. Plates 2, 7, 18, and 19.

Caules aggregati, elongati, basi attenuati, folia lanceolata, acuta, 13 ad 17 cm longa, 1.5 ad 2.6 cm lata, gerentes. Racemi brevissimi, 7-vel 8-flori, e caulibus defoliatis orientes. Flores circiter 5 cm longi, 4 cm lati. Sepala lateralia obliquissime triangulari-ovata, in apice cucullata, 1.8 ad 2.4 cm longa, secundum columnae pedem 2.5 ad 3 cm lata; mentum valde elongatum, superne abrupte reflexum. Sepalum dorsale ovato-lanceolatum, obtusum vel subacutum, 1.8 ad 2.6 cm longum, 9 ad 12.5 mm latum. Petala oblongo-elliptica, obliqua, in apice rotundata, 1.8 ad 2.4 cm longa. Labellum perbreviter, 3.3 ad 4 cm longum, obscurissime trilobum; lobi laterales breves, erecti, late rotundati; lobus intermedius productus late ovatus, abrupte acutus, reflexus, discus glaber.

Stems terete, aggregated, elongate, 66 to 95 cm tall, leafy, 7 to 10 mm in diameter at the middle, 3 to 5 mm across at the base; the nodes 1.5 to 4.5 cm distant. Leaves distichous, deciduous, lanceolate, acute, 13 to 17 cm long, 1.5 to 2.6 cm wide, 9-nerved, membranaceous, greenish, articulated to tubular sheaths. Leaf sheaths up to 4.5 cm long, membranaceous, deciduous on the lower part of the plant. Flowers 7 or 8, in very short lateral racemes, about 5 cm long, 4 cm across, with a strongly curved spur. Peduncles sheathed, about 5 mm long below the flowers, the rachis about 1.5 cm long, glabrous. Bracts lanceolate, purplish, up to 5 mm long. Pedicellate ovary 3.5 to 4 cm long, pale flesh color, pedicel slender. Lateral sepals very obliquely triangular-ovate, obtuse or subacute, somewhat cucullate at the tip, 1.8 to 2.4 cm long, about 2.5 to 3 cm wide along the column-foot. Dorsal sepal cucullate, reflexed, ovate-lanceolate, obtuse or subacute, 1.8 to 2.6 cm long, 9 to 12.5 mm wide, 7-nerved. Petals oblong-elliptic, oblique, rounded at the tip, 1.8 to 2.4 cm long, 1 to 1.2 cm wide, 7-nerved, margin entire. Labellum very shortly unguiculate, 3.3 to 4 cm long, cuneate-obovate, narrowed to the base, sharply bent at the base to conform to the curved spur formed by the mentum of the lateral sepals, very obscurely 3-lobed; the lateral lobes erect, broadly rounded; the front lobe produced, broadly ovate, abruptly acute, about 1.8 cm wide at the broadest portion, reflexed; the disc glabrous with a small hippocrepiform callus at the base. Column white, very short and stout, about 5 mm long, extended in an elongate foot.

The flowers are odorless, white with the apices of the petals and the labellum flushed with mallow pink or phlox purple; the

spur white with shades of mallow pink or phlox purple, the anther cap marguerite yellow and the base of the labellum primuline yellow.

LUZON, Rizal Province, Pasay, Mrs. Geo. H. Fairchild's gardens, *Bur. Sci.* 80820 *Quisumbing*, October 2, 1930. The plants were originally collected near Kilometer 42, Mountain Road to Bontoc, Mountain Province, growing on exposed rocks and they are now under cultivation in Mrs. Fairchild's gardens.

This species belongs in the group with *Dendrobium ramosii* Ames, *D. o'brienianum* Kränzl., and *D. epidendropsis* Kränzl. It is especially close to the first, but differs radically in being a much larger plant with very much larger flowers with dissimilar floral details.

The species is dedicated to Mrs. Geo. H. Fairchild, an orchid enthusiast with large collections in her gardens at Pasay, near Manila, and in Baguio. Through her untiring interest in Philippine orchids, she has succeeded in cultivating many of the beautiful, rare, and wild orchids of these Islands.

DENDROBIUM JUNCEUM Lindl. Plates 2, 8, 20, and 21.

Dendrobium junceum LINDL. in *Bot. Reg.* 28 (1842) Misc. p. 9, No. 11; REICHB. f. in *Walp. Ann.* 6 (1861) 281, *Gard. Chron.* (1873) 361; KRÄNZL. in *Engl. Pflanzenreich* IV. 50. II B. 21 (1910) 240.

Caules aggregati, supra parce ramosi, usque ad 115 cm longi; pars basalis 5 ad 15 cm longa, fusiformis, incrassata, sulcata, 1.5 ad 2.5 cm crassa; cum 3 internodiis 1.5 ad 3.5 cm longis; pars superior gracilis, teres, 2 ad 3 mm in diametro. Folia subteretia, sulcata, filiformia, subulata, 8 ad 16 cm longa, 1.5 ad 2.5 mm in diametro. Flores fugaces, viridi-flavicum, labello purpureo-striato, in apice caulium et in axillis foliorum superiorum singuli orientes, 3.5 ad 4 cm longi, 3 ad 4 cm lati; bracteae breves hyalinae; ovarium cum pedicello 1.6 ad 1.8 cm longum. Sepala lateralia latissime triangularia, obliquissima, acuta, basi anteriore dilatata, mentum obtusum formantia, 1.8 ad 2 cm longum. Sepalum dorsale triangulari-lanceolatum vel ovato-lanceolatum, acutum, 1.5 ad 1.8 cm longum, 0.9 cm latum, 5-vel 7-nerviium. Petala ovato-lanceolata, acuta, circiter 1.4 cm longa, 0.6 cm lata, 3- ad 7-nervia. Labellum prope apicem trilobum, e basi cuneata, obovatum, 2.3 ad 2.5 cm longum; lobi laterales late triangulares; lobus intermedius major quam laterales, semiorbicularis, margine crispatus et minute crenulatus, papillosus. Discus per partem basalem leviter tricarinatus, carinae antice in faeciam singulam carnosam productum. Gynos-

temium crassum, perbreve, superne tridentatum, in pedem elongatum extensum.

Stems rather tall, branching sparingly near the top, up to 115 cm long, pseudobulbous at base; lower part 5 to 15 cm long, fusiform, enlarged at the middle and tapering at both ends, conspicuously ridged, 1.5 to 2.5 cm in diameter with 3 internodes 1.5 to 3.5 cm long; upper part slender, terete, 2 to 3 mm in diameter, greenish olive or reddish brown. Leaves subterete, channelled, filiform, subulate, 8 to 16 cm long, 1.5 to 2.5 mm in diameter, dark green. Flowers produced singly from tufts of bracts along the naked termination of the stems or from the axils of upper leaves, 3.5 to 4 cm long, 3 to 4 cm across. The bracts small, hyaline. Pedicellate ovary 1.6 to 1.8 cm long. Lateral sepals very broadly triangular, very oblique, as long as the dorsal sepal, forming with the column-foot a spur that is stout, rather recurved, obtuse, 1.8 to 2 cm long. Dorsal sepal triangular-lanceolate or ovate-lanceolate, acute, 1.5 to 1.8 cm long, 0.9 cm wide, 5- to 7-nerved. Petals ovate-lanceolate acute, about 1.4 cm long, 0.6 cm wide, 3- to 7-nerved. Labellum trilobed near the apex, cuneate at the base, obovate, 2.3 to 2.5 cm long; lateral lobes broadly triangular; the middle lobe larger than the lateral lobes, semiorbicular, notched at the apex, crisped, the margins minutely crenulate, papillose. Disc through the basal part lightly tricarinate, the keels produced in front into a single fleshy band. Column very short and stout with three teeth at the apex, extended into an elongated foot.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 79065 *Quisumbing*, May 24, 1930, the living plants being originally collected at Atimonan, Tayabas Province.

The flowers open one at a time on the nodes along the naked termination of the stems or in the axils of apical leaves and are very fragrant, the odor approaching that of *Dendrobium crumenatum* Sw. In habit the flowers differ from those of *D. crumenatum* Sw. in that they remain fresh on the plant for several days. The sepals, petals, spur, and pedicellate ovary are chartreuse yellow with some cream color at the apices of the petals and sepals. The lateral lobes of the labellum including the cuneate base are white, the reticulations are dark rhodamine purple or true purple, the middle lobe of the labellum and the disc are chartreuse yellow. The plants first flowered in the Bureau of Science orchid house June 1, 1929, and again May 24, 1930.

Dendrobium junceum Lindl. was supposed in the original description to have come from Singapore, but Ridley³ doubts this origin and says that "what I take to be the plant intended I received from Manila, sent by Sr. Vidal." A record of the type of *D. junceum* together with the sketch of the lip in the herbarium of Oakes Ames shows an identical species beyond question. The flowers of the plants from Tayabas are larger than those of the type specimen in Lindley's herbarium, but similar to them in all salient points. The labellum in our material is not so prominently 3-lobed as represented in Lindley's sketch, yet the central carina and the surface of the middle lobe exhibit no marked difference from the type material as interpreted by Lindley. In habit *D. polytrichum* Ames resembles this species closely.

DENDROBIUM MODESTUM Reichb. f. Plates 1, 6, and 22.

Dendrobium modestum REICHB. f. in Bonpl. 3 (1855) 222, in Walp. Ann. 6 (1861) 281; NAVES, Novis. App. (1882) 234; KRÄNZL. in Engl. Pflanzenreich IV. 50. II. B. 21 (1910) 220; AMES, Orch. 5 (1915) 128, in Merr. Enum. Philip. Fl. Pl. 1 (1924) 352.

Species *D. aciculari* Lindl. et *D. philippinensi* Ames affinis. Planta epiphytica 30 ad 55 cm alta. Caules purpurei; pars basalis per 7 ad 13.5 cm longa, fusiformi-incrassata, 8-angulata, 5 ad 7 mm in diametro; pars superior teres, gracilis, 1.5 ad 2 mm crassa; internodia prope basim usque ad 4.5 cm longa. Foliorum vaginae cylindricae, internodiis aequilongae. Folia tertia, acicularia vel subulata, acuta, adscendentia, glabra, carnosa, rigidiuscula, 5.5 ad 10.5 cm longa, 1.75 ad 2.5 mm in diametro, quam internodia plerumque longiora. Flores pauci, pallide purpurei, singuli, versus apicem caulis. Bractee quam ovarium pedicellatum breviores. Pedicellum cum ovario circiter 7 mm longum, gracile. Sepala lateralia latissime et obliquissime triangularia, acuta, circiter 7 mm longa, 7 mm lata secundum columnae pedem, 3- ad 5-nervia, mentum obtusum formantia. Sepalum dorsale triangulari-lanceolatum, acutum, circiter 6.5 mm longum, in basi 3 mm latum, 5-nervium. Petala anguste elliptica, obtusa, circiter 6.5 mm longa, 1.75 mm lata, 1-nervia. Labellum e basi sensim cuneata dilatatum, prope apicem leviter trilobatum, circiter 12 mm longum; lobi laterales antice subrotundati, denticulati, circiter 1.5 mm lati; lobus intermedius subquadratus, antice subrotundatus, denticulatus, in apice api-

³ Journ. Linn. Soc. 32 (1896) 250.

culatus. Discus lineis 3, nervisque purpureis, parallelis percur-sus. Gynostemium perbreve, in pedem elongatum extensum.

An epiphyte 30 to 55 cm high. The stems flushed with purple; the lower part pseudobulbous, angled, much thickened, consisting of three internodes which are up to 4.5 cm long and 5 to 7 mm in diameter; the upper part terete, 1.5 to 2 mm in diameter. The leaf sheaths cylindrical, as long as the inter-nodes. Leaves terete, acicular or subulate, acute, 5.5 to 10.5 cm long, 1.75 to 2.5 mm in diameter, ascending, glabrous, rather fleshy and rigid, flushed with brownish purple. Flowers odor-less, few, pale purple, appearing singly at the extremities of the stems. The bracts minute and very much shorter than the pedicellate ovary. Pedicellate ovary slender, about 7 mm long. Lateral sepals very broadly and obliquely triangular, acute, about 7 mm long, 7 mm wide along the column-foot, 3- to 5-nerved, forming an obtuse spur. Dorsal sepal triangular-lanceolate, acute, about 6.5 mm long, 3 mm wide at the base, 5-nerved. Petals narrowly elliptic, obtuse, about 6.5 mm long, 1.75 mm wide, 1-nerved. Labellum gradually cuneate at the base, dilated somewhat at the apex, lightly trilobed beyond the middle, about 12 mm long; lateral lobes subrounded, denticu-late, about 1.5 mm wide across the apex; middle lobe subqua-drate, denticulate, the apex very broadly rounded and apiculate, about 2.5 mm long, 3.5 mm wide. Disc traversed by three distinct parallel lines, which are conspicuously purple. The column very short, tridentate at the apex, extended into an elongate foot.

CORON ISLAND, Palawan Province, *Bur. Sci.* 78800 *W. H. Brown*, December 24, 1929. Living plants were collected by Dr. William H. Brown, director of the Bureau of Science, Ma-nila, during a trip to Coron Island, while en route to Culion Leper Colony, situated on Culion Island, Palawan Province. These plants were found growing as an epiphyte on small trees on cliffs along the shore, and are now being cultivated in the Bureau of Science orchid house.

Dendrobium modestum Reichb. f. has heretofore escaped all modern collectors. However, a record in the herbarium of Oakes Ames shows a sketch from the herbarium of Reichen-bach that represents unmistakably a species similar to the one from Coron Island. A minor discrepancy appears in the short, scarcely uncinatate lateral teeth of the column.

Genus BULBOPHYLLUM Thouars

BULBOPHYLLUM CLEISTOGAMUM Ridl. Plates 3, 9, and 23.

Bulbophyllum cleistogamum RIDL. in Journ. Linn. Soc. 31 (1896) 277, Fl. Malay Penin. 4 (1924) 69; CARR in Gard. Bull. Straits Settlements 5 (1930) 139, t. 2, f. 5.

"Rhizoma pseudobulbis pluribus approximatis tectum; pseudobulbi *conici* sulcati, $3/4$ pollices longi, laete virentes. Folium oblongum petiolatum subacutum, canaliculâ distinctâ, carinâ dorsali paullo elevatâ, 4-6 pollices longum, $3/4$ -1 pollicem latum, petiolo profunde canaliculato, $1/2$ poll. longo. Scapi plures rigiduli teretes, ad 12 pollices longi, virides, bracteis siccis subacutis, $1/2$ -pollicaribus arcte amplectentibus. Racemus breviusculus complanatus, bracteis ovatis acutis, mucronatis, $1/4$ -pollicaribus amplectentibus. Flores mediocres *cleistogami*, saepissime clausi, raro paullo expansi. Sepala lanceolata acuminata acuta, pallide straminea, $3/4$ poll. longa, lateralia basi dilatata intus rubescentia. Petala *minuta quadrata* subdenticulata, mucrone subulato longiusculo, viridia. Labellum *elongatum curvum acutum*, basi latâ, lobis duobus lateralibus parvis falcatis, carinis duabus approximatis a basi usque ad geniculatum, basi kermesinum, apice stramineum. Columna brevis crassa viridis, margine clinandrii denticulato. Stelidia *subulata erecta*, pede kermesino haud producto. Anthera ovata. Rostellum nullum." Ridley, l. c.

Rhizomes creeping, branched, 3 to 5 mm in diameter, clothed with dry tubular sheaths, which later become fibrous; internodes 3 to 5 mm long. Pseudobulbs 1-leaved, cylindric-conic, usually curved, 2 to 3.5 cm long, 1 to 1.5 cm in diameter at the base, 0.7 to 2.5 cm distant, wrinkled and longitudinally grooved. Leaves dark green, more or less erect, oblong, oblong-lanceolate or oblong-elliptic, acute, 14.5 to 17.5 cm long, 3.5 to 4.5 cm wide; petioles grooved, 1 to 2 cm long. Inflorescences arising from the base of the pseudobulbs, more or less erect; the peduncles greatly elongated, terete, green suffused with dark purple, 50 to 61 cm long, 1.5 to 2 mm in diameter, clothed at every node with a tubular sheath. Bracts triangular, acute, 7 to 9 mm long, strongly keeled on the back. Flowers odorless, appearing singly at intervals of several weeks, widely expanded, 4 to 4.5 cm across; pedicellate ovary 1.5 to 2 cm long. Sepals spreading, chartreuse yellow tinted with pale vinaceous; the veins, reticulations, and margins dull dark purple. Lateral sepals falcately

triangular-lanceolate, acutely acuminate, 2 to 2.5 cm long, 7 to 8 mm wide, dorsally carinate, 9-nerved. Dorsal sepal erect, oblong-lanceolate, acutely acuminate, about the same size as the sepals, 7- to 9-nerved. Petals very small, 1-nerved, ovate-subquadrate, about 2 mm long without the cusp, about 3 mm wide near the base, the upper half pectinate, the middle nerve prolonged into a long cusp about 1.7 mm long, pale chalcedony yellow, with three patches of Hay's maroon near the base. Labelum reflexed near the base, maroon, mobile, attached by a minute claw to the foot of the column, fleshy, entire, tongue-shaped, about 2 cm long, the very tip acuminate; the basal portion dilated into a pair of erect auricles terminated on each side by an uncinat lobule, in the groove between the auricles runs a pair of approximate converging keels, the upper portion keeled, convex, tumid-rugulose. Column very short, stout, straw yellow, terminating in a pair of spreading, subquadrate, apically bilobed arms of which the posterior lobe is short-triangular and the anterior lobe is subulate and about 1.5 mm long; clinandrium excavated, transversely elliptic; rostellum wanting, the foot at right angles to the column, about 7 mm long; anther semiorbicular, about 1.5 mm long, naphthalene yellow with a median maroon spot.

LUZON, Tayabas Province, Atimonan, *Bur. Sci.* 80829 *Quisumbing*, April 6, 1930. The specimens were collected from the Quezon National Park, across the road from Gate No. 2 cottage, growing on a dead, standing tree trunk.

This species, which was originally collected from Riouw (Rhio), Borneo, and later reported also from the Malay Peninsula (Perak, Waterloo and Tahan), is new to the Philippines.

Bulbophyllum cleistogamum Ridl. is distinct from any Philippine *Bulbophyllum* by its greatly elongated, slender peduncles and the structure of its flowers, particularly of the labellum, petals, and sepals. The peduncles, indeed, are much more elongated than those previously described.

As Carr ⁴ points out the designation *cleistogamum* is rather a misnomer, for the flowers are usually widely expanded.

BULBOPHYLLUM MAQUILINGENSE sp. nov. Plates 3 and 10.

Herba epiphytica. Radices fibratae, glabrae. Rhizoma repens. Pseudobulbi conferti, suberecti, ovoidei vel oblongo-ovoides, 9 ad 16 mm longi, 6 ad 10 mm in diametro, monophylli. Folium ellipticum vel elliptico-oblongum, obtusum, subcoriaceum,

⁴ Gard. Bull. Straits Settlements 5 (1930) 139.

1.5 ad 4.5 cm longum, 1 ad 1.5 cm latum. Inflorescentiae erectae, fasciculatae, 1-florae; pedunculus filiformis, 3 ad 5 cm longus; bractea minuta, infundibuliformis, circiter 1.5 mm longa. Pedicellus cum ovario circiter 7 mm longus, gracilis. Sepala lateralia oblique oblonga, acuta, circiter 9 mm longa, 3.5 mm lata, 3-nervia. Sepalum dorsale valde cucullatum, ellipticum, subacutum, 9.5 ad 10 mm longum, 5 ad 6 mm latum, 3-nervium. Petala oblongo-elliptica, acuta vel obtusa, quam sepalum dorsale minora, circiter 7 mm longa, 3 mm lata, 1-nervia. Labellum mobile, lingulatum, carnosum, obtusum, in basi utrinque auriculato-lobatum, vix 6 mm longum, in medio constrictum, parte anteriore spathulata vix 3.5 mm longa; lobi laterales parvi, erecti, vix 1 mm longi, glabri. Gynostemium breve, steliidiis subulatis; anthera subglobosa.

Rhizomes creeping, very slender. Roots fibrous. Pseudobulbs crowded, suberect, ovoid or oblong-ovoid, 9 to 16 mm long, 6 to 10 mm in diameter, smooth or grooved, 1-leaved. Leaves erect, often slightly recurved towards the apex, elliptic or elliptic-oblong, obtuse, 1.5 to 4.5 cm long, 1 to 1.5 cm wide, subcoriaceous, green, sharply sulcate through the middle of the upper surface, with conspicuous median keel beneath; petioles very short, up to 3 mm long. Inflorescences 3 to 8 from the base of each pseudobulb, fascicled, erect, 1-flowered; the peduncles filiform, 3 to 5 cm long. Bracts funnel-shaped, about 1.5 mm long. Pedicellate ovary very slender, about 7 mm long. The sepals cameo pink, barred and mottled with Schoenfeld's purple. Lateral sepals obliquely oblong, acute, about 9 mm long, 3.5 mm wide, 3-nerved, the nerves elevated on the back, inner margins ciliolate and narrowly involute. Dorsal sepal strongly cucullate, elliptic, subacute, 9.5 to 10 mm long, 5 to 6 mm wide, 3-nerved, the nerves elevated on the back. Petals smaller than the sepals, oblong-elliptic, about 7 mm long, 3 mm wide, 1-nerved, olive green barred and mottled with dull dusky purple. Labellum tongue-shaped, blackish red-purple, adnate by a thin claw to the apex of the column-foot, mobile, fleshy, subentire, about 6 mm long, constricted in the middle, the spatulate apex about 3.5 mm long; lateral lobes on each side of the base small, auriculate, erect, about 1 mm long. Column very minute, stelidia subulate; anther subglobose.

LUZON, Laguna Province, Mount Maquilung, *Bur. Sci.* 80830 *Quisumbing*, April 4, 1930. A glabrous epiphyte, growing on tree trunks, above the second camp.

In the herbarium of the senior author is a sheet of three unnamed plants with a single agglutinated flower the parts of which show that the plants are referable to *Bulbophyllum maquilingense*. The leaves are apparently narrower than those of the type, the smallest being linear-oblong, 2.7 cm long and 4 mm wide. The data of this collection are: LUZON, Tayabas Province, Mount Banahao, A. D. E. Elmer (?) 3797, May, 1906. "On undershrubs in the forests at 800 meters; flowers comparatively large, pink, spotted, rare."

Bulbophyllum maquilingense is very similar vegetatively to *B. fenixii* Ames, but it appears to be distinct from all Philippine members of the genus by the strongly cucullate dorsal sepal and the unusual color markings of the flower.

Genus RENANTHERA Loureiro

RENANTHERA STORIEI Reichb. f. var. PHILIPPINENSIS var. nov. Plates 3, 7, and 24.

A specie haec planta parvitate communi, labelli lobis lateraliibus angustioribus truncatis et lobo intermedio latiore differt.

Stems erect, terete, dark brown, smaller than in the species, up to 80 cm high, 6 to 7 mm in diameter. The roots greatly elongated, 2 to 5 mm in diameter. Leaves distichous, much smaller than in the species, greenish or greenish yellow (very much paler than in the species, where it is dark green), coriaceous, oblong, unequally bilobed at the rounded apex, 4.5 to 9.5 cm long, 1.5 to 3.4 cm wide. Peduncles 14 to 15 cm long, terete; the bracts tubular, remote, 4 to 5 mm long. Panicles many-flowered (up to 45 flowers). Flowers slightly fragrant, scarlet red, except the bases of the lateral lobes of the labellum which are cream-colored and the base of the middle lobe and the throat of the labellum which are orange, 1.8 to 2 cm wide, 2.5 to 3.2 cm long. Lateral sepals oblong-ob lanceolate or oblanceolate, somewhat unguiculate, broadly obtuse or rounded, 1.3 to 2 cm long, 6 to 7 mm wide across the broadest portion, 3- to 5-nerved. Dorsal sepal narrowly oblanceolate, subacute, 1.1 to 1.4 cm long, 3 to 3.5 mm wide, 3- to 5-nerved. Petals narrower and shorter than the sepals, narrowly oblong-ob lanceolate or narrowly linear-ob lanceolate, broadly obtuse or rounded, 0.9 to 1.3 cm long, 2 to 2.5 mm wide, 3- to 5-nerved. Labellum fleshy, 5 to 6.5 mm long, deeply saccate-spurred at the base; lateral lobes subquadrate, broadly truncate, 1.25 to 1.5 mm long; the middle lobe broadly ovate, subacute, 2.25 to 2.5 mm long, about 2 mm wide; the spur rounded, about 2 mm long. Column

minute, about 2.5 mm long. Anther broadly ovoid, about 1.75 mm across. Pollinia suborbicular.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 78826 *Quisumbing*, December 28, 1929. The living plants were collected on trees in mangrove swamps in Aloneros, Tayabas Province, and flowered from October to March. The plants succeed well when nailed on adobe fences, using staples to hold the stems.

This dwarf variety of *Renanthera storiei* differs radically from the species in its small stature, small leaves and flowers, and the narrower broadly truncated lateral lobes of the labellum.

Although the flowers in the variety here proposed are smaller than in the type, it is noteworthy that intergrading forms may appear. In the herbarium of Oakes Ames there is a specimen, *A. Loher 6000*, collected in Rizal Province, with flowers that are equal in size to the largest flowers of var. *philippinensis* with leaves up to 1.5 dm long by 3.8 cm wide. This specimen is clearly referable to var. *philippinensis*.

Genus VANDA Jones

VANDA MERRILLII sp. nov. Plates 3, 11, 25, and 26.

Planta erecta, usque ad 95 cm alta. Folia disticha, parte inferiore imbricantia, rigida, recurvata, lineari-oblonga, oblique bilobata, 25 ad 32 cm longa, 2.8 ad 3.5 cm lata. Inflorescentiae laxae, 7- ad 11-florae, pedunculo incluso circiter 25 cm longae. Flores odoratissimi, 3 ad 3.5 cm in diametro. Sepala lateralia obovata, valde obtusa vel rotundata vel retusa, circiter 1.8 cm longa, 1.3 ad 1.5 cm lata, carnosae, margine valde undulato. Sepalum dorsale simile. Petala subsimilia, leviter unguiculata. Labellum trilobatum, carnosum, in basi in calcar parvum productum; lobi laterales erecti, subquadrati, circiter 3.5 mm longi; lobus intermedius multo major, panduratus, glaber, apice retusus, supra convexus, in basi utrinque auriculatus, circiter 12.5 mm longus, prope basim 12.5 mm latus. Columna abbreviata, crassissima. Pollinia 4, dissimilia, oblique ellipsoidea. Capsula oblongo-obovoidea, profunde carinata, circiter 10 cm longa, 2.5 cm in diametro.

Plant erect, up to 95 cm high. Stems terete. Leaves distichous, linear-oblong, closely imbricated at the base, recurved, rigid, 25 to 32 cm long, 2.8 to 3.5 cm wide, unequally bilobed at the apex, light green, much paler than those of *Vanda luzonica*, which are usually dark green. Racemes 1 to 3 in each plant,

spreading, loosely 7- to 11-flowered, about 25 cm long including the peduncles; the peduncles massicot yellow, rather stout. Flowers very fragrant, fleshy, 3 to 3.5 cm across, nearly as long. Pedicellate ovary massicot yellow, twisted, 3.5 to 6.5 cm long. Bracts broadly ovate, obtuse, up to 5 mm long. Sepals obovate, narrowed to the base, broadly obtuse, rounded or retuse at the apex, strongly undulate, about 1.8 cm long, 1.3 to 1.5 cm wide at the broadest portion, the lateral sepals slightly wider. Petals similar to the sepals in form, lightly clawed, slightly smaller, about 1.8 cm long, 1 to 1.1 cm wide. Labellum trilobed, fleshy, shortly spurred; lateral lobes erect, subquadrate, incurved, about 3.5 mm long; middle lobe much larger, pandurate, glabrous, retuse at the apex, convex above, auriculate on each side, about 12.5 mm long, 12.5 mm wide, with 4 more or less obscure raised nerves above, at the throat of the spur with two raised papillæ; spur small, compressed, about 4 mm long. Column very short and stout, much swollen laterally at the base. Pollinia 4, unequal, obliquely ellipsoid. Capsules oblong-obovoid, deeply ridged, about 10 cm long, 2.5 cm in diameter.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 80832 *Quisumbing*, August 25, 1930. The living plants were originally collected from the forests of Cabuyao, Atimonan, Tayabas Province, growing on trees, similar in habit to *Vanda luzonica* Loher.

The sepals and petals pinard yellow washed and stained half way to the apex and at the base with carmine or nopal red, striations of the same color in the middle. The lateral lobes of the labellum white with purple dots; middle lobe reed yellow, washed with dragon's blood red, the four raised nerves purple, the auricles dotted with pomegranate purple. Column and anther white with purple dots.

The native collectors, because of the habit of the plant, erroneously called it "*Vanda luzonica*."

This magnificent species belongs in the group with *Vanda tricolor* Lindl., but differing in the color of the flowers and in the shape of the labellum, etc. Its closest Philippine relative is *Vanda luzonica* Loher from which it can be distinguished not only by the general habit, but also by the form, size, and color of the flowers. *Vanda truncata* J. J. Sm., from Dutch New Guinea, is apparently a closely allied species, which differs chiefly in the shorter, few-flowered racemes and dissimilar floral markings.

Genus ROBIQUETIA Gaudichaud

ROBIQUETIA PANTHERINA (Kränzl.) Ames. Plates 2, 11, and 27.

Robiquetia pantherina (Kränzl.) AMES, Sched. Orch. 6 (1923) 95,
in Merr. Enum. Philip. Fl. Pl. 1 (1925) 435.

Cleisostoma spatulatum BLUME apud Naves Novis. App. (1882) 238.
Saccolabium densiflorum LINDL. in Bot. Reg. 24 (1838) Misc. 56,
quoad Philip., non Lindl. in Wall. Cat.; REICHB. f. in Walp. Ann.
6 (1864) 885, quoad Philip.; NAVES, Novis. App. (1882) 241.

Robiquetia spatulata AMES, Orch. 5 (1915) 237, non J. J. Sm.

Saccolabium pantherinum KRÄNZL. in Fedde Repert. 17 (1921) 391.

Stem pendulous, stout, somewhat thickened and compressed, about 32 cm long, 5 to 10 mm in diameter. Leaves coriaceous, oblong, slightly contracted at the sheathing base, unequally and broadly bilobed at the rounded apex, 15 to 18.5 cm long, 4.5 to 5 cm wide. Racemes opposite the leaf bases, elongate, densely flowered, pendulous, simple or one-branched, about 30 cm long including the peduncle; the peduncle stout, about 5.5 cm long, 4 mm in diameter. Flowers odorless, fleshy, 9 to 10 mm across; floral bracts lanceolate, acute, 3 to 7 mm long. Pedicellate ovary puberulent, 6 to 8 mm long. Lateral sepals spreading, broadly and obliquely elliptic-obovate, slightly cucullate or almost flattened, rounded, about 5 mm long, 3 mm wide, the tip slightly bent forward. Dorsal sepal broadly elliptic or oval, rounded, about 4 mm long, 3 mm wide, the tip bent forward, cucullate. Petals spreading, more or less flattened, obovate or obovate-oblong, obtuse, about 3.5 mm long, 2.5 mm wide. Labellum adnate to the column, consisting of an infundibuliform strongly incurved spur which is laterally dilated, and minutely 4-lobulate at the apex, 3-lobed at the mouth; lateral lobes narrow, erect, furnished with a fleshy carinate callus inside near the irregular margins; middle lobe triangular, subacute, fleshy, inflexed, about 3 mm long. There is a well-developed scale ascending obliquely from the anterior wall of the sac and an inconspicuous forcipate scale on the posterior wall. Column stout, very short. Anther acuminate, depressed, long-beaked. Pollinia 2, globose.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 80825 *Quisumbing*, September 13, 1930. The living plants were collected from Rizal Province, in the forests, with no definite locality.

The sepals and petals are covered with conspicuous maculations, the background amber yellow mottled and banded with brownish purple. The lateral lobes of the labellum amber yellow

with a circle of brownish purple, the middle lobe amber yellow with two patches of eugenia red at the base, the tip spotted with eugenia red. The spur marguerite yellow.

This species was originally known from the collection of Cuming.⁵ It was subsequently discovered by the late C. A. Wenzel, No. 180, July 15, 1913, from Dagami, Leyte, in forests 60 meters above sea level. Kränzlin's type of *Saccolabium pantherinum* was collected by Loher, s. n.

As pointed out by Ames,⁶ *Robiquetia pantherina* is limited to the Philippine Islands, where it is rare. It "is closely related to *R. spathulata* J. J. Sm.," from which it differs "in having the scale on the anterior wall of the sac obliquely ascending . . . Other differences are found in the contour of the labellum and in the somewhat differently shaped lateral lobes."

Robiquetia pantherina may be recognized among all known Philippine species by the conspicuous maculations on the petals and sepals and by the peculiar form of the labellum, particularly the structure of the spur.

Genus STAUROPSIS Reichenbach f.

STAUROPSIS FASCIATA Benth. Plates 2, 12, 28, and 29.

Stauropsis fasciata BENTH., Gen. Pl. 3 (1833) 572; KRÄNZL. in Xen. Orch. 3 (1894) 132, t. 275, I 1-7; VEITCH, Man. Orch. Pl. 2 (1891) Subtribe Sarcantheeae 2; Sanders' Orch. Guide (1927) 421.

Trichoglottis fasciata REICHB. f. in Gard. Chron. (1872) 669, L'Orchidophile (1885) 283, fig.; WILLIAMS, Orch. Album 5 (1886) t. 208, Orch. Grower's Manual ed. 7 (1894) 732, f.

Staurochilus fasciatus RIDL. in Journ. Linn. Soc. 32 (1896) 351; SCHLECHTER, Die Orchideen (1927) 570.

Vandopsis leytenensis AMES, Orch. 5 (1915) 222.

Trichoglottis fasciata, n. sp.

"Bene caulescens, foliis cuneato ligulatis obtuse bilobis abbreviatis (1" lat. 4" long.); spicis paucifloris, grandifloris, ovariis pedicellatis trigonis; sepalis petalisque cuneato oblongo acutis, sepalis lateralibus falcatis; labello basi cum columna connato; auriculis baseos dolabratis; lamina antica trifida, laciniis lateralibus triangulis patulis, lacinia media carinaeformi antice oblique obtusata; lineis velutinis ternis in fundos columna utrinque juxta antheram unifalcata; ligula baseos ligulata bidentata velutina nunc erosulo dentata, semper tenuissima." Reichb. f., in Gard. Chron. (1872) 699.

⁵ Bot. Reg. 24 (1833) Misc. 56.

⁶ Sched. Orch. 6 (1923) 95.

Plant erect or curved, 50 cm or more long. Roots stout, greatly elongated, piercing the leaf sheaths of the lower part of the stem, up to 45 cm long. Stems rigid, about 1 cm in diameter, terete, somewhat flattened toward the apex, concealed by tubular leaf sheaths; internodes 2 to 3.5 cm apart. Leaves distichous, oblong, 9 to 11.5 cm long, 3 to 3.7 cm wide, leathery, thick, flat, spreading, pale yellowish green, equally or unequally bilobed at the broad apex. Racemes rather stout, ascending, 3- or 4-flowered, about 15 cm long including the peduncle, which is 7 cm in length. Flowers large, about 4 cm across, very lax, fleshy, fragrant, lasting for a month or longer. Floral bracts deeply clasping or amplexicaul, triangular-ovate, apiculate, dorsally carinate, 7 to 10 mm long. Pedicellate ovary trigonous, marguerite yellow, about 2 cm long. Lateral sepals elliptic, 2.5 to 2.8 cm long, 1.1 to 1.3 cm wide at the widest portion, subacute, at the very tip with a dorsal horn, which is 4 mm long. Dorsal sepal similar. Petals oblanceolate, 2.3 to 2.5 cm long, 0.8 to 0.9 cm wide, subacute, with a horn at the very tip. Labellum about 1.9 cm long, fleshy, 5-lobed, base deeply concave; the basal lobes broadly rounded, auriculate, bluntly angled in front, erect, about 4 mm long, deeply connate with the sides of the column; middle lobe 3-lobed with lobes at right angles; side lobes triangular-lanceolate, 7 to 8 mm long, subacute, erect-spreading; terminal lobe linear-triangular, strongly compressed laterally and keel-like (when viewed from the side, highest beyond the middle), obtuse, about 9 mm long, 4 mm wide at the base. Disc with several pubescent lines at the base between the basal auricles. Column short and stout, about 8 mm long with a pair of linear or linear-triangular arms at the apex. Ovary semi-globose with a pair of ridges at the tip, densely papillose. Pollinia 4, complanate obovoid.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 80831 *Quisumbing*, May 26, 1930. The living plants were epiphytes collected from the forests of Atimonan, Tayabas Province, Luzon. Sepals and petals barium yellow to citron yellow barred with cinnamon brown. The middle lobe of the labellum white, the lateral lobes marguerite yellow and spotted at the base with coral red on top. Gynostemium barium yellow.

While this species was originally described as a member of the genus *Trichoglottis*, it is certainly aberrant from the general conception of that group in its relatively elongate several-flowered inflorescences of large flowers and especially in its spurless labellum.

Like the genus *Vandopsis* Pfitz., this species has an ecalcarate lip with a laterally flattened terminal lobe. But, unlike all members of that genus examined, it possesses conspicuous triangular-lanceolate side lobes.

In this latter feature the present species is in exact accord with the concept of Reichenbach when he transcribed *Trichoglottis philippinensis* Lindl., with its very similar lip structure, into *Stauropsis*. This genus was so-named, of course, from the spreading star-shaped lobes of the lip.

We are, therefore, of the opinion that this species and *Trichoglottis philippinensis* would best be reinstated as members of the genus *Stauropsis* Reichb. f.

Together with its rather localized Philippine occurrence, this species occurs in several parts of eastern tropical Asia; namely, Siam, Lankawi, etc.

This is a rare species in the Philippines, locally known as "*Renanthera alba*." It is characterized by the pale yellowish green oblong leaves, the peculiar labellum, and the horns at the tips of the sepals and petals.

ILLUSTRATIONS

PLATE 1

- FIG. 1. *Agrostophyllum luzonense* sp. nov., front view of a flower, $\times 4$.
2. *Agrostophyllum luzonense* sp. nov., side view of a flower, $\times 4$.
3. *Dendrobium modestum* Reichb. f., side view of a flower, $\times 2$.
4. *Dendrobium modestum* Reichb. f., front view of a flower, $\times 2$.
5. *Dendrobium batanense* sp. nov., front view of a flower, $\times 1$.
6. *Dendrobium batanense* sp. nov., side view of a flower, $\times 1$.
7. *Spathoglottis plicata* Bl. var. *parsonsii* var. nov., front view of a flower, $\times 1$.
8. *Spathoglottis plicata* Bl. var. *parsonsii* var. nov., side view of a flower, $\times 1$.

PLATE 2

- FIG. 1. *Dendrobium fairehildae* sp. nov., front view of a flower, $\times 1$.
2. *Dendrobium fairehildae* sp. nov., side view of a flower, $\times 1$.
3. *Dendrobium fairchildae* sp. nov., front view of a flower, $\times 1$.
4. *Stauropsis fasciata* Benth., front view of a flower, $\times 1$.
5. *Stauropsis fasciata* Benth., side view of a flower, $\times 1$.
6. *Robiquetia pantherina* (Kränzl.) Ames, front view of a flower, $\times 2$.
7. *Robiquetia pantherina* (Kränzl.) Ames, side view of a flower, $\times 2$.
8. *Dendrobium junceum* Lindl., front view of a flower, $\times 1$.
9. *Dendrobium junceum* Lindl., side view of a flower, $\times 1$.

PLATE 3

- FIG. 1. *Renanthera storiei* Reichb. f. var. *philippinensis* var. nov., front view of a flower, $\times 2$.
2. *Renanthera storiei* Reichb. f. var. *philippinensis* var. nov., side view of a flower, $\times 2$.
3. *Bulbophyllum eleistogamum* Ridl., front view of a flower, $\times 1$.
4. *Bulbophyllum elcistogamum* Ridl., side view of a flower, $\times 1$.
5. *Bulbophyllum maquilingense* sp. nov., front view of a flower, $\times 2$.
6. *Bulbophyllum maquilingense* sp. nov., side view of a flower, $\times 2$.
7. *Vanda merrillii* sp. nov., front view of a flower, $\times 1$.
8. *Vanda merrillii* sp. nov., side view of a flower, $\times 1$.

PLATE 4

- Agrostophyllum luzonense* sp. nov.: 1, apical portion of an inflorescence showing bracts, and side view of the column, $\times 2$; 2, a bract, $\times 7.5$; 3, dorsal sepal, $\times 7.5$; 4, lateral sepal, $\times 7.5$; 5, petal, $\times 7.5$; 6, front view of labellum, $\times 7.5$; 7, side view of labellum, $\times 7.5$.

× 7.5; 8, side view of column and pedicellate ovary, × 7.5; 9, front view of column and pedicellate ovary, × 7.5; 10, view of anther from above, × 18.5; 11, view of anther from below, × 18.5; 12, front view of pollinium, × 18.5; 13, side view of pollinium, × 18.5.

PLATE 5

Dendrobium batanense sp. nov.: 1, habit of a single plant, × 0.5; 2, basal portion of a stem showing pseudobulb with three internodes, × 0.5; 3, dorsal sepal, × 2; 4, lateral sepal, spur and pedicellate ovary, × 2; 5, petal, × 2; 6, front view of labellum, × 2; 7, front view of column, × 2; 8, side view of column, pedicellate ovary and bracts, × 2; 9, view of anther from above, × 7.5; 10, group of pollinia, × 7.5; 11, two pollinia, × 7.5; 12, fruit, × 1.

PLATE 6

Dendrobium modestum Reichb. f.: 1, habit, about one-third natural size; 2, dorsal sepal, × 4; 3, lateral sepal, × 4; 4, lateral sepal and spur, × 4; 5, petal, × 4; 6, front view of labellum, × 4; 7, side view of labellum, × 4; 8, side view of column, × 4; 9, front view of column, × 4; 10, view of anther from below, × 10; 11, side view of anther, × 10; 12, pollinia, × 10.

PLATE 7

- FIG. 1. *Dendrobium fairchildae* sp. nov.: 1, dorsal sepal, × 1; 2, exterior view of one lateral sepal and spur and partial view of the other lateral sepal, and the pedicellate ovary, × 1; 3, interior view of a lateral sepal, spur and side view of the column and pedicellate ovary, × 1; 4, petal, × 1; 5, front view of (flattened) labellum, × 1; 6, side view of labellum (natural position), × 1; 7, front view of column, × 1; 8, view of anther from above, × 6; 9, view of anther from below, × 6; 10, front view of pollinium, × 6; 11, side view of two pollinia, × 6.
2. *Renanthera storiei* Reichb. f. var. *philippinensis* var. nov.: 12, dorsal sepal, × 2; 13, lateral sepal, × 2; 14, petal, × 2; 15, view of labellum and column from above, × 7.5; 16, side view of labellum and column, × 7.5; 17, front view of column, × 7.5; 18, view of anther from below × 7.5; 19, front and side views of pollinia, × 7.5.

PLATE 8

Dendrobium junceum Lindl.: 1, dorsal sepal, × 2; 2, lateral sepal, × 2; 3, lateral sepal and spur, × 2; 4, petal, × 2; 5, front view of labellum, × 2; 6, side view of labellum, × 2; 7, front view of column, × 2; 8, side view of column, × 2; 9, view of anther from above, × 6; 10, view of anther from below, × 6.

PLATE 9

Bulbophyllum cleistogamum Ridl.: 1, tip of the inflorescence showing bracts, × 2; 2, dorsal sepal, × 2; 3, lateral sepal, × 2; 4, petal,

× 18; 5, side view of column, labellum and pedicellate ovary, × 2; 6, front view of labellum and column, × 2; 7, apical region of the column, × 4; 8, view of anther from above, × 10; 9, view of anther from below, × 10.

PLATE 10

Bulbophyllum maquilingense sp. nov.: 1, habit, approximately × 2; 2, view of dorsal sepal from back, × 4; 3, side view of dorsal sepal, × 4; 4, outer view of lateral sepal, × 4; 5, inner view of lateral sepal, × 4; 6, outer view of petal, × 4; 7, inner view of petal, × 4; 8, front view of labellum, × 4; 9, side view of labellum, column and pedicellate ovary, × 4; 10, front view of column, × 18.

PLATE 11

FIG. 1. *Vanda merrillii* sp. nov.: 1, dorsal sepal (natural position), × 1; 2, lateral sepal (natural position), × 1; 3, petal (natural position), × 1; 4, front view of labellum, × 2; 5, side view of labellum, column and anther, × 2; 6, view of column from above, × 3.65; 7, view of anther from above, × 3.65; 8, view of anther with pollinia, from below, × 3.65; 9, pollinia, × 8; 10, fruit, × 0.5.

2. *Robiquetia pantherina* (Kränzl.) Ames: 11, side view of dorsal sepal, × 3; 12, front view of dorsal sepal, × 3; 13, petal, × 3; 14, lateral sepal, × 3; 15, side view of column, anther, labellum and spur, × 4.25; 16, view from above of column, anther and labellum, × 4; 17, back view of spur, × 3.5; 18, longitudinal section of labellum and spur showing prominent scale on the anterior wall, × 3.5; 19, median section of spur showing partition, × 3; 20, view of anther from below, × 3; 21, pollinia, × 3.

PLATE 12

Stauroopsis fasciata Benth.: 1, interior view of dorsal sepal, × 2; 2, side view of dorsal sepal, × 2; 3, interior view of lateral sepal, × 2; 4, interior view of petal, × 2; 5, view of labellum and column from above, × 4; 6, side view of labellum and column, × 4; 7, side view of anther, × 4; 8, view of anther from above, × 4; 9, view of anther from below, × 4; 10, front view of pollinium, × 15; 11, side view of pollinium, × 15.

PLATE 13

Agrostophyllum luzonense sp. nov.; habit, much reduced.

PLATE 14

Agrostophyllum luzonense sp. nov.; tops of three flowering stems, approximately natural size.

PLATE 15

Spathoglottis plicata Bl. var. *parsonsii* var. nov.; habit, much reduced.

PLATE 16

Dendrobium batanense sp. nov.; habit, much reduced.

PLATE 17

- FIG. 1. *Spathoglottis plicata* Bl. var. *parsonsii* var. nov.; flowers, very slightly reduced.
 2. *Dendrobium batanense* sp. nov.; flowers, reduced.

PLATE 18

Dendrobium fairchildae sp. nov.; habit, very much reduced.

PLATE 19

Dendrobium fairchildae sp. nov.; inflorescence, approximately one-half natural size.

PLATE 20

- FIG. 1. *Dendrobium junceum* Lindl.; habit, very much reduced.
 2. *Dendrobium junceum* Lindl.; flowers, slightly reduced.

PLATE 21

Dendrobium junceum Lindl.; tops of flowering stems, very much reduced.

PLATE 22

Dendrobium modestum Reichb.f.; habit, very much reduced.

PLATE 23

- FIG. 1. *Bulbophyllum cleistogamum* Ridl.; flower and old fruit capsule, approximately natural size.
 2. *Bulbophyllum cleistogamum* Ridl.; habit, very much reduced.

PLATE 24

- FIG. 1. *Renanthera storiei* Reichb.f. var. *philippinensis* var. nov.; habit, very much reduced.
 2. *Renanthera storiei* Reichb.f. var. *philippinensis* var. nov.; inflorescence, reduced.

PLATE 25

Vanda merrillii sp. nov.; habit, very much reduced.

PLATE 26

Vanda merrillii sp. nov.; inflorescence, slightly reduced.

PLATE 27

- FIG. 1. *Robiquetia pantherina* (Kränzl.) Ames; habit, very much reduced.
 2. *Robiquetia pantherina* (Kränzl.) Ames; flowers, approximately natural size.

PLATE 28

Stauroopsis fasciata Benth.; habit, very much reduced.

PLATE 29

Stauroopsis fasciata Benth.; flower, slightly enlarged.

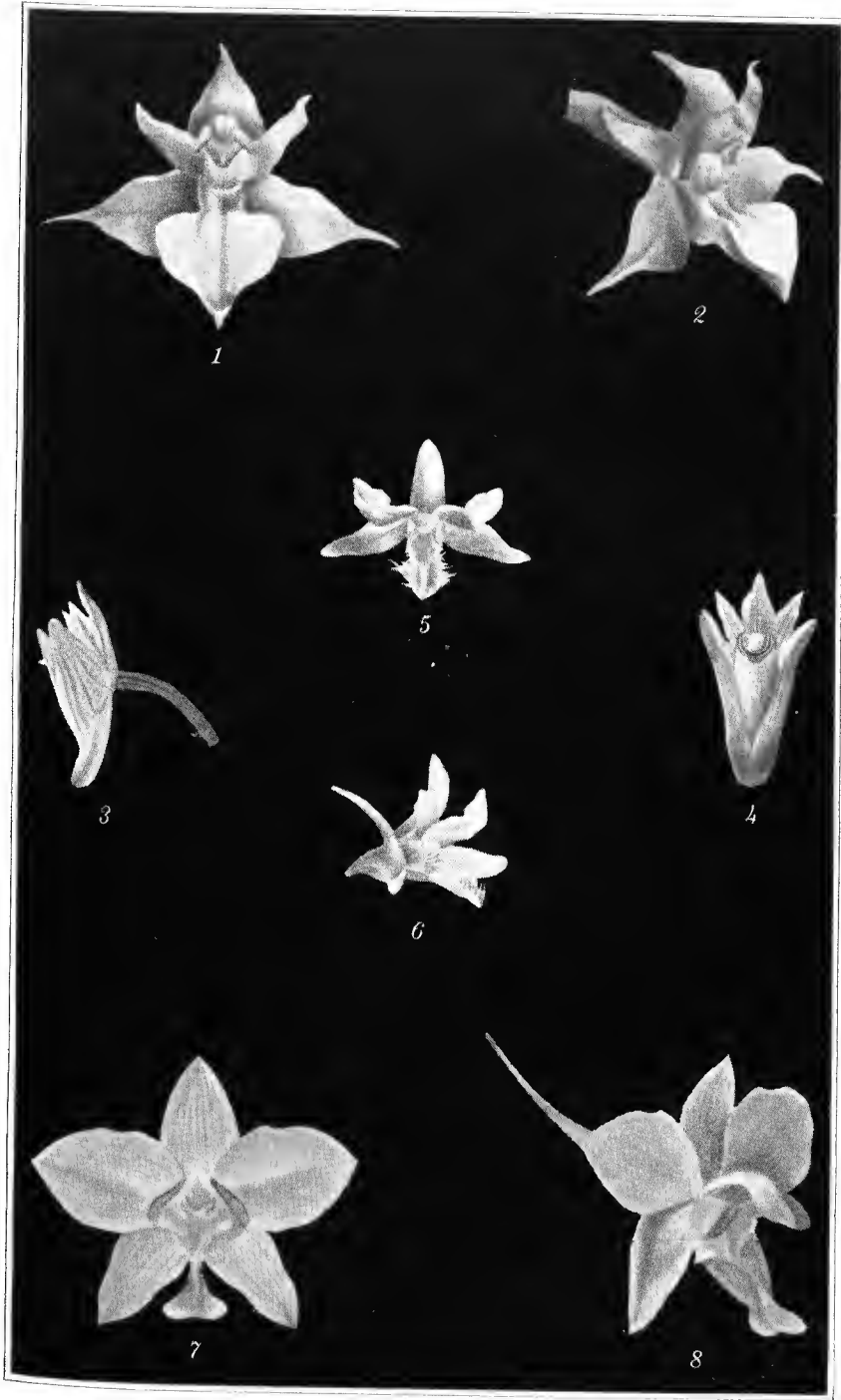


PLATE 1.





PLATE 2.



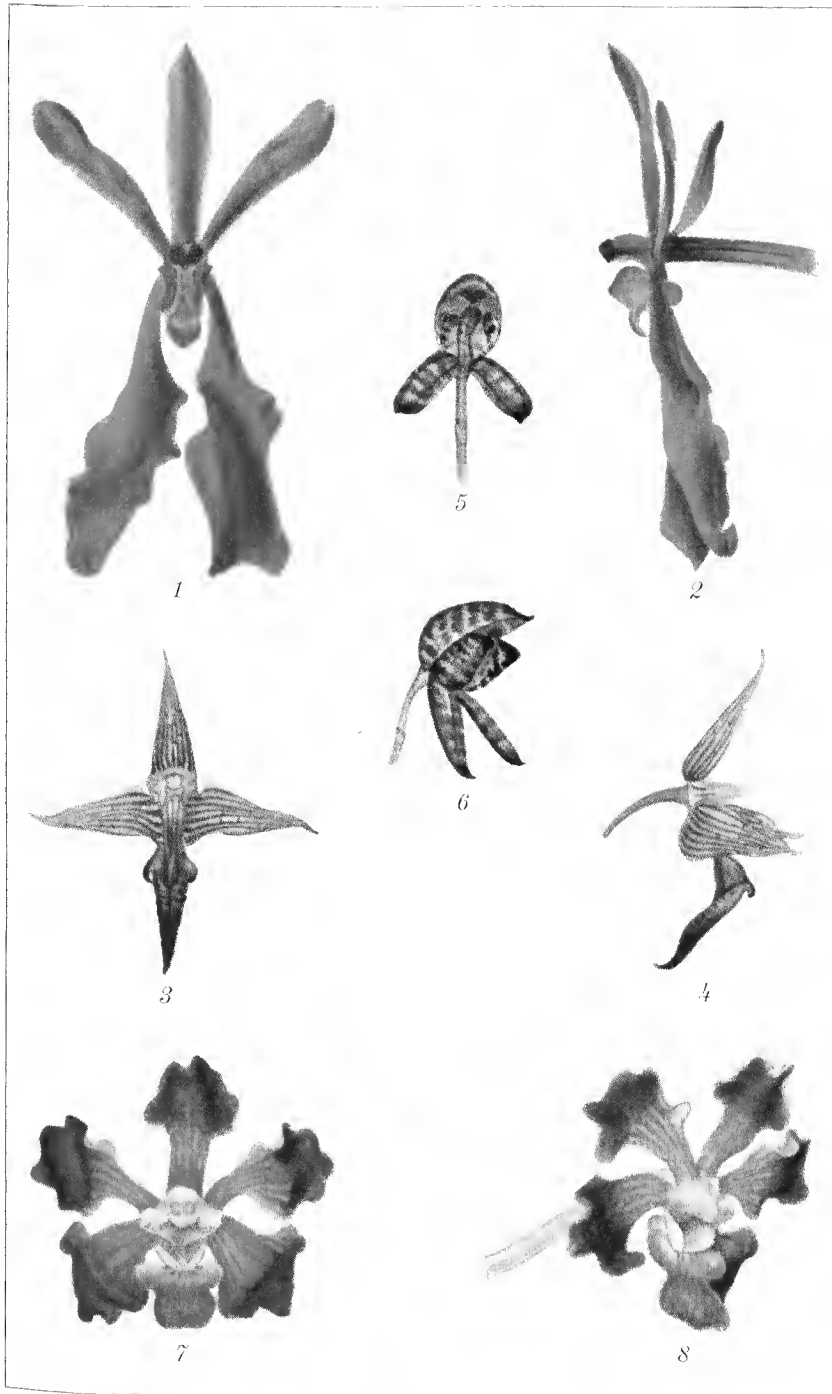


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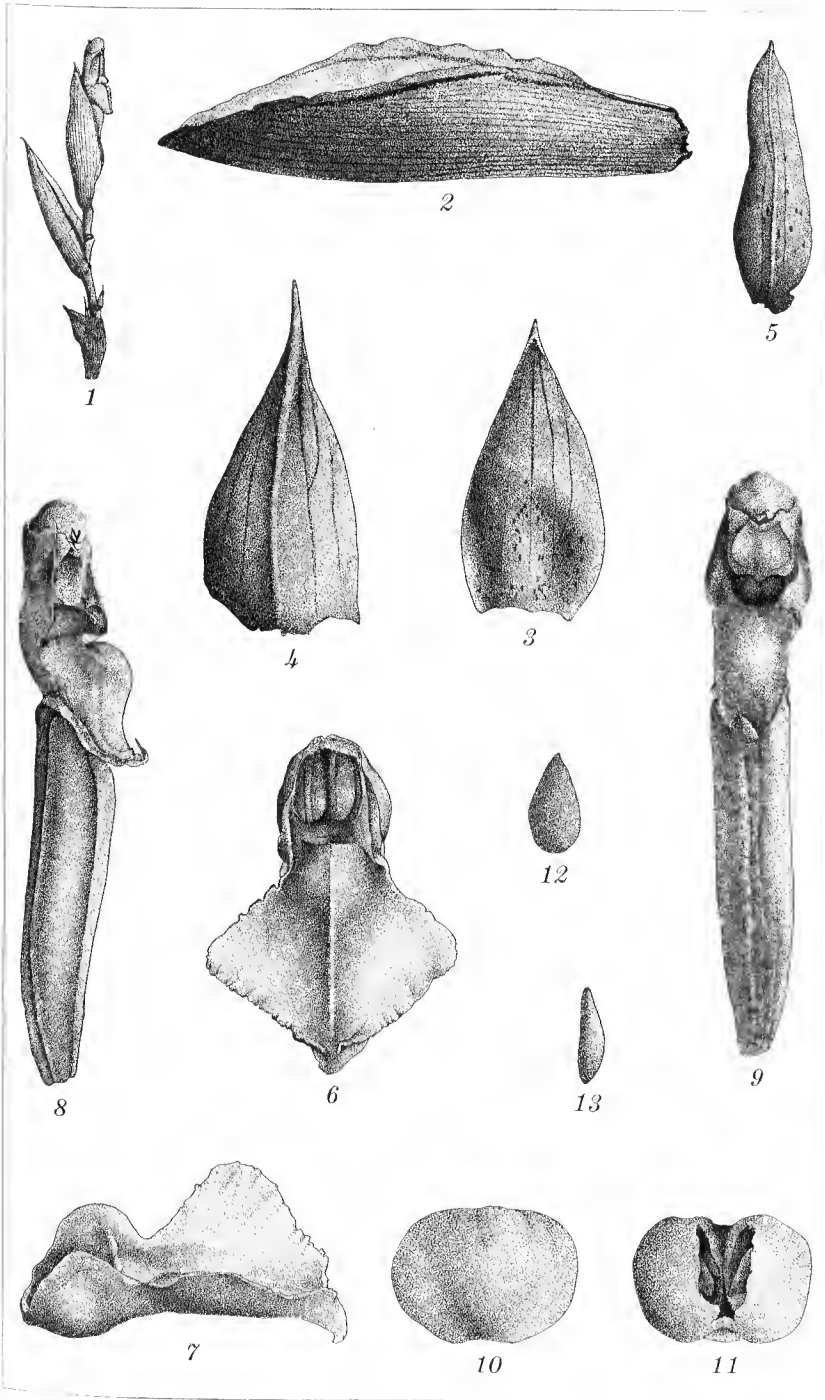


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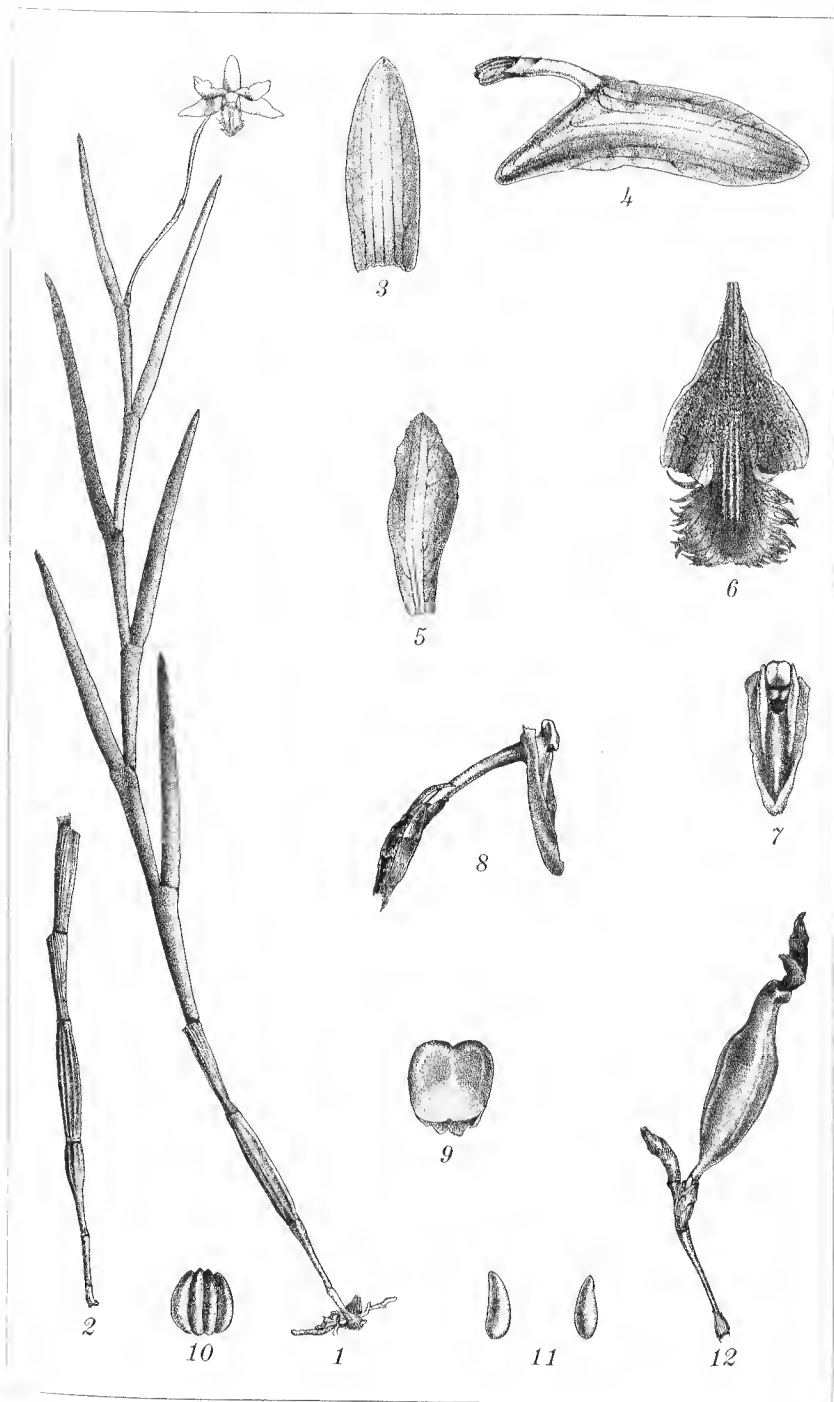


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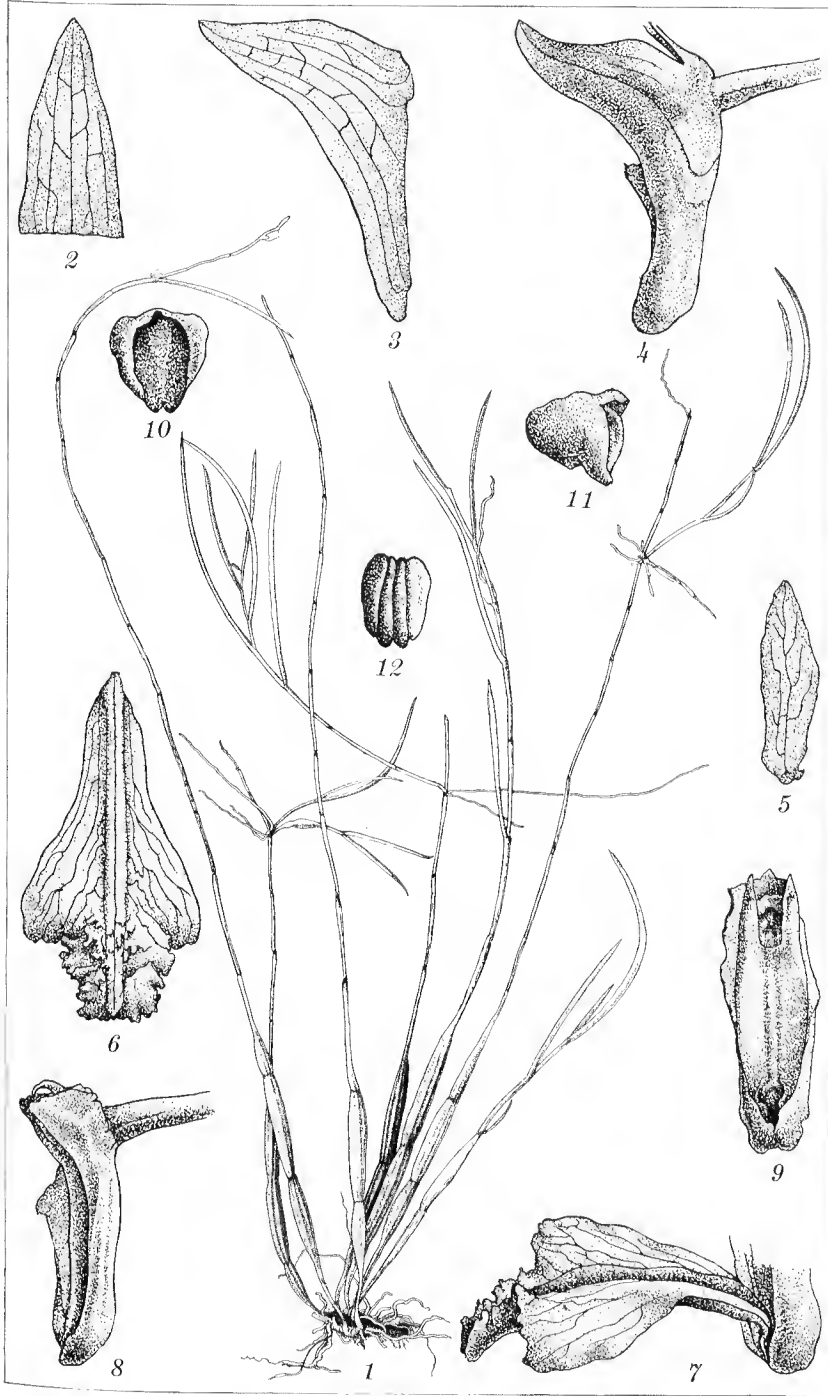


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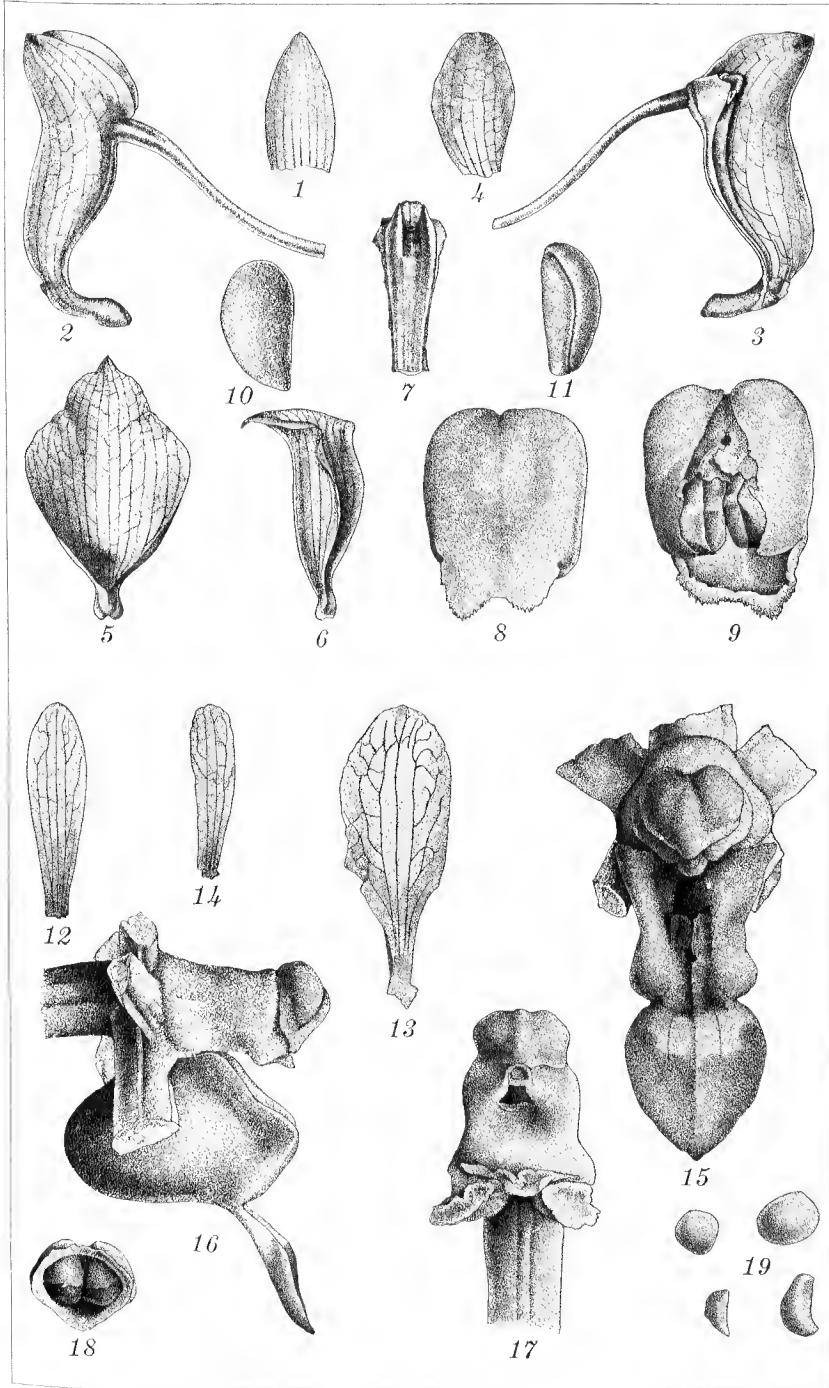


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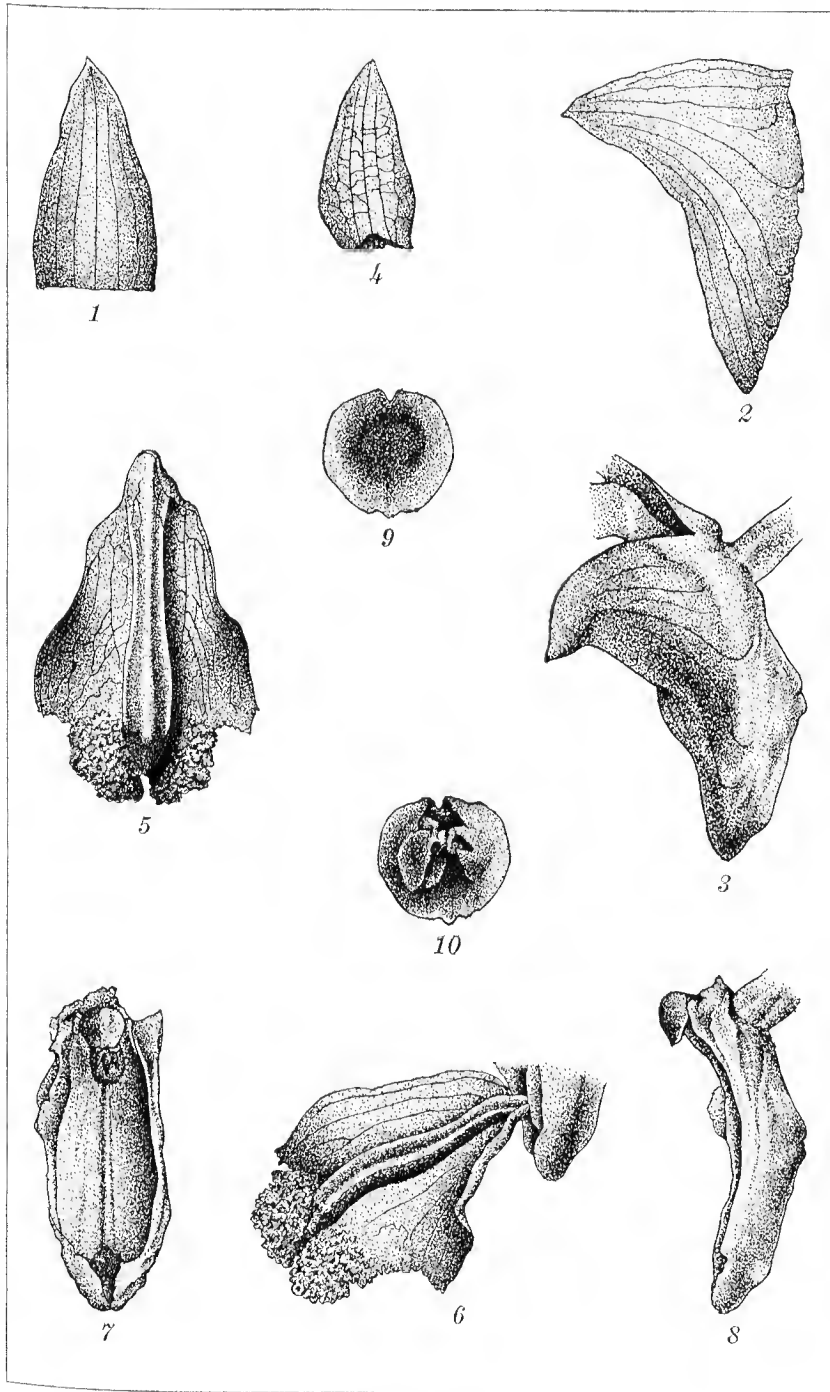


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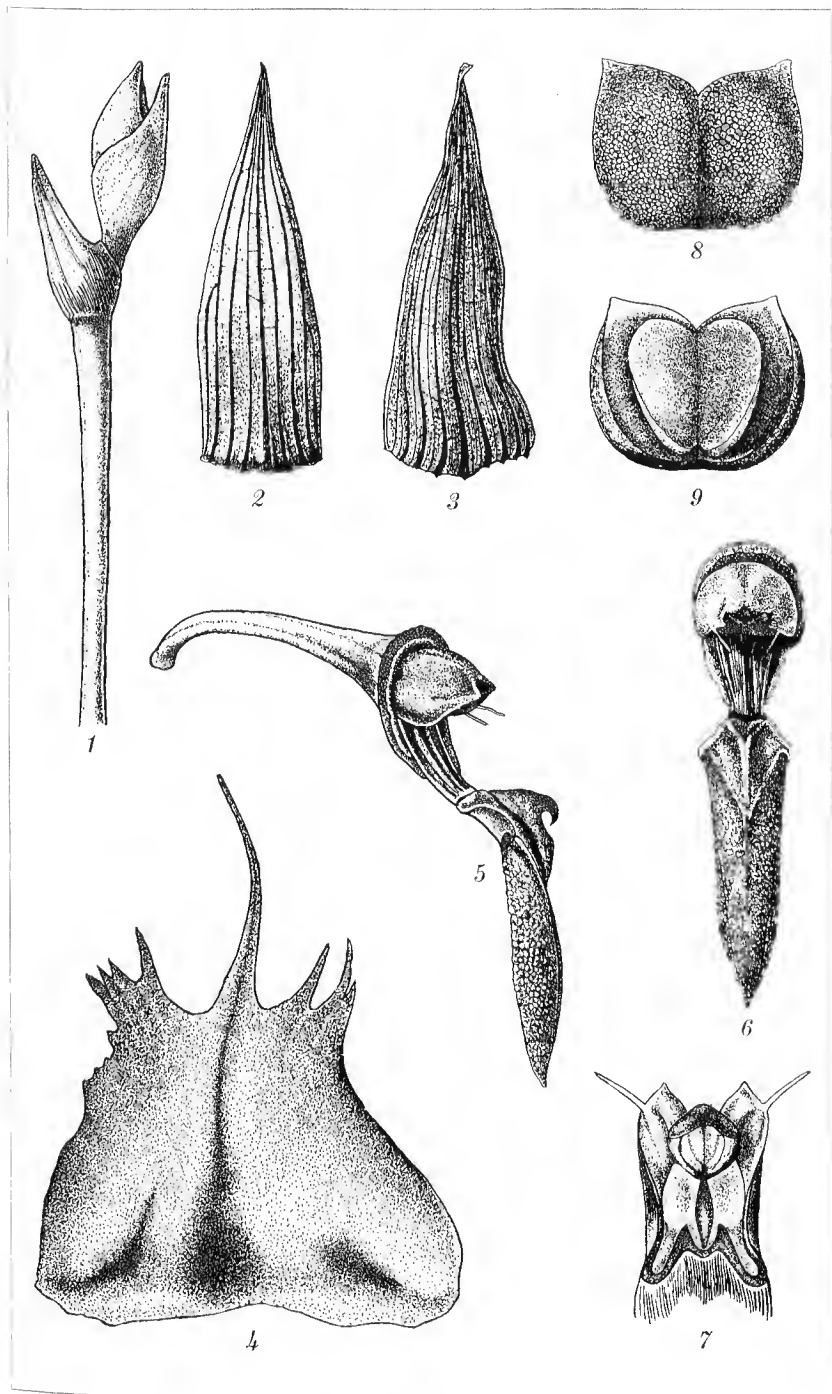
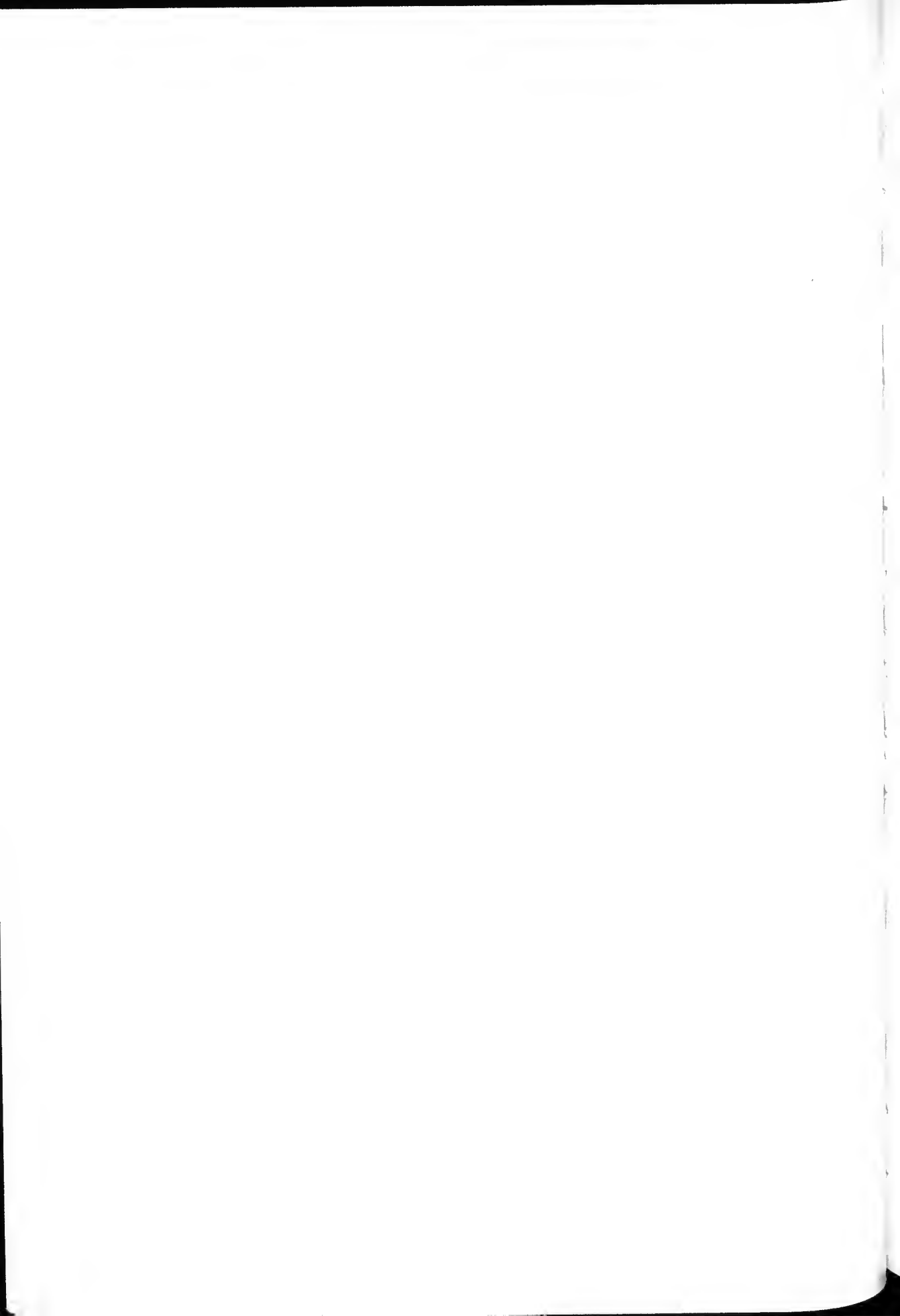


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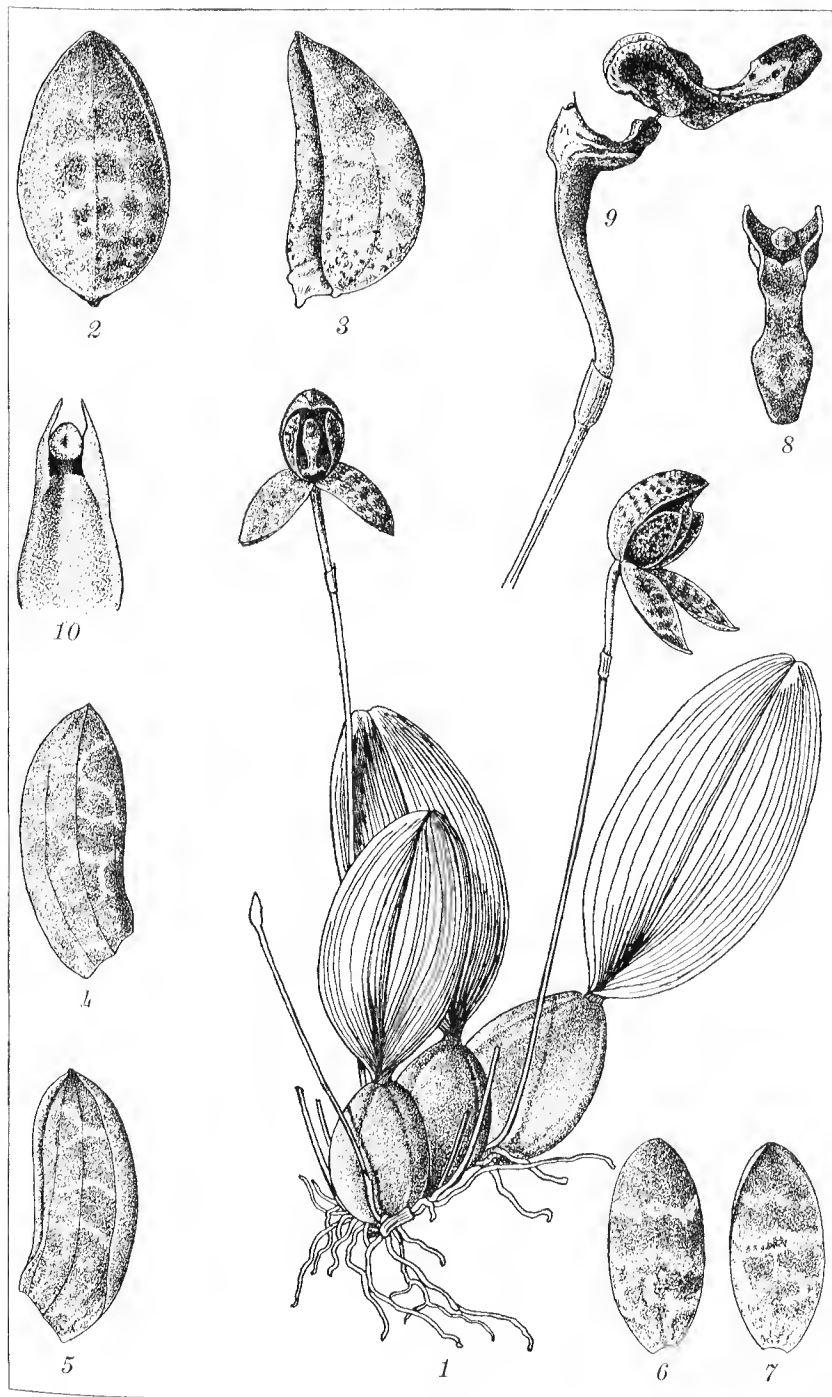


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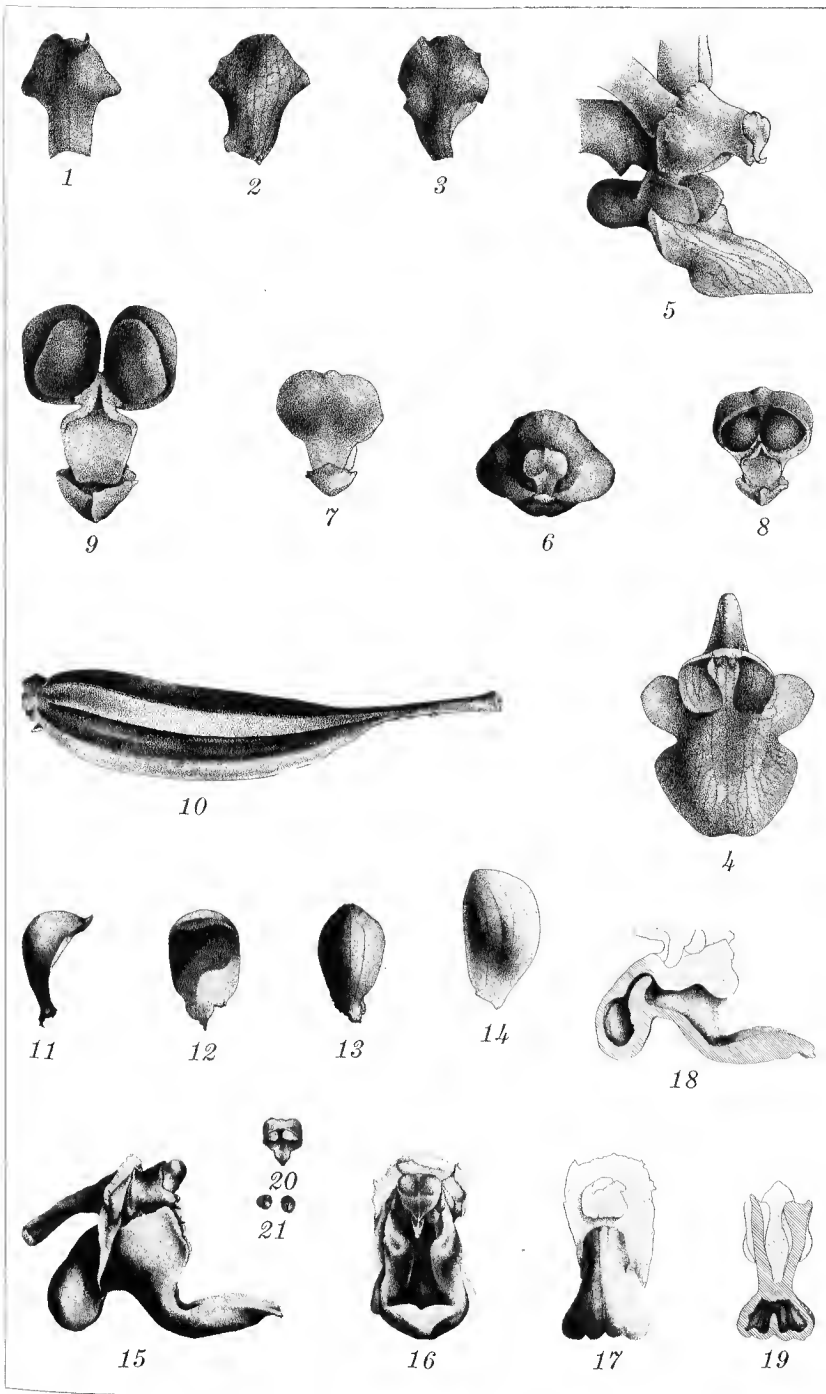


PLATE 11.



