

## CONTRIBUTION TO THE FLORA OF THE NEW HEBRIDES AND SANTA CRUZ ISLANDS

ORCHIDS COLLECTED BY S. F. KAJEWSKI IN 1928 AND 1929

OAKES AMES

A. GUILLAUMIN, in his enumeration of the species that comprise the flora of the New Hebrides, included less than forty representatives of the Orchidaceae. With the exception of *Corymborchis*, *Bulbophyllum*, and *Habenaria* which is represented in the tropics of both hemispheres and, if broadly interpreted, extends into the temperate zones, all of the genera enumerated by Guillaumin are paleotropical.

Collections recently made by S. F. Kajewski in 1928 and 1929 for the Arnold Arboretum have increased substantially the orchid flora of the New Hebrides and the adjacent islands of the Santa Cruz Group. Several of the genera found by Kajewski are additions to the region and ten of the species are new. Unfortunately some of Kajewski's material was collected without flowers and admits only of tentative or suggestive identification.

Two courses are open to the student of a flora which is but little known and which shows a close relationship to the floras of distant regions: he may disregard slight differences between species in hand and species from other localities, and recast published descriptions so that they will include his material, or he may throw emphasis on slight differences and, in anticipation of more intensive exploration and a wider knowledge of the flora, interpret specific characters in a very narrow sense. In the following treatment I have adopted the latter course, being prompted to do so by the conviction that an erroneous extension of range for a genus or species is more detrimental to scientific progress than the increase of synonyms.

*Corymborchis veratrifolia* (Reinw.) Blume, Fl. Jav. nov. ser. 1. 105, t. 43, fig. 1 (1858).

Tanna: Mt. Tokosh Meru, terrestrial, in rain-forest at 200 m., no. 146, March 14, 1928 (pretty, white-flowered ground orchid, 1 m. high; sweetly scented).—Already found on Espiritu Santo (Campbell).

The flowers are somewhat smaller than in typical material. A still smaller flowered plant with narrower leaves, collected by Dr. R. Morrison on Efate, August 20, 1896, appears to belong here. (Herb. Kew.). It is probable that the specimens examined rep-



resent a new species, but until more material is available it would be unwise to separate Kajewski's specimens from *C. veratrifolia*. *C. veratrifolia* has already been reported as a native of the New Hebrides. It is a widely distributed species ranging from India to New Guinea.

**Malaxis neo-ebudica** Ames, sp. nov.

Herba terrestris. Caules elongati, foliosi. Folia ovato-lanceolata, acuminata, in petiolum sulcatum contracta. Pedunculus elongatus. Bracteae inflorescentiae anguste lineares. Racemus cylindraceus, elongatus, multiflorus, floribus flavidis. Pedicellus cum ovario quam bractea subtendens paulo brevior. Sepala lateralibus elliptica, uninervia, obtusa, in sicco pellucida. Sepalum dorsale anguste ellipticum, valde obtusum, uninervium. Petala lineari-oblonga, obtusa, uninervia. Labellum trilobatum, lobi laterales post columnam in auriculas elongatas producti, lobus medius plus minusve triangulus, haud retusus, utrinque paucidentatus.

Stem up to 12 cm. long, ascending, bearing about 10 membranaceous leaves. Leaves variable, the lowermost ones much the smallest, uppermost leaves about 13 cm. long, up to 3 cm. wide, contracted at base into broad sheathing petioles, lanceolate, acuminate-acute. Peduncle slender, conspicuously angulate when dry, together with the raceme about 14 cm. long. Raceme slender, about 10 cm. long, many-flowered. Bracts of the inflorescence elongated, linear-lanceolate, about 7 mm. long, exceeding the flowers. Pedicellate ovary about 5 mm. long. Flowers yellow. Lateral sepals 2 mm. long, about 1 mm. wide, elliptical, obtuse, 1-nerved, spreading. Upper sepal similar, but slightly narrower. Petals about 2 mm. long, linear-oblong, obtuse, 1-nerved. Labellum 3-lobed, including the lateral lobes 3.5 mm. long. Lateral lobes auriculate, about 2 mm. long, narrowly triangular, acute or obtuse, twice or thrice longer than the column. Middle lobe 1.5 mm. long from tip to point of attachment, triangular, terminating in a bluntly triangular lobule on either side of which there are 2-3 irregular teeth.

**Tanna**: Lenakel, small plant growing in shade of large trees; flowers yellow; alt. 100 m. in rain-forest. No. 137 (type in Herb. Ames no. 36366), March 8, 1928.

The nearest ally of this species appears to be *M. bancana* (Ridl.) O. Ktze. from which it differs in the structure of the lip. *M. oculata* (Reichb. f.) O. Ktze. is also a closely allied species, but differs vegetatively from *M. neo-ebudica*.

**Malaxis xanthochila** (Schltr.) Ames & Schweinfurth in Ames, Orch. VI. 73 (1920).



*Microstylis xanthochila* Schlechter in K. Schumann & Lauterbach, Nachtr. Fl. Deutsch. Schutzgeb. 102 (1905).

