

New species of Peruvian Orchidaceae II

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Bennett, David E., Jr. (Francisco Tudela Varela 229, Miraflores, Lima 18, Peru) and Eric A. Christenson (The New York Botanical Garden, Bronx, NY 10458-5126, U.S.A.). New species of Peruvian Orchidaceae II. *Brittonia* 46: 228–259. 1994.—Seventeen new species are proposed in the genera *Ada*, *Gongora*, *Kefersteinia*, *Lockhartia*, *Lycaste*, *Macroclinium*, *Oncidium*, *Polycynis*, *Scelochilus*, and *Trichosalpinx*. All new species are illustrated. A key to *Kefersteinia* in Peru is presented. The description of *Oncidium boliviense* is emended, and the species is illustrated for the first time.

Key words: Peru, Orchidaceae, *Ada*, *Gongora*, *Kefersteinia*, *Lockhartia*, *Lycaste*, *Macroclinium*, *Oncidium*, *Polycynis*, *Scelochilus*, *Trichosalpinx*.

This article continues the systematic cataloging, description, and illustration of orchid species from Peru (Bennett, 1992, 1993; Bennett & Christenson, 1993, 1994; Bennett & Fernandez, 1992; Dodson & Bennett, 1989).

Ada Lindl.

Ada rolandoi D. E. Benn. & Christenson, sp. nov. (Fig. 1)

TYPE: PERU. Pasco, Oxapampa, Villarica, in the Yanachaga-Chemellin National Park, Jul 1991, *I. Rolando ex Bennett 5304* (HOLOTYPE: USM).

Species haec *A. ocanensi* (Lindl.) N. H. Williams similis, sed labello transverse late ovato-elliptico apice saccato apiculato, et anthera spiculata differt.

Caespitose epiphytes with short, thick rhizomes and coarse, fleshy roots. *Pseudobulbs* narrowly elliptic-oblong, oblique, compressed, ancipitous, striate, 5.5–7.0 [–10] × 2.2–2.5 cm, dull dark green, subtended by 2–3 pairs of distichous imbricating bracts, the upper bract foliaceous. *Leaf* 1, oblanceolate, acute, carinate, coriaceous, 38–47 × 4.0–4.6 cm, dull dark green. *In-*

florescence an erect gently curved raceme, axillary from uppermost foliaceous bract, the peduncle elliptic in cross section, the floral bracts prominent, conduplicate, subequal or slightly exceeding the ovary, pale ochre. *Flowers* 6–10, partially closed, sepals and petals greenish yellow with large dark brown blotches, unmarked on apical ¼, the labellum crystalline white, the callus base yellow, the column pale green, the stigmatic cavity mottled dark purplish brown, the anther carrot orange with crystalline papillae, the pollinia yellow, the stipe translucent, the viscidium dark chestnut brown. *Sepals* and *petals* subsimilar and subequal, lanceolate, acuminate, 3.3–4.0 × 0.4–0.6 cm, the margins of the apical ⅓ of the dorsal sepal involute, the apices of the lateral sepals recurved, the petals shorter than the sepals with involute distal margins. *Labellum* obovate with a broad, oblong claw, the apex pouch-like with a central knee-like knob, the callus biseriate, fleshy, paired longitudinal ridges to half the length of the labellum, the callus apices divergent, the posterior callus elevated relative to anterior callus, the base and inner faces of the calli covered with fleshy tubercles, the remainder spiculate, the upper surface of the labellum sparsely pubescent. *Column* stout, straight, 1.0 × 0.5 cm, basally enclosing callus base, the anther 2 × 1.8 mm, spiculate, the pol-

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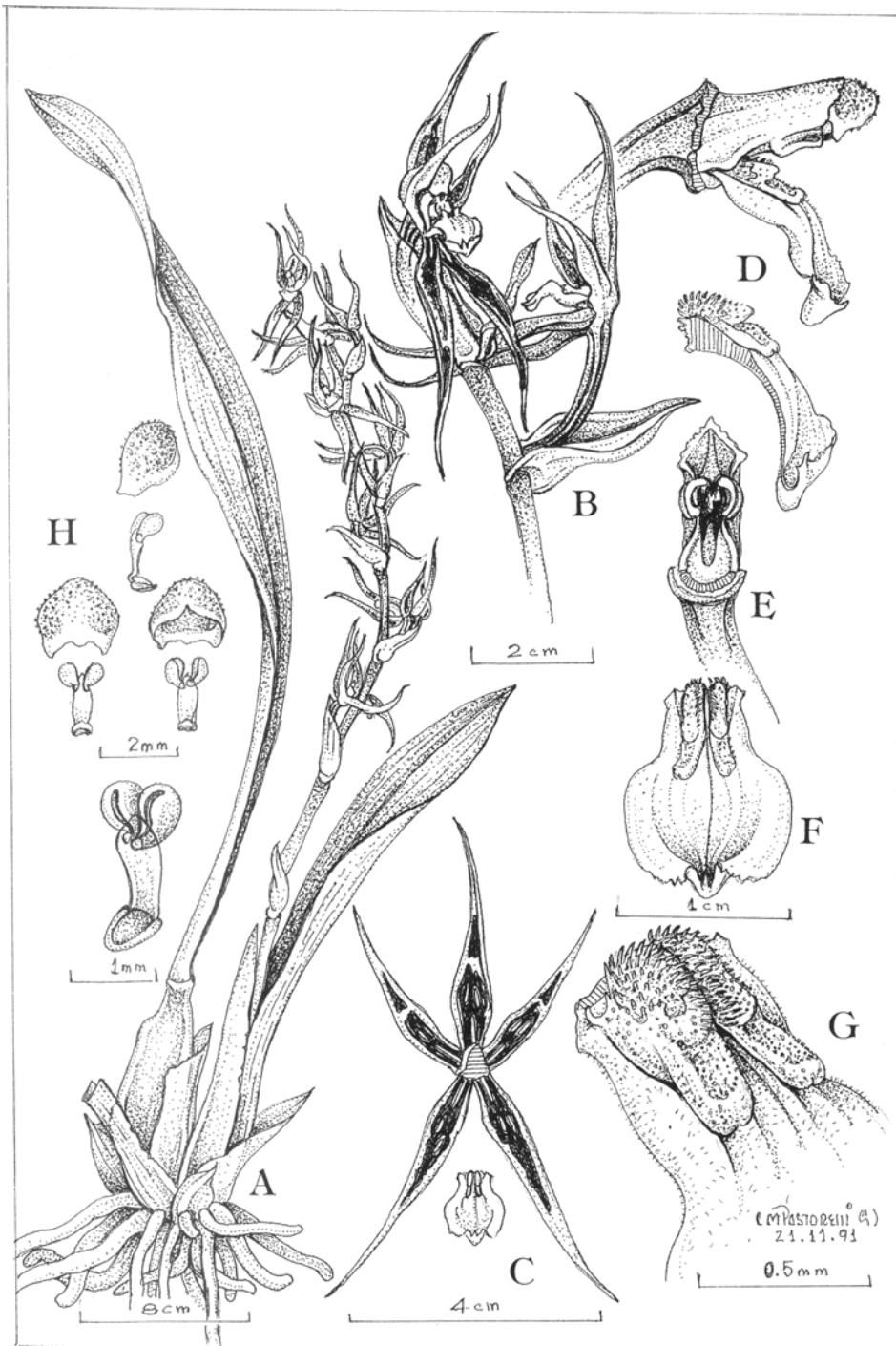


FIG. 1. *Ada rolandoi* D. E. Benn. & Christenson (drawn from Bennett 5304). **A**. Whole plant in flower. **B**. Flowers at apex of rachis. **C**. Floral dissection. **D**. Column and labellum, side view with longitudinal section of labellum. **E**. Column, abaxial view. **F**. Labellum. **G**. Callus in close-up. **H**. Pollinarium and anther.

linarium, 1.8 mm long, 1.2 mm across the obovoid pollinia.

Etymology: The plant honors Dr. Isaias Rolando, avid collector and popularizer of Peruvian orchid species.

Habitat: *Ada rolandoi* grows in cool, wet, lower cloud forest (1850 m) where it flowers in October and November on still-maturing pseudobulbs.

Ada rolandoi is distinguished from other species of *Ada* by the pouched, apiculate labellum apex, the sparsely pubescent labellum, the spiculate and tuberculate callus, and the spiculate bright orange anther. A color drawing of this species was published by Christenson (1994). *Ada rolandoi* is similar to Peruvian plants recorded as *Ada pozoi* Dodson & N. H. Williams (Dodson & Bennett, 1989), but differs from the type of the latter (Dodson & Dodson, 1984) by the differently shaped stipes (ligulate in *A. rolandoi*; obtriangulate in *A. pozoi*) and labellum (long acuminate in *A. pozoi*).

Gongora Ruiz & Pav.

Gongora cruciformis Whitten & D. E. Benn., sp. nov. (Fig. 2)

TYPE: PERU. Pasco, Oxapampa, Puerto Bermudez near the Fundo of Jesus Saldaña, flowered in cultivation at FLAS 3 Mar 1993, Bennett 4696-5 (HOLOTYPE: USM; ISOTYPES: FLAS, NY, SEL).

Species haec *G. pleiochromate* Rchb.f. affinis sed cornibus hypochilii angustioribus et unciformibus differt.

Plant typical for the genus, to 50 cm tall. *Pseudobulbs* ovoid, to 10 cm × 5 cm, 7–9-ribbed, bifoliate, covered at the base by 3–4 chartaceous, nonfoliaceous sheathing bracts to 8 cm long. *Leaves* to 26 × 8 cm, acuminate, light green, thin-textured, with 3 prominent abaxial veins, the petiole indistinct, to 8 cm long. *Inflorescence* a pendent raceme from the base of the pseudobulb, to 60 cm long, many-flowered, the rachis angular, winged, to 4 mm wide, the floral bracts 3 × 2 mm. *Flowers* small to average size for the genus, color variable ranging from white heavily spotted with dull red-brown to solid brownish-purple. *Dorsal*

sepal lanceolate, acute, concave, 24 × 6 mm long, adnate to column for proximal 8 mm, strongly revolute. Lateral sepals ovate-triangular, oblique, acute, reflexed, 23 × 9 mm. *Petals* sigmoid, aristate, adnate to column for most of length, free portion 6 × 1 mm. *Column* arcuate, clavate, 15 mm long, 3 mm wide at apex, the foot 4 mm long, claw lacking. *Labellum* to 19 mm long, conspicuously divided into hypochile and epichile; the hypochile slender, 4 mm at widest, tapering proximally, with the hypochilar horns relatively long, hook-shaped, slender, round in cross-section, 2.5–3.0 × 0.5 mm, curved adaxially, the abaxial surface of hypochile concave, the distal end bearing a pair of adaxially pointing seta to 9 mm long; the epichile 10 mm long, conduplicate, saccate, tapering distally, the basal folds of epichile enclosing an erect callus 3 mm tall, 2 mm long and 0.5 mm wide, barely projecting beyond folds of epichile. *Pollinia* 2, hard, waxy, clavate, 2 × 0.4 mm, the stipe and viscidium 1.0 × 0.3 mm. *Ovary* and pedicel terete, 36 mm long, 1.5 mm wide, dull red-brown. *Fruit* not seen.

Etymology: named for the relatively long and uncurved basal horns that give the labellum a cross-shaped appearance in adaxial view.

PARATYPES: PERU. **Huanuco:** Leoncio Prado, 5–8 km along road to Carpish above Tingo Maria, *E. Jara ex Bennett 4046* (FLAS), *E. Jara ex Bennett 4049* (FLAS). **Pasco:** Oxapampa, 8 km W along Rio Pelmaz, *Bennett 4648* (FLAS, USM); Oxapampa, 3 km N of Puerto Bermudez, Quebrada Yamazu, Fundo Valdez, *Bennett 4701-5* (FLAS, USM).

Habitat: *Gongora cruciformis* is an epiphyte in wet montane forest at low to intermediate elevations (ca. 280–800 m).

This species is a member of the confusing *G. quinquenervis* Ruiz & Pav. complex and is similar in appearance to several other sympatric species in Peru. It possesses, however, the most slender and relatively longest basal horns of any species we have seen. The flowers are small and delicate with strongly revolute sepals that add to the diminutive appearance. These subtle morphological traits are correlated with a very distinctive floral fragrance consisting of mainly beta-

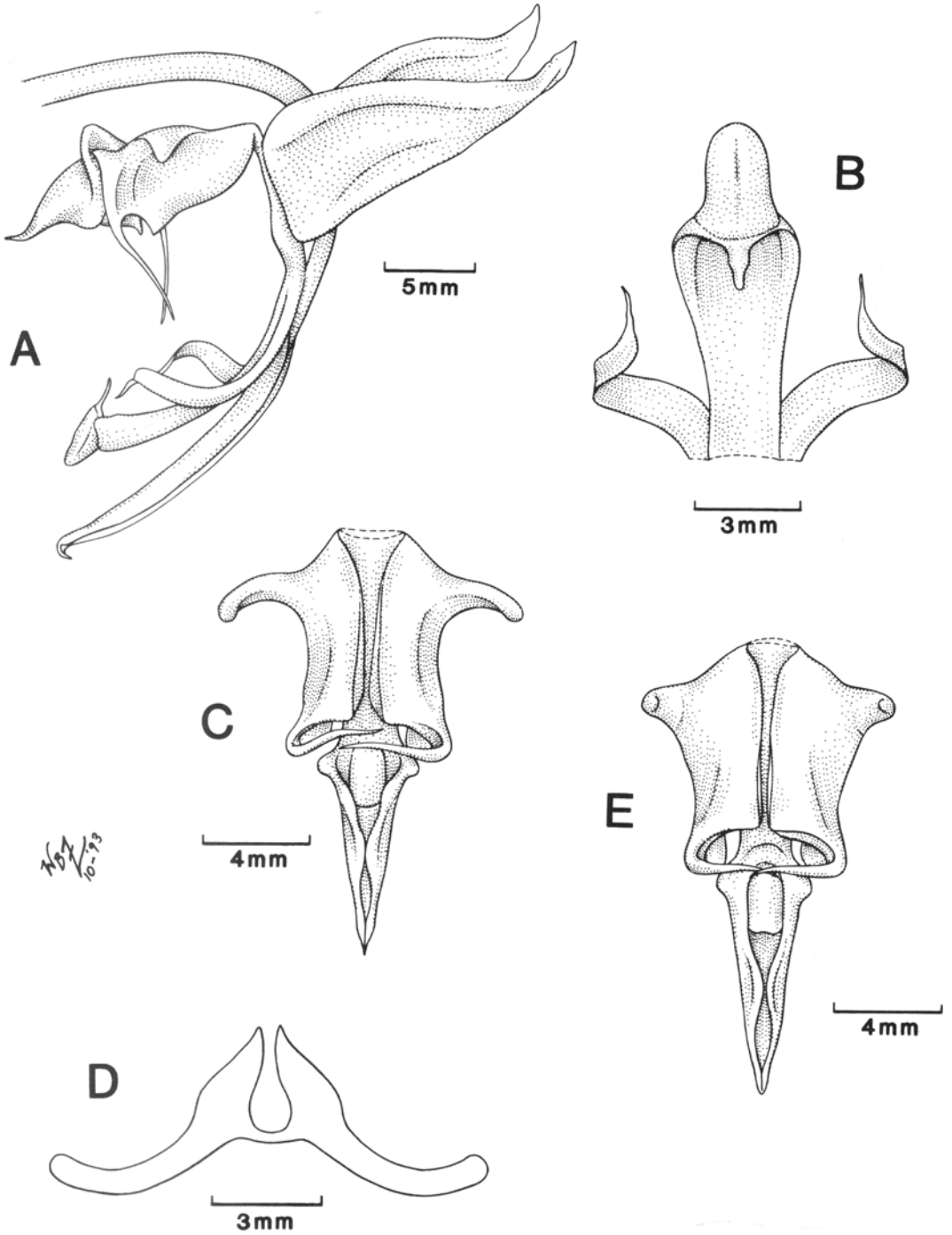


FIG. 2. *Gongora cruciformis* Whitten & D. E. Benn. (drawn from Bennett 4696-5). A. Flower. B. Abaxial view of column and petals. C. Labellum, adaxial view. D. Labellum cross-section. E. Labellum of *G. pleiochroma* Rehb.f. for comparison.

ocimene and 7,11-epoxy-megastigma-5(6)-en-9-one. The latter compound is quite rare in orchids (Whitten, unpubl.). Although the pollinator is unknown, the unique floral fragrance suggests that it attracts a different set of pollinators than do the sympatric *G. pleiochroma* and *G. gracilis* Jenny.