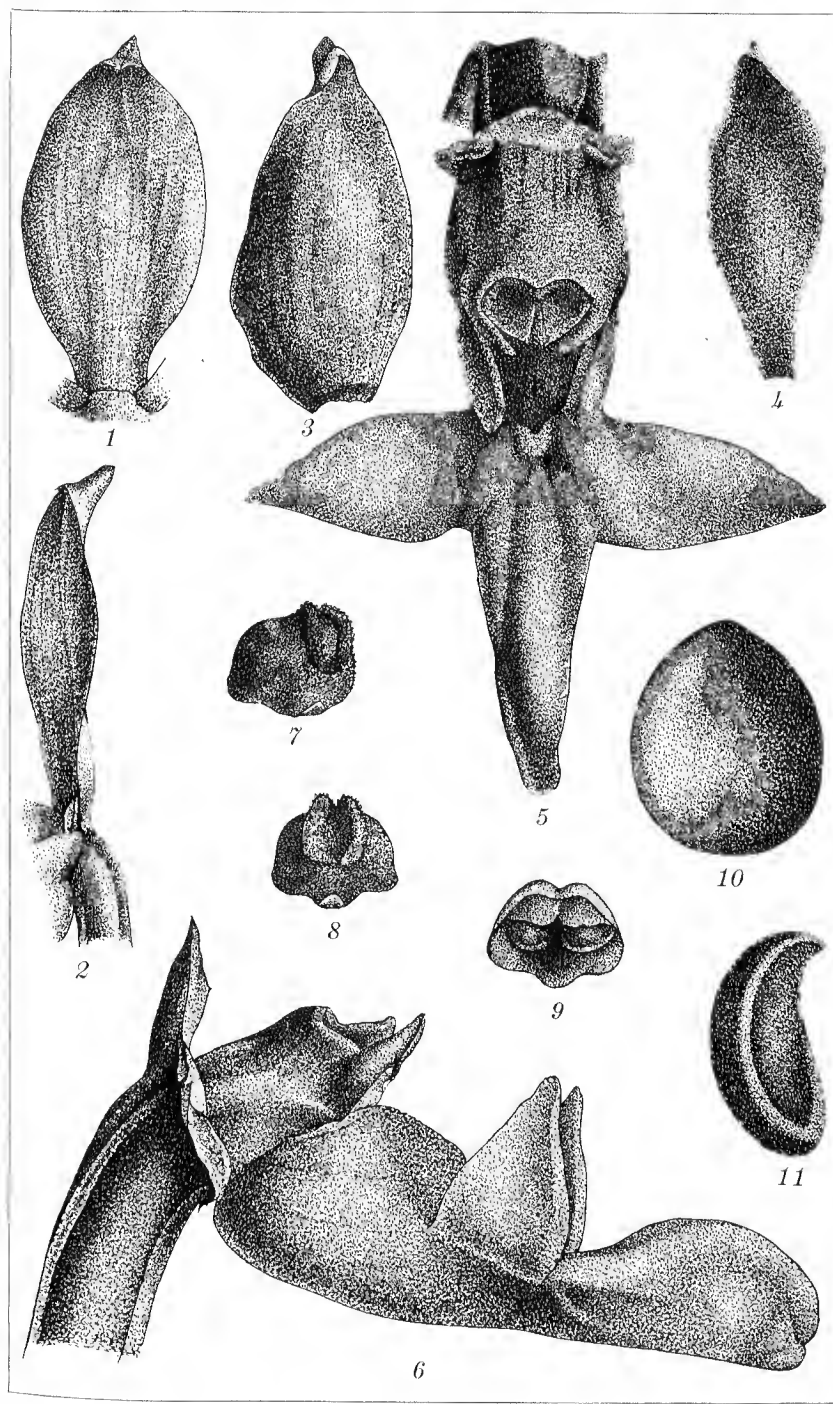


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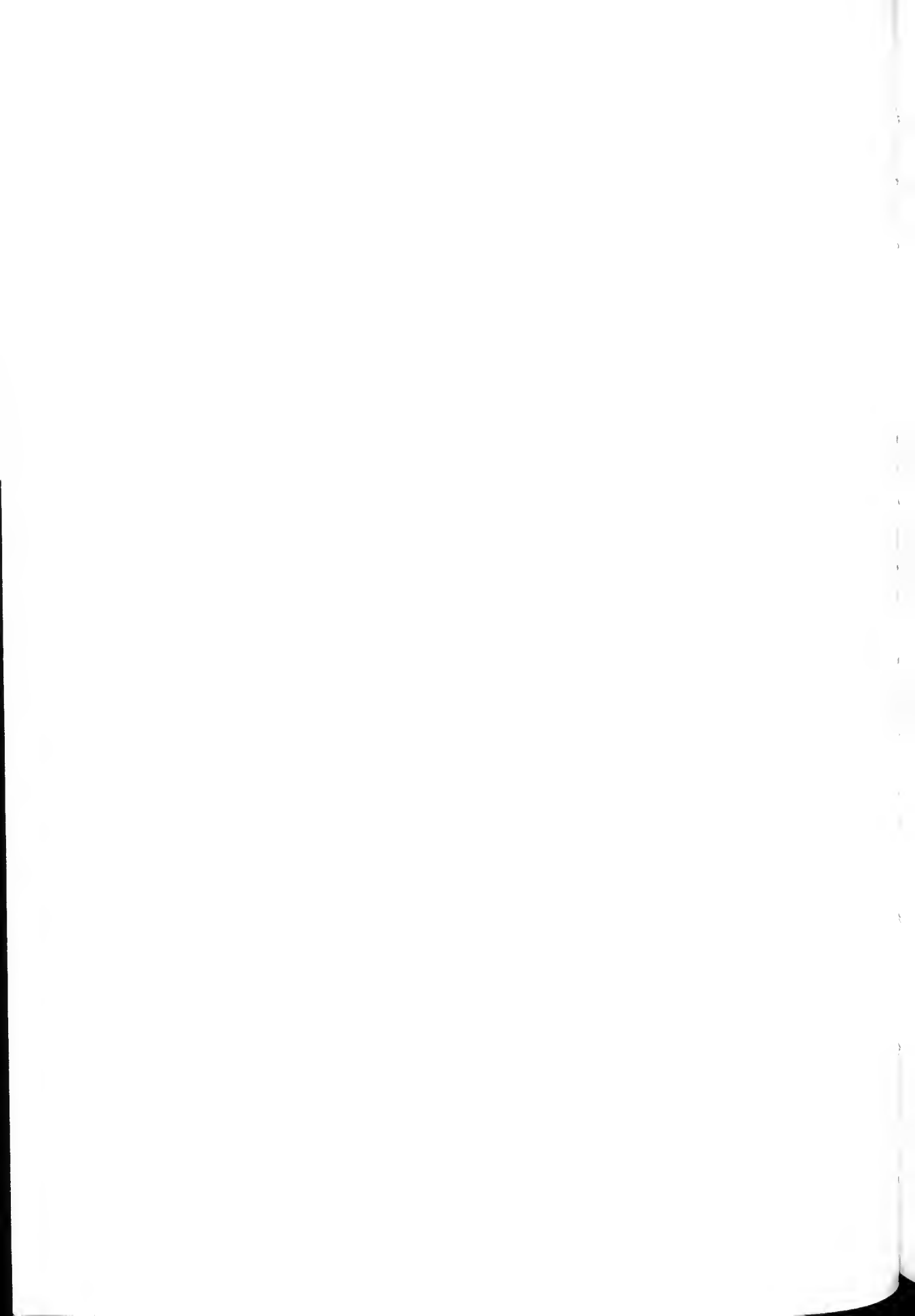




PLATE 13.

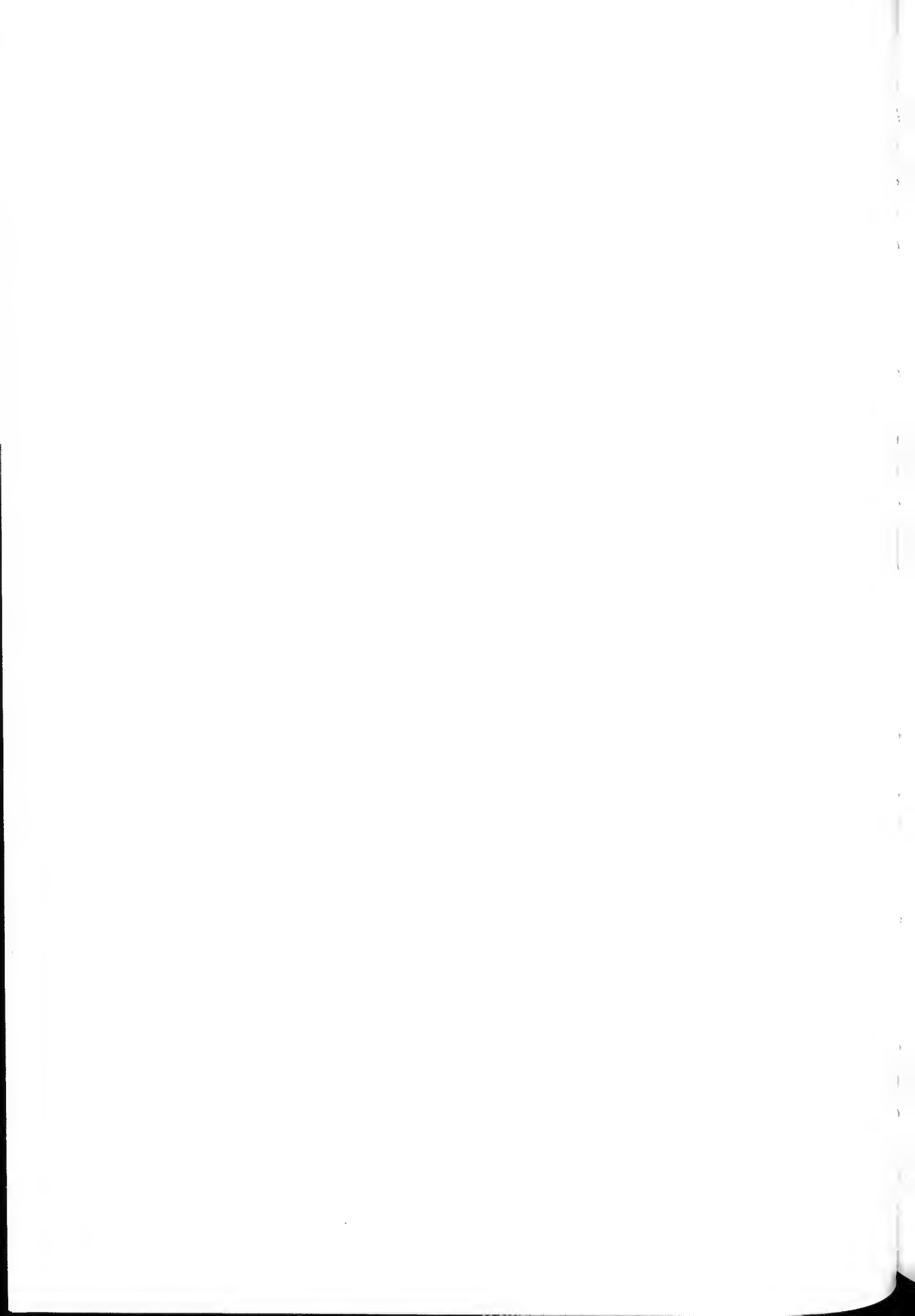




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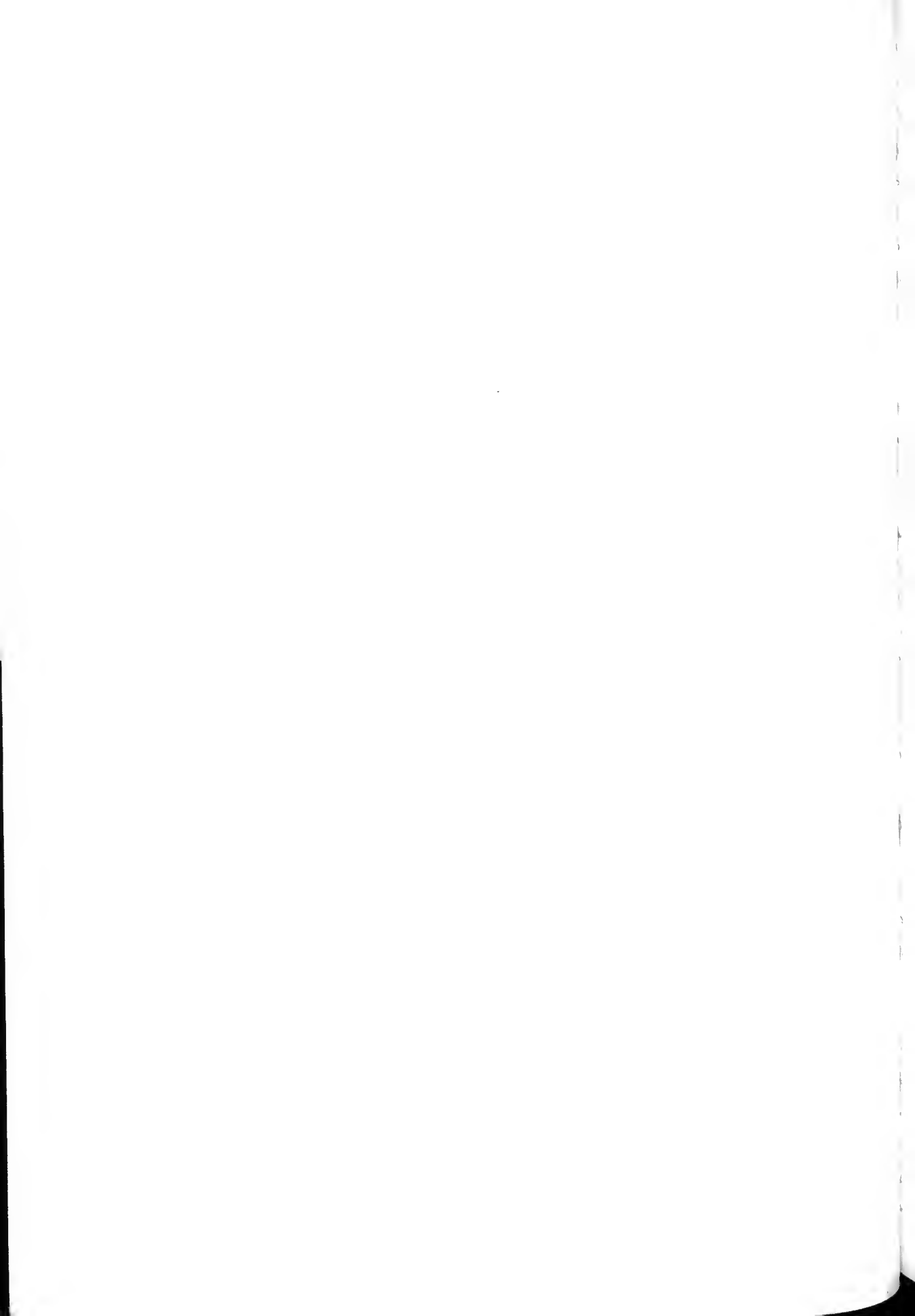




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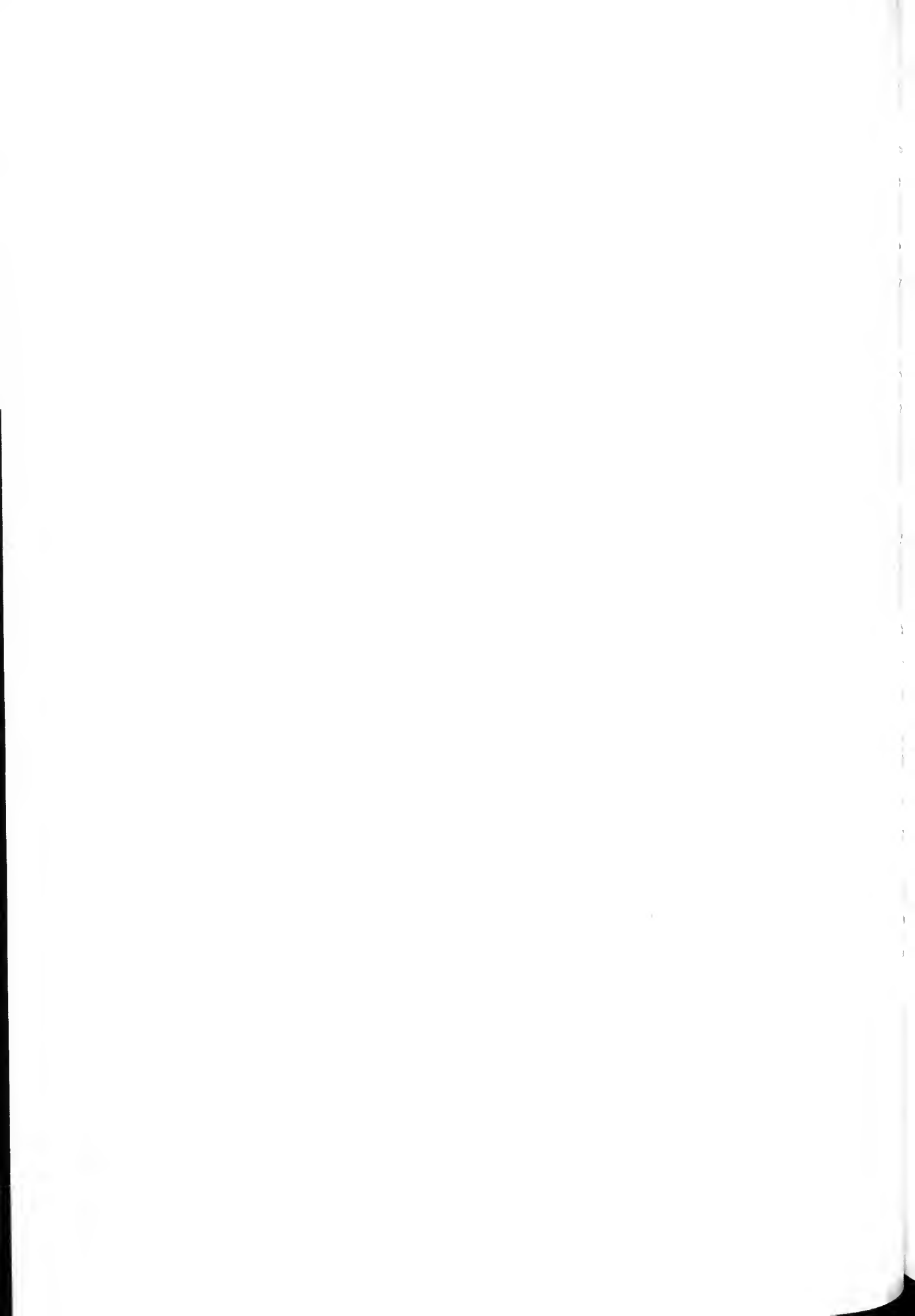




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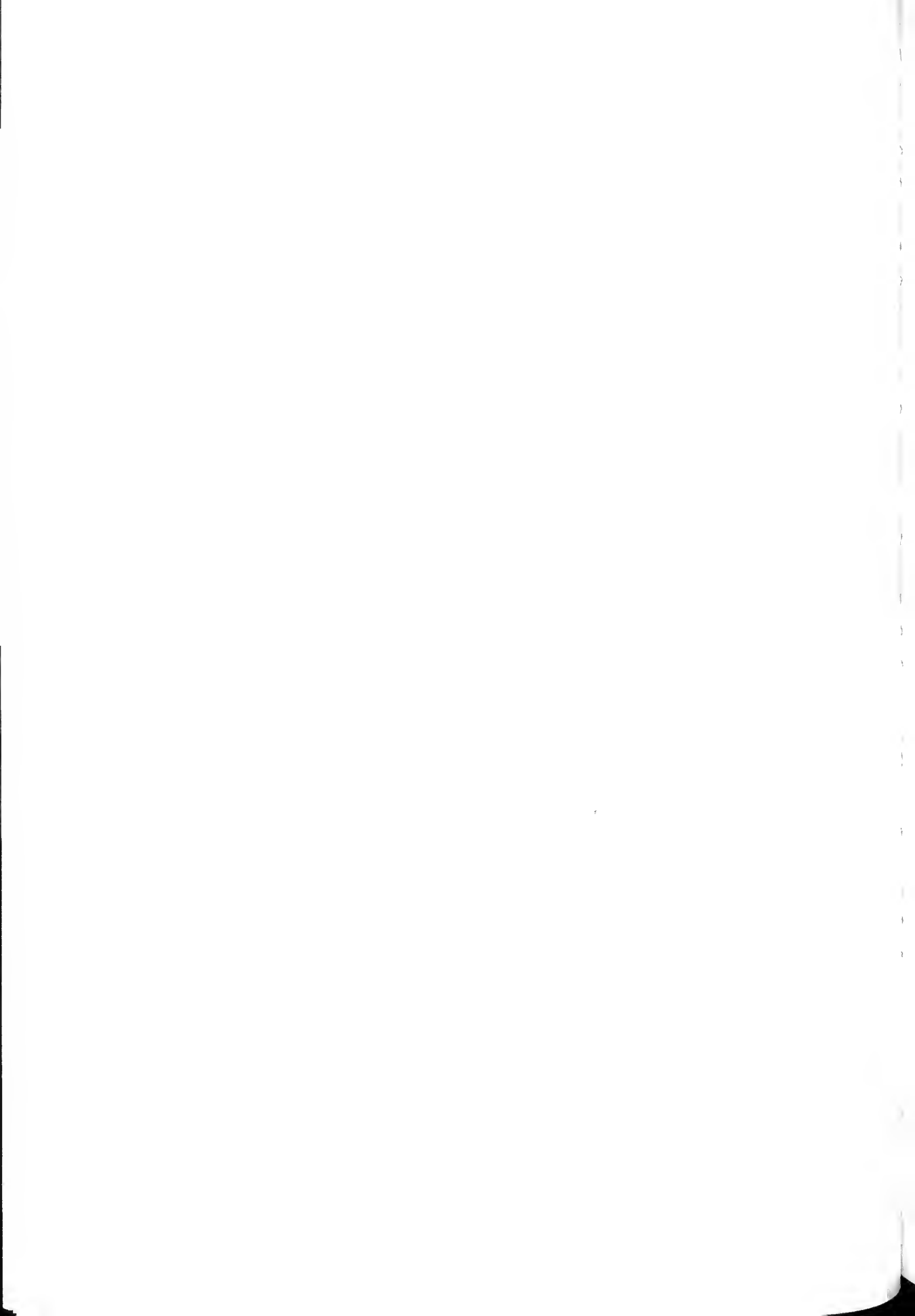




PLATE 17.





PLATE 18.

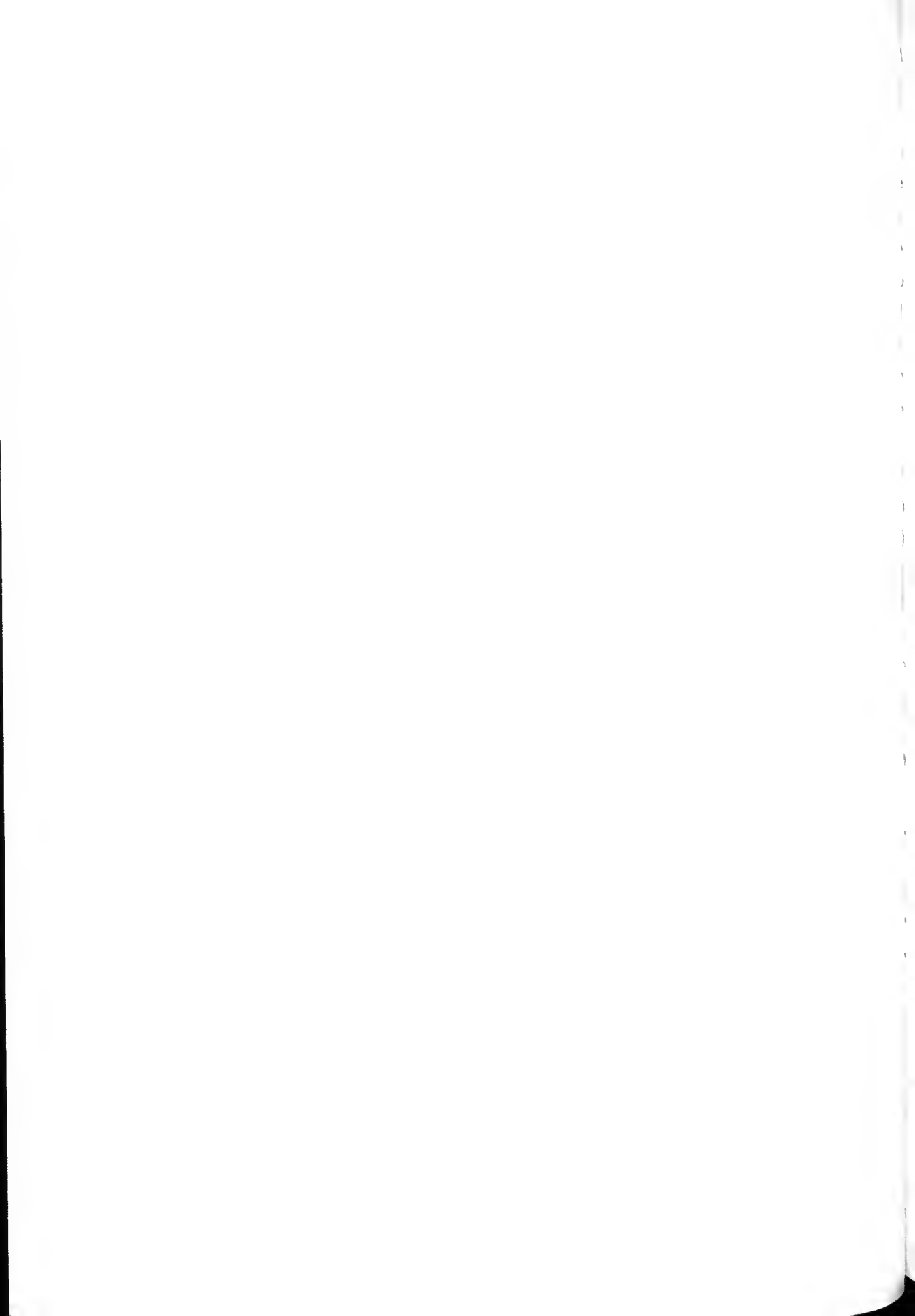




PLATE 19.

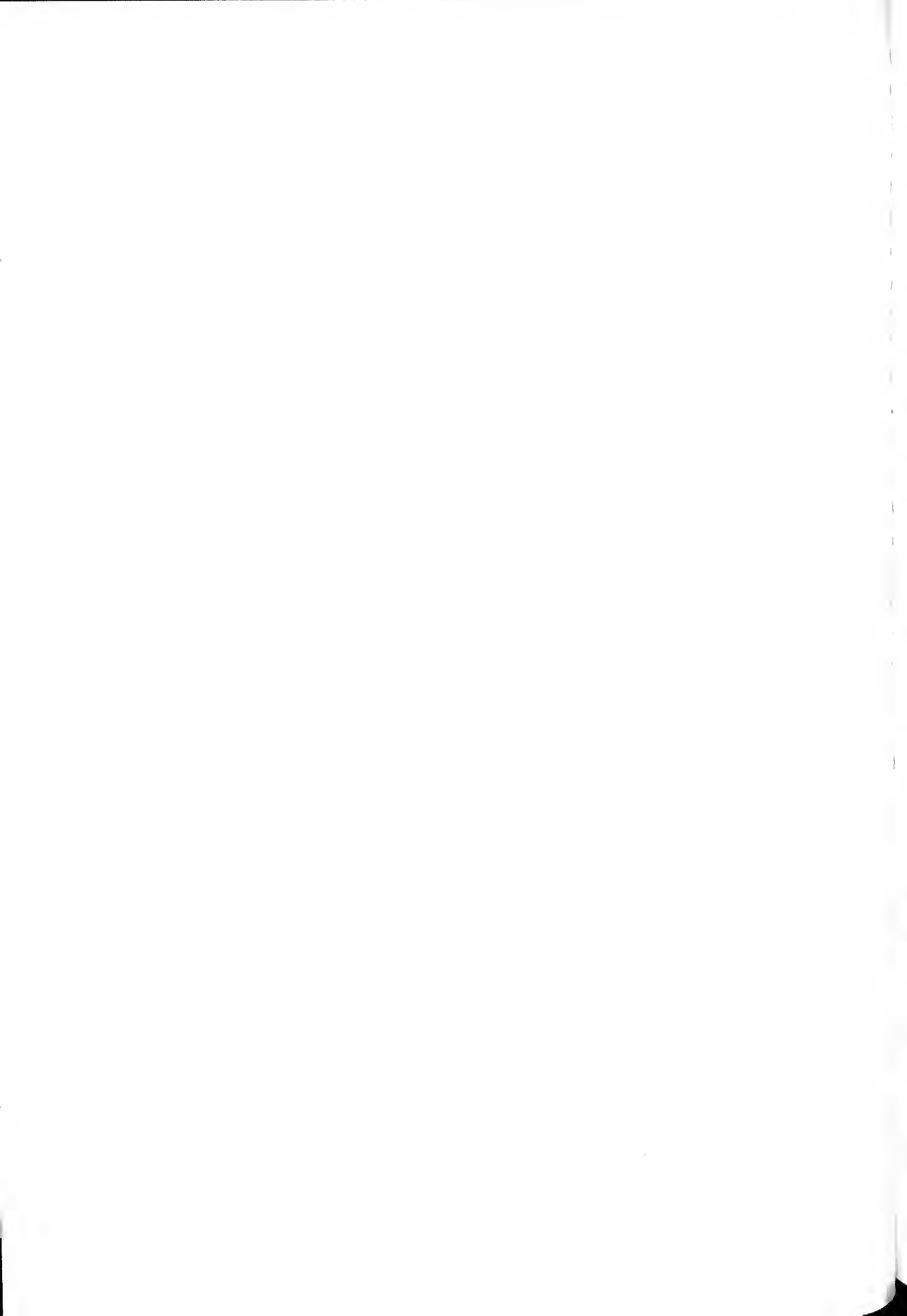




PLATE 20.





PLATE 21.

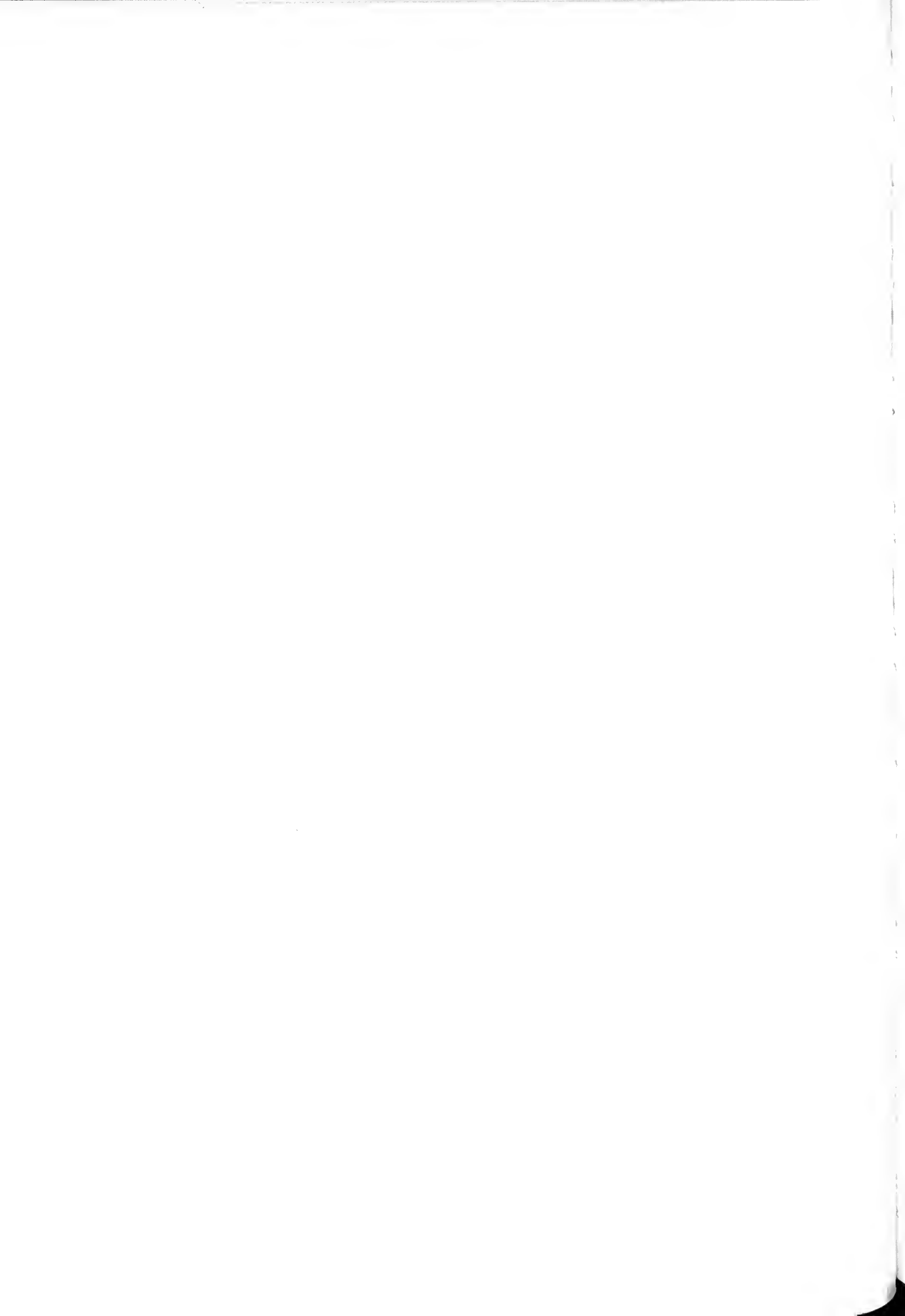




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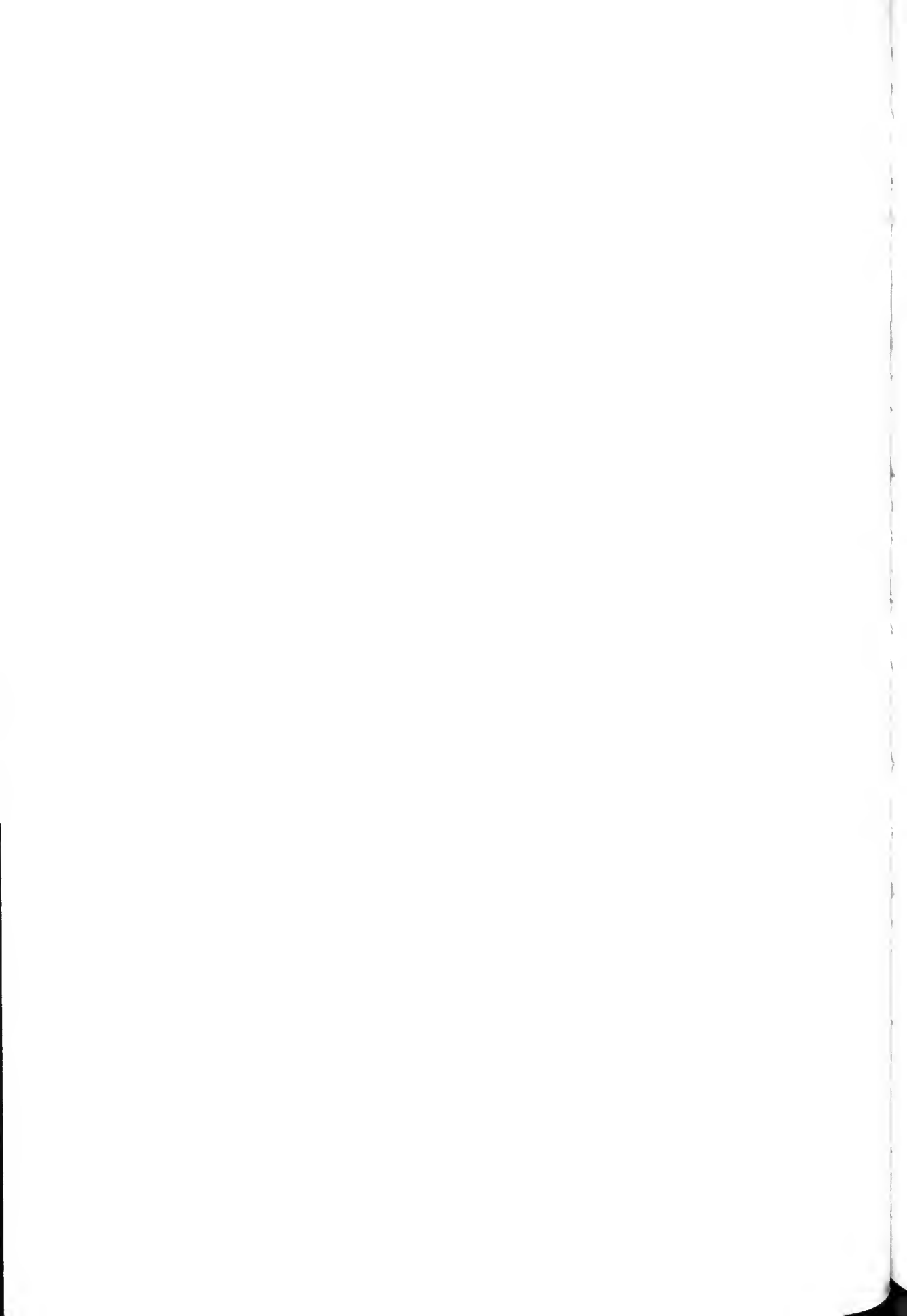




PLATE 23.





PLATE 24.

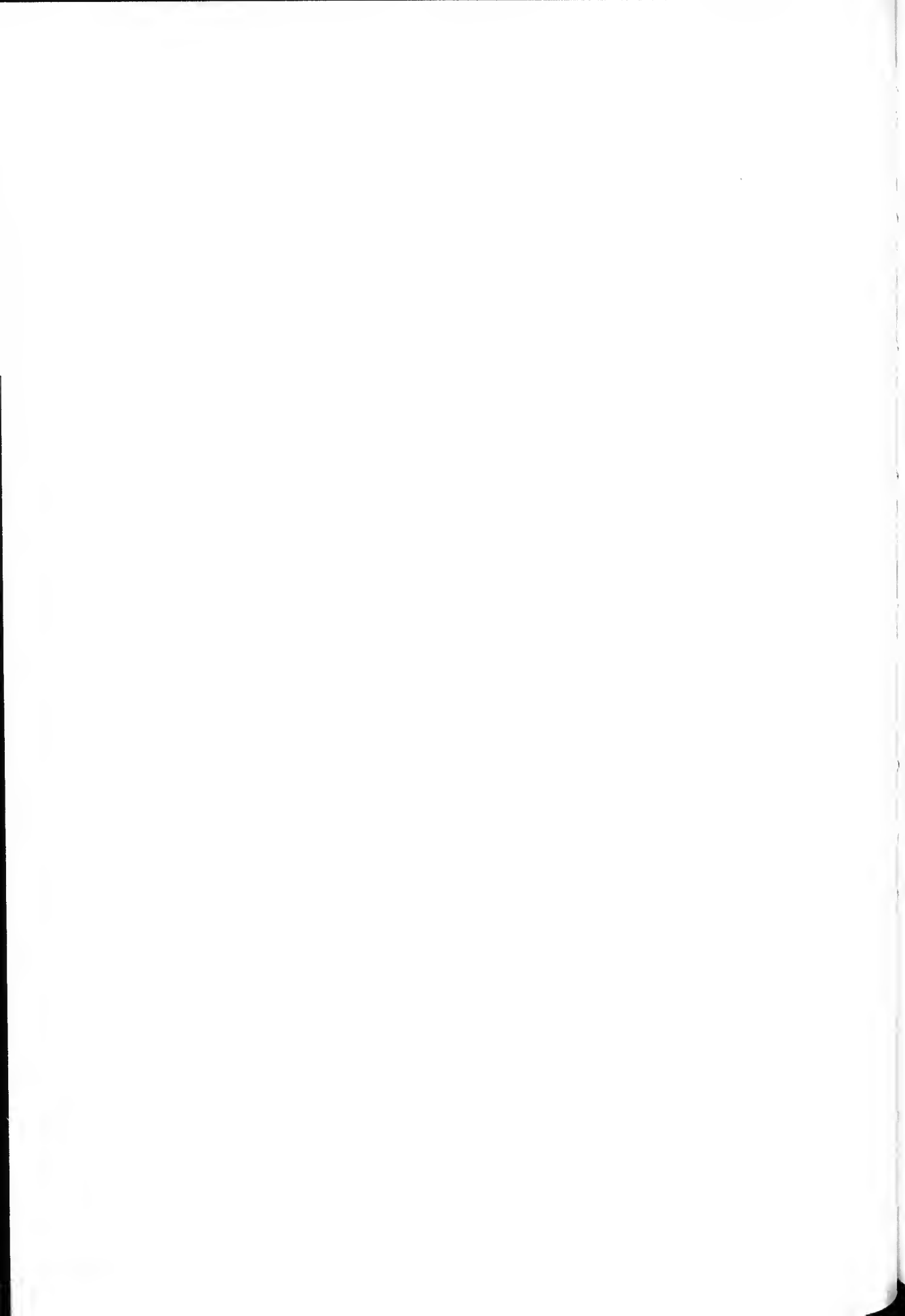




PLATE 25.



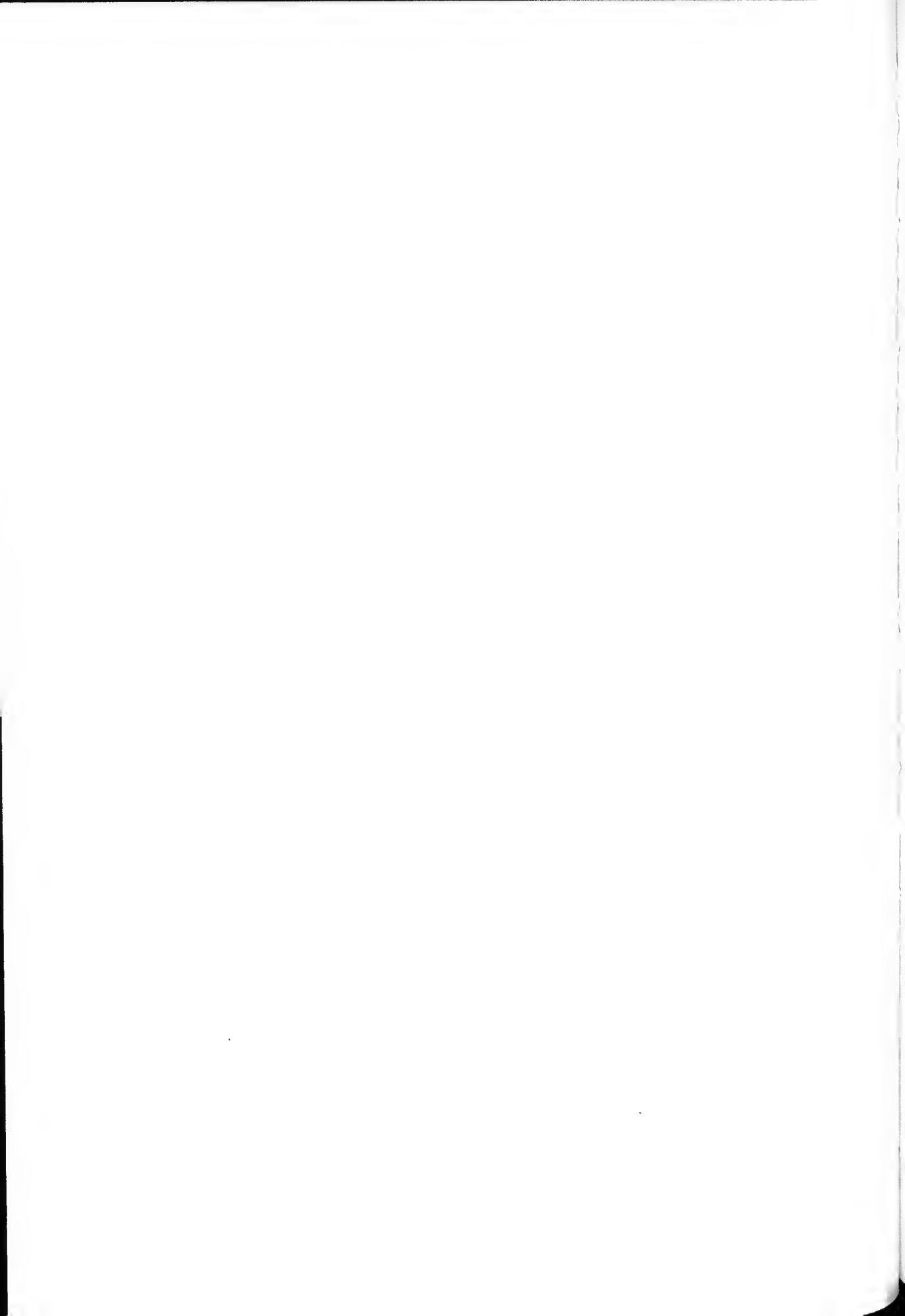


PLATE 26.





PLATE 27.



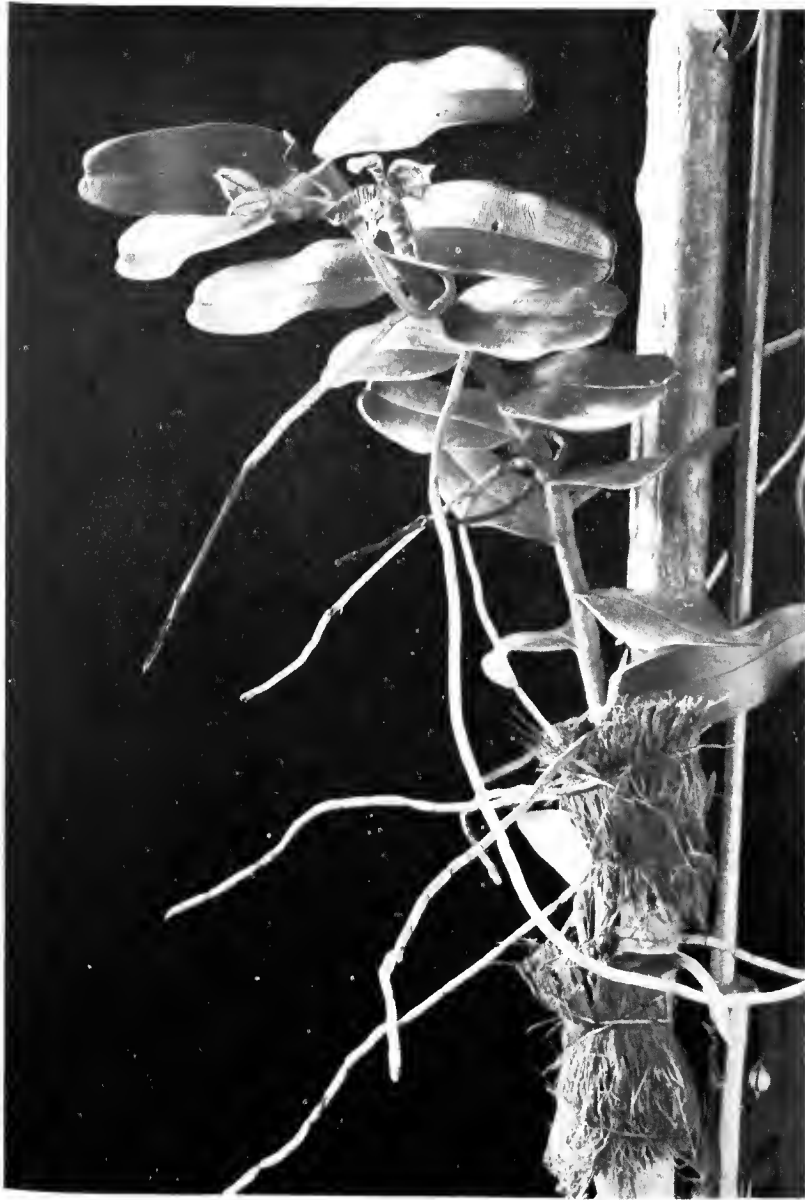


PLATE 28.

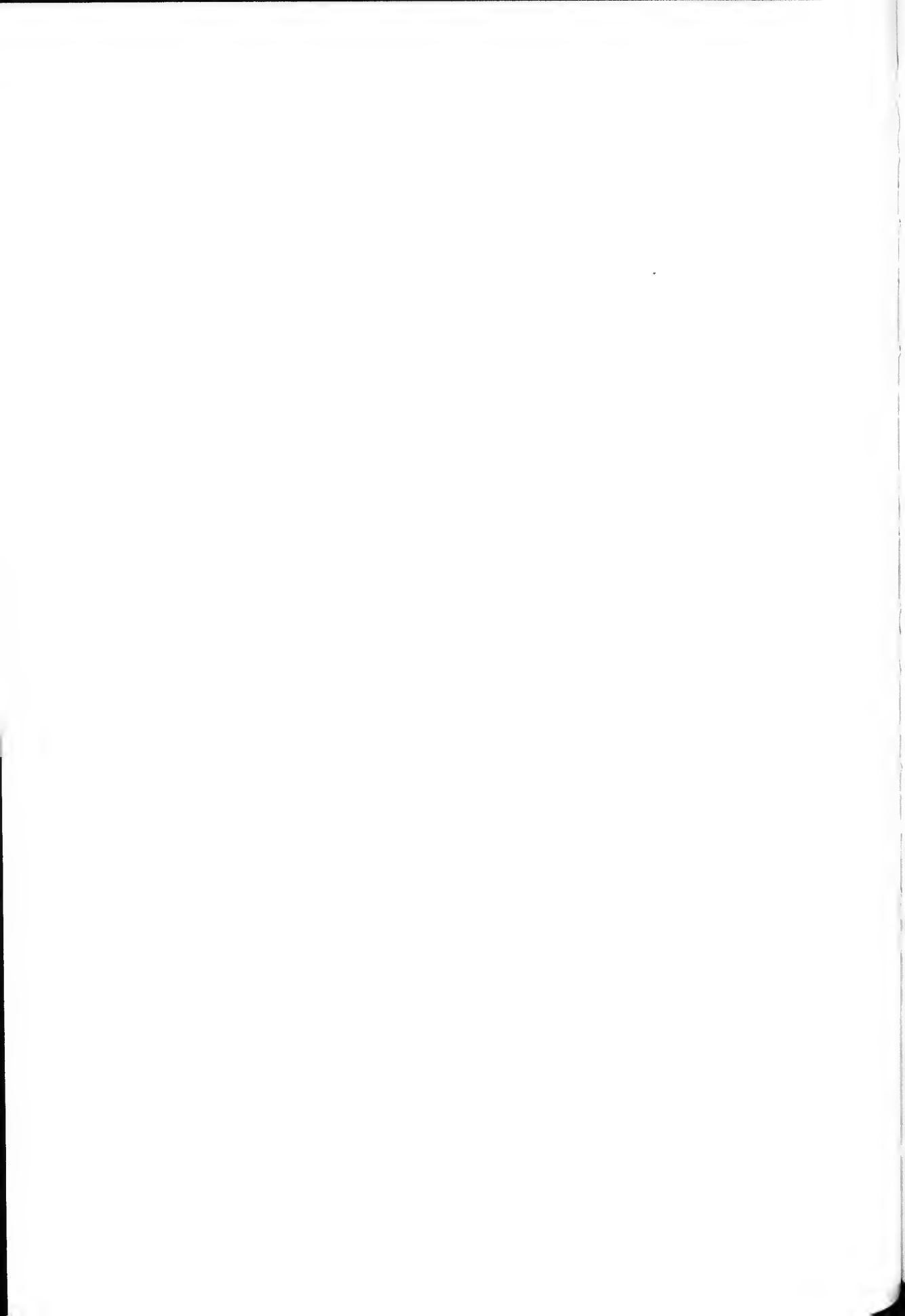
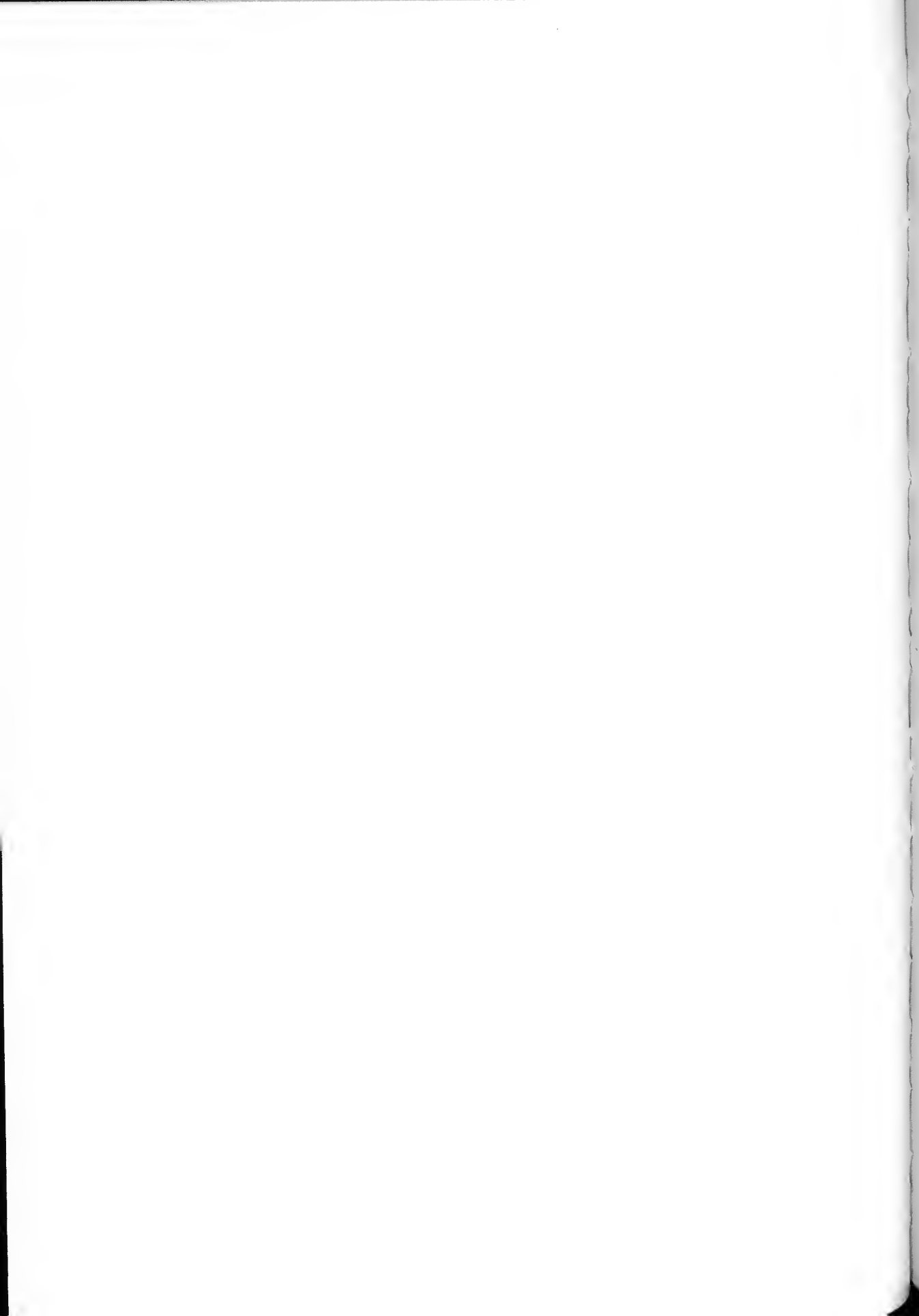




PLATE 29.



THE PHILIPPINE JOURNAL OF SCIENCE

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NEW OR NOTEWORTHY PHILIPPINE ORCHIDS, III

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and

EDUARDO QUISUMBING

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TWENTY-EIGHT PLATES

The third paper of this series is essentially like its predecessors, the last number of which was published in February, 1932.¹ The present paper contains the descriptions of six hitherto undescribed species and one variety, with notes and redescriptions of *Dendrochilum Weberi*, *Gastrochilus calceolaris*, and *Microsaccus Wenzelii*, as well as a record and description of one species (*Cymbidium pubescens*) previously described from extra-Philippine material now found for the first time in the Archipelago. All the illustrations and the descriptions in the text have been prepared from living plants. The colored illustrations and ink sketches were made by Messrs. J. M. Salazar and P. Ramos, draftsmen of the division of botany, Bureau of Science. Plates 11 and 12 were executed by F. Guerrero, a draftsman of the same division. All the types of the new species and varieties have been deposited in the herbarium of the Bureau of Science, with the isotypes in the herbarium of the senior author. Available isotypes will be distributed to the herbarium of the New York Botanical Garden and other herbaria.

¹ Philip. Journ. Sci. 47 (1932) 197.

Genus COELOGYNE Lindley

COELOGYNE REMEDIOSAE sp. nov. § Flexuosæ. Plates 1, 3, and 14.

Radices glabrae, plus minusve 2 mm in diametro, carnosae et pallidae ut videtur. Rhizoma 8 ad 10 mm in diametro. Pseudobulbi in serie, anguste cylindranei, 11 ad 13 cm longi, 2 ad 2.7 cm in crassitudine infra medium, utrinque attenuati, diphylli, in rhizomate crasso repenti 2 ad 3 cm inter se distantes; juniores vaginis membranaceis, obtusis vel acutis, usque ad 7 cm longis vestiti. Folia cum petiolo 22.5 ad 26 cm longa, 5.5 ad 8.5 cm lata, elliptico-oblonga vel elliptica, breviter acuminata, subtus prominenter quinquenervia. Scapus initio foliis juvenilibus synanthus, 23 ad 31.5 cm longus, basi nuda, pauciflorus; rhachis gracilis, erecta vel arcuata. Bracteae inflorescentiae ignotae. Flores succedanei. Pedicellus cum ovario circiter 1.5 cm longus. Sepala lateralia oblonga, abrupte acuta vel subacuta, 2.5 ad 2.9 cm longa, 1.0 ad 1.3 cm lata, subcarnosa. Sepalum dorsale oblongo-lanceolatum, acutum, 2 ad 2.2 cm longum, 0.8 ad 1.0 cm latum. Petala linearia, obtusa, apice obliquo apiculata, 2.5 ad 2.6 cm longa, 2.5 ad 3 mm lata, erecta. Labellum subcarnosum, trilobatum, circiter 2.5 cm longum; lobis laterales breves, subquadrati, apice valde obtusati vel rotundati, parte libera circiter 3 mm longa; lobus intermedius in circuitu suborbicularis, circiter 1.5 cm longus, 1.5 cm latus, apice subrotundatus, minute apiculatus, margine undulato; discus carinis 2, antice altis ornatus, ad basim 5-carinatus. Columna valde arcuata, carnosa, circiter 1.8 cm longa, apicem versus alata.

Roots glabrous, fibrous, about 2 mm in diameter, straw-colored. Rhizomes creeping, 8 to 10 mm in diameter. Pseudobulbs in linear series, narrowly cylindrical, 11 to 13 cm high, 2 to 2.7 cm in diameter, tapering at both ends, diphyllous, 2 to 3 cm distant. Sheaths membranaceous, obtuse or acute, up to 7 cm long. Leaves with petiole 22.5 to 26 cm long, 5.5 to 8.5 cm wide, elliptic-oblong or elliptic, acute, conspicuously 5-nerved beneath. Scapes terminal, arising between the leaves of the immature pseudobulbs, the base naked, few-flowered, 23 to 31.5 cm long; rachis slender, erect or curved at the top. Bracts of the inflorescence early deciduous, not seen. Flowers odorless, produced in succession. Pedicellate ovary about 1.5 cm long, the ovary ridged. Lateral sepals oblong, abruptly acute or subacute, 2.5 to 2.9 cm long, 1.0 to 1.3 cm wide, somewhat fleshy. Dorsal sepal oblong-lanceolate, acute, 2 to 2.2 cm long, 0.8 to 1.0 cm wide. Petals linear, obtuse, minutely apiculate at the oblique

apex, erect, 2.5 to 2.6 cm long, 2.5 to 3 mm wide. Labellum somewhat fleshy, trilobed, about 2.5 cm long; lateral lobes rather short, subquadrate, the apex broadly obtuse or rounded, free portion about 3 mm long; middle lobe suborbicular, about 1.5 cm long, 1.5 cm wide, apex subrounded with a minute apicule, the margin undulate; disc with 5 low keels at the base, two of the keels increasingly high, conspicuous and wavy toward the apex, extended to one-third or one-half of the middle lobe; the 3 short basal keels 3 to 3.5 mm long. Column about 1.8 cm long, arcuate, fleshy, conspicuously winged at the apex.

LUZON, Manila, cultivated in the gardens of Mrs. Remedios C. Gonzales, *Bur. Sci. 82232 Quisumbing*, February 24, 1931. The plants flowered again a month earlier in Mrs. Gonzales's gardens this year (1932). The living plants, purchased from a peddler, were of uncertain origin but they were surely Philippine. The sepals are sea-foam yellow and deep sea-foam green at the middle; the petals are sea-foam green; column glass green, the apical margin pale grass green; the labellum marguerite yellow except the lamellæ, lateral lobes and the markings at the center of the middle lobe snuff brown.¹

Among the known Philippine coelogynes, this species appears most closely related to *C. marmorata* Reichb. f., but differs in its longer scape and in the keels of the lip. In habit it suggests *C. bilamellata* Lindl., *C. candoonensis* Ames and *C. longirachis* Ames, but it has much larger flowers and a dissimilar lip.

Genus DENDROCHILUM Blume

DENDROCHILUM WEBERI Ames § Eudendrochilum. Plates 1, 4, and 15.

Dendrochilum Weberi AMES in Philip. Journ. Sci. 8 (1913) Bot. 410, Orch. 5 (1915) 65.

Rhizoma elongatum, repens, gracile, 2 ad 2.5 mm in diametro, ad nodos radicans. Pseudobulbi anguste cylindranei, 2 ad 3 cm longi, 2 ad 5.5 cm distantes. Folia breviter petiolata, coriacea, oblongo-lanceolata vel peranguste elliptica, in sicco nervosa, 7 ad 8.5 cm longa, 1 ad 2 cm lata, utrinque attenuata, ad apicem acuta. Scapus lateralis in basi pseudobulbi, plus minusve foliis longior, 8 ad 11 cm longus, gracilis, flexuosus vel pendulus, ad basim vaginis tubularibus bracteiformibus inclusus; bracteis inflorescentiae glabris, lanceolatis, usque ad 2 mm longis. Flores in

¹The color terms used are mostly from Ridgway's Color Standards and Color Nomenclature (1912).

racemis laxis dispositi. Sepala lateralia lineari-lanceolata, subacuta, circiter 5 mm longa, 1.25 mm lata, 3-nervia, levissime falcata. Sepalum dorsale lineari-lanceolatum, acutum, circiter 5 mm longum, 1.5 mm latum, 3-nervium. Petala lineari-oblancoolata, obtusa vel acuta, circiter 4 mm longa, 1 mm lata, 1-nervia. Labellum obovato-oblongum, medio utrinque leviter angustatum, ad apicem late rotundatum vel retusum, circiter 2 mm longum, 1 mm latum, 3-nervium, ad basim bicallosum; pars inferior abrupte reflexa. Columna brevis, ad apicem trilobatam dente medio bidentato, dentibus lateralibus erectis, triangulari-linearibus. Pollinia quatuor.

Rhizomes creeping, elongated, slender, 2 to 2.5 mm in diameter, copiously rooting at the nodes. Roots fibrous, branching. Pseudobulbs narrowly cylindrical, 2 to 3 cm long, rugose when dry, 2 to 5.5 cm apart. Leaves shortly petioled, coriaceous, oblong-lanceolate or very narrowly elliptic, 7 to 8.5 cm long, 1 to 2 cm wide, tapering at both ends, the apex acute; petioles 2 to 4 mm long. Scapes commonly longer than the leaves, 8 to 11 cm long, slender, flexuose or pendant, arising from the base of the pseudobulbs, sheathed at base with several tubular bracts. Bracts subtending the flowers lanceolate, acute, concave, up to 2 mm long. Flowers marguerite yellow, laxly disposed on the racemes. Lateral sepals linear-lanceolate, subacute, about 5 mm long, 1.25 mm wide, 3-nerved, slightly falcate. Dorsal sepal linear-lanceolate, acute, about 5 mm long, 1.5 mm wide, 3-nerved. Petals linear-oblancoolate, obtuse or acute, about 4 mm long, 1 mm wide, 1-nerved. Labellum glabrous, obovate-oblong, in the middle on each side slightly narrowed, reflexed at the base, about 2 mm long, 1 mm wide, broadly rounded or retuse at the apex, the base subhastate and bicallose, 3-nerved. Column very short, arcuate, at the apex trilobed, the middle tooth bidentate, the lateral arms triangular-linear and suberect. Pollinia 4.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 84546 *Quisumbing*, May 19, 1931. The living plants were collected by Messrs. M. Ramos and P. Convocar from near the banks of Camahalan River, Agusan Province, Mindanao, growing on rocks, April 30, 1931. Living specimens are now growing on the tuff (Guadalupe stone) walls in the Bureau of Science orchid house in Manila.

This is the third collection of this species. In general habit it very closely resembles *D. aurantiacum* Blume, but differs in the details of the flowers.

Genus AGROSTOPHYLLUM Blume

AGROSTOPHYLLUM SACCATILABIUM sp. nov. Plates 1, 5, 16, and 17.

Aff. *A. inocephalum* (Schauer) Ames. Planta glabra, ad basim foliis disscisis, nuda, supra foliosa, 32 ad 45 cm alta. Caules complanati, vaginis foliorum tecti. Folia disticha, anguste lineari-oblonga; lamina 12 ad 17 cm longa, 2 ad 3 cm lata, in sicco subcoriacea, obtusa; vaginae foliorum imbricatae, persistentes, flavidae et atromarginatae, longivaginantae, usque ad 5 cm longae. Inflorescentiae terminalis, densissime capitata, usque ad 3.5 cm in diametro. Flores albidii, parvi, in racemis paucifloris numerosissimis capitulum formantes, bracteis imbricatis subtendentibus, 4 ad 6 mm in diametro. Sepala lateralia carinata, cucullata, ovato-oblonga, subacuta, circiter 4 mm longa, 2 mm lata, 3-nervia. Sepalum dorsale ovatum, subacutum, 3-nervium, circiter 3.5 mm longum, 2.25 mm latum. Petala lineari-lanceolata, apice ipso paulo ampliata, circiter 3.5 mm longa, 0.75 mm lata. Labellum saccatum, in circuitu suborbiculare; parte inferiore (hypochilio) semiorbiculari, saccata, circiter 1.5 mm longa; parte terminali (epichilio) valde saccata, semiorbiculari, ad apicem rotundata, circiter 2.5 mm longa; callus transversus. Columna crassa, circiter 2 mm longa. Pollinia 8.

A glabrous epiphyte, rather stout, 32 to 45 cm high; stems tufted, flattened, narrowed at the base. Leaves restricted to the upper portion of the stems, distichous, jointed with persistent clasping rigid bases; lamina 12 to 17 cm long, 2 to 3 cm wide, narrowly linear-oblong, obtuse, when dry subcoriaceous; sheaths up to 5 cm long. Inflorescences terminal, capitate, pluribracteate, up to 3.5 cm in diameter. Flowers very numerous, in few-flowered racemes, very crowded, marguerite yellow, 4 to 6 mm across. Lateral sepals carinate, cucullate, ovate-oblong, subacute, about 4 mm long, 2 mm wide, 3-nerved, the two side nerves not reaching the apex. Dorsal sepal ovate, subacute, about 3.5 mm long, 2.25 mm wide, 3-nerved. Petals linear-lanceolate, about 3.5 mm long, 0.75 mm wide. Labellum saccate, suborbicular in outline, about 3 mm long; hypochile semiorbicular, saccate, about 1.5 mm long, separated from the epichile by a transverse callus; epichile saccate, semiorbicular, the apex broadly rounded, about 2.5 mm long. Column stout, about 2 mm long. Pollinia 8.

LUZON, Benguet Subprovince, Baguio, Gardens of the Mansion House, *Bur. Sci.* 82229 *Quisumbing*, May 6, 1931. The living plants were first seen in the gardens of the Mansion House at

Baguio; the origin of the specimens is not known, but we are assured that the orchid peddlers in Baguio collected them from the mountains in the vicinity of Baguio.

A species closely allied to *Agrostophyllum inocephalum* (Schauer) Ames, but differing radically in the shape of the epichile.

Genus DENDROBIUM Swartz

DENDROBIUM AURICULATUM sp. nov. Plates 1, 6, and 18.

Aff. *D. papilio*. Caulibus simplicibus, basibus foliorum auriculatis, floribus albidis et basi auriculata labelli plus ovati differt.

Stems numerous, crowded in a clump, 30 to 82 cm high, erect or suberect, not branched, terete, greenish yellow, 1.5 to 3 mm in diameter; internodes up to 2.5 cm long. Leaves linear-lanceolate, the apex narrowed, acute, unequally bilobed with the subulate lobules 1 to 2 mm long, the base prominently auricled with the lobules extending across the stems, the lamina 8 to 12.5 cm long, 4 to 8 mm wide, somewhat rigid; the sheaths tubular, purplish. Flowers odorless, showy, appearing singly on the naked termination of the stems, 6 to 6.5 cm across. Flowering stems usually defoliated (if leaves are present when the plant is in flower, only the apical ones remain). Pedicellate ovary slender, 1.8 to 2 cm long. Sepals and petals pure white, lined at the base with purple. Lateral sepals oblong-lanceolate, obtuse, including the spur 4 to 4.1 cm long, obtuse, greenish and lined with purple. Dorsal sepal oblong, obtuse, 2.5 to 2.6 cm long, 1 to 1.1 cm wide at the widest portion, 7-nerved. Petals obliquely oblong-elliptic, obtuse, 2.5 to 2.7 cm long, 1.1 to 1.2 cm wide, 5-nerved. Labellum conspicuously unguiculate, simple; claw linear, the lower third tubular saccate, 1.9 to 2 cm long, conspicuously green, lamina (when expanded) broadly ovate-cordate, obtuse, margins minutely dentate or crenate-dentate, membranaceous, 2 to 2.1 cm long, 1.5 to 1.6 cm wide, with three obscure central lines throughout, pure white. Gynostemium very short and stout, clinandrium tridentate with the central tooth linear-subulate, extended into a long foot, including the foot 1.9 to 2 cm long. Anther oblong-ovoid, obtuse, about 3 mm long, 2 mm wide.

In the herbarium of Oakes Ames is a plant from Mindanao representing this species. It differs from the typical specific form in its conspicuously smaller flowers of which the petal is 1.5 cm long and about 6.5 mm wide and the entire lip, including the claw, about 2.5 cm long. Its data are Mindanao, District

of Davao, Divide on Apo Ridge, altitude 3,050 feet. Epiphyte. Flowers white. *C. M. Weber 246*, August 25, 1911.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci. 84542 Quisumbing*, March 11, 1931. The living plants were collected from the mountains near the source of Angat Irrigation System, Bulacan Province, growing on rocks. The plants flowered for the second time earlier (January, 1932).

A very interesting orchid and worthy of a place in orchid gardens. The species doubtless is closely allied to *Dendrobium papilio* Loher, but differs in its unbranched stems, leaves with conspicuously auricled bases, and the pure white flowers, purple-lined at the bases of petals and sepals, with green throat and claw. The margins of the labellum are minutely dentate. The plants thrive well in earthen pots with tuff and humus.

DENDROBIUM GUERREROI sp. nov. Plates 1, 7, 19, and 20.

Aff. *D. O'Brieno* et *D. amethystoglosso*. Caules aggregati, elongati, suberecti, basi attenuati, 30 ad 76 cm longi, usque ad 8 mm in diametro. Folia lanceolata vel oblongo-lanceolata, 7.5 ad 10.5 cm longa, 1.6 ad 2.5 cm lata, apice attenuata, acuta, membranacea. Racemi penduli, pauci et laxiflori, usque ad 8 cm longi, 10- ad 13-flori, e caulibus defoliatis orientes. Flores 3 ad 3.3 cm longi, 2 ad 2.2 cm lati. Sepala lateralia oblique oblongo-lanceolata, acuta, 13.5 ad 14 mm longa, 7.5 ad 8.5 mm lata, 7-nervia, mentum formantia; mentum elongatum, saccatum, superne rectum vel leviter curvatum, obtusum, circiter 1.5 cm longum. Sepalum dorsale oblongo-lanceolatum, subacutum, 13 ad 15.5 mm longum, 5 ad 6 mm latum, 7-nervium. Petala oblongo-elliptica, obtusa, 14 ad 15 mm longa, 6 ad 7 mm lata, 5-nervia. Labellum simplex, elongatum, 25 ad 27 mm longum, basi unguiculata lineari, in positu naturali complanatum, cum pede gynostemii connatum; lamina ovata, 15 ad 17 mm longa, expansa 12 ad 13 mm lata, margine levissime crenulata vel integerrima, antice late rotundata vel leviter retusa, plus minusve apiculata; discus fascia una elevatula carnosae praeditus. Gynostemium brevissimum, crassum, tridentatum; stelidia lateralia recurvata, lata, obtusa, dens medius tenuis, linearis. Anthera ovoidea, circiter 2 mm longa.