**Aneityum:** Anelgauhat Bay, common in rain-forest at sea level, no. 837, March 1, 1929 (small plant up to 1 ft. high; flowers yellow). —Also New Guinea.

Two specimens which are referable to this species, one collected by Dr. R. Morrison on Aneityum at Anelgauhat in June 1896, the other collected by L. Cheeseman at South West Bay, Malekula in January 1930, are preserved in the Kew Herbarium. Although the basal auricles of the lip in the Malekula plant are longer than is typical, it agrees in essential characters with *M. xanthochila*. **Malaxis lunata** (Schltr.), comb. nov. (*Microstylis lunata* Schlechter in Fedde Rep. Spec. Nov. IX, 162 [1911]) differs from *M. xanthochila* in the basal auricles of the labellum and in the spatulate petals. The type specimen of *M. lunata* was collected by Dr. Morrison on Aneityum near Anelgauhat.

**Liparis condylobulbon** Reichenbach f. in Hamb. Gartenz, XVIII. 34 (1862).

*Liparis confusa* J. J. Smith, Fl. Buitenz. VI. (Orch. Jav.) 275 (1905).

**Eromanga:** Dillon Bay, common in rain-forest at 400 m., no. 321, May 29, 1928 (growing on trees thickly shaded from the sun). **Banks Group:** Vanua Lava, common in rain-forest at 350 m., no. 455, July 10, 1928 (orchid growing in dense shade on small tree in gully; perianth organs small, outer ones pale green, inner ones brown).—Vernacular name "Ute-melme-pohl" (under no. 321).

In the Kew Herbarium there are five specimens representing this species, obtained in Aneityum in 1896 by Dr. R. Morrison. This is one of the most widely distributed species of the genus, being very common in the Philippines, Sumatra, Java, Celebes, Borneo and New Guinea.

**Coelogyne asperata** Lindley in Jour. Hort. Soc. IV. 221 (1849).

**Santa Cruz Group:** Vanikoro, common in rain-forest at sea level, no. 679, December 4, 1928 (beautiful, large-leaved orchid common on trees in Vanikoro; leaves dark green; flower yellow-cream, orange center; most beautiful of Vanikoro orchids).

The specimen collected was in bud, and not wholly satisfactory for identification, but there is sufficient evidence to warrant referring it to the widespread *C. asperata*, a species which ranges from the Malay Peninsula to Sumatra, Borneo, the Philippine Islands and New Guinea.

**Coelogyne lamellata** Rolfe in Kew Bull. 1895, 36.

**Santa Cruz Group:** Vanikoro, common in rain-forest at sea level, no. 687, December 5, 1928 (large-leaved orchid common in the scrub on large trees; flower light yellow-green).



*Pholidota imbricata* Lindley in Hook. Exot. Fl. II. t. 138 (1825).

**Santa Cruz Group:** Vanikoro, common in rain-forest at sea level, no. 681, December 4, 1928 (orchid common on trees close to salt water creek; fruit yellow, brown when ripe). **Eromanga:** Dillon Bay, common orchid on trees in gullies in rain-forest at 300 m., no. 390, June 8, 1928 (capsules opened when ripe and the seeds put on the natives' faces as a substitute for the face powder of commerce).

The material, on which the identification of no. 681 rests, is devoid of flowers. It is highly probable that this material is conspecific with *P. grandis* Kraenzl. apud Guillaumin in Bull. Soc. Bot. France, LXXVI. 301 (1929), non Ridl. in Jour. Str. Br. Roy. Asiat. Soc. XLIX. 32 (1907). Kraenzlin described *P. grandis* with the aid of fruiting specimens to which only vestiges of the flowers adhered. In view of the occurrence of what appears to be *P. imbricata* on Eromanga, and taking into consideration the extensive range of this species, from India to Burma, Assam, Siam, Malay Peninsula, China, Sumatra, Java, the Philippine Islands, Celebes, Borneo and New Guinea, I suspect that *P. grandis* Kraenzl. is referable to it.—Vernacular name "Utnimpoll" (under no. 390).

*Pseuderia vanikorensis* Ames, sp. nov.

Caules elongati, vaginis foliorum omnino obtecti, plus minusve flexuosi. Folia disticha, anguste lanceolata, usque ad apicem attenuata, acuta. Vaginae foliorum tubulatae, arcte adpressae. Racemi pauciflori, laterales. Sepala lateralalia falcata, valde carinosa, leviter carinata. Sepalum dorsale spathulatum, concaviusculum, plus minusve rigidum, prope apicem carinatum. Petala oblongo-ligulata, apicem versus paulo latiora, obtusa, uninervia. Labellum ellipticum, subacutum, dense papillosum; callus linearis in disco decurrens. Columna carinosa, arcuata, in pedem brevem producta, labello articulata.

