

ICONES PLEUROTHALLIDINARUM
XIV

SYSTEMATICS
OF
DRACONANTHES

LEPANTHES
SUBGENUS MARSIPANTHES

AND

SUBGENUS LEPANTHES
OF
ECUADOR

ADDENDA TO BRACHIONIDIUM, LEPANTHES subgen.
BRACHYCLADIUM, PLATYSTELE, PLEUROTHALLIS subgen.
AENIGMA and subgen. ANCIPIITIA

(ORCHIDACEAE)



Missouri Botanical Garden







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Carlyle A. Luer



Missouri Botanical Garden

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Draconanthes bufonis: Ecuador, province of Loja, above Jimbura, altitute 3150 meters,
21 March 1984, photo by Alexander C. Hirtz.

SYSTEMATICS OF *DRACONANTHES* (ORCHIDACEAE)

ABSTRACT

A new genus is proposed in the Pleurothallidinae to accommodate two related species without close relationships that have been treated previously in *Lepanthes* Sw. subgenus *Draconanthes* Luer. As *Lepanthes* is presently defined, they cannot be included. Their closest affinity seems to be *Trichosalpinx* Luer. A key to the two species, descriptions and distributions with maps are given.

New taxa:

Draconanthes (Luer) Luer, gen. nov.

Draconanthes aberrans (Schltr.) Luer, comb. nov.

Draconanthes bufonis (Luer & Hirtz) Luer, comb. nov.

The first species attributable to *Draconanthes* was an Ecuadorian collection by Father Sodiro in 1873 and described as *Lepanthes aberrans* by Schlechter in 1915. The epithet *aberrans* indicated the most unusual, morphological features of the species being attributed to *Lepanthes* Sw. The species was described twice more: as *L. trachysepala* by Schlechter from a Colombian collection by Lehmann with minor differences, and as *L. prionota* by Luer from an Ecuadorian collection with an extreme form of the callus on the undersurface of the lip. A second, distinctly different, Ecuadorian species was added in 1987 as *L. bufonis*.

In *Systematics of the Pleurothallidinae* (Luer, 1986) the subgenus *Draconanthes* was proposed in *Lepanthes* for the above species because significant differences separated them from all other species attributed to *Lepanthes*. In common with *Lepanthes*, *Lepanthopsis* (Cogn.) Ames, and *Trichosalpinx* Luer, the ramicauls are largely concealed by a more or less imbricating series of lepanthiform sheaths. Lepanthiform sheaths are tubular and longitudinally ribbed with oblique ostia that are often dilated. Like the ribs, the thickened margins of the ostia are usually scabrous or ciliate.

Draconanthes differs from *Lepanthes*, as well as from the other lepanthiform-sheathed genera, by the combination of rigidly fleshy sepals; linear to oblong, non-lobed, fleshy petals; and a thick lip, entire at the apex, with lobe-like sides surrounding a slender, terete, footless column that is attached to the base of the column by a claw. The inflorescence of *Draconanthes* is racemose and successively flowered. The dorsal sepal is free while the laterals are connate to some degree. The anther is unhooded, apical and deciduous with a pair of pollinia, and the stigma is entire and ventral.

The genus consists of one frequent species found at high altitudes through the Andes from Venezuela into Bolivia, and one rare species known so far from only one locality in southern Ecuador.

Draconanthes (Luer) Luer, gen. nov.

Basionym: *Lepanthes* subgen. *Draconanthes* Luer, Monogr. Syst. Bot. 15: 32, 1986.

Type: *Draconanthes aberrans* (Schltr.) Luer. [= *Lepanthes aberrans* Schltr.]

Ety.: From the Greek *draconanthos*, "dragon-flower," referring to the fancied appearance of the flower.