Stems terete, aggregated, elongate, suberect, 30 to 76 cm long, up to 8 mm in diameter at the widest portion, narrowed at the base. Leaves distichous, deciduous, lanceolate or oblong-lanceolate, 7.5 to 10.5 cm long, 1.6 to 2.5 cm wide, nervose, membranaceous, greenish, when young flushed with purple, narrowed

to the acute apex, articulated to tubular sheaths. Leaf-sheaths purplish when young, otherwise green, membranaceous, deciduous on the lower part of the plant. Racemes pendulous, few- and laxly flowered, up to 8 cm long. Flowers 10 to 13, 2 to 2.2 cm across, 3 to 3.3 cm long, with rather straight or slightly inflexed spur. Bracts pellucid, minute, triangular, acute, up to 3.5 mm long, white flushed with purple. Pedicellate ovary 1.5 to 2.5 cm long, rose purple, pedicel slender. Lateral sepals obliquely oblong-lanceolate, acute, somewhat cucullate at the tip, 13.5 to 14 mm long near the posterior margin, 7.5 to 8.5 mm wide, 7-nerved, forming with the column-foot a mentum or spur which is elongate, straight or slightly curved, obtuse, about 1.5 cm long. Dorsal sepal slightly cucullate with the tip bent forward, oblong-lanceolate, subacute, 13 to 15.5 mm long, 5 to 6 mm wide, 7-nerved. Petals spreading, oblong-elliptic, obtuse, 14 to 15 mm long, 6 to 7 mm wide, 5-nerved, margin entire. Labellum simple, elongate, 25 to 27 mm long, claw linear, flattened, attached to the foot of the column, lamina ovate, 15 to 17 mm long, 12 to 13 mm wide at the widest portion (when expanded), the apex broadly rounded or slightly retuse, with a very minute mucro in the notch, the margin entire or finely crenulate; disc provided with a single broad central fleshy keel which is glabrous and extends from the column-foot nearly to the apex of the lip. Column white, very short and stout, 2 to 2.5 mm long, extended into an elongated foot. Anther ovoid, about 2 mm long.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci. 84541 Quisumbing*, July 27, 1932. The living plants were originally gathered by the botanical collectors Maximo Ramos and Pascual Convocar, of the Bureau of Science, in May, 1931, from Dinagat Island, near Mindanao. The plants are now being cultivated in the Bureau of Science orchid house, and this description was based on specimens which flowered in Manila on July 25, 1931. The flowers are showy and odorless, and last for two or three days. Pedicellate ovary rose purple; sepals naphthalene yellow, usually flushed with rose purple on the back (older flowers become cream-colored); petals paler, marguerite yellow; spur primrose yellow with shades of honey yellow at the tip and flushed on the back with rose purple; column-foot primrose yellow and minutely dotted with rose purple; gynostemium and anther white; labellum chamois and minutely dotted within (particularly at the throat) with rose purple except the tip which

is marguerite yellow, and the raised disc rosolane pink which extends from the column-foot to the very lip.

A species doubtless belonging in the group with *Dendrobium O'Brienum* Kränzl. and *Dendrobium amethystoglossum* Reichb. f. It is especially close to the first but differs in its much shorter and few-flowered racemes, in the spur, and especially the labelum.

This species is dedicated to Dr. Leon Ma. Guerrero, chief of the division of botany of the Bureau of Science and specialist in Philippine medicinal plants. The junior author greatly appreciates the encouragement Doctor Guerrero has given him during the prosecution of these studies.

Genus CYMBIDIUM Swartz

CYMBIDIUM PUBESCENS Lindl. Plates 2, 8, 21, and 22.

Cymbidium pubescens LINDL. Bot. Reg. 26 (1840) Misc. p. 75, 27 (1841) t. 38; J. J. SM. Fl. Buitenzorg. 6 (Orch. Java) (1905) 483, Fig.-Atlas (1911) fig. 368; SCHLECHTER, Die Orchideen (1927) 362.

Cymbidium aloifolium BLUME Bijdr. (1825) 378.

Cymbidium bicolor LINDL. (p. p.) Gen. & Sp. Orch. (1833) 164; MIQ. Fl. Ind. Bat. 3 (1859) 707; REICHB. f. Walp. Ann. 6 (1863) 625.

"*C. pubescens*; foliis ensiformibus striatis apice oblique bidentatis, racemo brevi pendulo, bracteis minimis squamaeformibus, sepalis petalisque linearibus acutiusculis, labelli trilobi basi saccati intus pubescentis laciniis lateralibus acutis intermedia oblonga subundulata obtusa, lamellis rectiusculis medio interruptis." Bot. Reg. 26 (1840), misc. p. 75, no. 177. Lindl. 27 (1841) t. 38.

An epiphyte, much the habit of *Cymbidium atropurpureum* (Lindl.) Rolfe. Leaves clustered, coriaceous, sessile, dark green, ligulate-linear, 50 to 53 cm long, 1.75 to 1.9 cm wide, striated, apex very obliquely notched. Racemes pendulous, 5- to 10-flowered, 15 to 25 cm long, arising from the sides of the base; the peduncles glabrous, about 11.5 cm long, 4 mm in diameter, clothed at the base with 3 tubular sheaths; the sheaths light green, the basal ones shortest, oblong (when expanded), acute, about 3 cm long, 2 cm wide, the two upper ones linear-lanceolate, acute, 4 to 4.5 cm long, about 1.5 cm wide. Floral bracts minute, squamiform, triangular, acute, 2.5 to 3 mm long. Pedicellate ovary 1.3 to 1.5 cm long. Flowers odorless, about 3 cm across. Lateral sepals spreading, narrowly oblong or slightly oblanceolate, acute, slightly oblique, 1.5 to 1.7 cm long, 5 to 5.5 mm wide, 7-nerved. Dorsal sepal similar, erect. Petals

spreading, lanceolate or elliptic-lanceolate, acute, 1.4 to 1.55 cm long, 4.75 to 5 mm wide, 5-nerved. Labellum trilobed, suborbicular-ovate in outline when expanded, saccate at the base, minutely ciliate on both surfaces, more so within and on the margins; lateral lobes semiovate with free apices, short, triangular, porrect, acute, 3 to 3.5 mm long; middle lobe broadly oblong to suborbicular, 7 to 7.5 mm long, 5.5 to 6.25 mm wide, the apex rounded, recurved, apiculate at the very tip; the disc with a pair of subparallel fleshy lamellæ or ridges at the base in front of which stands another pair of smaller calli. Column long, arcuate, without a foot, slightly thickened at the apex, 10 to 11.5 mm long. Anther semiglobose. Pollinia 2, complanate-pyriform.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 84547 *Quisumbing*, January 13, 1931. The living plants, which are now in cultivation in the Bureau of Science orchid house, were collected near Butuan, Agusan Province, Mindanao, growing on trees at low altitudes. The sepals and petals etruscan red or acajou red broadly edged with deep colonial buff; lateral lobes of the labellum ivory yellow dotted with ox-blood red; middle lobe of the labellum naples yellow and tipped with ox-blood red. Column pompeian red; anther light orange yellow above and amber brown below.

Lindley, *Bot. Reg.* 27 (1841) *t.* 38, states—"Although the woods of Singapore have been so often examined by Botanists it seems as if the forms of vegetation there were inexhaustible. The species now figured was met with by Mr. Cuming who sent it to Messrs. Loddiges." This species, which is distributed over Malay Peninsula, Sumatra, and Java, and Banca and Siam, fide Ridley, doubtless belongs in the group with *C. finlaysonianum* Lindl. and *C. atropurpureum* (Lindl.) Rolfe. It has the general habit of *C. atropurpureum* and resembles it in the form and size of leaves, but is distinct from both species in having very much shorter racemes, smaller flowers, and pubescent labellum as well as in the color of the flowers. *Cymbidium pubescens* Lindl. is here for the first time reported from the Philippines, although several sterile and fruiting specimens in the herbarium of Oakes Ames perhaps represent it. The plant thrives best in orchid pots with crushed tuff as a substratum or in wooden baskets. The cymbidiums of the Philippines are some of the most hardy of orchids and they even grow luxuriantly perched on branches of trees.

Genus SARCOCHILUS R. Brown

SARCOCHILUS BENGUETENSIS sp. nov. Plates 1, 9, and 23.

Herba epiphytica, carnosa. Caules leviter elongati, 8 ad 13 cm longi, teretes, radices crassas proferentes. Folia disticha, valde carnosa, rigida, oblonga vel elliptico-oblonga, obtusa, 6 ad 8 cm longa, 1.8 ad 2.3 cm lata, ad apicem inaequaliter biloba, in sicco rugosa, coriacea, 6 ad 12 mm distantia, vaginis persistentibus. Inflorescentiae breves, foliis multo breviores, usque ad 3 cm longae, pedunculus glaber, usque ad 1.2 cm longus; rhachis inflorescentiae leviter incrassata, 2 ad 3 mm in diametro; bractae squamiformes, circiter 4 mm longae, obtusae. Flores odoratissimi, in racemo cylindraceo laxo pauciflora dispositi, 10.5 ad 11 mm lati; pedicellus cum ovario gracilis, 6 ad 7 mm longus; bractae florales minutae, triangulares, acutae, usque ad 2 mm longae. Sepala lateralia oblique late ovata, obtusa ad apicem dorso leviter carinata, circiter 4 mm longa, 3.5 ad 3.75 mm lata, 3-nervia. Sepalum dorsale cucullatum, oblongo-ovatum, obtusum, leviter retusum, circiter 4 mm longum, 2.75 latum, 3-nervium. Petala oblongo-lanceolata vel elliptico-lanceolata, valde obtusa, uninervia, circiter 3.75 mm longa, 1.25 mm lata. Labelum pedi columnae affixum, calcaratum, 3-lobatum; lobi laterales erecti, petaloidei, lineares, obtusi, circiter 2.75 mm longi, 0.75 mm lati; lobus intermedius carnosissimus, abbreviatus, papillosus. Calcar supra lobum medium cylindraceo-conicum, complanatum, late obtusum, circiter 4 mm longum, 2 mm latum. Gynostemium brevissimum, circiter 1.5 mm longum, in pedem circiter 2.5 mm longum extensum.

An epiphytic herb; the stems somewhat elongated, 8 to 13 cm long, terete. Leaves distichous, very fleshy, rigid, oblong or elliptic-oblong, obtuse, 6 to 8 cm long, 1.8 to 2.3 cm wide, unequally and minutely bilobed at the apex, when dry rugose and coriaceous, 6 to 12 mm distant, articulated to persistent sheaths. Inflorescences much shorter than the leaves, few-flowered, up to 3 cm long; the peduncles glabrous, up to 1.2 cm long; the rachis 2 to 3 mm in diameter, provided with squamiform obtuse bracts about 4 mm long. Flowers very fragrant, 10.5 to 11 mm across; pedicellate ovary slender, 6 to 7 mm long; floral bracts minute, triangular, acute, up to 2 mm long. Lateral sepals broadly ovate, very oblique, obtuse, keeled on the back at the apex, about 4 mm long, 3.5 to 3.75 mm wide, 3-nerved. Dorsal sepal cucullate, oblong-ovate, obtuse, somewhat retuse, about 4 mm long, 2.75 mm wide, 3-nerved. Petals oblong-lanceolate or elliptic-

lanceolate, broadly obtuse, 1-nerved, about 3.75 mm long, 1.25 mm wide. Labellum attached to the foot of the column, spurred, 3-lobed; lateral lobes erect, petaloid, linear, slightly curved, obtuse, about 2.75 mm long, 0.75 mm wide; middle lobe a short fleshy, conical, papillose tooth; spur cylindrical-conic, dorsoventrally flattened, about 4 mm long, 2 mm wide, the tip broadly rounded or subtruncate. A pair of minute uncinata lobules stand inside the base of the lateral lobes. Gynostemium very short, about 1.5 mm long, extended into a foot about 2.5 mm long. Pollinia 4, complanate-ovoid, unequal.

LUZON, Benguet Subprovince, Baguio, gardens of the Mansion House, *Bur. Sci. 82203 Quisumbing*, May 6, 1931. The living plants were originally from the mountains near Baguio, but the exact locality is unknown. At present the living plants are growing in the Bureau of Science orchid house. Sepals and petals white dotted with purple-red; labellum white except the inner surfaces of the lateral lobes which are dotted with purple-red; anther yellow; back side of the column carmine; pedicellate ovary marguerite yellow.

Among the Philippine species, this plant appears to be allied to *Sarcochilus palawanensis* Ames but differs strikingly in its short racemes and in the dissimilar form of the perianth segments.

Genus PHALAEOPSIS Blume

PHALAEOPSIS LUEDDEMANNIANA Reichb. f. var. PURPUREA var. nov. Plates 2, 10, and 24.

Haec varietas floribus omnino purpureis haud striatis a *P. Lueddemanniana* differt.

Plant suberect. Leaves oblong-elliptic to narrowly obovate, thick, fleshy, slightly rigid, subacute, 8.5 to 14 cm long, 4.5 to 6 cm wide, shining on both surfaces. Scapes not branching, few-flowered; rachis 10.5 to 13.5 cm long. Flowers odorless, about 3.5 cm across, true purple and absolutely without transverse bars on the sepals and petals in front, and obscurely reticulated with white on the back. The tips of sepals are white. Pedicellate ovary white, 3 to 3.5 cm long. Lateral sepals obliquely ovate, acute, apiculate, 1.9 to 2.2 cm long, 1 to 1.3 cm wide (when spread out), 9-nerved. Dorsal sepal erect, elliptic-lanceolate, acute and apiculate, 1.9 to 2.2 cm long, about 0.9 cm wide, 9-nerved. Petals oblong-elliptic, subobtuse, 1.8 to 2 cm long, 0.8 to 0.9 cm wide, 7-nerved. Labellum fleshy, 3-lobed; lateral lobes erect, quadrate-oblong, bidentate at the broad apex, with a

prominent fleshy callus above the middle, about 7 mm long, light orange except the terminal horns which are mallow pink and the base which is white; middle lobe lanceolate or oblong-lanceolate, obtuse, 1.4 to 1.5 cm long, 0.6 to 0.7 cm wide at the widest portion. Disc provided with several distinct calli: near the base, between the side lobes, an obscurely 3-lobed plurituberculate callus; at the base of the middle lobe a pair of slender sharp teeth and a longer thin high median keel which extends to the middle of the terminal lobe where it is continued by irregular teeth and terminates in a fleshy callus (toothed or fringed at the base) which extends to the apex of the lip. Column 1 to 1.3 cm long, white with a mallow pink base.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci. 84550 Quisumbing*, June 6, 1931. The living plants were presented to the junior author by Mr. Constinoble, of Del Carmen, Pampanga Province, Luzon, who collected them at Balete Pass, Nueva Ecija Province, Luzon, growing on tree trunks.

The variety is characterized by the complete absence of transverse bars on the sepals and petals. It further differs from the species in its smaller floral segments and leaves.

Genus GASTROCHILUS D. Don

GASTROCHILUS CALCEOLARIS D. Don. Plates 2, 11, and 25.

Gastrochilus calceolaris D. DON, Prodr. Fl. Nep. (1825) 32.

Saccolabium calceolare LINDL. in Wall. Cat. No. 7302, Gen. & Spec. Orch. (1833) 223; Sert. Orch. Frontisp. (1838) No. 6, in Bot. Reg. (1838) Misc. p. 75, No. 139, in Journ. Linn. Soc. 3 (1859) 33; GRIFF., Notul. 3 (1851) 356, Itin. Notes (1848) 170, No. 869, Ic. Pl. Asiat. 3 (1851) t. 334; REICHB. f. in Walp. Ann. 6 (1864) 883; HOOK. f., Fl. Brit. Ind. 6 (1890) 60; KING and PANTL. in Ann. Roy. Bot. Gard. Calcutta 8 (1898) 225, t. 300; J. J. SM., Fl. Buitenzorg (Orch. Jav.) (1905) 632, Fig.-Atlas (1908) t. 472 (as *Gastrochilus*).

Aerides calceolare SM. in Rees. Cycl. (1819) Addend. & Corrigend.

Aerides leopardinum WALL. apud Lindl., Sert. Orch. (1838) No. 6, in *synon.*

Gastrochilus sororius SCHLTR. in Fedde. Repert. 12 (1913) 315.

Sarcophilus nepalensis SPRENG. Syst. Veg. 3 (1826) 721.

Epidendrum calceolare BUCH.-HAM. apud D. Don, Prodr. Fl. Nep. (1825) 32, in *synon.*

Gastrochilus philippinensis AMES, Orch. 5 (1915) 231, in MERR. Enum. Philip. Fl. Pl. 1 (1925) 434.

GASTROCHILUS. *Labellum* ventricoso-inflatum, sessile, indivisum, apice appendice rotundatâ papilloso-glandulosâ erosè crenatâ auctum. *Perianthii foliola* omnia distincta, subaequalia, patula. *Columna* brevissi-

ma. *Massae pollinis* 2, integrae, sessiles, apici stigmatis adnatae. Herba arboribus parasitica. Caudex brevis, radicans, erectus. Folia lineari-lanata, 5-7 pollices longa, 3-5 lineas lata, coriacea, enervia, plana, glabra. Scapi brevissimi, ex inferiore caudicis ortum ducentes, vix ibidem aequantes, pluri (3-5)-flori. Pedunculi patuli, uniflori. Flores facie fere Cypripedii at minimi. Perianthii foliola 5, distincta, obovata, subaequalia. Labellum valde ventricosum, foliolis brevius, margine rectum, anticè appendiculatum.

Obs. Nomen ἀγρονόμος, venter, et χαλκόν, labium; id est labium ventricosum.

1. G. calceolaris.

Epidendrum calceolare. *Hamilton MSS.*

Hab. ad Narainhetty Nepalensium, *Hamilton, Wallich.* Floret Februario." *Ex. D. Don, Prodr. Fl. Nep. (1825) 32.*

"16. *Saccolabium calceolare.* *Lindl. in Wall. Cat. No. 7302.*

S. subacaule, foliis loratis acuminatis apice obliquè bidentatis, corymbis multifloris breviter pedunculatis, sepalis petalisque obovato-oblongis obtusis, labelli calcare inflato orbiculato; laminâ lunatâ rotundatâ ciliatâ.

Gastrochilus calceolaris *Don Prodr. Nep. 32.* *Aeridis calceolare, Smith in Rees. suppl. Hab. in Nepalia et Sylhet, Wallich. (hab. s. sp. e Mus. Angl. Ind. et v. ic. pict.).* Folia 9 p. longa, basi maculata. Sepala et petala flava, maculis, subrotundis purpureis notata. Labellum album; laminâ basi luteo et coccineo punctatâ." *Ex. Lindl., Gen. & Sp. Orch. (1833) 223.*

Stems pendulous, about 8 cm long, up to 6 mm in diameter. Roots terete, up to 18 cm long, 3 to 3.5 mm in diameter. Leaves distichous, the lower ones imbricated, light green, oblong, oblong-elliptic, or oblanceolate, narrowed to the very unequally bilobed apex, 14 to 16 cm long, 2.5 to 2.8 cm wide, submembranaceous when dry. Racemes short, corymbose, 3 to 3.5 cm long, 8- to 10-flowered, peduncles green spotted with dark brown, stout and fleshy, 1.3 to 1.5 cm long, provided at the base with two short tubular sheaths which are 3 to 4 mm long. Floral bracts cucullate, ovate, obtuse, rigid, up to 3.5 mm long. Pedicellate ovary reed yellow, 7 to 8 mm long, lined with green. Flowers odorless, crowded, about 1.5 cm across. Sepals and petals fleshy, reed yellow to olive yellow spotted with chocolate on the sepals and brick red on petals. Sepals oblong-obovate, obtuse, about 7 mm long, 4 mm wide at the widest portion. Petals narrower, obovate-spatulate. Labellum 5 to 5.5 mm long, adnate to the lower half of the column, basal portion forming a conical, obtuse sac, 5 to 5.5 mm deep, white blotched with mallow pink, the very tip cream color; lateral lobes inconspicuous, erect; middle lobe subreniform, 3 to 4 mm long, 6 to 7 mm wide, margins deeply and unequally fimbriated, upper surface, except for a V-shaped zinc orange basal callus covered with white hairlike papillæ. At

the center of the callus there is a Naples yellow ridge. Column very short, stout, white flushed with pink. Anther somewhat flattened, shortly beaked, chartreuse yellow. Pollinia ellipsoid.

LUZON, Manila, Miyasaki Gardens, *Bur. Sci.* 82231 *Quisumbing*, February 7, 1931. The living plants were collected from Baguio, Benguet Subprovince by Mr. S. Miyasaki, an orchid grower, and are now in cultivation in his gardens. The first Philippine specimen was collected by A. D. E. Elmer 6517 (type of *G. philippinensis* Ames) in Baguio, June 28, 1904. The species has also been reported from Sikkim and the Khasia Hills, Java, Sumatra, and Assam.

After a careful study of this Philippine material, it has been found necessary to reduce *G. philippinensis* Ames to synonymy as the characters relied on for specific distinction have proved to be unreliable.

Genus VANDOPSIS Pfitzer

VANDOPSIS DAVISII sp. nov. Plates 2, 12, 26, and 27.

Herba valida, 20 ad 60 cm alta. Radices elongatae, brunneae, glabrae. Caules teretes, vaginiis foliorum omnino tecta, 1.2 ad 1.5 cm in diametro. Folia disticha, ligulata, valde rigida, falcato-decurvata, 1.5 ad 3.5 cm distantia, ad apicem inaequaliter bilobata cum lobis obtusis, medio canaliculata, 16 ad 39 cm longa, 2.3 ad 3.5 cm lata (in sicco valde coriacea haud nervosa), valde rugosa. Pedunculus 13 ad 14.5 cm longus, 4 ad 5 mm in diametro, rigidus, glaber, erectus. Inflorescentiae racemosae, 10- ad 14-florae, erectae. Pedicellus cum ovario albidus, 2 ad 2.5 cm longus, rigidus, glaber. Bracteae inflorescentiae squamiformes, breves, ovatae, cucullatae, circiter 3 mm longae; bracteae caulinae tubulares, 3 ad 4 mm longae. Flores albido-virides, 2.2 ad 2.4 cm lati, 3.2 ad 3.3 cm longi, carnosi. Sepala breviter unguiculata. Sepala lateralia ovato-elliptica, obtusa, circiter 1.5 cm longa, 7 mm lata. Sepalum dorsale ovato-oblancheolatum, obtusum, circiter 1.6 cm longum, supra medium 7 mm latum. Petala oblancheolata, obtusa, circiter 1.4 cm longa, 5.5 ad 6 mm lata. Labellum trilobatum, base valde saccata, circiter 1.1 cm longum; lobi laterales parvi, erecti, triangulares, circiter 2 mm alti, late rotundati, carnosi, utrinque glabri; lobus medius multo major, carnosus, lateraliter compressus, rigidus, in circuitu (supra visus) ovato-lanceolatus, circiter 7 mm longus, subtus prominenter carinatus, supra minutissime pubescens, apice truncatus. Carina transversa suborbicularis valde concava in basi saccata stat. Gynostemium breve, crassum, circiter 6 mm longum gla-

brum, ad apicem biconnutum. Anthera glabra. Pollinia 4, subaequalia. Capsula ellipsoidea, valde saccata, 6 ad 6.5 cm longa, 1.7 ad 1.8 cm in diametro.

A very coarse herb, 20 to 60 cm high, recalling *Sarcanthus pachyphyllus* Ames. Roots elongate, brown, glabrous. Stems terete, coarse, very rigid, usually erect, sometimes curved, altogether concealed by the tubular leaf-sheaths, 1.2 to 1.5 cm in diameter. Leaves distichous, ligulate, 16 to 39 cm long, 2.3 to 3.5 cm wide, very rigid, very thickly leathery, falcate-decurved, in texture approaching those of *Sarcanthus pachyphyllus*, 1.5 to 3.5 cm distant, unequally bilobed at the apex with obtuse lobes, channelled through the middle (when dry very coriaceous and never nerved), very rugose. Peduncles erect, rigid, 13 to 14.5 cm long, 4 to 5 mm in diameter, glabrous. Inflorescences in the upper part of the peduncle, racemose, 10- to 14-flowered, erect. Pedicellate ovary white, 2 to 2.5 cm long, rigid, glabrous, twisted at the base. Bracts of the inflorescence squamiform, short, ovate, cucullate, about 3 mm long. Flowers fragrant, fleshy, firm, 2.2 to 2.4 cm across, 3.2 to 3.3 cm long. Sepals shortly clawed. Lateral sepals ovate-elliptic, obtuse, about 1.5 cm long, 7 mm wide. Dorsal sepal ovate-oblongate, obtuse, about 1.6 cm long, 7 mm wide about the middle. Petals oblongate, obtuse, about 1.4 cm long, 5.5 to 6 mm wide. Labellum trilobed, conspicuously saccate at the base, about 1.1 cm long; lateral lobes small, erect, triangular, about 2 mm high, broadly rounded, fleshy, glabrous on both surfaces; middle lobe much larger, fleshy, laterally compressed, in outline (when seen from above) ovate-lanceolate, rigid, about 7 mm long, prominently carinate beneath, very minutely pubescent above, truncate at the apex. At the saccate base of the labellum (between the lateral lobes) there is a small transverse, suborbicular, deeply concave keel as in *Staurochilus ionosma*. Gynostemium short, stout, about 6 mm long, glabrous, 2-horned at the apex with falcate horns. Anther glabrous. Pollinia 4, subequal. Capsules ellipsoid, 6 to 6.5 cm long, 1.7 to 1.8 cm in diameter, prominently 3-keeled (between each keel there are two shallow ridges).

LUZON, Manila Bureau of Science orchid house, *Bur. Sci.* 82228 *Quisumbing*, March 31, 1931. The living plants, according to orchid peddlers, were originally collected from the mountains near Montalban, Rizal Province, Luzon. They are now in cultivation in the Bureau of Science orchid house, Miyasaki Gardens, and Mrs. Remedios C. Gonzales's gardens, all in Ma-

nila. Rachis of the inflorescence greenish; pedicellate ovary white; sepals and petals white on back and front washed with lumiere green or light lumiere green, and spotted and barred with claret brown on the petals and raw umber on the sepals; lateral lobes of the labellum pale viridine yellow; middle lobe of the labellum white; spotted with ox-blood red above, on both sides of the keel above and empire yellow at the very tip of the tongue; callus at the base of the labellum between the lateral lobes cuplike, white, light orange yellow within.

In habit this unique species suggests *Sarcanthus pachyphyllus*, especially in the very rigid, thick, keeled, falcate leaves, but it differs radically in floral characters. In floral structure it is very much like *Vandopsis lissochiloides* (Gaudich.) Pfitz., but its flowers are much smaller and of different color.

This very interesting species is dedicated to Hon. Dwight F. Davis, for his interest in orchids and particularly for his unselfish devotion and interest in his work when Governor-General of the Philippines.

Genus MICROSACCUS Blume

MICROSACCUS WENZELII Ames. Plates 1, 13, and 28.

Microsaccus Wenzelii AMES Orch. 5 (1915) 257, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 442.

Planta pusilla, epiphytica. Radices in basi caulium. Caules dependentes (?) usque ad 1 dm. alti, circiter 3 mm. in crassitudine, cum foliis usque ad 4 cm. lati, vaginis foliorum persistentibus obtegentibus: internodia brevia vaginis omnino tecta, 3 mm. longa. Folia biseriata, patentissima, equitantia, crasse carnosa, lateraliter compressa, oblonga a latere visa, dorso et apice acutangula, obtusa sed a basi sensim angustata, in sicco valde rugosa, usque ad 2 cm. longa, circiter 5 mm. alta, supra canaliculata. Inflorescentiae axillares, brevissimae, 1 (-2) florum. Pedunculus folii vaginis aequilongus. Bractee ovatae vel orbiculares, valde concavae, extus leviter carinatae, membranaceae, usque ad 5 mm. longae. Flores parvi, albi. Sepala lateralia leviter falcata, obtusa, extus, prope apicem, carinata, trinervia, vix 5 mm. longa, 2 mm. lata. Sepalum dorsale sepalis lateralibus minus, ad apicem cucullatum et incrassatum vel carinatum, 4 mm. longum, 1.5 mm. latum, trinervium. Petala oblongi-lanceolata, uninnervia, obtusa, 3 mm. longa, 1 mm. lata. Labellum calcaratum, spatulatum vel cuneato-obovatum, ad apicem obscure trilobatum, in disco bicallosum. Lamina incrassata cum calcari 7 mm. longa, ad apicem 3 mm. lata. Calcar circiter 2 mm. longum, scrotiforme, emarginatum. Gynostemium brevissimum. Fructus 7 mm. longus.

Epiphyte. Stems curved in maturity, the base terete, leafless, but covered with remnants of sheaths, the apical portion foliose, up to 11.5 cm long. Roots fibrous, numerous. Leaves con-

spicuously and densely distichous, equitant, imbricating, sessile, lanceolate, obtuse, decreasing but little in size toward the apex, the largest up to 2 cm long, 6 mm wide, rigid, leathery, thick, flattened, rugose when dry; internodes very short. Flowers small, white, single in the axils of the leaves, about 8 mm across. Pedicellate ovary very slender, about 1.5 mm long, entirely covered by imbricated, triangular, acute bracts which are 3.5 to 4 mm long. Lateral sepals obliquely elliptic, slightly falcate, obtuse, about 5 mm long, 2.5 mm wide. Dorsal sepal narrowly oblong, obtuse, about 5 mm long, 1.75 mm wide, 3-nerved. Petals oblong-lanceolate, obtuse, about 4 mm long, 1.5 mm wide. Labellum simple, obovate, fleshy, about 4 mm long, obscurely trilobed, apex expanded, 2 mm wide, subacute, the very apex thickened beneath. Spur short, flattened, emarginate, about 2.5 mm long. Column very minute, about 1 mm long.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 82230 *Quisumbing*, January 24, 1931. The living plants were originally gathered by Mr. Maximo Ramos, botanical collector of the Bureau of Science, at Quezon National Park, Tayabas Province, growing on tree trunks. LEYTE, Dagami, *C. A. Wenzel*, 0159, 029, October 25, 1912 (type).

This species is closely related to *Microsaccus brevifolius* J. J. Sm., differing in habit and in the form of the sepals and petals.

ILLUSTRATIONS

PLATE 1

- FIG. 1. *Microsaccus Wenzelii* Ames, front view of a flower, $\times 2$.
2. *Microsaccus Wenzelii* Ames, side view of a flower, $\times 2$.
3. *Coelogyne Remediosae* sp. nov., front view of a flower, $\times 1$.
4. *Coelogyne Remediosae* sp. nov., side view of a flower, $\times 1$.
5. *Agrostophyllum saccatilabium* sp. nov., front view of a flower, $\times 4$.
6. *Agrostophyllum saccatilabium* sp. nov., side view of a flower, $\times 4$.
7. *Dendrobium Guerreroi* sp. nov., front view of a flower, $\times 1$.
8. *Dendrobium Guerreroi* sp. nov., side view of a flower, $\times 1$.
9. *Dendrobium auriculatum* sp. nov., front view of a flower, $\times 1$.
10. *Dendrobium auriculatum* sp. nov., side view of a flower, $\times 1$.
11. *Dendrochilum Weberi* Ames, front view of a flower, $\times 4$.
12. *Dendrochilum Weberi* Ames, side view of a flower, $\times 4$.
13. *Sarcochilus benguetensis* sp. nov., front view of a flower, $\times 2$.
14. *Sarcochilus benguetensis* sp. nov., side view of a flower, $\times 2$.

PLATE 2

- FIG. 1. *Gastrochilus calceolaris* D. Don, front view of a flower, $\times 2$.
2. *Gastrochilus calceolaris* D. Don, side view of a flower, $\times 2$.
3. *Gastrochilus calceolaris* D. Don, view of column, anther and labellum from above, $\times 4$.
4. *Cymbidium pubescens* Lindl., front view of a flower, $\times 1$.
5. *Cymbidium pubescens* Lindl., side view of a flower, $\times 1$.
6. *Phalaenopsis Lueddemanniana* Reichb. f. var. *purpurea* var. nov., front view of a flower, $\times 1$.
7. *Phalaenopsis Lueddemanniana* Reichb. f. var. *purpurea* var. nov., side view of a flower, $\times 1$.
8. *Vandopsis Davisii* sp. nov., front view of a flower, $\times 1$.
9. *Vandopsis Davisii* sp. nov., side view of a flower, $\times 1$.
10. *Vandopsis Davisii* sp. nov., front view of ovary, column and labellum, $\times 2$.
11. *Vandopsis Davisii* sp. nov., side view of column and labellum, $\times 2$.

PLATE 3

- Coelogyne Remediosae* sp. nov.: 1, dorsal sepal, $\times 2$; 2, lateral sepal, $\times 2$; 3, petal, $\times 2$; 4, labellum and column from above, $\times 2$; 5, side view of column and labellum, $\times 2$; 6, front view of column, $\times 2$; 7, view of anther from above, $\times 17$; 8, view of anther from below, $\times 17$; 9, side view of anther, $\times 17$; 10, two pollinia, $\times 17$.

PLATE 4

Dendrochilum Weberi Ames: 1, dorsal sepal, $\times 16$; 2, lateral sepal, $\times 16$; 3, petal, $\times 16$; 4, view of column and labellum from above (natural position), $\times 28$; 5, side view of column and labellum, $\times 28$; 6, view of labellum (expanded) from above $\times 36$; 7, front view of column, $\times 28$; 8, views of anther from above and from below, $\times 36$; 9, pollinia, $\times 28$.

PLATE 5

Agrostophyllum saccatilabium sp. nov.: 1, a spike showing floral bracts and buds, $\times 4$; 2, a floral bract, $\times 15$; 3, dorsal sepal viewed from within, $\times 12$; 4, lateral sepal viewed from without, $\times 12$; 5, outer view of petal, $\times 12$; 6, side view of column, and labellum, $\times 12$; 7, view of labellum from above (in natural position), $\times 12$; 8, front view of column with the labellum removed, $\times 12$; 9, view of anther from above, $\times 34$; 10, pollinia, $\times 52$.

PLATE 6

Dendrobium auriculatum sp. nov.: 1, portion of the stem with leaves, $\times 0.5$; 2, detail of the base of the leaf and its attachment, $\times 2$; 3, dorsal sepal, $\times 1$; 4, lateral sepal, spur, and pedicellate ovary, $\times 1$; 5, petal, $\times 1$; 6, view of column and labellum from above (natural position), $\times 1$; 7, view of labellum (expanded) from above, $\times 1$; 8, side view of ovary, column, spur, and labellum (natural position), $\times 1$; 9, front view of column with foot, $\times 2$; 10, side view of pedicellate ovary, column, and spur with lateral sepals removed, $\times 2$; 11, view of anther from above, $\times 6$; 12, view of anther from below, $\times 6$; 13, pollinia, $\times 6$.

PLATE 7

Dendrobium Guerreroi sp. nov.: 1, dorsal sepal, $\times 2$; 2, lateral sepal and pedicellate ovary, $\times 2$; 3, petal, $\times 2$; 4, side view of ovary, column, and labellum, $\times 2$; 5, front view of column and labellum (natural position), $\times 2$; 6, view of (extended) labellum from above, $\times 2$; 7, side view of ovary and column with anther, $\times 4$; 8, front view of column with foot, $\times 4$; 9, view of anther from above, $\times 12$; 10, view of anther from below, $\times 12$; 11, two pollinia, $\times 12$.

PLATE 8

Cymbidium pubescens Lindl.: 1, dorsal sepal, $\times 3$; 2, petal, $\times 3$; 3, lateral sepal, $\times 3$; 4, view of column and expanded labellum from above, $\times 4$; 5, side view of portion of ovary, column, and labellum, (natural position), $\times 4$; 6, view of anther from above, $\times 15$; 7, view of anther from below, $\times 15$; 8, pollinia, $\times 30$.

PLATE 9

Sarcochilus benguetensis sp. nov.: 1, dorsal sepal, $\times 12$; 2, lateral sepal, $\times 12$; 3, petal, $\times 15$; 4, side view of column, labellum and spur, $\times 12$; 5, view of labellum with side lobes expanded from above, $\times 8$; 6, front view of column and anther, $\times 15$; 7, view of anther from below, $\times 28$; 8, pollinia, $\times 28$.

PLATE 10

Phalaenopsis Lueddemanniana Reichb. f. var. *purpurea* var. nov.: 1, dorsal sepal, $\times 2$; 2, petal, $\times 2$; 3, lateral sepal, $\times 2$; 4, view of column and labellum from above (natural position), $\times 4$; 5, view of labellum (expanded) from above, $\times 4$; 6, side view of column and labellum (natural position), $\times 4$; 7, views of anther from below and from above, $\times 5$; 8, pollinia, $\times 6$.

PLATE 11

Gastrochilus calceolaris D. Don: 1, dorsal sepal, $\times 4$; 2, petal, $\times 4$; 3, lateral sepal, $\times 4$; 4, side view of column and labellum, $\times 7$; 5, view of column and labellum from above, $\times 7$; 6, view of anther from above, $\times 15$; 7, view of anther from below, $\times 15$; 8, two pollinia, $\times 28$.

PLATE 12

Vandopsis Davisii sp. nov.: 1, dorsal sepal, $\times 3$; 2, petal, $\times 3$; 3, lateral sepal, $\times 3$; 4, side view of portion of ovary, column with anther and labellum, $\times 5$; 5, front view of column, and labellum, $\times 5$; 6, view of labellum from above with the lateral lobes slightly expanded, $\times 5$; 7, view of anther from above, $\times 15$; 8, view of anther from below, $\times 15$; 9, pollinia, $\times 15$; 10, fruit, $\times 1$.

PLATE 13

Microsaccus Wenzlii Ames: 1, habit of the plant with one flower, $\times 1$; 2, dorsal sepal, $\times 7.5$; 3, lateral sepal, $\times 7.5$; 4, petal, $\times 7.5$; 5, side view of ovary, column, and labellum, $\times 7.5$; 6, view of spur, column with anther removed, and labellum from above, $\times 7.5$; 7, view of anther from above, $\times 13$; 8, view of anther from below, $\times 13$; 9, pollinia, $\times 11$.

PLATE 14

Coelogyne Remediosae sp. nov.: habit, very much reduced, and flower, reduced.

PLATE 15

FIG. 1. *Dendrochilum Weberi* Ames: habit, very much reduced.
2. *Dendrochilum Weberi* Ames: flowers and portion of plant, very slightly enlarged.

PLATE 16

Agrostophyllum saccatilabium sp. nov.: habit, very much reduced.

PLATE 17

Agrostophyllum saccatilabium sp. nov.: inflorescence and leaf-bases, slightly enlarged.

PLATE 18

FIG. 1. *Dendrobium auriculatum* sp. nov.: habit, very much reduced.
2. *Dendrobium auriculatum* sp. nov.: flower, slightly enlarged.

PLATE 19

Dendrobium Guerreroi sp. nov.: habit, very much reduced.

PLATE 20

Dendrobium Guerreroi sp. nov.: flowers, slightly reduced.

PLATE 21

Cymbidium pubescens Lindl.; habit, very much reduced.

PLATE 22

Cymbidium pubescens Lindl.; flowers and raceme, almost natural size.

PLATE 23

Sarcophilus benguetensis sp. nov.; habit, very much reduced.

PLATE 24

FIG. 1. *Phalaenopsis Lueddemanniana* Reichb. f. var. *purpurea* var. nov.; habit, very much reduced.
2. *Phalaenopsis Lueddemanniana* Reichb. f. var. *purpurea* var. nov.; flower, slightly enlarged.

PLATE 25

Gastrochilus calceolaris D. Don; habit, much reduced.

PLATE 26

Vandopsis Davisii sp. nov.; habit, very much reduced.

PLATE 27

Vandopsis Davisii sp. nov.; flowering raceme, slightly reduced.

PLATE 28

FIG. 1. *Microsaccus Wenzelii* Ames; habit, very slightly enlarged.
2. *Microsaccus Wenzelii* Ames; tops of plants, each with a flower, enlarged about thrice natural size.

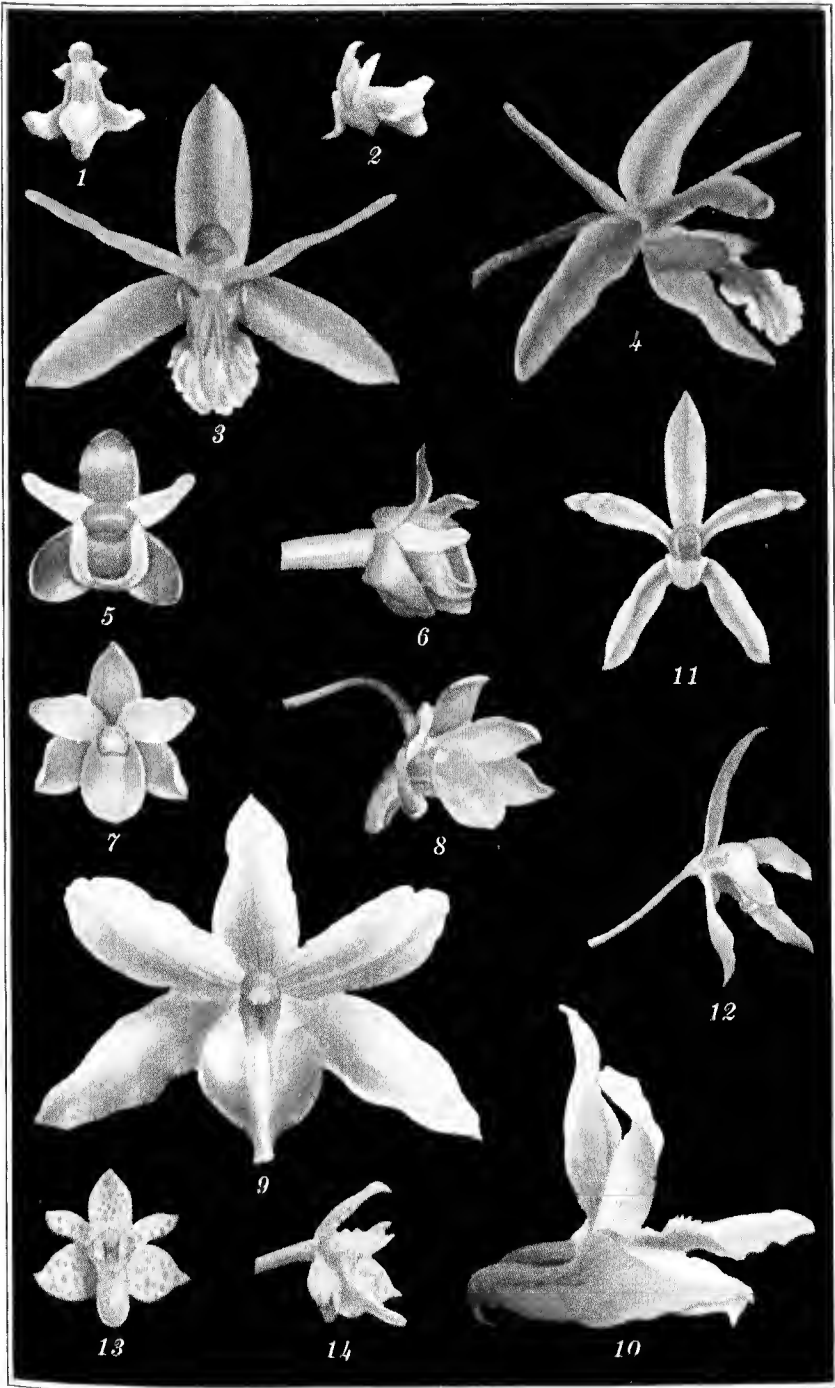
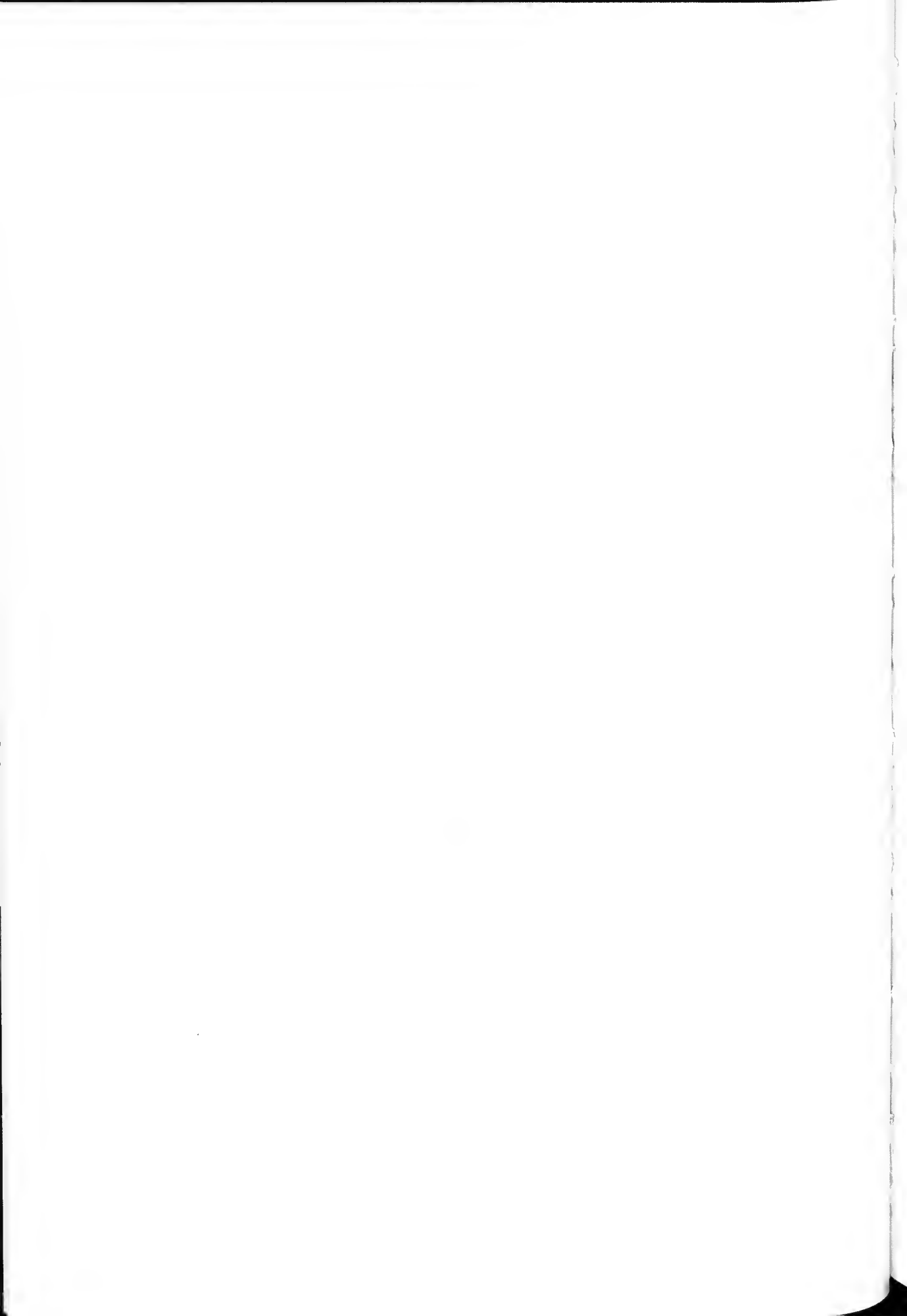


PLATE 1.



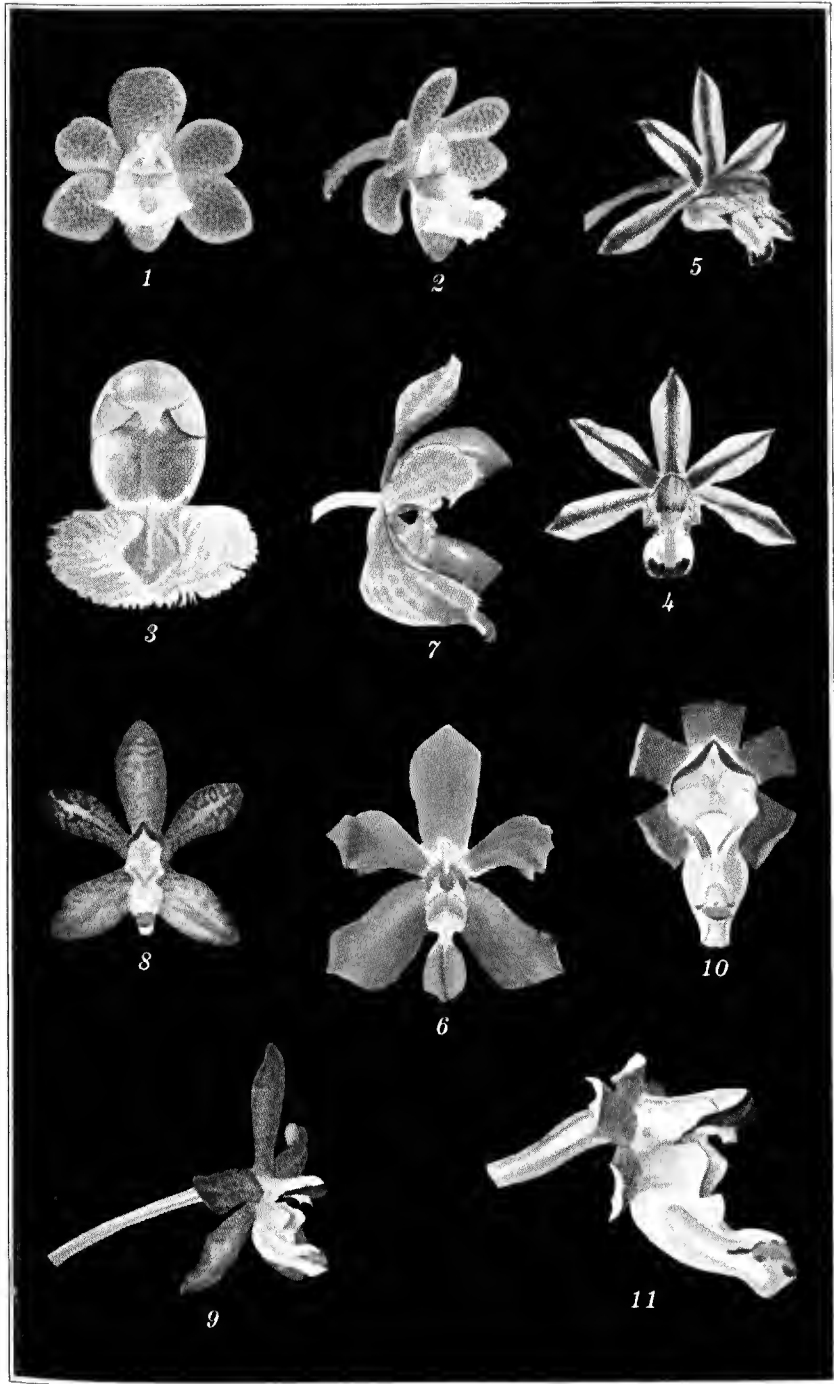
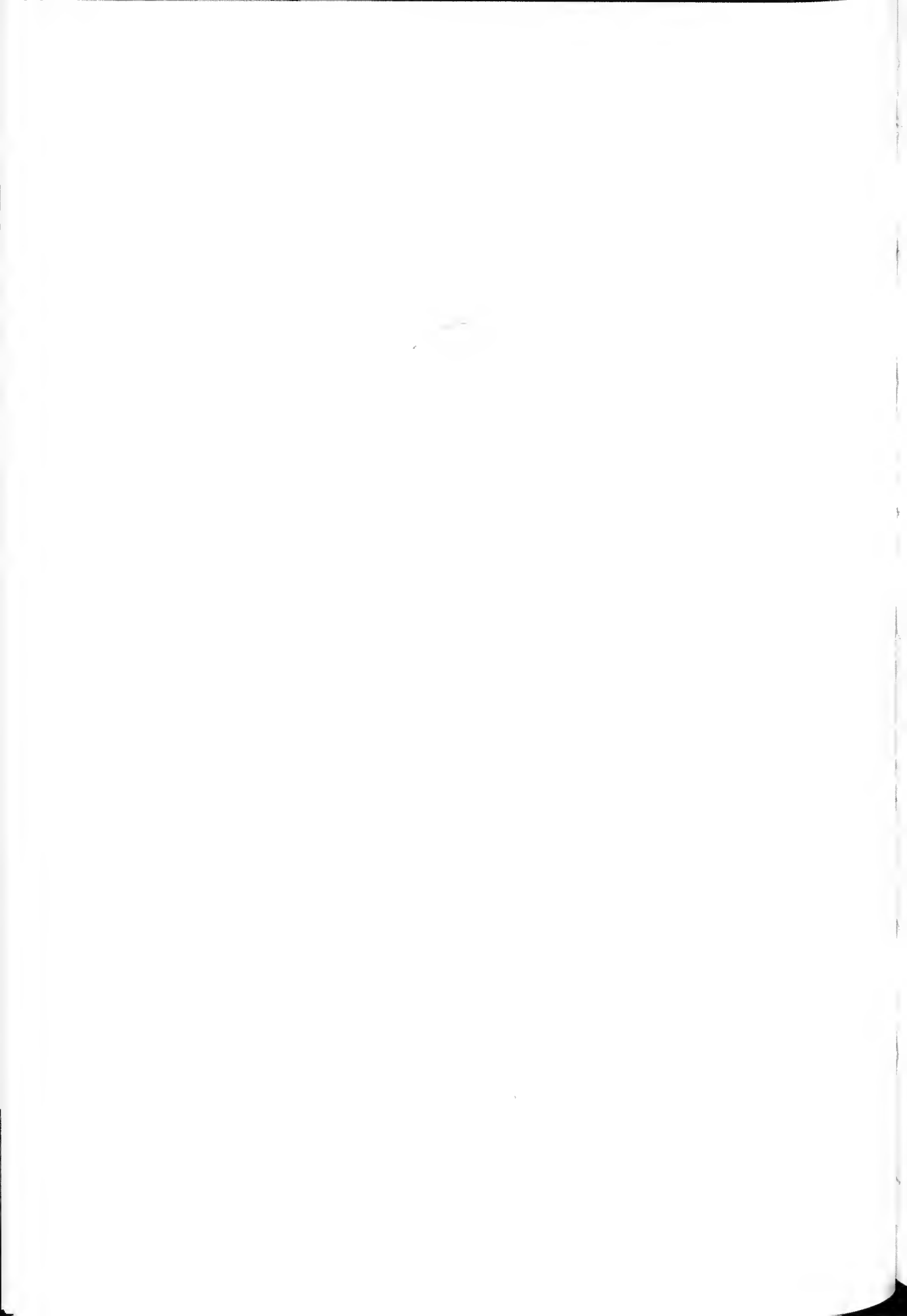


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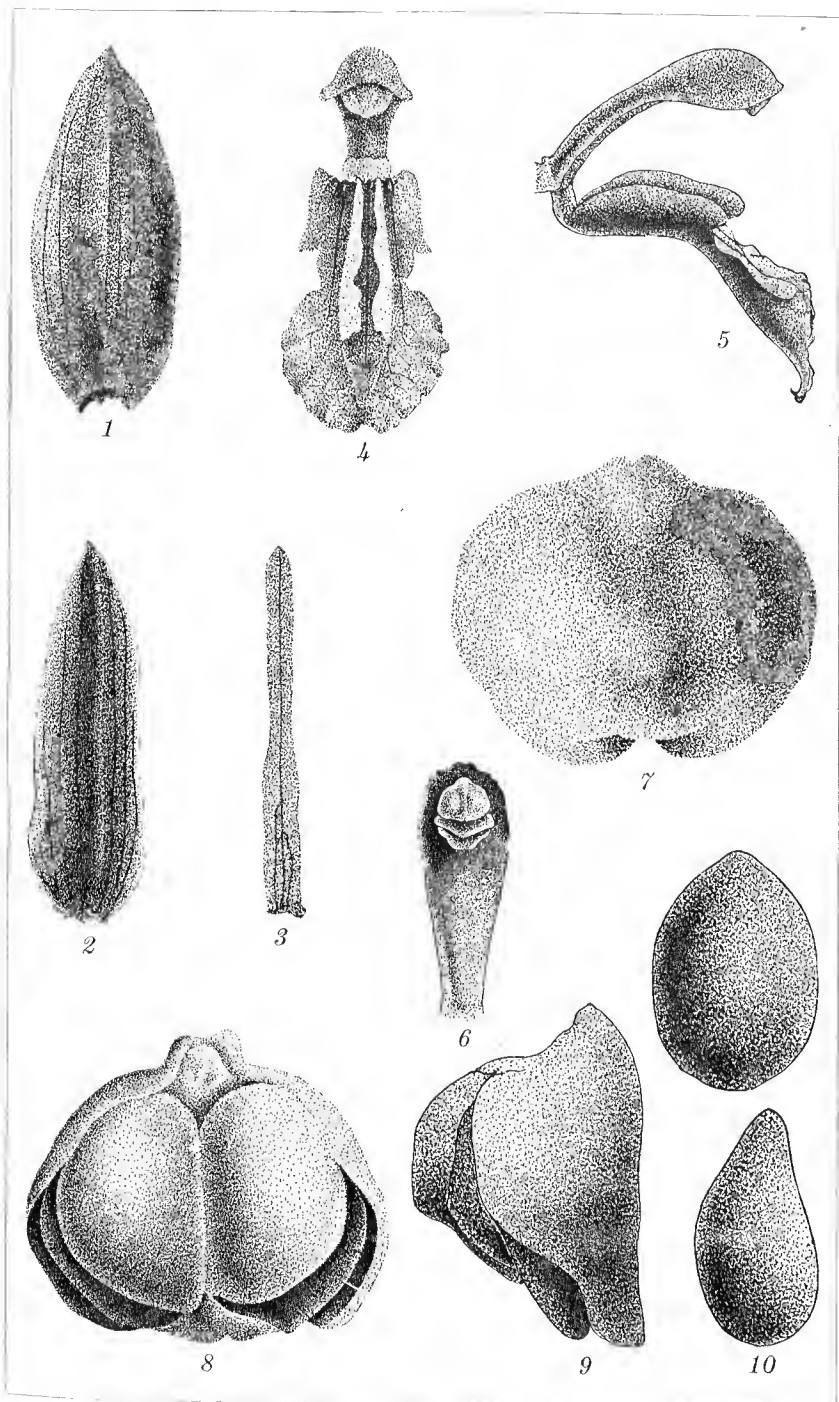


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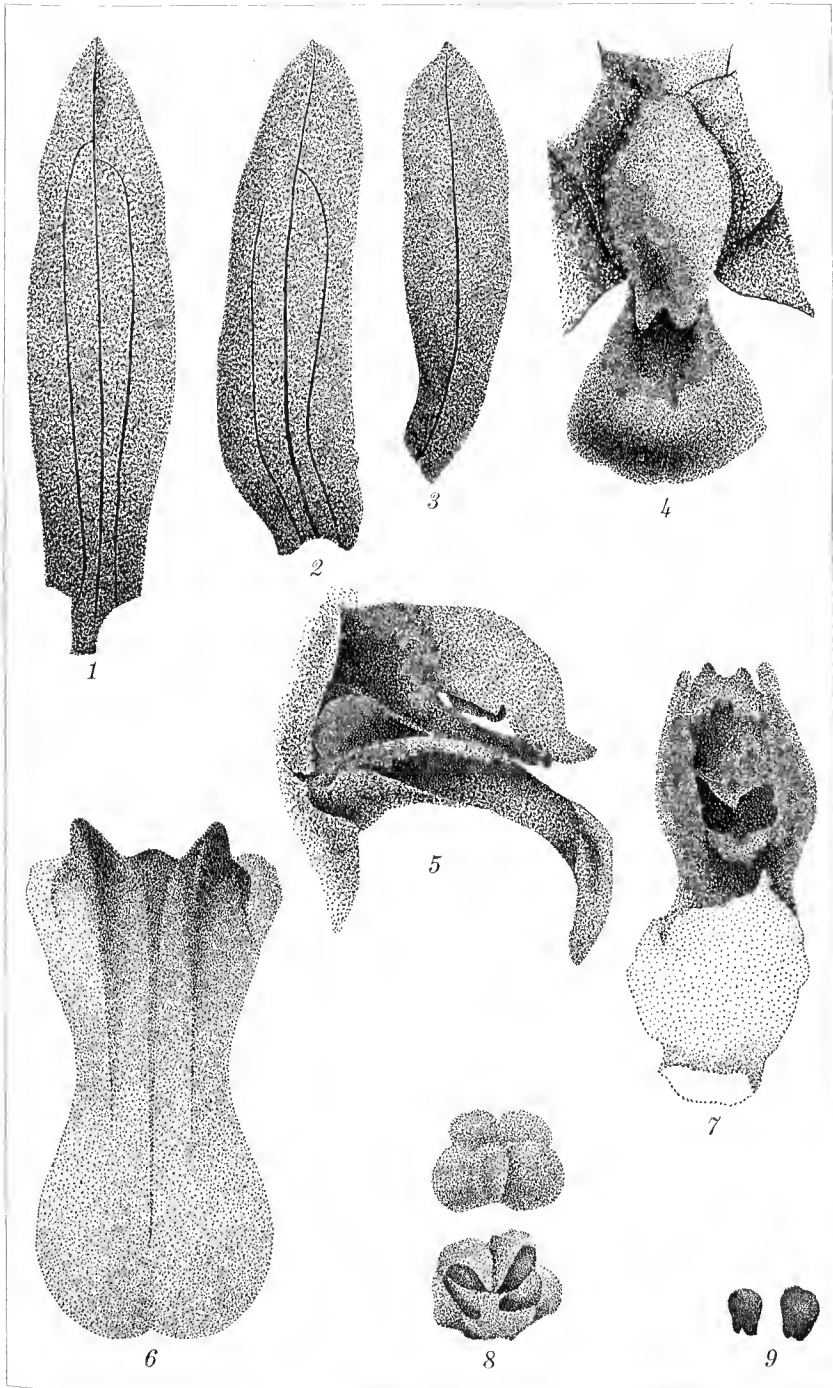
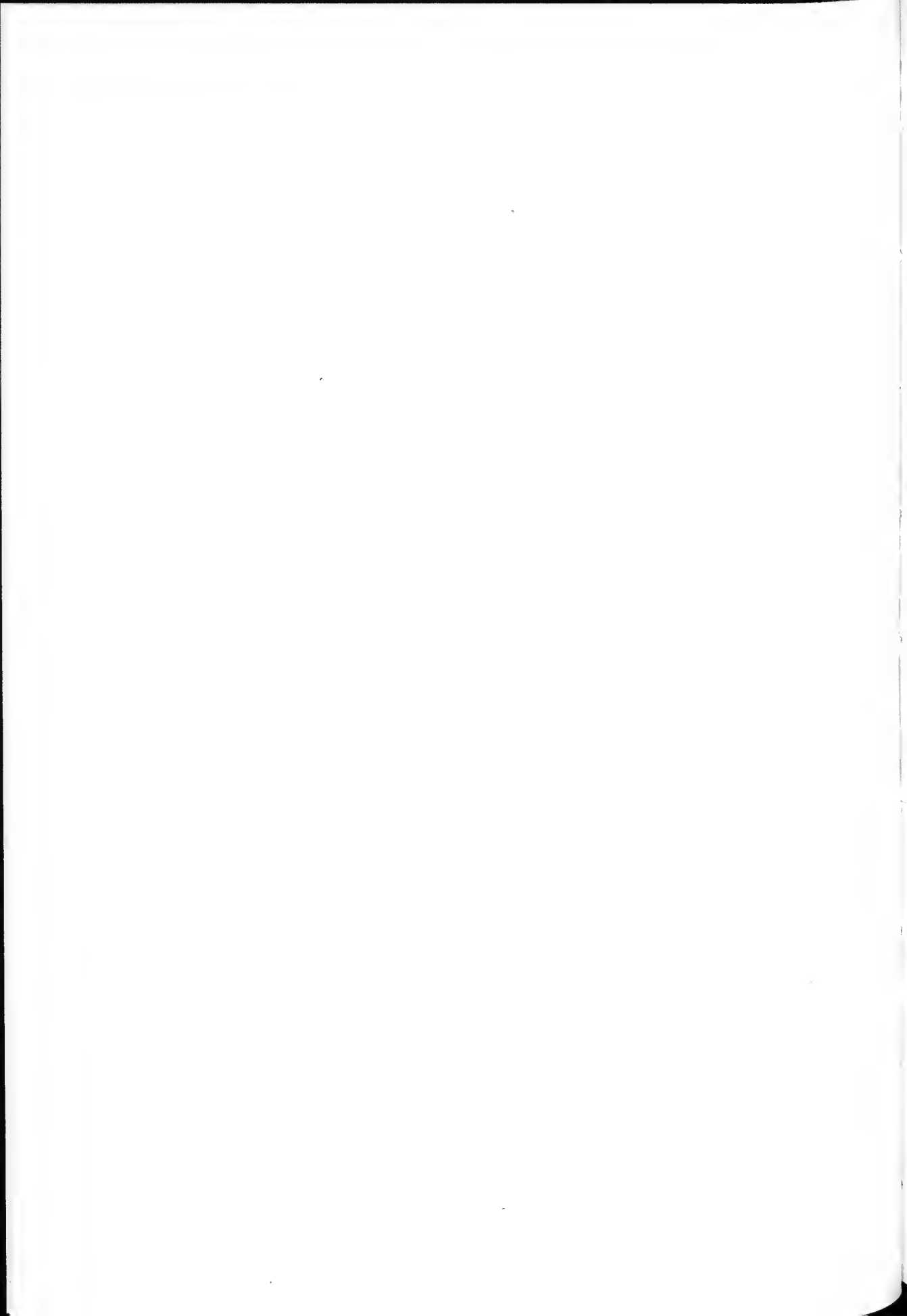


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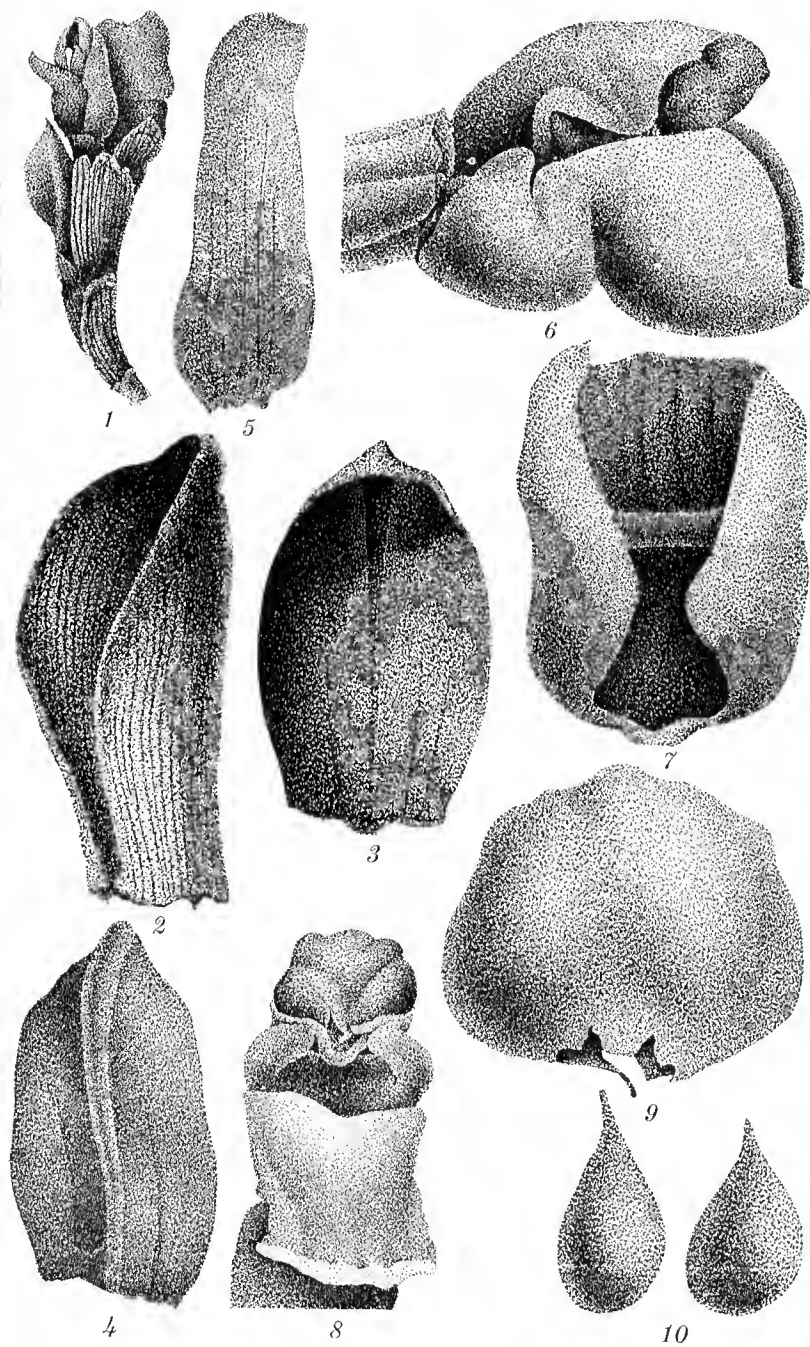
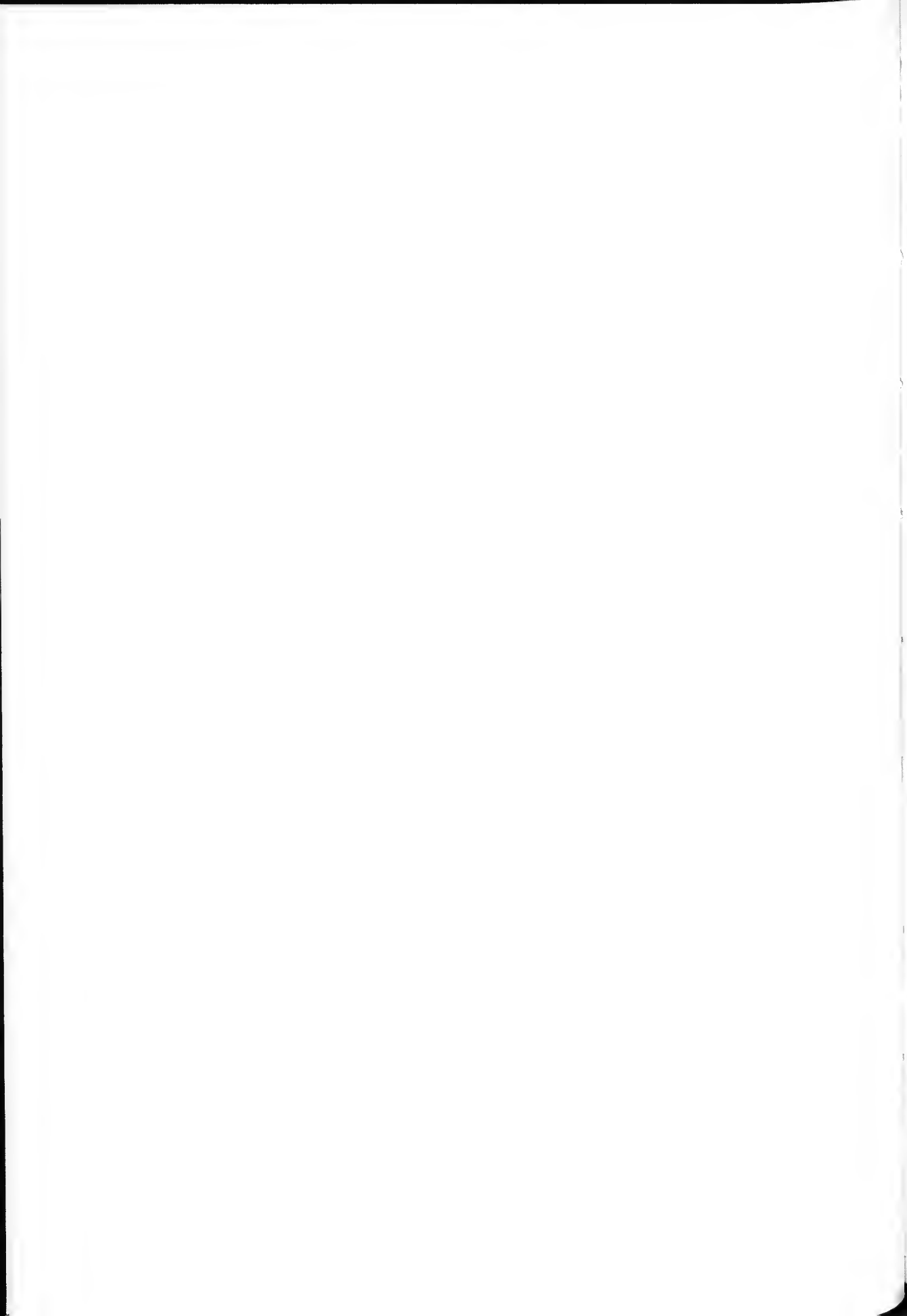


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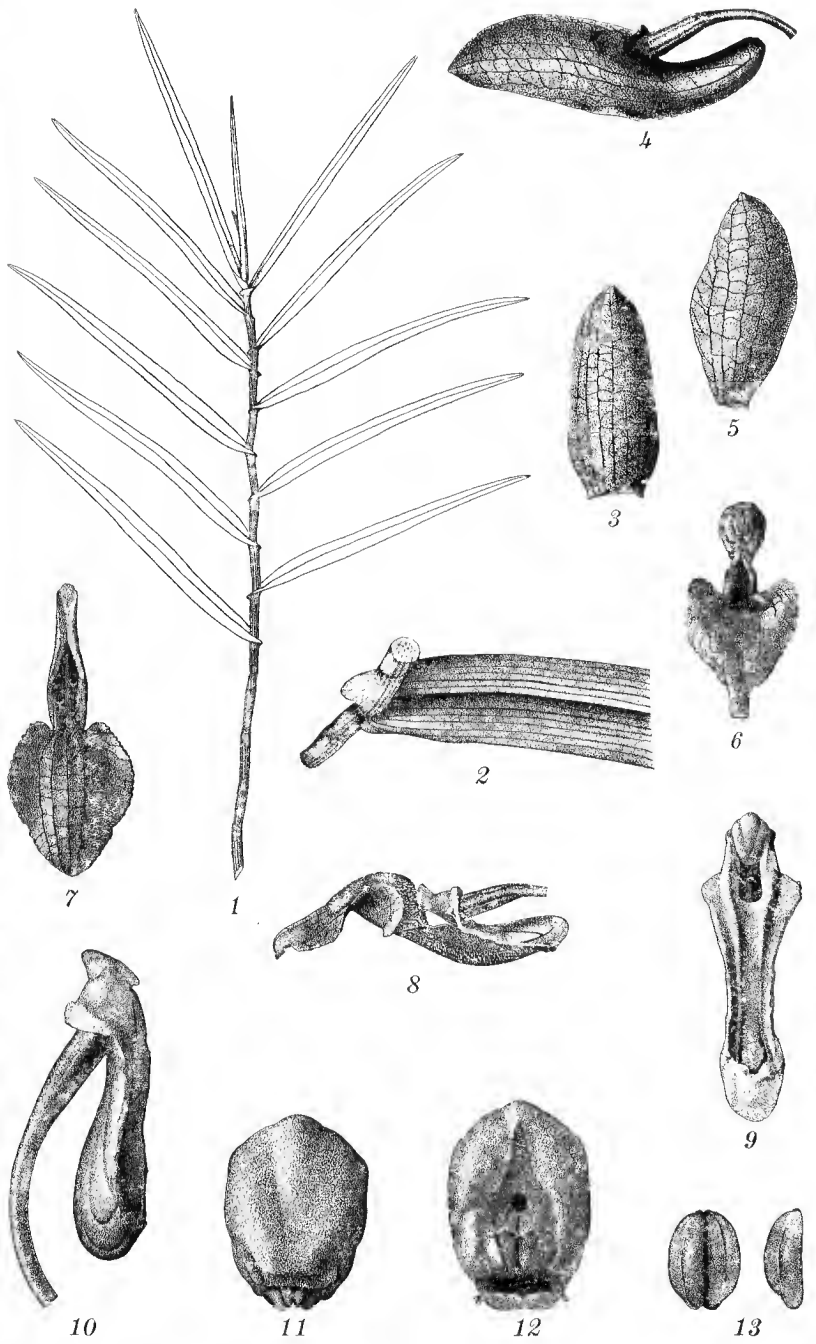


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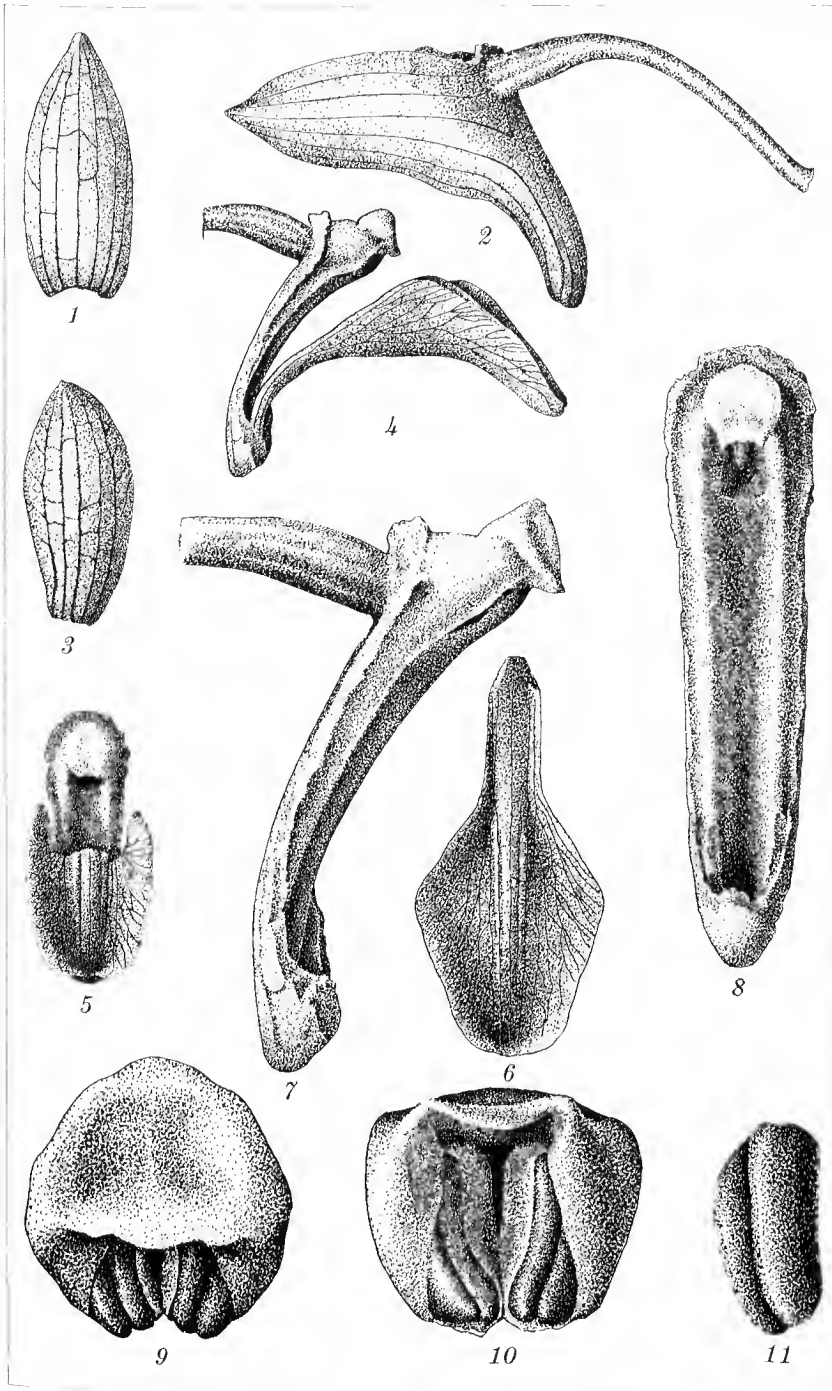
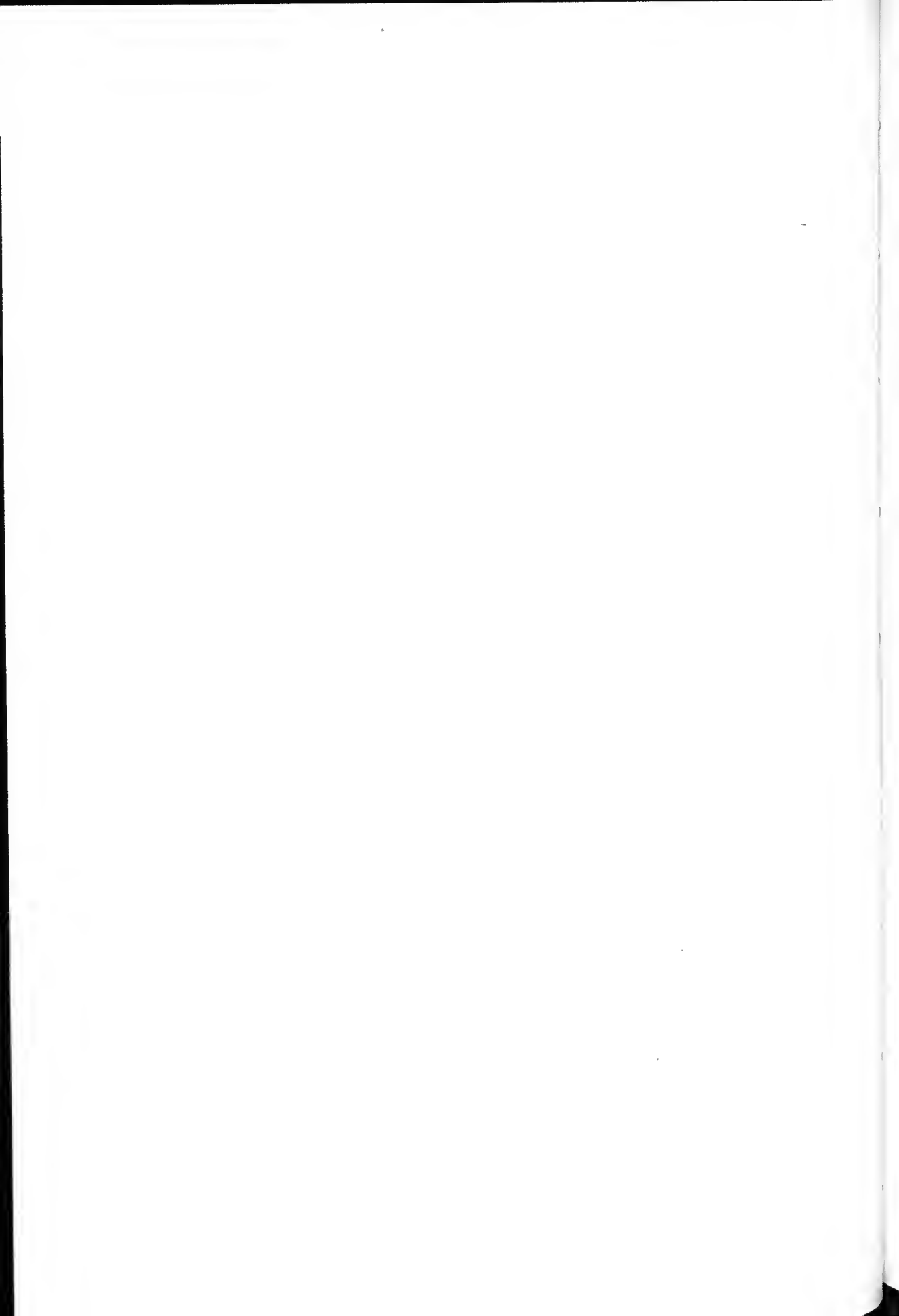