Stems 5–6 dm. long, slender, about 6 mm. in diameter, concealed by the sheathing bases of the leaves, more or less flexuose. Leaves numerous, distichous, 13–14 cm. long, about 2.5 cm. wide, 2–2.5 cm. apart, narrowly lanceolate, tapering gradually to an acute tip, rounded at the base and contracted into a short sulcate petiole. Petiole articulate with a tubular sheath. Racemes produced on the upper part of the stem, distichous, 2.5–3 cm. long. Bracts of the raceme lanceolate, rigid, shorter than the pedicels, blackish when dry. Pedicel with the ovary about 8 mm. long, glabrous, slender. Lateral sepals shorter than the dorsal sepal, 8 mm. long, about 2.5–3 mm. wide above the middle, very fleshy, rigid, falcate-oblong, obtuse, deflexed, carinate along the middle nerve on the outer surface.



Dorsal sepal 1 cm. long, 2 mm. wide above the middle, concave-spatulate, obtuse, conspicuously carinate near the tip on the outer surface, arcuate. Petals about 7.5 mm. long, 1.5 mm. wide, oblong-ligulate, obtuse, slightly broader near the tip than at the base, 1-nerved, slightly curved, fleshy. Labellum about 5 mm. long, hardly 4 mm. broad at the middle, elliptic, subacute, densely papillose, margin ciliolate. Disc with a fleshy keel extending from the base of the labellum almost to the apex on the inner surface; keel sulcate at the base. Column 5 mm. long, arcuate, produced at base into a short foot with which the labellum is articulated.

**Santa Cruz Group:** Vanikoro, in rain-forest at 150 m., no. 669 (type in Herb. Ames, no. 37190), December 3, 1928 (large climbing orchid hanging from rain-forest trees; leaves light green and glossy; flowers purple splashed with yellow).

In general facies this species closely resembles *Pseuderia frutex* Schltr. but differs in the form of the labellum.

**Dendrobium (§ Aporum) sp.**

**E f a t e:** Fila Island, Vila, common on rocky beach, no. 190, April 14, 1928 (small orchid growing on large rocks close to salt water).

The specimens are in fruit and indeterminable. Vegetatively the plants resemble closely *Dendrobium ventricosum* Kraenzl. from the Philippines.

**Dendrobium Goldfinchii** F. v. Mueller in Wing's South. Sci. Rec. (Jan. 1883).

**Santa Cruz Group:** Vanikoro, common at sea level, no. 636, November 20, 1928 (growing on rain-forest trees).—Already found on Aurora (*Im Thurn*, no. 341).—Also New Guinea and Admiralty Islands.

**Dendrobium Kajewskii** Ames, sp. nov.

Caules elongati, foliosi. Folia coriacea, elliptica vel elliptico-oblonga, apice inaequaliter bilobata. Pedunculi validi, elongati. Racemi multiflori. Sepala lateralia anguste triangularia, undulata, mentum formantia. Sepalum dorsale simile. Petala ligulata. Labellum trilobatum; lobi laterales rotundati, verrucosi; lobus medius ovatus; discus tricarinatus. Columna sectionis.

Roots elongated, about 2 mm. in diameter, whitish. Stems about 2.5 dm. or more tall, jointed, the upper internodes swollen; nodes 3–3.5 cm. apart. Leaves coriaceous, 5–11 cm. long, 2.5–3 cm. wide, elliptic to elliptic-oblong, unequally bilobed at the apex, contracted at base into closely appressed complanate sheaths,



only the uppermost leaves persisting at anthesis. Peduncles including the raceme elongated, up to 4 dm. long, 3 mm. or more in diameter, rigid, obliquely ascending, produced opposite the leaves, paucibracteate below the racemes. Bracts tubular, closely appressed, scarious. Racemes many-flowered, about 2 dm. long. Bracts of the raceme scale-like, much shorter than the pedicels. Pedicels slender, ascending, with the ovary 2.5 cm. long. Flowers large and showy. Lateral sepals 2.2 cm. long, about 5 mm. wide, narrowly triangular, undulate margined, acute, forming with the elongated foot of the column a subacute mentum. Upper sepal about 2 cm. long, 7 mm. wide, oblong-lanceolate, acute, 5-nerved, undulate margined. Petals ligulate, about 2.8 cm. long, 4 mm. wide, undulate margined. Labellum 2.5 cm. long, about 1.5 cm. wide, 3-lobed; lateral lobes rounded in front, rugulose or verrucose on the inner surface, about 1.5 cm. long; midlobe hardly 1 cm. long, 6 mm. wide, ovate, acute, undulate margined. Disc provided with three thickened keels. Column including the foot 1.5 cm. long, free portion 5 mm. long.

**Santa Cruz Group:** Vanikoro, common in rain forest, no. 638a (type in Herb. Ames, no. 37111) and 638b, November 20, 1928 (common orchid in the scrub on mangroves).

Under no. 638, Kajewski collected a series of specimens which differed from one another in floral characters and appeared to be separable. To these specimens he assigned the numbers 638, 638a and 638b. Number 638 is referable to *Dendrobium macranthum* A. Rich. Numbers 638a and 638b are conspecific differing from one another only in the color of the flowers and in slight differences in the form of the midlobe of the labellum. In 638a the prevailing color is yellow with purple lines, the labellum being greenish-yellow with purple striations. In 638b the sepals and petals are dull purple on the inner surface with bright yellow margins, while the labellum is bright yellow-green with purple lines and dots.