Plants perennial, small to medium in size, epiphytic to terrestrial, caespitose; roots coarse. Ramicauls erect, slender, nonpseudobulbous, usually longer than the leaf, unifoliate, sometimes producing another ramicaul from the apex, enclosed by a series of ribbed, tubular, more or less imbricating sheaths, dilated at the ostia, more or less ciliate or scabrous on the ribs and the margins of the ostia, the inflorescence emerging laterally with an annulus from near the apex, the abscission layer. **Leaf** erect, coriaceous, smooth, petiolate, the blade elliptical, acute, notched with an apiculum in the sinus, the base cuneate into the petiole. **Inflorescence** racemose, shorter or longer than the leaf, the raceme more or less drooping, congested, distichous, successively flowered, with the flowers resupinate in the pendent position; floral bracts small, infundibular; pedicels short; ovary verrucose; **sepals** fleshy, variously colored, more or verrucose externally, the dorsal sepal free, ovate, 3-veined, the lateral sepals partially connate; **petals** linear to oblong, not lobed; **lip** thick, rigid, fleshy, more or less ovate, entire at the apex, with broadly rounded sides erect and surrounding the column, the disc featureless, the base unguiculate, connate to the base or above the base of the column; **column** slender, wingless, terete, footless, non-cucullate at the apex, the anther and rostellum apical, and the stigma entire, ventral; pollinia 2, obovoid, with a common viscidium.

KEY TO THE SPECIES OF *DRACONANTHES*

- 1 Inflorescence longer than the leaf; peduncle decurved 180° below the raceme; petals smooth, narrowly linear; lip with a callus on the undersurface..... *D. aberrans*
- 1' Inflorescence shorter than the leaf; peduncle not decurved; petals verrucose, oblong; lip without a callus on the undersurface..... *D. bufonis*

LIST OF ILLUSTRATIONS OF *DRACONANTHES*

- Draconanthes aberrans* (Schltr.) Luer..... Fig. 1., 2., 3.
- Draconanthes bufonis* (Luer & Hirtz) Luer..... Fig. 4.

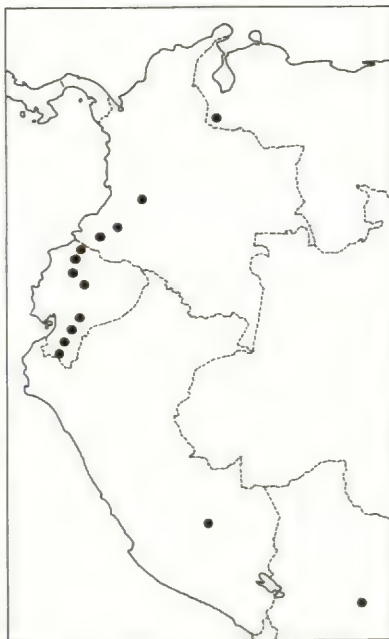
***Draconanthes aberrans* (Schltr.) Luer, comb. nov.**

Fig. 1., 2., 3.

Bas.: *Lepanthes aberrans* Schltr., Repert. Spec. Nov. Regni Veg. 14: 125, 1915.Ety.: From the Latin *aberrans*, "aberrant," referring to the non-conforming features of the flowers.Syn.: *Lepanthes trachysepala* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 100, 1920.Ety.: From the Greek *trachysepalos*, "rough sepals," referring to the verrucose sepals.Syn.: *Lepanthes prionota* Luer & Hirtz, Lindleyana 2: 102, 1987.Ety.: From the Greek *prionotos*, "jagged," referring to the callus on the undersurface of the lip.

Plant small to medium in size, epiphytic to terrestrial, caespitose; roots slender, coarse. Ramicauls slender, erect, 3-10 cm long, sometimes prolific, enclosed by 4-7 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, acute, 2.5-6 cm long, 0.8-1.5 cm wide, the base cuneate into a petiole 2-5 mm long. **Inflorescence** a congested, distichous, slightly flexuous, successively few- to many-flowered, pendent raceme up to 8 cm long, up to 3 flowers open simultaneously; borne by an erect peduncle 2-15 cm long, abruptly decurved ca. 180° below the raceme; floral bracts shortly spiculate, infundibular, 2-3 mm long; pedicels 1 mm long; ovary verrucose, 1-2 mm long; flowers dark red-purple through shades of orange to pure yellow; **sepals** fleshy, verrucose externally, the dorsal sepal ovate, concave, acute, 7-9 mm long, 3.5-4.5 mm wide, 3-veined, free from the lateral sepals, the lateral sepals narrowly triangular, fleshy, subcarinate, acute, diverging, 7-10 mm long, 1.5-2.5 mm wide, 1-veined, connate 1-2.5 mm; **petals** narrowly linear, acute, 6-8 mm long, 0.4 mm wide; **lip** thick, rigid, fleshy, verrucose, ovoid, with broad, erect sides surrounding the column, cannot be expanded without fracturing, 4-4.5 mm long, 2 mm wide unexpanded, the apex rounded, the base unguiculate, connate to the column above the base, the inferior surface of the lip above the base with a transverse, variably verrucose-dentate-fringed, descending callus 1-5 mm long; **column** slender, 4-5.5 mm long, the anther and rostellum apical, the stigma ventral.