Kefersteinia Rchb.f.

Schweinfurth (1960) recorded two species of *Kefersteinia* from Peru (as *Chondrorhyncha*), *K. lojiae* Schltr. and *K. pusilla* (C. Schweinf.) C. Schweinf. Since that time, many species have been added. Jenny (1985) added *K. bertoldii* Jenny. Dodson and Bennett (1989) added *K. bismarckii* Dodson & D. E. Benn., *K. mystacina* Rchb.f., *K. pastorellii* Dodson & D. E. Benn., *K. pellita*

Rchb.f. ex Dodson & D. E. Benn., and *K. sanguinolenta* Rchb.f. In our earlier paper (Bennett & Christenson, 1994), we described four additional species: *K. delcastilloi* D. E. Benn. & Christenson, *K. jarajae* D. E. Benn. & Christenson, *K. licethyi* D. E. Benn. & Christenson, and *K. salustianae* D. E. Benn. & Christenson. In this paper we describe six additional species, bringing the total to 18 for Peru. To aid in their identification we present the following key to the species. (Note: Flower color was not recorded for *K. lojiae*; we are treating it as a non-white flowered species [couplet 7] for the purpose of the key because of the similarity of its column wings to those of *K. villenae*. *Kefersteinia pusilla* was drawn from a rehydrated flower. The species has a labellum constricted at the middle [couplet 3; Bennett & Christenson, 1993]).

Key to the Peruvian species of *Kefersteinia*

- 1 Labellum deeply 3-lobed, the margin deeply fimbriate *K. mystacina*
- 1 Labellum not deeply 3-lobed, the margin entire or variously denticulate-erosulate or crisped-undulate.
 - 2 Labellum atypical for the genus, extended downward 165° from the column axis, the margin smooth *K. licethyi*
 - 2 Labellum more or less parallel to column, the margins not smooth.
 - 3 Labellum constricted at the middle, not with a transverse downward fold at the middle.
 - 4 Callus a complex, several-keeled structure with a curved, downward pointing apex *K. benvenathar*
 - 4 Callus a simple 2-lobed structure with apical margins parallel to the labellum or upturned.
 - 5 Column winged; leaf more than 3 cm wide; flower round with overlapping segments *K. bertoldii*
 - 5 Column not winged; leaf less than 2 cm wide; flower star-shaped with gaps between the segments.
 - 6 Labellum margin entire *K. jarajae*
 - 6 Labellum margin not entire, minutely papillate, multiplicate *K. pusilla*
 - 3 Labellum not constricted at the middle, with a transverse downward fold at the middle.
 - 7 Flowers white, with or without contrasting spots.
 - 8 Sepals and petals with small purple-red spots.
 - 9 Labellum margin crisped-undulate, not denticulate; the base of lip concave but not saccate; perianth flat, spreading *K. sanguinolenta*
 - 9 Labellum margin denticulate; the base of lip saccate; perianth campanulate *K. bengasahra*
 - 8 Sepals and petals white without any spotting.
 - 10 Scapes pendent; bidentate apex of callus divergent; column white without any spots; labellum with 6 ridges *K. escalarensis*
 - 10 Scapes erect or arching; bidentate apex of callus parallel; column white with yellow wings and red spots; labellum without ridges *K. candida*
 - 7 Flowers variously greenish or yellowish with spots.
 - 11 Column wings atypical for the genus, at or below the middle of the column.
 - 12 Callus suborbicular, peltate ("subpeltato-stipitato"), about 1/6 the length of the labellum, emarginate with the furrow to less than 1/2 the length of the callus *K. lojiae*
 - 12 Callus rhombic, the apex curved downwards, about 1/3 the length of the labellum, emarginate with the furrow to more than 1/2 the length *K. villenae*
 - 11 Column wings typical for the genus, above the middle of the column.
 - 13 Transverse fold of labellum posterior to column apex (the column extending beyond the fold).

- 14 Column wings prominent triangular flanges; petals strongly oblique; plants caespitose *K. salustiana*
 14 Column wings shallow rounded extensions; petals slightly oblique; plants rhizomatous *K. delcastilloi*
 13 Transverse fold of labellum anterior to column apex (the column not extending beyond the fold).
 15 Plant rhizomatous; labellum densely pubescent *K. pellita*
 15 Plant caespitose; labellum not densely pubescent.
 16 Labellum longer than broad when expanded (1.5 cm long) *K. bismarckii*
 16 Labellum broader than long when expanded (less than 1.4 cm long).
 17 Lateral sepal 1.5 cm long; leaves usually oblanceolate; perianth flat, spreading *K. aurorae*
 17 Lateral sepal 1.7 cm long; leaves linear-lanceolate; perianth campanulate *K. pastorellii*

***Kefersteinia aurorae* D. E. Benn. & Christenson, sp. nov. (Fig. 3)**

TYPE: PERU. Junin: Chanchamayo, Kivinaki, N slope above Río Perene, 1 Sep 1993, *O. del Castillo ex Bennett 5516* (HOLOTYPE: NY).

Species haec *K. pastorellii* Dodson & D. E. Bennett similis sed sepalis lateralibus brevibus, foliis oblanceolatis, et perianthio plano differt.

Caespitose fan-shaped epiphytes to 14–18 cm tall. *Leaves* 3–6, narrowly lanceolate or oblanceolate, acuminate, apiculate, long-tapered to carinate, petiolate base, 14–18.5 × 1.2–1.6 cm, articulated, conduplicate, imbricating sheaths, moderately dark green, the sheaths concolor green or spotted pale red. *Inflorescences* successive axillary scapes, erect to laxly pendent, the peduncle terete, slender, 5–7.7 cm long, with 1–3 narrow, conduplicate, acuminate, approximate bracts on the basal half, pale green blotched red, the floral bracts 2, subopposite, blotched pale red. *Flower color* variable, the sepals and petals dark yellow or green, heavily marked with intense orangish or dark purplish red, the labellum pale tan-yellow heavily overlaid with very dark red blotches and spots, center with a few patches of appressed intertwined white trichomes interspersed with more or less erect, aciform dark red trichomes, the callus ground color pale yellow or red, with spiculate dark red spots, between spots the indumentum short-pilose, hyaline, underneath densely covered with a mixture of short and long, hyaline, thin, pointed trichomes, the column dark yellow with sparse hyaline pubescence dorsally, thickly pilose underneath, spotted and

blotched intense brown-red, the anther straw-yellow with rose-red spots, the ovary green with reddish brown spots. *Sepals* and *petals* subsimilar and subequal, the dorsal sepal elliptic, apiculate, 12 × 6.2 mm, the lateral sepals obliquely oblong-elliptic, acute, concave at the base, thickened along the midveins, 15.5 × 6.6 mm, the petals obliquely elliptic, shortly acuminate, margins lightly revolute, 12 × 6.3 mm. *Labellum* obovate, 13 × 15 mm, the apex with a deeply undulate fold, the margin lacerate-fimbriate, the callus quadrangular, deeply bilobed-emarginate, auricular, with a central oblong, sulcate, broadly thickened rib. *Column* fleshy, winged, 8.6 mm long, 5 mm broad across the transverse, broadly semielliptic wings, the abaxial keel short, 3–3.5 mm long, the column foot with a prominent claw, the anther 1.9 × 1.5 mm, the pollinia 2 in very unequal pairs, larger pair 1.3 × 0.5 mm, smaller pair 1.0 × 0.3 mm, the stipe short, continuous with the rhombic, thick viscidium. *Ovary* sulcate, obtusely angled, the pedicel terete. *Fragrance* diurnal, musty.

Etymology: Named to honor Aurora Pastorelli de Bennett in recognition for her skillful and constant care of the living specimens from which the orchid species described in this series are illustrated.

PARATYPES: PERU. Junin: Tarma, Contaypaccha, 22 Apr 1992, *O. del Castillo ex Bennett 5550* (USM); Chanchamayo, Kivinaki, N slope above Río Perene, 26 Mar 1992, *O. del Castillo ex Bennett 5517* (NY, USM).

Habitat: Found at lower levels of wet cloud forest (1700–1890 m), *K. aurorae* flowers

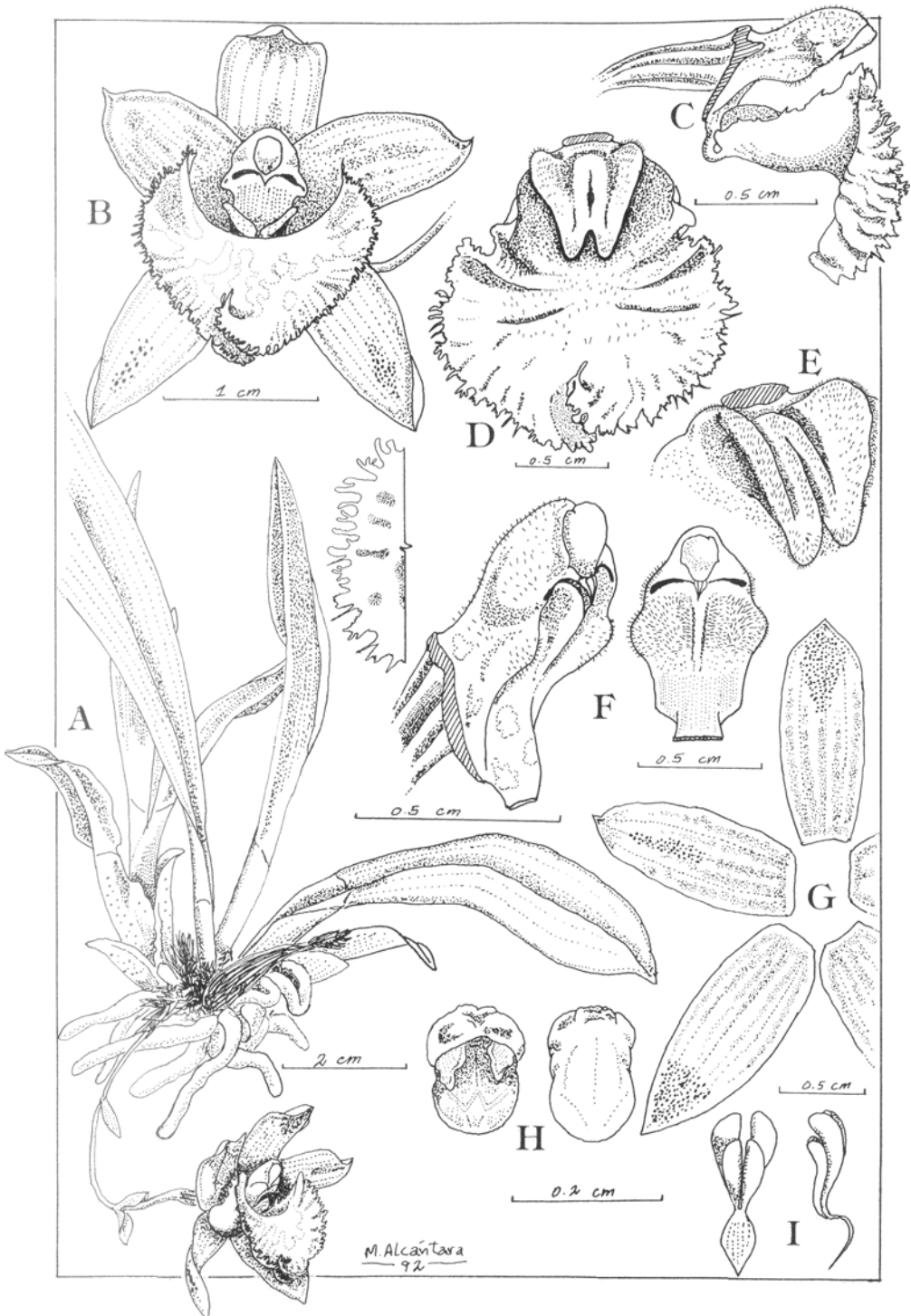


FIG. 3. *Kefersteina aurorae* D. E. Benn. & Christenson (drawn from Bennett 5516). A. Plant in flower. B. Flower. C. Column and labellum in profile. D. Labellum with close-up of margin. E. Callus. F. Column. G. Floral dissection. H. Anther. I. Pollinarium.

from September through May when in active growth.

This species is distinguished by the pubescence on the lip and column, the lacerate-fimbriate lip margin, the ear-shaped calli lobes separated by a broad rib furrowed in the center and the broadly transverse, semielliptic column wings.

Kefersteinia bengahra D. E. Benn. & Christenson, sp. nov. (Fig. 4)

TYPE: PERU. Pasco: Oxapampa, Puerto Bermúdez, Río Lorenzo, 4 Jun 1992, *O. del Castillo ex Bennett 5605* (HOLOTYPE: USM).

Species haec *K. sanguinolentae* Rchb.f. similis sed labello margine denticulato basi saccato, et flore campanulato differt.

Caespitose fan-shaped epiphytes. *Leaves* 4–5, linear-lanceolate, acute, articulated to imbricating sheaths, 7–14 × 1.2 cm. *Inflorescences* slender axillary scapes, semierect, the peduncle with a solitary loose bract below the middle, the floral bracts 2, dissimilar, subopposite. *Flowers* campanulate, small for the genus, the sepals and petals greenish-white, the labellum white with purple spots and flecks, the column greenish-white with purple spots and flecks, the anther yellowish white, the viscidium and stipe translucent, the pollinia pale yellow. *Sepals* and *petals* subsimilar and subequal, 11–12 × 5 mm, the dorsal sepal lanceolate, apiculate, concave-galeate, the lateral sepals obliquely lanceolate, curved forward, parallel, decurrent on the foot, the petals obliquely elliptic-oblong, acute, apiculate, parallel. *Labellum* obovate-suborbicular, concave-subsaccate, with a transverse folded ridge near the middle, 11 × 10 mm when expanded, the margins erose above the abruptly subcordate base, the callus elliptic in outline, 0.5 × 0.3 mm, apically with 2 oblique, divergent, complanate teeth and with lateral flaps just below the middle. *Column* stout, slightly arcuate, with semielliptic wings at the middle, with a short, inconspicuous abaxial keel and below the middle with a thick, raised, oblong rib extending on to the foot, sparsely pubescent dorsally and on wings, 11 × 6 mm, the anther obovoid, 2.8 × 3 mm, the pollinar-

ium 2.6 × 1.2 mm, the viscidium ovate-triangular, 1 × 0.6 mm, the pollinia claviform, compressed, larger pair 1.5 × 0.6 mm.

Etymology: Named for Ben-Gasahra del Castillo, the oldest son of the collector of the species, Oliveros del Castillo.

Habitat: Wet montane forest (1250 m). This species flowers in April and May under cultivation in Lima and probably during many months of the year under favorable growing conditions.

Kefersteinia bengahra is distinguished from other species by the callus with lateral semielliptic flaps and oblique, divergent, dorsally compressed teeth, the oblong, winged column, and the inconspicuous, very short abaxial column keel with a basal, oblong rib.

Kefersteinia benvenathar D. E. Benn. & Christenson, sp. nov. (Fig. 5)

TYPE: PERU. Pasco: Oxapampa, Puerto Bermúdez, Río Lorenzo, 4 Jun 1992, *O. del Castillo ex Bennett 5606* (HOLOTYPE: USM).

Species haec *K. bertoldii* Jenny similis sed callo curvato carinato differt.