*Dendrobium Kajewskii* differs from *D. macranthum* in the undulate sepals and the very different labellum. From the closely allied *D. conanthum* Schltr., it differs chiefly in lacking supplementary carinae on the disc of the labellum and in having the lateral lobes verrucose or rugulose on the inner surface.

***Dendrobium macranthum* A. Richard, Sert. Astrol. 15, t. 6 (1832).**

**Santa Cruz Group:** Vanikoro, common in rain-forest, no. 638, November 20, 1928 (common orchid both in the scrub and on mangroves). This species was originally found on Vanikoro Island.—Also Samoa. The flowers are somewhat smaller than in typical *D. macranthum*.



**Dendrobium** (§ *Dendrocoryne*) **macrophyllum** A. Richard, Sert. Astrol. 22, t. 9 (1834).

**Santa Cruz Group:** Vanikoro, common in rain-forest at sea level, no. 637, November 20, 1928 (a common orchid; flower yellow with purple spots, very pretty).—Also New Guinea, Java and the Philippine Islands.

**Dendrobium separatum** Ames, sp. nov.

Caules elongati, validi, foliosi. Folia disticha, oblongo-lanceolata, apice inaequaliter bilobata, acuta, in sicco chartacea. Racemi laterales, plus minusve decemflori. Flores congesti, aurantiaci. Sepala lateralia oblonga, subacuta, mentum elongatum formantia. Sepalum dorsale oblongum, prope apicem angustatum, subacutum vel obtusum. Petala margine minute erosa, elliptico-lanceolata, obtusa vel subacuta, concaviuscula, uninervia. Labellum elongatum, simplex, infra medium leviter constrictum, superne in laminam oblongo-ellipticam productum, lamella transversa ornatum; lamella denticulata. Columna generis.

Stems up to 1 m. long, stout, leafy, concealed by the sheathing bases of the leaves, yellow after the fall of the leaves, deeply sulcate in dried specimens. Leaves spreading, 1.5–2 dm. long, 1.9–2.5 cm. wide, oblong-lanceolate, tapering to an acute unequally bilobed tip; internodes about 2.5 cm. long. Peduncles lateral on defoliated stems, including the raceme about 2 cm. long, produced at the nodes, rather fleshy, ascending or at right angles with the stem. Racemes about 1.5 cm. long, about 2 cm. in diameter, bearing ten or more orange flowers. Bracts of the raceme about 3 mm. long, narrowly lanceolate, acute, rigid. Flowers 1.5 cm. long, fleshy. Lateral sepals 1.4 cm. long including the mentum, 2.5 mm. wide, oblong, subacute, strongly concave, fleshy. Upper sepal 5 mm. long, oblong, narrowed to a rounded or subacute apex, strongly concave. Mentum about 9.5 mm. long, forming a blunt spur which is open in front. Petals 5 mm. long, about 2 mm. wide, elliptic-lanceolate, obtuse, with an erose margin, 1-nerved. Labelum 1.3 cm. long, slightly constricted below the middle, simple, 3 mm. wide above the middle, dilated upward forming an oblong-elliptic smooth lamina with the apical margin slightly inrolled, traversed, where it is constricted, by a fleshy retrorse plate which is minutely denticulate. Column including the foot 11 mm. long, fleshy.

**Santa Cruz Group:** Vanikoro, in rain-forest on giant Kauri at 350 m., no. 503 (type in Herb. Ames 37154), September 9, 1928 (straggling orchid up to 1 m. long, hanging in strings; flowers orange; found only on old stems).



This species has the general facies of *Dendrobium triviale* Kraenzl. but differs in the structure of the labellum and in having the transverse plate or lamella on the disc distinctly erose on the upper edge. The transverse lamella which serves as a dividing wall between the basal and apical parts of the labellum suggests the specific name of the plant.

***Dendrobium vanikorense* Ames, sp. nov.**

Planta *D. acuminatissimo* habitu omnino congruens. Caules pergraciles, elongati. Folia disticha, linearia, acuta. Flores singuli, e nodis superioribus exorientes. Sepala lateralibus anguste triangularia, acuta, mentum obtusum formantia. Petala linearia, usque ad apicem attenuata. Labellum anguste ellipticum, margine denticulato vel breviter fimbriato; callus angustus prope basim stat. Columna generis.

Stems up to 1 m. long, about 1.5 mm. in diameter, yellowish, concealed by the tubular sheaths with which the leaves are articulated. Leaves distichous, 8–11 cm. long, about 3 mm. wide, tapering gradually to an acute tip, linear-triangular, about 12 mm. apart. Inflorescence breaking through the leaf-sheaths opposite the leaves, 1-flowered, alternating on the upper part of the stem. Peduncle 6 mm. long, subtended by a closely appressed complanate bract about 5 mm. long. Lateral sepals 12–15 mm. long, about 3 mm. wide above the mentum, narrowly triangular, acute, forming an obtuse mentum 4 mm. long. Upper sepal 14–16 mm. long, similar to the laterals, subcaudate at the tip. Petals 12–15 mm. long, about 1 mm. wide near the base, linear, tapering gradually to the acute caudate tip, 3-nerved. Labellum simple, 11 mm. long, 4–5 mm. wide, elliptical with a shortly fringed or denticulate margin, upper surface thickly studded with simple or several-toothed, complanate processes, and provided near the base with an elongated central callus 4 mm. long. Column fleshy, stout, including the foot 6 mm. long.