ECUADOR: Prov. of Pichincha: western slopes of Mt. Pichincha near Lloa, July 1873, A. Sodiño 21 (Holotype: destroyed at B); Atacaso, alt. 3500 m, A. Hirtz 1056 (Lectotype here designated: MO). Prov. of Azuay: lithophytic in páramo west of the pass between Gualaceo and Limón, alt. 3200 m, 16 Jan. 1986, S. Dalström & T. Höijer 1042 (MO). Prov. of Carchi: west of Tulcán, alt. 3000 m, Holm-Nielsen et al. 5455 (AAU); terrestrial on embankments in páramo, alt. 3650 m, 5 Apr. 1985, C. Luer, J. Luer, A. Hirtz & X. Hirtz 11067 (MO); road to El Angel, lithophytic in páramo, alt. 3720 m, 17 Nov. 1988, L.J. Dorr & L.C. Barnett 6169 (NY). Prov. of Loja: epiphytic in cold, cloud forest above Jimbura, alt. 3350 m, 21 March 1984, C. Luer, S. Dalström, T. Höijer & J. Kuijt 9635 (MO, type of *L. prionota*); epiphytic in scrubby brush in páramo, east of Yanganá, alt. 3200 m, 22 March 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10780 (MO); east of Nudo de Cajanuma, trail to Lagunas de Compadre, páramo, alt. 3100-3200 m, B. Ollgaard 90343 (AAU). Prov. of Morona-Santiago: between Sigsig and Gualaquiza, alt. 3200 m, 10 Apr. 1968, G. Harling, G. Storm & B. Strom 8182 (GB). Prov. of Napo: Cerro Sumaco, terrestrial in ravines in páramo, alt. 3700-3800 m, 29 Apr. 1979, B. Lojtnant & U. Molau 12960 (AAU, GB). VENEZUELA: Edo. Táchira: lithophytic in bed of Quebrada Las Copas, headwaters of Río Quinimari, alt. ca. 2400 m, Jan. 1968, G.C.K. Dunsterville 1028. COLOMBIA: Dept. of Cauca: terrestrial on embankments about the lake, Páramo de Guanacas, alt. 3500-4000 m, F. C. Lehmann 6910 (type of *L. trachysepala* destroyed at B). Dept. of Nariño: Bordoncillo above Pasto, alt. 3300 m, 20 Feb. 1881, F. C. Lehmann 350 (W); between Pasto and Mocoa, alt. 10,500 ft., 1 Nov. 1878, F. C. Lehmann s.n. (K); scrub forest in páramo between La Cocha and Putumayo, alt. 3000 m, 26 Jan. 1987, C. Luer, J. Luer, R. Escobar et al. 12520 (Lectotype here designated: MO). Dept. of Quindío: terrestrial on road-cut at the pass between Salento and Tocha, alt. 3300 m, 10 May 1993, C. Luer, J. Luer, R. Escobar & A. DeWilde 16752 (MO). PERU: Dept. of Cuzco: Urubamba, near Wenner Gren ruins, alt. 3400-3600 m, 5-6 Aug. 1942, R. D. Metcalf 30769 (AMES, UC). BOLIVIA: Dept. of Cochabamba: Chapare, terrestrial on wet embankment, Balconcillo, alt. 3260 m, 13 Jan. 1981, C. Luer, J. Luer & R. Vásquez 5629 (SEL).