Caespitose epiphytes with elongate fan-shaped growths. *Leaves* oblanceolate, acute, articulated to imbricating sheaths, 7–12 × 1.2–2.0 cm, the petioles conduplicate. *Inflorescences* slender axillary scapes, with a single clasping bract near the middle and a solitary floral bract. *Flowers* campanulate, the sepals yellowish, translucent, the petals similar but with purple spots, the labellum dark purple with a paler, darker spotted plicotee, the callus dark purple, the column pale yellow, the anther pale yellow with several purple spots, the stipe and viscidium hyaline, the pollinia very pale yellow. *Dorsal sepal* obliquely oblong-lanceolate, acute, 11 × 4 mm, with small basal auricles. *Lateral sepals* strongly oblique, ovate-oblong, subfalcate, acute, adnate to the column foot, 12 × 4 mm. *Petals* obliquely oblong-lanceolate, acute, 11 × 4 mm, with small basal auricles. *Labellum* obovate, obtuse, 9.5 × 7.4 mm, deeply concave at the base, constricted at the middle, the proximal lateral margins tightly revolute, the distal lateral margins strongly crisped-undulate, plicate, erose, with a sparsely spiculate surface, the

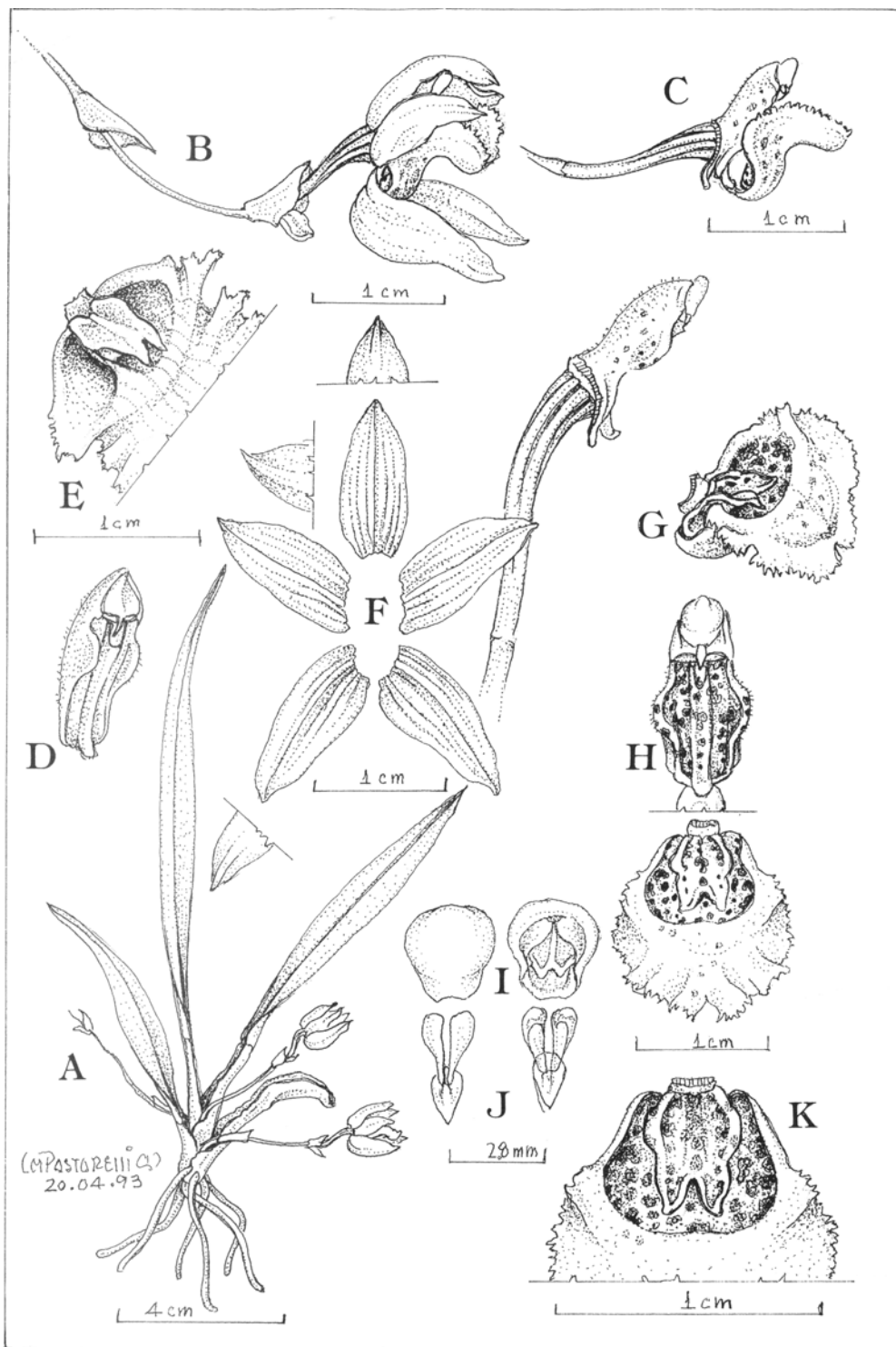


FIG. 4. *Kefersteinia bengasahra* D. E. Benn. & Christenson (drawn from Bennett 5605). A. Plant in flower. B. Flower. C. Column and labellum in profile. D. Column. E. Callus. F. Floral dissection. G. Labellum. H. Column, abaxial view. I. Anther. J. Pollinarium. K. Callus, adaxial view.

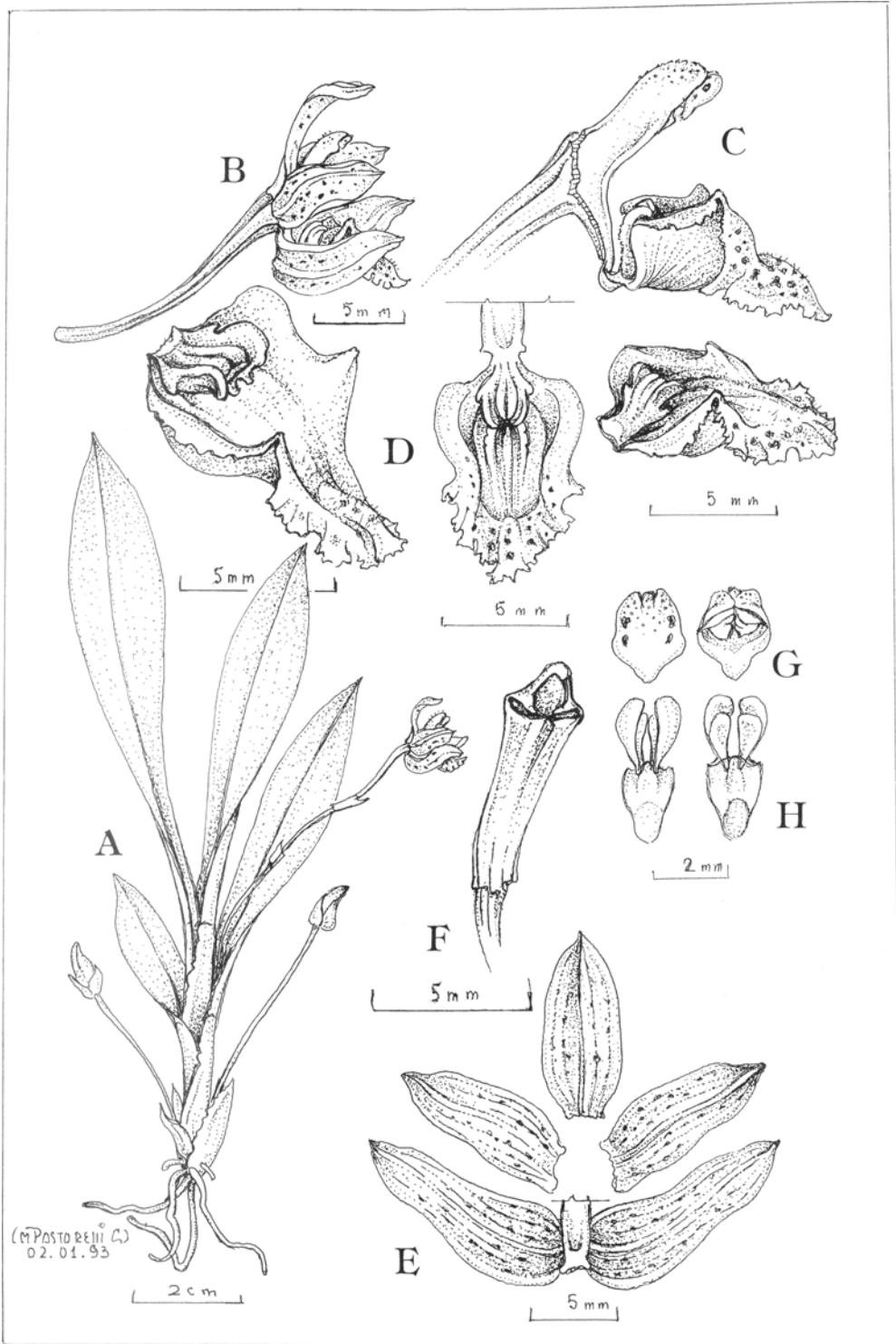


FIG. 5. *Kefersteinia benvenathar* D. E. Benn. & Christenson (drawn from *Bennett 5606*). A. Plant in flower. B. Flower. C. Column and labellum in profile. D. Labellum, three views. E. Floral dissection. F. Column. G. Anther. H. Pollinarium.

callus free, very fleshy throughout, with 2 basal, lateral teeth, 2-ridged in the center, with the apex rounded with 2 short, blunt, downward projecting teeth. *Column* clavate, adaxially sparsely short-spiculate, the abaxially keel diminishing gradually to the base, 9.5×3 mm including the foot, the anther 2×2 mm, the pollinarium 0.35×0.18 mm, the pollinia 4 in two dissimilar pairs, obliquely oblong-claviform, convex-concave, recurved, complanate, larger pair 0.18×0.05 mm, the stipe broadly elliptic, truncate, the viscidium sessile, elliptic.

Etymology: Named in honor of Ben-benvenathar del Castillo, the second son of the collector of this species, Oliveros del Castillo.

Habitat: Tropical forest (250 m), flowering January to February under cultivation in Lima.

Kefersteinia benvenathar is distinguished by the narrow, tightly clasping, imbricate, leaf-bearing sheaths; the obovate labellum with a concave base, tightly revolute lateral margins, and strongly crisped-undulate, plicate apex; and the very thick 2-ridged callus with 2 basal, lateral teeth and 2 deflexed apical teeth. In habit this species is reminiscent of the Ecuadorian *K. lindneri* Dodson.

***Kefersteinia candida* D. E. Benn. & Christenson, sp. nov. (Fig. 6)**

TYPE: PERU. Junín: Tarma, District of Huasahuasi, Caserio Santa Rosa, 28 Nov 1992, *O. del Castillo ex Bennett 5922* (HOLOTYPE: USM).

Species haec *K. lacteae* (Rchb.f.) Schltr. similis sed petalis acuminatis abrupte, callo rhombiformi biporcato, et columna pubescenti differt.

Fan-shaped caespitose epiphytes to 17 cm tall. *Leaves* lanceolate, acute, conduplicate at the base, $11\text{--}17 \times 1.0\text{--}1.5$ cm, articulated to basal sheaths. *Inflorescences* axillary scapes, laxly pendent, the peduncle terete with 2 close basal bracts, the flower with 2 subopposite floral bracts. *Flowers* pure white. *Sepals* subsimilar and subequal, $1.3\text{--}1.5 \times 0.6\text{--}0.64$ cm, the dorsal sepal elliptic-lanceolate, acute, lightly concave, distal margins lightly involute, the lateral sepals ovate-oblong, obtuse or abruptly acute. *Pet-*

als obliquely ovate, abruptly acuminate, 1.3×0.81 cm. *Labellum* suborbicular when expanded, crisped-undulate, margins erose-denticulate, joint of claw and foot of column sharply angled, 1.3×1.5 cm; callus rhombiform, 2-ridged in the center, distal margins repand. *Column* elliptic in outline, winged, abaxial central keel extends only to base of wings, descending below, sparsely pubescent in the middle on both surfaces, the anther granulate distally, the anther dorsally tuberculate, 2.2×1.8 mm, the pollinarium 2.8×1.3 mm, the pollinia 4 in two dissimilar pairs, larger pair 1.6×0.6 mm, the viscidium, ovate, 1.2×0.6 mm. Pedicellate ovary to 1.75 cm long.

Etymology: From the Latin *candidus*, "pure white," referring to the color of the flowers.

PARATYPES: PERU. Pasco: Oxapampa, below Caazu near Los Angeles bridge, 12 Feb 1993, *O. del Castillo ex Bennett 6133* (NY); Junín: Jauja, Dist. Monobamba, Sector Cedrulla, 20 Sep 1993, *Bennett 6316-4* (NY).

Habitat: Montane wet forest (780–2300 m) where it flowers intermittently throughout the year.

Kefersteinia candida is most similar to the mesoamerican *K. lactea* (Rchb.f.) Schltr. but differs by the rhombiform calyx, the abruptly acuminate corolla, and absence of spotting on the column and in the lip. It is distinguished from other white-flowered species by the combination of pure white flowers, a subrhombic labellum with a crisped-undulate, erose-denticulate margin, the sharply angled junction of column foot with the labellum, the rhombic 2-ridged callus with an emarginate apex, and the sparsely pubescent column.

***Kefersteinia escalerensis* D. E. Benn. & Christenson, sp. nov. (Fig. 7)**

TYPE: PERU. San Martín: San Martín, above Tarapoto, in forest along road, 4 Mar 1988, *R. Galvez ex Bennett 4196* (HOLOTYPE: USM).

Species haec *K. sanguinolentae* Rchb.f. similis sed labello margine dentato, callo granulato bidentato, et disco 6-cristato differt.

Small fan-shaped caespitose epiphytes. *Leaves* narrowly lanceolate, acuminate, the

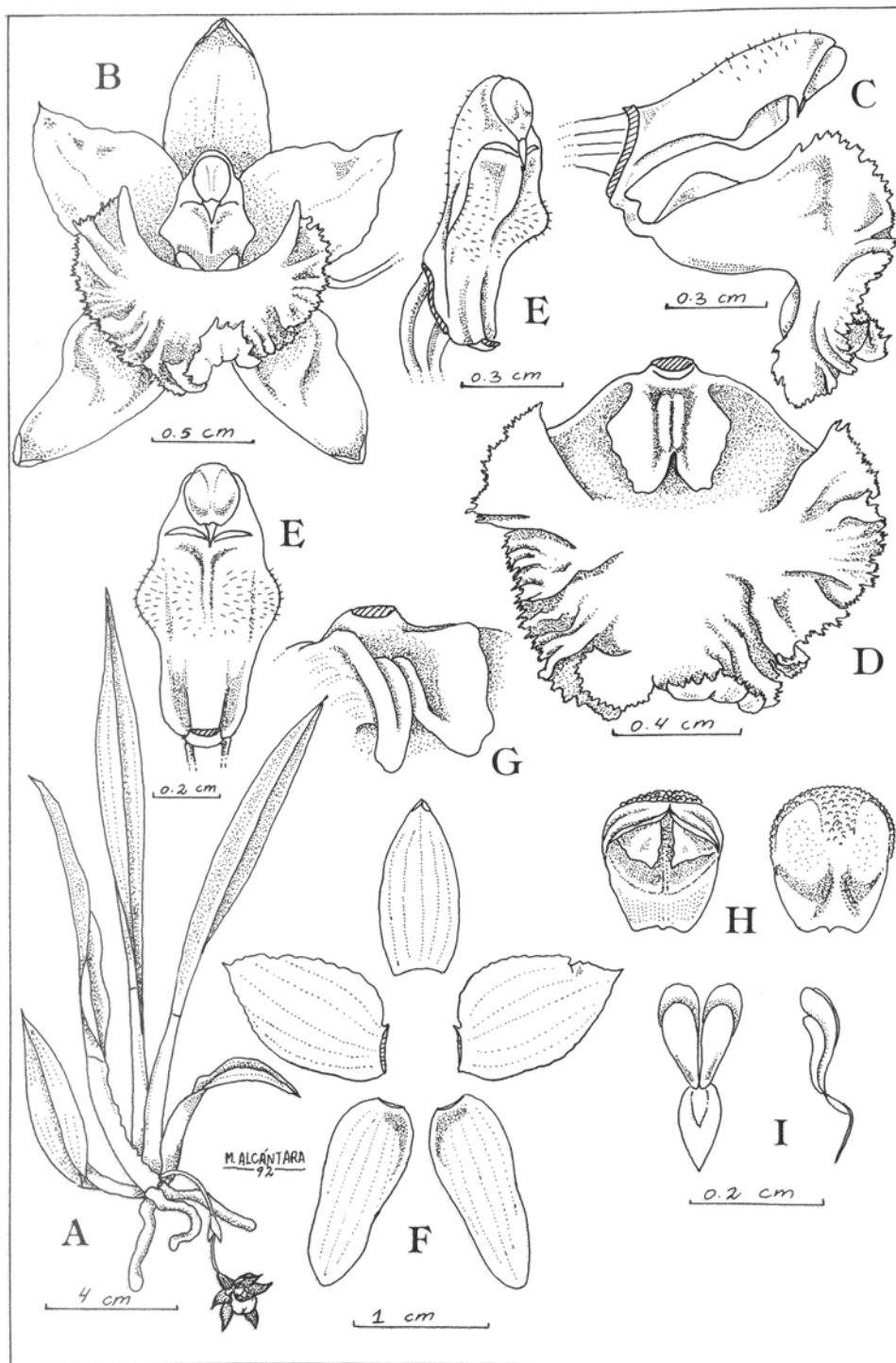


FIG. 6. *Kefersteina candida* D. E. Benn. & Christenson (drawn from Bennett 5922). A. Plant in flower. B. Flower. C. Column and labellum in profile. D. Labellum. E. Column, lateral and frontal views. F. Floral dissection. G. Callus. H. Anther. I. Pollinarium.