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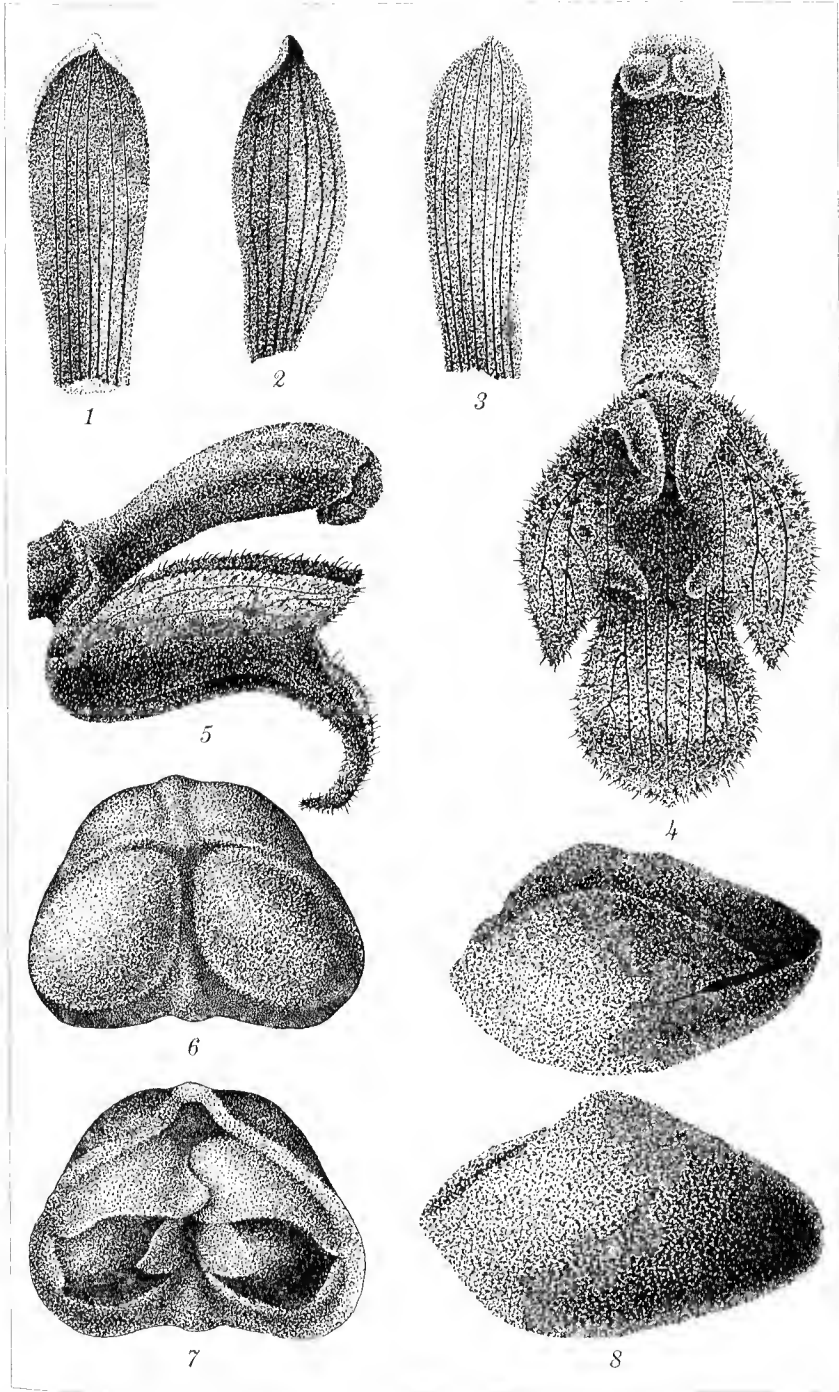
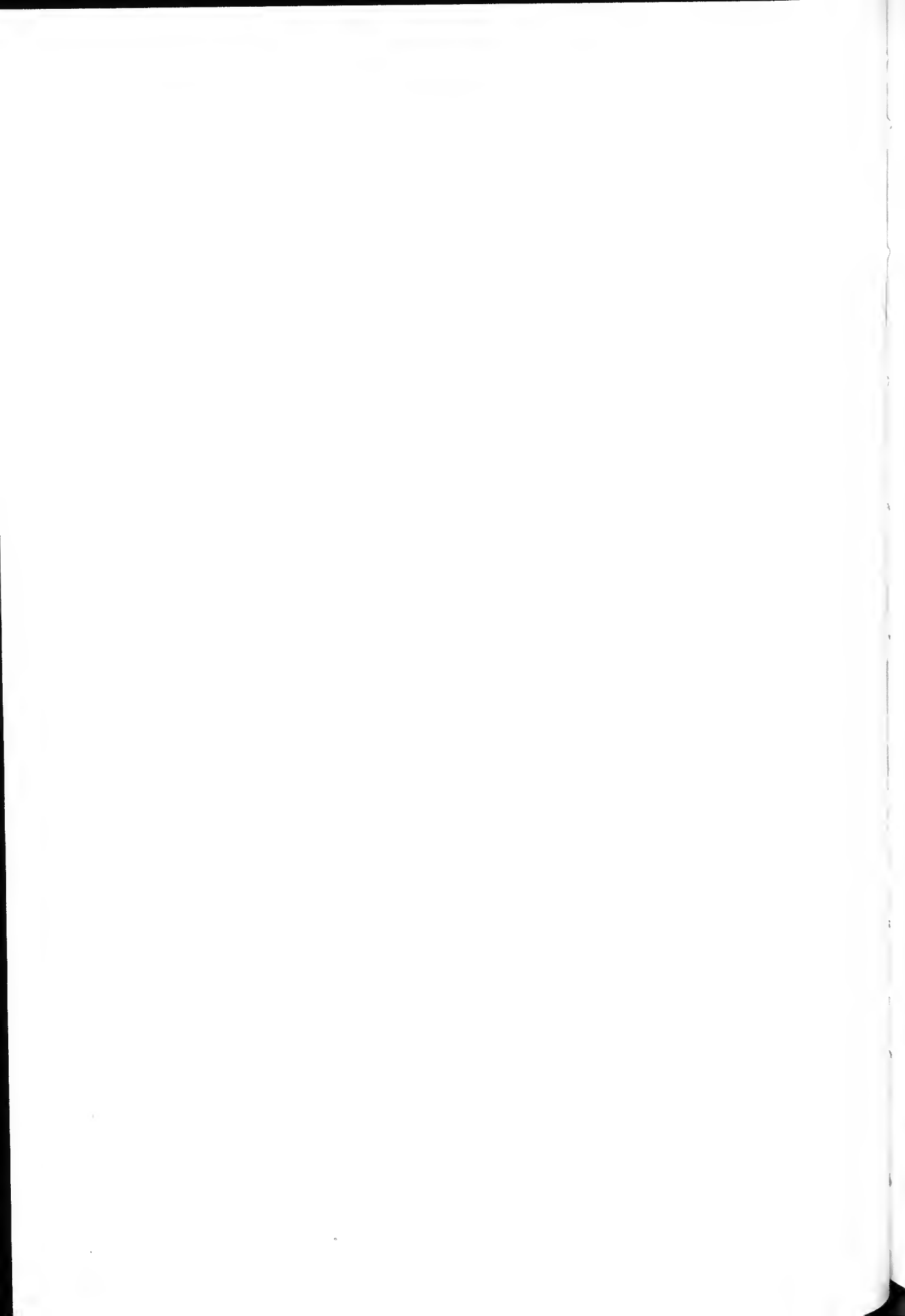


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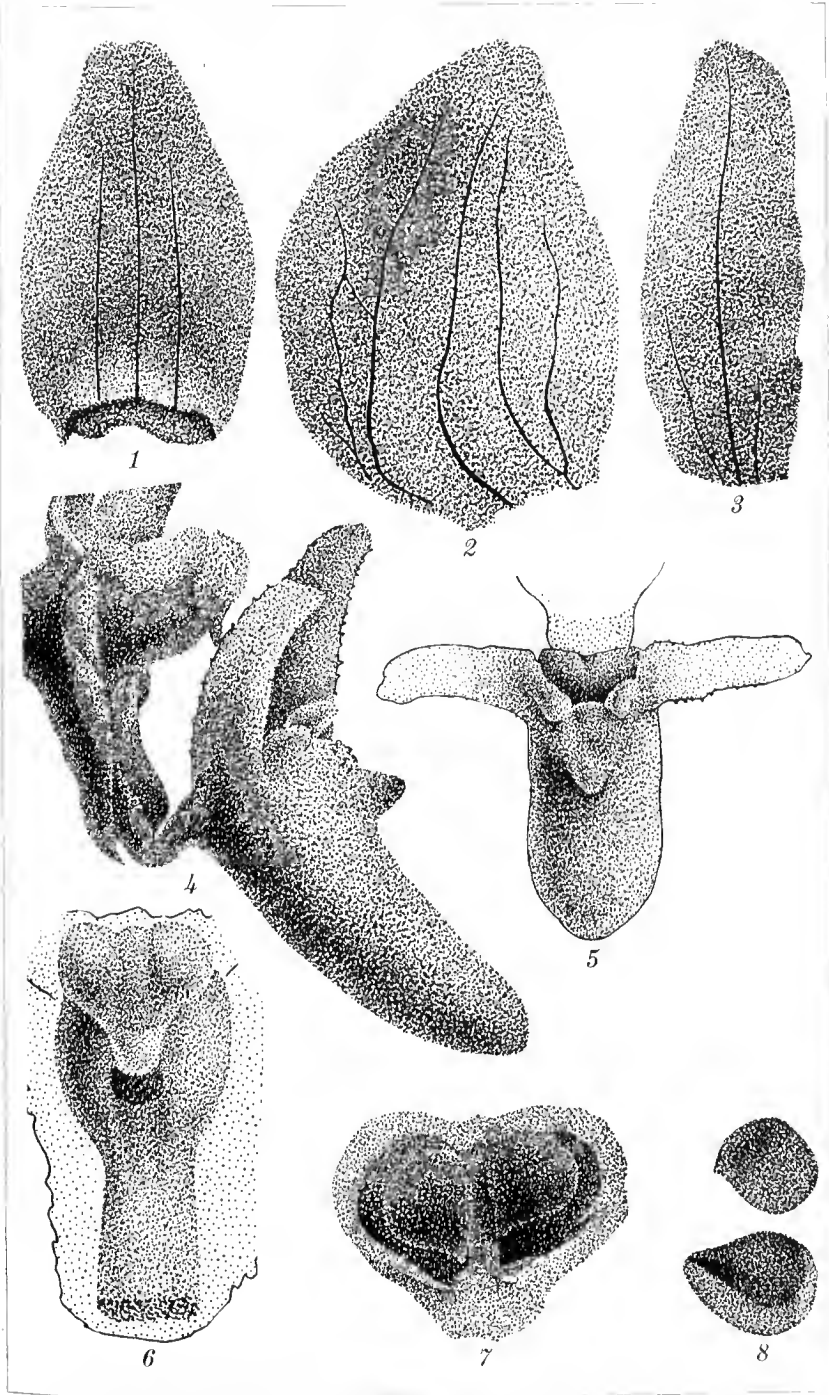
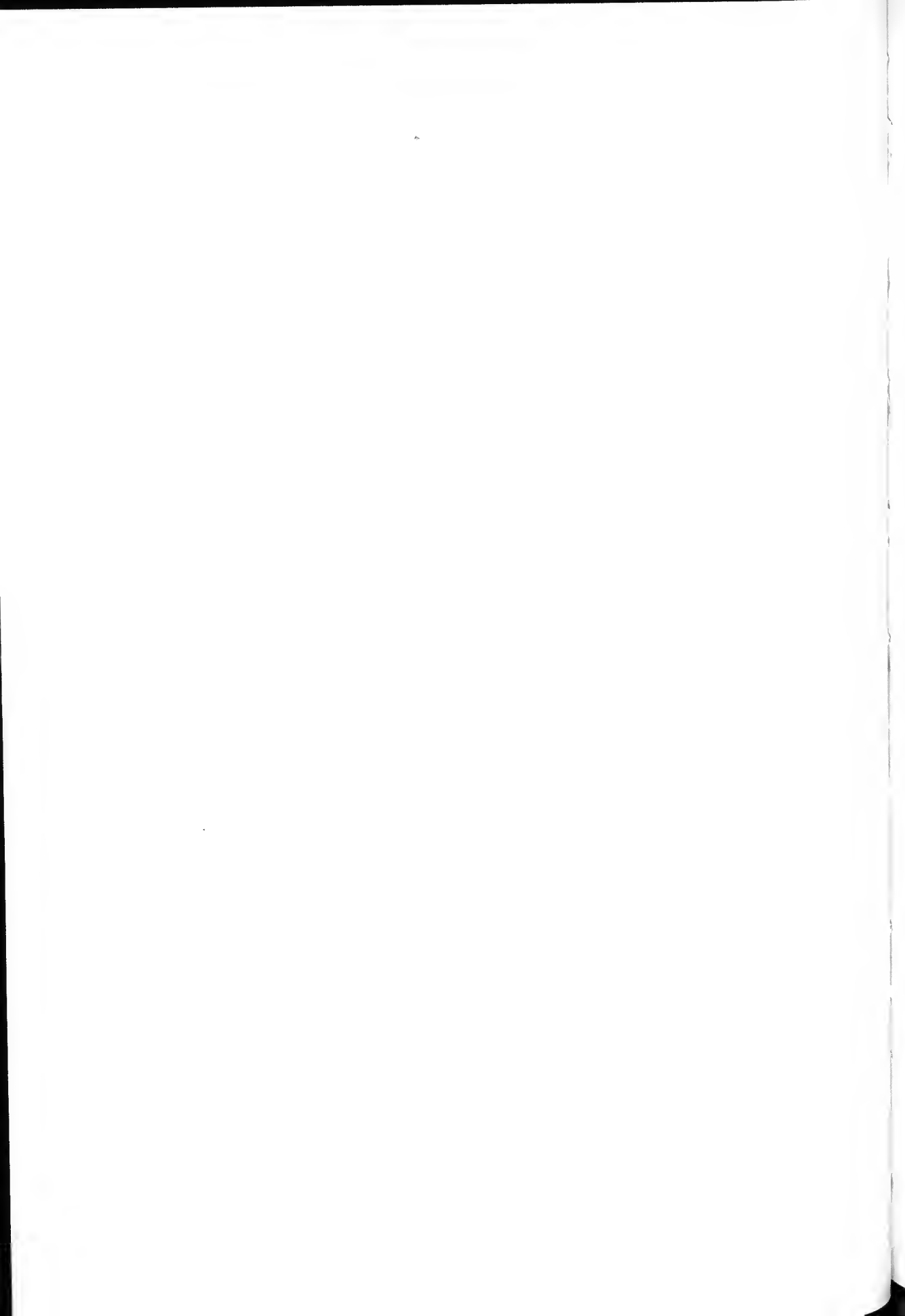


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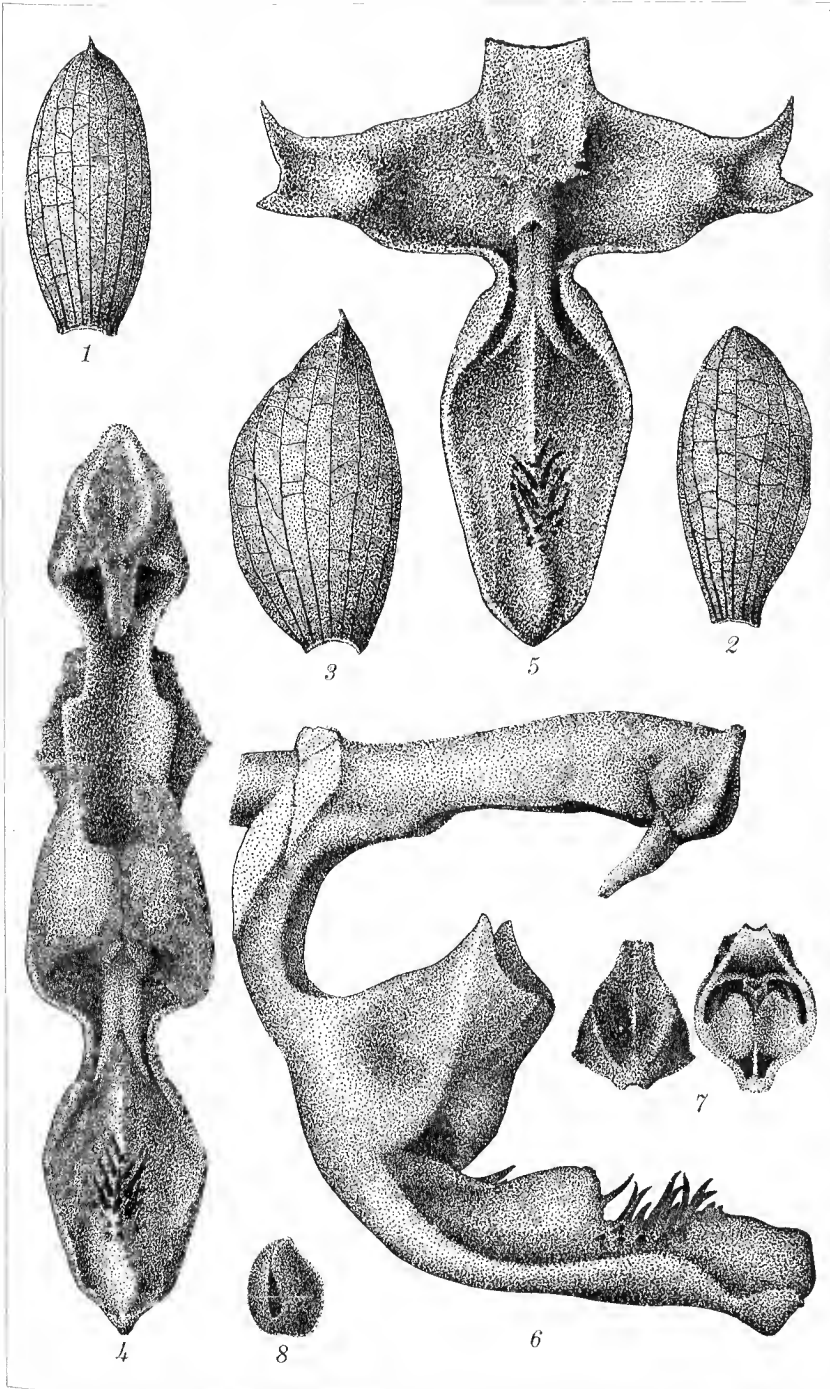
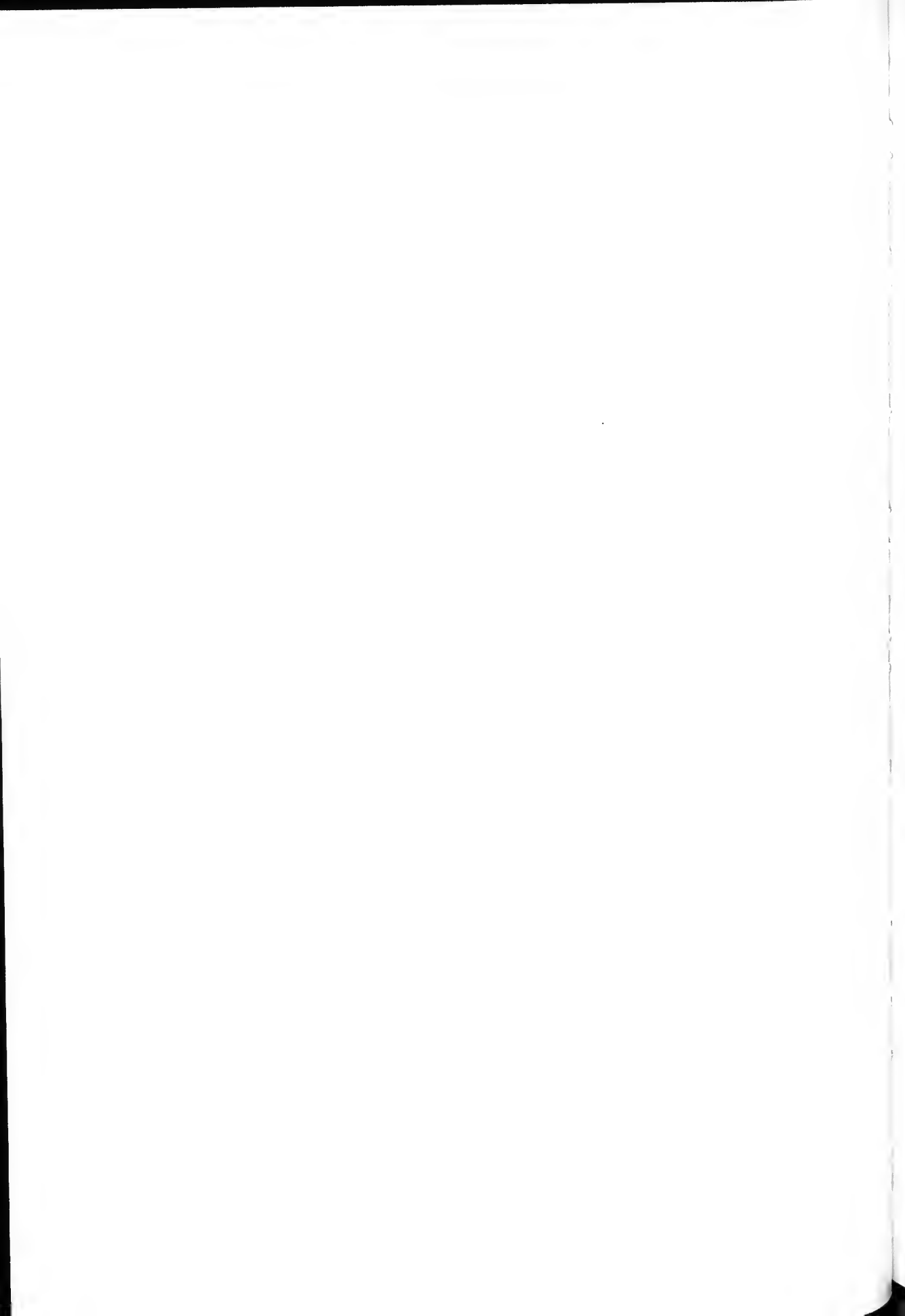


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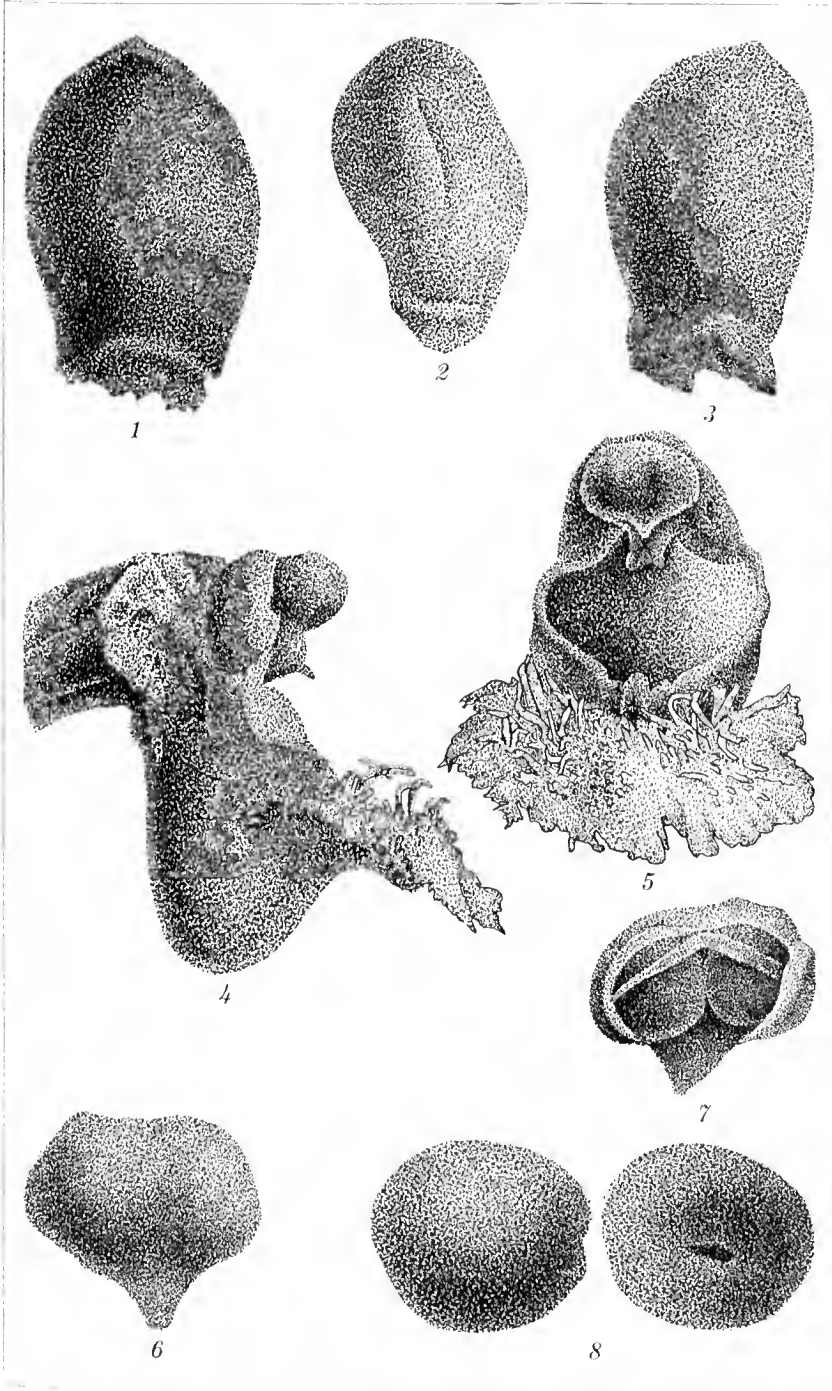
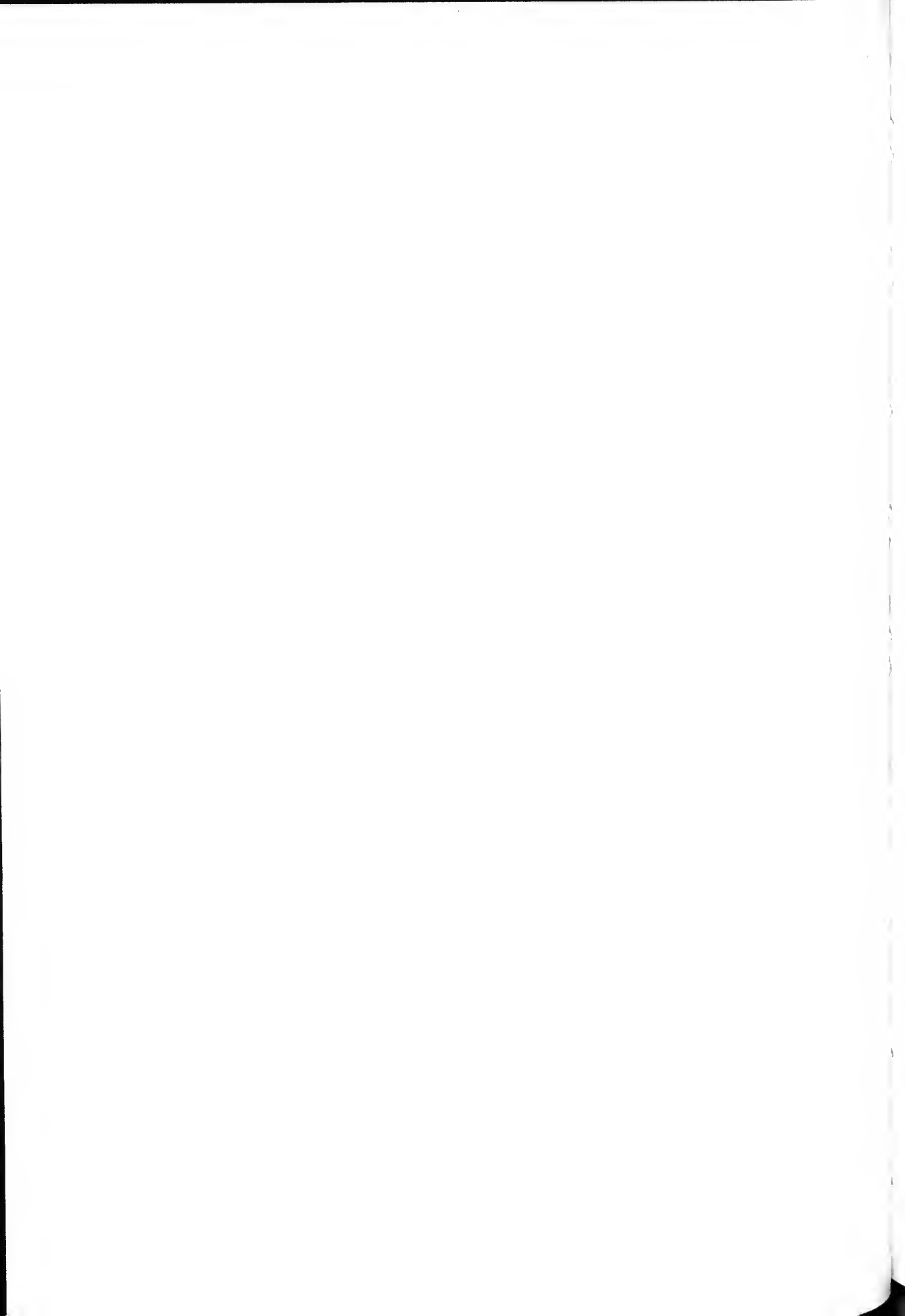


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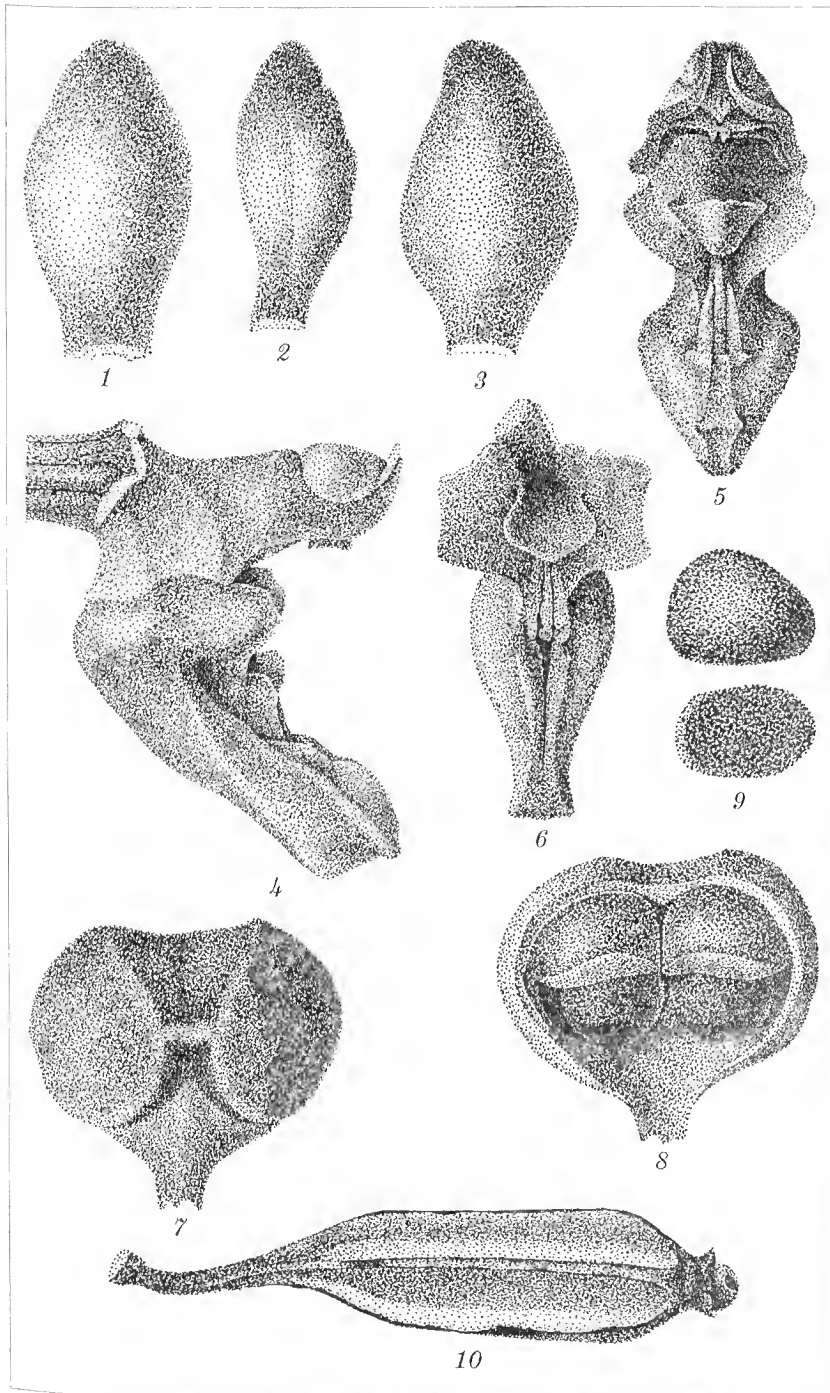
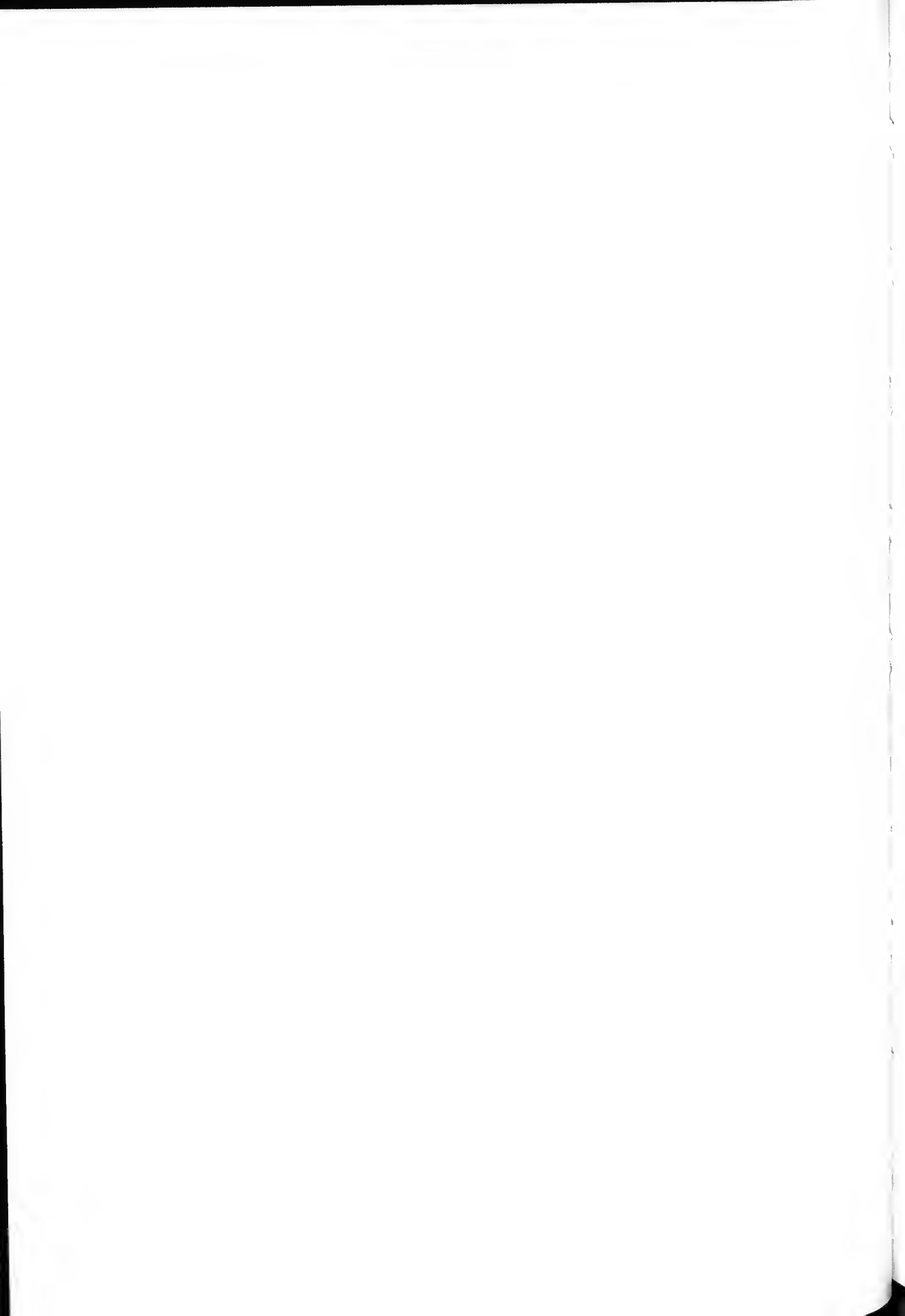


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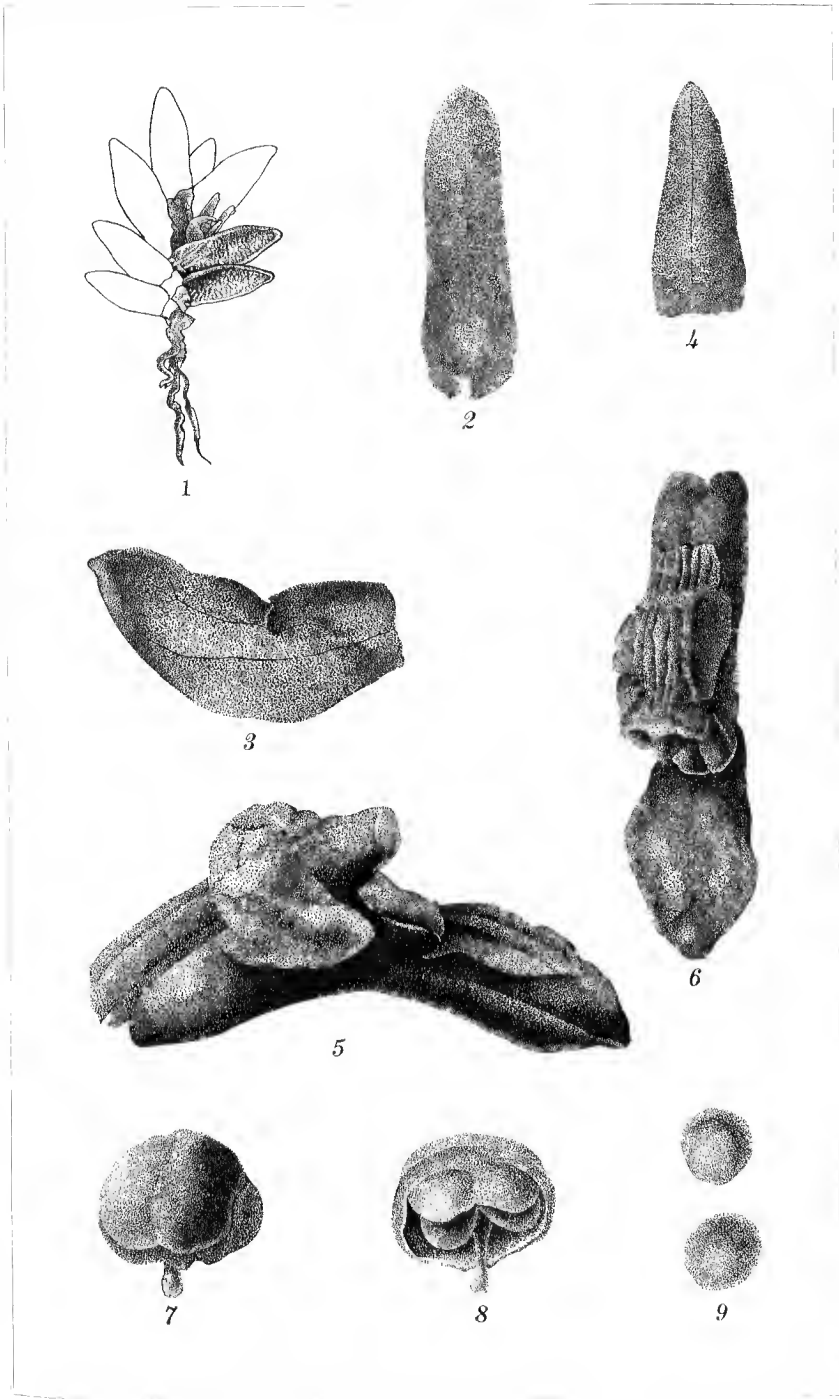


PLATE 13.





PLATE 14.

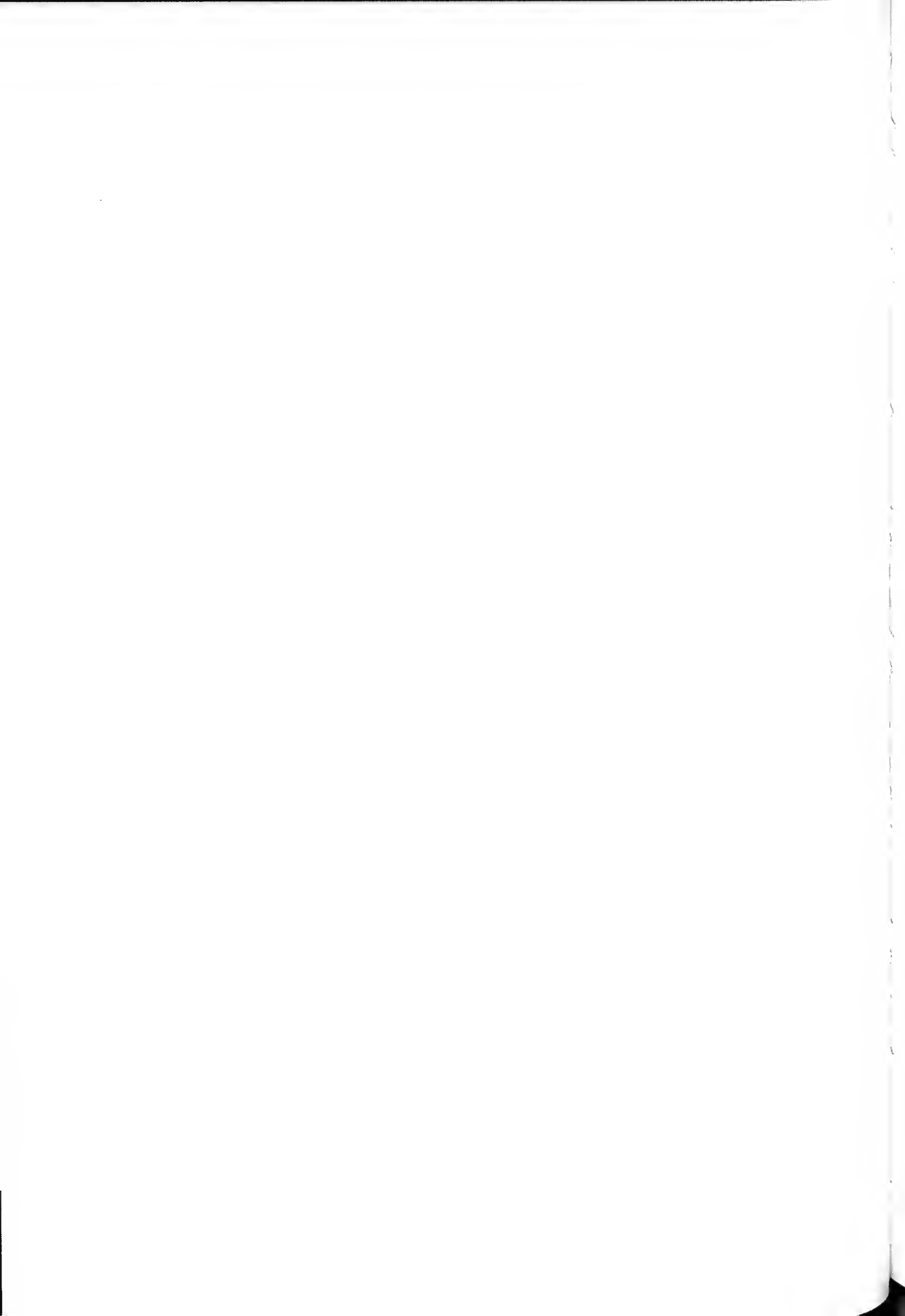




PLATE 15.

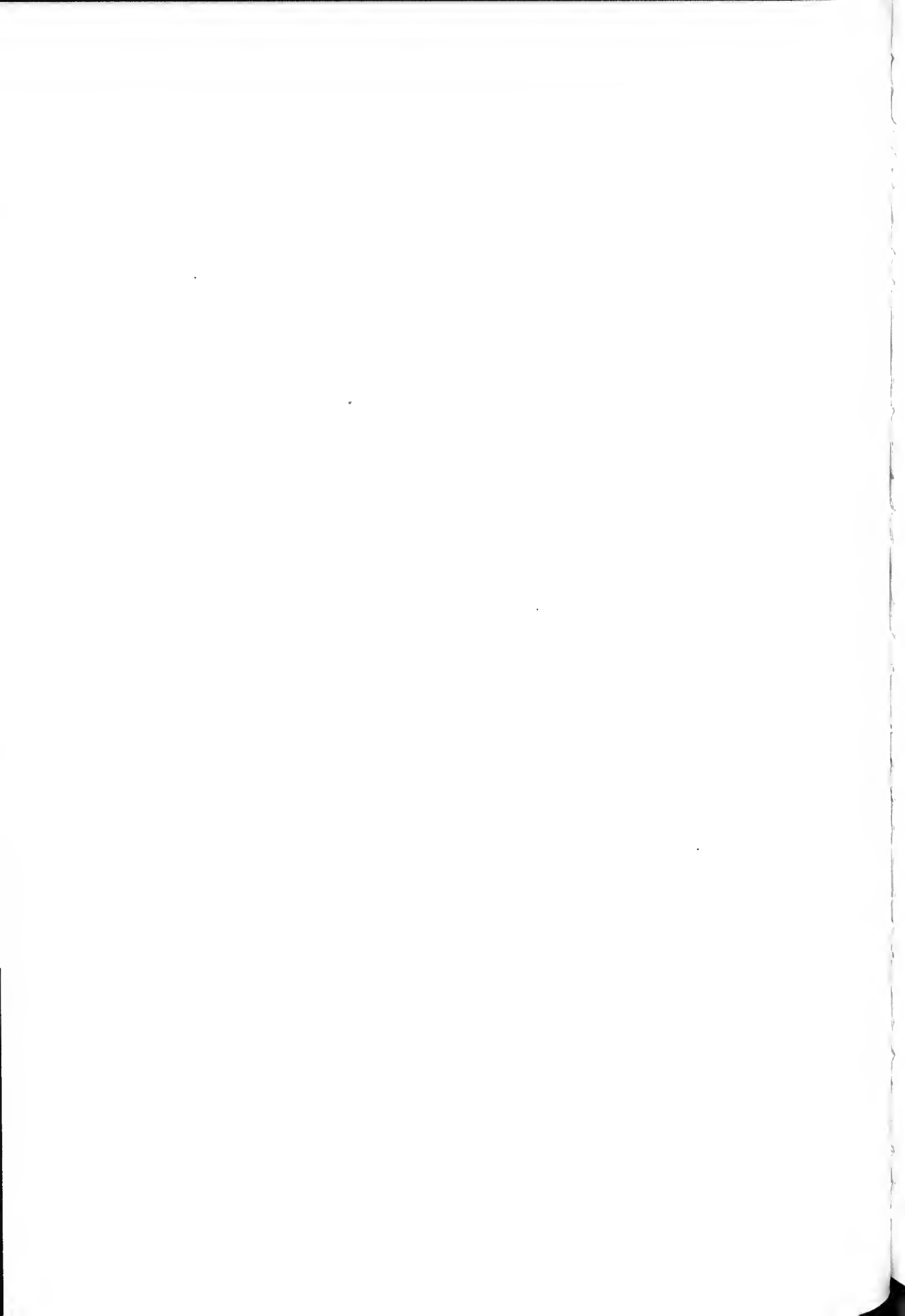




PLATE 16.





PLATE 17.



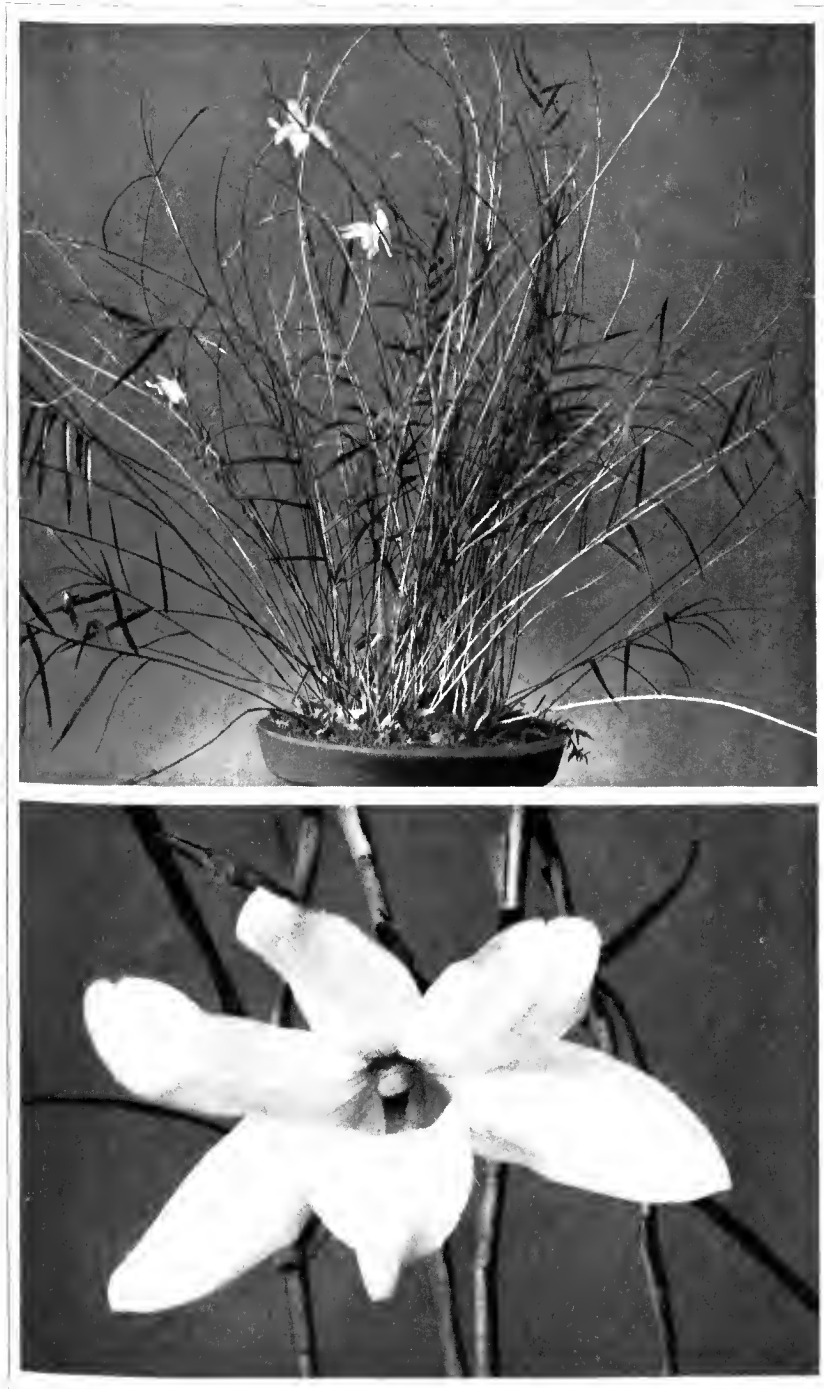


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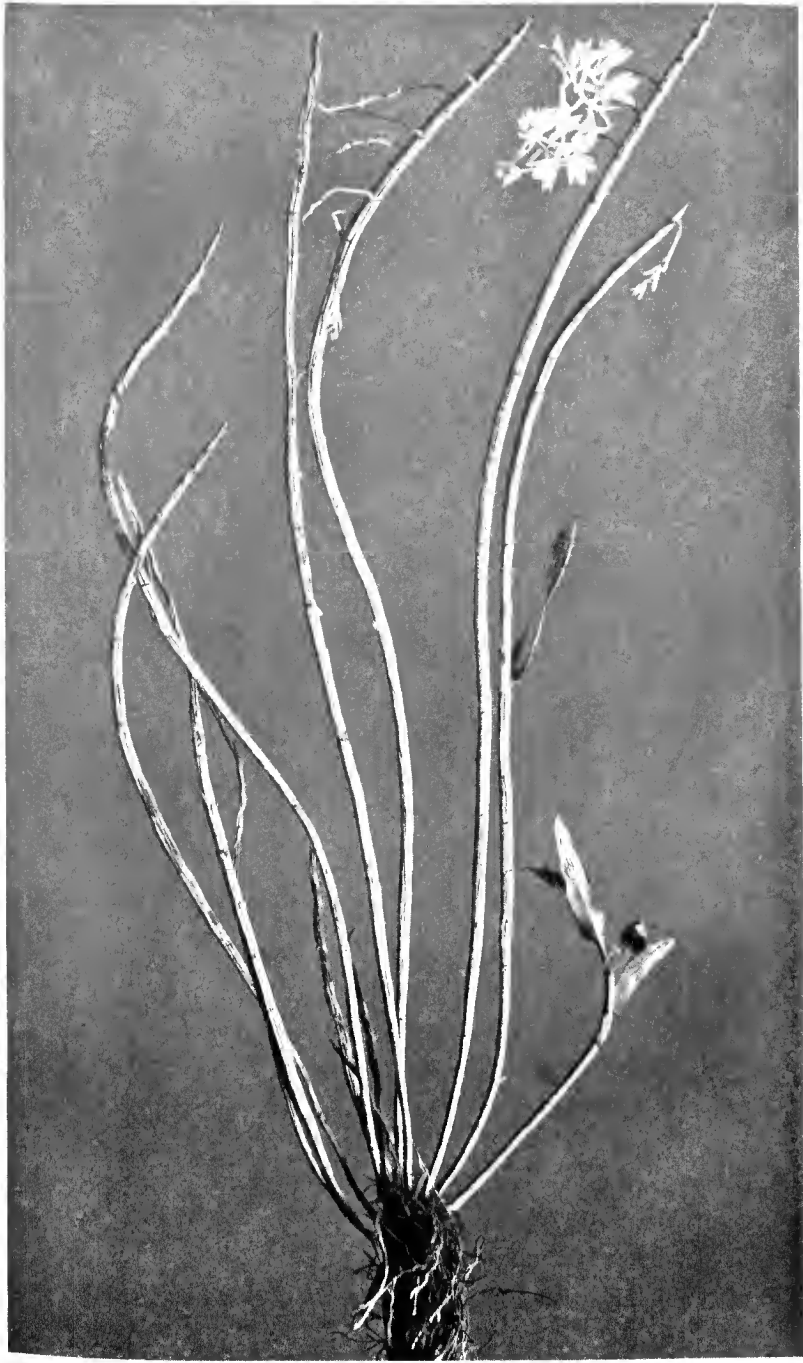


PLATE 19.





PLATE 20.

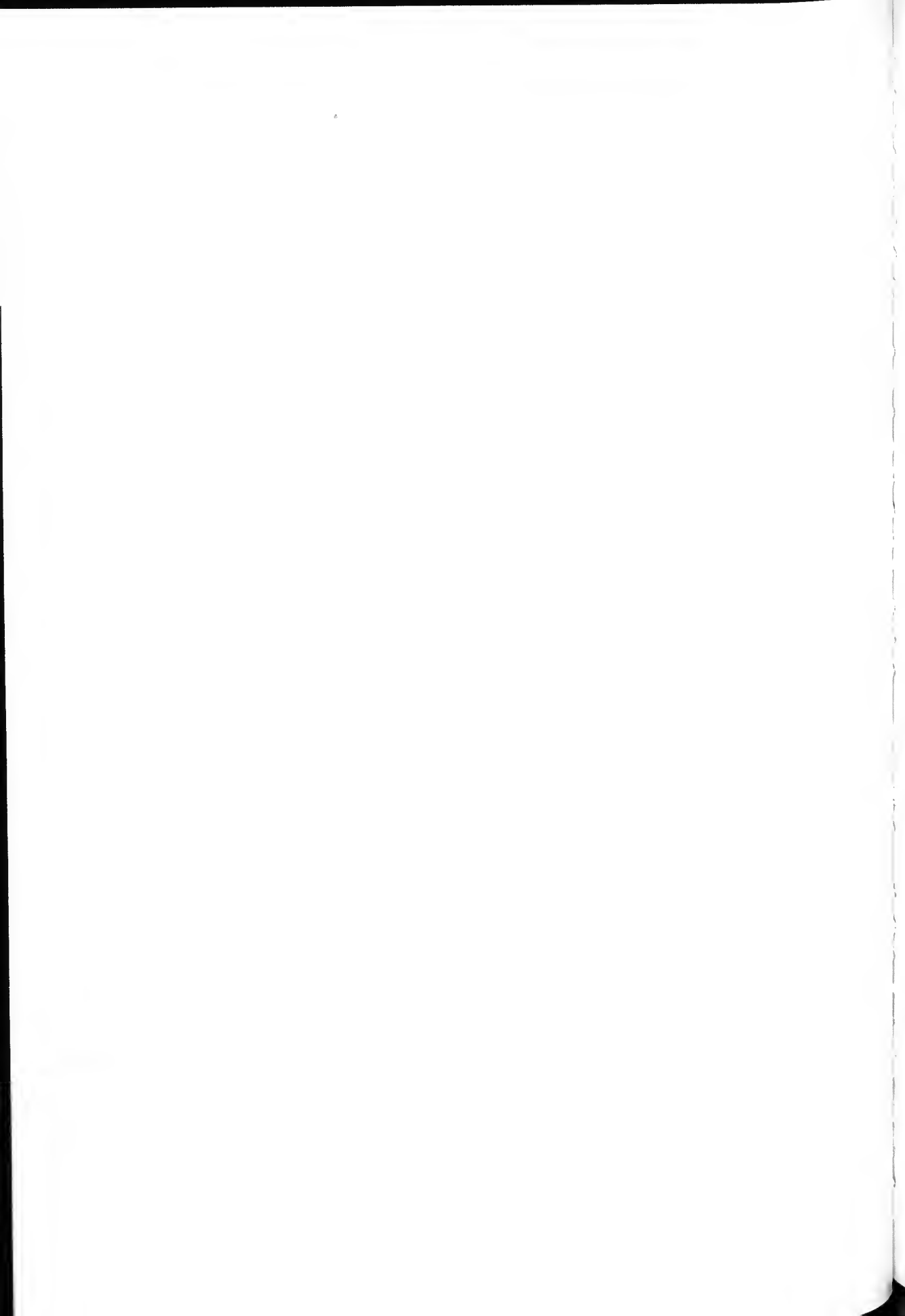




PLATE 21.





PLATE 22.

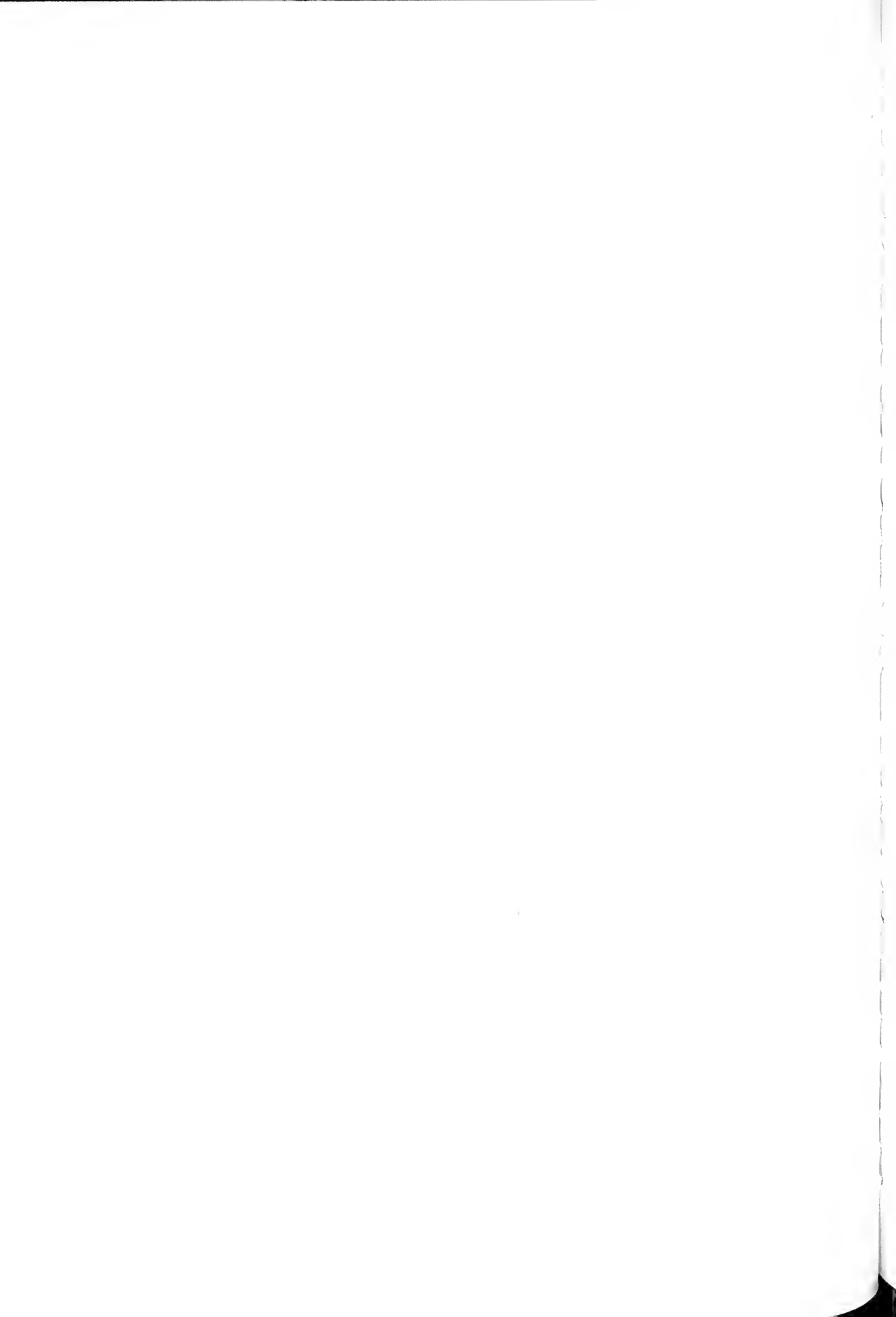




PLATE 23.



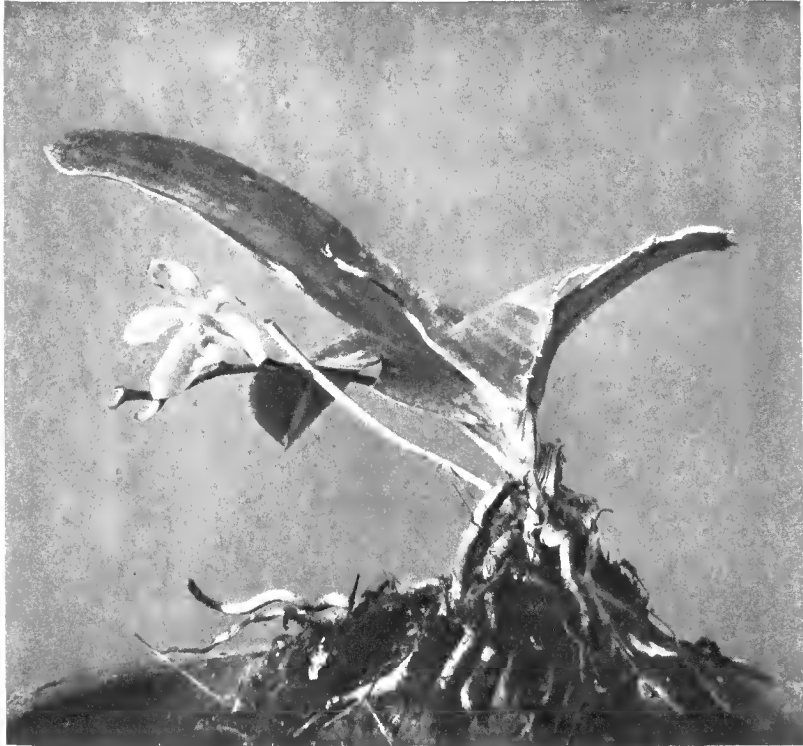
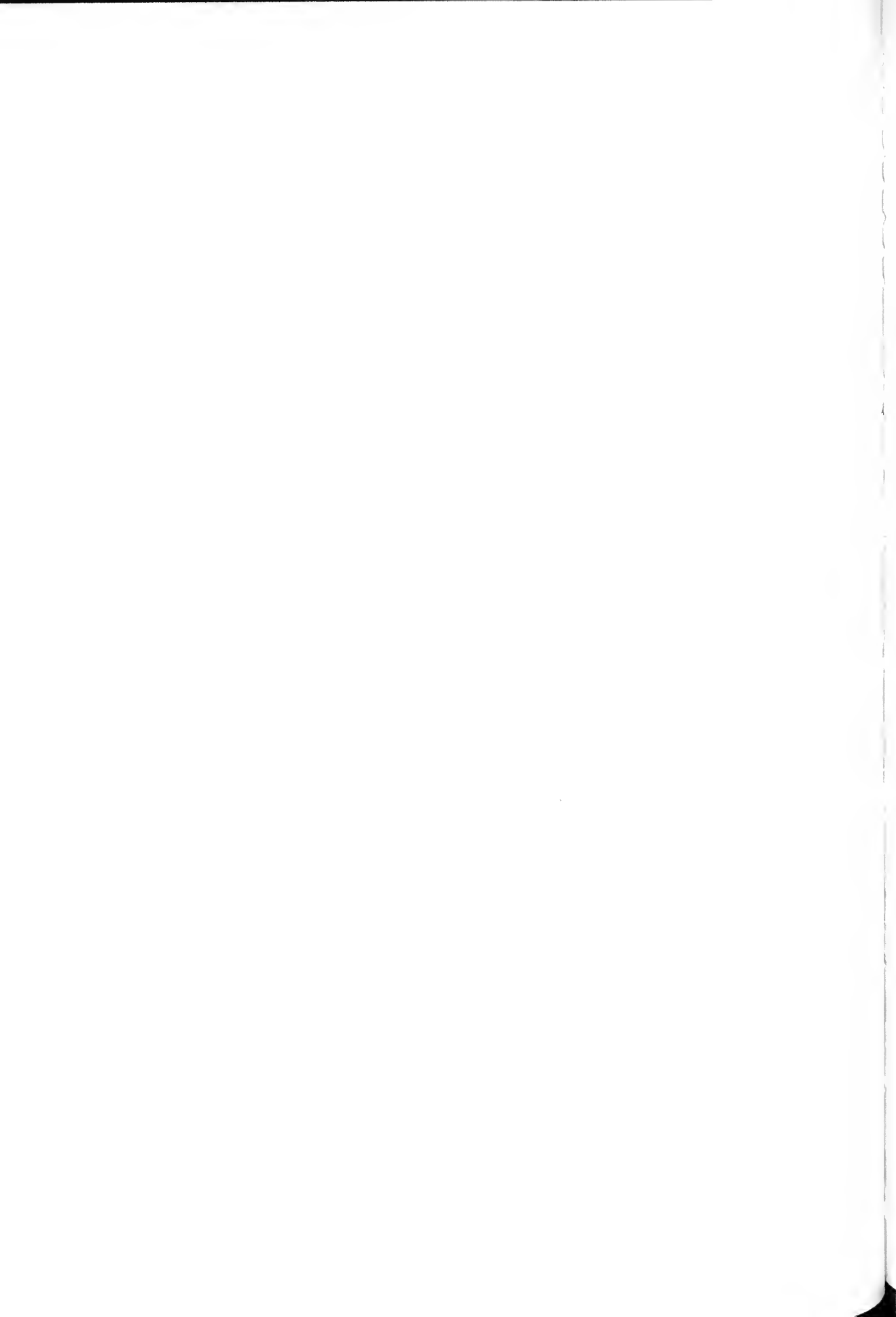


PLATE 24.



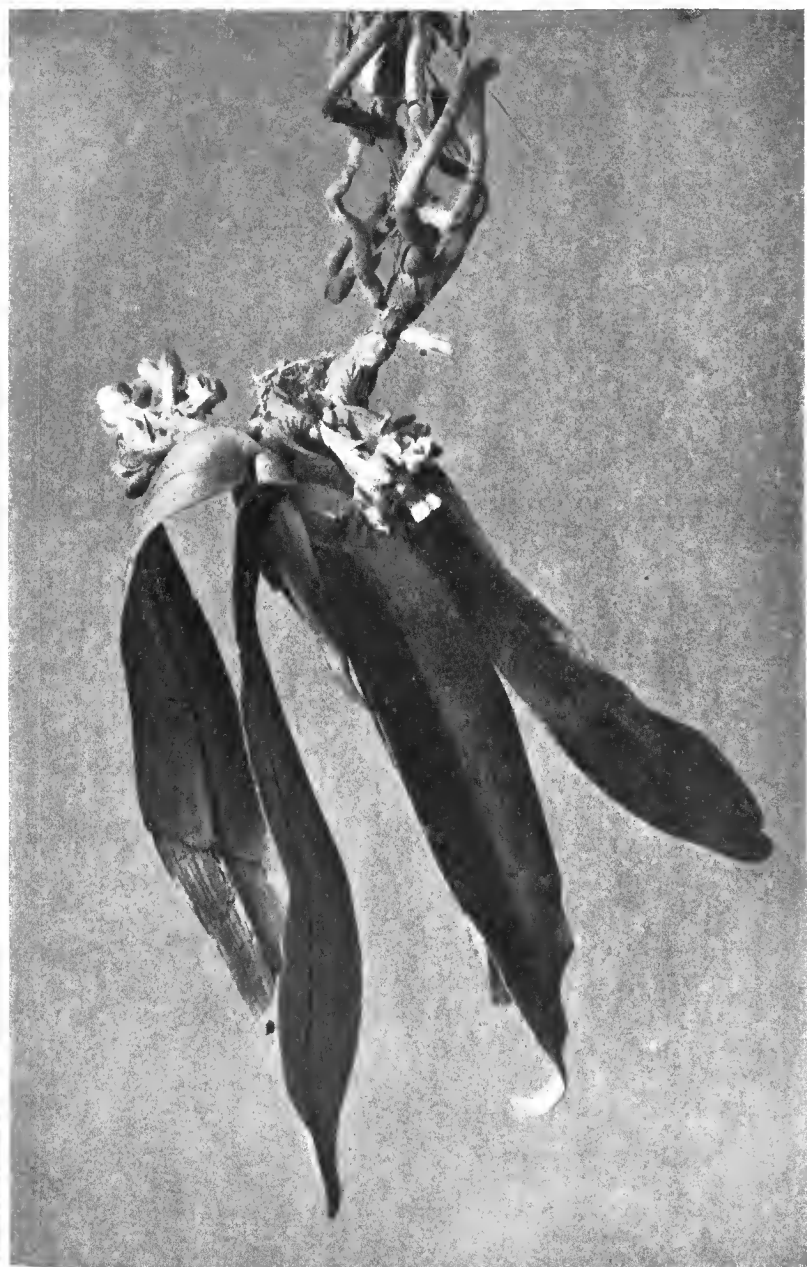


PLATE 25.





PLATE 26.



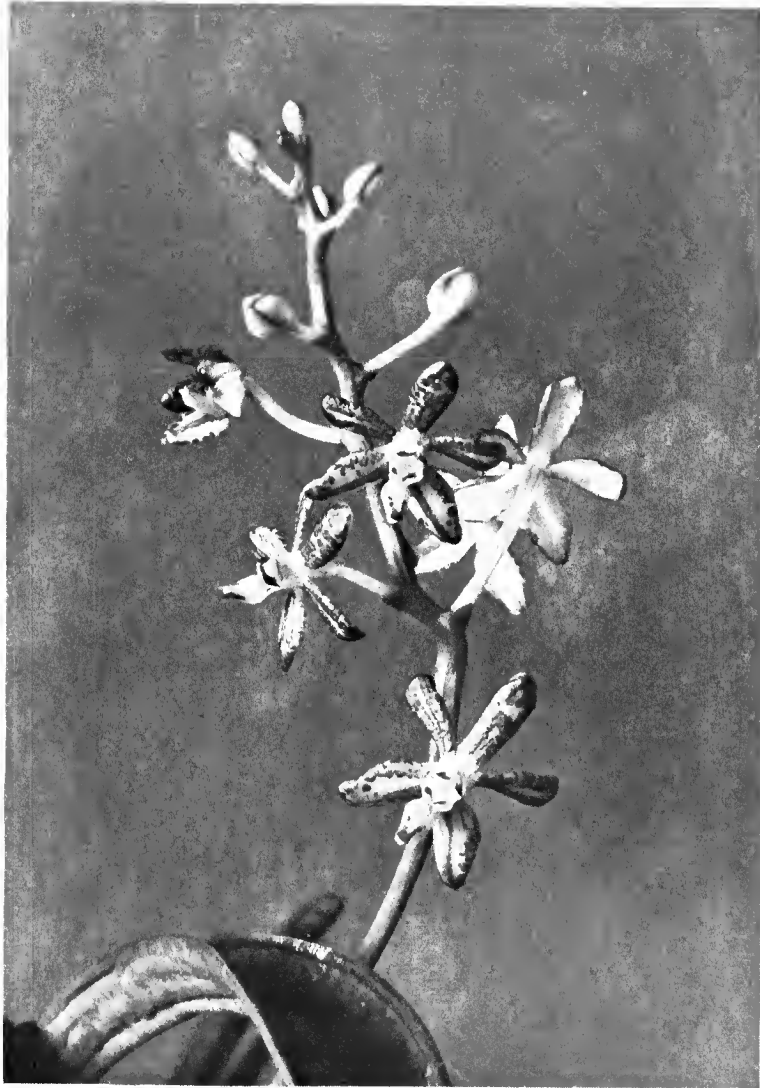
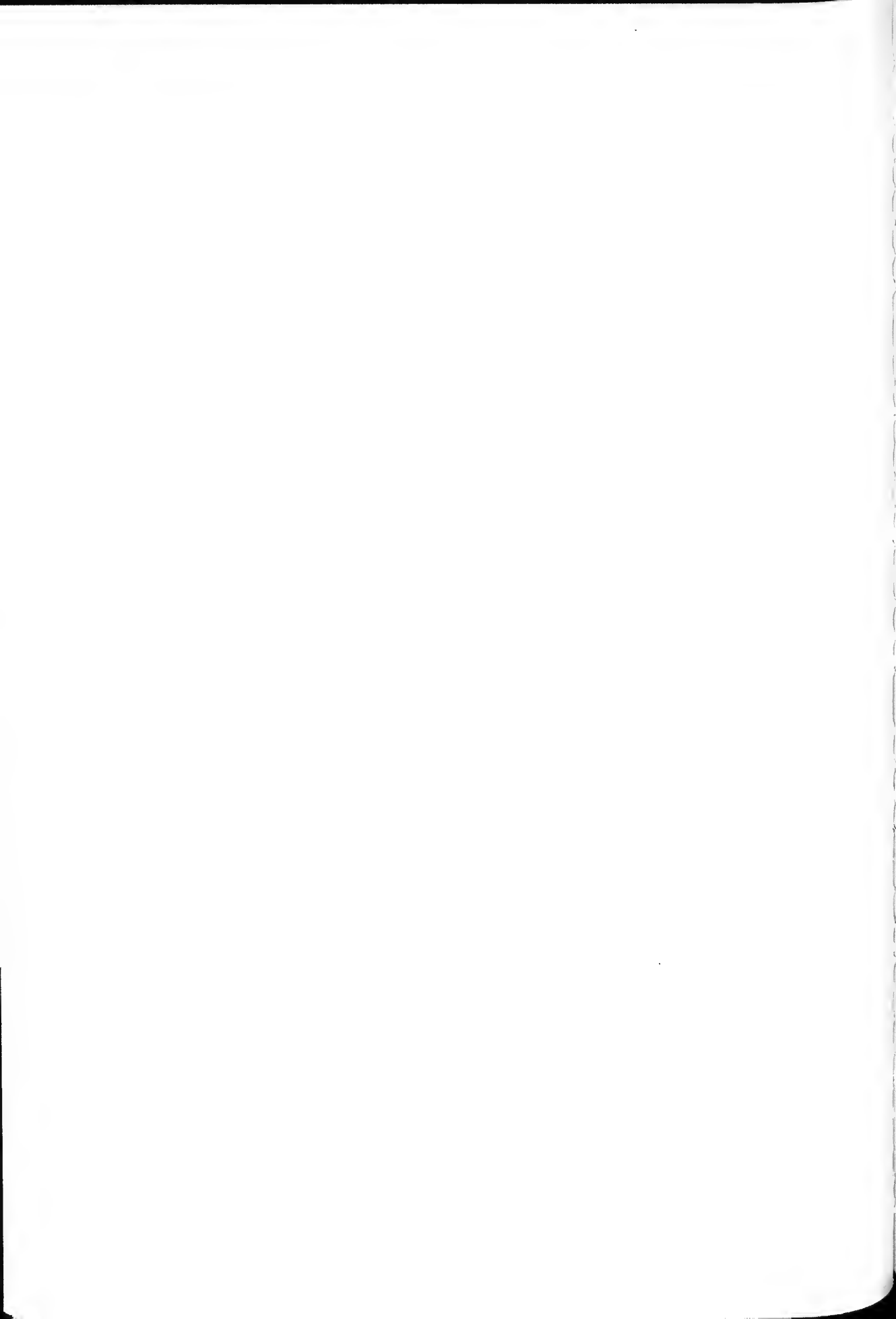


PLATE 27.