This species occurs relatively commonly at high altitudes from western Venezuela to central Bolivia. It often grows terrestrially on wet embankments or seepage slopes. It is characterized by the clumped ramicauls and elliptical leaves usually surpassed by an erect peduncle. The peduncle arches abruptly 180° just before the raceme so that the rachis points downward. The raceme is congested, distichous and slightly flexuous with the flowers resupinate. The sepals are variously verrucose externally and the petals are narrowly linear. The sides of the thick lip embrace the slender column. A variable callus is present on the undersurface of the lip. It is found in all shapes and sizes, no two flowers being the same. Sometimes it presents a tooth-like processes, but at other times it is flabellate and fringed. A form with a markedly developed, jagged, three-segmented process was described as *Lepanthes prionota*, but all degrees of formation have been found to exist throughout the wide distribution.

***Draconanthes bufonis* (Luer & Hirtz) Luer, comb. nov.**

Fig. 3.

Bas.: *Lepanthes bufonis* Luer & Hirtz, *Lindleyana* 2: 96: 1987.

Ety.: From the Latin *bufonis*, "like a toad," referring to the warty sepals.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect to horizontal, 2-10 cm long, enclosed by 4-7 pubescent, lepanthiform sheaths with dilated ostia. **Leaf** erect in relation to the ramicaul, coriaceous, purple beneath, narrowly elliptical, acute, 2.5-4 cm long, 0.5-0.7 cm wide, the base cuneate into a petiole 2-4 mm long. **Inflorescence** a subclax, successively few-flowered raceme up to 2.5 cm long including the slender peduncle ca. 0.5 cm long, borne behind the leaf, 2 flowers often open simultaneously; floral bracts 2 mm long; pedicels 1-1.5 mm long; ovary shortly spiculate, 1 mm long; **sepals** fleshy, the dorsal sepal dull green, suffused with purple centrally, shortly pubescent-spiculate externally, ovate, concave, acute, 7 mm long, 4.5 mm wide, free from the lateral sepals, the lateral sepals dull purple with a green central stripe, triangular-ovate, acute, conduplicate with the crest of the fold markedly erose, 8 mm long, 2.5 mm wide, 1-veined, connate 2.5 mm; **petals** yellow-orange, fleshy, verrucose, linear, decurved, acute, 5 mm long, 0.75 mm wide; **lip** orange with red striae, fleshy, verrucose, broadly bilobed, cannot be expanded without fracturing, 2.5 mm long, 1.5 mm wide unexpanded, the apex truncate, the sides, or lateral lobes, thick, erect, broadly rounded, surrounding the column, the base unguiculate, connate to the column at the base; **column** slender, 3 mm long, the anther and rostellum apical, the stigma ventral.

ECUADOR: Prov. of Loja: epiphytic in cold, cloud forest above Jimbura, alt. 3150 m, 21 March 1984, C. Luer, S. Dalström, T. Höjjer & J. Kuiji 9632 (Holotype: MO); same area, alt. 2600 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11993 (MO).

This species is apparently rare and endemic in a small area of high altitude near the Peruvian border. It is related to the frequent and widely distributed *D. aberrans*, but it is distinguished by the smaller habit with short, straight racemes. Although all three sepals are verrucose externally, the lateral sepals are tall-carinate with the carinae markedly erose. The petals are thickened, decurved and verrucose. The lip is similar to that of *D. aberrans* with thick, rounded, verrucose sides that surround the column, but no callus is present on the undersurface.