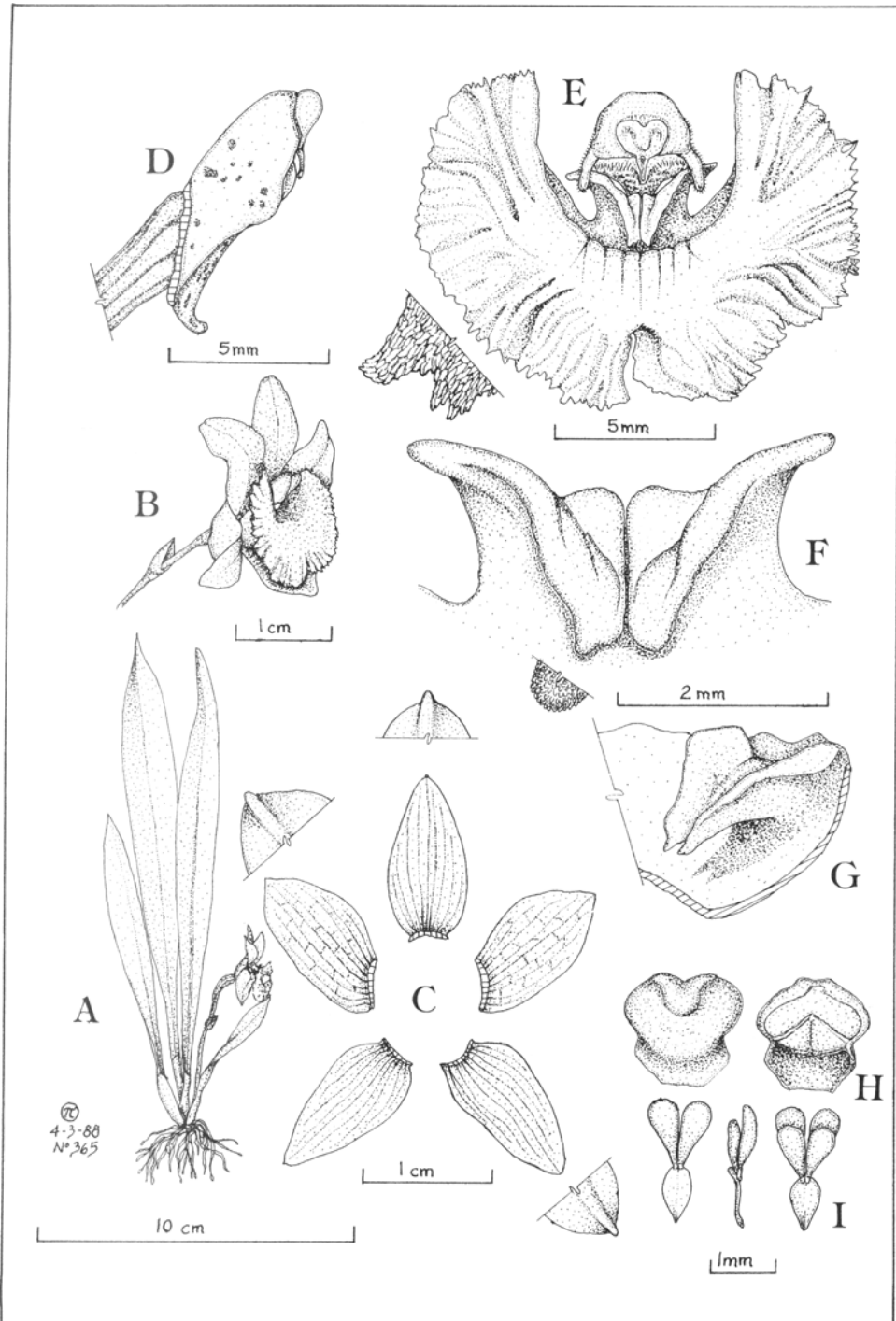


FIG. 7. *Kefersteina escalerensis* D. E. Benn. & Christenson (drawn from Bennett 4196). A. Plant in flower. B. Flower. C. Floral dissection. D. Column. E. Labellum and column, front view. F. Callus, front view. G. Callus, side view. H. Anther. I. Pollinarium.

mid-vein carinate, 10–13 × 1.2–1.4 cm, articulated to imbricate bases. *Inflorescences* axillary scapes, erect or arching, the peduncle flexuous, 4.0 cm long, 0.05 cm in diam., clear green. *Flowers* white, the column white with yellow wings and sparse dark rose-red spots. *Sepals* subsimilar, ovate-elliptic, apiculate, 9-veined, the lateral sepals slightly broader, 1.2 × 0.59–0.62 cm. *Petals* obliquely oblong-elliptic, apiculate. Lip suborbicular, reflexed near the middle, emarginate, margins dentate, 1.36 × 1.4 cm in natural position, disc with 6 low ridges; callus with spreading, recurved basal lobes, bidentate, apical half free, granulate. *Column* fleshy, the wings semielliptic, pubescent, the low abaxial keel diminishing toward the foot, the anther transversely elliptic with a rhombic base, 1.75 × 1.8 mm, the pollinarium 1.9 × 1.0 mm, the pollinia 4, hard, in 2 unequal oblong-lanceolate, complanate pairs, larger pair only slightly convex, the viscidium elliptic, acute.

Etymology: Named after Cerro Escalera, the distinctive mountain behind the city of Tarapoto.

Habitat: *Kefersteinia escalerensis* grows in dense shade, low on tree trunks in wet montane forest (1000 m) where it flowers intermittently throughout the year.

This species is distinguished from other species in the genus by the combination of the dentate margin of the labellum, the 6-ridged disc, and the granulate, bidentate callus.

***Kefersteinia villenae* D. E. Benn. & Christenson, sp. nov. (Fig. 8)**

TYPE: PERU. San Martin: Moyobamba, near Pacaysapa, 31 Oct 1992, R. Villena & B. Collantes ex Bennett 5699 (HOLOTYPE: NY; ISOTYPE: USM).

Species haec *K. lojae* Schltr. similis sed callo rhombiformi differt.

Diminutive fan-shaped epiphytes with very short rhizomes. *Leaves* lanceolate, acute, tapered to the slender, articulated, conduplicate, petiolate base, 8.0–11.2 × 1.0–1.2 cm. *Inflorescences* successive axillary scapes, lax, the peduncle to 4.0 cm long,

pedicellate ovary to 1.0 cm long, the 2 floral bracts, unequal, subopposite, ovate, acute. *Sepals* very pale greenish yellow with faint purplish red dots, the spots paler on distal half, darker and more defined on basal half, the petals more densely spotted, the labellum very pale tan with dark red spots, the column pale yellowish green with abaxial brownish red spots, the anther pale cream yellow. *Sepals* subequal, 1.5–1.7 × 0.5 cm, the dorsal sepal narrowly elliptic lanceolate, apiculate, nearly flat, the lateral sepals obliquely oblong-lanceolate, apiculate, basally concave. *Petals* lanceolate, apiculate, 1.45 × 0.55 cm, recurved at the apex. *Labellum* obovate, 1.2 × 0.9 cm, margins erose-dentate, the callus subrhombic, arcuate, bilobed. *Column* fleshy, winged, 7.9 × 3.5 mm, distal portion of abaxial keel highest below stigma, semioblong-elliptic, below low carinate, the wings below the middle of column, obliquely semiovate, directed back and slightly downward, sparsely pubescent, the anther 1.3 × 1.4 mm, broader than long across the apex, the pollinarium 1.8 mm long, the pollinia in two very unequal pairs, the viscidium hastiform-lanceolate, viscid pad more or less narrowly elliptic occupying a little more than half the length of the viscidium. *Pedicellate ovary* to 1.0 cm long.

Etymology: Named to honor Renato Villena, the collector of the species.

Habitat: From montane rain forest (1100 m) in deep shade, *Kefersteinia villenae* flowers at any time of the year as new growths mature.

This species is distinguished from other species in the genus by the combination of a subrhombic, bilobed callus; the semioblong-elliptic high abaxial keel that diminishes towards the base; the semiovate column wings, atypically below the middle, directed back and slightly downward; and the hastate viscidium.

***Lockhartia* Hook.**

***Lockhartia tuberculata* D. E. Benn. & Christenson, sp. nov. (Fig. 9)**

TYPE: PERU. Junín: Chanchamayo, headwaters of Río Toro near Puente San

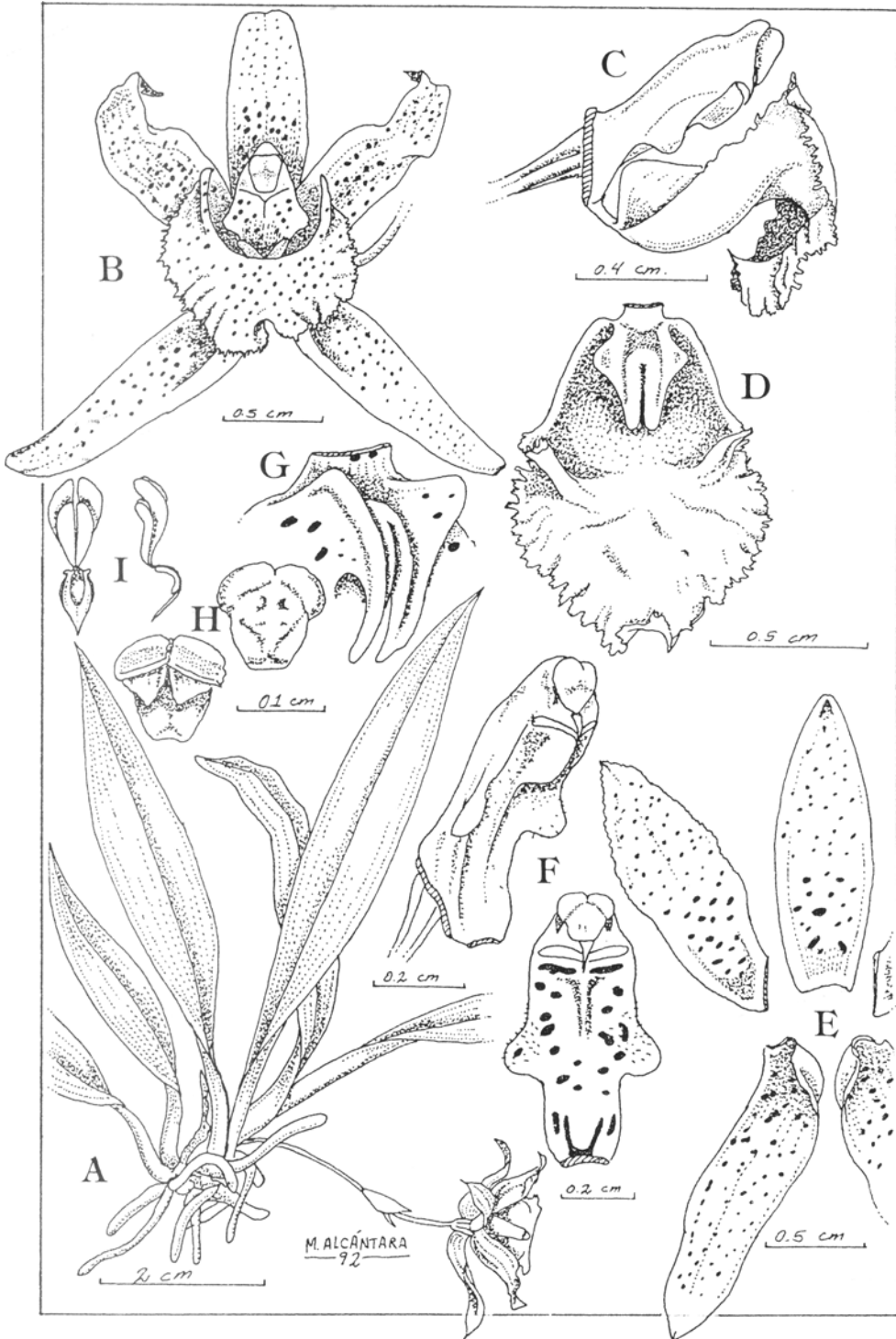


FIG. 8. *Kefersteinia villenae* D. E. Benn. & Christenson (drawn from Bennett 5699). A. Plant in flower. B. Flower. C. Column and labellum in profile. D. Labellum. E. Floral dissection. F. Column. G. Callus. H. Anther. I. Pollinarium.

Felix, 29 Feb 1992, *O. del Castillo ex Bennett 5403* (USM).

Species haec *L. longifoliae* (Lindl.) Schltr. similis sed alis columnae corniformibus et callo tuberculato differt.

Caespitose epiphytes. *Stems* to 25 cm long, wholly concealed by imbricating leaf bases. *Leaves* distichous, bilaterally compressed, sigmoid in side view, acute, to 2 cm long, with hyaline edge. *Inflorescences* subsessile, axillary, solitary flowers near the stem apex, the floral bract tubular, ovate, acute, to 2 mm long. *Flowers* yellow, campanulate. *Sepals* subsimilar, subequal, ovate, acute, concave, 3.3×1.2 mm. *Petals* elliptic-obovate, apiculate, 5×1.8 mm. *Labellum* suborbicular, cuneate, emarginate, convex, 4×4 mm, the margin minutely irregular, the callus of 3 tuberculate, longitudinal ridges, converging to form an elevated, retrorse, tuberculate hook, to 1.4 mm above the disc. *Column* stout, to 2.4 mm long, with large corniform wings. *Pollinia* 2, clavate, 1 mm long.

Etymology: From the Latin *tuberculatus*, "tuberculate," referring to the densely tuberculate callus.

Habitat: From wet montane forest (2100 m), *L. tuberculata* flowers in February and March.

Lockhartia tuberculata is distinguished from other species which bear a subapical erect tooth on the labellum, such as *L. hologlossa* Schltr. and *L. longifolia* (Lindl.) Schltr., by the corniform column wings and tuberculate callus.

Lycaste Lindl.

Lycaste diastasia D. E. Benn. & H. Oakeley, sp. nov. (Fig. 10)

TYPE: PERU. Huanuco: Leoncio Prado, along road to Monzon, 10 Jul 1987, *E. Jara P. ex Bennett 3797* (HOLOTYPE: USM).

Species haec *L. ciliatae* (Ruiz & Pav.) Lindl. ex Rchb.f. similis sed carinis lateralibus divergentibus et viscidiiis sagittatis differt.