**Santa Cruz Group:** Vanikoro, common in rain-forest at 50 m., no. 663 (type in Herb. Ames, no. 37191), November 28, 1928 (orchid up to 1 m. long, hanging down from the rain-forest trees; flower creamy yellow tinged with purple); poor red soil in rain-forest at 50 m., no. 657, November 25, 1928 (a common orchid growing on small trees; flowers whitish); a sterile specimen which is vegetatively similar to no. 663.

In general habit this species resembles *D. acuminatissimum* Lindl. from which it differs chiefly in having a simple lip. *D. indragiriense* Schltr. and *D. holochilum* Schltr. are closely allied species but differ both vegetatively and florally from *D. vanikorense*.



**Eria Kajewskii** Ames, sp. nov.

Radices fibratae, pubescentes. Pseudobulbi cauliformes, clavati, bracteis vaginantibus omnino obtecti. Folia prope apicem pseudobulbi conferta, oblonga, utrinque attenuata, apice inaequaliter bilobata. Pedunculi e parte superiore pseudobulbi exorientes, foliis multo breviores, glabri. Bracteae inflorescentiae in sicco brunneae, ellipticae. Pedicellus cum ovario gracilis, elongatus. Sepala lateralibus anguste triangularia, acuta, mentum formantia. Sepalum dorsale simile. Petala oblongo-lanceolata, acuta. Labellum ovatum, margine irregulariter dentatum; discus glaber, prope basim bicallosus. Columna generis.

Roots fibrous, elongated, branching, finely pubescent. Pseudobulbs stemlike, 14–17 cm. long, clavate, when dry 7 mm. in diameter near the base, up to 11 mm. in diameter near the summit, concealed by brownish tubular closely appressed sheaths, the upper portion bearing about 5 more or less crowded leaves. Leaves 11.5–17 cm. long, 1.5–2 cm. wide, oblong, narrowed toward the ends, unequally bilobed at the apex. Peduncles arising from the upper part of the pseudobulb, interspersed among the leaves, about 9 cm. long, floriferous almost to the base. Flowers about 15 in a loose raceme. Floral bracts elliptic, brownish when dry, about 5 mm. long. Pedicel with the ovary about 1 cm. long, slender. Lateral sepals 11 mm. long, about 3 mm. wide at the base, narrowly triangular, acute, forming with the foot of the column a short obtuse mentum, 3-nerved; mentum 2 mm. long. Upper sepal 11 mm. long, about 2 mm. wide, oblong, acute, 3-nerved. Petals 9–10 mm. long, 2.5 mm. wide near the base, oblong-lanceolate, acute, 3-nerved, the outer nerves branched. Labellum 5 mm. long, about 2.5 mm. wide, rather fleshy, smooth, ovate, acute or subacute, margin with several blunt teeth on either side above the middle, 3-nerved with the outer nerves branching, bicallose near the base; calli abbreviated, one on each outer nerve. Column including the foot 5 mm. long.

**A n e i t y u m :** Anelgauhat Bay, common in rain-forest at 200 m., no. 820 (type in Herb. Ames, no. 37850) (small orchid growing on trees; flowers inconspicuous).

*Eria Kajewskii* is closely allied to *E. retroflexa* Lindl. which it resembles closely in habit, but it is clearly distinguishable from that species and from all close allies in having the margin of the labellum bluntly dentate above the middle.

**Eria vanikorensis** Ames, sp. nov.

Caules elongati, erecti, vaginis foliorum omnino obtecti. Folia disticha, oblonga, utrinque attenuata, quam racemus longiora,



dense fusco-villosa, in petiolum vaginantem contracta. Racemi pauciflori, rubro-villosi. Bractee inflorescentiae dense rufo-villosae, anguste ovatae, rigidae. Flores tomento rufo vestiti. Sepala lateralia triangulari-lanceolata, valde incrassata, intus et extus dense rufo-villosa, mentum obtusum formantia. Sepalum dorsale triangulari-lanceolatum. Petala oblonga, obtusa, extus dense rufo-villosa, leviter concava. Labellum prope apicem conspicue constrictum lobum transverse ellipticum vel reniformem formans, per lobum medium callo prominenti ornatum, inferne usque ad basim attenuatum; discus intus villosus, per medium 4-nervius. Columna generis.