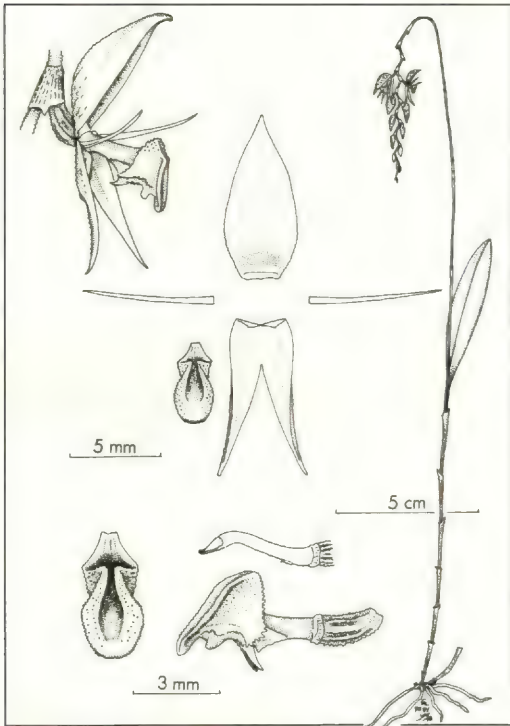


Fig. 1. *Draconanthes aberrans*

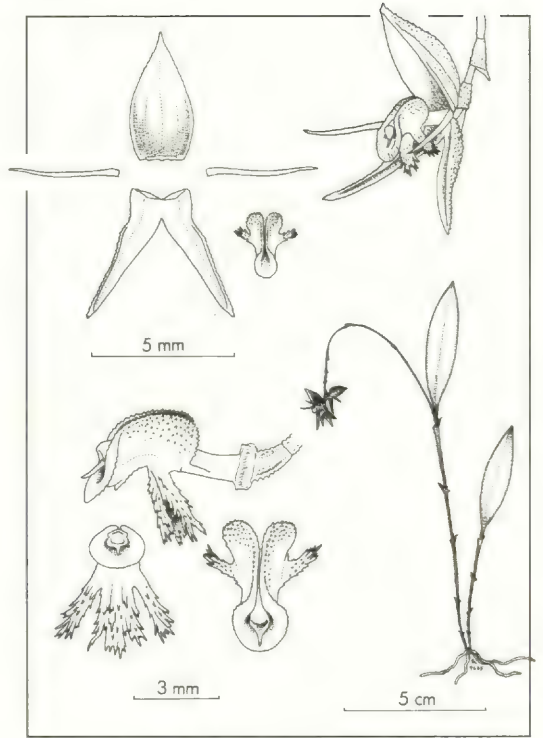


Fig. 2. *Dragonanthes aberrans*

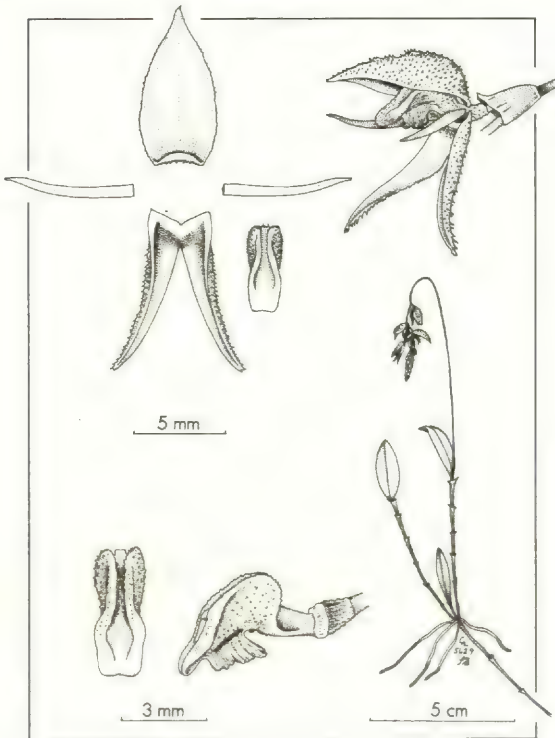


Fig. 3. *Dragonanthes aberrans*

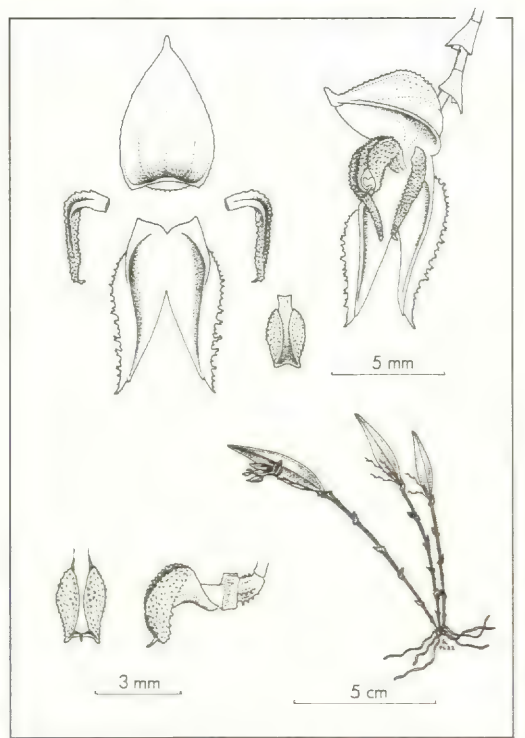


Fig. 4. *Dragonanthes bufonis*

REFERENCE

- LUER, C. A., 1986. Icones Pleurothallidarum I. Systematics of the Pleurothallidinae. Monogr. Syst. Bot. Missouri Bot. Gard. 15: 32.