Caespitose terrestrials 40–60 cm tall. *Pseudobulbs* ovoid to ovoid-oblong, compressed, sulcate, obtusely angled, scabrous, $9\text{--}12 \times 4.5$ cm. *Leaves* elliptic-lanceolate, acute or acuminate, $32\text{--}45 \times 12\text{--}13$ cm, the

petiole short, channeled. *Inflorescences* short erect basal scapes, 2–6 per pseudobulb, from mature growths, just exceeding the pseudobulb, the peduncle to 17 cm long, 0.6 cm in diam., with several large infundibuliform bracts, the floral bract exceeds the ovary. *Sepals* and *petals* clear green, white at base, the labellum yellow, mid-lobe with or without reddish brown short streaks, base of lateral lobes white, the column and anther white. *Dorsal sepal* oblanceolate to oblong-oblanceolate, acute, $6.5\text{--}7.0 \times 2.4\text{--}2.5$ cm. *Lateral sepals* obliquely elliptic-ovate, falcate, blunt, $6.0 \times 2.3\text{--}3.0$ cm. *Petals* oblanceolate, lightly oblique, acute, $5.4\text{--}5.6 \times 1.6\text{--}1.8$ cm. *Labellum* strongly 3-lobed, $5.6\text{--}6.0 \times 2.5$ cm, the lateral lobes obliquely ovate, acute, erect, involute, the mid-lobe oblong, the emarginate apex strongly deflexed, the mid-lobe margin shallowly lacerate diminishing towards the apex, the claw long with three conspicuous ribs continuing to callus apex, near the middle of disc two marginal ribs arise each soon dividing into a distinct separate pair which are abruptly divergent to the lateral margins well below the apex of the central ribs, the callus border distinctly obtuse-angled near the truncate to shallowly retuse apex. *Column* arcuate, 5.0×0.9 cm, a thick keel below, the lateral margins cord-like thickened from base to just below the anther, basal half and foot with fine, sparse pubescence, the anther bell-shaped, 5.8×2.2 mm, the pollinarium 4.5×4.5 mm, the pollinia 4 in two unequal pairs, subrhombic-obovate, compressed, convex-concave, the larger 2.8×1.8 mm, the smaller 1.8×1.3 mm, the stipe 4.25 mm long, 1 mm broad across the union with pollinia, attenuate below, the viscidium widely transverse, sagittate, 0.18 mm long, 2.5 mm broad.

Etymology: From the Greek *diastasis*, "separation," with reference to the outer pair of callus ribs which are abruptly divergent to the margin of the raised callus well below the apex.

PARATYPES: PERU. San Martin: San Martin, Moyobamba, 4 km downstream along Rio Mayo, 18 Jun 1977, *D. Bennett et al. 3226* (USM), along road to Lamas, 12 Jul 1989, *R. Villena ex D. Bennett 4548* (USM).

Habitat: A terrestrial in montane rain for-

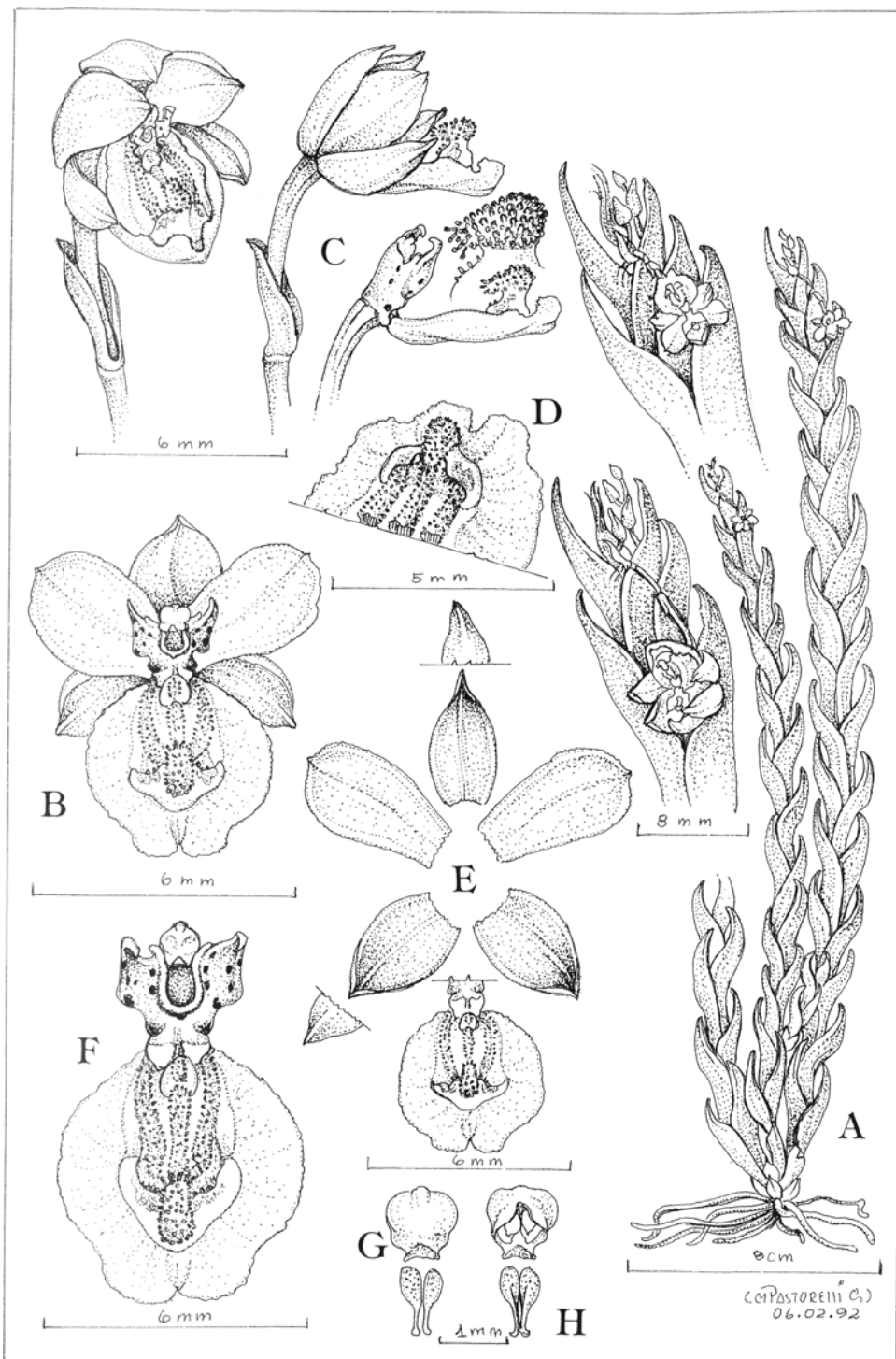


FIG. 9. *Lockhartia tuberculata* D. E. Benn. & Christenson (drawn from Bennett 5403). A. Whole plant in flower. B. Flower. C. Flower in profile with close-up of tuberculate callus. D. Close-up of labellum apex. E. Floral dissection. F. Column and labellum. G. Anther. H. Pollinarium.

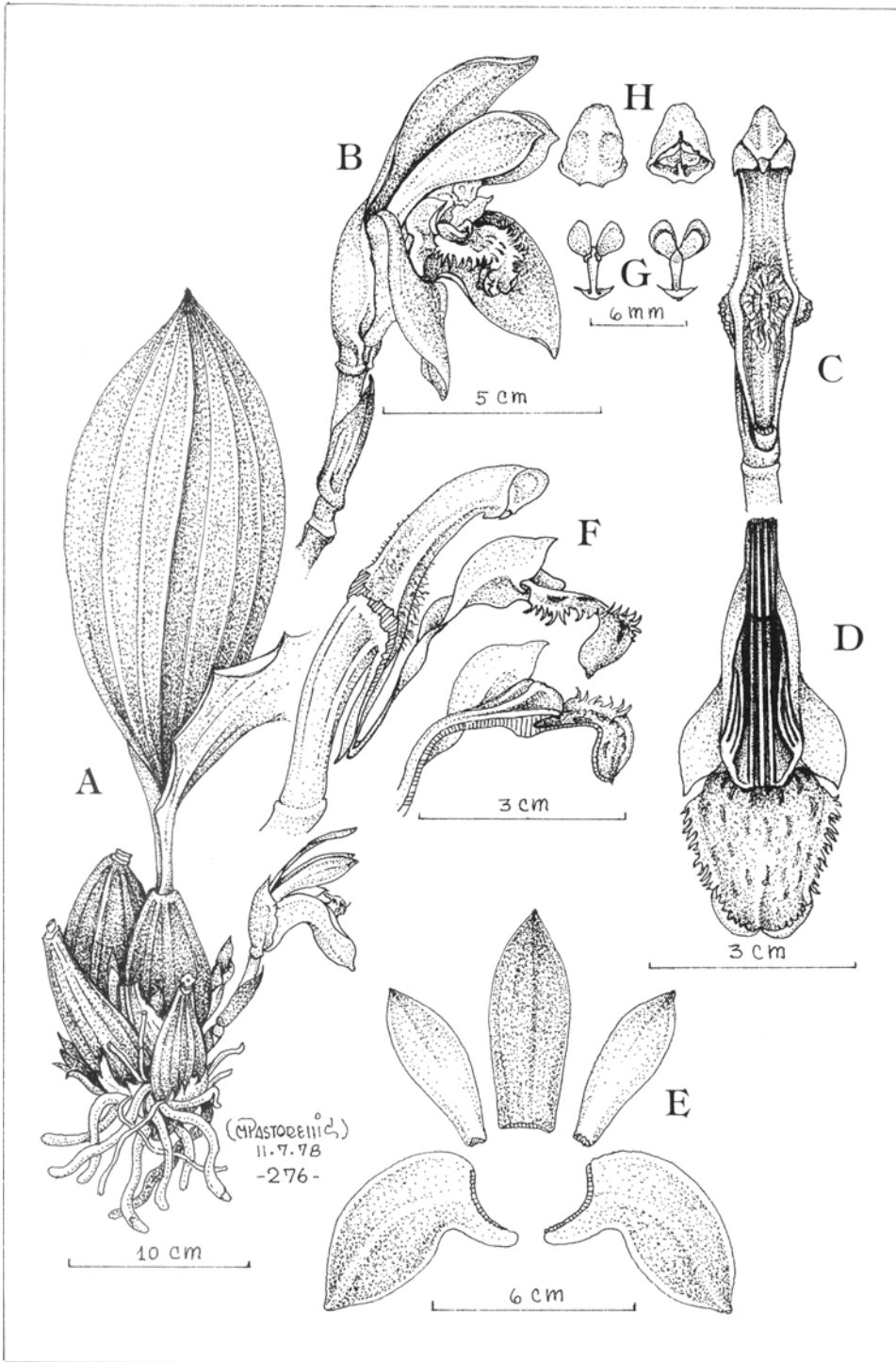


FIG. 10. *Lycaste diastasia* D. E. Benn. & Oakeley (drawn from Bennett 3332). A. Whole plant in flower. B. Flower. C. Abaxial surface of column. D. Labellum. E. Floral dissection. F. Column with labellum in side view; longitudinal section of labellum. G. Pollinarium. H. Anther.

est (750–1350 m), *L. diastasia* flowers from late May through July.

This species is distinguished from other campanulate, green-flowered species by the three straight central and four divergent lateral callus ribs and by the column with a thickened, longitudinal, ventral, keel-like rib and cord-like lateral margins.

Illustration voucher: PERU. San Martin: San Martin, Moyobamba, along road to Roque, Jun 1978, *J. Schunke V. ex D. Bennett 3332* (specimen not made).

Lycaste maxibractea D. E. Benn. & H. Oakeley, sp. nov. (Fig. 11)

TYPE: PERU. Cuzco: La Convención, Quillabamba, along the road between Cuzco and Quillabamba, exact locality not given, 23 Mar 1986, *D. McSorley & L. Moore ex Bennett 3572* (HOLOTYPE: K; ISOTYPE: NY).

Species haec *L. grandi* Fowlie ex Oakeley similis sed bractea florali maxima differt.

Large, robust, caespitose terrestrials with scape subequalling the leaves. *Pseudobulbs* ovoid-oblong, sulcate, 7–10 cm long. *Leaves* lanceolate, acute, 80–95 × 18–21 cm, subcoriaceous, the petioles channeled. *Inflorescences* elongate erect scapes, the peduncle terete, 75–90 cm long, with 5–6 distant, lanceolate, acuminate bracts 9–11 cm long, the floral bract very large, far exceeding the dorsal sepal, ovate-triangular to lanceolate, acuminate, to 13.5 cm long, the margin sparsely, evenly denticulate. *Flowers* very fleshy, apices of sepals and petals conduplicate with thick, carinate tips, color not recorded by collectors. *Dorsal sepal* lanceolate, 7.5 × 1.85 cm, the apex curved upwards slightly. *Lateral sepals* obliquely lanceolate, 9 × 2.1 cm, basally adnate to and forming a short mentum with the column foot. *Petals* obliquely elliptic-lanceolate, 6.6 × 1.9 cm. *Labellum* 3-lobed, 4.9–5.0 cm long when expanded, 2.25 cm across the lateral lobes, the lateral lobes obliquely elliptic-ovate, erect, entire, the mid-lobe ovate, recurved near the middle, apex deeply emarginate, margins completely serrate-dentate, the callus oblong-pandurate in outline, constricted above the middle with

laterally compressed sides, apex retuse with upturned, concave margins, the mid-rib extends to the apex with 2 lateral ribs nearly as long, the claw with 7 nerves thickening into 7 ribs or keels above, 2 of which diminish leaving 5 near the middle including the compressed sides. *Column* convex, arcuate dorsally, with a low ventral keel extending nearly to the dilated base and foot, pubescent on the basal third to half and on the foot.

Etymology: From the Latin *maximus*, “greatest,” and *bractea*, “bract,” referring to the uncommonly large floral bract.

Habitat: Native to steep brush- and grass-covered slopes in wet forest below 2000 m, *Lycaste maxibractea* flowers from May to June.

This species is distinguished from all others in the genus by the very large floral bract and the upturned, concave apical margin of the callus.

Lycaste mezae D. E. Benn. & H. Oakeley, sp. nov. (Fig. 12)

TYPE: PERU. Amazonas: Chachapoyas, above Leimebamba toward the Cordillera Calla Calla, 18 Feb 1992, *J. Meza T. ex Bennett 5417* (HOLOTYPE: NY).

Species haec *L. reichenbachii* Giroud ex Rchb.f. similis sed floribus patentibus suaveolentibus et anthera peculiari differt.

Robust caespitose terrestrials 50–60 cm tall. *Pseudobulbs* narrowly ovoid-oblong, tapered, sulcate, trifoliate, 10–13 cm long. *Leaves* 3, lanceolate, acuminate, 40–45 × 5.5–6.5 cm, with 5 pale green ribs (inner 3 thicker), narrowed below to a short, channeled petiole. *Inflorescence* 1–2 erect, basal scapes, the peduncle 25–36 cm tall, terete, with 5–6 distant, tubular, loose bracts, the floral bract ovate-triangular, far exceeding the ovary, to 5.5 cm long. *Sepals* and *petals* green, the labellum yellowish green, the column pale green. *Dorsal sepal* narrowly elliptic-oblong, shortly acuminate, concave, arcuate, 5-veined, 4.8 × 1.8 cm. *Lateral sepals* elliptic, acute, falcate, recurved, concave, 7-veined, 4.8 × 1.8 when expanded, connate bases adnate to the column foot forming a complanate mentum. *Petals*

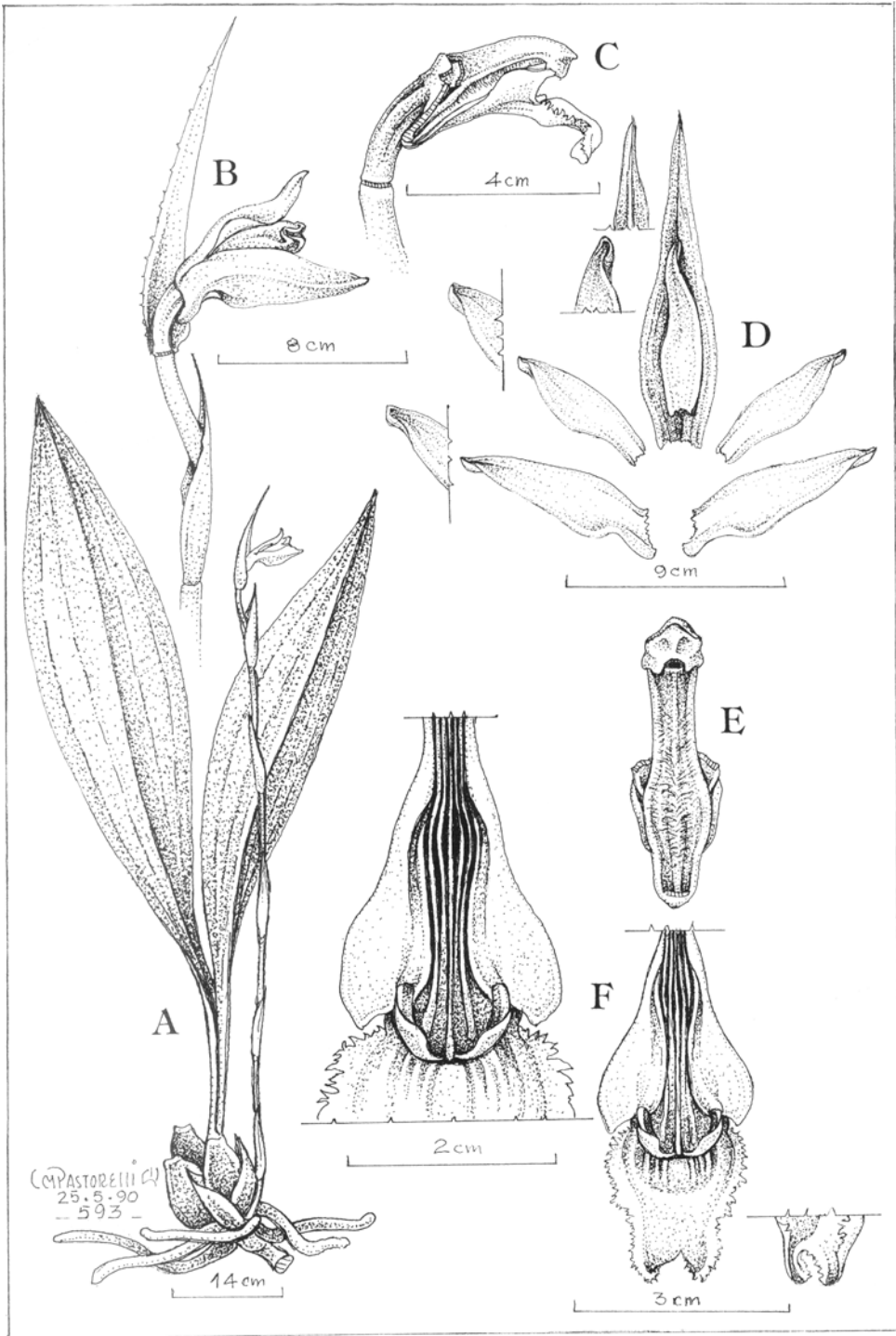


FIG. 11. *Lycaste maxibractea* D. E. Benn. & Oakeley (drawn from Bennett 3572). A. Whole plant in flower. B. Flower. C. Column and labellum, side view. D. Floral dissection with floral bract. E. Column, abaxial view. F. Labellum with close-up of callus.