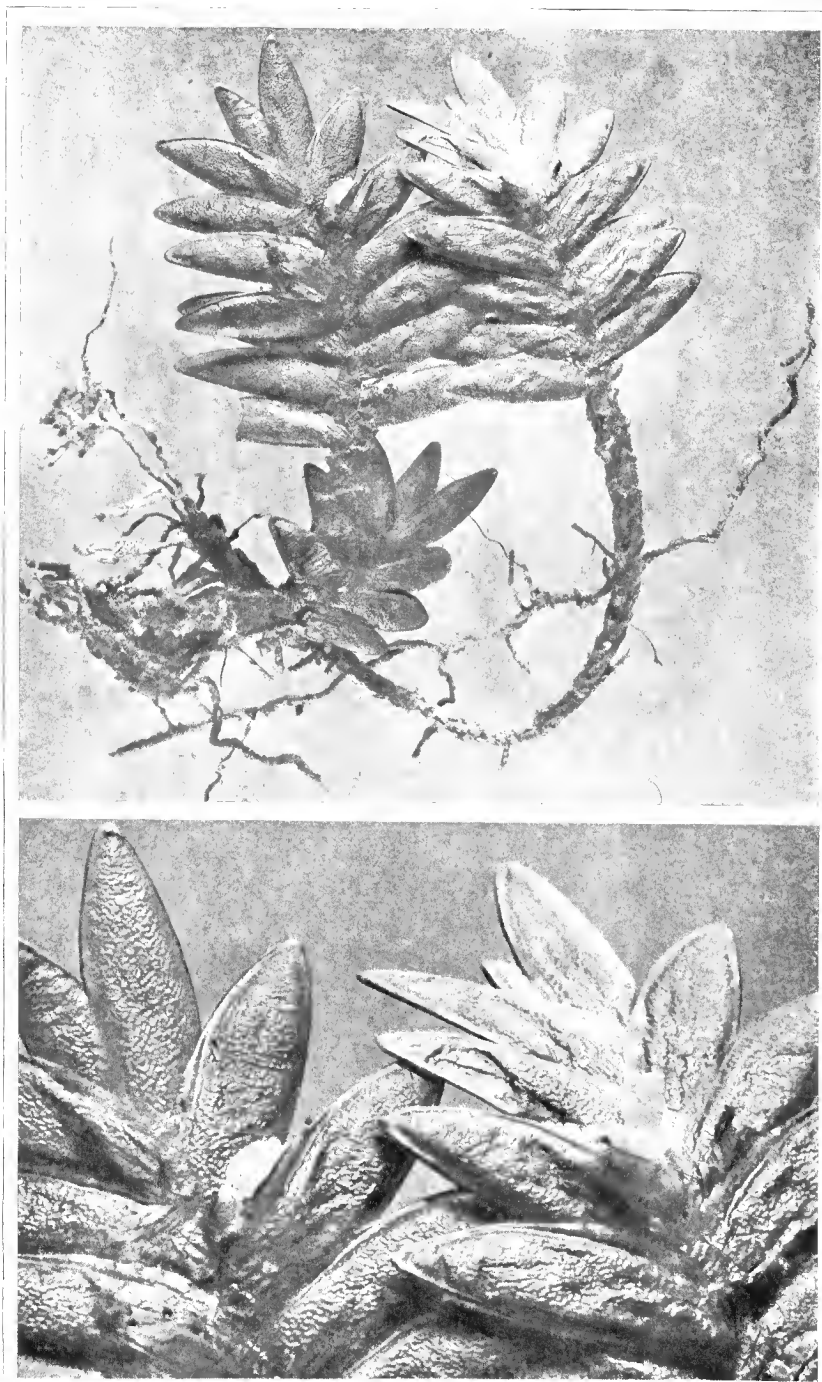


PLATE 28.

NEW OR NOTEWORTHY PHILIPPINE ORCHIDS, IV

By OAKES AMES

Professor of Botany in Harvard University

and

EDUARDO QUISUMBING

Botanist, National Museum Division, Bureau of Science, Manila

SEVENTEEN PLATES

The present contribution is essentially similar to its predecessors.¹ It consists of descriptions of five new species and four new varieties. One previously described species, *Cymbidium dayanum*, is for the first time credited to the Archipelago. *Phalaenopsis Micholitzii*, *Aërides Jarckianum*, *Aërides quinquevulnerum* var. *album*, and *Phalaenopsis equestris* var. *leucotanthe*, which were known only from their original descriptions, were recently rediscovered. A few combinations and changes in nomenclature are hereby proposed; this is particularly true with the species belonging formerly to *Trichoglottis* which we now propose to transfer to *Stauropsis*. *Sarcochilus unguiculatus*, which was interpreted as a synonym of *S. pallidus*, is hereby validated and elevated once more to a specific rank. All the descriptions in the text have been prepared from living specimens, and all the illustrations were made by Messrs. F. Guerrero and J. M. Salazar, draftsmen of the National Museum Division, Bureau of Science. All the types of the new species and varieties have been deposited in the herbarium of the Bureau of Science, with the isotypes in the herbarium of the senior author. Available isotypes will be distributed to the herbarium of the New York Botanical Garden and to other herbaria.

Genus DENDROBIUM Swartz

DENDROBIUM ALICIAE sp. nov. Plate 1, figs. 1 and 2; Plate 4, figs. 1 to 9; Plate 8, fig. 1.

Aff. *Dendrobium acuminatissimo*. Caules numerosi, simplices, fasciculati, penduli, 98 ad 107 cm longi, 2 ad 2.5 mm in crassi-

¹ Philip. Journ. Sci. 44 (1931) 369-383, 16 pls.; 47 (1932) 197-220, 29 pls.; 49 (1932) 483-504, 28 pls.

tudine, nitidi, teretes; internodia 1.5 ad 3.5 cm longa. Folia linearia, longe angustata, apice valde inaequalia, 9.5 ad 11.5 cm longa, 5 ad 5.5 mm lata, papyracea, vaginae foliorum arctae, glabrae. Racemi biflori; rhachis brevissima; pedunculus 1.3 ad 1.8 cm longus; bracteae oblongae, 7 ad 10 mm longae. Flores fugaces, caduci. Sepala lineari-lanceolata, in caudas longas filiformes tenerrimas extensa 3 ad 6 cm longa, basi 3.5 ad 5 mm lata; mentum sepalorum lateralium breve, obtusum, 4 ad 5.5 mm longum. Petala aequalia, 3 ad 5 cm longa, basi 2.5 ad 3 mm lata. Labellum manifeste trilobum, 10 ad 11 mm longum; lobi laterales oblique ovato-triangulares, obtusi, parte libera 2.25 ad 2.5 mm longa; lobus intermedius multo major, ovato-oblongus, 6 ad 7 mm longus, 2.5 ad 3 mm latus, supra conspicue densissime pilosus; discus per dimidium basale cum linea mediana incrassata. Gynostemium breve, circiter 4 mm longum; stelidia brevia, rotundata, levissime denticulata.

Stems numerous, simple, fascicled, pendulous, 98 to 107 cm long, 2 to 3.5 mm in diameter, smooth, terete; internodes 1.5 to 3.5 cm long. Leaves linear, narrowed to the tips, the apex unequal, 9.5 to 11.5 cm long, 5 to 5.5 mm wide, papery, the sheaths glabrous. Racemes two-flowered, rachis very short, the peduncles 1.3 to 1.8 cm long; bracts oblong, 7 to 10 mm long. Flowers fugaceous, ephemeral. Sepals linear-lanceolate, with very long slender prolongations, 3 to 6 cm long, 3.5 to 5 mm wide at the base; the mentum short, obtuse, 4 to 5.5 mm long. Petals similar to the sepals in form, 3 to 5 cm long, 2.5 to 3 mm wide. Labellum manifestly trilobed, 10 to 11 mm long; lateral lobes (free portion) obliquely ovate-triangular, obtuse, 2.25 to 2.5 mm long, covered with short papillose hairs; middle lobe much larger, ovate-oblong, 6 to 7 mm long, 2.5 to 3 mm wide, the upper surface densely and conspicuously pilose. Disc through the basal half with a very prominent central fleshy ridge. Column short, about 4 mm long, stelidia short, rounded, obscurely denticulate.

LUZON, Benguet Subprovince, Baguio, *Bur. Sci. 84618 Eduardo Quisumbing*, May 9, 1932. The type material was originally collected by Mrs. K. B. Day from Mount Santo Tomas, near Baguio. Living plants are now under cultivation in the gardens of Mrs. K. B. Day and Mrs. Colton in Baguio, and Mrs. Remedios C. Gonzales in Manila.

Sepals and petals are straw yellow² and spotted with carmine or oxblood red; the middle lobe of the labellum is empire yellow, covered on the upper surface with numerous white hairs, the lateral lobes are white and spotted with oxblood red.

The alliance of this species is doubtless with *Dendrobium acuminatissimum* (Blume) Lindl. which had been found but twice in the Philippines. It differs, however, conspicuously in the size and color of the flowers, and in the details of the labellum.

This species is dedicated to Mrs. K. B. Day who has graciously and kindly coöperated with the junior author in giving him free access to her collections of living orchids and is a testimonial to her interest in Philippine orchids.

DENDROBIUM Plicatile Lindl. var. **CONVOCARI** var. nov. Plate 1, figs. 5 and 6; Plate 4, figs. 10 to 19; Plate 8, fig. 2.

Aff. *D. plicatili*. Caules 35 ad 65 cm longi, ramosi. Pseudobulbi parvi, monophylli. Folia sessilia, elliptica vel oblongo-elliptica, obtusa, 4 ad 6.5 cm longa, 2.5 ad 3 cm lata. Flores odoratissimi, singuli, fugacei, parvi, 2.8 ad 3 cm lati. Sepala oblongo-lanceolata, subacuta, 1.7 ad 1.9 cm longa, 6 ad 6.25 mm lata, mentum conicum, obtusum, circiter 5 mm longum formantia. Petala anguste oblonga, subacuta, 1.4 ad 1.5 cm longa, 3 and 3.5 mm lata. Labellum 1.6 ad 1.9 cm longum, basi cuneata; lobi laterales oblique triangulari-ovati, apice rotundati, parte libera 3 ad 4 mm longa, lobus intermedius subquadrato-flabellatus, retusus, margine valde undulato et lobulato; carinae usque supra medium 3, cum mediana obscura, deinde elevatulae et undulatae. Gynostemium brevissimum.

Rhizomes creeping, 6 to 8 mm in diameter. Stems rigid, suberect, smooth, shining and polished, jointed, 35 to 65 cm long, 4 to 6 mm in diameter, branching. Pseudobulbs monophyllous, shining; the leaflets ones usually ellipsoid or fusiform, up to 6 cm long; the leaf-bearing ones smaller, narrowly oblong-cylindric or oblong-obconic, 1.5 to 2.5 cm long. Leaves terminal, sessile, solitary, elliptic or oblong-elliptic, obtuse, 4 to 6.5 cm long, 2.5 to 3 cm wide. Flowers fragrant, solitary, axillary at the summit of apical pseudobulbs or at nodes at the apex of very short slender branches above the pseudobulbs, fugaceous,

² The color terms used are mostly from Ridgway's Color Standards and Color Nomenclature (1912).

2.8 to 3 cm across. Sepals oblong-lanceolate, subacute, 1.7 to 1.9 cm long, 6 to 6.25 cm wide, lateral ones oblique, forming a conical obtuse straight spur about 5 mm long. Labellum 3-lobed, 1.6 to 1.9 cm long, the base cuneate, decurved about in the middle; lateral lobes obliquely triangular-ovate, rounded at the apex, the free portion 3 to 4 mm long; middle lobe about 10 mm long, 14 mm wide, subquadrate-flabelliform, apex retuse; carinae 3, the middle line extending from the base of the labellum to the apex, the lateral ones prominently elevated and crisped in the middle particularly at the isthmus, the keels 1 to 1.5 mm high. Column very short.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 84713 *Eduardo Quisumbing*, September 8, 1931.

The living plants were originally collected by Messrs. Maximo Ramos and Pascual Convocar in Dinagat Island, Surigao Province, Mindanao, on medium-sized trees near the seashore, in June, 1931, but now grow on adobe stone walls in the Bureau of Science orchid house.

Petals, lip, and column white, spotted with violet-carmine. Sepals white, suffused with massicot yellow at the base and spotted with violet-carmine. Spur massicot yellow and minutely dotted with pomegranate purple.

This form is apparently distinguished from the variable *Dendrobium plicatile* Lindl. by the smaller leaves, pseudobulbs, and flowers and by the lack of an elongate base of the lip. This variety is dedicated to Mr. Pascual Convocar, a botanical collector of the Bureau of Science, who discovered these plants perched on a tree.

DENDROBIUM IRAYENSE sp. nov. Plate 3, figs. 5 and 6; Plate 4, figs. 20 to 28; Plate 9, fig. 1.

Caules fasciculati, simplices, 30 ad 95 cm longi, penduli, multiarticulati, teretes; internodia 1.5 ad 3 cm longa, fibris vaginalium dejectarum vestita; nodi incrassati. Folia linearilanceolata, acuminata, acuta, submembranacea, 7.5 ad 9 cm longa, 1.4 to 1.6 cm lata; vaginae foliorum subcompressae, apice paulum ringentes. Racemi abbreviati, laxe 4- ad 8-flori, in caulibus defoliatis; bracteae sub anthesi scariosae, lanceolatae, acutae, 1.5 ad 2.5 mm longae. Flores purpurei, 1.4 ad 1.8 cm lati. Sepala lateralia ovata, acuta, 9 ad 10 mm longa, circiter 5.5 mm lata, 7-nervia, in mentum subaequilongum, obtusum producta. Sepalum dorsale erectum, ovato-lanceolatum, subacutum, 9 ad 9.5 mm longum, 4.5 ad 5 mm latum, 5-nervium. Petala lanceolato-elliptica, acuta, 8.5 ad 9.5 mm longa, 4 ad

4.5 mm lata, margine integra, 5-nervia. Labellum simplex, oblanceolatum, e basi sensim attenuatum, cucullatum, unguiculatum, subacutum, 13.5 ad 14 mm longum, callo basali hippocrepiformi. Columna brevis; clinandrium tridentatum, dentibus lateralibus rotundatis, dente medio tenui.

Stems fascicled, unbranched, 30 to 95 cm long, 8 to 15 mm in diameter, pendulous, terete, with swollen nodes; internodes 1.5 to 3 cm long. Leaves linear-lanceolate, acuminate, acute, submembranaceous, 7.5 to 9 cm long, 1.4 to 1.6 cm wide, the sheaths subcompressed. Racemes short, laxly 4- to 8-flowered, on defoliated stems. Flowers purple, 1.4 to 1.8 cm across, odorless; bracts pale purple, lanceolate, acute, 1.5 to 2.5 mm long. Pedicellate ovary slender, 10 to 14 mm long. Lateral sepals, ovate, acute, 9 to 10 mm long, about 5.5 mm wide at the base, 7-nerved; mentum subequally long, obtuse, retuse at the very tip. Dorsal sepal erect, ovate-lanceolate, subacute, 9 to 9.5 mm long, 4.5 to 5 mm wide, 5-nerved. Petals lanceolate-elliptic, acute, 8.5 to 9.5 mm long, 4 to 4.5 mm wide, the margins entire, 5-nerved. Labellum simple, oblanceolate, narrowed at the base, cucullate, unguiculate, subacute, 13.5 to 14 mm long, 5 to 5.5 mm wide near the apex, with a horseshoe-shaped callus at the base. Column short, about 2 mm long; stolidia erect, the lateral ones rounded, the median slender acute.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 84714 *Quisumbing*, February 5, 1932.

The living plants were originally collected by the late Mr. Maximo Ramos, collector of the Bureau of Science, on Mount Iraya, Batan Island, north of Luzon.

The flowers are mallow purple or phlox purple, the nerves on sepals and petals and the lines on the labellum true purple; anther apricot yellow.

Dendrobium irayense is allied to *Dendrobium victoriae-reginae* Loher, but differs in its much smaller flowers and in the short lateral sepals.

DENDROBIUM YEAGERI sp. nov. Plate 3, figs. 7 and 8; Plate 4, figs. 29 to 37; Plate 9, fig. 2.

Caules fasciculati, 25 ad 50 cm longi, pauci ramosi, penduli; internodia ad basim leviter incrassata, 1.2 ad 2 cm longa. Folia lanceolata, acuta, 4.5 ad 10.5 cm longa, 1.3 ad 2.3 cm lata, nervosa, papyracea; vaginae foliorum subcompressae, apice paulum ringentes. Racemi pauciflori (2- ad 6-flori); bracteeae oblongae, obtusae, usque ad 6 mm longae, membranaceae; ovarium pedicellatum tenerum, 1.5 ad 1.6 cm longum. Sepala la-

teralia lanceolato-oblonga, obtusa, circiter 1.9 cm longa, 7 ad 9 mm lata, 7-nervia, mentum obtusum, 9 ad 10 mm longum formantia. Sepalum dorsale oblongo-lanceolatum, subobtusum, 1.8 ad 1.9 cm longum, 7.5 ad 8 mm latum, 7-nervium. Petala anguste oblonga vel oblongo-elliptica, subobtusata, circiter 1.9 cm longa, 5.5 ad 7 mm lata, 5-nervia. Labellum simplex, oblanceolato-oblongum, e basi sensim dilatatum et antice expansum, apice rotundatum, 2.2 ad 2.5 cm longum, 9 ad 10 mm latum, lineae elevatulae nullae. Gynostemium perbreve, carnosum, circiter 5 mm longum, in pedem extensum; stelidia erecta, lateralia rotundata, stelidium medium acutum, 1 ad 1.25 mm longa. Capsula ellipsoidea, 2.4 ad 2.5 cm longa, 1.3 ad 1.4 cm in crassitudine. Flores basi purpureo-violacei, apice pallidiores.

Stems fascicled, slender, pendulous, 25 to 50 cm long; branches few, jointed, nodes greatly swollen, internodes 1.2 to 2 cm long. Leaves lanceolate, acute, 4.5 to 10.5 cm long, 1.3 to 2.3 cm wide, papyraceous and nervose when dried, leaf sheaths expanded above. Racemes few-flowered (2- to 6-flowered); bracts oblong, obtuse, up to 6 mm long, membranaceous. Flowers odorless, showy; pedicellate ovary slender, 1.5 to 1.6 cm long. Lateral sepals lanceolate-oblong, obtuse, about 1.9 cm long, 7 to 9 mm wide, 7-nerved, forming an obtuse mentum, 9 to 10 mm long. Dorsal sepal oblong-lanceolate, subobtusata, 1.8 to 1.9 cm long, 7.5 to 8 mm wide, 7-nerved. Petals narrowly oblong or oblong-elliptic, subobtusata, about 1.9 cm long, 5.5 to 7 mm wide, 5-nerved. Labellum simple, oblanceolate-oblong, gradually dilated from the base, expanded at the apex, broadly and bluntly apiculate, 2.2 to 2.5 cm long, 9 to 10 mm wide at the widest portion near the apex, devoid of any raised lines or calli. Column short, stout, about 5 mm long, extended into a foot; lateral arms erect, rounded, middle one narrow and acute, 1 to 1.25 mm long. Capsules ellipsoid, 2.4 to 2.5 cm long, 1.3 to 1.4 cm in diameter.

LUZON, Benguet Subprovince, Mount Pauai, *Bur. Sci.* 85567 *Eduardo Quisumbing*, May 9, 1932.

The living specimens were purchased from Igorot peddlers at Gate 52, Mountain Road, and were claimed to have originated in the hardwood forests of Mount Pauai.

The sepals and petals are pale lavender-violet or rose-purple at the tips, gradually increasing in intensity of color to the base which is Chinese violet or magenta, with the nerves of darker purple (Matthews' purple); labellum lavender-violet or pale rose-purple at the tip, darker at the base, bright violet-purple;

spur or mentum very bright violet-purple; pedicellate ovary aster purple; the column violet-purple, with white arms and anther.

Dendrobium Yeageri is closely allied to *Dendrobium victoriae-reginae* Loher, but may be readily separated by the reverse distribution of color in the flowers and the entirely smooth ecarinate lip.

This species is dedicated to Dr. C. H. Yeager, of the Rockefeller Foundation in Manila, who accompanied the junior author and Dr. W. H. Brown, former director of the Bureau of Science, on a trip to the Mountain Province in May, 1932.

Genus BULBOPHYLLUM Thouars

BULBOPHYLLUM SURIGAENSE sp. nov. Plate 1, figs. 3 and 4; Plate 5, figs. 1 to 9; Plate 10, figs. 1 and 2.

Radices fibratae, numerosae. Rhizoma repens. Pseudobulbi monophylli, cylindranei vel semifusiformes, 2.5 ad 3.2 cm longi, usque ad 5 cm distantia. Folia valde coriacea, rigida, ad apicem rotundata, ad basim attenuata, oblonga vel elliptico-oblonga, 5 ad 8.5 cm longa, 2 ad 2.8 cm lata, breviter petiolata. Scapus folio longior, 12 ad 14.5 cm longus; racemus recurvatus, 3 ad 3.5 cm longus, bracteis 5 vel 6 vaginantibus. Flores albidi, 2.5 ad 3.2 cm longi, in racemo perdenso dispositi. Bractee inflorescentiae lineari-lanceolatae, acutae, cucullatae, 6 ad 10 mm longae. Pedicelli graciles. Sepala lateralia lanceolato-lineararia, in apicem filiformem elongatum, obtusa, 5-nervia sensim extensa, primum connata, deinde libera, patentia, 3 ad 3.2 cm longa, glabra, prope basim ciliata. Sepalum dorsale ovatum, cucullatum, circiter 7 mm longum, 2.5 mm latum, 5-nervium, margine fimbriato. Petala triangulari-lanceolata, leviter falcata, acuminata, circiter 3.75 ad 4 mm longa, 3-nervia, margine fimbriato. Labellum minutum, anguste triangulare, acuminatum, acutum, recurvatum, ad basim cordatum, glabrum, 2.5 ad 3 mm longum, 1.5 mm latum, bilamellatum. Gynostemium brevissimum, ad apicem bicuspidatum, in pedem arcuatum extensum.

Roots numerous, fibrous, 0.75 to 1.25 mm in diameter. Rhizomes creeping, stout and woody. Pseudobulbs cylindrical or semifusiform, monophyllous, 2.5 to 3.2 cm long, strongly ridged, up to 5 cm apart, the young pseudobulbs clothed and almost covered with membranaceous, brown sheaths. Leaves oblong or elliptic-oblong, dark green, very leathery, firm and rigid, petiolate, bilobed at the rounded apex, cuneate at the base, 5

to 8.5 cm long, 2 to 2.8 cm wide; petioles 5 to 8 mm long. Scapes much longer than the leaves, 12 to 14.5 cm long including the erect peduncles; the racemes abbreviated, recurved or pendulous, 3 to 3.5 cm long. Sheaths infundibuliform, acute, 8 to 15 mm long, marguerite yellow with the tips greenish. Flowers odorless, crowded, 2.5 to 3.2 cm long. Pedicellate ovary very short, slender, greenish, 2 to 2.5 mm long. Floral bracts deep sea-foam green, linear-lanceolate, acute, cucullate, 6 to 10 mm long. Lateral sepals lanceolate-linear, with greatly elongated filiform tips, obtuse, 3 to 3.2 cm long, 5-nerved, white with marguerite yellow tips, minutely ciliate at the margins near the base, 5-nerved, at first connate, becoming free, parallel. Dorsal sepal ovate, acute, cucullate, about 7 mm long, 2.5 mm wide, 5-nerved, membranaceous, fimbriate on the margins. Petals narrowly triangular-lanceolate, slightly falcate, about 3.75 to 4 mm long, 1.25 mm wide at the base, ciliate on the margins, 3-nerved. Labellum minute, narrowly triangular, acuminate, acute, recurved, cordate at the base, glabrous, about 2.5 to 3 mm long, 1.5 mm wide, primuline yellow in color, with 2 ridges or keels running from the base to the tip. The column very short, white, about 1.5 mm long, bicuspidate at the apex, extended into an arcuate foot. Anther ovoid, obtuse, primuline yellow in color.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 84715 *Eduardo Quisumbing*, September 11, 1931.

The living specimens were collected at Surigao, Surigao Province, Mindanao, by the botanical collectors, Messrs. Maximo Ramos and Pascual Convocar.

Among Philippine orchids, this species differs from *Bulbophyllum Loherianum* (Kränzl.) Ames in the much larger flowers and dissimilar lateral sepals and from *B. zamboangense* Ames in the awnless dorsal sepal and petals. It is vegetatively very similar to *B. medusae* Reichb. f.

Genus CYMBIDIUM Swartz

CYMBIDIUM DAYANUM Reichb. f. Plate 1, figs. 7 and 8; Plate 5, figs. 10 to 17; Plate 11, fig. 1.

Cymbidium dayanum REICHB. f. in Gard. Chron. (1869) 710; Williams' Orch. Grow. Man. ed. 7 (1894) 218; RIDL. Fl. Mal. Penin. 4 (1924) 146; Sanders' Orch. Guide (1927) 138.

Cymbidium acutum RIDL. in Journ. Linn. Soc. 32 (1896) 334; Mat. Fl. Mal. Penin. 1 (1907) 140; SCHLTR. Die Orchideen (1927) 355.

Cymbidium simonsianum KING and PRANTL. in Journ. As. Soc. Beng. 64, pt. 2 (1895) 338, in Ann. Roy. Bot. Gard. Calc. 8 (Orch. Sik-Himal.) (1898) 188, t. 250.

The original description reads as follows:

Cymbidium Dayanum, sp. n.

Foliis longissimis (4 pedalis), angustis (vix quartam pollicis latis) coriaceo-pergameneis apice nunc inaequali altero latere acutis, nunc aequaliter bidentatis, inferne suberosis; racemo plurifloro; vaginis scariosis acutis basi vaginato; rhachi angulata, bracteis triangulis acuminatis ovarii pedicellatis multo brevioribus, mento subevanido; flore carnosiusculo; sepalis linearibus acuminatis; petalis sublatioribus brevioribus, labello medio trifido, laciniis lateralibus semiovatis, acutangulis, lacinia media oblongo-triangua acuminata; carinis geminis parallelis approximatis velutinis, usque ad basin laciniarum lateralium altioribus, dein humilibus, ante apicem confluentibus.

Plant epiphytic, erect, stemless. Leaves 5 or 6, tufted, subcoriaceous, pale green, elongate linear, sessile, channelled at the base, acute and suboblique at the apex, 76.5 to 78.5 cm long, 1.1 to 1.4 cm wide. Racemes erect, about 24 cm long; peduncle about 11 cm long; sheaths at the base three or more, imbricated, 1 to 7 cm long, acute, pinkish vinaceous, the lowermost one nearly white. Pedicellate ovary 1.5 to 3 cm long. Flowers fragrant, about 10, 3.5 to 4.5 cm across; bracts triangular, acute, cucullate, 5 to 8 mm long. Lateral sepals spreading, elliptic-lanceolate or oblanceolate, acute and slightly subfalcate, 2.6 to 2.7 cm long, 7 to 8 mm wide. Dorsal sepal erect, elliptic-lanceolate or oblanceolate, acute, 2.8 to 2.9 cm long, 7 to 7.5 mm wide. Petals smaller than the sepals, connivent around the column, narrowly elliptic-oblong, acute, apiculate, 2.1 to 2.2 cm long, about 6 mm wide. Labellum 3-lobed, 2 to 2.2 cm long; lateral lobes broadly obtuse, free portion 3 to 3.5 mm long; middle lobe ovate, apiculate, reflexed, 7 to 7.5 mm wide; lamellae two, stout, parallel, conspicuously pubescent with white glandular hairs, ending abruptly with the lateral lobes, but continued to the middle lobe as raised lines. Column about 12 mm long. Anther broadly triangular-ovoid. Pollinia obliquely ovoid, compressed.

LUZON, Benguet Subprovince, Baguio, Mrs. K. B. Day's gardens, *Bur. Sci.* 85569 *Eduardo Quisumbing*, October 20, 1931. Living plants originally collected by Mrs. K. B. Day in Baguio, Mountain Province.

The flowers are fragrant, the sepals and petals are white with a crimson central line which does not extend to their apices, the labellum is Bordeaux with oblique white and seafoam yellow lines on the lateral lobes and an amber yellow. The column is blackish red-purple; the anther sulphur yellow. Pedicellate ovary lumiere green.

Sikkim, Assam, and Perak (Waterloo) at altitudes from 800 to 1,200 meters.

From the three species of *Cymbidium* known to occur in the Philippines, *Cymbidium dayanum* is distinguished by its grass-like, tufted leaves and the color of the flowers.

Genus SARCOCHILUS R. Brown

SARCOCHILUS UNGUICULATUS Lindl. Plate 2, figs. 9 and 10; Plate 5, figs. 18 to 24; Plate 12, fig. 1.

Sarcochilus unguiculatus LINDL. in Bot. Reg. 26 (1840) Misc. p. 67, 32 (1846) sub. t. 19; Edit. in Allg. Berl. Gartenz. 14 (1846) 167; REICHB. F. in Walp. Ann. 6 (1863) 501, in Gard. Chron. II 15 (1881) 562; NAVES Novis. App. (1882) 238; ROLFE in Orch. Rev. 2 (1894) 231, 14 (1906) 273, fig. 37; RIDL. in Journ. Linn. Soc. 31 (1896) 298, Mat. Fl. Mal. Penin. 1 (1907) 175; AMES in Merr. in Journ. Roy. Asiat. Soc. Straits Branch, Special No. (1921) 196, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 408.

Thrixspermum unguiculatum REICHB. F. Xen. Orch. 2 (1867) 122, in Flora 51 (1868) 53; WARNER and WILL. Orch. Alb. 6 (1887) t. 266; MIETHE, Orchis 6 (1912) 101, 102, t. 24.

Phalaenopsis Ruckeri HORT. ex Reichb. f. in Gard. Chron. New Ser. 15 (1881) 562, in textu.

Phalaenopsis Ruckeriana HORT. ex Warner and Will. Orch. Alb. 6 (1887) t. 266, in syn.

Sarcochilus aureus HOOK. F., Fl. Brit. Ind. 6 (1890) 35, in Ann. Roy. Bot. Gard. Calc. 5 (Cent. Ind. Orch.) (1895) 42, t. 64.

Thrixspermum aureum O. KTZE., Rev. Gen. Pl. 2 (1891) 682.

Sarcochilus unguiculatus Lindl. var. *aureus* RIDL., Mat. Fl. Mal. Penin. (1907) 175.

? *Phalaenopsis fugax* KRÄNZL. in Gard. Chron. III 14 (1893) 360; ROLFE in Orch. Rev. 13 (1905) 230.

Sarcochilus unguiculatus; racemo 3-4-floro, labelli unguiculati trilobi ungue convexo lineari lineâ mediâ exaratâ, laminâ cavâ, lobis lateralibus semi-ovatis obtusis intermedio supra trinervi subtus globoso apice papillae-formi.

A native of Manilla, where it was discovered by Mr. Cuming. The flowers are light straw-color, the side lobes of the labellum white streaked with crimson, and the middle lobe rounded, fleshy, and dotted with crimson. It is a rather pretty species, for which I am indebted to Mr. Bateman.

Plants erect in habit. Stems very short. Leaves disposed more or less horizontally, distichous, 7 to 8 mm distant, oblong or elliptic-oblong, rigid, firm, coriaceous, greenish, the lower surface purplish, 10.5 to 16 cm long, 4 to 5.5 cm wide, unequally bilobed at the apex. Scapes very short, issuing from the side of the stems among the lower leaves, purplish, 2- to 4-flowered, 1 to 5.5 cm long. Flowers very fragrant, 2.3 to 2.5 cm across. Pedicellate ovary about 1.5 cm long, primrose

yellow. Lateral sepals oblong-elliptic, subacute, semioblique, slightly concave, 1.2 to 1.5 cm long, 4.5 to 5.5 mm wide, 5-nerved, colonial buff with a patch of eugenia red on the basal inner half and tipped with old rose. Dorsal sepal oblong-elliptic, subacute, cucullate, 1.2 to 1.5 cm long, 4.5 to 5.5 mm wide, 5-nerved, primrose yellow and tipped with pale rosolane purple. Petals narrowly oblong-elliptic, obtuse, 1.1 to 1.2 cm long, 4 to 4.5 mm wide, 3-nerved, primrose yellow lined in the middle with flesh pink. Labellum unguiculate, 3-lobed; claw convex, linear, median line smooth, eugenia red above, white below; lateral lobes semierect, oblong-ovate, rounded at the apex, about 4.5 mm long, 2 mm wide, naples yellow striped with eugenia red; middle lobe about 5 mm long, fleshy, white dotted with violet-purple, globose below, with a papilla above. Column cylindrical, about 4 mm long, marguerite yellow. Capsules oblong-cylindric, about 3 cm long, 1.2 cm in diameter, angled.

The original description of the species was based upon a specimen collected at Manila by Cuming, and according to Mr. Rolfe³ the type plant flowered in the garden of Mr. Bateman in 1840. What is considered to be the same species was described as a *Phalaenopsis* (*P. fugax*), but the structure of the flower is far from being that of a *Phalaenopsis*.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 85570 *Eduardo Quisumbing*, July 11, 1932. Living specimens were said to have been collected in the mountains back of Antipolo, Rizal Province, Luzon.

This is the third time that *Sarcochilus unguiculatus* has come to the attention of the junior author during a period of four years, and while in the beginning he suspected that the species was separable from the true *S. pallidus* (Bl.) Reichb. f., additional data have convinced him of its distinctness. The flowers of *S. pallidus* last for a couple of hours only, opening early in the morning and generally wilting before noon, while records of the flowering of *S. unguiculatus* show that the flowers remain in good condition longer, opening the first day and wilting on the third day. It flowers from May to July.

Sarcochilus unguiculatus is distinct from *S. pallidus*, not only in the habit of the plant, but also in the following features. The leaves are disposed horizontally and are more rigid and tinged with purple on the lower surface. The racemes are decidedly shorter, the flowers are much smaller, the lateral

³ *Orch. Rev.* 2 (1894) 231.

lobes of the labellum are oblong-ovate while the papilla on the front of the middle lobe is not so abrupt or prominent.

Genus PHALAENOPSIS Blume

PHALAENOPSIS EQUESTRIS (Schauer) Reichb. f. var. LEUCOTANTHE Reichb. f. Plate 2, figs. 7 and 8; Plate 11, fig. 2.

Phalaenopsis equestris (Schauer) Reichb. f. var. *leucotanthe* REICHB. F. in l'Orchidoph. 3 (1883) 490; AMES Orch. 2 (1908) 230, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 414.

The original description reads as follows:

Les pétales et les sépales sont blanc aussi pur que la neige. Le labelle également blanc porte quelques taches citron sur les lobes latéraux.

Habit is similar to the species. Leaves oblong, elliptic-oblong or oblanceolate-oblong, 9 to 11 cm long, 4 to 5 cm wide, light green in color. Scape about 20 cm long, ascending, unbranched. Flowers about 1.4 cm across; pedicellate ovary about 2 cm long. Sepals oblong-lanceolate or ovate-lanceolate, obtuse, about 1.4 cm long, 6 to 7 mm wide, the lateral ones asymmetric. Petals elliptic, obtuse, about 12.5 mm long, 7 mm wide. Labellum 3-lobed; lateral lobes linear-spatulate, about 7 mm long, 2.5 mm wide, incurved; middle lobe ovate, acute, about 12 mm long, 7 mm wide. Column about 8 mm long.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 85571 *Eduardo Quisumbing*, October 30, 1931. The living plants were collected in the mountains of Rizal Province, near Antipolo.

Peduncles chrysolite green. Buds chartreuse yellow. Sepals and petals pure white or white with very faint line of pale rose-purple at the center. Column white at the base, apex pale rose-purple. Lateral lobes of the labellum white with the base suffused with amber yellow or citron, the apex sometimes slightly suffused with pale rose-purple; middle lobe white with honey yellow at the base or white tipped with pale rose-purple. Callus at base of middle lobe empire yellow and dotted with red.

The variety differs from the species in the color of the peduncles, floral buds, and flowers.

PHALAENOPSIS MICHOLITZII Rolfe. Plate 2, figs. 1 and 2; Plate 5, figs. 25 to 33; Plate 12, fig. 2.

Phalaenopsis Micholitzii ROLFE in Gard. Chron. III 8 (1890) 187, in Journ. des Orch. 1 (1890) 198, in Orch. Rev. 13 (1905) 229; AMES Orch. 5 (1915) 217, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 415.

Since *Phalaenopsis Micholitzii* has never been adequately described, the following amplification is given.

Herba *P. Lueddemanniana* habitu. Caulis abbreviatus, paucifolius. Folia oblongo-oblancheolata, ad basim sensim angustata, carnosae. Scapi breves, simplices, pauciflori. Flores subflavidi et sine maculis. Sepala lateralia oblique ovata, acuta. Sepalum dorsale oblongo-ellipticum, obtusum. Petala ovato-elliptica, breviter unguiculata. Labellum trilobatum; lobi laterales erecti, subquadrato-oblongi, apice bidentato truncato; lobus intermedius rhombico-spathulatus, inferne unguiculatus, apice obtuse tridentatus; discus supra medium papillis capilliformibus numerosis ornatus. Columna flavida.

Habit similar to that of *P. Lueddemanniana* Reichb. f. Stem abbreviated. Leaves oblong-oblancheolate, 13 to 17.5 cm long, 5.5 to 7 cm wide, broadly obtuse at the apex, gradually tapering to the base, pale green, fleshy, thick, very slightly rigid, somewhat conspicuously nerved with yellowish nerves. Scapes simple, short, few-flowered, 3 to 6 cm long, appearing in the axils of the leaves or at the base of the stem near the roots; rachis very short. Flowers odorless, 6 to 6.5 cm across, yellowish, and absolutely without transverse bars on the sepals and petals, 1 or 2 opening at a time. Pedicellate ovary marguerite yellow, about 3.3 cm long, the ovary terete, not twisted. Lateral sepals obliquely ovate, acute, apiculate, 3.2 to 3.3 cm long, 1.6 to 1.7 cm wide, 9-nerved. Dorsal sepal oblong-elliptic, obtuse, 3.2 to 3.3 cm long, 1.5 to 1.6 cm wide, 9-nerved. Petals ovate-elliptic, obtuse, about 2.8 cm long, 1.7 cm wide, with shortly stalked base which is about 4 mm long, 7-nerved. Labellum fleshy, 3-lobed; lateral lobes erect, subquadrato-oblong, with a prominent fleshy callus above the middle, bidentate at the truncate apex, about 8 mm long, cadmium yellow; middle lobe rhombic-spathulate, about 1.9 cm long, narrowed below into a distinct claw about 7 mm long, obtusely tridentate at the apex when spread out, the irregular margins minutely crisped-undulate, marguerite yellow; disc (between the side lobes) with a ligulate sharply bidentate callus which extends (in the middle of the claw) into a median high keel dentate in front, and which is succeeded by an irregular longitudinal cluster of hairlike papillae. Column about 1.2 cm long, marguerite yellow; anther white.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 85572 *Eduardo Quisumbing*, February 3, 1932.

A living plant of this species was sent to the junior author by Mr. F. E. Shafer, an orchid enthusiast of Cebu, who purchased it from a peddler in Cebu. Its origin is unknown, but is doubtless Philippine. The plant presented to the junior

author is still growing in the Bureau of Science orchid house, and has flowered twice already this year (February 3 and May 31, 1932), the flowers lasting about two weeks.

A species with the habit of *P. Lueddemanniana* Reichb. f., differing conspicuously in its yellowish flowers with absolutely no bars on the sepals and petals, and in the form of the middle lobe of the labellum.

Genus AERIDES Loureiro

AERIDES JARCKIANUM Schltr. Plate 3, figs. 1 and 2; Plate 6, figs. 1 to 8; Plate 13, fig. 1.

Aërides jarckianum SCHLTR. in Orchis 9 (1915) 53, t. 5, figs. 15-21; AMES in Merr. Enum. Philip. Fl. Pl. 1 (1925) 420; SUMMERHAYES in Bot. Mag. 155 (1932) t. 9274.

Aërides sp. SCHLTR. in Orchis 9 (1915) 29, in dos.

Aërides recurvipes J. J. SM. in Bull. Jard. Bot. Buitenz. III 8 (1926) 63.

The original description reads as follows:

Aërides Jarckianum Schltr. n. sp.

Planta epiphytica, habitu *A. rubescenti* (Rolfe) Schltr. similis cui affinis, c. 20 cm. alta; foliis loratis illis *Rhynchostylidis retusa* Bl. similibus, sed latioribus et minus carinatis; racemis leviter decurvis, dense multifloris, c. 25 cm. longis; cylindraceis; pedunculo c. 10 cm. longo; bracteis reflexis, ovatis subacutis, ovario multo brevioribus; floribus adscendentibus vel suberectis in racemo decurvo, glabris, roseis, illis *A. rubescentis* (Rolfe) Schltr. similibus, c. 1 cm. diametientibus; sepalo intermedio suborbiculari, apiculato, concavo, c. 5 mm. longo, lateralibus oblongis obtusis, c. 6 mm longis obliquis; petalis late et oblique ovalibus obtusis, sepalo intermedio paululo brevioribus; labello trilobo, c. 6 mm. longo, lobis lateralibus incurvis, oblique oblongis, obtusiusculis, intermedio antico incurvo, ligulato, apice obtuse tridentato, lateralibus plus duplo longiore calcare oblique conico, leviter arcuato-protuso, subacuto, c. 8 mm. longo, columna brevi generis, pede subduplo longiore incrassato, medio longitudinaliter foveolato, c. 3 mm. longo, ovario pedicellato subviscido, glabro, pedicello gracili incluso c. 1.7 cm. longo.

Stems curved or recurved, terete, 30 to 35 cm long. Leaves lorate, recurved, leathery, thinner than those of *Aërides quinquevulnerum* Lindl., 12 to 20 cm long, 2 to 3 cm wide, unequally bilobed at the apex, slightly carinate on the back. Racemes subpendulous, densely many-flowered, 10 to 15 cm long, with their peduncles 30 to 50 cm long; sheaths remote, tubular, ovate, obtuse, up to 13 mm long. Flowers odorless, 12 to 13 mm across, 18 to 19 mm long; bracts ovate, acute, reflexed, up to 6 mm long. Pedicellate ovary slender, 14 to 16 mm long. Lateral sepals convex, suborbicular, subtruncate or broadly rounded at the apex, about 7 mm long, 6 mm wide, 7-nerved. Dorsal

sepal suborbicular-oblong, about 7 mm long, 4.5 to 5 mm wide, 7-nerved. Petals oblong-suborbicular or oval, rounded, about 6.5 mm long, 4 to 4.5 mm wide, 7-nerved. Labellum fleshy, trilobed; lateral lobes incurved and overlapping, joined to the middle lobe, falcate-oblong, obtuse or obliquely truncate, denticulate at the apex, about 3 mm long, 2 mm wide, the side margins entire; middle lobe lanceolate, strongly incurved at the tip, base covered by the infolded lateral lobes, narrowed to the obtuse, apiculate apex, 5.5 to 6 mm long, about 3 mm wide at the base, the margins entire. Spur conical, somewhat incurved, obtuse, 9 to 10 mm long. Column erect, very short, fleshy, stout, extended in a long slightly convex foot, about 8 mm long including the foot which has two thickened ridges on each side. Anther broadly triangular, beaked.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 80815, 80836 *Eduardo Quisumbing*, October, 1930.

Living plants were collected in the mountains of Rizal Province, by Novaliches orchid collectors, at medium altitudes.

Pedicellate ovary cameo pink to almost white; sepals and petals white dotted with light mallow pink; middle lobe of the labellum phlox purple to magenta; lateral lobes of the labellum phlox pink spotted with magenta; the spur magenta. Flowering season from December to February.

A species often mistaken locally for *Anota violacea* (Lindl.) Schltr. However, the two species are conspicuously differentiated by the floral parts. It differs from *Aërides quinquevulnerum* Lindl. in being a more slender plant, in the size and color of the flowers, and in the structure of the floral parts particularly the labellum. The species is allied to *Aërides Leea-num* Reichb. f., differing in the shape and details of the labellum.

AERIDES JARCKIANUM Schltr. var. *SMITHII* var. nov. Plate 3, figs. 3 and 4; Plate 6, figs. 9 to 16; Plate 13, fig. 2.

A typo foliis latioribus sepalis lateralibus saepissimi truncatis et floribus paulo majoribus intensius coloratis differt.

Plant more robust than the species. Leaves 13 to 19 cm long, 3.5 to 4 cm wide, about 2 mm thick, more distichous, broader and more rigid than in the species. Racemes 11 to 19 cm long, with the peduncles 26 to 62 cm long. Flowers more intensely colored than in the species, flower parts not so spreading as in the species, about 10 mm across, 20 to 21 mm long. Pedicellate ovary mallow purple, 20 to 22 mm long. Lateral sepals bent forward, with the anterior margin slightly involute, subquadrate, truncate, about 7.5 mm long, 6.5 mm wide, 7-nerved.

Dorsal sepal strongly cucullate, subquadrate-oval, rounded, about 7 mm long, 6 mm wide, 7-nerved. Petals suborbicular, rounded, about 6 mm long, 5.5 mm wide, 5-nerved. Labellum 3-lobed; lateral lobes not overlapping completely as in the species but overlapping only by the anterior margins, broadly falcate-oblong, truncate, denticulate at the apex, about 7.5 mm long, 3.5 mm wide; middle lobe oblong, broadly obtuse at the apex, the very tip slightly incurved, about 7.5 mm long, 3.75 mm wide. Spur as in the species, about 11 mm long. Column stout, fleshy, about 8.5 mm long including the foot.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 80816 *Eduardo Quisumbing*, October 6, 1930.

The living plants were collected originally in the same locality as the species. Basal half of the lateral sepals light mallow pink, upper half magenta; spur, dorsal sepal, and petals magenta. Labellum magenta except the apical four-fifths of the lateral lobes which is cameo pink. Column white; anther naphthalene yellow.

The variety is chiefly distinguished from the species by its more robust stems, more distichous, thicker wider leaves, more intensely colored and larger flowers and truncate lateral sepals.

This interesting variety is dedicated to Dr. J. J. Smith, an indefatigable student of Indo-Malaysian orchids, particularly those of Sumatra and Java, who has helped us to identify the species. The determination was accidental while Doctor Smith was studying the true status of the so-called *Anota violacea* from the Philippines.

AERIDES QUINQUEVULNERUM Lindl. var. **ALBUM** Williams. Plate 2, figs. 3 and 4; Plate 6, figs. 17 to 25; Plate 14, fig. 1.

Aërides quinquevulnerum Lindl. var. *album* WILLIAMS in *Orch. Grow. Man.* ed. 2 (1862) 41.

Aërides quinquevulnerum Lindl. var. *Farmeri* WILLIAMS apud Stein *Orchideenb.* (1892) 63; WILLIAMS, *Orch. Grower's Man.* ed. 7 (1894) 90; AMES *Orch.* 2 (1908) 253, in *Merr. Enum. Philip. Fl. Pl.* 1 (1925) 422.

Aërides Farmeri BOXALL ex Naves *Novis. App.* (1882) 239, nomen. *Aërides album* SANDER apud Stein *Orchideenb.* (1892) 63, in syn.

"A white variety of the preceding, (*A. quinquevulnerum*), producing long spikes of white flowers; grows like *quinquevulnerum*, and blooms about the same time." *Ex Orch. Grower's Man.* ed. 2 (1862) 41.

In habit similar to the species. Roots fleshy, greatly elongated, 5 to 9 mm in diameter. Stems unbranched, terete, 15 to 30 cm long, 1.2 to 1.3 cm in diameter. Leaves more distichous than in the species, carinate, coriaceous, 18 to 30 cm long, 3

to 4 cm wide. Racemes axillary, drooping, many-flowered, 20 to 30 cm long. Flowers very fragrant, pure white, fleshy and waxy, about 20 mm across. Pedicellate ovary 13 to 15 mm long. Sepals and petals spreading. Lateral sepals suborbicular-ovate, rounded at the apex, 10 to 11 mm long, 7 to 8 mm wide 7-nerved. Dorsal sepal suborbicular-oval, broadly obtuse, 7.5 to 9 mm long, about 7 mm wide, 5-nerved. Petals suborbicular-obovate, minutely acute at the rounded apex, 8.5 to 9.5 mm long, 5.5 to 6.5 mm wide, 5-nerved. Labellum 3-lobed; lateral lobes erect, oblong-semiorbicular, oblique, about 7 mm long, 6 mm wide; middle lobe concealed by the lateral lobes, lanceolate, incurved, about 8 mm long. Column short, stout, erect, with the foot 8 to 10 mm long. Anther ovoid; pollinia subglobose.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 85573 *Eduardo Quisumbing*, October 26, 1932.

The plants were originally collected by Mr. Aleko Lilius at an altitude of 100 to 130 meters in the hills of Calayan Island, Babuyan group, north of Luzon.

This variety differs from the species in its white flowers, more compact racemes, and more distichous leaves. This extremely rare orchid is remarkable for the elegance of its spikes of pure white, very fragrant flowers, which lasted for over a month. Since its appearance at Mr. W. F. G. Farmer's⁴ place in Non-such Park, Cheam, England, in 1862, this is the first time it has been shown in Manila, and apparently the second in the world.

Genus *LUISIA* Gaudichaud

LUISIA CORDATILABIA sp. nov. Plate 3, figs. 9 and 10; Plate 6, figs. 26 to 33; Plate 14, fig. 2.

Herba epiphytica. Caules adscendentes, simplices (ver rissime ramosi), 30 ad 80 cm alti, 5 ad 6 mm in crassitudine. Folia teretia, 9 ad 13.5 cm longa, 4 ad 5 mm in crassitudine, basi ad vaginas rigidas articulata. Inflorescentiae oppositifoliae; pedunculus circiter 2 cm longus; rhachis crassa; bracteae rigidae, cucullatae, usque ad 4 mm longae. Flores carnosae, rigidi, 1.8 ad 2 cm lati, bracteis triangularibus, acutis, persistentibus subtenti; pedicellus cum ovario 12 ad 13 mm longus. Sepala lateralia valde navicularia, carinata, oblique lanceolata vel ovato-lanceolata, acuta vel subacuta, circiter 11 mm longa, 5 mm lata, 3-nervia. Sepalum dorsale lanceolato-oblongum, ob-

⁴ Williams, *Orchid Grower's Manual* ed. 7 (1894) 90.

tusum vel subacutum cum apice cucullato, 10 ad 11 mm longum, 4.5 ad 5 mm latum, 3-nervium. Petala elliptico-lanceolata, obtusa, valde obliqua, carnosae, sepalis majora, 12 ad 13 mm longa, circiter 6 mm lata, 5-nervia. Labellum incrassatum, trilobatum, 10.5 ad 11 mm longum; lobi laterales erecti, subquadrati, truncati, circiter 3 mm longi, 2 mm alti; lobus medius perlate cordatus, obtusus, 7 ad 7.5 mm longus, 9 ad 10 mm latus. Columna crassa, circiter 5 mm longa. Anthera subquadrata, complanata. Pollinia 2, subglobosa, circiter 1.5 mm longa.

An epiphytic herb. Stems ascending, simple (only one case of branching was noted), 30 to 80 cm high, 5 to 6 mm in diameter. Leaves dark green, fleshy, terete, slightly tapered to the apex, 9 to 13.5 cm long, 4 to 5 mm in diameter, articulated to rigid sheaths, internodes 2 to 3 cm long. Inflorescences situated opposite the leaves, stout; peduncles up to 2 cm long; bracts rigid, cucullate, triangular, up to 4 mm long, acute at the apex. Flowers fleshy, odorless, rigid, 1.8 to 2 cm across; floral bracts brownish, acute, persistent; pedicellate ovary 12 to 13 mm long, twisted at the base. Lateral sepals strongly navicular, carinate, membranaceous, obliquely lanceolate or ovate-lanceolate, acute or subacute, about 11 mm long, 5 mm wide, 3-nerved. Dorsal sepal lanceolate-oblong, membranaceous, slightly concave, obtuse or subacute with a strongly cucullate apex, 10 to 11 mm long, 4.5 to 5 mm wide, 3-nerved. Petals elliptic-lanceolate, obtuse, fleshy at the apex, 12 to 13 mm long, about 6 mm wide, 5-nerved, spreading. Labellum 3-lobed, thickened, the middle lobe much so, 10.5 to 11 mm long; lateral lobes erect, subquadrate, truncate, about 3 mm long, 2 mm high; middle lobe very broadly cordate, obtuse, 7 to 7.5 mm long, 9 to 10 mm wide, with vertical ridges on the upper surface, the very tip recurved. Column stout, about 5 mm long. Anther subquadrate, flattened. Pollinia 2, subglobose, about 1.5 mm long.

LUZON, Benguet Subprovince, Baguio, Mansion House gardens, *Bur. Sci.* 82227 *Eduardo Quisumbing*, May 6, 1931.

The plants were first found in the orchid gardens of the Governor General's Palace in Baguio. The origin of these plants is not definitely known, but they were doubtless collected by the Igorots from the hills close to Baguio.

Pedicele sea-foam yellow; ovary Kildare green, dorsal sepal and petals deep sea-foam green dotted with pale rose-purple; lateral sepals deep sea-foam green at the base, the rest vina-

ceous-cinnamon; anther cap ivory yellow; column pale grass green lined and dotted at the base with dahlia purple; labellum dull dark purple.

This is an ally of *Luisia teretifolia* Gaudich. from which it is distinguished by the size of the flowers, by the relatively broad petal, and by the unbranched habit of the stems.

Genus VANDA Jones

VANDA LAMELLATA Lindl. var. REMEDIOSAE var. nov. Plate 1, figs. 9 and 10; Plate 7, figs. 1 to 9; Plate 15, figs. 1 and 2.

Planta erecta; folia quam in specie breviora, minus curvata, 13 ad 16 cm longa.

Stems erect, slender, terete, about 75 cm long, 1.2 cm in diameter. Leaves relatively short, ligulate-lorate, channeled, slightly curved, 13 to 16 cm long, 2.5 to 3.2 cm wide when expanded, the apex unequal, acute. Racemes longer than the leaves, erect, bearing from 19 to 23 flowers, 33 to 37 cm long including the peduncles. Flowers fragrant, intermediate in size between those of *V. lamellata* Lindl. and *V. lamellata* var. *boxallii* Reichb. f., 3.7 to 4 cm across. Pedicellate ovary 4 to 4.3 cm long. Lateral sepals ovate-spatulate, obtuse, subfalcate, 1.7 to 1.9 cm long, 1 to 1.2 cm wide. Dorsal sepal elliptic-oblan-ceolate, minutely acute at the rounded apex, 2 to 2.2 cm long, 7 to 8 mm wide. Petals elliptic-oblan-ceolate, acute, 1.9 to 2.1 cm long, 6.5 to 7 mm wide. Spur narrowly conical, obtuse, somewhat flattened, 5 to 6 mm long. Labellum 3-lobed, 1.1 to 1.2 cm long; lateral lobes asymmetrically ovate, broadly rounded, erect, about 4 mm long; middle lobe pandurate-subquadrate, retuse, constricted in the middle of each side, 9 to 10 mm long, 6 to 7 mm wide at the widest portion near the base, traversed longitudinally by two prominent keels, which are broadest in the middle. Column 5 to 6 mm long. Pollinia subglobose.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 85575 Eduardo Quisumbing, May 23, 1932.

The plants were originally collected from Jolo, Mindanao, with no definite locality. Since its arrival in Manila the plant has flowered three times (May 23, 1932, November 8, 1932, and January 20, 1933). The flowers remain fresh for about a month. Pedicellate ovary whitish. Dorsal sepal and petals white, their bases lined with ferrugineous; lateral sepals marguerite yellow, the inner half citron green and lined longitudinally with buff-citrine; lateral lobes of the labellum white; middle lobe of the labellum pale rosolane purple marked at the base

with six vinaceous-rufous lines, the two outer ones forking at the base. Column white.

This variety differs from the typical forms of *Vanda lamellata* in its erect stems, short and but slightly curved leaves. The flowers are larger than in usual forms of the species, and the color of the flower is distinct especially the middle lobe of the labellum.

This variety is dedicated to Mrs. Remedios C. Gonzales to whom the junior author owes great favors for her kindness in putting at his disposal for study her large collections of orchids and for her great interest in Philippine orchids.

VANDA MERRILLII Ames and Quisumbing var. **IMMACULATA** var. nov. Plate 2, figs. 5 and 6.

Haec varietas floribus omnino luteis haud striatis neque maculatis a *Vanda Merrillii* differt.

In habit and flower parts similar to the species. The flowers are slightly larger; the sepals, petals, and middle lobe of the labellum primuline yellow, with pinard yellow in the center. The lateral lobes of the labellum, column, and pedicellate ovary are white.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 85574 *Eduardo Quisumbing*, November 8, 1932.

The plant was originally collected by orchid peddlers from the mountains near Atimonan, Tayabas Province, Luzon. Since its arrival in Manila the plant had flowered twice (May 23 and November 8, 1932).

The variety is characterized by the complete absence of bars or maculations on the sepals and petals.

Genus *STAUROPSIS* Reichenbach f.

This genus was proposed in 1860 (*Hamb. Gartenz.* 16: 117) and briefly characterized as follows: "Gynostemium apus. Sepala a labello libera." As exemplifying these characters, *Trichoglottis philippinensis* Lindl. was referred here.

Later the genus *Stauropsis* was amplified by Bentham [in Bentham & Hook. f. *Gen. Pl.* 3 (1883) 572], where the distinction from the allied genera still rested on the footless column, while the lip was described as ecalcarate.

The type description of the allied genus *Trichoglottis* Bl. [Bijdr. (1825) 359] showed the base of the sepals adnate to a distinct column foot and the lip conspicuously spurred.

While several species subsequently referred to *Trichoglottis* appear to have a footless column and spurless lip, the vast ma-

jectory of *Trichoglottis*, including all the Philippine orchids which logically belong to that genus, have prominent spurs. It appears to us, therefore, that the genus *Stauropsis* should be retained for the Philippine orchids of this alliance, which are distinguished by an ecalcarate lip and footless column. Accordingly, the following transfers are made and a key to the Philippine members of the genus *Stauropsis* appended.

Key to the Philippine species of Stauropsis.

1. Flowers in racemes; peduncles elongate, about 7 cm long; labellum cruciform, with prominent keel *S. fasciata*.
1. Flowers solitary, opposite the axils of the leaves; peduncles very short or none.
 2. Labellum 5-lobed, cruciform, with prominent elongate keel; middle lobe of labellum elongate, linear.
 3. Lateral lobes of labellum (not the erect basal lobes) narrowly triangular to obliquely quadrate-oblong.

S. philippinensis.
 3. Lateral lobes of labellum acinaciform-linear; sepals and petals within victoria lake.

S. philippinensis var. *brachiata*.
 2. Labellum 3-lobed, not cruciform (with short basal lobes only), provided with a distinct rounded callus; middle lobe ovate-lanceolate with a caudate apex..... *S. Wenzelii*.

STAUROPSIS FASCIATA Benth.

Stauropsis fasciata BENTH. apud Jackson in Ind. Kew. (1885) 892; AMES and QUISUMBING in Philip. Journ. Sci. 47 (1932) 214, pls. 2, 12, 28, and 29.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 80831 Eduardo Quisumbing, May 26, 1930.

The living plants were collected from Atimonan, Tayabas Province, Luzon. They occur also in eastern tropical Asia; namely, Siam, Lankawi, etc.

Stauropsis fasciata Benth. differs from all other Philippine species in its elongate racemes and in the color and form of its flowers.

STAUROPSIS PHILIPPINENSIS (Lindl.) Reichb. f. Plate 2, figs. 11 to 13; Plate 7, figs. 19 to 27; Plate 16, fig. 1.

Stauropsis philippinensis (Lindl.) REICHB. F. in Hamb. Gartenz. 16 (1860) 117, Xen. Orch. 2 (1862) 8, in Walp. Ann. 6 (1864) 882; VIDAL Rev. Pl. Vasc. Filip. (1886) 270; AMES Orch. 2 (1908) 223, 5 (1915) 224, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 440.

Trichoglottis philippinensis LINDL. in Ann. & Mag. Nat. Hist. 15 (1845) 386; NAVES Novis. App. (1882) 243; VIDAL Phan. Cuming. Philip. (1885) 150; USTERI Beitr. Ken. Philip. Veg. (1905) 128; AMES Orch. 7 (1922) 137, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 440.

The original description reads as follows:

"* * * foliis subrotundo-ovatis emarginatis mucrone interjecto, sepalis oblongo-lanceolatis patulis, petalis reflexis linearibus brevioribus, labello esaccato pubescente secus axin villosa oblongo convexo apice hastato-trilobo dentibus baseos brevibus rotundatis. Philippines. Cuming." Lindley, loc. cit.

Tall, branched epiphyte (the herbarium specimens often simple). Roots greatly elongate, simple or branched, whitish. Stems erect (often tending to twist) up to 130 cm high, 5 to 10 mm in diameter, somewhat flattened; internodes up to 2.5 cm long. Leaves light green, oblong, oblong-ovate, or ovate-elliptic, distichous, retuse, mucronate, carinate, 2 to 9 cm long, 1.4 to 3.5 cm wide, thick, rigid. Flowers solitary, opposite the axils of the leaves, odorless or fragrant, lasting for several weeks on the stems without drying, 3 to 3.5 cm across, fleshy. Peduncles very short or none. Bracts imbricate at the base, minute, membranaceous. Lateral sepals ovate to lanceolate, acute, 1.5 to 1.9 cm long, 8 to 10 mm wide, apex abruptly recurved. Dorsal sepal lanceolate-elliptic, acute to subacute, 1.5 to 1.8 cm long, 3.5 to 8 mm wide. Petals narrower than the sepals, linear-ob lanceolate or narrowly elliptic-lanceolate, subacute or obtuse, 1.5 to 1.7 cm long, 4 to 4.5 mm wide. Labellum 5-lobed, cruciform, acute, 14 to 19 mm long; two basal lobes erect, triangular, short, subacute or obtuse, 1.75 to 2 mm long, firmly united with the column at the base; lateral lobes near the middle triangular to subquadrate-oblong, acute to obliquely truncate, white, 1.5 to 7.5 mm long. Entire disc laterally flattened and fleshy, 3 to 7 mm thick, strongly angled below near the apex, white, upper surface villose with white hairs; beneath the hairs mallow pink. Between the basal lobes within the shallow sac there is a quadrate yellow hairy appendage. Column fleshy, stout, about 6 mm long.

Cuming 2140 (Philippines), without definite locality (type of *Trichoglottis philippinensis* Lindl. in Herb. Brit. Mus.).

LUZON, Bulacan Province, Angat, *Bur. Sci.* 21680 Ramos, September 23, 1913: Cavite Province, Maragondong, *Merrill* 4188, July 30, 1930: Rizal Province, Mt. Alban, *Loher* 6023, July 9, 1905. NEGROS, Hermosa, *For. Bur.* 17460 Curran, September 29, 1909. CEBU, Algot, *Lange* 18630, November, 1928. PALAWAN, without definite locality, *Watling* 17574, May, 1927. MINDANAO, Surigao Province, Surigao, *Bur. Sci.* 34542 Ramos and Pascasio, April 9, 1919: Misamis Province, without definite

locality, *For. Bur.* 19519 *W. Klemme*, January, 1911: Davao Province, Astorga, *Copeland*, s. n. April 29, 1914; *Mati*, *Bur. Sci.* 49026 *Ramos and Edaño*, June 28, 1929. TAWI-TAWI, Sulu Province, *Bur. Sci.* 44245 *Ramos and Edaño*, July 19, 1924.

A common endemic species in the Philippines, up to 300 meters altitude. The typical form is colored thus: Sepals and petals are margined with primrose yellow, at the center deep colonial buff or honey yellow to orange-cinnamon with the base Etruscan red. Labellum white with mallow pink on both sides of the central ridge; appendage in the sac between the basal lobes yellow. Column white with a liseran purple line around it.

A species characterized by its cruciform 5-lobed labellum and its solitary flowers opposite the axils of the leaves.

In the herbarium of the Bureau of Science are two plants with different colored flowers. These plants must be referred to this species. The data are: (a) *Bur. Sci.* 85576 *Eduardo Quisumbing*, May 20, 1929. Living plant originally was collected by the late Mr. Maximo Ramos from Catanduanes. Sepals and petals white to marguerite yellow, splashed or barred with dragon's blood red or jasper red (Plate 2, fig. 12). (b) *Bur. Sci.* 85557 *Eduardo Quisumbing*, August 8, 1931. Living plant was originally collected in Davao Province, without definite locality. Sepals and petals are madder brown and margined by reed yellow (Plate 2, fig. 13).

STAUROPSIS PHILIPPINENSIS (Lindl.) Reichb. f. var. *BRACHIATA* (Ames) comb. nov.
Plate 3, figs. 11 and 12; Plate 7, figs. 10 to 18; Plate 16, fig. 2.

Trichoglottis brachiata AMES *Orch.* 7 (1922) 136, in Merr. *Enum. Philip. Fl. Pl.* 1 (1925) 440.

The original description reads as follows:

"Aff. *T. philippinensis* Lindl. Caules plus minusve 30 cm alti, rigidi, usque ad apicem foliati, vaginis foliorum obtecti, usque ad 8 mm. in crassitudine, internodiis 1.4 cm. longis. Folia plus minusve 4.5 cm. longa, 2.9 cm. lata, oblongo-elliptica, disticha, retusa, apiculata, apiculo rigido, acuto. Flores laterales, e nodis orientes, singuli. Pedicellus cum ovario usque ad 3.5 cm. longus. Sepala lateralia patentia, 21 mm. longa, 11 mm. lata, ovato-lanceolata, acuta, coriacea. Sepalum dorsale simile. Petala 2 cm. longa, 6 mm. lata, anguste lanceolata, utrinque attenuata, subacuta, valde coriacea, patentia. Labellum 19 mm. longum, quinquelobatum, usque ad medium columnae affixum, ecalcaratum, basi saccatum vel valde concavum; lobi basiales erecti, trianguli, carnosii, circa 3 mm. alti, intus minute pubescentes; lobi laterales 8 mm. longi, usque ad 1.5 mm. lati, acinaciformes, apice inaequaliter dentati, utrinque minute pubescentes; lobus terminalis a latere complanatus, 9 mm. longus, 5 mm. altus, carnosus,

cuneato-quadratus, angulo superiore valde elongato, utrinque pubescens, supra pilosus; discus carina valde carnosus ornatus, prope basim appendicula quadrata, truncata, carnosus instructus. Colmuna brevis, 7 mm. longa, minute pubescens." Ames, loc. cit.

Stems erect, rigid, up to 56 cm high, 5 to 8 mm in diameter; internodes 1 to 1.5 cm long. Leaves ovate-oblong or broadly oblong-elliptic, 3 to 8 cm long, 2.5 to 4 cm wide, distichous, thickly coriaceous, rigid, retuse, apiculate; the apicule rigid, acute. Flowers lateral, appearing singly at the nodes opposite the leaves, 3 to 4.5 cm across. Pedicellate ovary twisted, 3 or more cm long. Sepals and petals spreading and star-shaped. Lateral sepals thickly coriaceous, ovate or ovate-lanceolate, acute, 2 to 2.5 cm long, 1 to 1.5 cm wide. Dorsal sepal similar in form and texture, 1.7 to 1.9 cm long, 1 to 1.4 cm wide. Petals thickly coriaceous, lanceolate or oblong-elliptic, narrowed at both ends, subacute or obtuse at the apex, 1.9 to 2 cm long, 6 to 7 mm wide. Labellum 19 to 25 mm long, 5-lobed, adnate to the lower half of the column, ecalcarate, the base saccate or strongly concave; basal lobes erect, triangular, fleshy, 2.5 to 4 mm high, glabrous without and minutely pubescent within; lateral lobes 6 to 8 mm long, up to 4 mm wide, acinaciform, unequally dentate at the apex, minutely pubescent on both surfaces; middle lobe laterally flattened, about 14 to 18 mm long from the base of the basal lobes, 2.5 to 5 mm high, fleshy, elongate-cuneate, disc with a prominent fleshy keel which is pilose above. Between the basal lobes there is a quadrate, truncate callus which is minutely pubescent. Column stout, 7 to 8 mm long, minutely pubescent.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 85613 *Eduardo Quisumbing*, August 14, 1930. Living plants were collected by orchid peddlers from Tayabas Province. Other collections in the herbarium of the Bureau of Science, Manila, are as follows: BILIRAN, *Bur. Sci.* 18931 *McGregor* (type), June 23, 1914. PALAWAN, near the shores between Cataban and Pancol, *Ermitaño 17577*, May, 1927. MINDANAO, Agusan Province, Cabadbaran, *Weber 134* (this number shows transition to *S. philippinensis*): Davao Province, Todaya, Mount Apo, *Elmer 12021*.

An endemic variety usually found on tree trunks at low altitudes. Sepals and petals light cadmium on the outer surface, victoria lake inside, except the margins, tips, and a central line, which are light cadmium. Labellum rhodamine purple, except the white pilose hairs above the ridge and the center of the lat-

eral lobes of the labellum ivory yellow. Blooms in Manila gardens usually around August. The plants thrive on adobe stone walls and in wooden baskets.

This variety differs from the species in its Victoria lake color of the inside of the flowers, and its elongate, linear, curved lateral lobes of the labellum, which arise near the middle of the central lobe.

STAUROPSIS WENZELII (Ames) comb. nov. Plate 3, figs. 14 and 15; Plate 7, figs. 28 to 35; Plate 17.

Trichoglottis Wenzelii AMES in Philip. Journ. Sci. 8 (1913) Bot. 440, Orch. 5 (1915) 257, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 440.

Trichoglottis retusa AMES in Philip. Journ. Sci. 4 (1909) Bot. 676, non Blume, in Merr. Enum. Philip. Fl. Pl. 1 (1925) 440.

The original description reads as follows:

"Herba epiphytica circiter 30 cm alta, rigida. Caules foliosi, internodiis 1.5-2 cm longis. Foliorum vaginae cylindraceae, supra paulo dilatatae, internodiis aequilongae, laminae valde coriaceae, in sicco rugosae, oblongae, 4.5-6 cm longae, circiter 1.5 cm latae, distichae, ad apicem subaequaliter rotundato-bilobae vel retusae. Inflorescentiae oppositifoliae, foliis breviores. Bracteae rigidae, 2 mm longae. Flores inter maximos generis, purpureo-maculati, circiter 2 cm in diametro. Sepala lateralia oblonga, subacuta ad basim late cuneata, carnosa, 1 cm longa, 6 mm lata. Sepalum dorsale simile. Petala spathulata, 9-10 mm longa, prope apicem 3 mm lata. Labellum breve saccatum, 3-lobatum, lobis lateralibus brevibus obtusis, utrinque pubescentibus, lobo medio elongato, attenuato, sagittato-lanceolato, apice attenuato, acuto, usque ad 13 mm longo, pubescenti. Callus in disco, pubescens. Ligula ante foveam pubescens 4 mm longa. Gynostemium pubescens auriculis elongatis, pilosis, 4 mm longis." Ames, Philip. Journ. Sci. 8 (1913) Bot. 440.

Epiphyte; the roots greatly elongate. Stems rigid, foliose, erect, or more or less arcuate, 25 to 75 cm high, 4 to 7 mm in diameter; internodes 1.5 to 4 cm long. Leaf sheaths cylindric, dilated at the apex, and as long as the internodes. Leaves oblong to ligulate, leathery, rugose when dry, 4 to 12 cm long, 1.1 to 2.5 cm wide, distichous, unequally bilobed or retuse at the apex with rounded lobules. Inflorescences opposite the leaves and much shorter than the leaves. Bracts rigid, tubular, about 2 mm long. Flowers fragrant, in life 1.6 to 1.7 cm across, 2 to 2.5 cm across when fully expanded. Pedicellate ovary somewhat twisted, about 1.3 cm long. Lateral sepals fleshy, ovate to oblong, subacute, 8 to 13 mm long, 5 to 7 mm wide, 6- to 7-nerved. Dorsal sepal oblong-obovate, acute to subacute, apiculate, 7.1 to 11 mm long, 4.2 to 6.25 mm wide, 5- to 6-nerved. Petals spatulate or oblong-spatulate, 7 to 10 mm long, 2 to 3 mm wide at the widest portion, 3-nerved. Labellum 3-lobed, shal-

lowly saccate at the base, fleshy, 12.8 to 17 mm long when expanded; basal lobes short, triangular, obtuse, 1.5 to 2.5 mm long, free portion about 1.6 mm, pubescent; middle lobe ovate to ovate-lanceolate, about 13 mm long, attenuate or caudate at the apex (with tail 5.5 to 7 mm long), glabrous below and pubescent above. Between the basal lobes there is a ligulate, pubescent appendage which is 2.8 to 3 mm long. Keel beneath the middle lobe narrow and thin. Gynostemium pubescent, the auricles elongate, pilose, 2.5 to 2.9 mm long.

LUZON, Tayabas Province, Pitogo, *For. Bur.* 9653 Curran, March 23, 1908; Camarines Sur Province, Mount Bagacay, *Bur. Sci.* 33850 Ramos and Edaña, December 17, 1918. NEGROS, Occidental Negros Province, along Gimogaa River, *For. Bur.* 5553 H. D. Everett, October 26, 1906. LEYTE, Dagami, *Wenzel* 15 (Type of *Trichoglottis Wenzelii* Ames), December 8, 1912, *Wenzel* 176. MINDANAO, Surigao Province, Surigao, *F. H. Bolster* 225, January 17, 1906; *W. S. Lyon* 127: Davao Province, Davao, *Rev. R. F. Black*, s. n. 1909; Zamboanga Province, Malasugat, *Merrill* 8206, November-December, 1911. TAWITAWI, Sulu Province, *Bur. Sci.* 44262 Ramos and Edaña, August 22, 1924. BASILAN, *For. Bur.* 6103 Hutchinson, August, 1906. A species growing at lower altitudes. Endemic.

Sepals and petals chalcedony yellow or light green-yellow, striped with amaranth purple. Labellum cream-colored, barred with amaranth purple with the white pilose hairs on the upper surface of the middle lobe.

The species is characterized by having a trilobed labellum, of which the middle lobe is ovate to ovate-lanceolate, attenuate or caudate at the apex.

ILLUSTRATIONS

PLATE 1

- FIG. 1. *Dendrobium Alieiae* sp. nov., front view of flower, $\times 1$.
2. *Dendrobium Alieiae* sp. nov., side view of flower, $\times 1$.
3. *Bulbophyllum surigaense* sp. nov., side view of flower, $\times 1.5$.
4. *Bulbophyllum surigaense* sp. nov., front view of flower, $\times 1.5$.
5. *Dendrobium plieatile* Lindl. var. *Convoearii* var. nov., front view of flower, $\times 1$.
6. *Dendrobium plieatile* Lindl. var. *Convoearii* var. nov., side view of flower, $\times 1$.
7. *Cymbidium dayanum* Reichb. f., front view of flower, $\times 1$.
8. *Cymbidium dayanum* Reichb. f., side view of flower, $\times 1$.
9. *Vanda lamellata* Lindl. var. *Remediosae* var. nov., front view of flower, $\times 1$.
10. *Vanda lamellata* Lindl. var. *Remediosae* var. nov., side view of flower, $\times 1$.

PLATE 2

- FIG. 1. *Phalaenopsis Micholitzii* Rolfe, front view of flower, $\times 1$ (circa).
2. *Phalaenopsis Micholitzii* Rolfe, side view of flower, $\times 1$ (circa).
3. *Aërides quinquevulnerum* Lindl. var. *album* Williams, side view of flower, $\times 1$.
4. *Aërides quinquevulnerum* Lindl. var. *album* Williams, front view of flower, $\times 1$.
5. *Vanda Merrillii* Ames and Quisumbing var. *immaculata* var. nov., front view of flower, $\times 1$.
6. *Vanda Merrillii* Ames and Quisumbing var. *immaculata* var. nov., side view of flower, $\times 1$.
7. *Phalaenopsis equestris* (Schauer) Reichb. f. var. *leucotanche* Reichb. f., front view of flower, $\times 1$.
8. *Phalaenopsis equestris* (Schauer) Reichb. f. var. *leucotanche* Reichb. f., side of view of flower, $\times 1$.
9. *Sarcochilus unguiculatus* Lindl., front view of flower, $\times 1$.
10. *Sarcochilus unguiculatus* Lindl., side view of flower, $\times 1$.
11. *Stauropsis philippinensis* (Lindl.) Reichb. f., (typical form), front view of flower, $\times 1$.
12. *Stauropsis philippinensis* (Lindl.) Reichb. f., front view of flower, $\times 1$.
13. *Stauropsis philippinensis* (Lindl.) Reichb. f., front view of flower, $\times 1$.
14. *Stauropsis Wenzelii* (Ames) comb. nov., front view of flower, $\times 1$.
15. *Stauropsis Wenzelii* (Ames) comb. nov., side view of flower, $\times 1$.

PLATE 3

- FIG. 1. *Aërides Jarckianum* Schltr., front view of flower, $\times 2$.
 2. *Aërides Jarckianum* Schltr., side view of flower, $\times 2$.
 3. *Aërides Jarckianum* Schltr. var. *Smithii* var. nov., front view of flower, $\times 2$.
 4. *Aërides Jarckianum* Schltr. var. *Smithii* var. nov., side view of flower, $\times 2$.
 5. *Dendrobium irayense* sp. nov., front view of flower, $\times 2$.
 6. *Dendrobium irayense* sp. nov., side view of flower, $\times 2$.
 7. *Dendrobium Yeageri* sp. nov., front view of flower, $\times 1$ (circa).
 8. *Dendrobium Yeageri* sp. nov., side view of flower, $\times 1$ (circa).
 9. *Luisia cordatilabia* sp. nov., front view of flower, $\times 2$.
 10. *Luisia cordatilabia* sp. nov., side view of flower, $\times 2$.
 11. *Stauroopsis philippinensis* (Lindl.) Reichb. f. var. *brachiata* (Ames) comb. nov., front view of flower, $\times 1$.
 12. *Stauroopsis philippinensis* (Lindl.) Reichb. f. var. *brachiata* (Ames) comb. nov., side view of flower, $\times 1$.

PLATE 4

- Dendrobium Aliciae* sp. nov.: 1, dorsal sepal, $\times 1.5$; 2, lateral sepal, $\times 1.5$; 3, petal, $\times 1.5$; 4, front view of column and labellum (natural position), $\times 2.5$ (circa); 5, labellum from above, stretched out, $\times 3$; 6, side view of ovary, column, and labellum (natural position), $\times 3$; 7, anther from above, (enlarged); 8, anther from below, (enlarged); 9, pollinia, (enlarged).
- Dendrobium plicatile* Lindl. var. *Convocarii* var. nov.: 10, dorsal sepal, $\times 1$ (circa); 11, lateral sepal, $\times 1$ (circa); 12, petal, $\times 1$ (circa); 13, front view of column, and labellum (natural position), $\times 1.5$ (circa); 14, labellum from above, stretched out, $\times 1.5$ (circa); 15, side view of column, ovary, and labellum (natural position), $\times 1.5$ (circa); 16, anther from below, $\times 6$; 17, anther from above, $\times 6$; 18, group of pollinia, $\times 6.5$; 19, a pollinium, $\times 6.5$.
- Dendrobium irayense* sp. nov.: 20, dorsal sepal, $\times 2$ (circa); 21, lateral sepal, $\times 2$ (circa); 22, petal, $\times 2$ (circa); 23, side view of pedicellate ovary, column, and labellum (natural position), $\times 2.4$ (circa); 24, labellum from above (flattened), $\times 2.4$ (circa); 25, front view of column, $\times 1.5$ (circa); 26, anther from above, $\times 10$ (circa); 27, anther from below, $\times 10$ (circa); 28, pollinia, $\times 8$ (circa).
- Dendrobium Yeageri* sp. nov.: 29, dorsal sepal, $\times 1.5$ (circa); 30, petal, $\times 1.5$ (circa); 31, lateral sepal, $\times 1.5$ (circa); 32, labellum from above (stretched out), $\times 1.5$ (circa); 33, side view of labellum, column, and pedicellate ovary (natural position), $\times 1.5$ (circa); 34, anther from above, $\times 7$; 35, anther from below, $\times 7$; 36, front view of column, $\times 1.5$ (circa); 37, pollinia, $\times 7$.