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Note: To facilitate removal and binding elsewhere, should this be desired, the pages of *Systematics of Draconanthes* are numbered 1 through 6, separate from the numbering of *Systematics of Subgenus Marsipanthes* and the subgenus *Lepanthes* of Ecuador.

SYSTEMATICS OF *LEPANTHES* SUBGENUS *MARSIPANTHES*

ABSTRACT

Lepanthes Sw. subgen. *Marsipanthes* Luer is described and a key to the species is given. Each species is described and illustrated with a black and white drawing and a distribution map for each is included.

This subgenus was proposed (Luer, 1986) to accommodate three unusual species of *Lepanthes* with saccate flowers that differed significantly from all the other species of the genus. The three also differed significantly from each other, so each was placed in a monotypic section. Sections *Caprimulginae* and *Marsipanthes* remain monotypic, but four additional species are now included in section *Felinae*.

Reichenbach described the first species included in this subgeneric taxon in 1886 from a Colombian collection by Lehmann as *Lepanthes carunculigera*. At the time the subgenus was proposed, this species had not yet been re-discovered, so the details of the flower were obscure. *Lepanthes carunculigera* as well as three recently discovered species are related to *L. felis* of section *Felinae*.

The subgenus is distinguished by lepanthiform-sheathed ramicauls that do not differ from those of the majority of species of *Lepanthes*. The leaf is elliptical and erect in relation to the ramicaul, but often held horizontally. The peduncle lies on top of the leaf bearing the successively flowered raceme near the tip or beyond. The sepals are variously connate.

The petals are thick and fleshy, contrasting markedly from the majority of the membranous, transversely lobed petals typical of subgenus *Lepanthes*. Nevertheless, the petals of *Marsipanthes* are also transversely bilobed, but it is the upper lobe that distorts the appearance by sometimes being greatly thickened.

The lip is entire or bilobed suggesting the lip that was used to segregate section *Haplocheilus*. The latter section is no longer tenable because all degrees of forms exist between an entire lip and the complicated lip with laminated lobes and an appendix. The column is terete and footless with an apical anther and rostellum and with the stigma either apical or ventral as in subgenus *Lepanthes*.

Monotypic section *Marsipanthes*, typified by *L. ribes*, is characterized by a large flower with an inflated sepaline tube; petals with the upper lobe erect and elongate and with the lower lobe vestigial; and a transversely bilobed lip with an apiculate midlobe or "appendix." The anther is apical and the stigma is ventral.

Monotypic section *Caprimulginae*, typified by *L. caprimulgus*, shares in common the large flower with an inflated sepaline tube, but the petals are short and transverse with more or less equal lobes, and the lip is extremely small and bilobed, also with an apiculum. The anther and stigma are apical.

Section *Felinae* is characterized by a gaping flower more similar to those of subgenus *Lepanthes*, but with the upper lobe of the petals erect, thick, and variously modified. Similar to those petals of *L. ribes* (sect. *Marsipanthes*), the lower lobe is vestigial. The lips are transversely bilobed. As in subgenus *Lepanthes*, the anther is apical and the stigma is either apical or ventral.

Lepanthes subgen. **Marsipanthes** Luer, Monogr. Syst. Bot. 15: 34, 1986.

Ety.: From the Greek *marsipos*, "a pouch," and *anthos*, "a flower," in allusion to the pouchlike sepaline tube.

Type: *Lepanthes ribes* Luer, Selbyana 3: 14, 1976.