Stems up to 1 m. long, concealed by the cylindrical foliar sheaths with which the leaves are articulated; sheaths 1.5–3 cm. long, densely covered with brownish, more or less matted hairs. Leaves distichous, up to 12.5 cm. long, 1.7–2.5 cm. wide, oblong-lanceolate, coriaceous, densely pubescent above, covered beneath with reddish appressed hairs. Racemes 5 or more, produced on the upper part of the stem, situated opposite the leaves, about 3.5 cm. long with a cupuliform sheath at the base. Rachis of the raceme densely reddish villose. Bracts subtending the pedicels about 1 cm. long, rigid, covered with reddish hairs. Ovary sessile, up to 2 cm. long, covered with reddish hairs. Flowers about 1 cm. long. Lateral sepals 1 cm. long, about 5 mm. wide near the base, triangular-lanceolate, acute, covered inside and out with bristle-like reddish hairs, fleshy, rigid, forming a prominent obtuse mentum. Upper sepal about 1 cm. long, similar to but narrower than the laterals. Petals 8 mm. long, 1.5 mm. wide, linear-oblong, rounded at the tip, sparsely pubescent inside, conspicuously hairy on the outside, mid nerve prominent. Labellum about 1 cm. long, 3 mm. wide, constricted 2 mm. below the apex forming a terminal reniform or transversely elliptical lobe; lamina oblong, contracted toward the base, ornamented inside and out with long closely appressed or slightly spreading reddish hairs; disc 4-nerved, ecarinate, with a short fleshy callus extending along the middle of the terminal lobe. Column characteristic of the genus.

**Santa Cruz Group:** Vanikoro, common in rain-forest, alt. 50 m., no. 512 (type in Herb. Ames no. 37110), September 20, 1928.

Allied to *E. iodantha* Schltr. from which it differs in the structure of the lip.

**Mediocalcar vanikorense** Ames, sp. nov.

Herba epiphytica. Radices dense pubescentes. Rhizoma validum, elongatum, arcte vaginatum, vaginis brunneis obtectum.



Pseudobulbi obpyriformes, in sicco valde sulcati, monophylli, statu juvenili vaginis vestiti. Folium variabile, 3.5–7.5 cm. longum, 1–1.7 cm. latum, valde coriaceum, oblongum vel oblanceolato-oblongum, apice tridentatum. Pedunculi uniflori ut videtur, singuli vel bini, folium aequantes vel breviores, plus minusve 4 cm. longi, paucibracteati, bracteis acuminatis. Flos 1 cm. longus, aurantiacus. Sepala cupulam formantia, ovata usque ad medium cohaerentia. Petala lineari-lanceolata, trinervia. Labellum prope medium valde calcarato-saccatum, ovato-acuminatum. Columna valida, labello brevior.

Rhizome rather stout, elongated, when young concealed by brownish tubular bracts, those subtending the pseudobulbs broadly ovate, chartaceous. Roots fibrous, elongated, branching, densely pubescent. Pseudobulbs 1–1.5 cm. long, obpyriform, longitudinally sulcate, monophyllous. Leaf extraordinarily variable, coriaceous, 3.7–7.5 cm. long, 1–1.7 cm. wide, oblong or oblong-oblanceolate, tapering gradually to a blunt bilobed apex, the midnerve extended into an apicule that almost equals the lobes in length. Peduncles single or geminate, shorter than or equalling the leaf, including the pedicellate ovary 2.5–4 cm. long, one-flowered, slender, only one peduncle floriferous at a time. Pedicel and ovary 1–1.5 cm. long, subtended by a scale-like acuminate bract. Flower urceolate, 1 cm. long, orange with the tip of the sepals yellow. Sepals similar, ovate-lanceolate, about 4 mm. wide at the point of union, free portion about 4 mm. long, united for more than half their length, the lateral ones forming a protuberant blunt mentum. Petals free, about 9.5 mm. long, hardly 2 mm. wide, linear-lanceolate, acute, 3-nerved. Labellum about 9 mm. long, parallel with the column, erect, with a rounded blunt sac near the middle; lamina ovate, acuminate-acute from a broad base. Column 6 mm. long.

**Santa Cruz Group:** Vanikoro Island, common on large trees at 50 m., no. 641 (type in Herb. Ames no. 37194), November 22, 1928. Also from the New Hebrides, Eromanga, Peak south of Dillon Bay, Dr. R. Morrison, August 5, 1896 (Herb. Kew). N. E. Traitor's Head, summit of old crater growing on rotten trunk, 2,400 feet alt., L. Cheeseman, no. 71 (Herb. Kew). Aneityum, Peak of Ithumu, Dr. Morrison, June 30, 1896 (Herb. Kew).

The genus *Mediocalcar* has not been reported heretofore from the New Hebrides or from the Santa Cruz Group. *M. vanikorense* is an ally of *M. bulbophylloides* J. J. Sm. differing from it in the widely separated pseudobulbs, larger leaves and in the color of the flowers. *Mediocalcar* is essentially New Guinean with very few outlying species. *M. ponapense* Schltr., from the Caroline



Islands, one of the few species reported from beyond New Guinea, differs from *M. vanikorensis* in being much more robust, with larger pseudobulbs and dissimilar leaves.

*Ceratostylis kaniensis* Schlechter in Fedde Rep. Spec. Nov. Beihfte 1. 245 (1912).