PLATE 5

- Bulbophyllum surigaense* sp. nov.: 1, a bract, $\times 3$ (circa); 2, dorsal sepal, $\times 3$ (circa); 3, lateral sepal, $\times 3$ (circa); 4, petal, $\times 3$ (circa); 5, front view of column, and labellum (natural position), $\times 6$ (circa); 6, side view of ovary, column, and labellum (natural position), $\times 6$ (circa); 7, anther from above, $\times 14$; 8, anther from below, $\times 14$; 9, pollinia, $\times 14$.
- Cymbidium dayanum* Reichb. f.: 10, dorsal sepal, $\times 1$ (circa); 11, lateral sepal, $\times 1$ (circa); 12, petal, $\times 1$ (circa); 13, side view of column, and labellum (natural position), $\times 1.5$ (circa); 14, front view of column, and labellum from above (stretched out), $\times 1.5$ (circa); 15, anther from above, $\times 8$ (circa); 16, anther from below, $\times 8$ (circa); 17, pollinia, $\times 8$ (circa).
- Sarcochilus unguiculatus* Lindl.: 18, dorsal sepal, $\times 2$; 19, petal, $\times 2$; 20, lateral sepal, $\times 2$; 21, side view of column, and labellum (natural position), $\times 2$; 22, column and labellum from above, with the lateral lobes of the labellum stretched out, $\times 2$; 23, front view of column without anther, $\times 8$; 24, fruit, $\times 1$ (circa).
- Phalaenopsis Micholitzii* Rolfe: 25, dorsal sepal, $\times 0.75$; 26, petal $\times 0.75$; 27, lateral sepal, $\times 0.75$; 28, side view of column, and labellum (natural position), $\times 1.5$; 29, front view of column, and labellum (natural position), $\times 1.5$; 30, labellum from above (stretched out) 1.5; 31, anther from above, $\times 4.5$; 32, anther from below, $\times 4.5$; 33, pollinia, $\times 7.5$.

PLATE 6

- Aërides Jarckianum* Schltr.: 1, dorsal sepal, $\times 3$; 2, lateral sepal, $\times 3$; 3, petal, $\times 3$; 4, side view of pedicellate ovary, column, and labellum (natural position), $\times 2$ (circa); 5, front view of column, and labellum (natural position), $\times 2$ (circa); 6, anther from above, $\times 6$ (circa); 7, anther from below, $\times 6$ (circa); 8, pollinia, $\times 9$ (circa).
- Aërides Jarckianum* Schltr. var. *Smithii* var. nov.: 9, dorsal sepal, $\times 3$ (circa); 10, lateral sepal, $\times 3$ (circa); 11, petal, $\times 3$ (circa); 12, side view of pedicellate ovary, column, and labellum (natural position), $\times 2$ (circa); 13, front view of column, and labellum (natural position), $\times 2$ (circa); 14, anther from above, $\times 6$ (circa); 15, anther from below, $\times 6$ (circa); 16, pollinia, $\times 9$ (circa).
- Aërides quinquevulnerum* Lindl. var. *album* Williams: 17, dorsal sepal, $\times 3$ (circa); 18, lateral sepal, $\times 3$ (circa); 19, petal, $\times 3$ (circa); 20, front view of labellum (natural position), $\times 4$; 21, side view of labellum, and portion of column (natural position), $\times 2$ (circa); 22, front view of column, $\times 2$ (circa); 23, an-

ther from above, $\times 5$ (circa); 24, anther from below, $\times 5$ (circa); 25, pollinia, $\times 10$ (circa).

Luisia cordatilabia sp. nov.: 26, dorsal sepal, $\times 2$ (circa); 27, petal, $\times 2$ (circa); 28, lateral sepal, $\times 2$ (circa); 29, front view of column, and labellum (natural position), $\times 2$ (circa); 30, side of pedicellate ovary, column, and labellum (natural position), $\times 2$ (circa); 31, anther from above, $\times 4$ (circa); 32, anther from below, $\times 4$ (circa); 33, pollinia in two views, $\times 4$ (circa).

PLATE 7

Vanda lamellata Lindl. var. *Remediosae* var. nov.: 1, dorsal sepal, $\times 1.5$ (circa); 2, lateral sepal, $\times 1.5$ (circa); 3, petal, $\times 1.5$ (circa); 4, side view of ovary, column, and labellum (natural position), $\times 2$ (circa); 5, labellum from above (natural position), $\times 2$ (circa); 6, labellum from above (stretched out), $\times 2$ (circa); 7, anther from above, $\times 8$ (circa); 8, anther from below, $\times 8$ (circa); 9, pollinium, $\times 8$ (circa).

Stauropsis philippinensis Lindl. var. *brachiata* (Ames) comb. nov.: 10, dorsal sepal, $\times 2$; 11, petal, $\times 2$; 12, lateral sepal, $\times 2$; 13, side view of ovary, column, and labellum (natural position), $\times 2$; 14, column and labellum from above (natural position), $\times 2$; 15, labellum from above (stretched out), $\times 2$; 16, anther from above, $\times 5.5$ (circa); 17, anther from below, $\times 5.5$ (circa); 18, pollinia, $\times 5.5$ (circa).

Stauropsis philippinensis (Lindl.) Reichb. f.: 19, dorsal sepal, $\times 1.5$ (circa); 20, lateral sepal, $\times 1.5$ (circa); 21, petal, $\times 1.5$ (circa); 22, labellum from above with lateral lobes stretched out, $\times 1.5$ (circa); 23, side view of ovary, column, and labellum, (natural position), $\times 1.5$ (circa); 24, front view of column, and labellum (natural position), $\times 1.5$ (circa); 25, anther from above, $\times 8$ (circa); 26, anther from below, $\times 8$ (circa); 27, pollinia, $\times 8$ (circa).

Stauropsis Wenzelii (Ames) comb. nov.: 28, dorsal sepal, $\times 2$ (circa); 29, lateral sepal, $\times 2$ (circa); 30, petal, $\times 2$ (circa); 31, side view of ovary, column, and labellum (natural position), $\times 2$ (circa); 32, labellum from above, stretched out, $\times 2$ (circa); 33, front view of column, and labellum, $\times 2$ (circa); 34, views of anthers from above and from below, $\times 8$ (circa); 35, pollinia, $\times 8$ (circa).

PLATE 8

- FIG. 1. *Dendrobium Aliciae* sp. nov., habit, very much reduced.
2. *Dendrobium plicatile* Lindl. var. *Convocarui* var. nov., habit, very much reduced.

PLATE 9

- FIG. 1. *Dendrobium irayense* sp. nov., habit, very much reduced.
2. *Dendrobium Yeageri* sp. nov., habit very much reduced.

PLATE 10

- FIG. 1. *Bulbophyllum surigaense* sp. nov. habit, very much reduced.
 2. *Bulbophyllum surigaense* sp. nov., flowers, almost natural size.

PLATE 11

- FIG. 1. *Cymbidium dayanum* Reichb. f., habit, very much reduced.
 2. *Phalaenopsis equestris* (Schauer) Reichb. f. var. *leucotanche* Reichb. f., habit, reduced.

PLATE 12

- FIG. 1. *Sarcochilus unguiculatus* Lindl., habit, and fruits, much reduced.
 2. *Phalaenopsis Micholitzii* Rolfe, habit, much reduced.

PLATE 13

- FIG. 1. *Aërides Jarekianum* Schltr., habit, very much reduced.
 2. *Aërides Jarekianum* Schltr. var. *Smithii* var. nov., habit, very much reduced.

PLATE 14

- FIG. 1. *Aërides quinquevulnerum* Lindl. var. *album* Williams, habit, very much reduced.
 2. *Luisia cordatilabia* sp. nov., habit, very much reduced.

PLATE 15

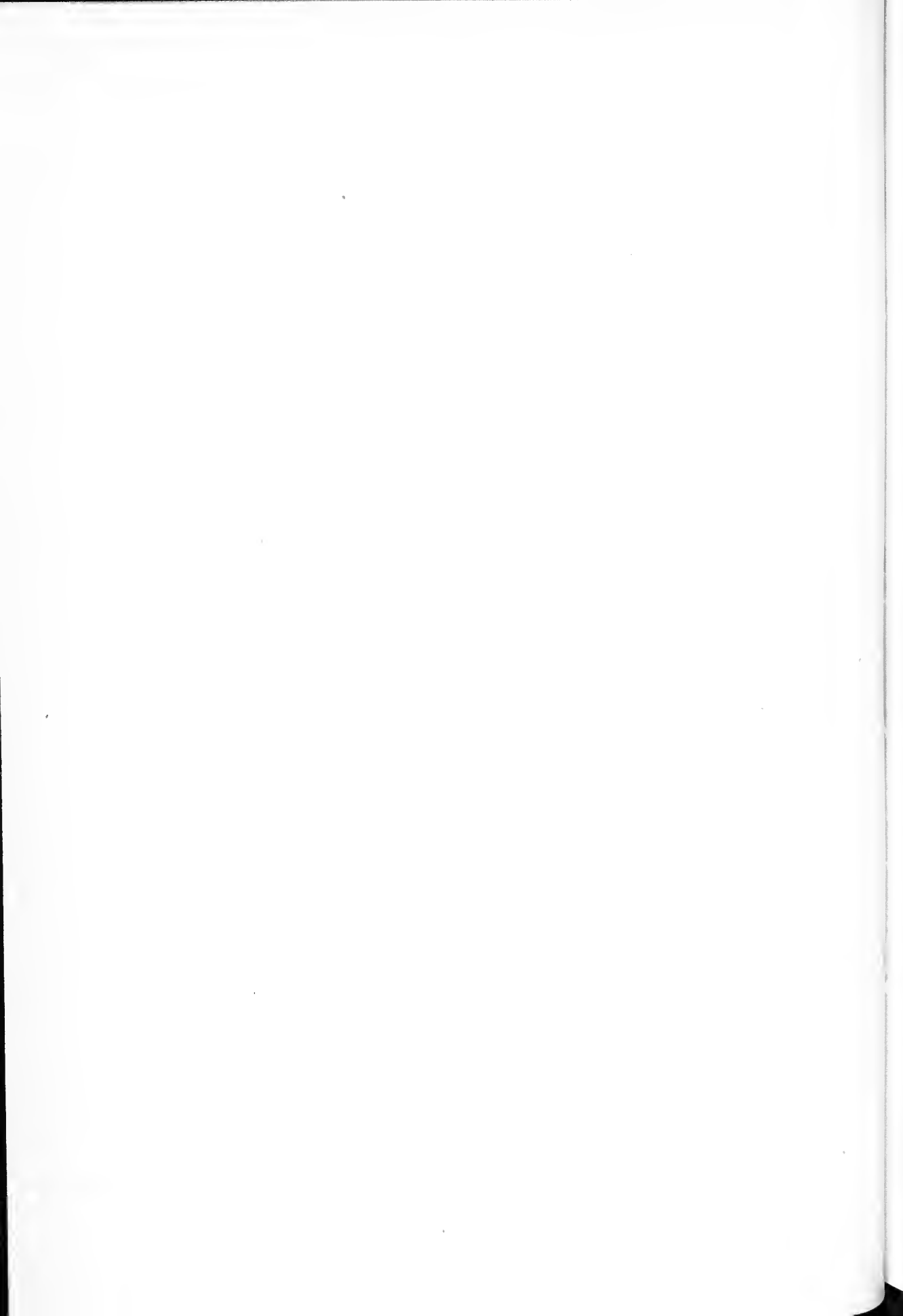
- FIG. 1. *Vanda lamellata* Lindl. var. *Remediosae* var. nov., habit, very much reduced.
 2. *Vanda lamellata* Lindl. var. *Remediosae* var. nov., flowers, slightly enlarged.

PLATE 16

- FIG. 1. *Stauropsis philippinensis* (Lindl.) Reichb. f., habit, very much reduced.
 2. *Stauropsis philippinensis* (Lindl.) Reichb. f. var. *brachiata* (Ames) comb. nov., habit, very much reduced.

PLATE 17

- Stauropsis Wenzelii* (Ames) comb. nov., habit, very much reduced.



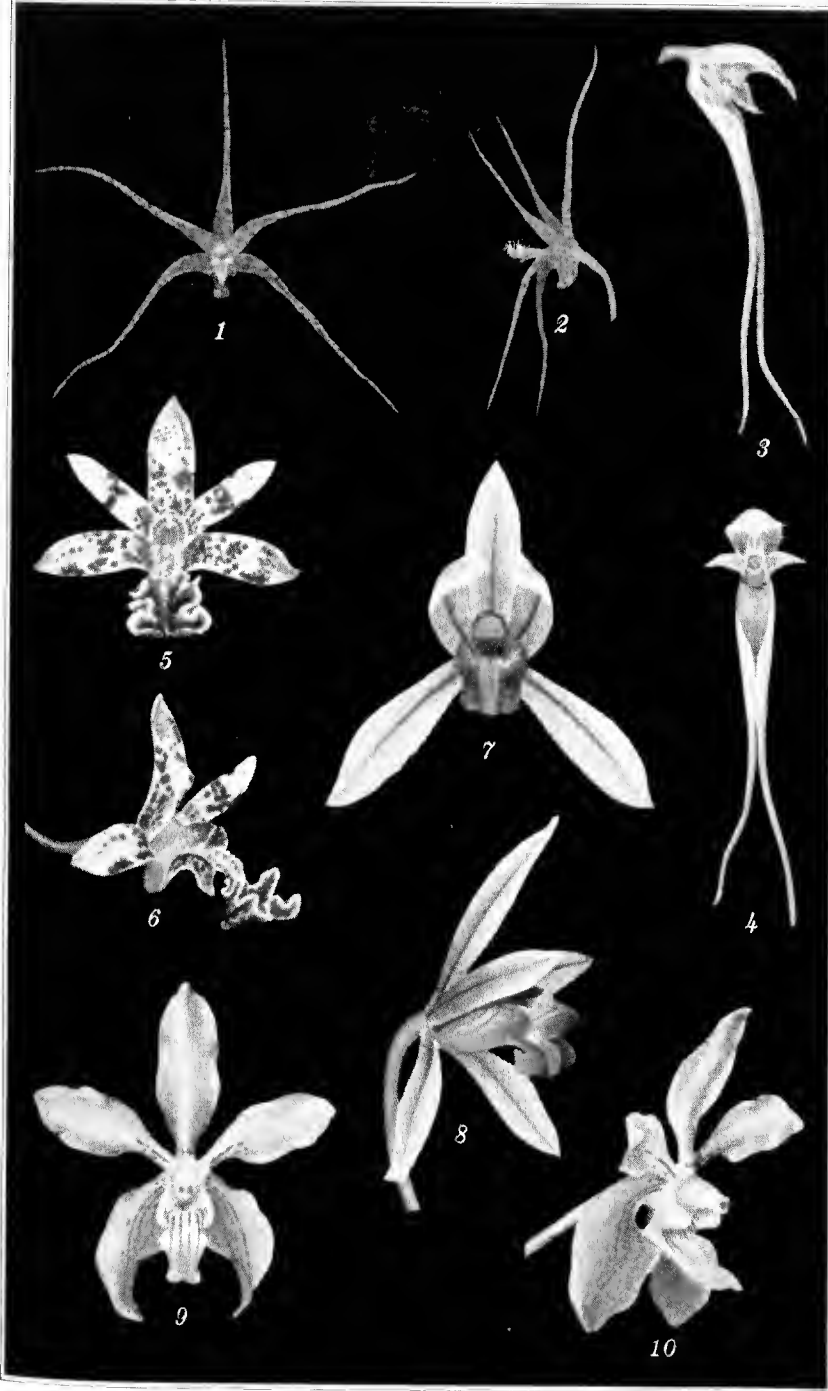


PLATE 1.

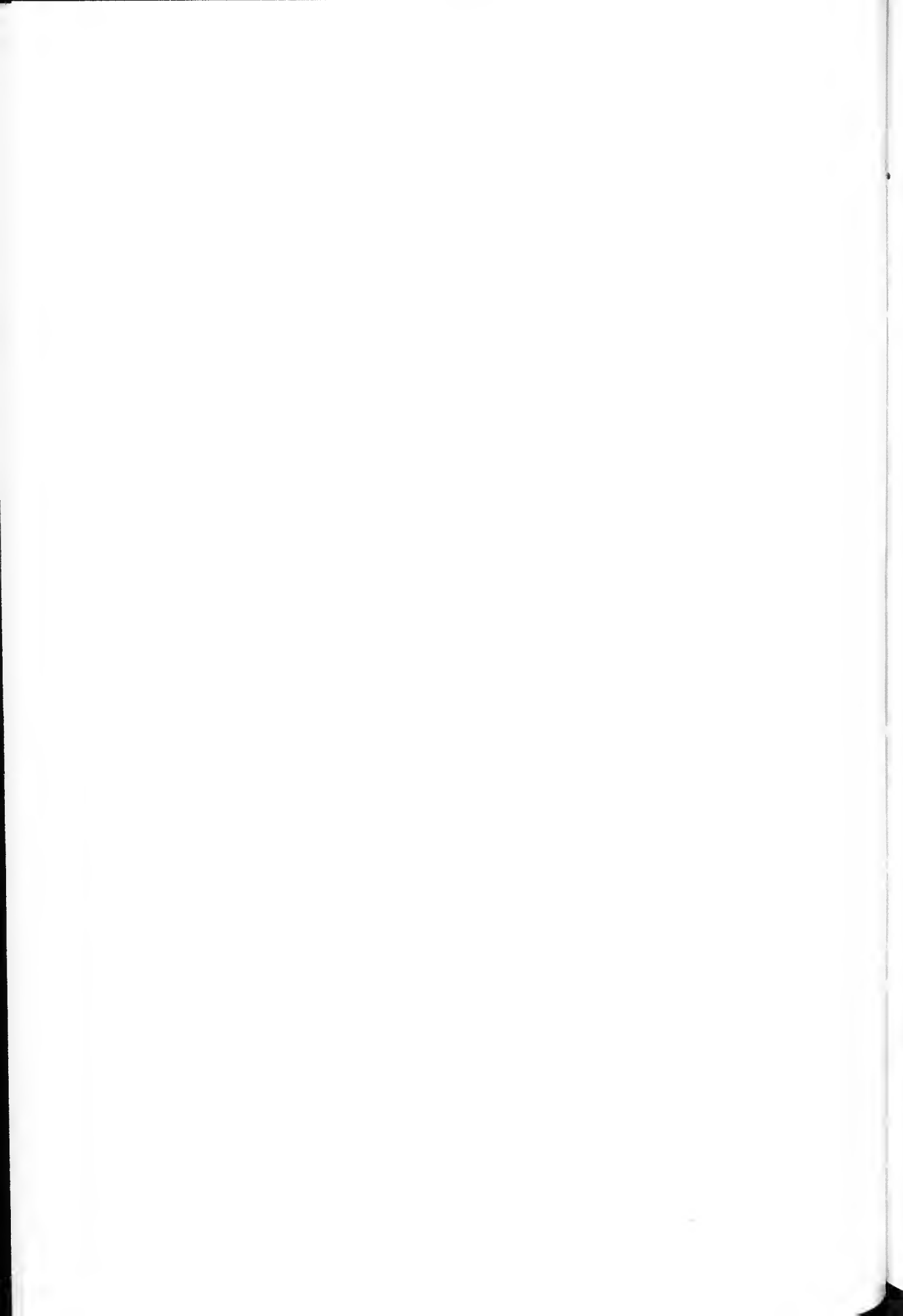




PLATE 2.

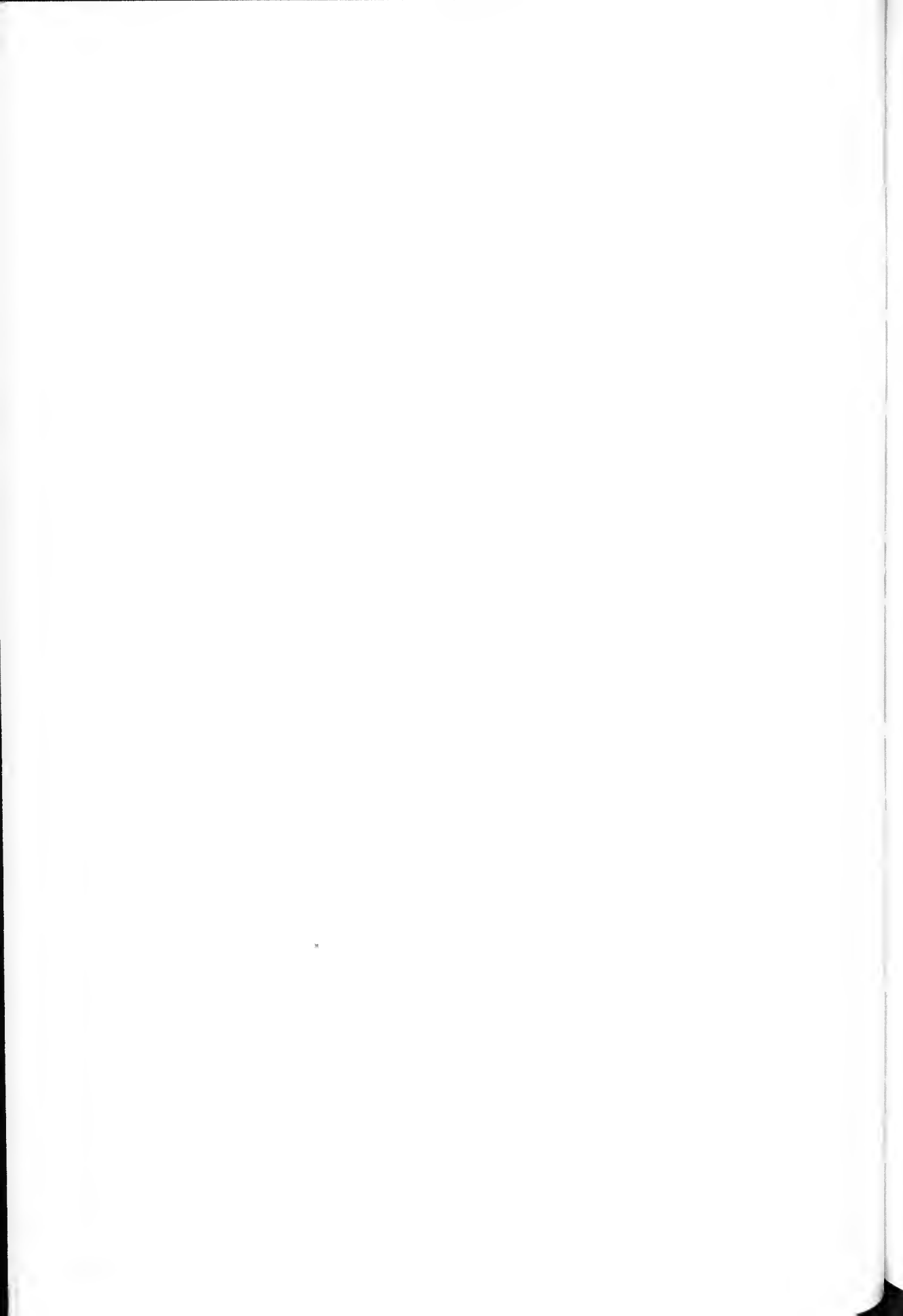
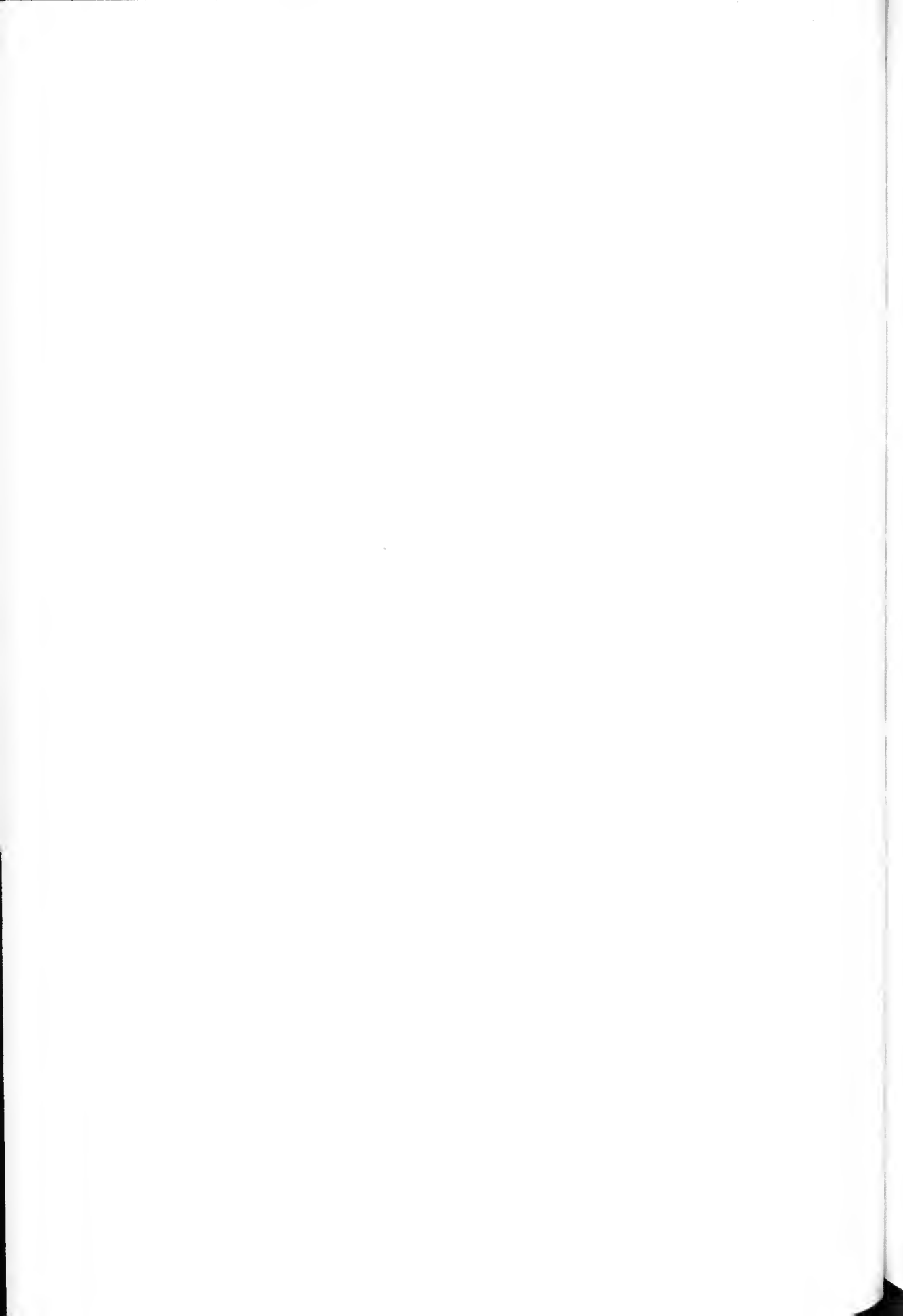




PLATE 3.



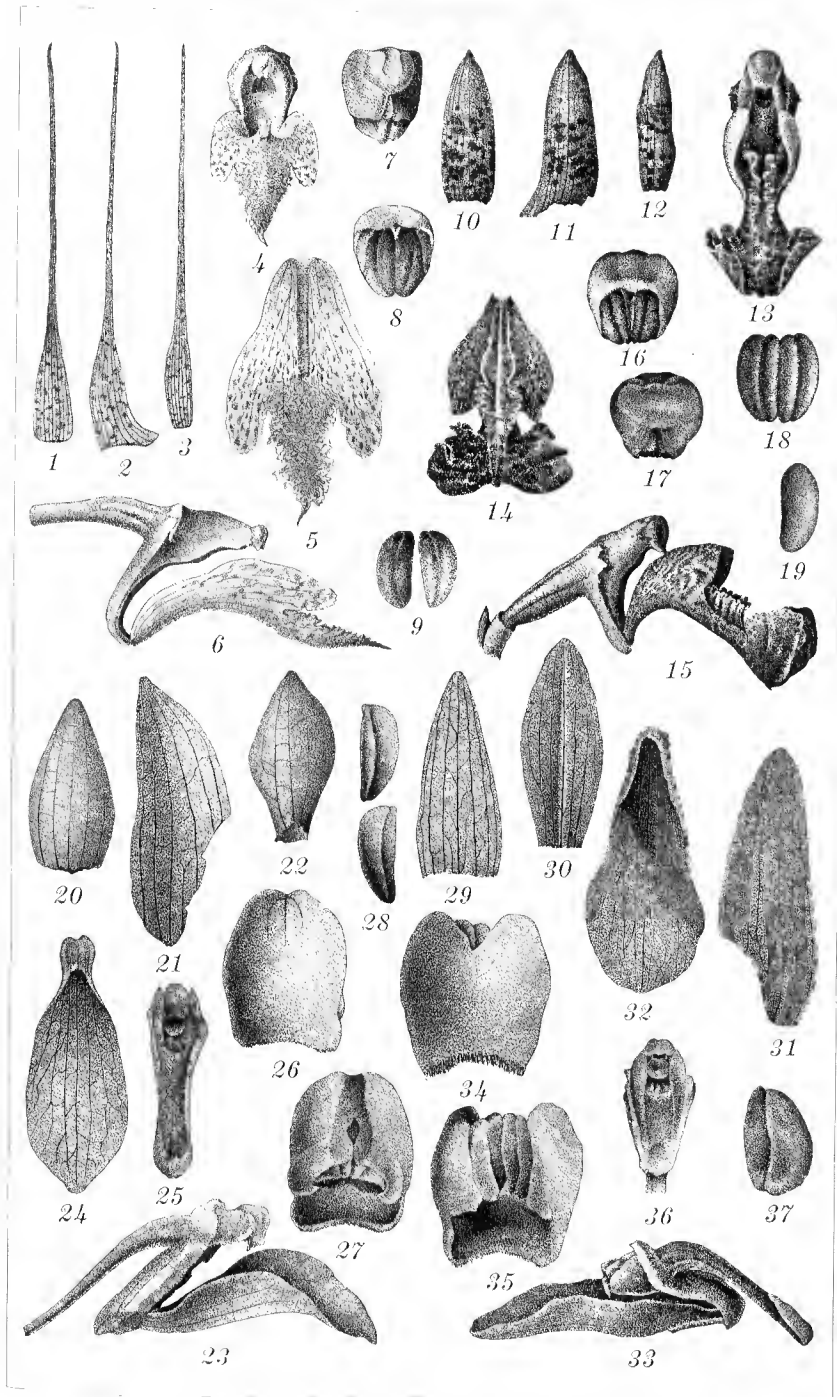


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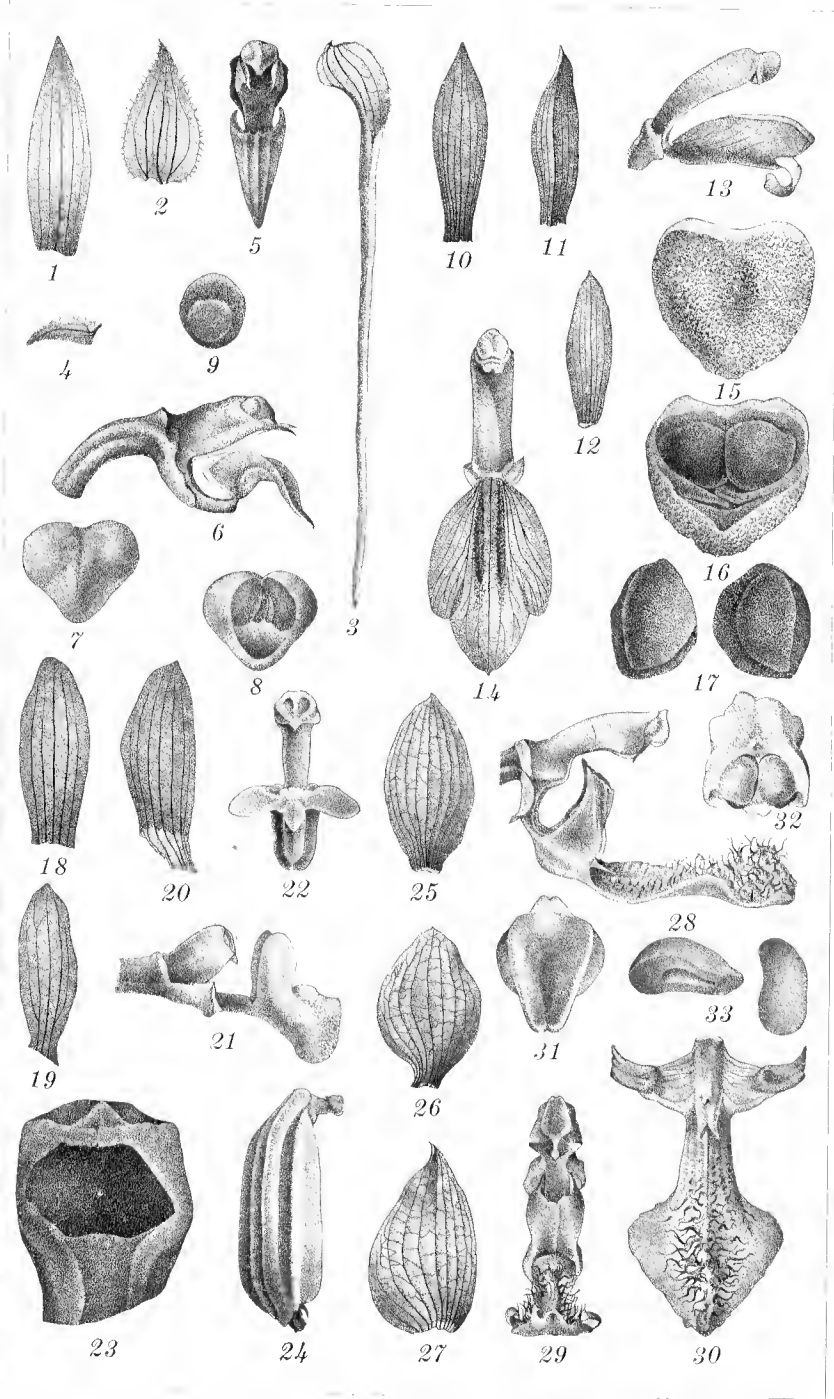
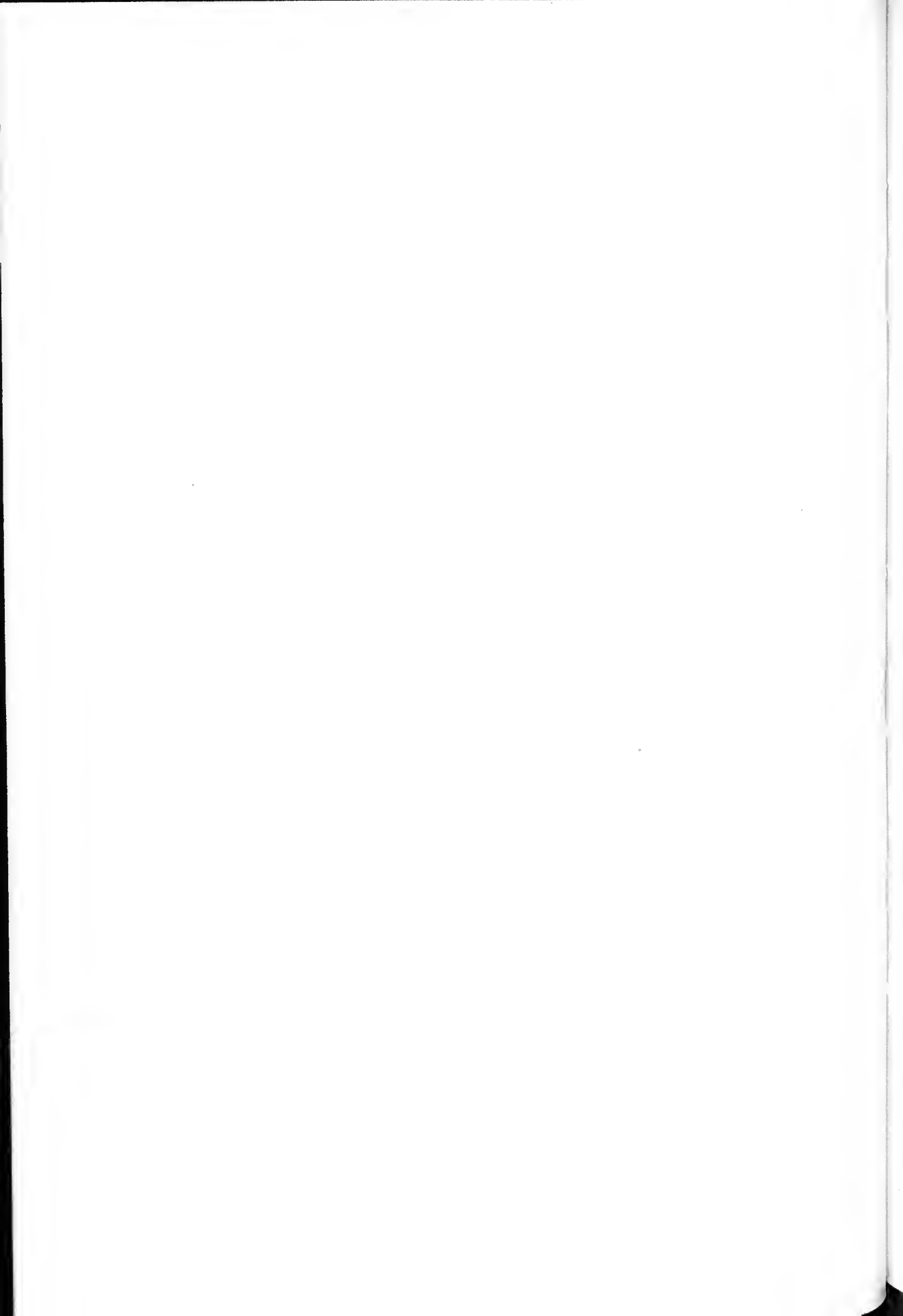


PLATE 5.



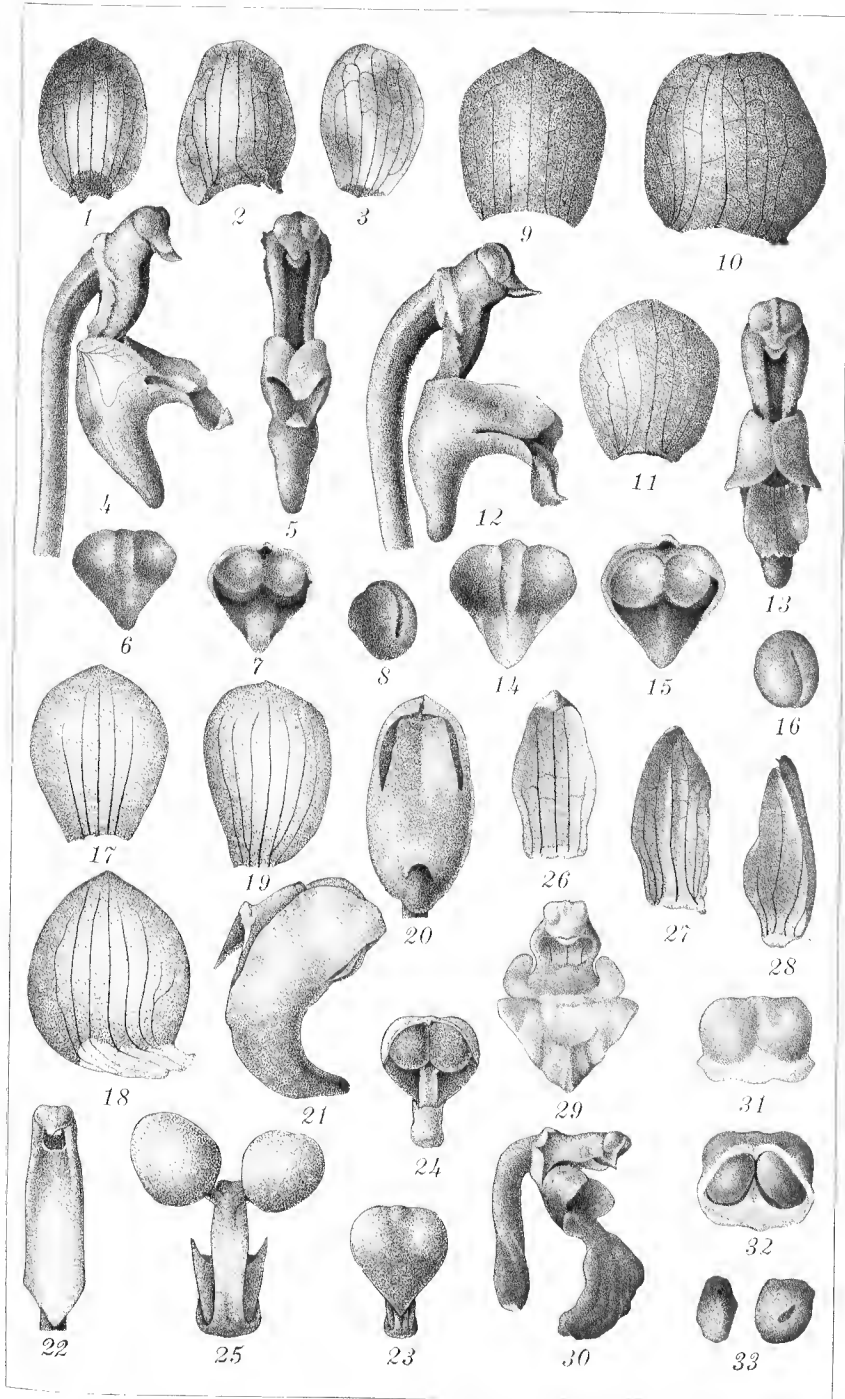
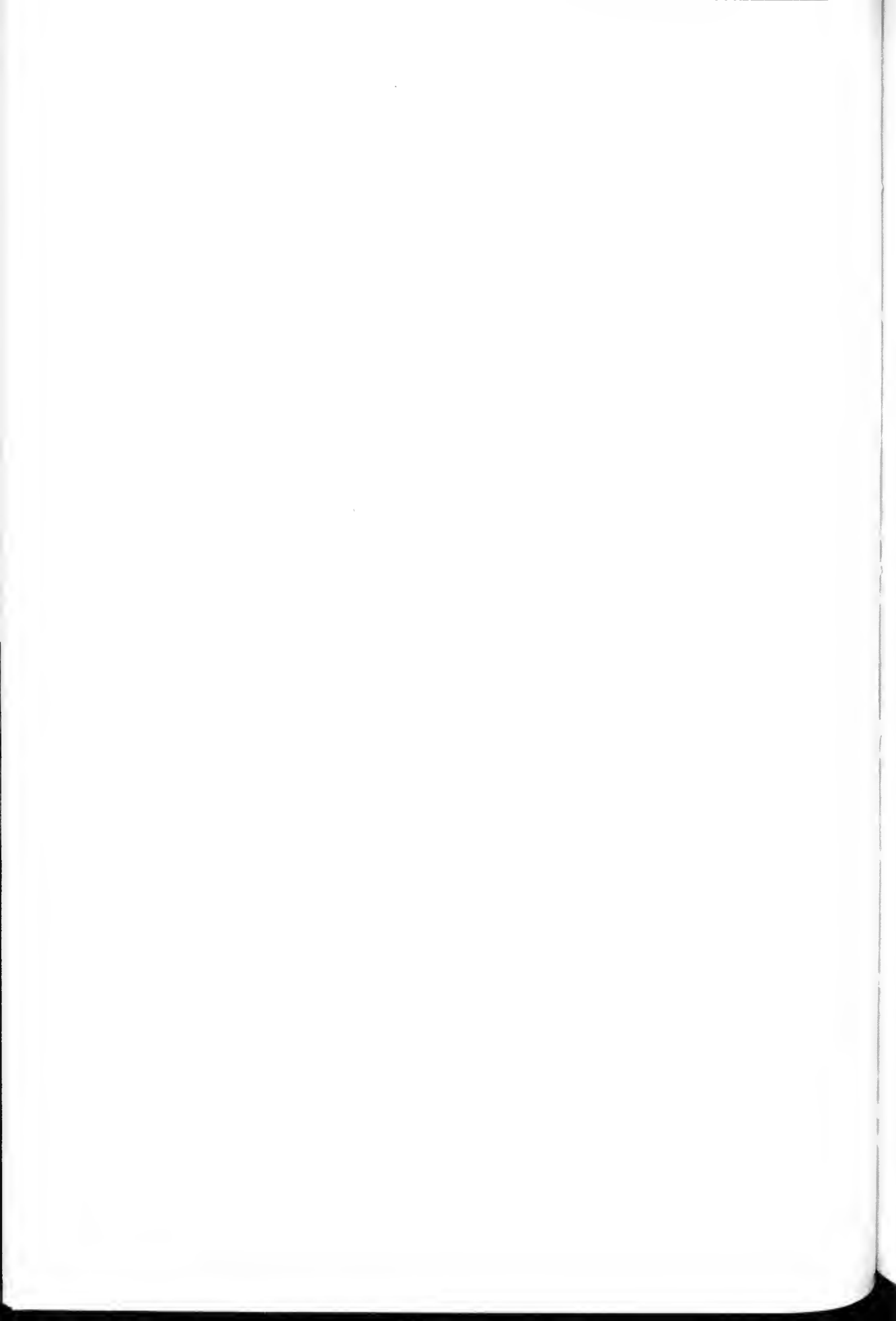


PLATE 6.



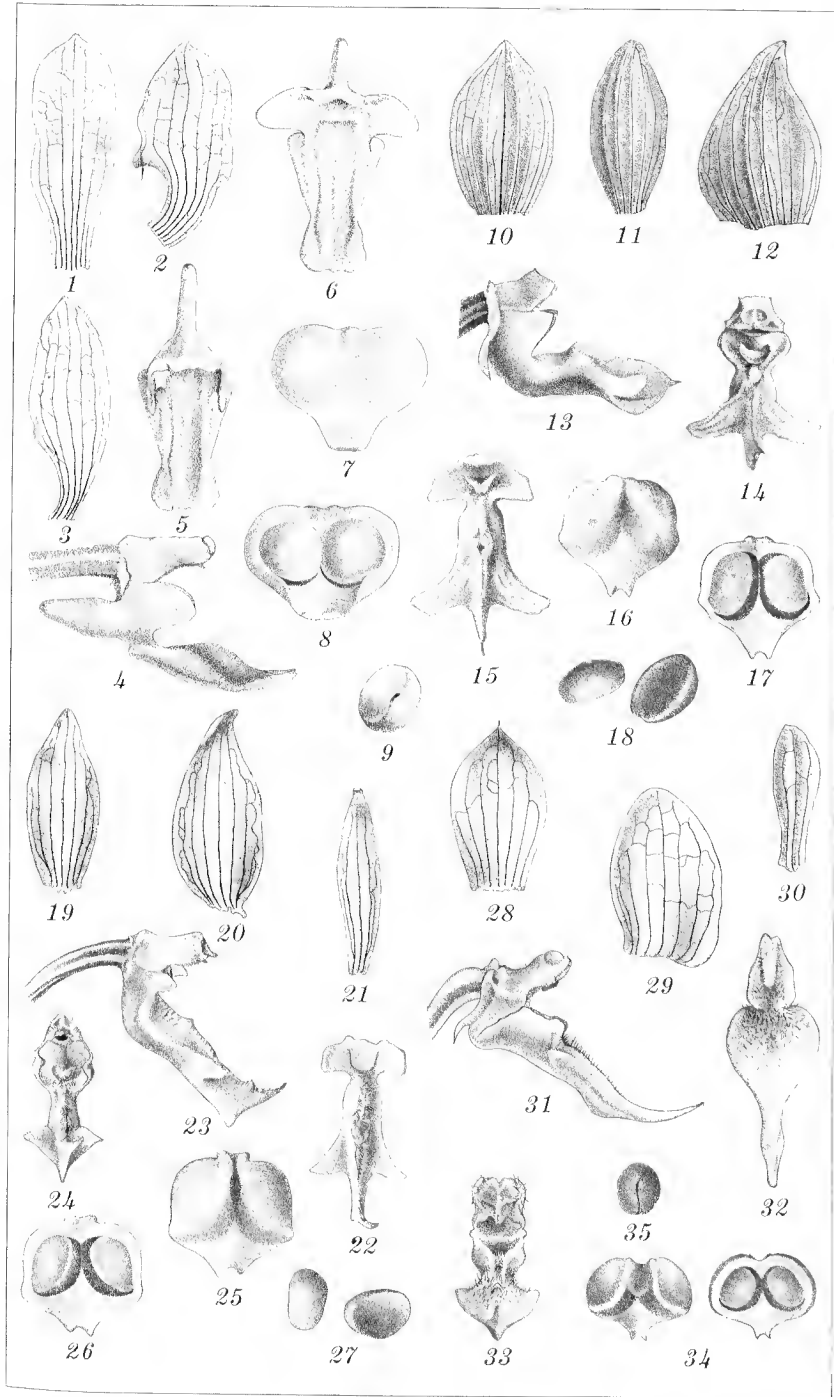


PLATE 7.

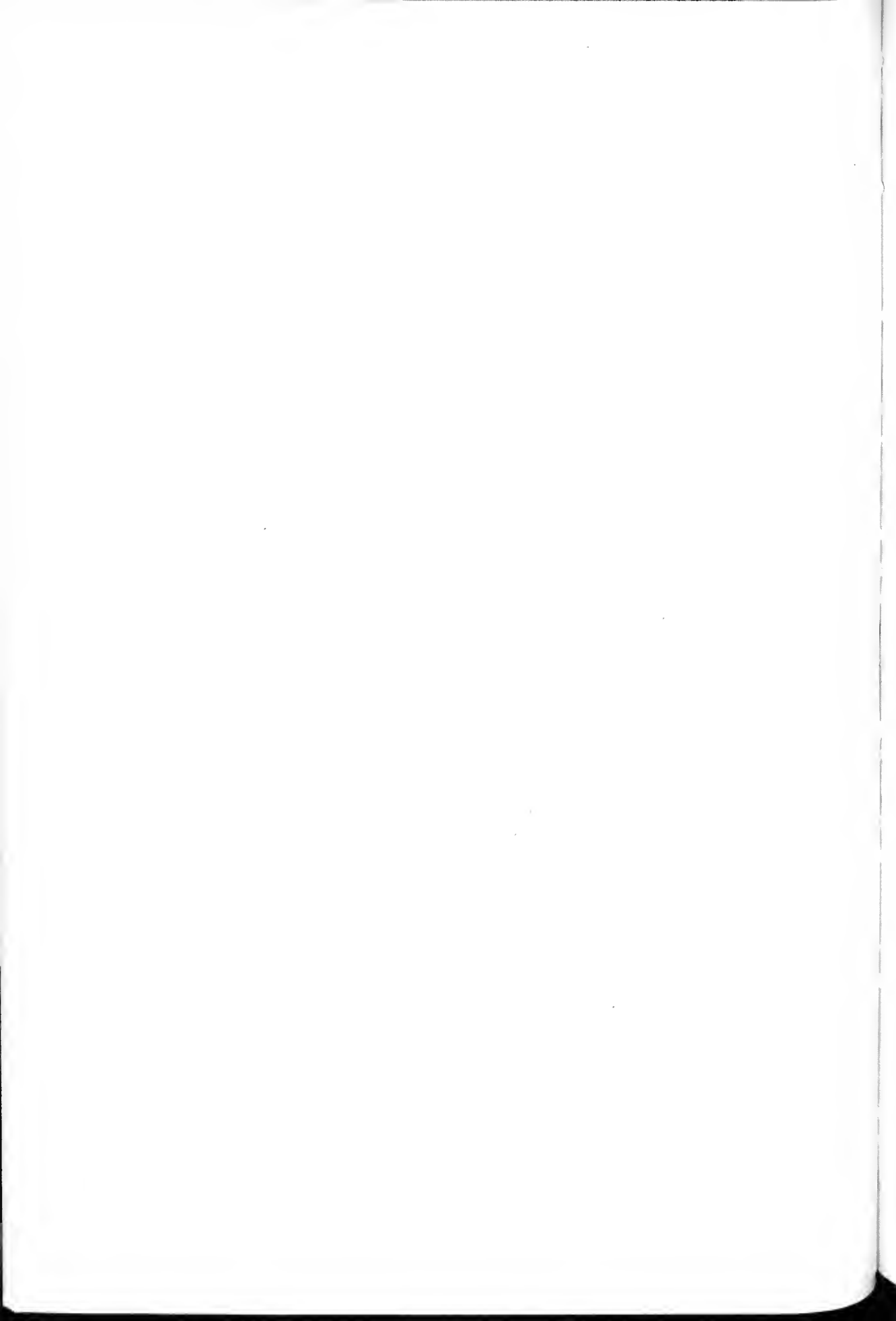




PLATE 8.

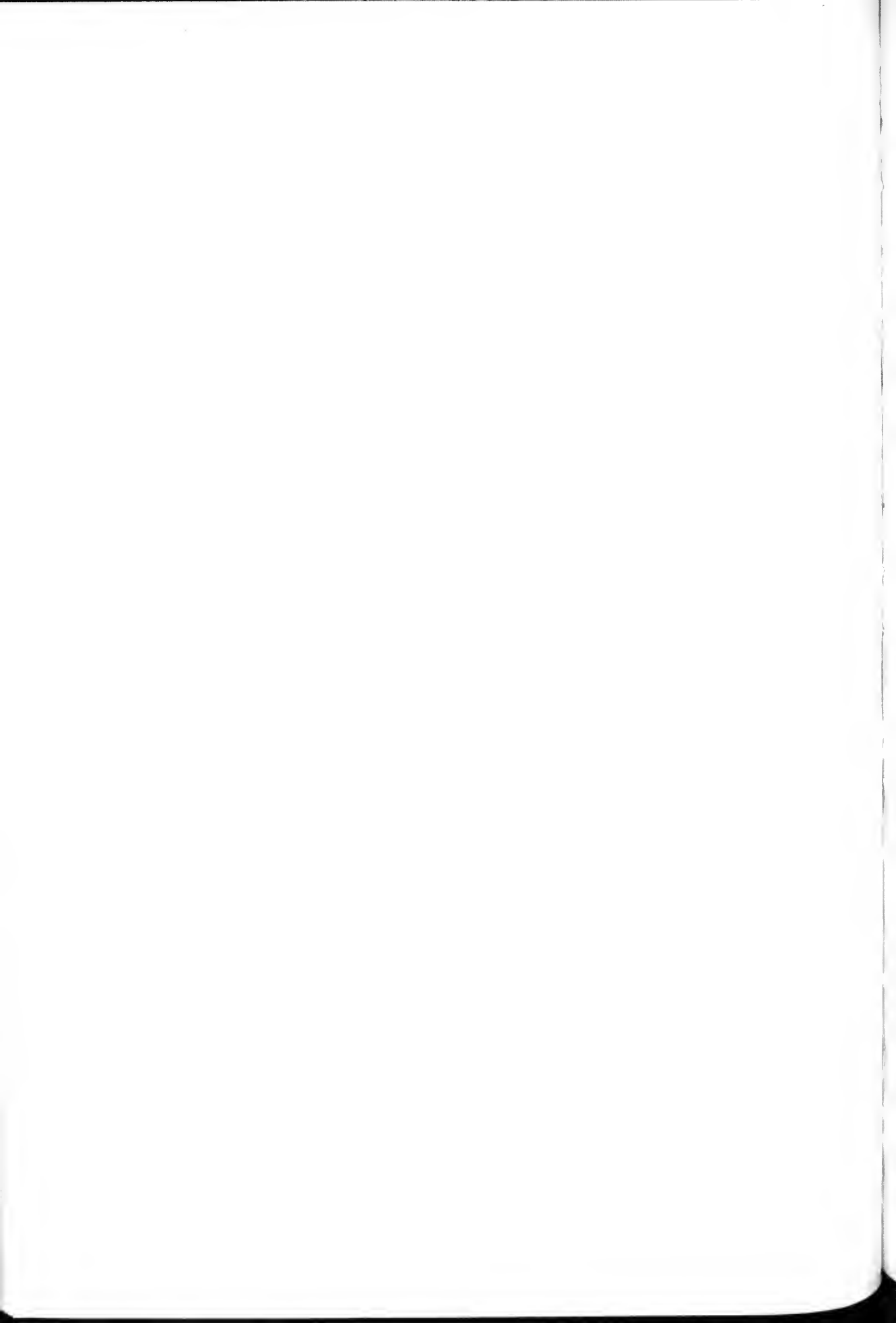




PLATE 9.

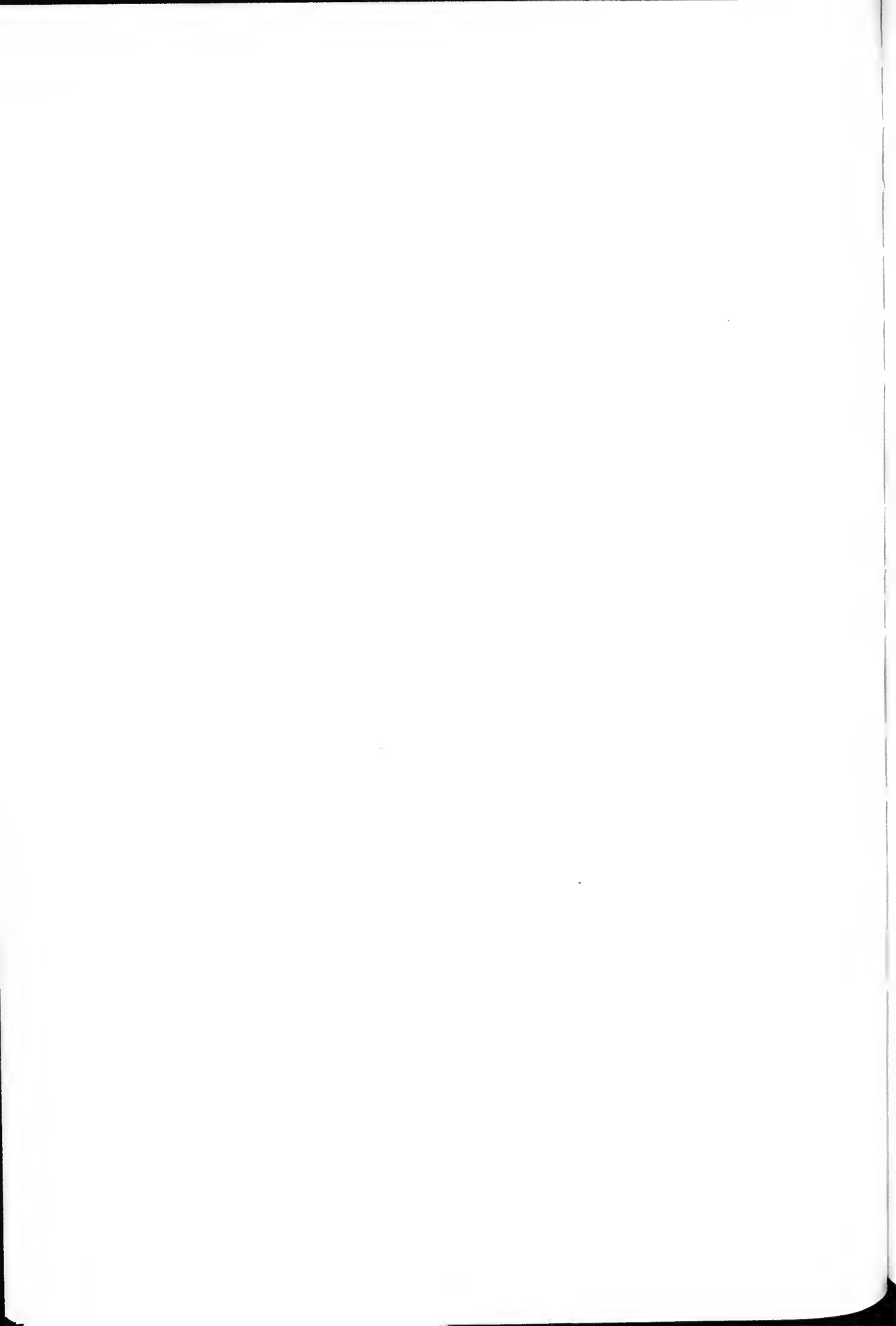
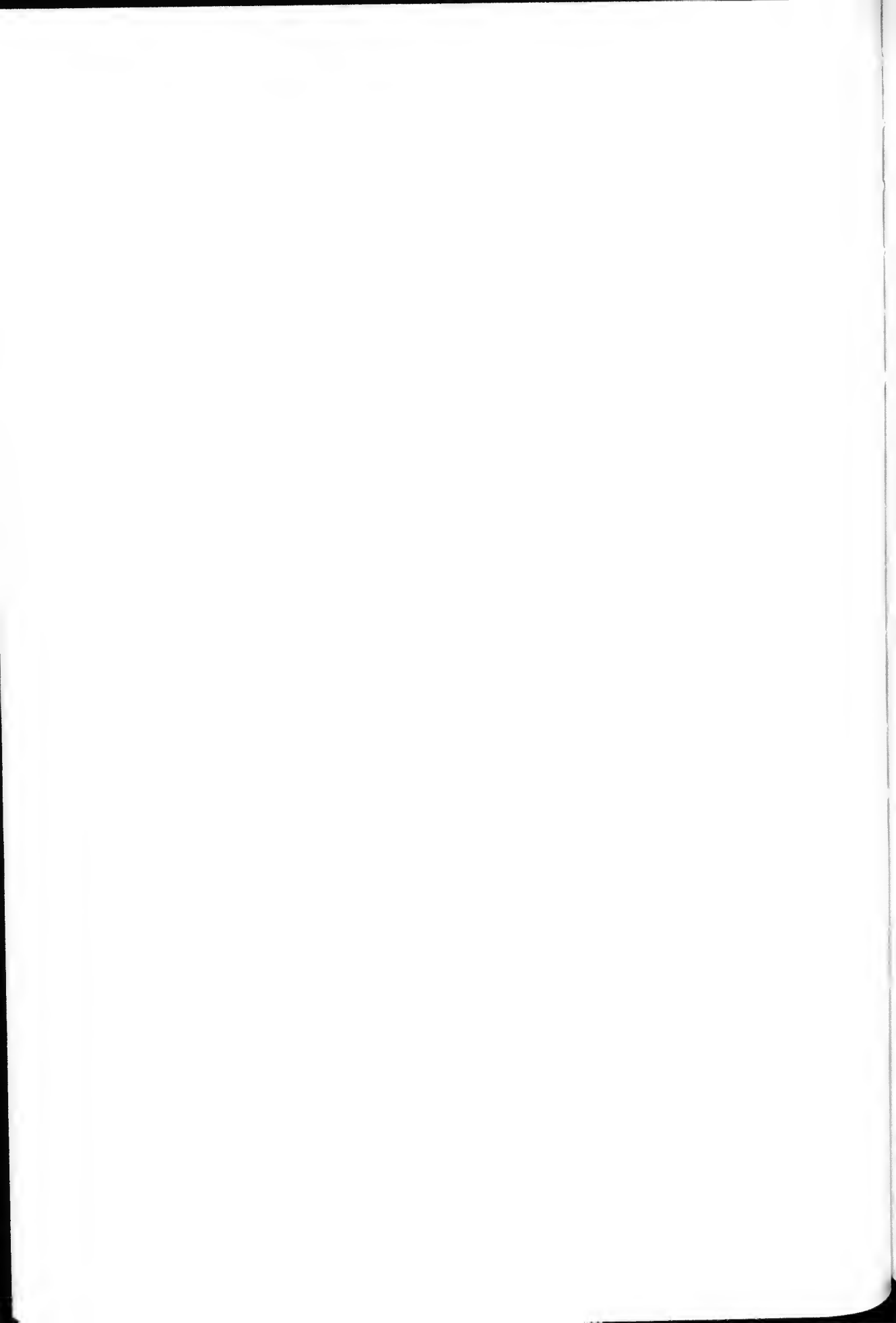


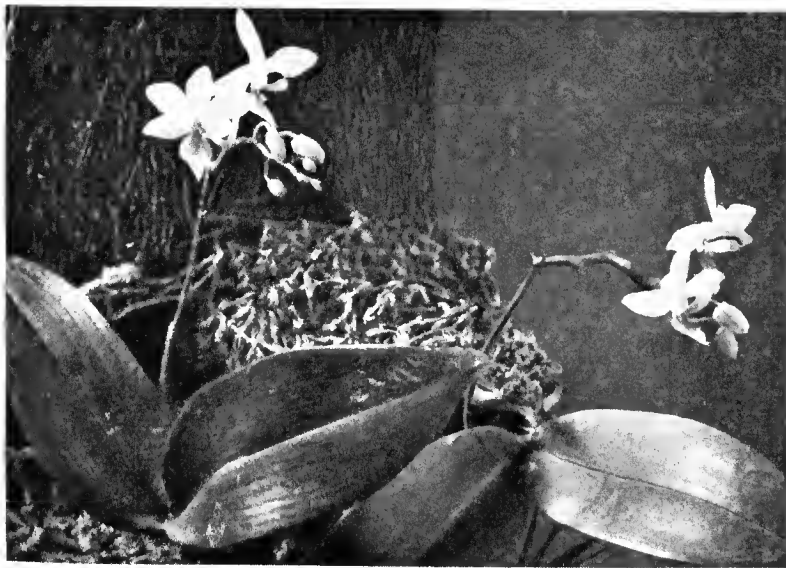


PLATE 10.

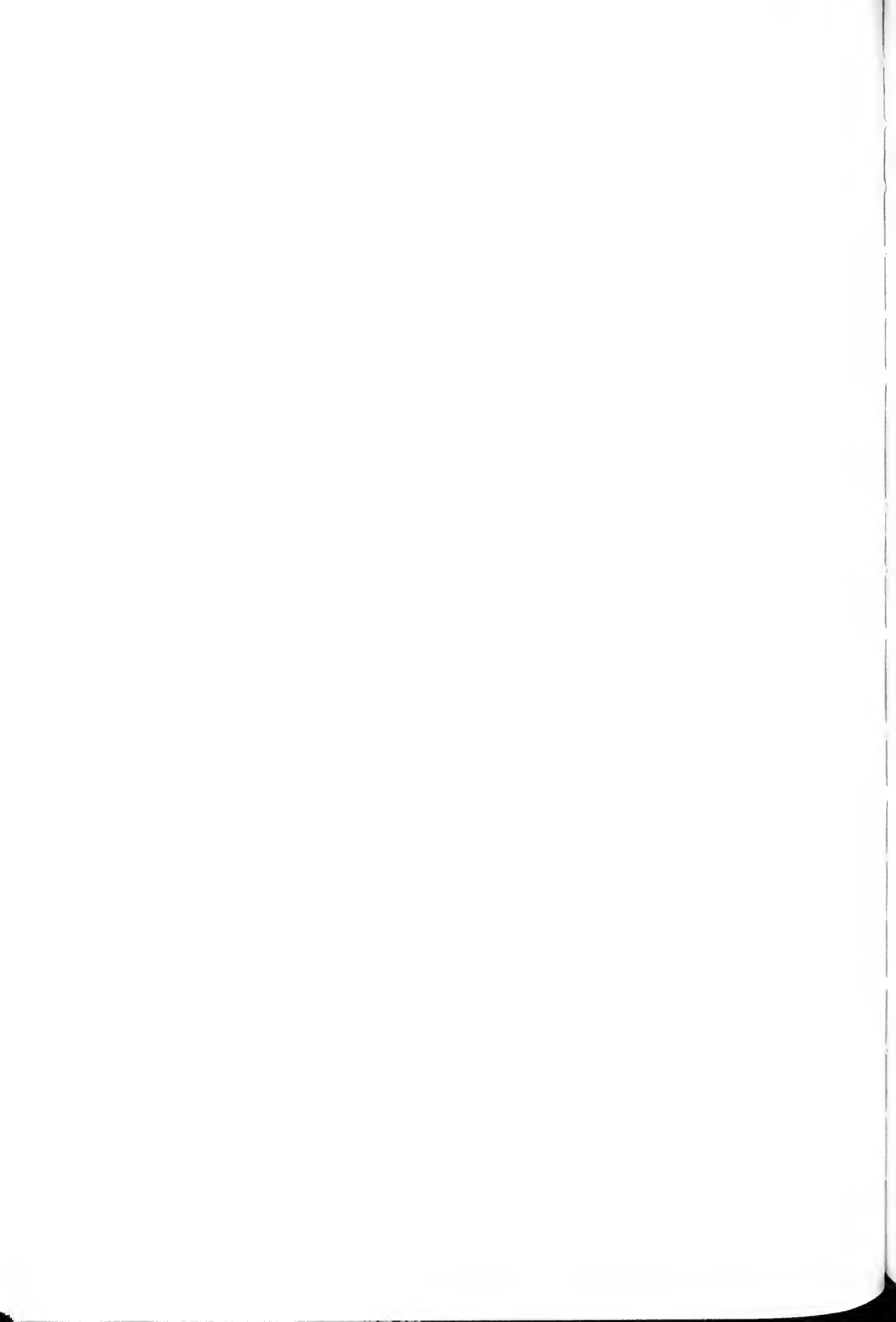




1



2



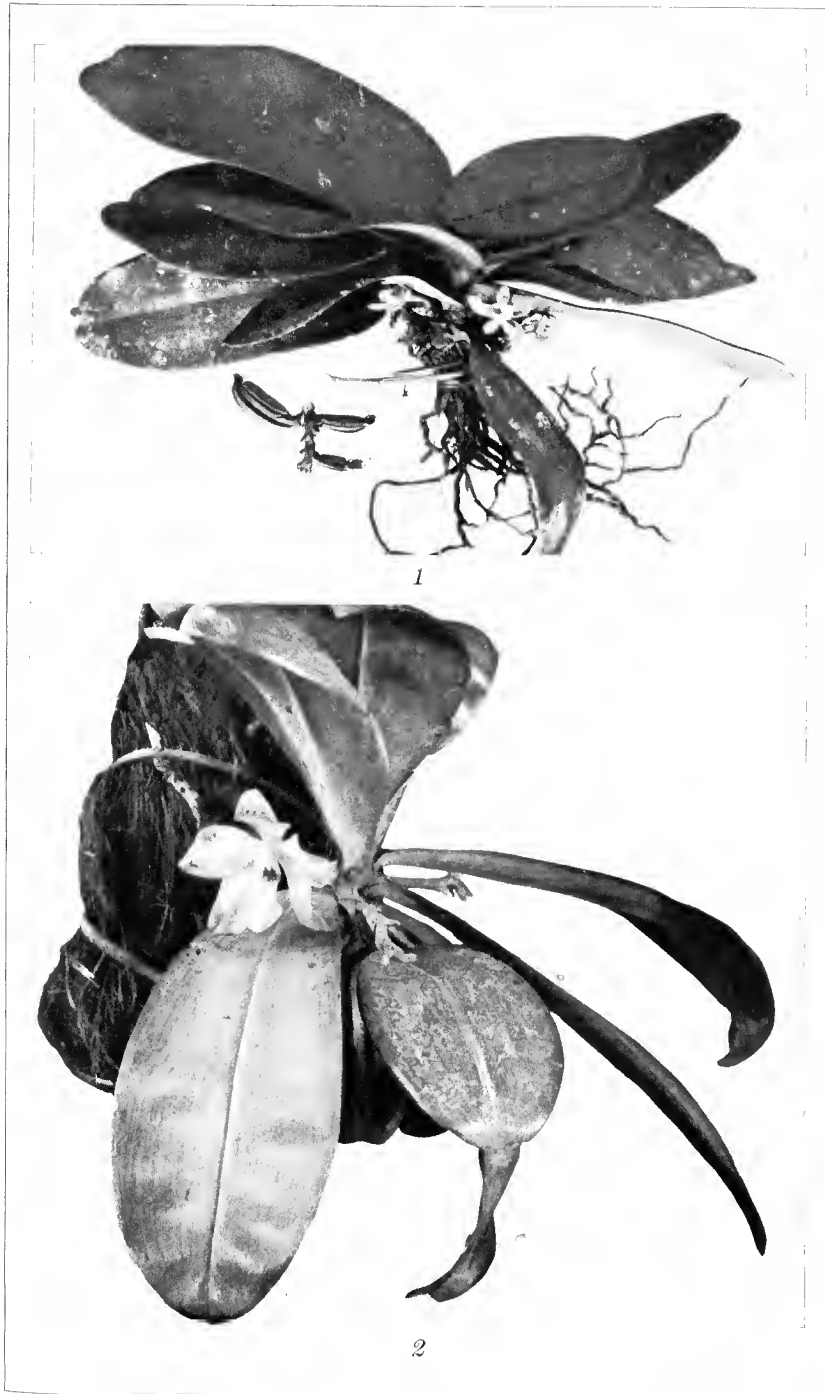
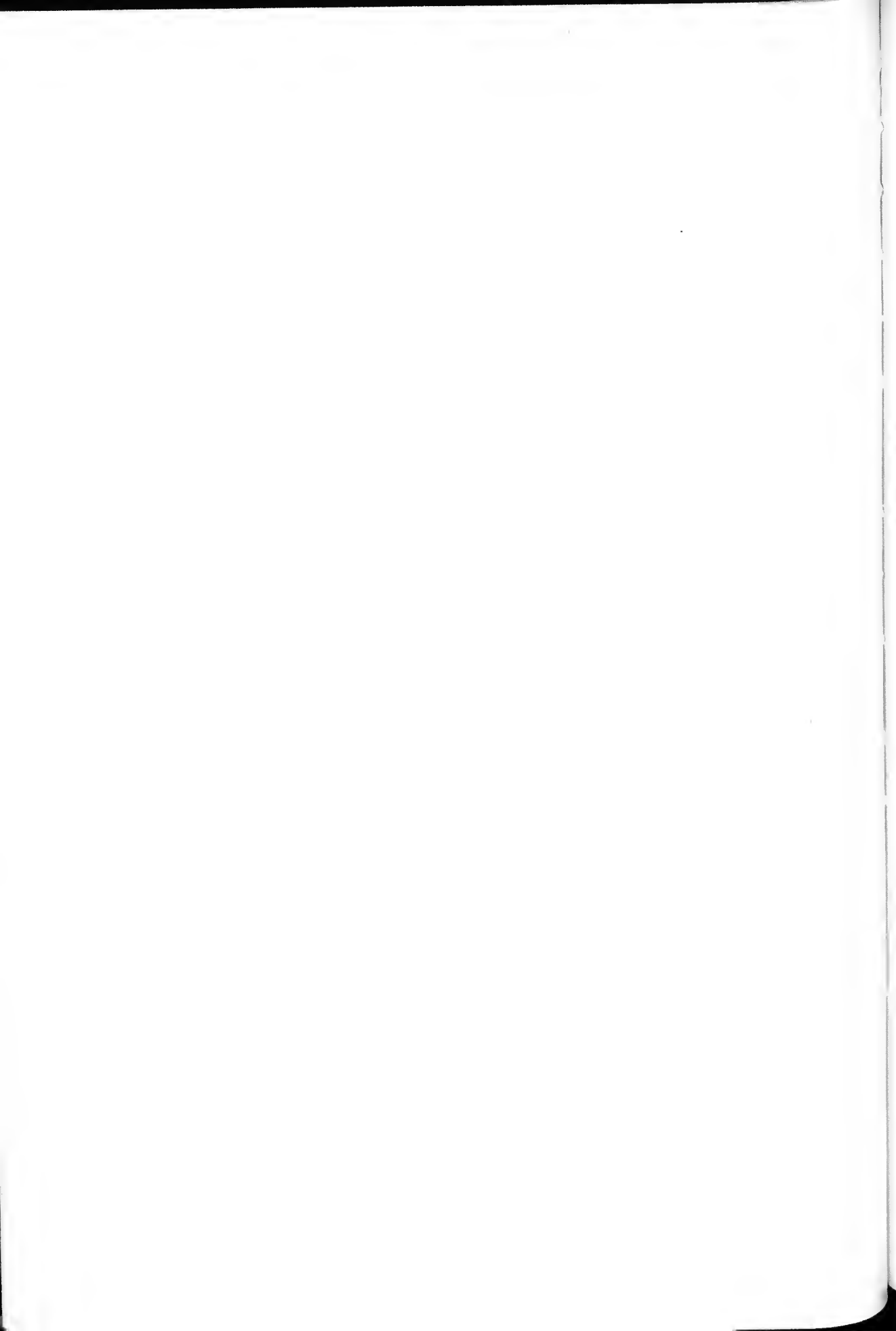


PLATE 12.



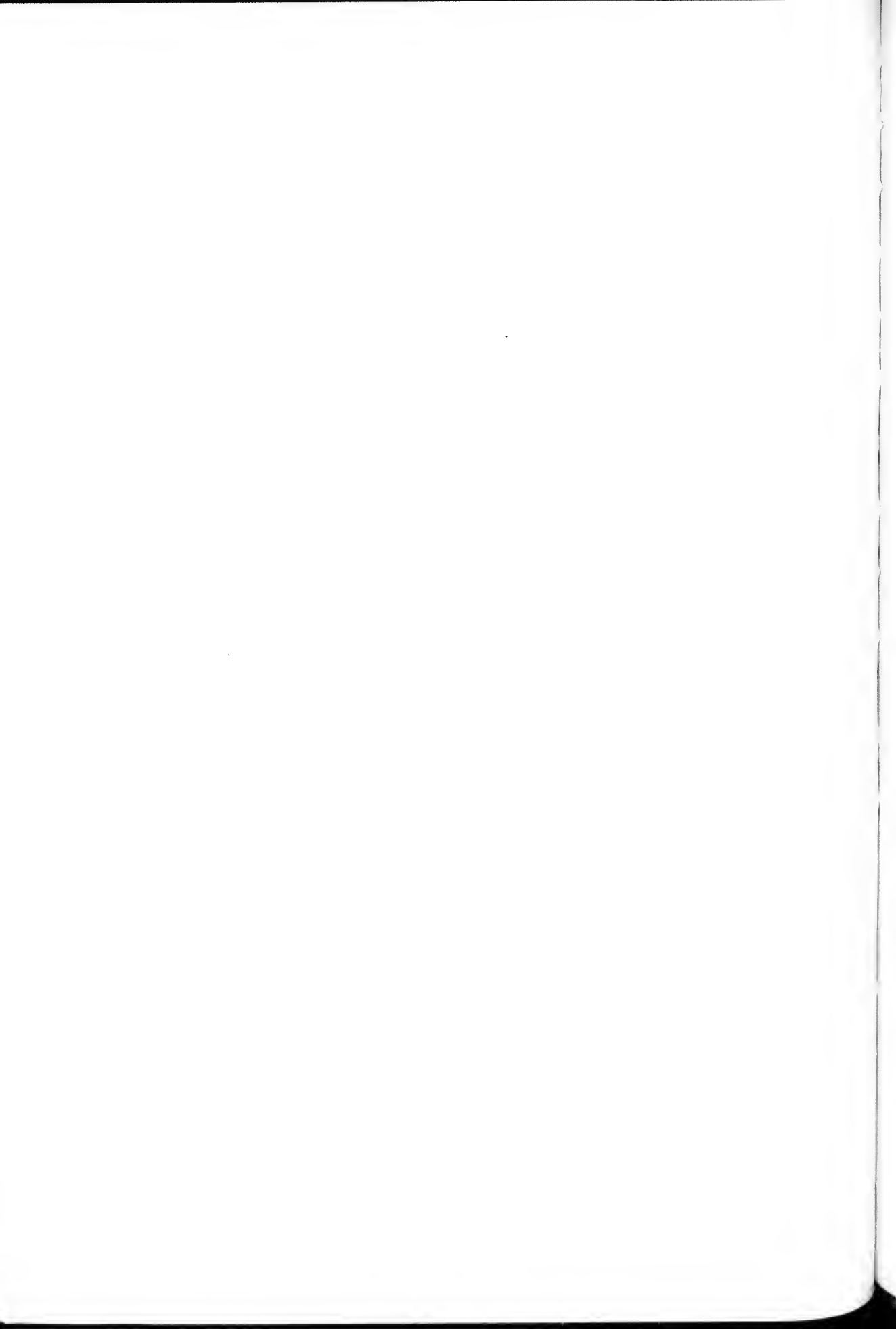


1



2

PLATE 13.