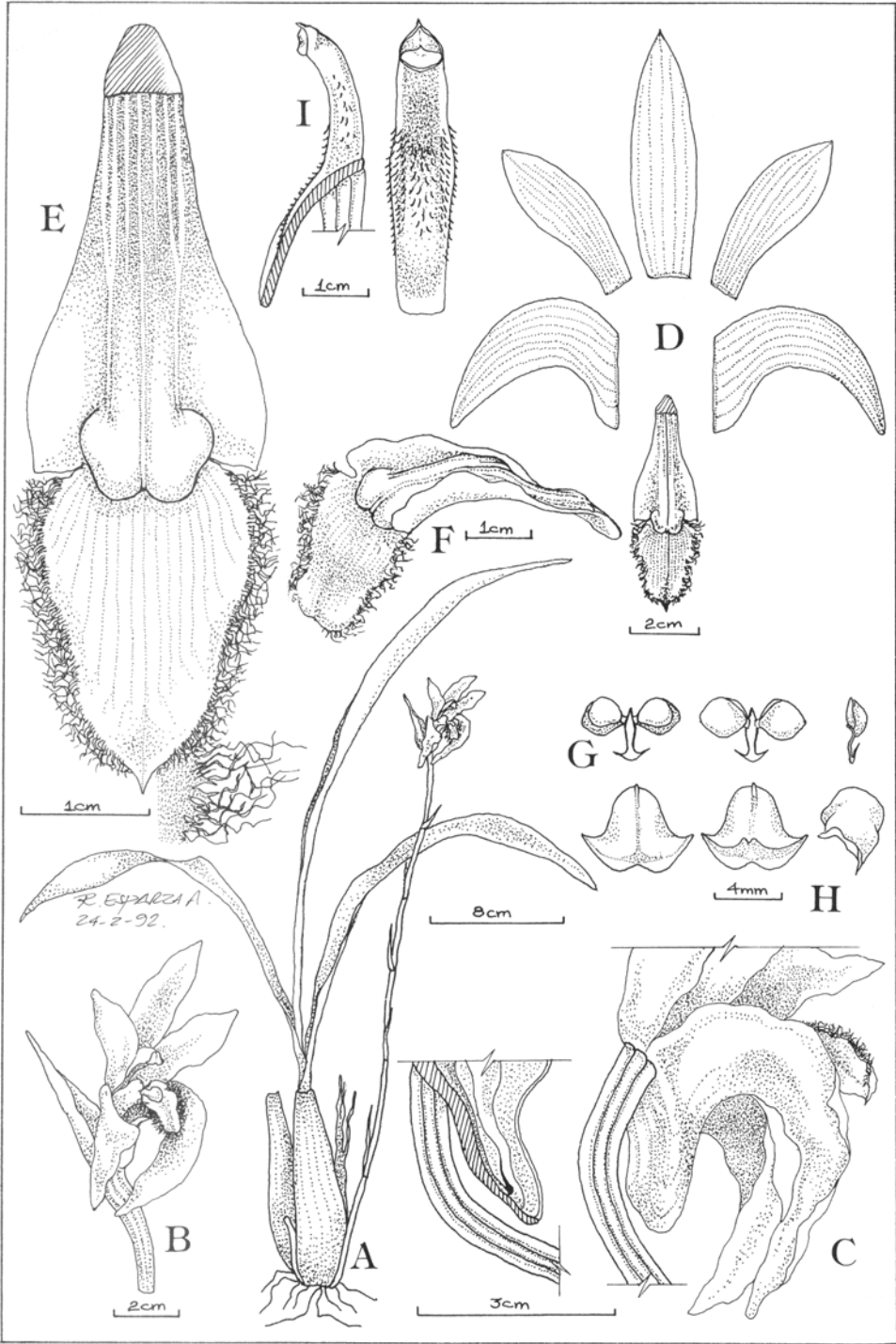


FIG. 12. *Lycaste mezae* D. E. Benn. & Oakeley (drawn from Bennett 5417). A. Whole plant in flower. B. Flower. C. Close-up of mentum and spur with longitudinal section. D. Floral dissection. E. Labellum. F. Labellum in side view. G. Pollinarium. H. Anther. I. Column.

obliquely elliptic-oblongate, subacute, lightly recurved, 7-veined, 5.5 × 2.1 cm. *Labellum* sharply 3-lobed, cuneate, arcuate, 6.3 × 2.0 cm, the lateral lobes obliquely elliptic-ovate, erect, incurved, the mid-lobe ovate, abruptly acute, 17–19 veined, the margins densely covered with a tangled mat of long, branched, flexuous trichomes, the callus fleshy, 4-lobulate, rhombic, at the junction of the mid-lobe with the lateral lobes, with the disc 7-ribbed at the base becoming 3-ribbed by the merging of two outer pairs and the elimination of the ribs directly to either side of the mid-rib, the mid-rib continuing to the apex of the callus, the base of the labellum adnate to the column foot forming a compressed sac. *Column* arcuate, 4.6 cm long, 1.0 cm across the base, sparsely pubescent on the middle abaxial surface of the column and foot, the anther 2.6 × 3.3 mm, shaped like a widely flared bell, the pollinia 4 in two unequal, obovate, compressed pairs, each 3 mm long, the stipe lanceolate, 3 mm long, the viscidium sagittate, 2 mm broad.

Etymology: Named to honor Jorge Meza, the collector and donor of the type specimen.

PARATYPE: ECUADOR. Morona-Santiago: Chiquinda, Aguacate, *Andreetta* 41 (SEL).

Habitat: A terrestrial on open rocky slopes in cool cloud forest (2800 m), *L. mezae* flowers from January through March on un-matured pseudobulbs.

Lycaste mezae is distinguished from other long-pedunculate species by the long, branched, flexuous, tangled pubescence of the labellum mid-lobe, the flattened saccate joint of the labellum base with the column foot, the uniquely shaped anther, and the distinctive sweet fragrance so different from the marine algae-like odor of *L. reichenbachii* (which it superficially resembles). Ecuador is included in the range of *L. mezae* on the basis of *Andreetta* 41, published as *L. trifoliata* F. Lehm. ex Mast. (Dodson & Dodson, 1982).

Macroclinium Barb. Rodr.

Macroclinium christensonii D. E. Benn., sp. nov. (Fig. 13)

TYPE: PERU. Junín: Chanchamayo, Gran Playa Centro, 4 Aug 1991, *O. del Castillo ex Bennett* 5160 (HOLOTYPE: NY).

Species haec *M. aurorae* Dodson & D. E. Benn. similis sed pseudobulbis carens, foliis distichis imbricatis glabris, inflorescentia subumbellata 1–2 ramulis subumbellatis lateralibus brevissimis instructa, columna brevi recta apice dilatata triloba, polliniis turbinatis complanatis differt.

Small, psygmoid, twig epiphytes to 6 tall and broad. *Leaves* sigmoid, conduplicate basally, bilaterally compressed apically, distichous, imbricate, glabrous, 2.5 × 0.6 cm. *Inflorescences* sequential from leaf axils, 6–7-flowered subumbels subsequently followed by lateral branches arising just below the primary rachis, the peduncles filiform with 2–4 subremote lanceolate bracts. *Flowers* with sepals dull white tinted purple apically, the petals basally white with 3–4 broad, rose-purple transverse bands, dark purple above, the labellum claw white, rose-purple above, the column base yellowish, above pale yellowish lavender, the anther white and pale lavender, the pollinia cream-yellow on a white stipe. *Sepals* similar, lanceolate, long acuminate, 15–16 × 1.8 mm, the lateral sepals fused shortly at base. *Petals* obliquely lanceolate, curved and recurved above the middle, 12 × 1 mm. *Labellum* 3-lobed, the claw dilated, stout, with a thick clavate callus, the basal lobes auriculate, retrorse, separated from the mid-lobe by a conspicuous claw with evenly incurved, slightly revolute margins, the mid-lobe elliptic, long acuminate, basal margins serrulate, 10 × 2.5 mm. *Column* short, apically dilated in 3 fleshy lobes, the anther bed raised along the middle with a subcrenulate ridge, 5.5 mm long, 1.4 mm broad across the apex; stigma elongate, narrowly lanceolate in outline; anther apex scrotiform, base slipper-shaped, 2.7 × 1 mm; pollinarium 2.8 × 0.4 mm, the stipe margins lightly revolute, strongly tapered below to the cordiform viscidium, the pollinia 2, equal, turbinate, complanate.

Etymology: Named to honor Dr. Eric A. Christenson for his immeasurable contributions to the knowledge of Peruvian orchids.

Habitat: A twig epiphyte in wet montane

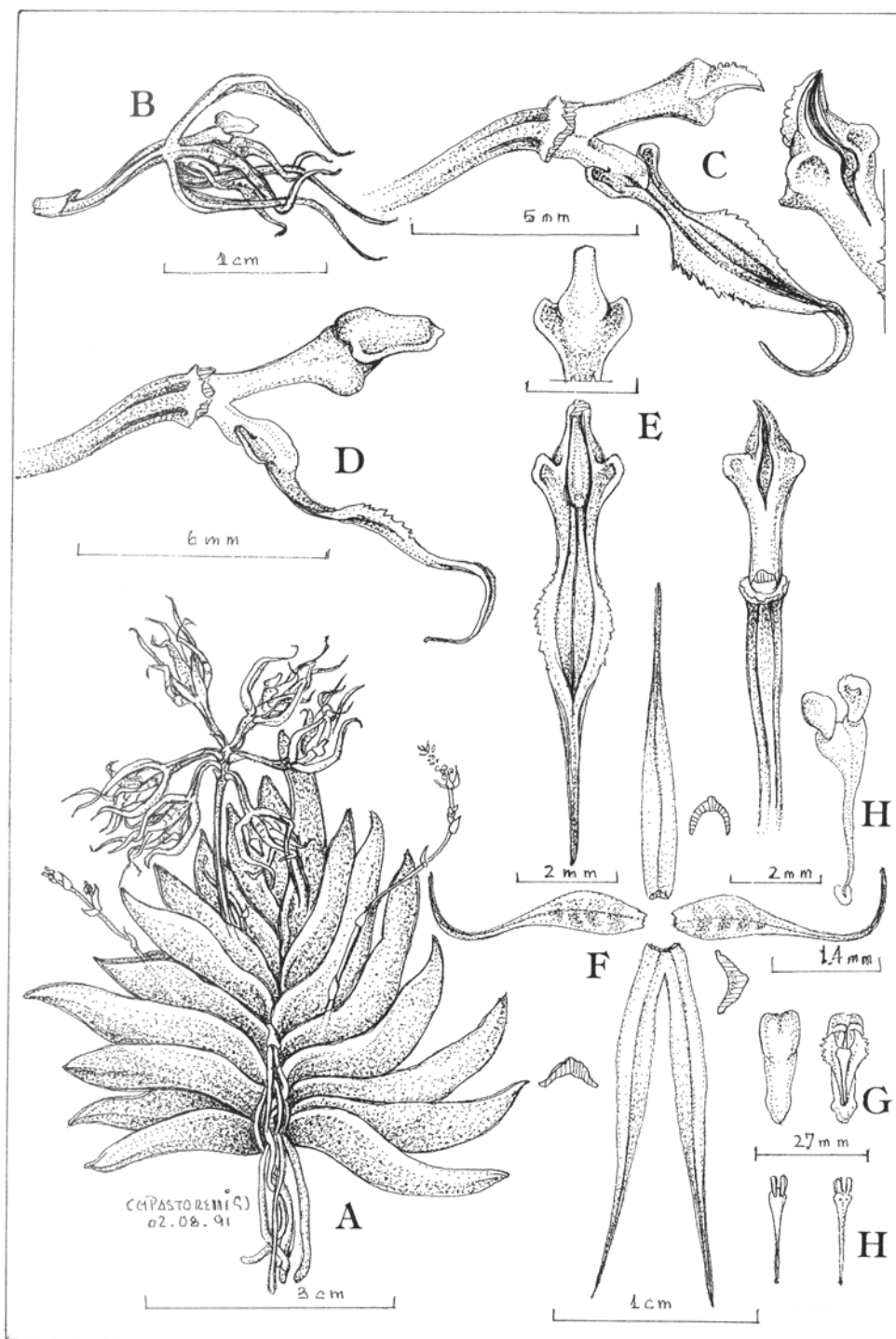


FIG. 13. *Macroclinium christensonii* D. E. Benn. (drawn from Bennett 5160). A. Plant in flower. B. Flower. C. Column and labellum in profile showing callus. D. Column and labellum in profile with the labellum in longitudinal section. E. Column, abaxial and adaxial views and labellum. F. Floral dissection. G. Anther. H. Pollinarium.

forest (1800 m), *Macroclinium christensonii* probably flowers during many months of the year as the stem elongates and new leaves emerge.

The species is distinguished from other species by the combination of psymoid habit with apically branched, very short, subumbellate inflorescences, the short, straight, apically dilated 3-lobed column, and the serrulate margins of the labellum midlobe.

Oncidium Sw.

Oncidium boliviense Rolfe, Bull. N. Y. Bot. Gard. 4: 452. 1907. TYPE: BOLIVIA. Yungas: Coripati, 16 May 1894, *Bang 2196* (HOLOTYPE: K; ISOTYPES: LE, NY); emend D. E. Benn. & Christenson (Fig. 14)

Caespitose terrestrials with scapose paniculate inflorescences to 110 cm tall. *Pseudobulbs* ovoid, lightly compressed, 7.5 × 3.5 cm. *Leaves* 3, linear-oblong to linear-oblancoate, petiolate base conduplicate, acute, stiff, 40 × 2 cm. *Inflorescence* stiffly erect, with 8 or more lightly flexuous branches bearing 8–10 flowers each. *Sepals* and *petals* yellow with muddy-brown bars and large markings, the labellum brilliant clear yellow, callus pale tan-white with pale brown and dark brown spots, surrounded by a large, pale brown area, the column and the anther green. *Dorsal sepal* oblong, cuneate above and below, clawed, tip obtuse, 7.5 × 3.5 mm. *Lateral sepals* lanceolate, oblique, falcate, 8 mm long. *Petals* oblique, ovate-oblong, basally concave clawed, obtuse, 8 × 6 mm expanded. *Labellum* 3-lobed, basal lobes with spreading, oblancoate auricles, a broad median claw, midlobe subreniform, 1.25 × 1.6 cm, the callus with several spreading lamina and teeth basally, continued in front with 3 lobulate, toothed lamellae. *Column* stout, wings large, 3-lobed, tabula infrastigmatica geniculate, the anther ovate, with a central adaxial keel, 1.6 × 1.2 mm, the pollinarium 1.6 × 0.8 mm, the pollinia 2, obovate, cleft, 0.6 × 0.4 mm, the stipe linear, 1 × 0.2 mm, the viscidium minute, orbicular.