**Santa Cruz Group:** Vanikoro, common in rain-forest at 150 m., no. 575, November 6, 1928 (a plant found on a large Kauri tree).—Also New Guinea.

*Ceratostylis subulata* Blume, Bijdr. 306 (1825).

**Efate:** Undine Bay, common in rain-forest at 500 m., no. 234, April 28, 1928 (growing on bark of tree).—Also Java, Sumatra, Malay Peninsula, Assam.

The material studied lacks flowers and leaves. In general aspect the plant resembles *C. kaniensis* Schltr.

*Earina Brousmichei* Kraenzlin in Lecomte, Notulae Syst. iv. 136 (1928).

**Aneityum:** Anelgauhat Bay, common in rain-forest at 1000 feet, no. 844, March 2, 1929 (orchid growing on rain-forest trees; flowers white).—Also New Caledonia.

Kajewski's specimen differs from the type in being taller with much longer leaves. A flowerless plant from Efate, Undine Bay collected by Dr. Morrison in August 1896 appears to belong here (Herb. Kew).

*Appendicula reflexa* Blume, Bijdr. 301 (1825).

**Aneityum:** Anelgauhat Bay, common in poor red soil country at 500 feet, no. 915, March 17, 1929 (ground orchid 2 ft. high; flower white and green). **Eromanga:** Dillon Bay, common in poor red soil, bracken country, no. 326, May 29, 1928 (orchid growing on ground in shade of bracken and stunted brush; flower white).—Also Sumatra, Borneo, Celebes, and the Malay Peninsula.—Vernacular name "Orvum-nge-nompull" (under 326).

*Appendicula vanikorensis* Ames, sp. nov.

Herba gracilis. Caules vaginis foliorum omnino obtecti. Folia disticha, lanceolato-linear, acuminata, apice rotundato-bilobulata, basi amplexantia. Inflorescentiae omnino laterales. Sepala lateraliter late triangularia, trinervia, mentum obtusum formantia. Sepalum dorsale anguste ellipticum. Petala oblongo-lanceolata, valde obtusa, uninervia. Labellum simplex, carina hippocrepiformis instructum.

Stems slender, 1.5 dm. long in the fragments that were collected, probably attaining a height of 25 or 30 cm., entirely concealed by the



sheathing tubular bases of the leaves, flexuose. Leaves distichous, 3.5-5.5 cm. long, 8-15 mm. wide, about 1 cm. apart, narrowly lanceolate, bluntly bilobed at the tip with the midnerve projecting between the lobes, obliquely ascending. Inflorescences opposite the leaves, breaking through the tubular sheaths with which the leaves are articulated, about 1 cm. long, several-flowered. Bracts of the inflorescence about 3 mm. long, rigid, lanceolate. Lateral sepals about 3 mm. long including the blunt mentum, about 2 mm. wide at the base, strongly concave, broadly triangular, ending in a much thickened tip, 3-nerved. Upper sepal about 2.5 mm. long, approximately 1 mm. wide, narrowly elliptical, obtuse, 3-nerved, thickened at the apex, strongly concave. Petals 2 mm. long, 1 mm. wide, oblong-lanceolate, rounded at the apex, usually 1-nerved. Labellum 3 mm. long, 2 mm. wide, simple, lightly saccate at the broad base, in front of the sac expanded into a more or less elliptical obtuse lamina with an apical callus; sac with a large callus in the center; callus transversely elliptical with the ends continued into thickened keels. Column including the foot 2 mm. long, rostellum bifid.

**Santa Cruz Group:** Vanikoro, in rain-forest at 300 m., no. 594 (type in Herb. Ames, no. 37193), November 11, 1928 (orchid growing on rocks in a gully with water running around them; flowers greenish white).

In general aspect this plant resembles *A. anceps* Bl. but is dissimilar from it in the structure of the lip. *A. reflexa* Bl. is also a close ally but different from *A. vanikorensis* chiefly in the shape of the petals.

**Calanthe Vaupeliana** Kraenzlin in Notizbl. Bot. Gart. Berlin, XLIV. 111 (1907).

**Santa Cruz Group:** Vanikoro, common in rain-forest at 800 m., no. 599, November 11, 1928 (a ground orchid a meter high, found growing at high altitudes; flower beautiful, white, length of flower stalk 70 cm.).—Also Samoa.

Three specimens from the New Hebrides, collected on Aneityum in June 1896 by Dr. Morrison, are preserved in the Kew Herbarium. One of these specimens from Anelgauhat is described as having had yellow flowers, another specimen from ranges above Anelgauhat collected on June 4, 1896 is said to have had white flowers. Structurally the plants collected by Kajewski on Vanikoro and by Morrison on Aneityum are similar and agree in essential characters with *C. Vaupeliana*. The apical lobe of the labellum is variable. In the type it is oblong; in Morrison's specimens it is strongly dilated from the base. Kajewski's specimen, with regard



to the lip, is almost intermediate between Vaupel's Samoan plants and Morrison's plants from Aneityum.