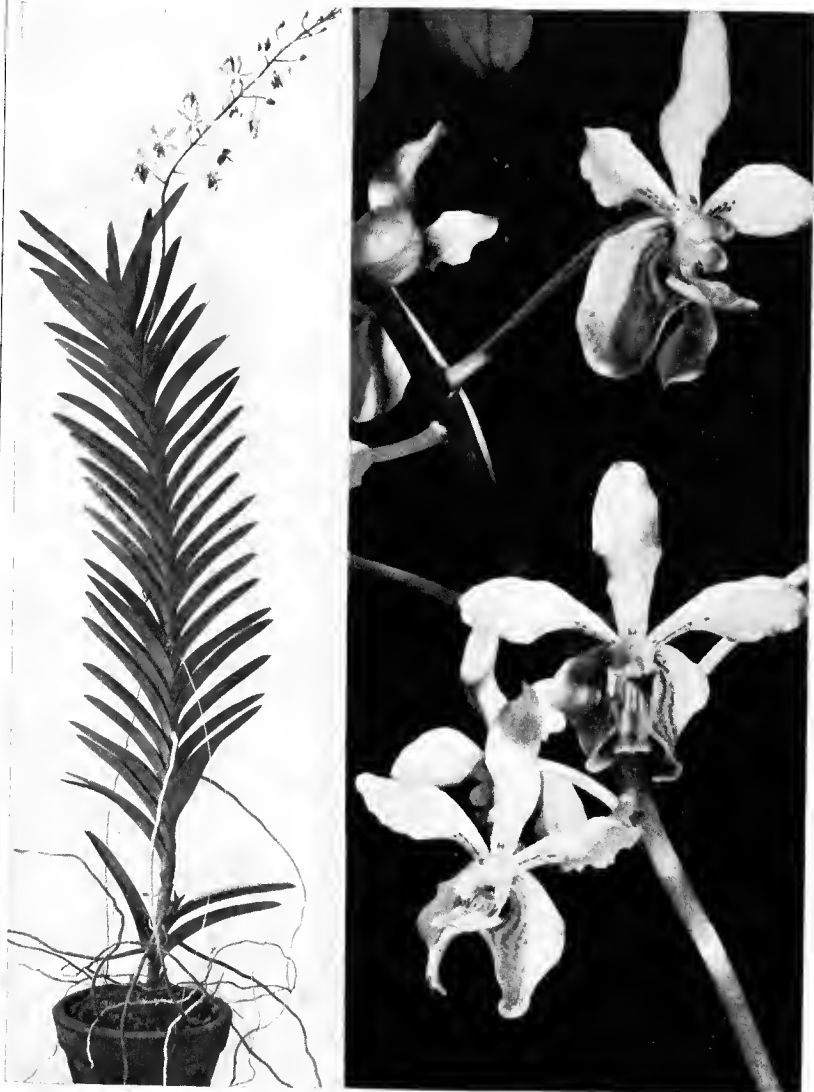
1



2

PLATE 14.

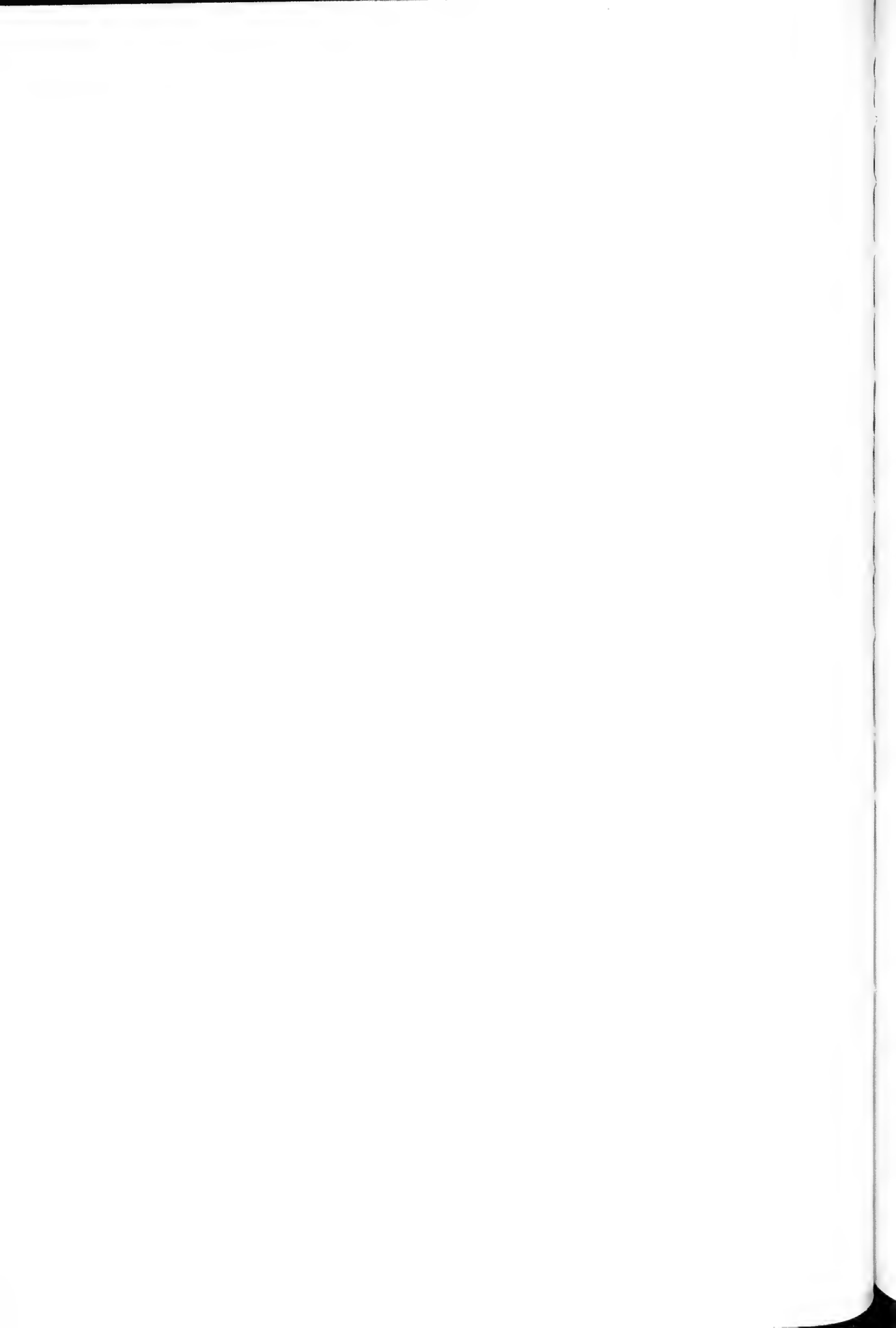




1

2

PLATE 15.





1



2

PLATE 16.

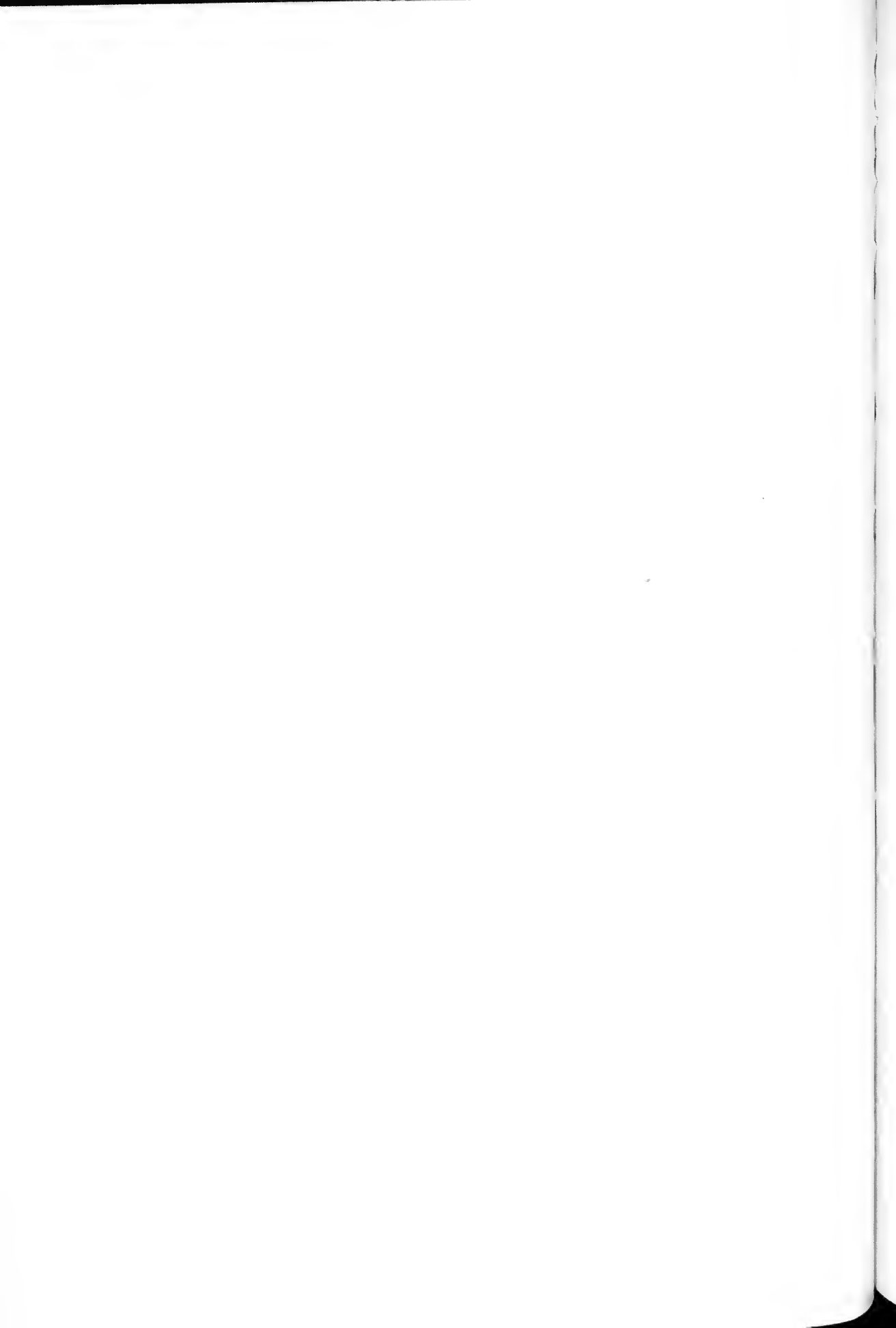




PLATE 17.



NEW OR NOTEWORTHY PHILIPPINE ORCHIDS, V

By OAKES AMES

Professor of Botany in Harvard University

and

EDUARDO QUISUMBING

Curator, Philippine National Herbarium, Bureau of Science, Manila

TEN PLATES

The present paper is essentially similar to its predecessors.¹ It consists of descriptions of one new species and four new varieties. Four previously described species, *Dendrobium cerinum*, *Bulbophyllum Lobbii*, *Renanthera elongata*, and *Trichoglottis Guibertii*, are for the first time credited to the Philippine Islands with certainty. *Dendrobium anosmum* var. *Dearei* and *Dendrobium anosmum* var. *Huttonii*, which were known only from their original descriptions, were recently rediscovered. *Dendrobium Schuetzei*, which is known only from Agusan and Surigao Provinces, Mindanao, is for the first time illustrated in color and redescribed. All the descriptions in the text have been prepared from living specimens, and all the illustrations were made by Mr. Pedro Ramos, draftsman of the National Museum Division, Bureau of Science. All the types of the new species and varieties have been deposited in the Philippine National Herbarium, Bureau of Science, formerly called Herbarium of the Bureau of Science, with isotypes in the herbarium of the senior author. Available isotypes will be distributed to the herbarium of the New York Botanical Garden and to other herbaria.

Genus DENDROBIUM Swartz

DENDROBIUM ANOSMUM Lindl. var. DEAREI (Rolfe) Ames and Quis. comb. nov.

Plate 1, fig. 1; Plate 5.

Dendrobium superbum Reichb. f. var. *Dearei* ROLFE in *Lindenia* 6 (1891) 52, sub t. 264; ROLFE in *Orch. Rev.* 14 (1906) 177, fig. 22; AMES, *Orch.* 2 (1908) 187.

¹ *Philip. Journ. Sci.* 44 (1931) 369-383, 16 pls.; 47 (1932) 197-220, 29 pls.; 49 (1932) 483-504, 28 pls.; 52 (1933) 443-473, 17 pls.

? *Dendrobium macranthum* Hook. var. *album* NAVES, Novis. App. (1882) 233.

La variété DEAREI a les fleurs du blanc le plus pur, avec les segments très pointus.

In habit similar to the species, but the stems are shorter and more slender. The flowers are pure white, except the naphthalene yellow throat of the lip, slightly fragrant, 8.5 to 9.5 cm across. The sepals lanceolate, 5.2 to 5.3 cm long, 1.5 to 1.6 cm wide, the dorsal acute, the laterals acuminate and forming a mentum or short spur which is pale greenish. Petals elliptic, acute, about 5 cm long, 3.2 cm wide.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Phil. Nat. Herb. 102 Quisumbing*, March 9, 1934. This is the second time that this variety has come to the attention of the junior author. The first instance was a plant belonging to Mrs. Stewart, collected by her near Baguio in March, 1926. The second plant, the subject of this description, was originally collected from the mountains of Rizal Province and was found mixed with typical *Dendrobium anosmum*.

This is one of the purest white dendrobes known, and is endemic to the Philippines.

DENDROBIUM ANOSMUM Lindl. var. **HUTTONII** (Reichb. f.) Ames and Quis. comb. nov. Plate 1, fig. 3.

Dendrobium superbum Reichb. f. var. *Huttonii* REICHB. F. in Gard. Chron. (1869) 1206; ROLFE in *Lindenia* 6 (1891) 52, sub. t. 264; Orch. Rev. 29 (1921) 116; WILLIAMS, Orch. Grow. Man. ed. 7 (1894) 364; AMES, Orch. 2 (1908) 187.

Perigonio candido, labelli disco ac ungue purpureis.

A very striking novelty. The flowers are clear white. The disc of the lip bears two beautiful purplish blotches, and its base is of the same colour. For this beautiful thing we have to thank Messrs. Veitch, who obtained it through their late excellent collector, Mr. Hutton, from the Malayan Archipelago.

In habit and general features similar to the species. The stems are comparatively shorter and more slender. The flowers are beautiful, showy, slightly fragrant, and about 8.5 cm across. They resemble those of the former variety in being pure white throughout but have the throat of the labellum dark purple.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Phil. Nat. Herb. 103 Quisumbing*, March 10, 1934. The plant was originally collected by orchid peddlers among the typical plants of *Dendrobium anosmum*, from the mountains of Rizal Province, Luzon.

This, like the former variety, is very rare and beautiful, having been seen by the junior author in Manila gardens but once during his many years of study of orchids. It is characterized by having white flowers with the throat of the labellum dark purple. This particular variety has also been reported from the Malay Archipelago.

DENDROBIUM CERINUM Reichb. f. Plate 1, figs. 4 and 5; Plate 3, figs. 1 to 10; Plate 9, fig. 2.

Dendrobium cerinum REICHB. F. in Gard. Chron. II 12 (1879) 554.

Dendrobium cerinum, n. sp.—Caule teretiusculo demum multum sulcato calamum aquilinum crasso; racemis brevibus paucifloris densifloris; sepalo impari ovato oblongove acutiusculo; sepalis lateralibus triangulo semiovatis obtuse acutis, in mentum teretiusculum apice abrupte acutum extensis; tepalis ovatis obtuse acutis; labelli ungue cum cornu retrorso in medio, lamina subrotunda laevi, antice minute denticulata, columna clavata—Flores cerini, nitidi, ochroleuci, brunneo lavatis. Lineae fuscae radiantia in basi laminae labelli.—Ex aff. *Dendrobii sanguinolenti*; labello tamen ac mentum multum recedens. Ex archipelago Sondaico viv. misit el. Burbidge ad dominos Veitch.

This is very near the well-known buff-coloured variety of *Dendrobium sanguinolentum*. The stem is half as thick as one's little finger, and much furrowed when old. It bears dense racemes of from four to six flowers, whose chin is thinner and abruptly acute, not thick and retuse as in the compared species. Ovaries and pedicels light rose. Sepals and petals light yellowish-ochre coloured, shaded with brown. The central rib of the mentum is light purple. The lip is just alarming. It mimics that of *Dendrobium sanguinolentum*, having a strong retrorse tooth on its claw. The blade, however, shows the best differences; it is oblong, not three-lobed, and its border, in lieu of being totally entire, shows numerous minute teeth on its anterior edge. The colour is light ochre with radiating brown lines at the transition of the blade into the claw. The whole flower is of very firm texture, and shining as if made from wax. The lip has sometimes a certain tendency to become three-lobed. I have to thank for materials Messrs. Veitch, who tell me that the plant was collected in the Malayan Archipelago by Mr. Burbidge. It flowered in July and September.

H. G. REICHENBACH F.

Stems terete, aggregated, subpendulous, fusiform, 4.5 to 17 cm long, 5.5 to 10 mm in diameter at the widest portion, angled and sulcate when dry, the nodes 1 to 2.5 cm distant. Leaves distichous, elliptic-lanceolate or oblong-lanceolate, 6 to 11 cm long, 1.8 to 3.2 cm wide, nervose, membranaceous, pale green, narrowed to the acute apex. Leaf sheaths green, membranaceous, deciduous on the lower part of the plant. Racemes short, pendulous, laxly few-flowered, up to 4.5 cm long, 2- to 3-flowered. Flowers 3.5 to 3.8 cm long, 3.5 to 3.8 cm across, odorless, with slightly inflexed spur. Bracts pellucid, minute, membranaceous,

1.5 to 2 mm long. Pedicellate ovary 2.3 to 2.5 cm long, slender. Lateral sepals very obliquely oblong-lanceolate, acute, 1.4 to 1.6 cm long, 7-nerved, forming with the column foot a mentum or spur which is elongate, slightly curved, obtuse, 1.9 to 2 cm long. Dorsal sepal lanceolate-ovate, subacute, 1.4 to 1.6 cm long, 7 to 8 mm wide, 7-nerved. Petals spreading, oblong-elliptic, rounded and minutely apiculate at the apex, 14.5 to 15.5 mm long, 7.5 to 8 mm wide, 5-nerved. Labellum simple, elongate, about 3 cm long, attached to the column-foot; claw linear-oblong, sharply sigmoid, with a retrorse tooth in the middle; lamina round-ovate, about 1.8 cm long, 1.7 cm wide at the broadest portion (when expanded), broadly rounded or slightly retuse at the apex, crenulate-denticulate on the margin; disc provided with a single broad rather obscure central fleshy band which is glabrous and extends from the column-foot nearly to the apex of the labellum. Column very short and stout, tridentate. Anther subquadrate-ovoid, about 3 mm long, 3.5 mm wide.

LUZON, Manila, Bureau of Science orchid house, *Phil. Nat. Herb.* 104 *Quisumbing*, February 28, 1933. The living plants were originally gathered by Novaliches orchid peddlers from the mountains of Rizal Province, Luzon, back of the town of Antipolo. The plants are now being cultivated in the Bureau of Science orchid house and in the gardens of Mrs. Remedios C. Gonzales. The description was based on Bureau of Science material which flowered in Manila February 28, 1933. The flowers are fairly large and odorless, and remain fresh for three to four days. Pedicellate ovary apple green; sepals straw yellow; petals and labellum chalcedony yellow; spur straw yellow with shades of ecru-olive and some very pale purple, light lumiere green at the tip.

In the herbarium of the senior author is a colored sketch of this species from the Reichenbachian collection in Vienna. Thanks to this authentic record, one more obscure species is now shown to be represented by a recent definite collection.

Apparently the original collection was destitute of leaves. It was described (and shown) as having light rose or reddish pedicellate ovaries whereas the recent collection has the pedicellate ovary apple green.

A species closely allied to *Dendrobium Guerreroi* Ames and Quis. but differing from it in its fusiform, short, angled stems, in its few-flowered racemes, in the color of the flowers, in the

shape of the spur, and in its denticulate-margined labellum with ovate-rounded lamina.

DENDROBIUM PHILLIPSHI sp. nov. Plate 1, figs. 6 and 7; Plate 3, figs. 11 to 19; Plate 6, fig. 1.

Aff. *D. Fairchildae*. Caules penduli, aggregati, teretes, tenuiter-fusifformes, 45 ad 60 cm longi, 5 ad 7 mm in diametro. Folia lanceolata, acuta, papyracea, decidua, 11.5 ad 12.5 cm longa, 1.5 ad 2 cm lata. Racemi brevissimi, pauciflori; bractee lanceolatae, acutae, 5 ad 6.5 mm longae. Sepala lateralia obliquissime triangulari-ovata, acuta, 1.6 ad 1.7 cm longa, columnae pedem secundum 1.2 ad 1.3 cm lata; mentum valde elongatum, obtusum, ad apicem haud inflexum 2.7 ad 3 cm longum. Sepalum dorsale ovato-lanceolatum, subacutum vel obtusum, 1.8 ad 1.9 cm longum, 9 ad 10 mm latum. Petala late oblonga vel oblongo-elliptica, apice rotundata, 1.7 ad 1.8 cm longa, circiter 8 mm lata. Labellum simplex, ovato-oblancoelatum cum parte inferiore oblonga sensim dilatata, antice ovato-triangulare, acutum, circiter 3.5 cm longum et 1.5 cm latum. Gynostemium brevissimum, crassum, apice tridentatum cum steliidiis lateralibus triangulari-ovatis leviter recurvatis et dente medio tenui, in pedem elongatum extensum.

Stems pendulous, crowded, terete, elongate, fusiform, 45 to 60 cm long, 5 to 7 mm in diameter, reddish-brown, smooth; internodes 2.5 to 4.5 cm long. Leaves lanceolate, acute, 11.5 to 12.5 cm long, 1.5 to 2 cm wide, papery, deciduous. Racemes short, few-flowered, 3 to 4 cm long; bracts lanceolate, acute, greenish, 5 to 6.5 mm long, 3 to 3.5 mm wide when expanded. Flowers about 1.8 cm across. Pedicellate ovary about 3 cm long. Lateral sepals very obliquely triangular-ovate, acute, 1.6 to 1.7 cm long, 1.2 to 1.3 cm wide along the column-foot; the mentum or spur stout, elongate, obtuse, straight, 2.7 to 3 cm long, 1.2 to 1.3 cm wide near its base. Dorsal sepal broadly ovate-lanceolate, subacute or obtuse, 1.8 to 1.9 cm long, 9 to 10 mm wide. Petals broadly oblong or oblong-elliptic, rounded at the apex, 1.7 to 1.8 cm long, about 8 mm wide. Labellum simple, ovate-oblancoelate with the lower part gradually narrowed and adorned with a low transverse lacerate ridge, about 3.5 cm long, triangular-ovate near the apex, acute, about 1.5 cm wide. Gynostemium very short, broad, with the lateral steliidia triangular-ovate and slightly recurved, and middle tooth slender. Foot elongate.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 85618 *Quisumbing*, February 14, 1933. The above description was based upon a living flowering specimen sent to the junior author by Mr. L. H. Phillips, who collected it from the hills of Bukidnon, Mindanao. The flowers are white except the spur and the throat of the labellum which are apricot yellow.

This species is allied to *Dendrobium Fairchildae* Ames and Quis., but differs from it in having smaller and more-slender stems, straight spur, and broadly ovate-oblongate labellum.

This species is dedicated to Mr. L. H. Phillips, formerly of the Philippine Packing Corporation at Bukidnon, Mindanao. While he was there, he spent considerable time and effort in collecting orchids during week ends and holidays, and we owe to him our present knowledge of the orchid flora of Bukidnon.

DENDROBIUM SCHUETZEI Rolfe. Plate 1, fig. 2; Plate 3, figs. 20 to 27; Plate 6, fig. 2.

Dendrobium Schuetzei ROLFE in *Orch. Rev.* 19 (1911) 224, 20 (1912) 289, 308, 337, fig. 47, in *Gard. Chron.* III 50 (1911) 42, III 52 (1912) 229, fig. 102; G. WILSON in *Orch. World* 3 (1912) 19, t.; ROLFE in *Bot. Mag.* 139 (1913) t. 8495; AMES *Orch.* 5 (1915) 138, 7 (1922) 96, in *Merr. Enum. Philip. Fl. Pl.* 1 (1924) 354.

The original description reads as follows:

"DENDROBIUM SCHUETZEI ROLFE.—This is another striking *Dendrobium*, of the *D. Dearei* group, which has been introduced by Messrs. Sander & Sons, St. Albans, and of which a technical description has been prepared. It has very large white flowers, the petals are obovate-orbicular in shape, and the lip strongly three-lobed, with broadly-rounded side lobes, and the front lobe broadly obovate or nearly orbicular, with a distinct apiculus. The petals and lip are much broader than in *D. Dearei*, and altogether different in shape. It should prove a great acquisition." *Orch. Rev.* 19 (1911) 224.

Rolfe's Latin diagnosis, *Bot. Mag.* (1913) t. 8495, reads as follows:

Herba epiphytica, 15-40 cm. alta. *Caules* erecti, subcylindrici, medio incrassati, sulcati, basi attenuati, dense foliati. *Folia* subpatentia, elliptico-oblonga, obtusa, coriacea, 8-10 cm. longa, 2.5-3.5 cm. lata. *Pedunculi* subterminales, breves, pauciflori. *Bracteeae* oblongae, subacutae, breves. *Pedicelli* circiter 4 cm. longi. *Flores* magni, speciosi, albi, labelli basi viridi. *Sepala* subpatentia; posticum oblongo-lanceolatum, acuminatum, 3 cm. longum; lateralia triangularia, acuta, carinata, 3-5 cm. longa; mentum obtusum, 1.3 cm. longum. *Petala* late ovato-orbicularia, apiculata, 4.5-5.5 cm. longa, 3.5-4 cm. lata. Labellum trilobum, 4-4.5 cm. longum; lobi laterales subincurvi, late rotundati; lobus intermedius subrecurvus, late obovatus, truncatus vel emarginatus, apiculatus, crenulatus, 3.5-4 cm. latus; discus basi obtuse carinatus. *Columna* lata, 6 mm. longa; alae falcato-oblongae.

Dwarf in habit; the stems erect, leafy, short, stouter at the middle, narrowed to the base, 15 to 30 cm long or more, 1.1 to 1.5 cm in diameter at the widest portion. Leaves oblong-lanceolate or elliptic-lanceolate, subacute or obtuse at the apex, narrowed to the base, subcoriaceous, 6 to 11 cm long, 1.6 to 3 cm wide. Raceme 3- to 5-flowered; bracts triangular, about 2 mm long. Flowers showy, odorless, 6 to 6.5 cm across, pure white except the throat of the lip which is emerald green with a few purple stains at the base. Pedicellate ovary greenish white, 5.5 to 6 cm long. Lateral sepals triangular, acutely acuminate, keeled, 3.5 to 4 cm long, 1.5 to 1.8 cm wide. Dorsal sepal lanceolate, sharply acuminate, 3.5 to 3.8 cm long, about 2 cm wide along the column-foot. Petals suborbicular-ovate, broadly obtuse or rounded, apiculate, 4 to 4.7 cm long, 3.8 to 4.2 cm wide. Labellum distinctly 3-lobed; lateral lobes semiobovate, broadly rounded, somewhat incurved, about 2.7 cm long and 1.1 cm wide near the apex; middle lobe somewhat recurved, broadly flabellate-ovate or nearly orbicular, truncate, or slightly retuse, apiculate, 2.4 to 2.6 cm long, 3.2 to 3.7 cm wide; the whole labellum pure white except the throat between the lateral lobes which has a patch of full green-yellow with short Victoria lake lines at the base. Spur white, pale olivine at the tip, short, obtuse, 1.3 to 1.4 cm long. Column broad and short, white, green dotted with Victoria lake at the base. Anther subquadrate in outline, white. Pollinia narrowly oblong.

LUZON, Manila, Bureau of Science orchid house, *Phil. Nat. Herb.* 82 *Quisumbing*, February 13, 1933, originally collected by Mr. L. Hachero from Surigao, Mindanao, presented to Doctor Quisumbing, and now growing in Bureau of Science orchid house. MINDANAO, Surigao, *W. Lyon s. n.*, February, 1917.

A species with the habit of *Dendrobium Dearei* Reichb. f. and *D. Sanderae* Rolfe and allied to them, but differing strikingly in the short, obtuse spur. In addition to the different spur, this species differs from *D. Dearei* in having much larger flowers with different petals; it differs from *D. Sanderae* in the color and details of the flowers.

Genus BULBOPHYLLUM Thouars

BULBOPHYLLUM LOBBII Lindl. Plate 2, fig. 1; Plate 4, figs. 1 to 8; Plate 7, fig. 1.

Bulbophyllum Lobbia LINDL. in *Bot. Reg.* 33 (1847) sub *t.* 29 (as *B. Lobii*); W. J. HOOKER in *Curtis's Bot. Mag.* 76 (1850) *t.* 4532.

The original description reads as follows:

BOLBOPHYLLUM LOBII; folio petiolato obovato-oblongo coriaceo, pedunculo unifloro folio brevior, pedunculo nudo unifloro folio brevior, sic basi subglanduloso e bracteis squamaeformibus cucullatis falcatis subglandulosis erumpente, sepalis oblongis acutis lateralibus falcatis, petalis conformibus minoribus reflexis, labello longe unguiculato cordato ovato acuto canaliculato apice recurvo. Lindl.

Rhizome creeping, rather stout, 5 to 7 mm in diameter, with numerous simple or rarely branched roots which are 1 to 1.5 mm in diameter. Pseudobulbs pyriform-cylindric, asymmetrically curved, remote, rugose, monophyllous, sessile, 4 to 4.5 cm long, 1.7 to 1.9 cm in diameter at the widest portion near the base. Leaves oblong-elliptic, acute, coriaceous, rigid, about 12 cm long, 4.6 cm wide; the petioles about 3 cm long. Scape arising from the side of each pseudobulb, its base sheathed with imbricated, lanceolate, membranaceous bracts, which are 2.2 to 2.8 cm long; the peduncles provided with bracts, which are 1.5 to 2 cm long. Pedicellate ovary primuline yellow and minutely spotted with dark purplish brown, 4.5 to 5 cm long, the ovary conspicuously ridged. Flowers showy, the largest of all known Philippine bulbophyllums, solitary, 7.5 to 8.5 cm across. Lateral sepals strongly falcate, lanceolate, gradually narrowed to the acute apex, 7.8 to 8 cm long, about 2 to 2.3 cm wide at the widest portion near the base, 13-nerved, the anterior portion circinate. Dorsal sepal greatly elongated, narrowly lanceolate, gradually narrowed to the acute apex, about 9.5 cm long, 1.5 cm wide at the widest portion near the base, 11-nerved. Petals similar to the lateral sepals, 7.1 to 7.7 cm long, 1.1 to 1.2 cm wide at the widest portion near the base, 9-nerved. Labellum triangular-lanceolate, strongly recurved, fleshy, mobile, acuminate, cordate at the base, 2.8 to 3 cm long, 1.1 to 1.2 cm wide. Column very short, stout, free portion 9 to 10 mm high, laterally winged, produced into an elongated curved foot about 1.1 cm long, of which the terminal portion is free and bears at its apex the mobile labellum. Pollinia subglobose.

LUZON, Benguet Subprovince, Baguio, Mrs. G. H. Fairchild's gardens, *Bur. Sci.* 85568 *Quisumbing*, March 23, 1932. The living plants were originally collected by Mrs. G. H. Fairchild near Baguio.

Bulbophyllum Lobbi is the largest-flowered *Bulbophyllum* ever reported from the Philippines and is closely allied to *Bulbophyllum calossum* Ridl.

Genus PHALAENOPSIS Blume

PHALAENOPSIS MARIAE Burbidge var. ALBA Ames and Quis. var. nov. Plate 2, figs. 3 and 4; Plate 4, figs. 9 to 17; Plate 7, fig. 2.

Haec varietas floribus omnino albidis haud striatis a *P. Mariae* differt.

In habit and in leaves similar to the species. The leaves, shining on the upper surface, dark green, 22.5 to 24 cm long, 5.5 to 7.7 cm wide. Scapes slender, sparingly branched, few-flowered, 10 to 20 cm long. Flowers odorless, 5 to 8 mm distant, 3.5 to 4 cm across, without bars and entirely pure white except at their apices which are light green-yellow and the inner basal portion of the lateral lobes of the labellum which is empire yellow. Pedicellate ovary white, about 12 mm long. Lateral sepals spreading, obliquely elliptic-ovate, obtuse, apiculate, 1.9 to 2 cm long, 1 to 1.1 cm wide. Dorsal sepal narrower, erect, broadly lanceolate-elliptic, obtuse, 1.9 to 2 cm long, 8.5 to 9 mm wide. Petals lanceolate-elliptic, obtuse, 1.7 to 1.8 cm long, 8.5 to 9 mm wide. Labellum fleshy, 3-lobed; lateral lobes erect in natural position, obliquely subquadrate-oblong, incurved towards the column, white with empire yellow stain on the inner basal portion, 5 to 6 mm long; middle lobe pure white, spatulate-obovate, 11 to 12 mm long, 7 to 8 mm wide at the widest portion, prominently keeled in the middle longitudinally, the keel conspicuously clothed with hairs on the anterior part. Column pure white, about 7 mm long.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 85707 *Quisumbing*, June 21, 1933. The description is based upon a living plant (now growing in the Bureau of Science orchid house), which was donated to the junior author by Mr. L. H. Phillips, who collected it from the hills of Bukidnon, Mindanao.

The variety is characterized by having pure white flowers with a complete absence of bars on the sepals and petals.

The plate in *Bot. Mag.* t. 6964 shows a very similar middle lobe of the lip, and the length of the pedicellate ovary is variable in specimens in the herbarium of the senior author.

Genus AERIDES Loureiro

AERIDES LAWRENCIAE Reichb. f. var. FORTICHII Ames and Quis. var. nov. Plate 2, fig. 2.

Habitu speciei similis, floribus albidis differt.

A variety resembling the species in habit and general features. Leaves 15 to 22.5 cm long, 2.8 to 3.3 cm wide. Inflorescence

curving, about 42 cm long including the peduncles. Flowers fragrant, 3.1 to 3.2 cm across. Sepals and petals white faintly washed at center with sea-foam yellow, and devoid of purple at the tips. Lateral lobes of labellum white, the tips overlapping below the middle lobe; middle lobe rose-pink, margin denticulate. Spur goose green. Column white. Pedicellate ovary pale dull green-yellow.

LUZON, Manila, Bureau of Science orchid house, *Phil. Nat. Herb. 106 Quisumbing*, January 13, 1933. According to Mr. L. H. Phillips, formerly of the Philippine Packing Corporation, Cagayan de Misamis, Mindanao, who furnished the junior author with a living plant in flower, the Hon. Manuel Fortich, representative from Bukidnon, collected two plants from his ranch in Bukidnon Province, Mindanao.

As far as we know, this is the first time a white variety of *Aërides Lawrenciae* has been reported. The variety closely resembles the species in habit and general features, but differs in its white flowers. To Representative Fortich, of Bukidnon Province, this interesting and newly discovered variety is dedicated.

AERIDES LAWRENCIAE Reichb. f. var. **PUNCTATA** Ames and Quis. var. nov. Plate 2, figs. 5 and 6.

Habitu speciei similis, floribus purpureis punctatis differt.

In habit and general features this variety resembles the species. The flowers are large, fragrant, about 3 cm across. Petals and sepals white tipped with true purple. Lateral lobes of the labellum white, dotted conspicuously with true purple, the dots extending up to the spur; the front lobe of the labellum true purple. The tip of the spur is buckthorn brown.

LUZON, Manila, Bureau of Science orchid house, *Phil. Nat. Herb. 107 Quisumbing*, November 12, 1932. The plant was originally collected by Mr. L. H. Phillips in the mountains of Cagayan de Misamis, Mindanao.

This variety is characterized by the conspicuous purple dots on the sides of the lateral lobes of the labellum.

Genus **RENANTHERA** Loureiro

RENANTHERA ELONGATA Lindl. Plate 2, fig. 7; Plate 4, figs. 18 to 25; Plate 8.

Renanthera elongata LINDL. Gen. & Sp. Orch. Pl. (1833) 218; AMES Orch. 5 (1915) 224, Bot. Mus. Leaf. Harv. Univ. 2 (1934) 31.

Renanthera micrantha BLUME, Rumphia 4 (1848) 54, Mus. Bot. Lugd.-Bat. 1 (1849) 60; REICHB. F. in Walp. Ann. 3 (1852) 566; MIQ. Fl. Ind. Bat. 3 (1859) 698; NAVES, Novis. App. (1882) 240.

Renanthera matutina LINDL. in Bot. Reg. 29 (1843) t. 41, G. K. in Bot. Zeit. 1 (1843) 760.

"Caule ramoso, foliis lato-linearibus oblique emarginatis, paniculis elongatis nutantibus, sepalis exterioribus lateralibus internis latioribus spatulatis, labelli limbo ovato basi bicalloso.

"Aërides elongatum. Blume l. c. [Bijdr. 366.]

"Hab. in Java, in rupibus calcareis prope Kuripan, Blume. Flores puniceæ."

Epiphytic on trees. In habit similar to *Renanthera storiei*. Stems erect, 210 to 215 cm high. Leaves distichous, greenish, oblong-elliptic, unequally bilobed at apex, 6.5 to 11.3 cm long, 2.7 to 4 cm wide, 3 to 4.5 cm distant. Peduncles 11.5 to 11.8 cm long. Panicles many-flowered (50 to 70 or more). Flowers small, of the same color as *Renanthera storiei* var. *philippinensis*, 13 to 14.5 mm long, 9 to 10.5 mm wide. Pedicellate ovary slender, 9 to 11 mm long. Lateral sepals asymmetrically spatulate, clavate, rather abruptly dilated above, 6.5 to 7 mm long, 3.5 to 4 mm wide above the middle, about 1 mm wide across the claw. Dorsal sepal oblong-ob lanceolate, obtuse, 7 to 7.5 mm long, about 3 mm wide at widest portion. Petals very similar to the dorsal sepal but smaller, broadly rounded at the apex, 5.5 to 6 mm long, 2 mm wide. Labellum relatively small, fleshy, 3.5 to 3.75 mm long, deeply saccate-spurred at base; 3-lobed at the apex; lateral lobes transversely subquadrate, broadly truncate, about 1 mm high; the middle lobe strongly recurved, triangular-ovate, subacute, about 1.25 mm long, 1 to 1.10 mm wide; spur cylindrical-conic, about 2 mm long. Column minute, 1.5 mm long. Anther broadly ovoid, about 1.5 mm long, 1.25 mm across. Pollinia four.

MINDANAO, Zamboanga Province, on a small island on the east coast of Zamboanga, *Mrs. Kenneth B. Day s. n.*, September, 1932. The plants were epiphytic on trees in mangrove swamps.

This species is characterized by its very small flowers.

Genus VANDA Jones

VANDA MERRILLII Ames and Quis. var. ROTORII Ames and Quis. var. nov. Plate 2, fig. 8; Plate 9, fig. 1.

Haec varietas floribus omnino badiis neque striatis neque maculatis a *Vanda Merrillii* differt.

In habit and flower parts very similar to the species. The flowers are essentially the same in size; the sepals and petals

are ox-blood red within, and chalcedony yellow on the back; the lateral lobes of the labellum pure white; the middle lobe of the labellum Vandyke red except the base of the auricles which are chalcedony yellow; column naphthalene yellow, and the pedicellate ovary white.

LUZON, Manila, Doctor Rotor's gardens, *Phil. Nat. Herb.* 109 *Quisumbing*, February 9, 1934.

The plant was originally collected by a friend of Doctor Rotor from a tree along the road between Baler, Tayabas Province, and Cabanatuan, Nueva Ecija Province, Luzon.

This variety resembles var. *immaculata* Ames and Quis. in the complete absence of bars or maculations on the flowers, but differs in the ox-blood red petals and sepals and Vandyke red middle lobe of the labellum.

This variety is dedicated to Dr. A. B. Rotor, a lover of orchids.

Genus TRICHOGLOTTIS Reichenbach f.

TRICHOGLOTTIS GUIBERTII (Linden and Reichb. f.) Ames and Quis. comb. nov. Plate 2, figs. 9 and 10; Plate 4, figs. 26 to 35; Plate 10.

Cleisostoma Guiberti LINDEN and REICHB. f. apud Reichb. f. in Bot. Zeit. 20 (1862) 375, *Xenia Orch.* 2 (1867) 126, t. 142.

Vanda Guiberti LINDL. apud Linden and Reichb. f. in synon.

The present species, which is well figured in *Xenia Orch.* l. c., appears to be referable to the genus *Trichoglottis* as now interpreted, while the concept *Cleisostoma* Bl. is no longer generally upheld by orchidologists.

Moreover, *Trichoglottis Guibertii* is certainly allied to *T. luzonensis* Ames, both vegetatively and florally. On the other hand, the name *Staurochilus* was founded by Ridley on *Trichoglottis fasciata* Reichb. f. which had previously been referred by Bentham, apparently with logic, to Reichenbach's genus *Stauroopsis*.

Such species as *Trichoglottis Guibertii*, *T. luzonensis*, *T. Dawsoniana*, *T. fasciata*, etc., certainly differ from the original conception of *Trichoglottis* in having large flowers with scarcely developed spur, and in having the inflorescences (more or less elongate) either loosely racemose or paniculate.

It seems highly probable that orchidologists will eventually be forced to agree with J. J. Smith, in referring to the genus *Trichoglottis* all these allied and intergrading species.

"Affine *Cleisostomati ionosmo* Lindl. labelli lamina pandurata, pilosula, carina postice bicurvi a calcaris fundo in laminae fossam excurrente.

"*Vanda Guiberti* Lindl.

"Panicula multiflora. Flores illis *Vandae Roxburghii* aequales, colore fere *Anselliae*, extus pallide flaveolo-albi. Sepala cuneato-oblonga, obtusa. Tepala subaequalia. Omnia flavida annulis rufis. Labellum basi cum columnae basi connatum auriculis rectangularibus hinc unidentatis bidentatisve; lamina pandurata, postice latior, apice emarginata, pilosula. Columna brevis, apice utrinque unifalcis, falcibus velutinis; lamella ovata apiculata cochleata sub fovea.

"Die Berichte über die am 24. September in Brüssel veranstaltete Ausstellung heben als wesentliche Merkwürdigkeit diese, vom Hrn. Director Linden ausgestellte und zunächst *Vanda Guiberti* genannte Orchidee vor.

"In der That ist dieselbe eine sehr merkwürdige acquisition, besonders wenn man erwägt, wie die *Cleisostomen* bis jetzt keine irgend hübschen Blüten aufwiesen, es sei denn das doch gar bescheidene *Cl. ionosmum*. Unsere neue Art hat einen mächtigen Blütenstand von Blüten, die einen modernen deutschen Vereinsthaler decken, und deren braune Ringe auf Paille Untergrund einen guten Eindruck machen." Reichb. f.

Coarse, stout, epiphyte, approaching *Trichoglottis ionosma* in habit. Roots stout, elongate, glabrous. Stems elongate, 50 to 70 cm long, 10 to 14 mm in diameter, subterete. Leaves distichous, oblong-ligulate, 14 to 28.5 cm long, 2.5 to 3.3 cm wide, coriaceous, 3 to 3.5 cm distant, dark green, unequally bilobed at the apex with obtuse lobes. Peduncles rigid, erect when occurring on erect stems and rather pendent when on drooping stems, 4 to 6 mm in diameter. Inflorescences showy, laxly paniculate, many-flowered, inclusive of the peduncles, 16 to 35 cm long, glabrous. Ovary twisted. Flowers fleshy, 3.5 to 4.5 cm across. Lateral sepals elliptic-obovate, obtuse, 1.6 to 1.8 cm long, 9 to 11 cm wide, somewhat asymmetric. Dorsal sepal, obovate-oblong, rounded at the apex, 1.6 to 2.1 cm long, 7 to 9 mm wide. Petals spatulate, more or less falcate, rounded at the apex, 1.5 to 1.8 cm long, 7.5 to 9 mm wide above. Labellum trilobed, fleshy, shortly saccate-spurred at the base, 1.6 to 2 cm long, densely pubescent on both surfaces especially on the inner surface; lateral lobes erect and connate with the column, short, rounded-triangular, 1.5 to 2 mm high; middle lobe much larger than the lateral lobes, subquadrate-pandurate, recurved at the apex, retuse at the tip, 1 to 1.3 cm long, 8 to 9 mm wide at the broadest portion near the base, with a prominent longitudinal keel on the upper surface; spur shortly conical, obtuse, 4 to 5

mm long. Within the saccate base of the labellum (between the lateral lobes) there is a small, ovate, abruptly acuminate, deeply concave ligule, about 5 mm long. Column short, stout, 7 to 8 mm long, densely and minutely pubescent, on each side at the apex with upcurved falcate stelidia which are 3 to 3.5 mm long. Pollinia 4, united in pairs, unequal.

LUZON, Manila, Mrs. Remedios C. Gonzales's gardens, *Bur. Sci.* 84716 *Quisumbing*, June 22, 1932.

The living plants were originally collected on limestone rocks and on branches of trees in Quezon National Park, Tayabas Province, Luzon.

The flowers are fragrant, and remain open for about eight weeks. Sepals and petals marguerite yellow barred and spotted with Hay's russet or madder brown, pale lumiere green at the tips; lateral lobes of the labellum white outside, primuline yellow inside spotted with vinaceous rufous, middle lobe barium yellow spotted with vinaceous-rufous; ligule between the lateral lobes at the base white; keel of labellum and column white; spur marguerite yellow; arms of the column pompeian red; anthers amber yellow.

This species is now reported from the Philippines for the first time. It differs from *T. ionosma* and *T. luzonensis* in the form of the lip.

ILLUSTRATIONS

PLATE 1

- FIG. 1. *Dendrobium anosmum* Lindl. var. *Dearei* (Rolfe) Ames and Quis. comb. nov., front view of flower, $\times 1$.
2. *Dendrobium Schuetzei* Rolfe, front view of flower, $\times 1$ (circa).
3. *Dendrobium anosmum* Lindl. var. *Huttonii* (Reichb. f.) Ames and Quis. comb. nov., $\times 1$.
4. *Dendrobium cerinum* Reichb. f., front view of flower, $\times 1$.
5. *Dendrobium cerinum* Reichb. f., side view of flower, $\times 1$.
6. *Dendrobium Phillipsii* Ames and Quis. sp. nov., front view of flower, $\times 1$ (circa).
7. *Dendrobium Phillipsii* Ames and Quis. sp. nov., side view of flower, $\times 1$ (circa).

PLATE 2

- FIG. 1. *Bulbophyllum Lobbiai* Lindl., front view of flower, $\times 1$ (circa).
2. *Aërides Lawrenceiae* Reichb. f. var. *Fortichii* Ames and Quis. var. nov., front view of flower, $\times 1$ (circa).
3. *Phalacnopsis Mariae* Burbidge var. *alba* Ames and Quis. var. nov., front view of flower, $\times 1$.
4. *Phalaenopsis Mariae* Burbidge var. *alba* Ames and Quis. var. nov., side view of flower, $\times 1$.
5. *Aërides Lawrenceiae* Reichb. f. var. *punctata* Ames and Quis. var. nov., front view of flower, $\times 1$ (circa).
6. *Aërides Lawrenceiae* Reichb. f. var. *punctata* Ames and Quis. var. nov., side view of flower, $\times 1$ (circa).
7. *Renanthera elongata* Lindl., front view of flower, $\times 4$ (circa).
8. *Vanda Merrillii* Ames var. *Rotorii* Ames and Quis. var. nov., front view of flower, $\times 1$.
9. *Trichoglottis Guibertii* (Linden and Reichb. f.) Ames and Quis. comb. nov., front view of flower, $\times 1$.
10. *Trichoglottis Guibertii* (Linden and Reichb. f.) Ames and Quis. comb. nov., side view of flower, $\times 1$.

PLATE 3

Dendrobium cerinum Reichb. f.: 1, dorsal sepal, $\times 1.5$; 2, petal, $\times 1.5$; 3, lateral sepal, side view of column, pedicellate ovary, and spur, $\times 1.5$; 4, labellum from above (expanded), $\times 1.5$; 5, side view of labellum (natural position), $\times 1.5$; 6, front view of column, $\times 1.5$; 7, anther from above, $\times 3$; 8, anther from below, $\times 3$; 9-10, pollinia, $\times 6$.

Dendrobium Phillipsii Ames and Quis. sp. nov.: 11, dorsal sepal, $\times 1$ (circa); 12, petal, $\times 1$ (circa); 13, lateral sepal, $\times 1$ (circa); 14, labellum from above (expanded), $\times 1$ (circa); 15, side view of ovary and column, $\times 2.5$ (circa); 16, front view of column, $\times 2.5$ (circa); 17, anther from above, $\times 4.5$ (circa); 18, anther from below, $\times 4.5$ (circa); 19, pollinia much enlarged.

Dendrobium Schuetzei Rolfe: 20, dorsal sepal, $\times 0.5$ (circa); 21, lateral sepal, $\times 0.5$ (circa); 22, petal, $\times 0.5$ (circa); 23, side view of ovary, column, and labellum (natural position), $\times 1$ (circa); 24, labellum from above (expanded), $\times 0.5$ (circa); 25, front view of column, $\times 1$ (circa); 26, anther from above, $\times 2.5$ (circa); 27, anther from below, $\times 2.5$ (circa).

PLATE 4

Bulbophyllum Lobbiai Lindl.: 1, dorsal sepal, $\times 0.5$ (circa); 2, petal, $\times 0.5$ (circa); 3, lateral sepal, $\times 0.5$ (circa); 4, front view of column and labellum (natural position), $\times 0.5$ (circa); 5, side view of ovary, column, and labellum (natural position), $\times 0.5$ (circa); 6, labellum from above (natural position), $\times 2$ (circa); 7, anther from above, very much enlarged; 8, anther from below, very much enlarged.

Phalaenopsis Mariae Burbidge var. *alba* Ames and Quis. var. nov.: 9, dorsal sepal, $\times 1$ (circa); 10, petal, $\times 1$ (circa); 11, lateral sepal, $\times 1$ (circa); 12, side view of column and labellum (natural position), $\times 2$ (circa); 13, labellum from above (expanded), $\times 2$ (circa); 14, front view of column and labellum (natural position), $\times 2$ (circa); 15, anther from above, $\times 6$ (circa); 16, anther from below, $\times 6$ (circa); 17, pollinia, $\times 6$ (circa).

Renanthera elongata Lindl.: 18, dorsal sepal, $\times 2.5$ (circa); 19, petal, $\times 2.5$ (circa); 20, lateral sepal, $\times 2.5$ (circa); 21, column and labellum from above, (natural position), $\times 3.5$ (circa); 22, side view of ovary, column, and labellum (natural position), $\times 3.5$ (circa); 23, anther from above, $\times 10$ (circa); 24, anther from below, $\times 10$ (circa); 25, pollinia, $\times 10$ (circa).

Trichoglottis Guibertii (Linden and Reichb. f.) Ames and Quis. comb. nov.: 26, dorsal sepal, $\times 3$ (circa); 27, lateral sepal, $\times 3$ (circa); 28, petal, $\times 3$ (circa); 29, side view of column and labellum (natural position), $\times 3$ (circa); 30, front view of column, $\times 3$ (circa); 31, column and labellum from above (natural position) $\times 3$ (circa); 32, labellum from above (expanded), $\times 3$ (circa); 33, anther from above, very much enlarged; 34, anther from below, very much enlarged; 35, pollinia, very much enlarged.

PLATE 5

Dendrobium anosmum Lindl. var. *Dearei* (Rolfe) Ames and Quis. comb. nov., habit, very much reduced.

PLATE 6

FIG. 1. *Dendrobium Phillipsii* Ames and Quis. sp. nov., flowers, approximately natural size.

2. *Dendrobium Schuetzei* Rolfe, habit, very much reduced.

PLATE 7

- FIG. 1. *Bulbophyllum Lobbii* Lindl., habit, much reduced.
2. *Phalaenopsis Mariae* Burbidge var. *alba* Ames and Quis. var. nov., habit, very much reduced.

PLATE 8

Renanthera clongata Lindl., habit of the plant, very much reduced.

PLATE 9

- FIG. 1. *Vanda Merrillii* Ames and Quis. var. *Rotorii* Ames and Quis. var. nov., habit, very much reduced.
2. *Dendrobium cerinum* Reichb. f., habit, very much reduced.

PLATE 10

Trichoglottis Guibertii (Linden and Reichb. f.) Ames and Quis. comb. nov., habit, very much reduced.

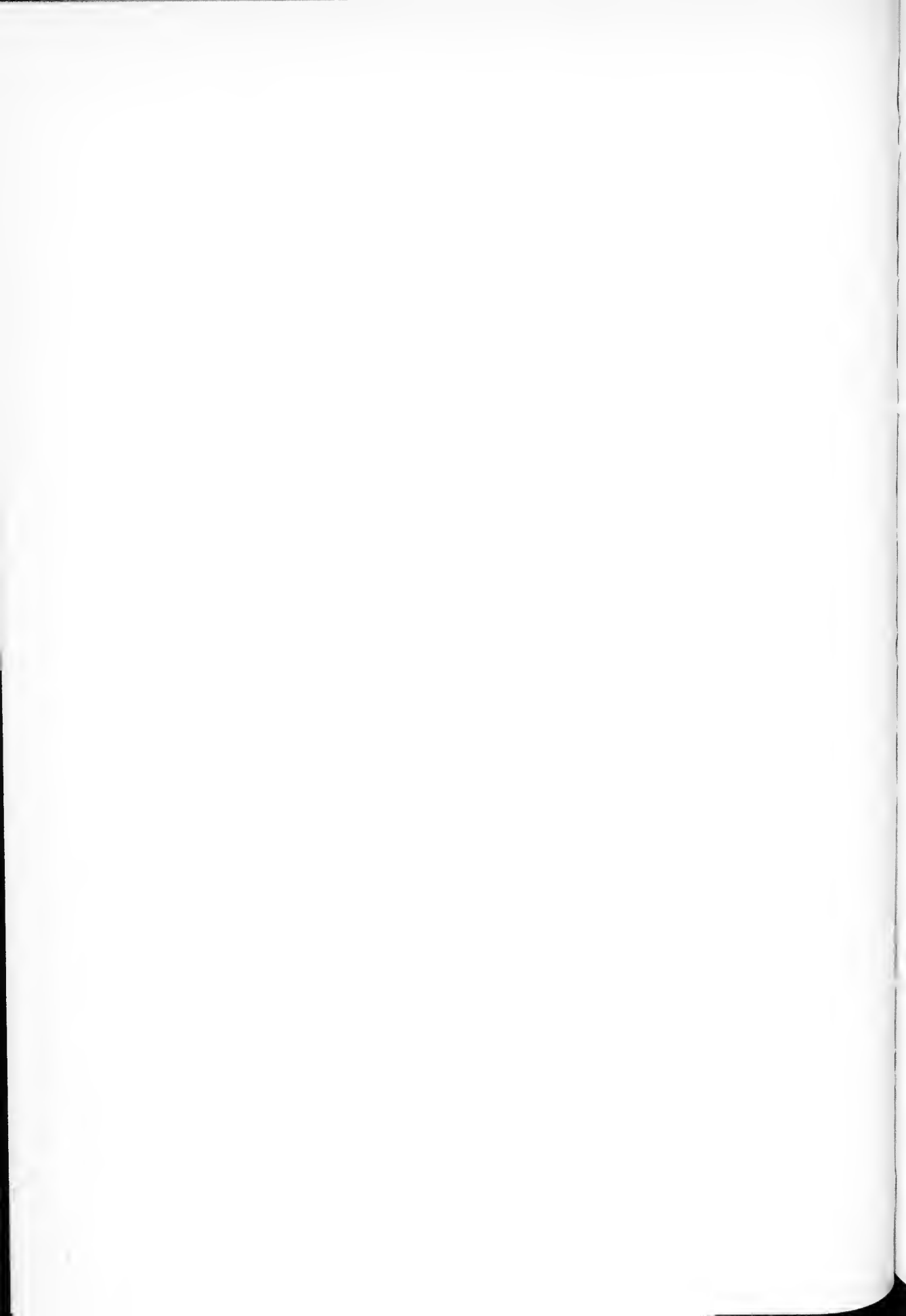
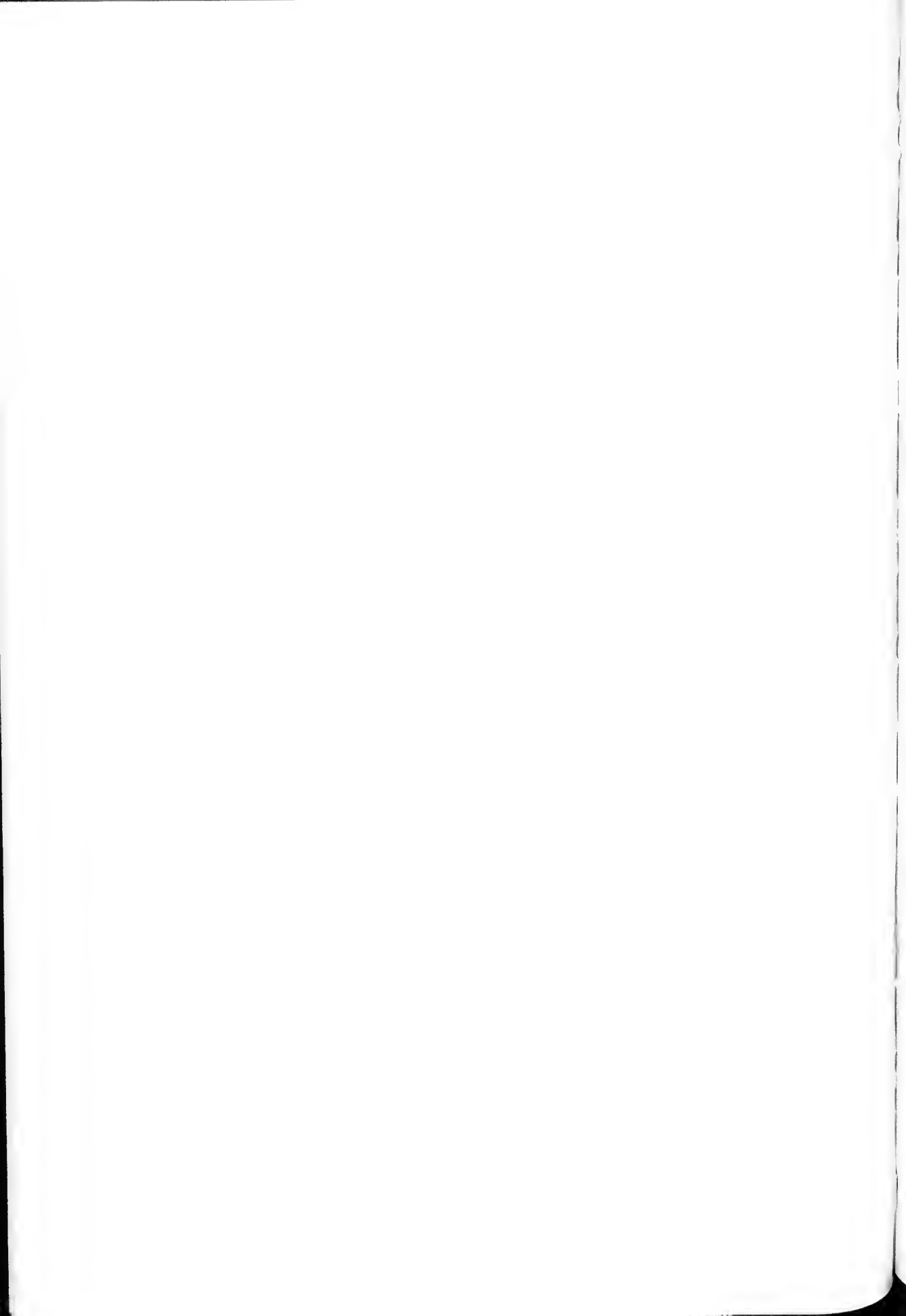




PLATE 1.



PLATE 2.



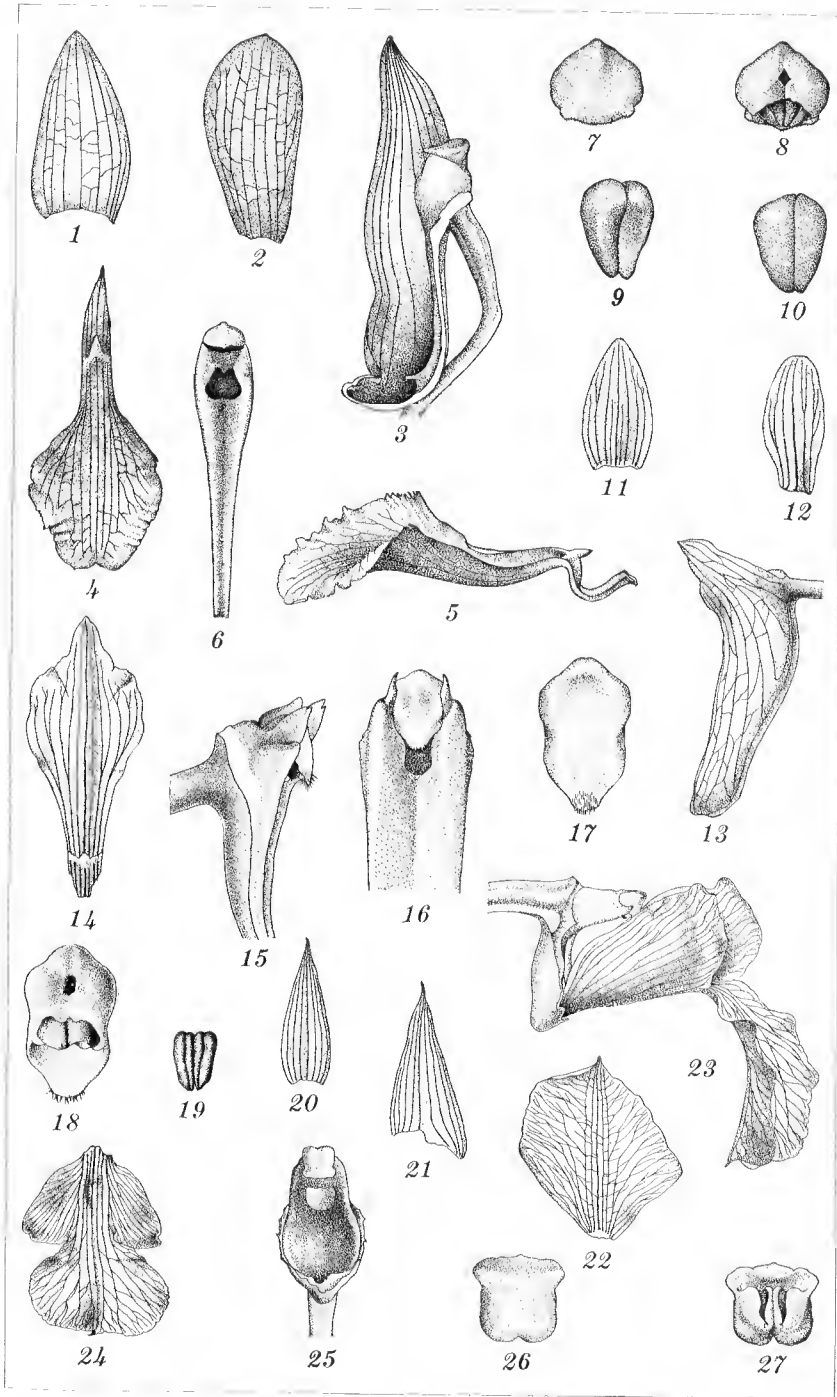
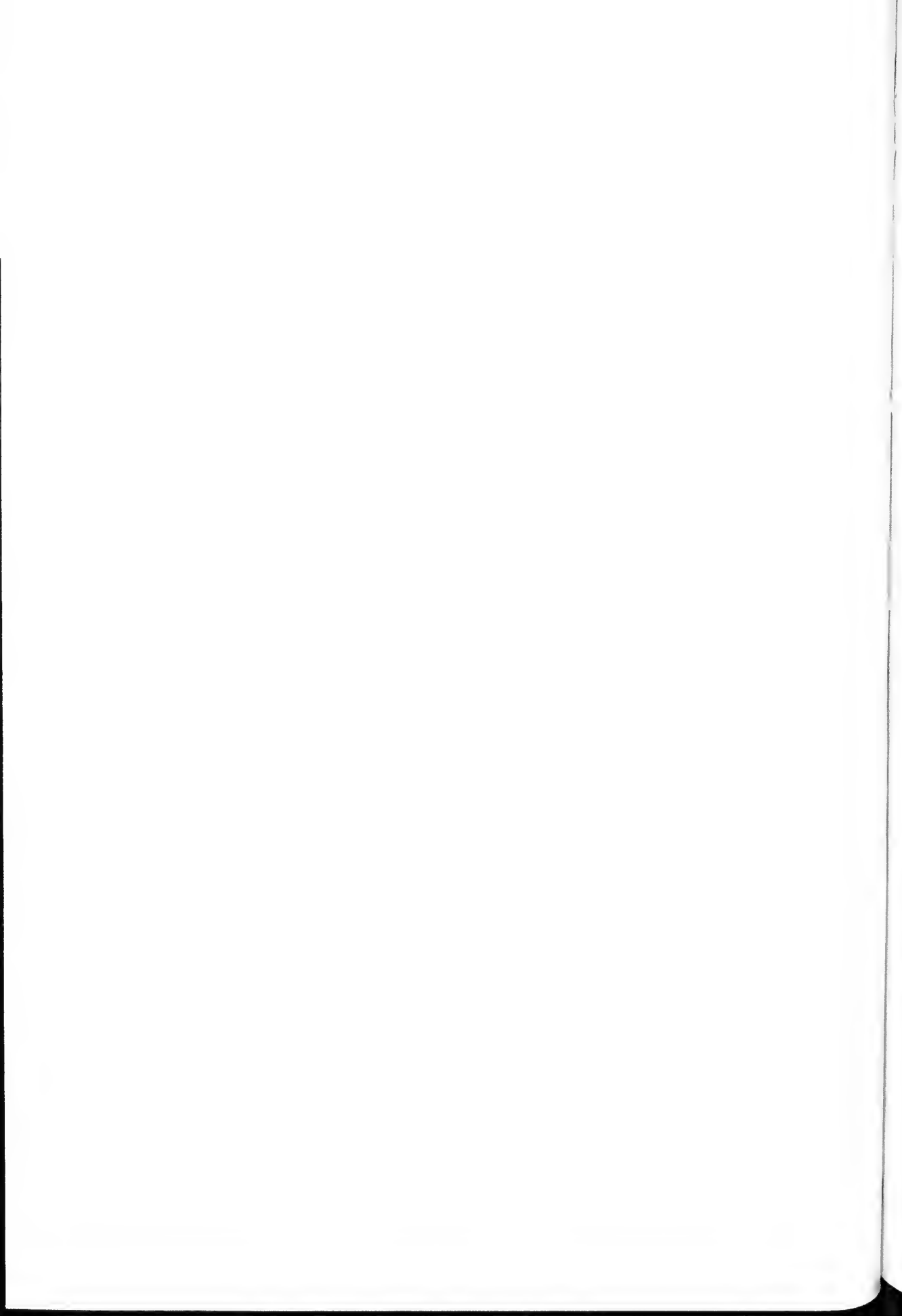


PLATE 3.



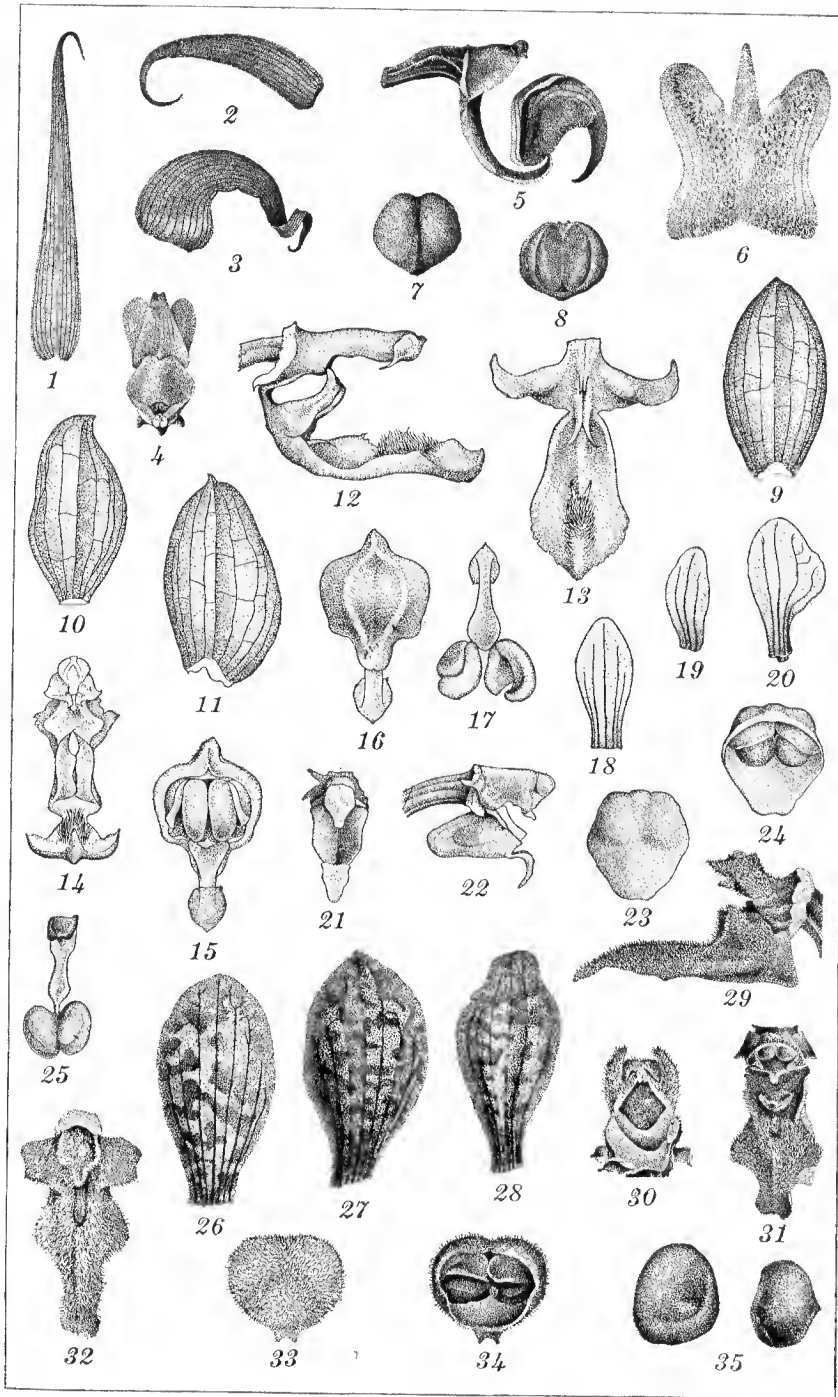


PLATE 4.

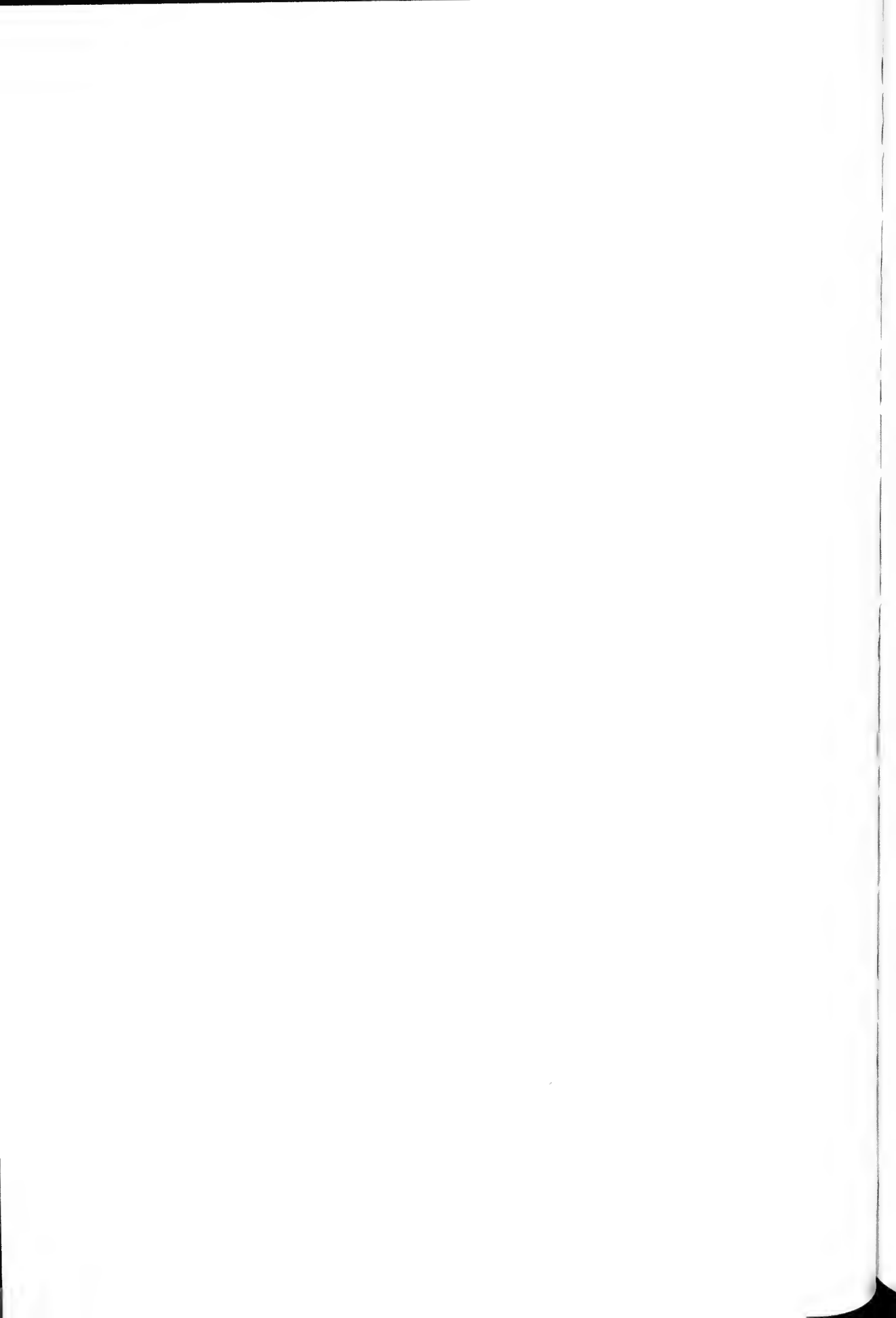




PLATE 5.

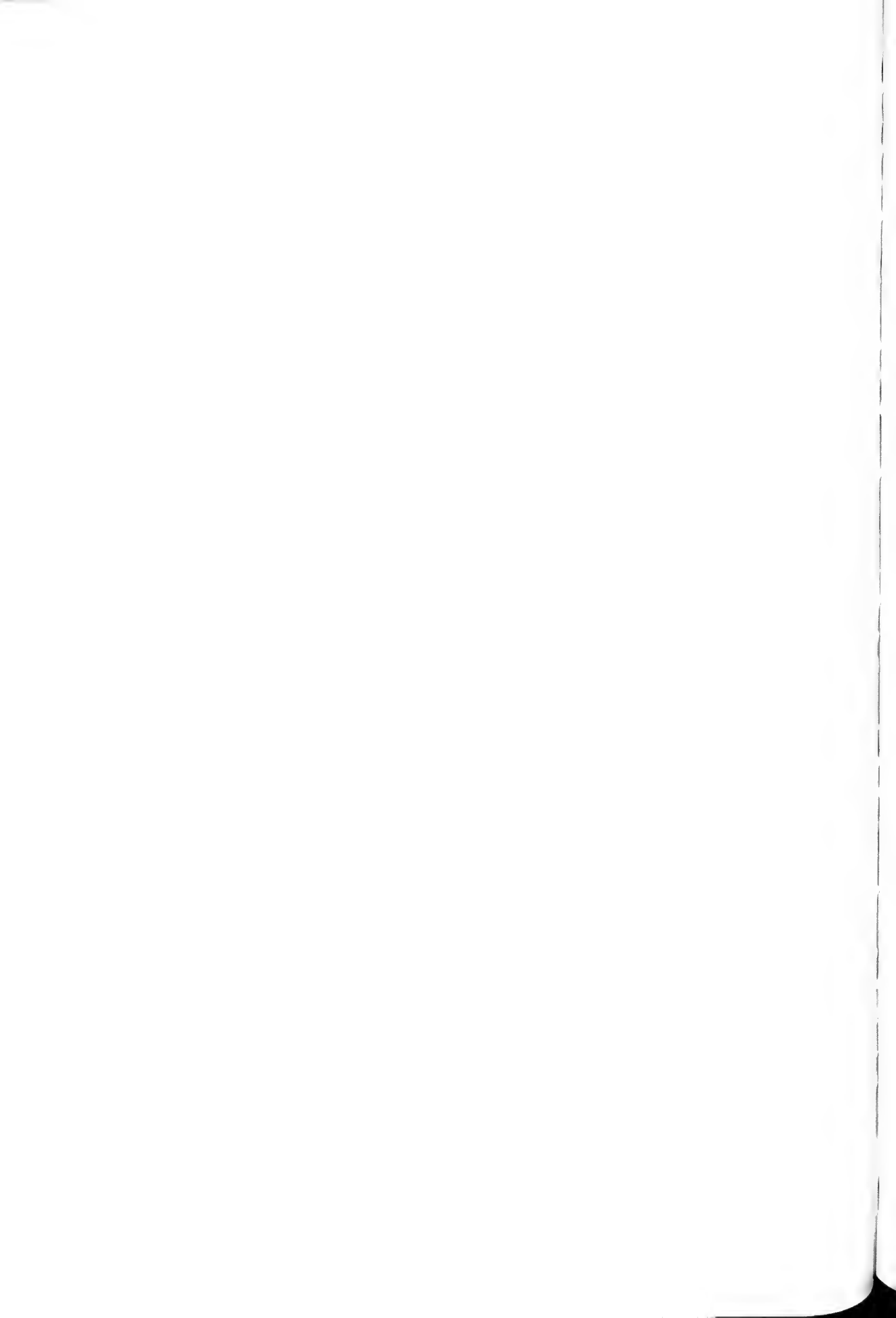




PLATE 6.

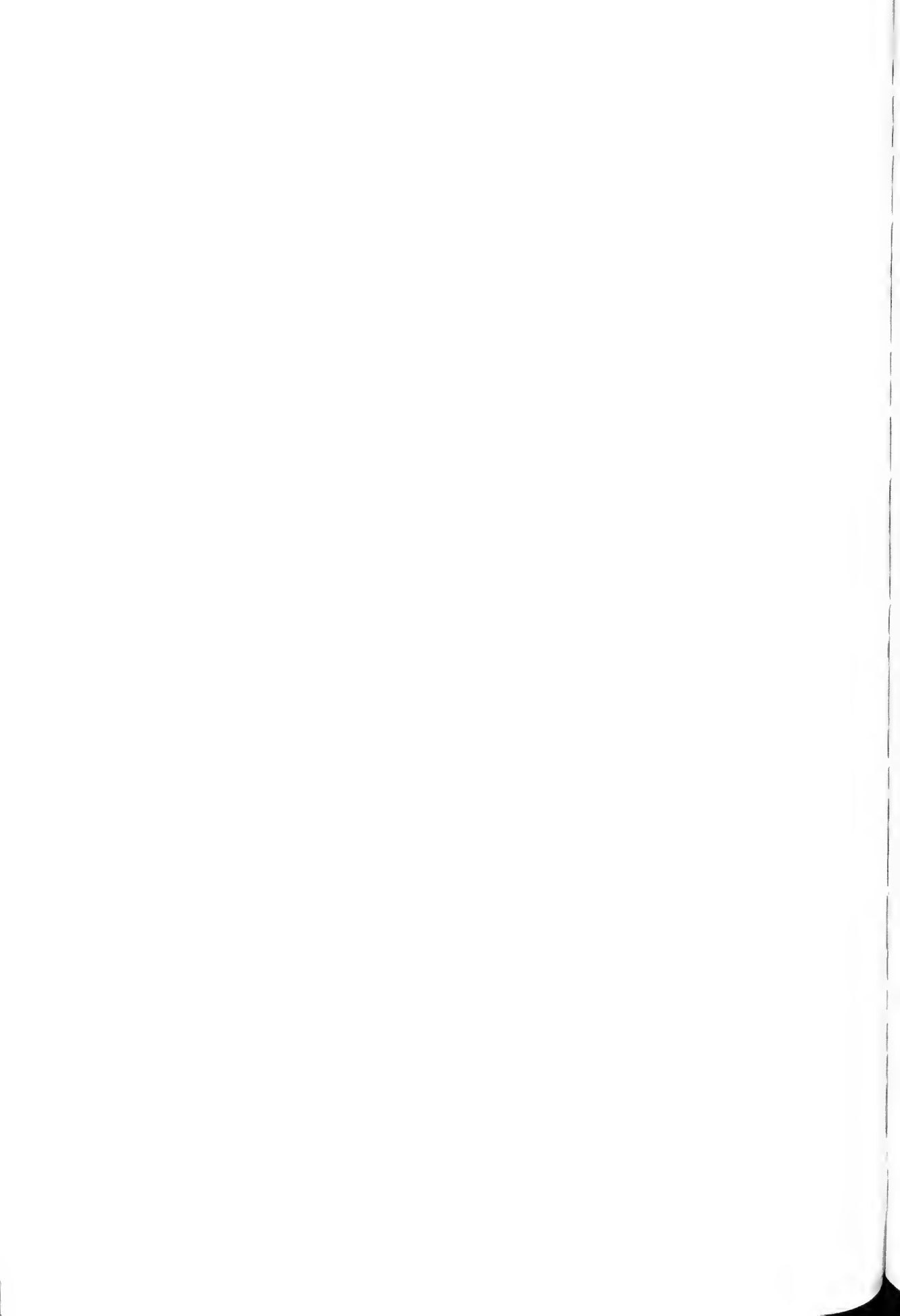




PLATE 7.