Specimens examined: BOLIVIA. N. Yungas: Miluguaaya, Dec 1917, *O. Buchtien 4209* (NY).

PERU. Pasco: Pasco, below Paurcatambo along the road between Yuncan and Yaupi, *D. A. & G. Bennett 4514* (USM).

Habitat: Common on grass- and brush-covered slopes from 1500 to 2600 m, *O. boliviense* flowers from January through March in Peru during the rainy season.

We take this opportunity to emend and amplify Rolfe's description, provide the first illustration of this species, and extend the known range to include Peru. Rolfe described *O. boliviense* as having one leaf. That observation was an artifact of the herbarium specimen available to him at Kew. One of the isotypes at NY also appears to bear one leaf (i.e., the apical leaf was lost during processing of the material). Examination of two other isotypes (LE & NY) as well as subsequent collections from Bolivia and Peru shows *O. boliviense* to typically bear 2–3 leaves. This species is very similar to Brazilian plants referred to *O. hydrophilum* Barb. Rodr. (probably representing a suite of species in Brazil), differing by the many-branched paniculate inflorescence, the broader petals and lateral sepals, differences in the callus, and habitat at high elevation.

Oncidium orthostatoides D. E. Benn. & Christenson, sp. nov. (Fig. 15)

TYPE: PERU. San Martin: Tarapoto, 15 Dec 1987, *R. Galvez ex Bennett 3939* (HOLOTYPE: USM).

Species haec *O. orthostatem* H. N. Ridley simulans sed alis columnae flexae crenulatis, et lobis lateralibus orbiculatis differt.

Medium-sized epiphytes. *Pseudobulbs* approximate, ellipsoid, compressed, bifoliate, 5.5 × 3.5 cm. *Leaves* narrowly oblancoate, acute, 20–23 × 4.3 cm, the petiolate base conduplicate. *Inflorescence* paniculate, long pedunculate, subfractiflex to 77 cm or more tall, the short lateral branches laxly 4–5-flowered the peduncle with 8 or more distant, small, ovate, acute bracts. *Flowers* showy, the sepals and petals brilliant yellow with purple markings on the outer surface, the labellum brilliant yellow, the callus purplish with yellowish white teeth, the column similarly colored to the callus, the anther marked yellow and purple, the pollinia shiny yellow, the stipe semitranslucent white, the

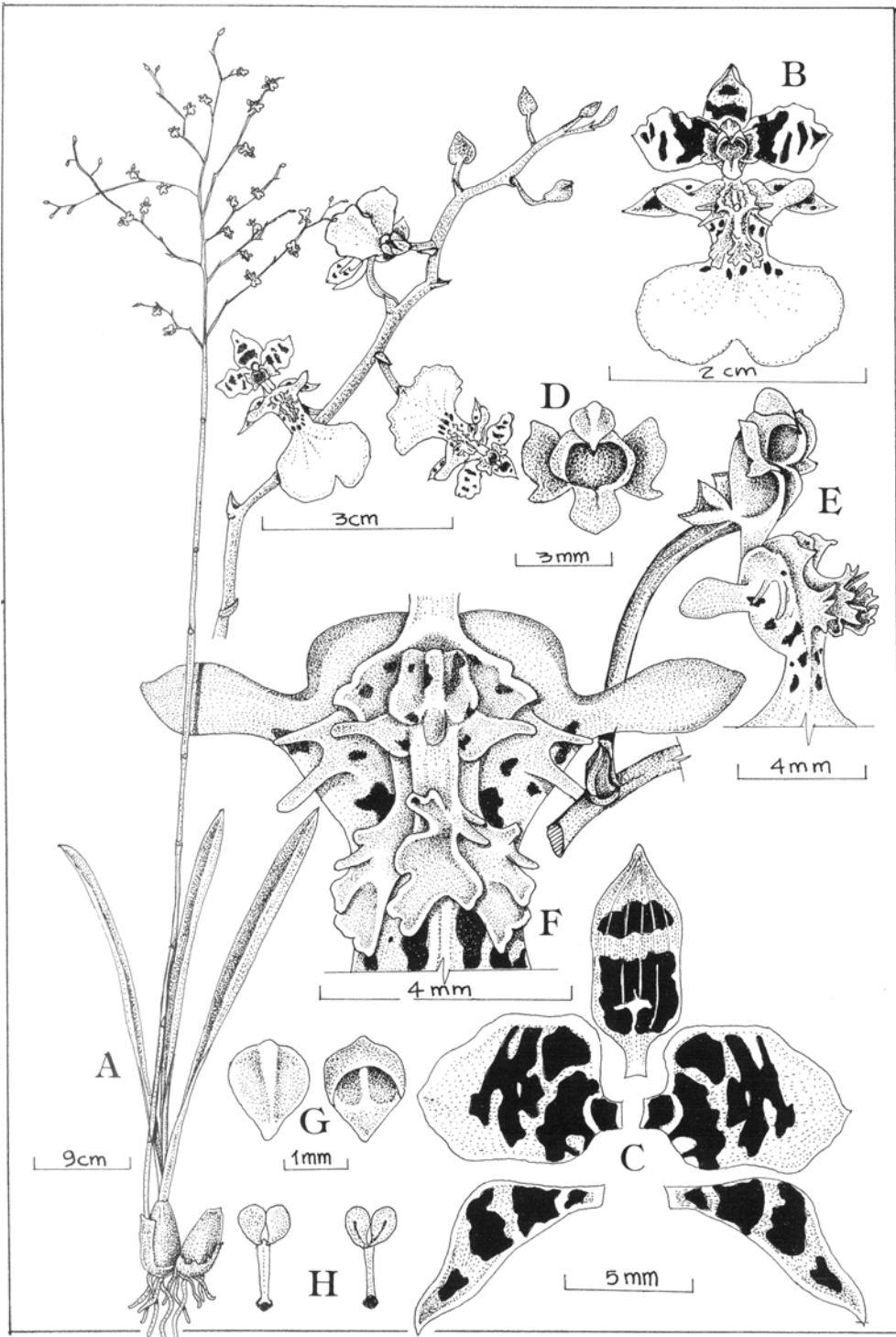


FIG. 14. *Oncidium boliviense* Rolfe (drawn from Bennett 4514). A. Plant in flower. B. Flower. C. Floral dissection. D. Column apex. E. Column and base of labellum in profile. F. Callus. G. Anther. H. Pollinarium.

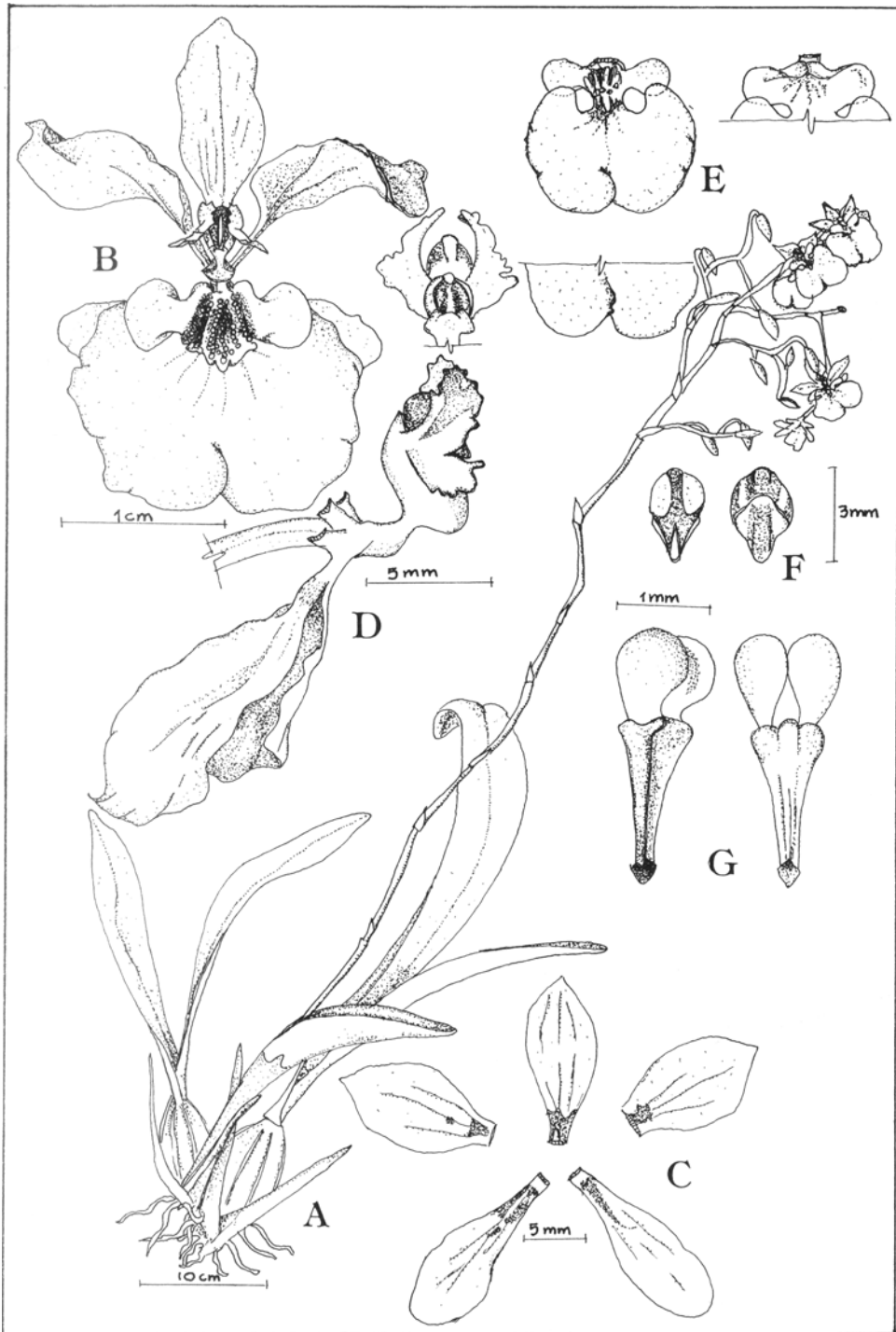


FIG. 15. *Oncidium orthostatoides* D. E. Benn. & Christenson (drawn from Bennett 3939). A. Plant in flower. B. Flower. C. Floral dissection. D. Column in profile. E. Labellum with details of lateral lobes and apex. F. Anther. G. Pollinarium.

viscidium purple. *Dorsal sepal* and *petals* subsimilar, elliptic-lanceolate, clawed, acute, 13×5.5 – 6.5 mm, the petals broader. *Lateral sepals* subspathulate, clawed, shortly connate basally, 14×4.5 mm. *Labellum* 3-lobed, transverse, 1.5×1.8 cm, the lateral lobes much smaller, revolute, basally subcordate, the mid-lobe suborbicular, emarginate with overlapping lobules. *Column* bent upward from the more or less terete base, abruptly expanded above, the antrorse wings large, irregularly crenulate, tabula infrastigmatica thick, transverse, with 2 diverging geniculate-rounded margins separated by a low central ridge; anther 3×1.5 mm; pollinarium 2.6×1 mm, the pollinia 2, hard, obpyriform, obliquely obpyriform when viewed from the side, the stipe convex-concave, margins lightly recurved, the viscidium minute, oval-shaped.

Etymology: From the Greek comparative "oides" implying a close resemblance to *Oncidium orthostates* Ridl.

Habitat: An epiphyte in wet montane forest (950–1000 m), *O. orthostatoides* flowers from November through February.

Oncidium orthostatoides is readily separated from its sister species *O. orthostates* (Brazil, Venezuela, and Guyana) by its larger, crenulate column wings and strongly bent column.

Polycynis Rchb.f.

Polycynis trullifera D. E. Benn. & Christenson, sp. nov. (Fig. 16)

TYPE: PERU. Huanuco: Leoncio Prado, Tingo Maria, 7 Jul 1978, *J. Schunke V. ex Bennett 3376* (HOLOTYPE: USM).

Species haec *P. barbatae* (Lindl.) Rchb.f. similis sed labelli lobis lateralibus angustis incurvatis et lobo medio trullato differt.

Caespitose terrestrials to 55 cm tall. *Pseudobulbs* ovoid-pyriform, 4–6 angled, lightly sulcate, 4–6 cm long, 3 cm in diam. *Leaf* 1, broadly elliptic, acuminate, 47×24.5 cm, with a petiole to 5 cm long, 0.6 cm in diam. *Inflorescence* suberect-arching racemes, 55 cm long, 2 mm in diam., the peduncle, rachis and ovaries spiculate, the 4–5 peduncular bracts tubular, 2.5–3.0 cm long, the

floral bracts ovate-triangular, 1.4 cm long, much shorter than the ovary. *Flowers* 15–18, appearing limp, the sepals and petals cream yellow with red dots and spots, the labellum hypochile pale greenish cream-yellow moderately spotted with purplish-red, the center of the claw white with similar spots, the callus white dorsally, otherwise purplish-red, pubescence hyaline, the epichile white with reddish-purple spots along basal margins and on the distal half, the column green heavily overlain with reddish-purple spots, the anther cream-yellow, the stipe and viscidium semitranslucent white and the pollinia cream-yellow. *Sepals* subsimilar, spreading, lanceolate, acuminate, to 39×9 mm, the lateral sepals oblique. *Petals* subfiliform, pendulous, 42×3 mm. *Labellum* 3.3×1.1 cm, the hypochile with two basal incurved, thickened auricles, more or less triangular, in front with a short thick claw expanding gradually in two large convex-concave, incurved, obliquely tapered lobes with suboblong, acute apices, with a central ridge dilated apically into a large, laterally compressed, semielliptic free callus, the epichile trullate, apically complicate-concave with a lightly upturned apex, the claw, base of lateral lobes, callus, and epichile hispid. *Column* slender, arcuate, gradually clavate above, 28 mm long, the anther oblong-ovate, constricted slightly below the apex, 4.5×1.6 mm, the pollinarium 4.6×1 mm, the pollinia linear-oblancheolate, parallel, 2.2×0.5 mm, the stipe linear-oblancheolate, 2.2×0.5 mm, viscidium minute.

Etymology: The species is named for its trullate epichile of the labellum.

Habitat: A terrestrial on densely shaded, moist cliffs in montane rain forest (700 m), *Polycynis trullifera* flowers in January and February.

Polycynis trullifera is closely related to *P. barbata* (Lindl.) Rchb.f., a plant probably restricted to Costa Rica and western Panama (Dressler, in litt.). It is distinguished from other species of the *P. barbata* complex by the broadly elliptic, petiolate leaf, the subfiliform petals, the trullate epichile of the labellum, the hispid labellum with a large, complanate, free callus, and the terrestrial habit.