*Spathoglottis Petri* Reichenbach f. in Gard. Chron. n. ser. VIII. 392 (1877).

**Eromanga:** Dillon Bay, common in red soil, bracken country at 300 m., no. 306, May 24, 1928 (ground orchid 1.5 m. high with pretty pale puce flowers).—Vernacular name "Lar-ver-ae."

In the Kew Herbarium there are three specimens from the New Hebrides, that are referable to *S. Petri*. Two of these were collected by Dr. R. Morrison on Aneityum near Anelgauhat in 1896. The third one was collected in March 1930 on Eromanga by L. Cheeseman (no. 14).

*Spathoglottis Vieillardii* Reichenbach f. in Linnaea, XLI. 85 (1877).

**Santa Cruz Group:** Vanikoro, common in rain-forest at sea level, no. 563, November 6, 1928 (a ground orchid common throughout the New Hebrides; color of the flowers varies from white to purple; diameter 4 cm.; inside of flower yellow).—Already reported from Tanna.—Also New Caledonia.

*Bulbophyllum* sp.

**Santa Cruz Group:** Vanikoro, common in rain forest at 150 m., no. 680, December 3, 1928 (an orchid growing on trees close to the sea; flowers dark red, inconspicuous petals; fruit 5 cm. long, 2.4 cm. in diameter).

This species is in advanced fruit. It is probably referable to *B. praealtum* Kraenzl. from Samoa, but the flowers are too old to be serviceable in attempts at identification. In general habit the plant resembles closely *Macrolepis longiscapa* A. Rich. and may be identical with it. *Macrolepis longiscapa* was originally found on Vanikoro. The genus *Macrolepis* is referable to *Bulbophyllum*, but Richard's species has never been transferred to *Bulbophyllum*. *B. longiscapum* Rolfe from Fiji would appear from the description to belong in the same alliance with Richard's species and with *B. praealtum* Kraenzl. Until a critical study of these species has been made it would be unwise to propose a new name under *Bulbophyllum* for Richard's *Macrolepis longiscapa*.

*Vandopsis Warocqueana* (Rolfe) Schlechter in K. Schumann & Lauterbach, Nachtr. Fl. Deutsch. Schutzgeb. 225 (1905).

**Santa Cruz Group:** Vanikoro, common in rain-forest at 150 m., no. 586, November 8, 1928 (climbing orchid going up trees that are more or less leaning; flower yellowish green with light purple spots).—Also New Guinea.



*Vandopsis Quaipei* (Rolfe) Schltr. from Espiritu Santo is a closely allied species and may prove to be conspecific with *V. Warocqueana*. In the Kew Herbarium there is a specimen from Aneityum that is surely referable to *V. Warocqueana*, but it is in a fruiting condition and hardly satisfactory for critical study. This specimen was collected by Dr. R. Morrison on June 20, 1896 on the coast east of Anelgauhat.

***Saccolabium Kajewskii* Ames, sp. nov.**

Caules vaginis foliorum obtekti. Folia ligulata, coriacea, utrinque attenuata, apice inaequaliter et obtuse bilobulata, basi in petiolum brevem conduplicatum contracta. Pedunculus elongatus, infra racemum paucibracteatus, bracteis infundibuliformibus. Racemus cylindraceus vel cylindraceo-secundus. Sepala anguste ovata vel elliptica. Petala elliptica, acuta vel subobtusa, trinervia. Labellum longe calcaratum; lamina infra apicem suborbicularis, antice in apicem complanatum contracta.

Stem about 5 cm. or more long, rigid, completely concealed by the sheaths to which the leaves are articulated. Leaves distichous, 14–21 cm. long, up to 2 cm. wide, oblong, ligulate, unequally and bluntly bilobed at the apex. Peduncle with the raceme up to 19 cm. long, with about 3 infundibuliform bracts. Raceme up to 9 cm. long, densely many-flowered. Bracts of the inflorescence scale-like, very much shorter than the pedicels, 1.5 mm. long. Pedicel with the ovary 9 mm. long. Flowers including the spur of the lip 1.3 cm. long. Lateral sepals about 5 mm. long, 2 mm. wide, ovate or elliptical, obtuse, concave. Upper sepal similar. Petals about 5 mm. long, 2 mm. wide, elliptical, acute, 3-nerved. Labellum including the spur 1 cm. long, in front dilated into an orbicular lamina which terminates in a complanate tip; lamina with an intramarginal keel; spur 7 mm. long, inflated below the middle. Column 1.5 mm. long.

**E f a t e:** Undine Bay, common in rain-forest along sea shore, no. 205 (type in Herb. Ames no. 36375), April 4, 1928 (color of flowers ranging from creamy white to white with green, some purple, others pink). **B a n k s G r o u p:** Vanua Lava, common along sea shore, no. 448, July 9, 1928 (found growing close to the sea on trees whose trunks are well shaded).

Two specimens referable to this species are in the Kew Herbarium. They were collected on Efate, Undine Bay, in August 1896 by Dr. R. Morrison. One of these specimens differs from the type in having broader leaves.

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