PLATE 8.





PLATE 9.



PLATE 10.



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NEW OR NOTEWORTHY PHILIPPINE ORCHIDS, VI

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and

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NINE PLATES

The present paper is essentially similar to its predecessors.¹ It consists of descriptions of four new species. The genera *Bromheadia* and *Ascoglossum* are new to the Philippines. *Nephelaphyllum pulchrum* Blume and *Ascoglossum calopterygium* (Reichb. f.) Schltr. are for the first time credited to the Philippines. Illustrations of two Philippine species, *Nephelaphyllum mindorense* Ames and *Plocoglottis lucbanensis* Ames, are also included.

All descriptions in the text have been prepared from living specimens, and all colored illustrations were made by Mr. Pedro Ramos, draftsman of the National Museum Division, Bureau of Science. All line drawings were prepared by Messrs. Marasigan, Aguilar, and Castelo, and Miss Ico, artists of the National Museum Division. All the types of the new species have been deposited in the Philippine National Herbarium, Bureau of Science, and the isotypes in the herbarium of the senior author. Available types will be distributed to American and European

¹ Philip. Journ. Sci. 44 (1931) 369-383, 16 pls.; 47 (1932) 197-220, 29 pls.; 49 (1932) 483-504, 28 pls.; 52 (1933) 443-473, 17 pls.; 56 (1935) 453-469, 10 pls.

herbaria. The color terms used are mostly from Ridgway's Color Standards and Color Nomenclature (1912).

Genus MALAXIS Solander ex Swartz

MALAXIS PURPUREIFLORA Ames and Quis. sp. nov. Plate 1, fig. 9; Plate 2, figs. 1 to 8; Plate 7.

Radices numerosae, fibrosae. Herba terrestris, prope basim foliosa, circiter 25 cm alta. Caulis brevis, crassus, 3.5 ad 5 cm longus, vaginis tubuliformibus inflatis membranaceis imbricantibus omnino obtectus. Folia 3 ad 8; lamina lanceolato-elliptica ad late elliptica, acuminata, acuta, 7 ad 20 cm longa, 2.5 ad 8 cm lata, nervosa, paulatim in petiolum latum basi dilatatum vaginantem transiens. Pedunculus gracilis, cum racemo 45 ad 46 cm longus. Bractei scariosae, triangulari-lanceolatae, acutae, 4 ad 6 mm longae. Flores juveniles approximati ut videtur, sed tardius remotiores. Sepala petalaeque margine valde revoluta. Sepala lateralia suborbicularia, apice late rotundata, circiter 4 mm longa, 3.2 mm lata, 4- ad 5-nervia. Sepalum dorsale oblongo-ellipticum, obtusum, circiter 5.4 mm longum, 2.4 mm latum, 3- ad 5-nervium. Petala anguste oblongo-elliptica, obtusa, 4.75 ad 5 mm longa, 1.4 ad 1.7 mm lata, 3-nervia. Labellum in circuitu suborbiculare, valde auriculatum, circiter 6 mm longum, 5.5 ad 6 mm latum, antice acute pluridentatum cum callo semicirculari lobulato circa gynostemium ornatum, postice in auriculae triangulari-ovatas retrorsas obtusas extensum. Gynostemium per breve, bialatum. Anthera oblata. Pollinia 4, pyriformia, per paria cohaerentia.

Roots numerous, fibrous. Terrestrial herb, about 25 cm tall, leafy at the base. Stems short, stout, 3.5 to 5 cm long, concealed by the swollen, infundibuliform membranaceous leaf-sheaths. Leaves 3 to 8, with petioles imbricating below; lamina lanceolate-elliptic to very broadly elliptic, acuminate, acute, 7 to 20 cm long, 2.5 to 8 cm wide, 5-nerved. Peduncles slender, including the racemes 45 to 46 cm long, provided with triangular-lanceolate, acute, scarios bracts, 4 to 6 mm long. The buds and young flowers at the apex of the racemes crowded, older flowers remote. Sepals and petals with strongly revolute margins. Lateral sepals suborbicular, broadly rounded at the apex, about 4 mm long, 3.2 mm wide, 4- to 5-nerved. Dorsal sepal oblong-elliptic, obtuse, about 5.4 mm long, 2.4 mm wide, 3- to 5-nerved. Petals narrowly oblong-elliptic, obtuse, 4.75 to 5 mm long, 1.4 to 1.7 mm wide, 3-nerved. Labellum suborbicular in

outline, prominently auriculate, about 6 mm long, 5.5 to 6 mm wide, 8- to 10-dentate on the anterior margin, extended at base into a pair of retrorse triangular-ovate rounded auricles. Disc in front of the column, with a semicircular lobulate callus. Gynostemium very short, 2-winged. Pollinia 4, pyriform, in pairs.

LUZON, Benguet Subprovince, near Baguio, on rocks on the Naguilian Trail, *Phil. Nat. Herb.* 79 Mrs. K. B. Day, June 29, 1934.

The species is especially characterized by the purple color on the lower surface of the leaves, the purple flowers and the 8- to 10-sharp-toothed labellum. It differs from all its nearest allies—*M. atrosanguinea* Ames, *M. bulusanensis* Ames, and *M. Taylora* Ames—in its much broader petals and in the teeth on the anterior margin of the lip.

Genus NEPHELAPHYLLUM Blume

NEPHELAPHYLLUM MINDORENSE Ames. Plate 1, figs. 3 and 4; Plate 2, figs. 21 to 31; Plate 8.

Nephelaphyllum mindorense AMES in Philip. Journ. Sci. 2 (1907) Bot. 316, Orch. 3 (1908) 83, t. 55, 5 (1915) 48, in Merr. Enum. Philip. Fl. Pl. 1 (1924) 280.

"Closely allied to *N. pulchrum* Blume. Plants about 2 dm. tall. Rhizome creeping, slender, rooting at intervals. Stems purple. Leaves with the under surface uniformly dark purple, upper surface mottled, ovate-lanceolate, acuminate, acute, 8-10 cm. long, 3-5.5 cm. wide near the base. Petioles relatively slender, about 3 cm. long. Peduncles exceeding the leaves, clothed with several scarios, tubular, acute sheaths. Inflorescence loosely few-flowered. Bracts about 1 cm. long, linear, acute, scarios, somewhat shorter than the pedicels of the white flowers. Lateral sepals linear-acute, 1-nerved, 9 mm. long, 1.5 mm. wide. Upper sepal similar and equal to the laterals. Petals oblong, acute, slightly broader above than below the middle, 1-nerved, about 8 mm. long, 3 mm. wide. Labellum suborbicular, entire, 9-10 mm. long, 9-10 mm. wide, with 3 prominent converging lamellae near the apex, which pass basally into the main nerves of the hairy disc. Spur blunt, inflated, 4-5 mm. long."—AMES, loc. cit.

LUZON, Benguet Subprovince, Baguio, *Phil. Nat. Herb.* 80 Mrs. K. B. Day, June 29, 1934; Nueva Ecija Province, Mount Umingan, *Bur. Sci.* 26319, 26494, 29652 Ramos and Edaña, August and September, 1916. MINDORO, along Binabay River, *Merrill* 5623 (type in *Phil. Nat. Herb.*), November 2, 1906.

The peduncles are purple; sepals and petals pale grass green flushed with light brownish olive and lined with purple-drab; labellum white except the lamellae orange-chrome; anther orange

chrome. Terrestrial orchids on dry slopes and in humid forests at 200 to 1,700 meters altitude.

NEPHELAPHYLLUM PULCHRUM Blume.

Nephelaphyllum pulchrum BLUME Bijdr. (1825) 373, f. 22, Fl. Jav. Orch. (1858) 144, t. 61, f. 1, t. 54 F; LINDL. Gen. & Sp. Orch. (1830) 24; REICHB. F. Xenia Orch. 1 (1856) 216, t. 88, f. 1; MIQ. Fl. Ind. Bat. 3 (1859) 675; Bot. Mag. 88 (1862) t. 5332; HOOK. F. Fl. Br. Ind. 5 (1890) 818; J. J. SM. Fl. Buitenz. 6 (Orch. Java) (1905) 178, Fig.-Atlas (1909) fig. 135; SCHLTR. Die Orchideen (1927) 127.

The original description reads as follows:

"N: floribus dense spicatis, labelli limbo lineis tribus muricatis.

"Crescit: in locis humidioribus sylvarum Salak.

"Floret: Januario-Aprili."—BLUME.

Plants ascending, 10 to 15 cm high; rhizome creeping, slender, rooting at intervals. Leaves three in our plant, submembranaceous, ovate or triangular-ovate, subcordate at the base, acuminate-acute at apex, 8.4 to 9 cm long, 4 to 4.2 cm wide near the base, uniformly dark purple beneath, silvery green with dark green reticulations above; petioles 1.3 to 1.8 cm long. Inflorescence terminal, few-flowered; the peduncle clothed with several scarious tubular sheaths, erect, about 4 cm or more long. Flowers about 2.8 cm across. Sepals and petals reflexed. Sepals linear, acute, about 12.7 mm long, 1.8 to 2 mm wide. Petals oblong-linear, acute, about 13 mm long, 3 mm wide. Labellum large, oblong-obovate when expanded, cuneate at the base, slightly retuse, about 10.5 mm long, 11 mm wide when stretched out, with three elevated dentate or lacerate lamellæ near the apex; base of the labellum extended into a short didymous spur about 5 mm long. Column stout in proportion to the size of the flower, semiterete, the margin expanded into a wing along each side. Anther two-horned. Pollinia 8, unequal, in pairs.

PALAWAN, on rocks along the bank of Iwahig River, *Bur. Sci.* 81158 E. H. Taylor, September 18, 1923.

The single collection here cited appears to be referable to *Nephelaphyllum pulchrum* Blume, although the long acuminate leaves seem aberrant from those of the typical form.

This species differs from *N. mindorensis* Ames in having much larger flowers and dentate (not subentire) keels on the lip.

Besides the Philippines, it occurs in Borneo, Java, Sumatra, and the Straits Settlements.

Genus PLOCOGLOTTIS Blume

PLOCOGLOTTIS LUCBANENSIS Ames. Plate 1, figs. 7 and 8; Plate 2, figs. 9 to 20.

Plocoglottis lucbanensis AMES in Elm. Leaf. Philip. Bot. 5 (1912)
1572, Orch. 5 (1915) 100, in Merr. Enum. Philip. Fl. Pl. 1 (1924)
338.

"Herba terrestris. Caules subcaespitiosi, purpurei, ad basim incrassati, fibris elongatis ornati, monophylli. Folium oblongi-lanceolatum, acutum, acuminatum ad basim attenuatum, circiter 3.8 dm. longum, usque ad 3.5 cm. latum in petiololum gracilem elongatum contractum distincte 3-nervium. Scapi aphylli a basi caulium laterales, longi, erecti, circiter 6 dm. longi, vaginati, pubescentes. Racemi abbreviati. Bracteae inflorescentiae lanceolatae, acutae, pubescentes, \pm 5 mm. longae. Pedicellus cum ovario circiter 1.2 cm. longus, pubescens. Flores atro-flavidi, purpurco-maculati, pubescentes. Sepala lateralalia crassa 12 mm. longa, acuta, ad apicem subcucullata, oblongi-lanceolata, extus pubescentia, 5-nervia. Sepalum posticum oblongum, obtusum. Petala 11 mm. longa, linearia, falcata, ad apicem sensim dilatata et incrassata. Labellum crassum 8 mm. longum, circiter 4 mm. latum, ad apicem in apiculo productum. Apiculus valde deflexus, recurvatus. Columna scabrata.

"Aside from a slight thickening of the nerves the labellum appears to be ecallose.

"LUZON, Province of Tayabas, Lucban, May, 1907, A. D. E. Elmer, 7707.

"Small tufted terrestrial herbs in damp soil of wooded ravines at 2,750 feet altitude. Pseudobulbs and stems conspicuously purple; leaves submembranaceous; buds whitish; flower dull yellow, spotted with purple. Rare!"—AMES in Elm. Leaf. Philip. Bot. 5 (1912) 1572.

BABUYAN ISLANDS (CAMIGUIN ISLAND), *Bur. Sci.* 4147 *Fenix*, July 16, 1907. LUZON, Benguet Subprovince, Baguio, *Phil. Nat. Herb.* 50 Mrs. K. B. Day, May 21, 1934: Laguna Province, *For. Bur.* 28939 *Willie and Salvoza*: Tayabas Province, Lucban, *Elmer* 7707 (type), May, 1907: Sorsogon Province, Irosin, Mount Bulusan, *Elmer* 17123, September, 1916.

The peduncles are purplish; sepals and petals light cadmium and spotted with nopal red; labellum pinard yellow; column pinard yellow at apex and white at base; pedicellate ovary white.

Genus DENDROBIUM Swartz

DENDROBIUM BUKIDNONENSE Ames and Quis. sp. nov. Plate 1, figs. 5 and 6; Plate 3, figs. 1 to 7; Plate 9, fig. 1.

Caules aggregati, 23.5 ad 50 cm longi, basi ovoideo-incrassati, supra attenuati. Folia disticha, linearia, obtusa, 4 ad 7 cm longa, 3 ad 4 mm lata. Racemi breves; flores singuli succedanei, circiter 1.4 cm dimetiente. Sepala lateralalia late triangularia, apice rotundato subacuta, 6.5 ad 8 mm longa, circiter 15.6 mm secundum columnae pedem lata, 6- to 7-nervia. Sepalum

dorsale oblongo-ovatum, subacutum, 6 ad 7 mm longum, circiter 3.5 mm latum, 5- to 7-nervium. Petala oblongo-elliptica, obtusa, 5.5 ad 7 mm longa, 2.9 ad 3.5 mm lata, 1-nervia. Labellum cuneato-obovatum, simplex obscurissime trilobatum, crenulatum, 15.7 ad 18 mm longum, 9 ad 11 mm latum. Columna brevis, in pedem perlongum extensa.

Stems aggregated, similar in habit to those of *Dendrobium crumenatum* Sw., 23.5 to 50 cm long. Pseudobulbs or ovoid thickenings at the base of the stems, 2 to 4 cm long, 1.3 to 1.5 cm in diameter, conspicuously many-ridged with rounded angles. Leaves distichous, linear, obtuse, 4 to 7 cm long, 3 to 4 mm wide. Racemes short; the flowers appearing singly, about 1.4 cm across. Lateral sepals broadly triangular, subacute, 6.5 to 8 mm long, about 15.6 mm broad along the column-foot, 6- to 7-nerved. Dorsal sepal oblong-ovate, subacute, 6 to 7 mm long, about 3.5 mm wide, 5- to 7-nerved. Petals oblong-elliptic, obtuse, 5.5 to 7 mm long, 2.9 to 3.5 mm wide, 1-nerved. Spur or mentum conical with elongated apex. Labellum simple, cuneate-obovate, crenulate on the anterior margins, 15.7 to 18 mm long, 9 to 11 mm wide when expanded at the broadest portion. Disc with slightly thickened veins—especially the central one—and with scattering papillæ at the center near the apex. Column very short, extended into a very long foot.

LUZON, Manila, Bureau of Science orchid house, *Bur. Sci.* 85617 *E. Quisumbing*, December 14, 1932. Living specimens were presented to the junior author by Mr. L. H. Phillips, formerly of Bukidnon, Mindanao, who collected them from the hills of Bukidnon. The plants have flowered several times in the Bureau of Science orchid house during the months of July, August, and December. The flowers are not fugacious (remaining fresh for two days) and are slightly fragrant. The sepals are marguerite yellow. The petals almost white with a slight tinge of primrose yellow at the tips, and the spur slightly cream-colored; the ridge at the middle of the labellum apricot yellow.

This species is allied to *Dendrobium gracile* (Bl.) Lindl., but differs in not having subulate leaves, in its oblong-ovate dorsal sepal, and in the color of the flowers.

Genus BROMHEADIA Lindley

BROMHEADIA PHILIPPINENSIS sp. nov. Plate I, figs. 1 and 2; Plate 4; Plate 9, fig. 2.

Herba epiphytica. Caules e rhizomate ramoso exorti, complanati, erecti, 26 ad 54 cm alti, vaginis foliorum omnino obtecti;

internodia 2 ad 3 cm longa. Folia disticha, patentia, ligulata, subcoriacea, 10.5 ad 17.5 cm longa, 1.1 ad 1.6 cm lata, apice valde bilobata, lobis inaequalateralibus. Inflorescentia terminalis, 4 ad 6 cm longa, simplex, fere sessilis; bracteae distichae, rigidae, imbricantes, cymbiformes, acutae, 6 ad 8 mm longae. Flores singuli apparentes, albi, odorati, 2.5 ad 2.6 cm longi, 2.2 ad 2.4 cm dimetiente. Pedicellus cum ovario gracilis, circiter 1.4 cm longus. Sepala lateralia lanceolata, paulo obliqua, carinata, acuta, circiter, 2.3 cm longa, 7 mm lata. Sepalum dorsale oblanceolato-oblongum, acutum, circiter 2.5 cm longum, 7 mm latum. Petala anguste lanceolata vel anguste oblanceolata, obliqua, acuta, circiter 2.2 cm longa, 5.75 mm lata. Labellum in circuitu late oblongum, brevissime unguiculatum, supra medium trilobatum, circiter 1.7 cm longum et 9.5 mm latum; lobi laterales parvi, ovato-triangulares, obtusi, 2 ad 2.5 mm longi; lobus medius subquadratus, antice truncatus et minute apiculatus, 6 ad 6.5 mm latus, medio calloso-elevato et flavo. Discus cum parte longitudinali centrali calloso-elevata pubescenti in callum distinctum terminanti. Columna crassiuscula, recta, vel paulo incurvata, antice excavata, circiter 14 mm longa. Clinandrium parvum; anthera late ovoidea, apice obtusa, margine anteriore profunde emarginato. Pollinia 2, triangulari-ovoidea, dorso excavata.

Plants growing ascendingly on tree trunks. Roots fibrous, flexuous, stout, glabrous. Stems flattened, 26 to 54 cm long, arising from terete, branching rhizomes; internodes shortest at base, 2 to 3 cm long, entirely or almost entirely concealed by the flattened leaf-sheaths. Leaves distichous, ligulate, subcoriaceous when dry, 10.5 to 17.5 cm long, 1.1 to 1.6 cm wide, strongly bilobed at the apex with the lobes inequilateral. Inflorescence terminal, simple, almost sessile, 4 to 6 cm long; bracts distichous, rigid, imbricated, cymbiform, acute, 6 to 8 mm long. Flowers appear singly, rather fleshy, white, fragrant, 2.5 to 2.6 cm long, 2.2 to 2.4 cm across. Pedicellate ovary slender, about 1.4 cm long. Lateral sepals lanceolate, oblique, carinate near the apex, acute, about 2.3 cm long, 7 mm wide. Dorsal sepal oblanceolate-oblong, acute, about 2.5 cm long, 7 mm wide. Petals narrowly lanceolate or narrowly oblanceolate, oblique, acute, about 2.2 cm long, 5.75 mm wide. Labellum very slightly unguiculate, broadly oblong, trilobed in outline above the middle, about 1.7 cm long and 9.5 mm wide; lateral lobes very small, ovate-triangular, obtuse, 2 to 2.5 mm long; middle lobe subquadrate, truncate and minutely apiculate, 6 to 6.5 mm wide, with the center callose-elevated and yellow.

Disc with a central longitudinal fleshy pubescent zone ending in a distinct callus. Column thick, straight or slightly incurved, concave in front, with winged margins, about 14 mm long. Clinandrium small; anther broadly ovoid, obtuse at the apex, cucullate. Pollinia 2, triangular-ovoid, the dorsal side excavated, about 1.5 mm long.

MINDANAO, Zamboanga Province, Mount Silingan, *Phil. Nat. Herb.* 3000 Mrs. K. B. Day, November, 1934.

The description was based on living specimens given to the junior author by Mrs. Day and now cultivated in the Bureau of Science orchid house. The flowers have the general appearance and habit of opening of *Sarcochilus pallidus*. Pedicellate ovary chalcedony yellow; sepals and petals white with naphthalene yellow tips; labellum white with the callus on the front lobe apricot yellow; column naphthalene yellow.

The genus *Bromheadia* is new to the Philippines. *Bromheadia philippinensis* is apparently closely allied to *B. alticola* Ridl., but differs in its apparently dissimilar habit of growth and the obtuse outward-pointing side lobes of the lip.

Genus ASCOGLOSSUM Schlechter

ASCOGLOSSUM CALOPTERUM (Reichb. f.) Schltr. Plate 1, figs. 12 and 13; Plate 5, figs. 1 to 10.

Ascoglossum calopterum (Reichb. f.) SCHLTR. in Fedde Repert. Beihefte 1 (Orchidaceen von Deutsch-Neu Guinea) (1914) 975; 21 (Fig. Atlas) (1923) t. 343, No. 1324.

Saccolabium calopterum REICHB. F. in Gard. Chron. (1882) 2: 520.

Cleisostoma cryptochilum F. v. MUELL. in Wing South Sci. Rec. n. 5 1 (1885).

Saccolabium Schleinitzianum KRANZL. in Engl. Bot. Jahrb. 7 (1886) 440.

Caules erecti vel curvati, rigidi, teretes, 20 ad 30 cm longi, vix 1 cm dimetiente. Folia disticha, rigida, ligulata, approximata, valde coriacea, apice rotundato inaequaliter obtuse bilobata, 11 ad 18.5 cm longa, 2 ad 3 cm lata. Inflorescentiae laterales paniculatae, multiflorae, 20 ad 35 cm longae; pedunculus erectus, rigidus, 12 ad 15 cm longus, vaginis brevibus tubularibus, 4 ad 5 mm longis ornatus. Pedicellus cum ovario gracilis, 11 ad 15 mm longus. Flores inodori ferri, purpurei, 15 ad 17 mm longi, 6 ad 8 mm dimetiente; perianthii parte valde reflexae. Sepala lateralia unguiculata, acuta vel obtusa, 9 ad 12 mm longa, 4.5 ad 5 mm lata, ad basim vix 1.25 mm lata, supra medium lobulo ovato-triangulari plus minusve distincto ornata. Sepalum dorsale oblongo-oblongolatum, acutum vel

subacutum, 9 ad 10.5 mm longum, 3 ad 3.25 mm latum. Petala elliptico-lanceolata, apice attenuata, acuta, 8.5 ad 9.5 mm longa, 2.75 ad 3 mm lata. Labellum calcaratum, trilobatum; lobi laterales erecti, apice oblique truncati, postice ad columnam attingentes; lobus medius e calcaris medio exoriente, minutus, reflexus, lineari-lanceolatus, apice obtusus, 2.5 ad 3 mm longus, 0.75 ad 0.9 mm latus. Calcar cylindricum, leviter curvatum, apice lateraliter abrupte inflatum et rotundatum, 10.25 ad 11 mm longum. Columna rigida, perbrevis, crassa, 4.5 ad 5 mm alta. Anthera obovoidea, 1.7 ad 1.8 mm longa. Pollinia oblonga.

Roots dark gray, elongate, 3.5 to 4 mm in diameter. Stems erect or curved, rigid, terete, 20 to 30 cm long, about 1 cm in diameter. Leaves distichous, rigid, ligulate, approximate, very leathery, unequally bilobed at the rounded apex with obtuse lobules, 11 to 18.5 cm long, 2 to 3 cm wide. Panicles lateral, many-flowered, 20 to 35 cm long; peduncles erect, rigid, 12 to 15 cm long; sheaths short, tubular, 4 to 5 mm long. Pedicellate ovary slender, 11 to 15 mm long. Flowers odorless, 15 to 17 mm long, 6 to 8 mm wide. Lateral sepals unguiculate, parallel, oblanceolate, acute or obtuse, 9 to 12 mm long, 4.5 to 5 mm wide, the very base about 1.25 mm wide, above the middle provided with a more or less distinct triangular-ovate lobule. Dorsal sepal oblong-oblanceolate, acute or subacute, 9 to 10.5 mm long, 3 to 3.25 mm wide. Petals parallel, elliptic-lanceolate, narrowed to the acute apex, 8.5 to 9.5 mm long, 2.75 to 3 mm wide. Labellum spurred, trilobed; lateral lobes erect, obliquely truncate at the apex, attached to the column at the base; middle lobe very small, linear-lanceolate, reflexed, obtuse at the tip, 2.5 to 3 mm long, 0.75 to 0.9 mm wide. Spur cylindric, elongate, curved, laterally abruptly dilated and rounded at the apex, 10.25 to 11 mm long, 3 to 3.5 mm in diameter at the very apex, when viewed from the front. Column rigid, very short and thick, 4.5 to 5 mm high. Anther obovoid, 1.7 to 1.8 mm long. Pollinia oblong.

DINAGAT ISLAND, Osmeña, Dinagat, *Phil. Nat. Herb.* 387 L. E. *Hachero*, October, 1933. Growing on tree trunks in the coastal forests on Dinagat Island, northeast of Mindanao. Living plants were sent to the junior author through Dr. E. B. Copeland, formerly of the Economic Garden, Bureau of Plant Industry, and have flowered in the Bureau of Science orchid house twice—May 12, 1934, and March 6, 1935. The flowers remain fresh on the plant for two weeks.

Sepals and petals rosolane purple dotted with true purple; pedicellate ovary aster purple; middle lobe of the labellum and throat onion skin pink; spur pomegranate purple.

A very interesting species with very leathery dark green leaves and conspicuous purple flowers, of which the lateral sepals and petals are reflexed and parallel. It differs from any typical *Renanthera* in its long clavate spur and minute narrow middle lobe of the labellum.

This species belongs to the genus *Ascoglossum* Schltr., a new genus for the Philippines. The genus is closely allied to *Renanthera* but differs in that the lateral lobes reach much higher than the mid-lobe.

Genus TRICHOGLOTTIS Blume

TRICHOGLOTTIS AGUSANENSIS Ames and Quis. sp. nov. Plate 1, figs. 10 and 11; Plate 6, figs. 1 to 10.

Herba epiphytica, erecta, rigida, 22 ad 35 cm alta. Caules foliosi, internodiis 2 ad 3 cm longis. Foliorum vaginae cylindricae, internodiis vix aequilongae. Folia disticha, ligulata, coriacea, in sicco rugosa, 14 ad 15.5 cm longa, 1.7 ad 2 cm lata, apice inaequaliter rotundato-bilobata. Inflorescentiae oppositifoliae, paniculatae, 12 ad 13 cm longae, 10- ad 12-florae. Bractae inflorescentiae rigidae, squamiformes, 1.5 ad 2 mm longae. Flores carnosi, 16 ad 17 mm dimetiente. Sepala lateralibus ovato-elliptica, acuta vel subacuta, 8.5 ad 9.5 mm longa, 6 ad 6.5 mm lata. Sepalum dorsale obovato-ellipticum, apice late rotundatum, 9 ad 10 mm longum, 6 ad 6.5 mm latum. Petala elliptico-obovata, apice rotundata, 8.5 ad 9 mm longa, 4.5 ad 5.5 lata. Labellum basi breviter saccatum, 3-lobatum, 8 ad 9 mm longum; lobi laterales breves, erecti, indistincti, 1 ad 1.25 mm alti; lobus medius lanceolatus, antice attenuatus, supra medium abrupte inflexus, apice ipso truncato-dilatatus. Discus valde calloso-incrassatus et pubescens.

Epiphytes with elongated roots. Stems rigid, foliose, erect or more or less arcuate, 22 to 35 cm high; internodes 2 to 3 cm long. Leaf sheaths cylindrical, almost as long as the internodes. Leaves distichous, ligulate, coriaceous, rugose when dry, 14 to 15.5 cm long, 1.7 to 2 cm wide, unequally bilobed at the apex with rounded lobules. Inflorescences opposite the leaves, shorter than the leaves, paniculate, 12 to 13 cm long, 10- to 12-flowered. Bracts of the fractiflex inflorescence rigid, squamiform, concave, 1.5 to 2 mm long. Flowers fleshy, odorless, 16 to 17 cm across. Pedicellate ovary, 10 to 11 mm long. Lateral sepals ovate-

elliptic, acute or subacute, 8.5 to 9.5 mm long, 6 to 6.5 mm wide. Dorsal sepal obovate-elliptic, broadly rounded at the apex, 9 to 10 mm long, 6 to 6.5 mm wide. Petals elliptic-obovate, rounded at the apex, 8.5 to 9 mm long, 4.5 to 5.5 mm wide. Labellum 3-lobed, shallowly saccate at base, 8 to 9 mm long; lateral lobes short, erect, indistinct, with free portion 1 to 1.25 mm high; middle lobe lanceolate, attenuate toward the apex, above the middle abruptly inflexed, truncate dilated at the very tip. Disc strongly callose-thickened and pubescent through the center. Between the basal lobes there is a ligulate, pubescent upcurved appendage which is about 2.5 mm long. Gynostemium very short and stout, pubescent, with a pair of falcate, narrow, elongate, pubescent auricles which are 2.5 to 3 mm long.

LUZON, Rizal Province, Mariquina, Mrs. M. L. Quezon's gardens, *Phil. Nat. Herb.* 3005 *E. Quisumbing*, January 16, 1935.

The living plants were sent from Agusan by Attorney José Rodriguez. Pedicellate ovary lumiere green. Sepals and petals bright chalcedony yellow lined with vinaceous rufous. Lateral lobes of the lip white; the middle lobe white with two eugenia red lines above, apex and base between the lateral lobes cadmium yellow, callus white.

This species is allied to *Trichoglottis ionosma* (Lindl.) J. J. Sm., but is a much smaller plant throughout with less prominent spurred base to the lip.



ILLUSTRATIONS

PLATE 1

- FIG. 1. *Bromheadia philippinensis* Ames and Quis. sp. nov., front view of flower, $\times 1$.
2. *Bromheadia philippinensis* Ames and Quis. sp. nov., side view of flower, $\times 1$.
3. *Nephelaphyllum mindorense* Ames, front view of flower, $\times 2$.
4. *Nephelaphyllum mindorense* Ames, side view of flower, $\times 2$.
5. *Dendrobium bukidnonense* Ames and Quis. sp. nov., front view of flower, $\times 2$ (circa).
6. *Dendrobium bukidnonense* Ames and Quis. sp. nov., side view of flower, $\times 2$ (circa).
7. *Plocoglottis luebanensis* Ames, front view of flower, $\times 1$.
8. *Plocoglottis luebanensis* Ames, side view of flower, $\times 1$.
9. *Malaxis purpureiflora* Ames and Quis. sp. nov., front view of flower (natural position), $\times 3$ (circa).
10. *Trichoglottis agusanensis* Ames and Quis. sp. nov., front view of flower, $\times 2$.
11. *Trichoglottis agusanensis* Ames and Quis. sp. nov., side view of flower, $\times 2$.
12. *Ascoglossum calopteryum* (Reichb. f.) Schltr., front view of flower, $\times 1$.
13. *Ascoglossum calopteryum* (Reichb. f.) Schltr., side view of flower, $\times 1$.

PLATE 2

- Malaxis purpureiflora* Ames and Quis. sp. nov.: 1, dorsal sepal, $\times 5.5$; 2, petal, $\times 5.5$; 3, lateral sepal, $\times 5.5$; 4, front view of column and labellum (natural position), $\times 5.5$; 5, side view of ovary, column, and labellum (natural position) $\times 5.5$; 6, anther from above, $\times 14$; 7, anther from below, $\times 14$; 8, pollinia, very much enlarged. (All figures drawn with aid of camera lucida.)
- Plocoglottis luebanensis* Ames: 9, dorsal sepal, from back, $\times 2$; 10, side view of dorsal sepal, $\times 2$; 11, petal (flattened), $\times 2$; 12, exterior view of lateral sepal, $\times 2$; 13, side view of lateral sepal, $\times 2$; 14, side view of ovary, column, and labellum (natural position), $\times 4$; 15, front view of column, $\times 4$; 16, column and labellum (natural position) from above, $\times 4$; 17, labellum from above (natural position), $\times 4$; 18, labellum from above (stretched out), $\times 4$; 19, anther from above, $\times 7$; 20, anther from below, $\times 7$. (Figs. 19 and 20 were drawn with the aid of a camera lucida.)

Nephelaphyllum mindorense Ames: 21, dorsal sepal, $\times 3$; 22, petal, $\times 3$; 23, lateral sepal, $\times 3$; 24, side view of ovary, column, and labellum (natural position), $\times 3$; 25, labellum from above (natural position), $\times 3$; 26, labellum from above (stretched out), $\times 3$; 27, front view of spur, $\times 4$; 28, front view of column, $\times 3$; 29, side view of column, $\times 3$; 30, anther from above, $\times 5.5$; 31, anther from below, $\times 5.5$. (Figs. 30 and 31 were drawn with the aid of a camera lucida.)

PLATE 3

Dendrobium bukidnonense Ames and Quis. sp. nov.: 1, dorsal sepal, $\times 7$; 2, petal, $\times 7$; 3, lateral sepal, $\times 7$; 4, labellum from above (somewhat expanded), $\times 4$; 5, side view of ovary and column, $\times 7$; 6, front view of column, $\times 7$; 7, anther, $\times 11$.

PLATE 4

Bromheadia philippinensis sp. nov.: 1, dorsal sepal, $\times 2$; 2, petal, $\times 2$; 3, lateral sepal, $\times 2$; 4, labellum from above (natural position), $\times 4$; 5, labellum from above, (stretched out), $\times 4$; 6, front view of column, $\times 4$; 7, side view of column, $\times 4$; 8, pollinia, $\times 12$.

PLATE 5

Ascoglossum calopteryum (Reichb. f.) Schltr.: 1, habit, one-third natural size; 2, dorsal sepal, $\times 2.66$ (circa); 3, petal, $\times 2.66$ (circa); 4, lateral sepal, $\times 2.66$ (circa); 5, front view of flower, $\times 2$; 6, side view of flower, $\times 2$; 7, longitudinal section of the labellum and spur, $\times 2$; 8, anther from above, $\times 4.66$ (circa); 9, anther from above, $\times 4.66$ (circa); 10, pollinia, $\times 4.66$ (circa). (Figs. 8 to 10 drawn with aid of camera lucida.)

PLATE 6

Trichoglottis agusanensis Ames and Quis. sp. nov.: 1, habit, one-third natural size; 2, dorsal sepal, $\times 1.33$ (circa); 3, petal, $\times 1.33$ (circa); 4, lateral sepal, $\times 1.33$ (circa); 5, side view of ovary, column, and labellum (natural position), $\times 2$; 6, front view of column and labellum (natural position), $\times 2$; 7, column and labellum from above (natural position), $\times 2$; 8, anther from above, $\times 4$; 9, anther from below, $\times 4$; 10, pollinia, $\times 4$.

PLATE 7

Malaxis purpureiflora Ames and Quis. sp. nov.: habit, much reduced.

PLATE 8

Nephelaphyllum mindorense Ames: habit, slightly larger than natural size.

PLATE 9

FIG. 1. *Dendrobium bukidnonense* Ames and Quis. sp. nov.: habit, very much reduced.

2. *Bromheadia philippinensis* Ames and Quis. sp. nov.: habit, very much reduced.

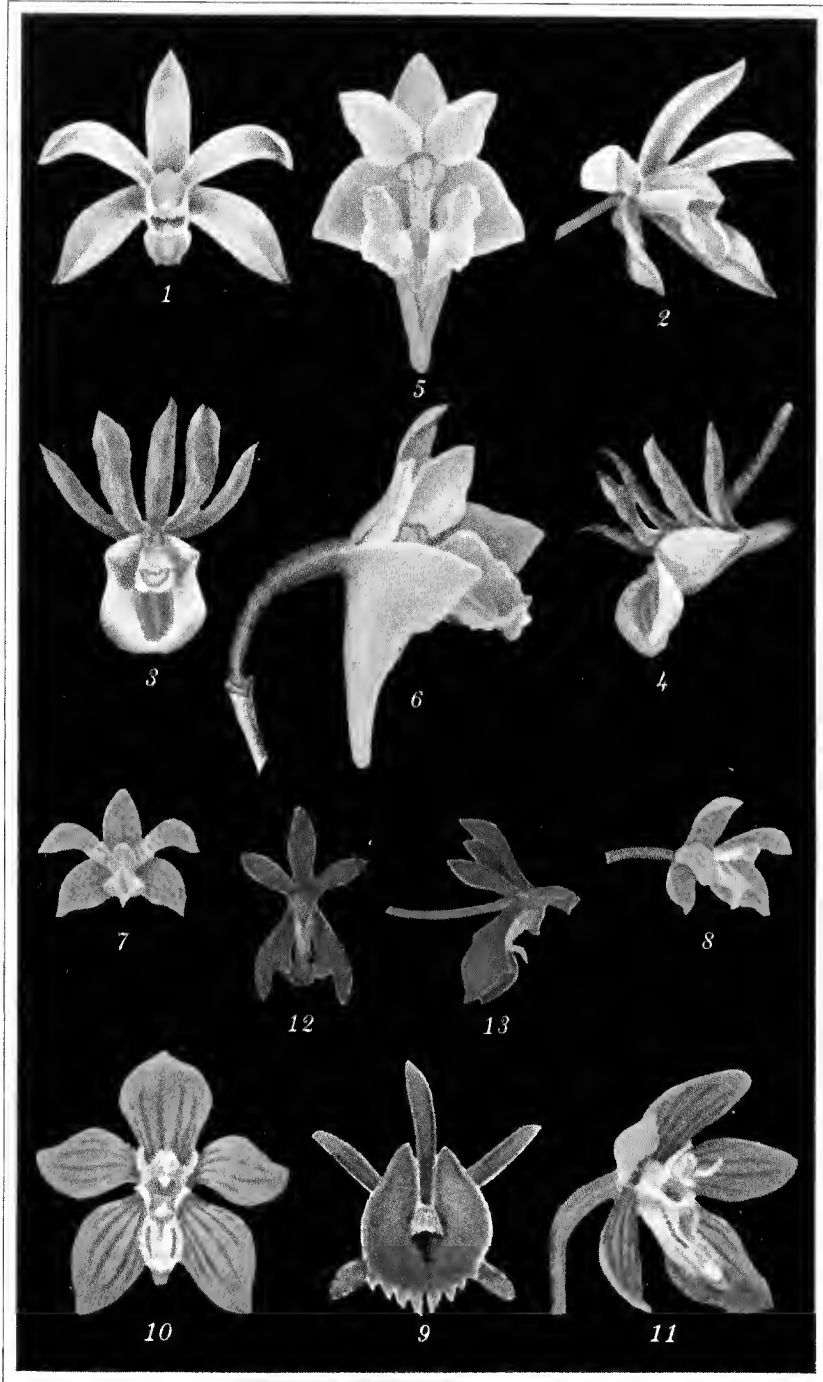
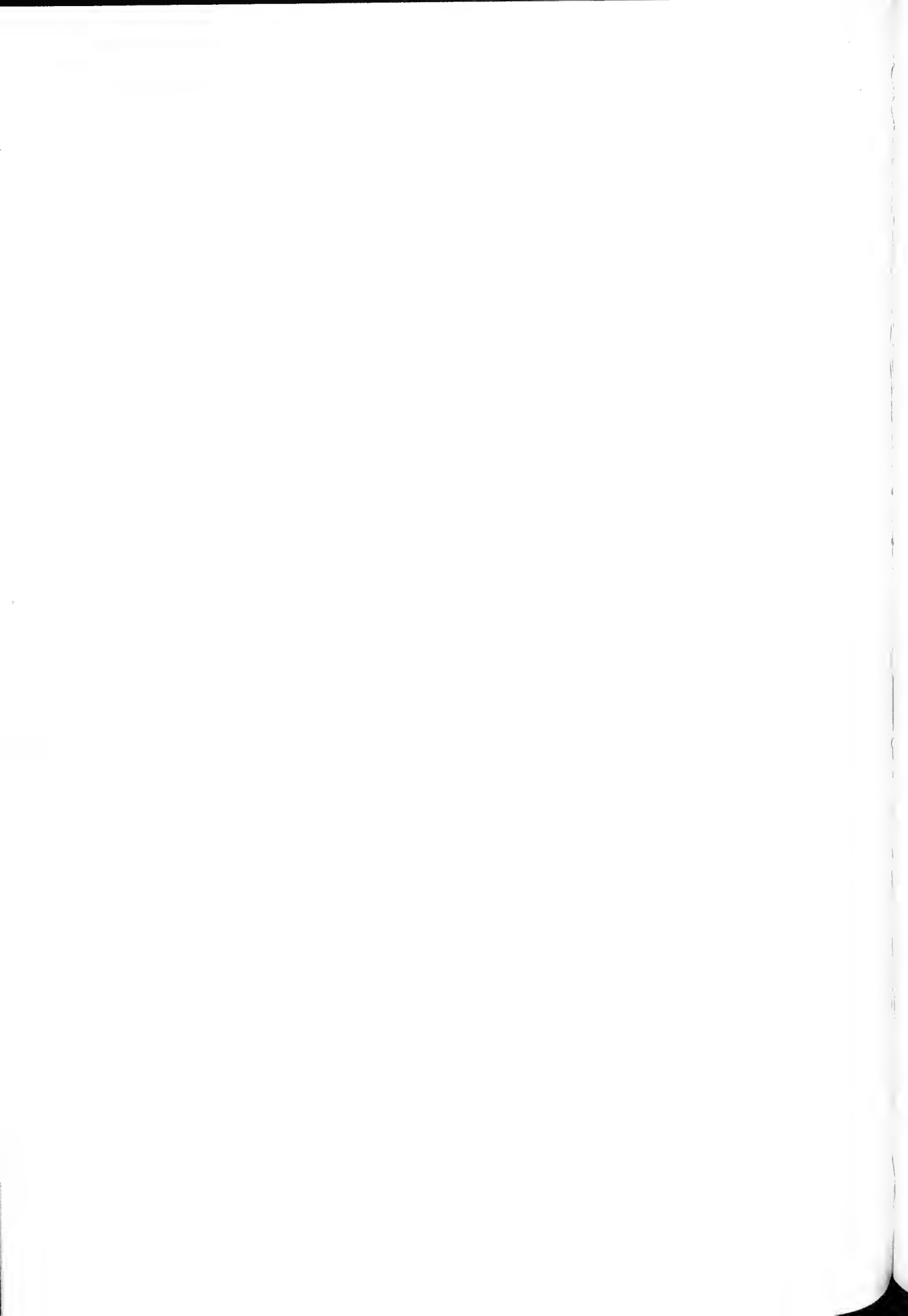


PLATE 1.



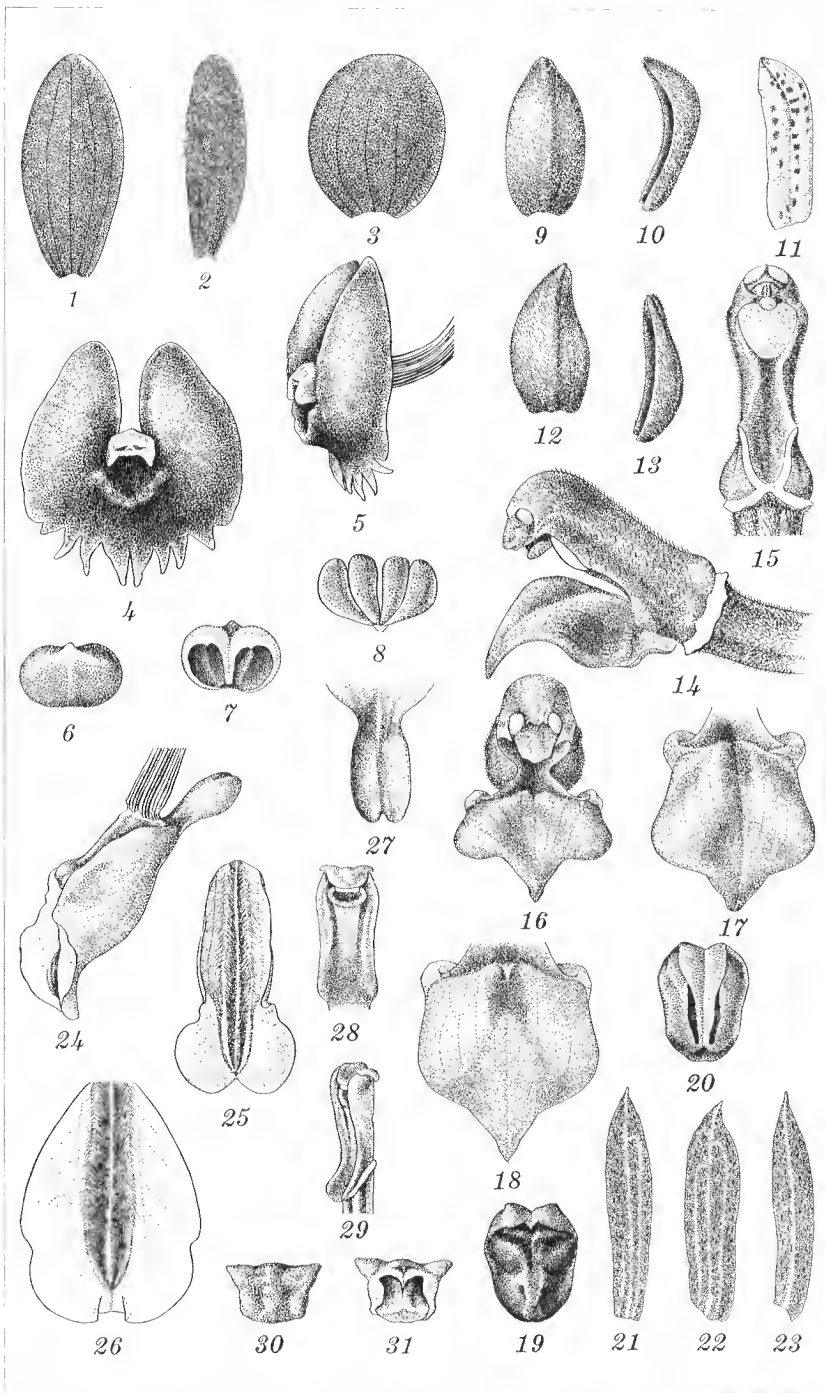


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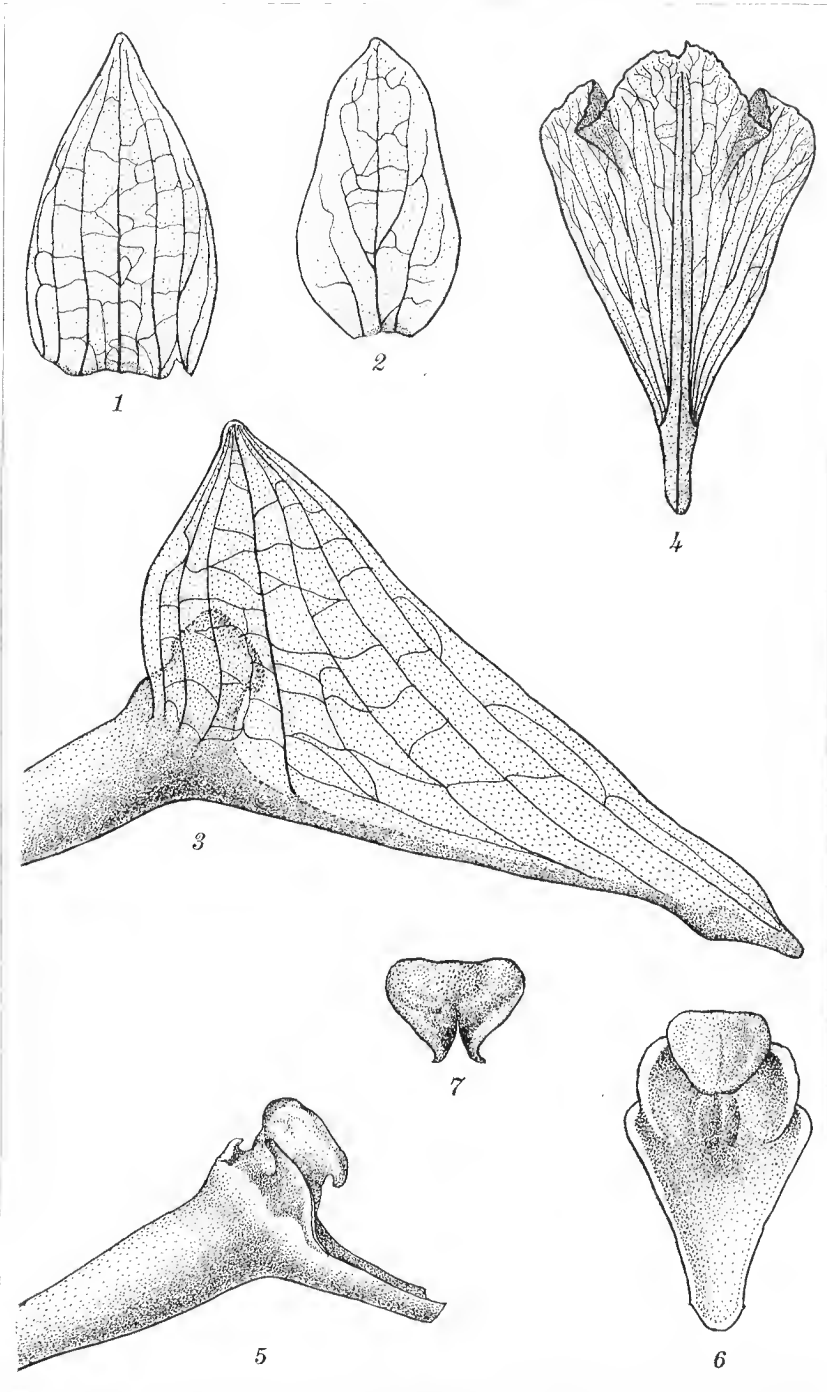


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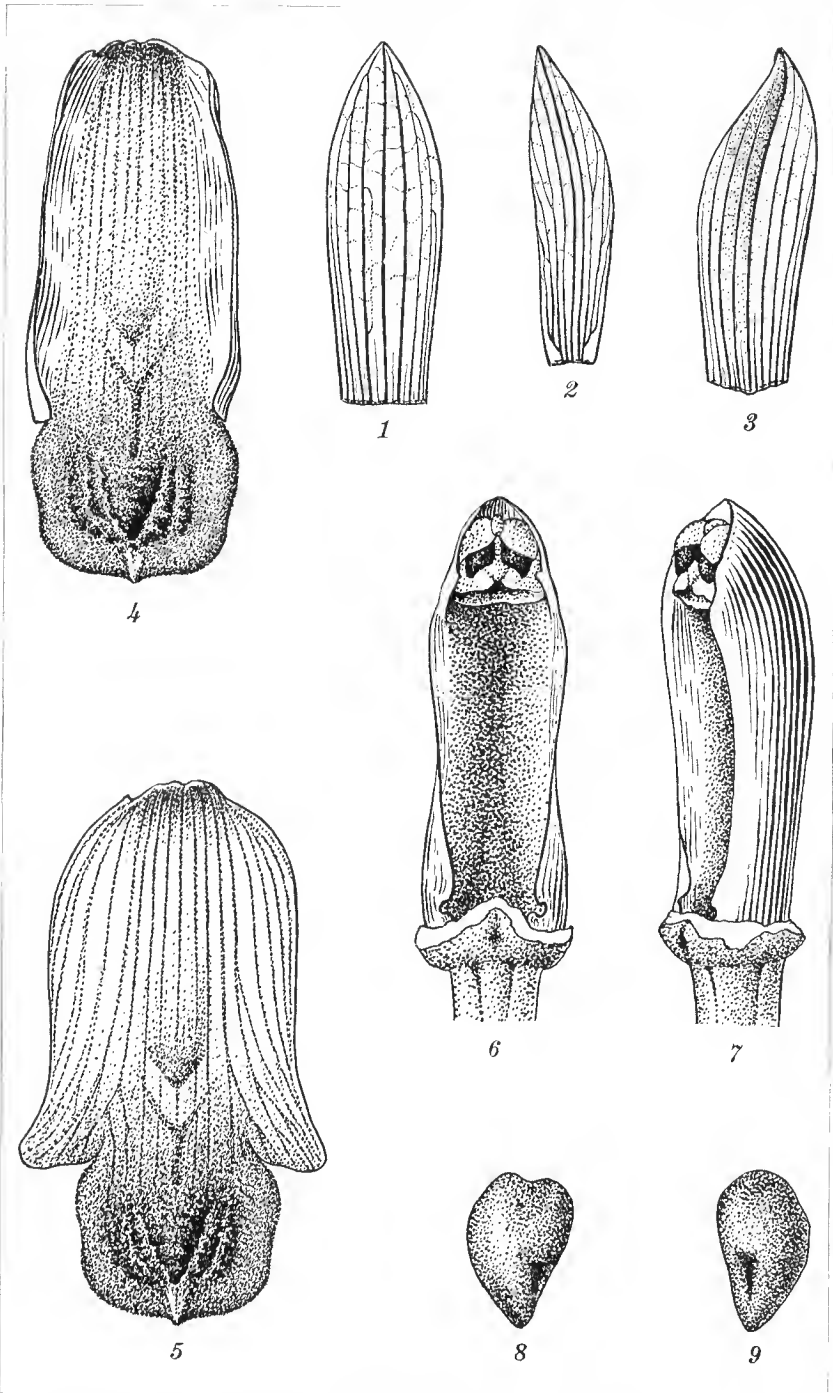
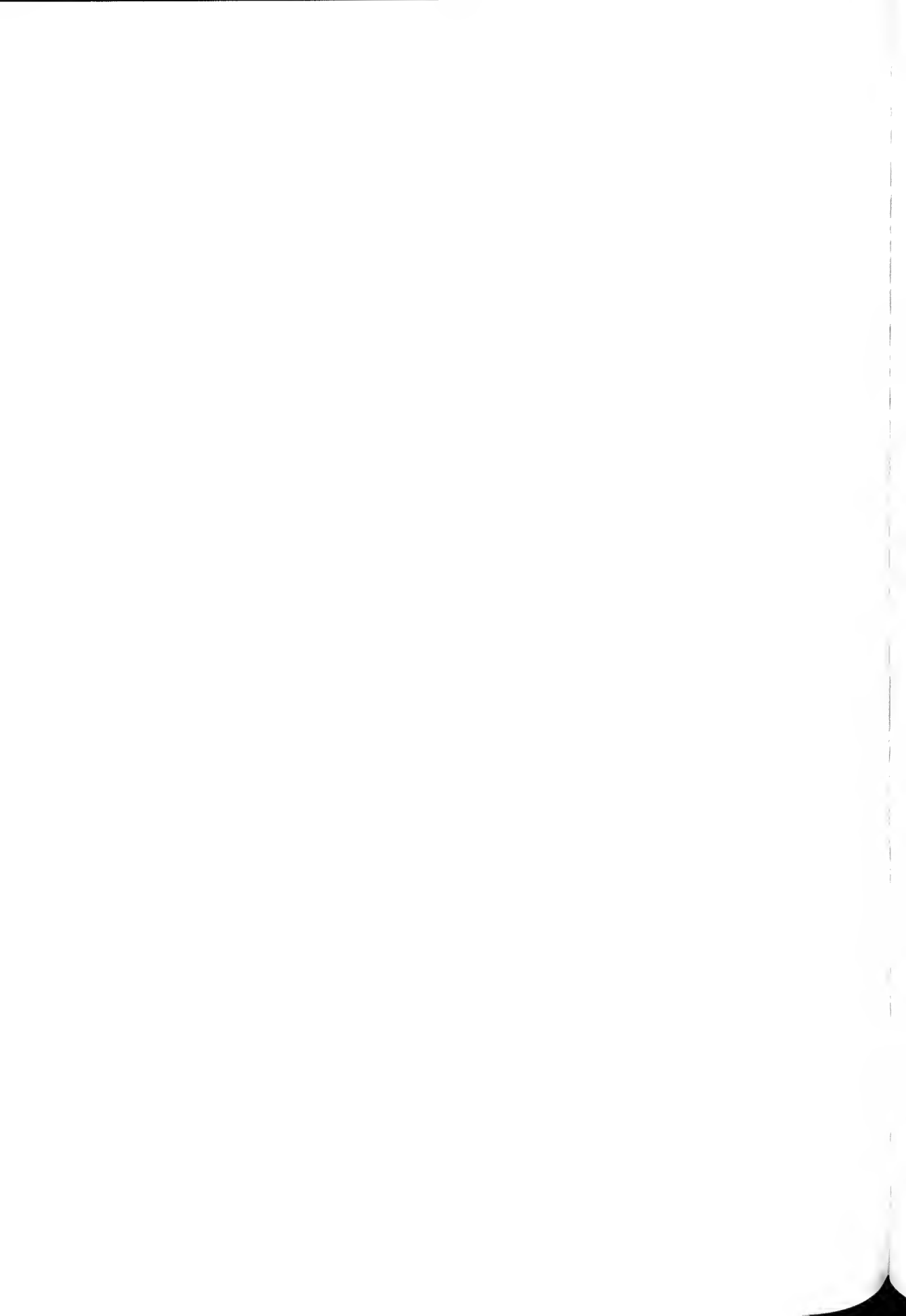


PLATE 4.



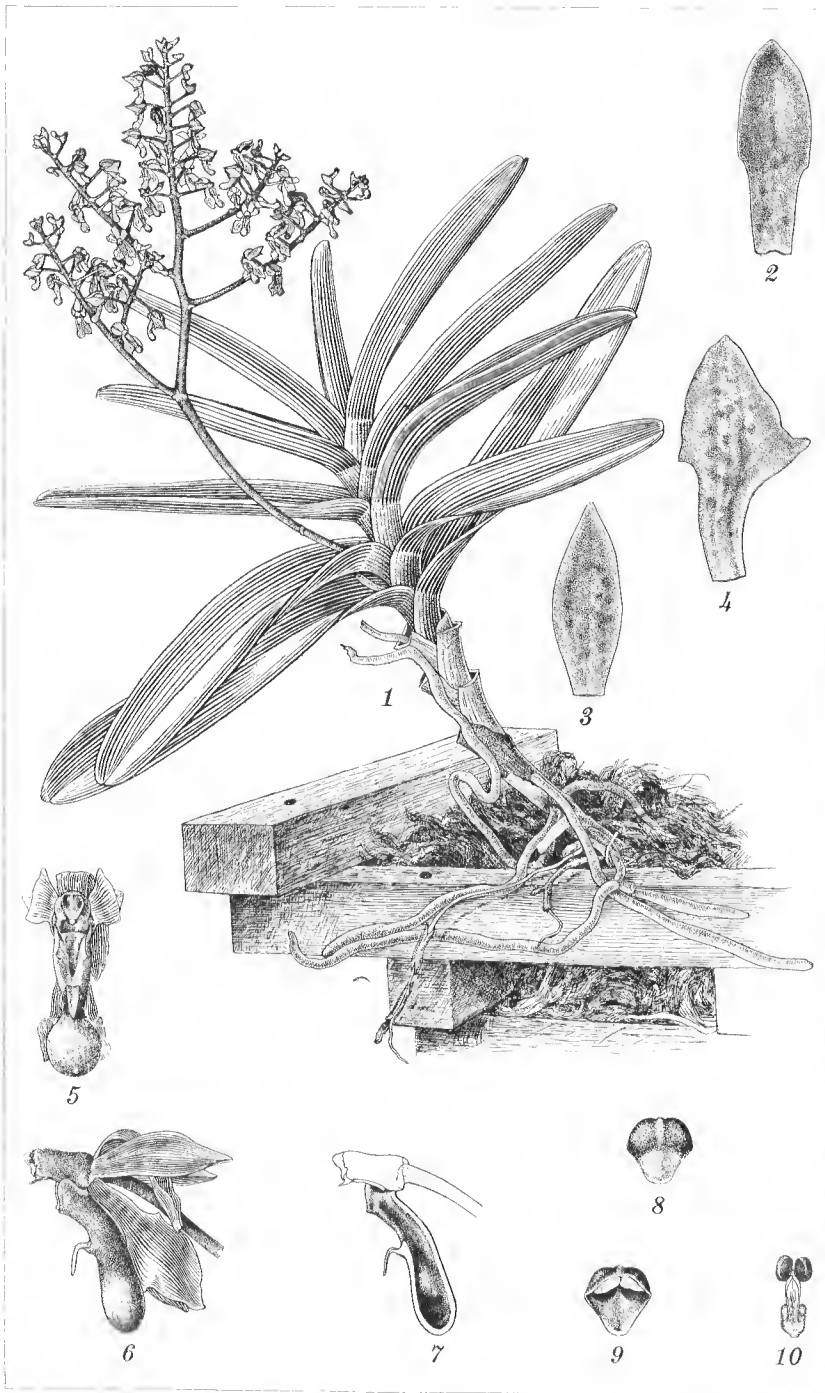
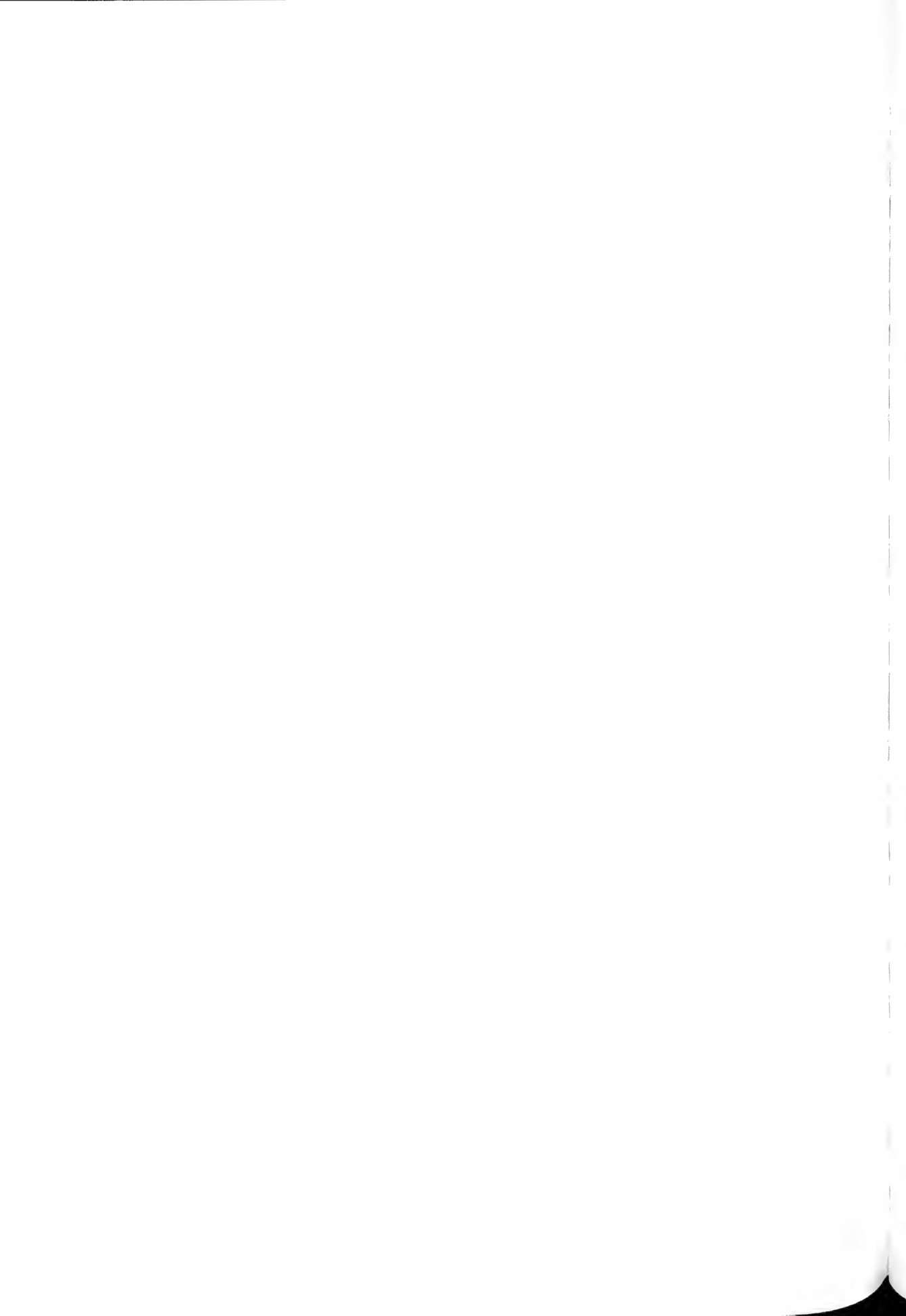


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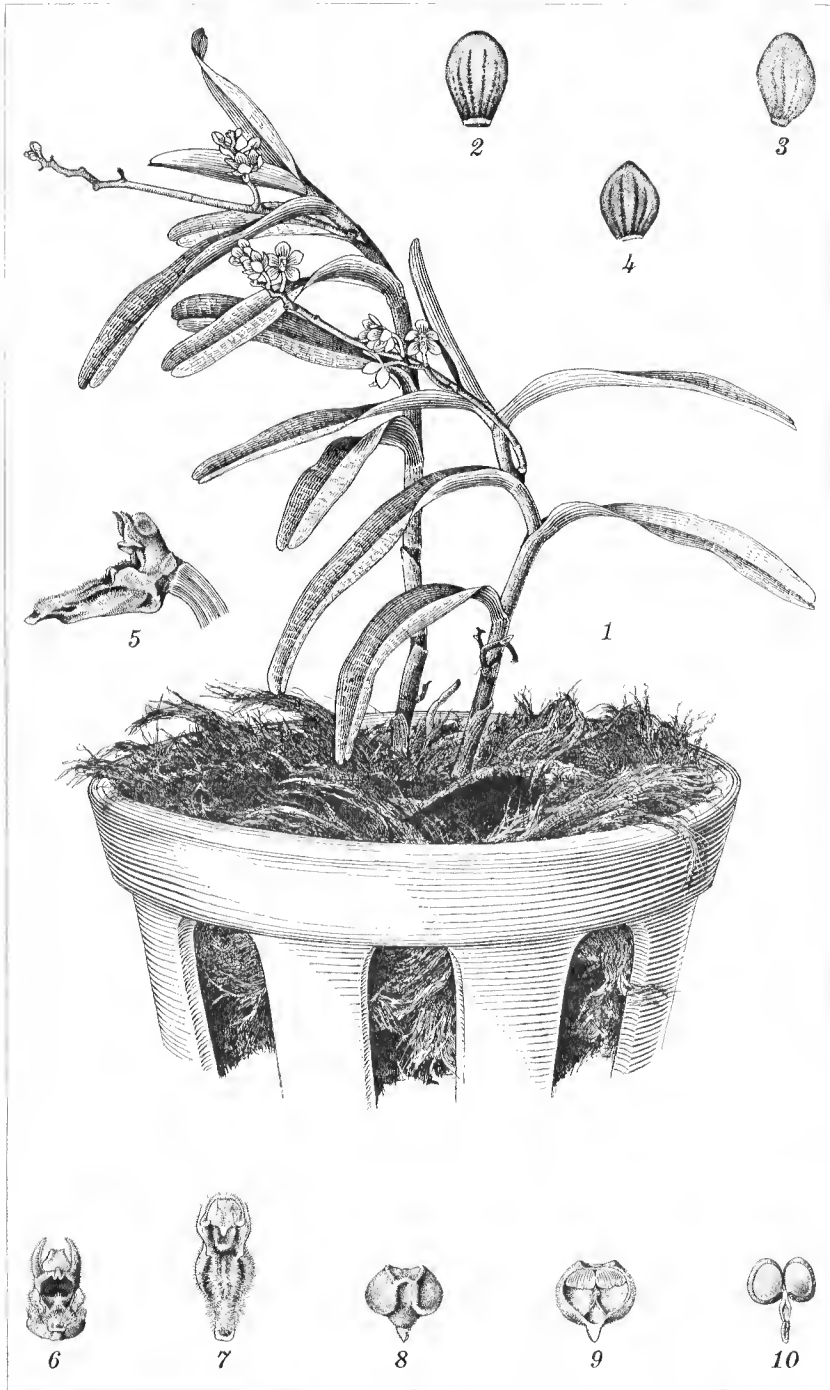


PLATE 6.





PLATE 7.





PLATE 8.



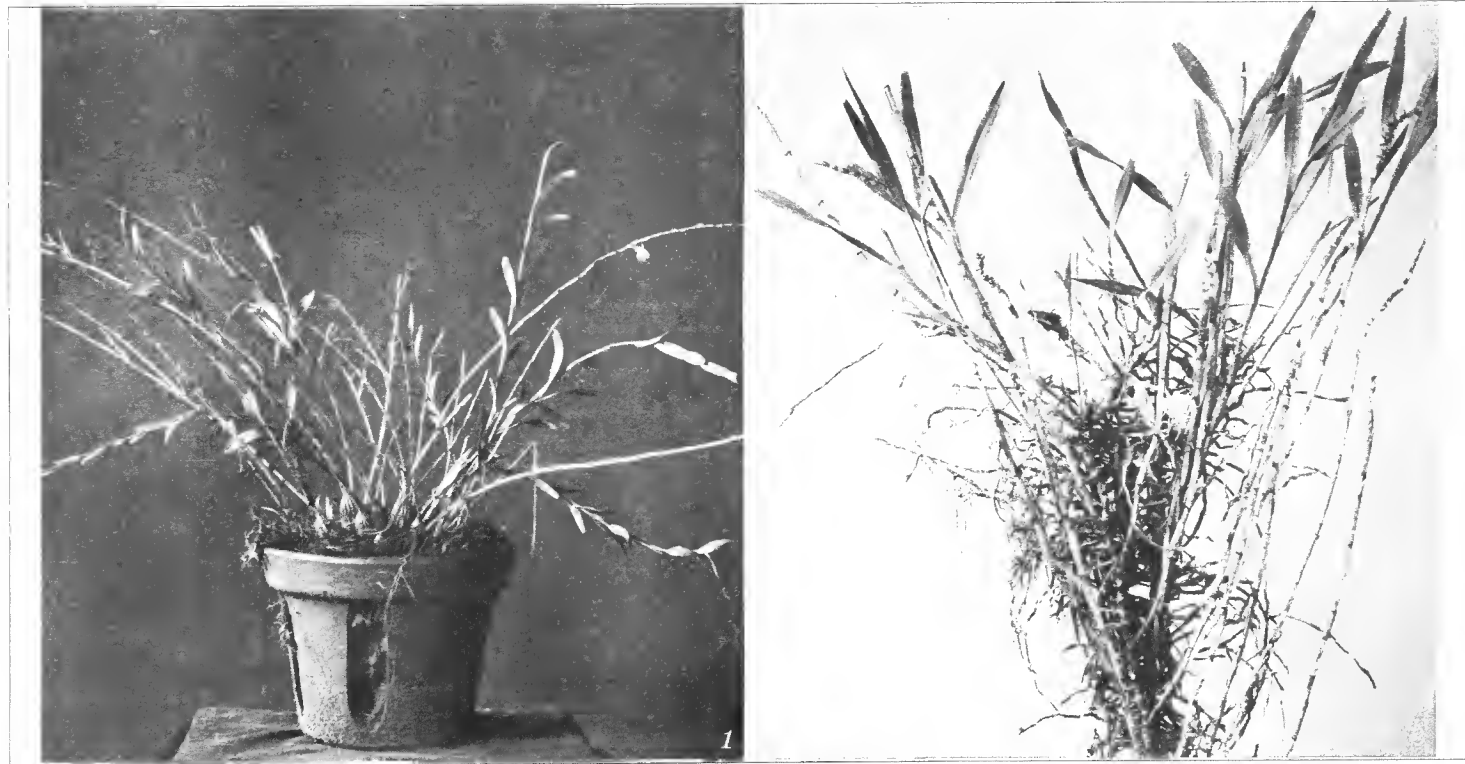
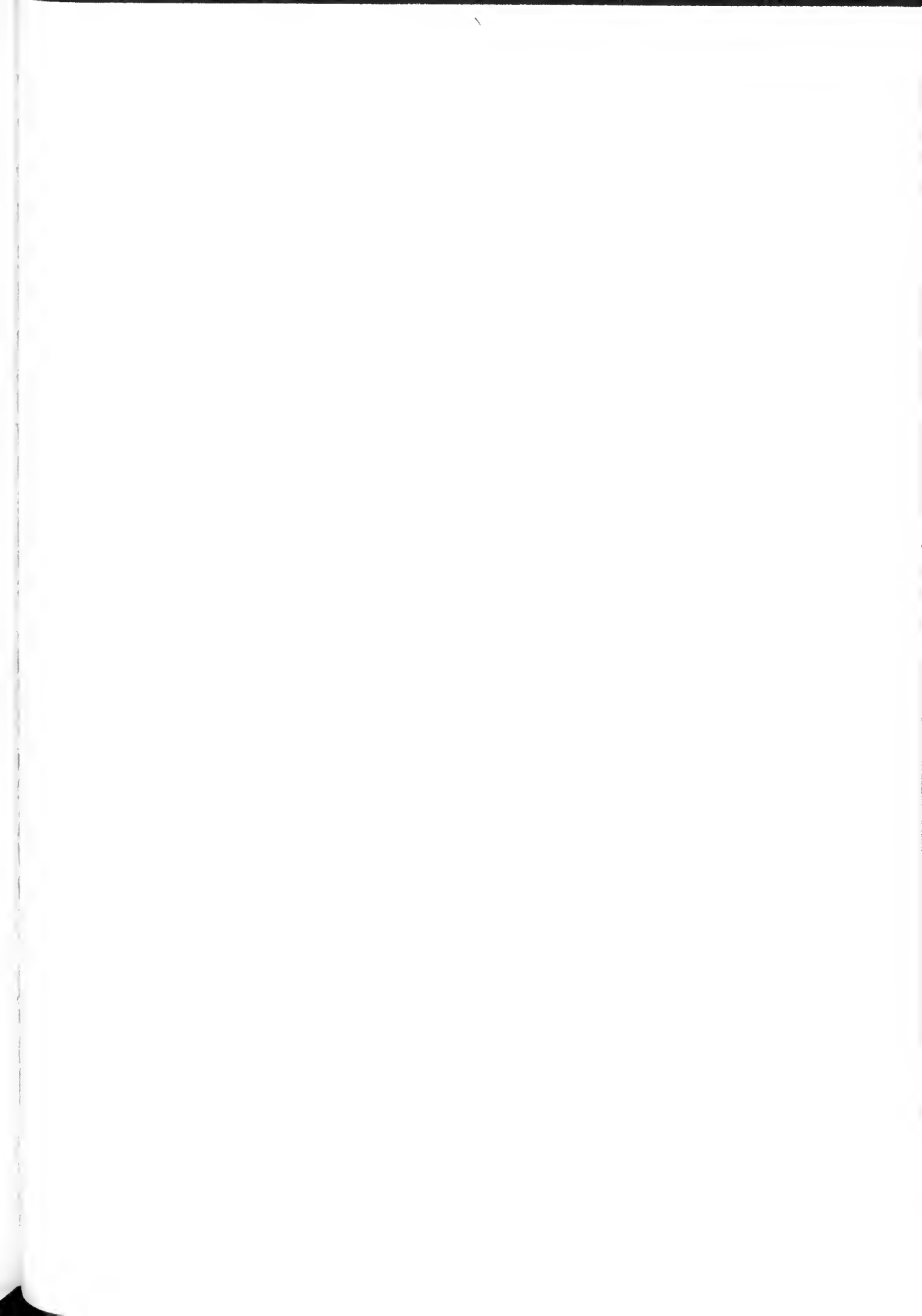
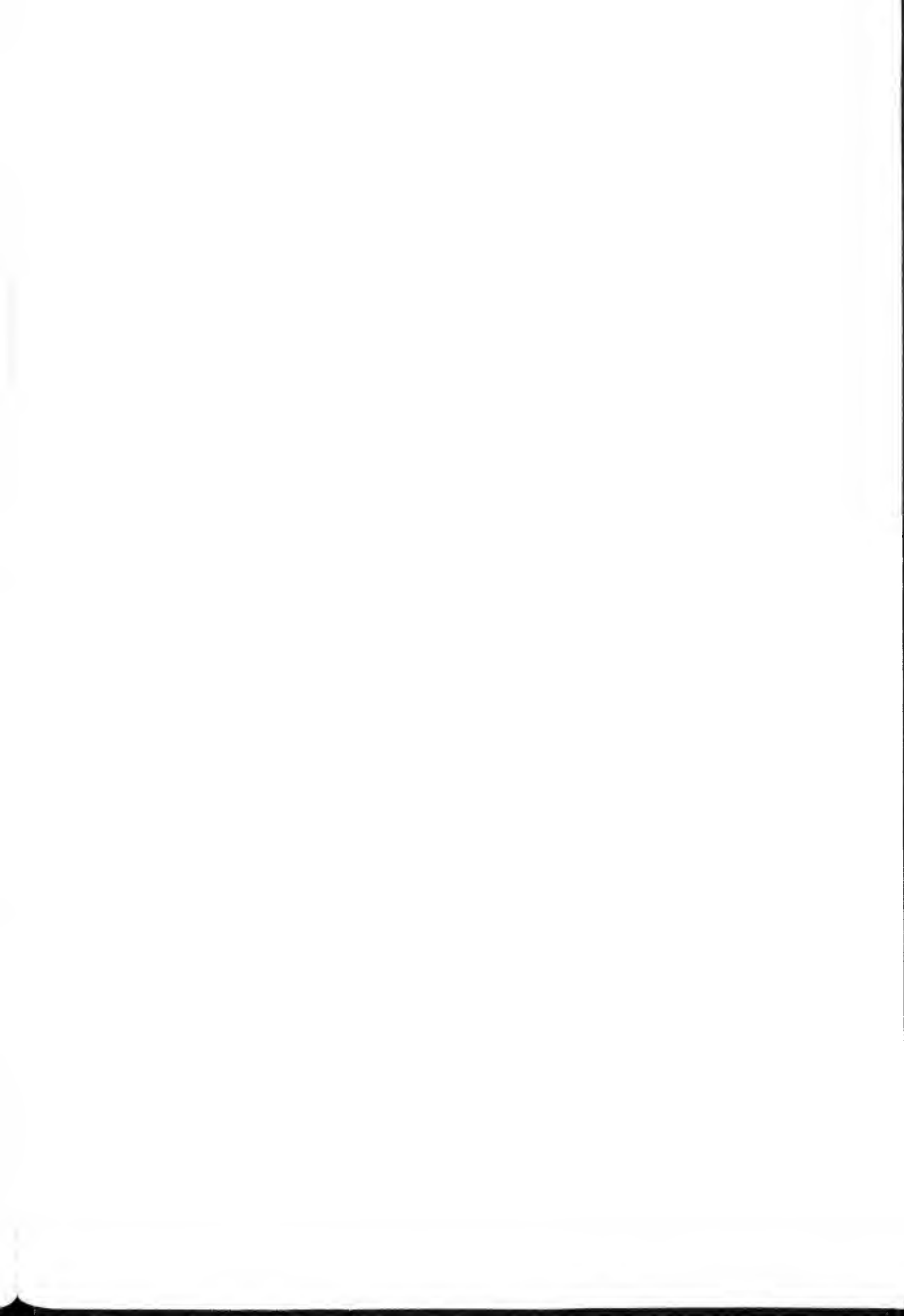


PLATE 9.

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MH Ames and Quisumbing
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Am3n New or noteworthy

Phillipine orchids. 1-6