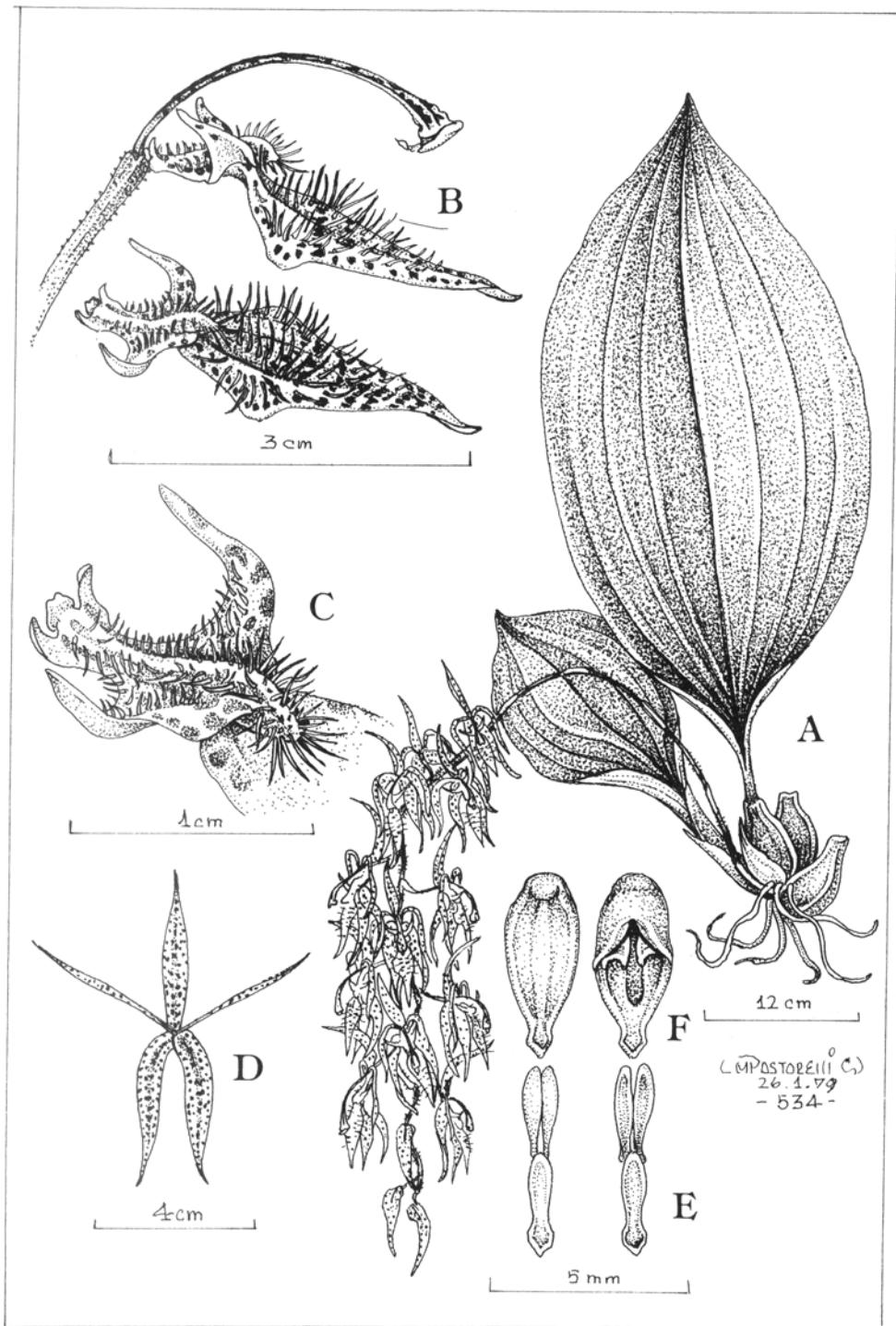


FIG. 16. *Polycynis trullifera* D. E. Benn. & Christenson (drawn from Bennett 3376). A. Plant in flower. B. Column and labellum in profile; labellum in detail. C. Close-up of callus and lateral labellum lobes. D. Perianth. E. Pollinarium. F. Anther.

Scelochilus Klotzsch

Scelochilus campoverdei D. E. Benn. & Christenson, sp. nov. (Fig. 17)

TYPE: PERU. Pasco: Oxapampa, District Villarica, Cumbre de Bocaz, 13 Mar 1993, *J. E. Campoverde ex Bennett 6151* (HOLOTYPE: NY).

Species haec *S. paraguaensis* Garay & Dunsterv. similis sed labello basi hirsuto et foliis latis differt.

Small caespitose twig epiphyte. *Pseudobulb* ellipsoid, complanate, unifoliate, 14 × 6 mm. *Leaf* elliptic-lanceolate, acuminate, basally conduplicate, mid-vein keeled, to 7 × 2.5 cm, shortly petiolate. *Inflorescences* basal, more or less erect, laxly paniculate, with few-flowered lateral branches. *Flowers* with sepals pale green marked pale violet, the petals whitish, mid-vein greenish, with dark purple small spots and broken lines, the labellum cream-white, calli teeth and disc yellow, the column pale green tinted cream-yellow, the anther dark violet-purple, the pollinia pale yellow, the stipe cream-yellow, the viscidium ochre. *Dorsal sepal* oblong-obovate, concave, subacute, 7.3 × 3.3 mm. *Lateral sepals* concave, connate for $\frac{3}{4}$ their length, elliptic in outline, the two apical lobes overlapping, basally bisaccate, 12 × 4 mm when expanded, with two lateral swellings. *Petals* obliquely elliptic-obovate, obtuse, subacute, 8.9 × 4.0 mm. *Labellum* 12 × 6 mm, basal half semiterete, oblong, glabrous below, sparsely hirsute above, extended into a pair of pointed spurs, the lamina broadening near the middle, the mid-lobe with basal margins laciniate-fimbriate, with two strongly compressed, vertical lamellate keels ascending close to the lateral margins which form two antrorse, conical lobules whose forward edges descend to the disc, in front with two parallel, subapproximate, antrorse, lightly complanate, obtuse teeth, the mid-margins with a deep fold, the lamina broadly rounded apically, minutely papillose. *Column* joined to the labellum by a common keel, gradually dilated above, ventrally concave, from the middle a thin, high, continuous border around the stigma forming a membranous, cucullate hood around anther bed, 7.5 × 2.5 mm; the pollinia 2, hard, subglobose-napiform, 0.7 ×

0.6 mm; the stipe obovate, acuminate, 1.1 × 0.5 mm; the viscidium elliptic, relatively thick, 0.3 × 0.2 mm.

Etymology: Named to honor José Edén Campoverde, an intrepid collector of Peruvian orchids.

Habitat: On twigs high in the canopy of very wet montane forest (1925 m), *Scelochilus campoverdei* flowers in February and March.

Scelochilus campoverdei is distinguished from other species of the genus by the combination of the lateral swellings and bisaccate base of the partially connate lateral sepals with their subacute, overlapping apical lobes, by the hirsute basal half of the labellum, and by the labellum with long conical horns, 2 retrorse lamellae, 2 antrorse calli teeth, and laciniate-fimbriate margins.

Trichosalpinx Luer

Trichosalpinx glabra D. E. Benn. & Christenson, sp. nov. (Fig. 18)

TYPE: PERU. Junín: Tarma, Caserío Santa Rosa in District of Huasahuasi, 28 Nov 1992, *O. del Castillo ex Bennett 5927* (USM).

Species haec *T. ciliari* (Lindl.) Luer similis sed labello glabrato differt.

Small caespitose epiphytes. *Stems* to 6 cm long, concealed by clasping, ciliate-lepanthiform bracts. *Leaf* 1, elliptic-lanceolate, acute, 4.8 × 1.4 cm, coriaceous, thickest in the middle. *Inflorescences* fasciculate, numerous, short, each successively 2-flowered. *Flowers* subringent, the dorsal sepal translucent greenish, apex intense orange, the lateral sepals with apical third translucent orange, basally dark lavender, the petals translucent greenish, the labellum dark lavender with yellow apices, the column pale lime-green. *Dorsal sepal* oblong, acute, concave, 6.5 × 3 mm, the apical margin sparsely ciliate. *Lateral sepals* connate throughout the basal two thirds, concave, 9 × 7 mm, forming a conspicuous mentum with the column foot, margins sparsely ciliate, the free apices triangular with the external faces rounded. *Petals* obliquely oblong, apex triangular and serrate-ciliate, 3 × 1 mm. *Labellum* shallowly 3-lobed, pandurate, 4 × 1.8 mm, the lateral lobes semirhombic, erect,

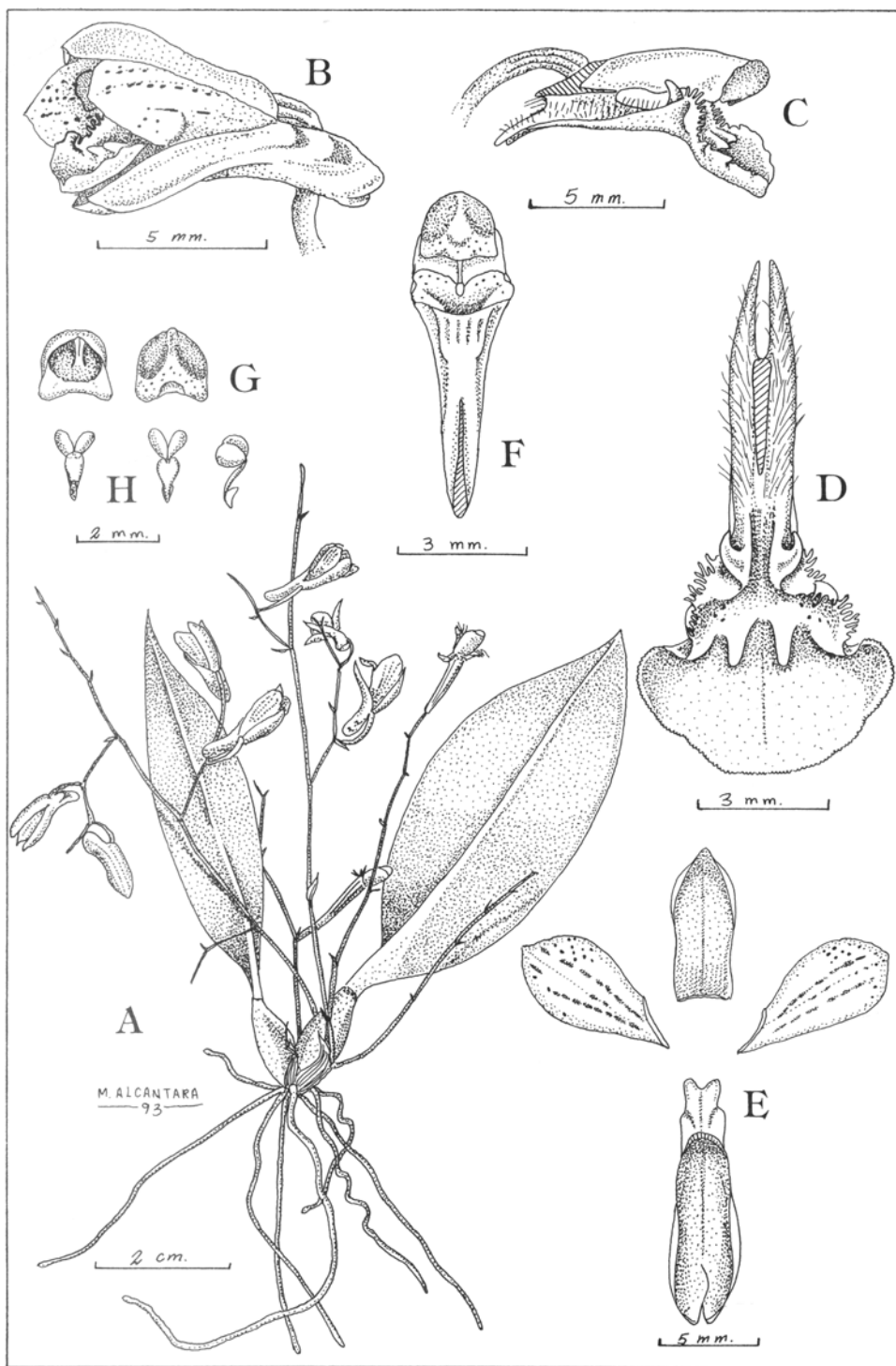


FIG. 17. *Scelochilus campoverdei* D. E. Benn. & Christenson (drawn from Bennett 6151). A. Plant in flower. B. Flower in profile. C. Column and labellum in profile. D. Labellum. E. Floral dissection. F. Column, abaxial view. G. Anther. H. Pollinarium.

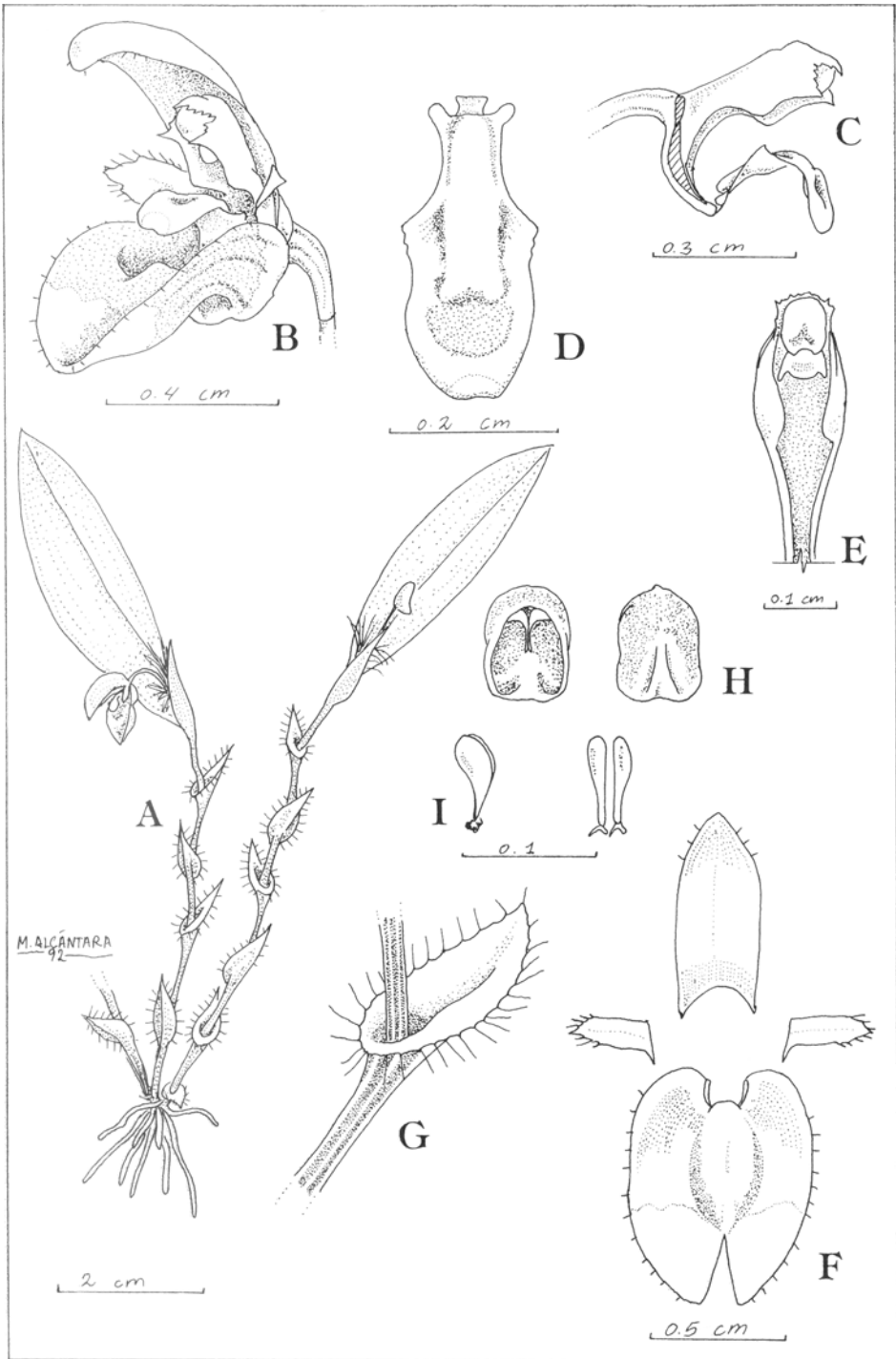


FIG. 18. *Trichosalpinx glabra* D. E. Benn. & Christenson (drawn from Bennett 5927). A. Plant in flower. B. Flower. C. Column and labellum in profile. D. Labellum. E. Column, abaxial view. F. Floral dissection. G. Lepanthisform sheath. H. Anther. I. Pollinarium.

the mid-lobe bluntly rounded, deflexed, basally clawed and auriculate, with a slightly raised oblong callus. *Column* clavate, 3.5 × 1.5 mm, apex tridentate, margins serrate, wings broad, the pollinia 2, obliquely claviform, laterally complanate, 0.6 × 0.25 mm.

Etymology: From the Latin *glaber*, "glabrous," in reference to the totally glabrous labellum.

Habitat: Found in damp forest of arroyos of lower sierra (1800 m), *Trichosalpinx glabra* flowers throughout many months of the year.

This species is distinguished from other successively flowered species by the apically sparsely ciliate sepals, the oblique petals apically serrate-ciliate, the subpandurate glabrous labellum, and the tridentate-serrate column apex.

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