Plants perennial, small to medium in size, epiphytic, caespitose; roots slender. Ramicauls unifoliate, erect, suberect, to more or less horizontal, enclosed by a series of tubular, more or less imbricating, ribbed sheaths with oblique, dilated ostia, scabrous or ciliate on the thickened margins and ribs. Leaf erect in relation to the ramicaul, coriaceous, green or dark green, sometimes suffused with purple, elliptical, subacute to obtuse, shallowly notched with a mucro in the sinus, the base contracted into a short petiole. **Inflorescence** a congested, successively few-flowered raceme, borne near or beyond the tip of the leaf by a slender peduncle, from an annulus near the apex of the ramicaul, with the flowers resupinate; floral bracts and pedicels short; ovary costate, smooth to serrulate or spiculate, trivalvate; **sepals** conspicuous, membranous, variously colored, smooth, glabrous, with the margins smooth to ciliate, variously connate into an inflated tube or a gaping flower; **petals** thick, fleshy, variously shaped from transversely ovate to elongate, forked or clavate; **lip** small, entire to bilobed with the sides embracing the column, to bilobed with a rudimentary appendix as in subgenus *Lepanthes*, the base connate to the base of the column; **column** terete, short, the anther, rostellum and the stigma apical, the anther cap deciduous, 2-celled, the pollinia 2, clavate-pyriform, attached to a detachable viscidium.

Lepanthes subgen. **Marsipanthes** sect. **Caprimulginae** Luer, Monogr. Syst. Bot. 15: 34, 1986.

Type: *Lepanthes caprimulgus* Luer.

This monotypic section is characterized by a successively flowered raceme of large, inflated flowers borne beyond the leaf by a slender, arching peduncle. The petals are thick, short and transversely ovate. The lip is minute and broadly bilobed-ovate, beneath the column.

Lepanthes subgen. **Marsipanthes** sect. **Felinae** Luer, Monogr. Syst. Bot. 15: 34, 1986.

Type: *Lepanthes felix* Luer & Escobar.

This monotypic section is characterized by a successively flowered raceme of showy flowers borne on top of the leaf near or beyond the apex by a slender apex. The petals are erect, thick and fleshy, sometimes forked. The lip is bilobed with the lobes surrounding the column as often seen in subgenus *Lepanthes*.

Lepanthes subgen. **Marsipanthes** sect. **Marsipanthes** Luer.

Type: *Lepanthes ribes* Rchb.f., Flora 69: 556, 1886.

This monotypic section is characterized by a successively flowered raceme of large, inflated flowers borne beyond the leaf by a slender, arching peduncle. The petals are erect and elongated, and the lip is bilobed.

KEY TO THE SECTIONS AND SPECIES
OF SUBGENUS *MARSIPANTHES*

- 1 Sepals deeply connate into an inflated flower borne far beyond the leaf by an elongated, arching peduncle2
 1' Sepals variously connate, not into an inflated flower borne far beyond the leaf by an elongated, arching peduncle3
- Sect. *Marsipanthes*
- 2 Petals narrowly elongate *L. ribes*
- Sect. *Caprimulginæ*
- 2' Petals short, transverse..... *L. caprimulgus*
- Sect. *Felinae*
- 3 Petals oblong, neither forked nor clavate4
 3' Petals forked or clavate5
- 4 Lip with lobes broad, obtuse *L. felis*
 4' Lip with lobes narrow, truncate..... *L. equicalceolata*
- 5 Petals forked6
 5' Petals clavate *L. lucifer*
- 6 Petals forked above the middle with the inner prong broad and verrucose
 *L. carunculigera*
 6' Petals forked from near the base..... *L. quadricornis*

LIST OF ILLUSTRATIONS AND
SPECIES REFERABLE TO SUBGENUS *MARSIPANTHES*

- Lepanthes caprimulgus* LuerFig. 1.
Lepanthes carunculigera Rchb.f.....Fig. 2.
Lepanthes equicalceolata Luer & Escobar.....Fig. 3
Lepanthes felis Luer & Escobar.....Fig. 4., Fig. 5.
Lepanthes lucifer Luer & HirtzFig. 6.
Lepanthes quadricornis Luer & EscobarFig. 7.
Lepanthes ribes LuerFig. 8.

Lepanthes caprimulgus Luer, *Selbyana*, 3: 12, 1976.

Fig. 1.

Ety.: Named for the fancied similarity of the flower to a whip-poor-will or chuck-will's-widow, birds of the night-hawk genus *Caprimulgus*.

Plant small to medium, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-8 cm long, enclosed by 6-8 microscopically ciliate-scabrous, lepanthiform sheaths. Leaf erect, coriaceous, elliptical, subacute, 20-30 mm long, 10-14 mm wide, cuneate below into a petiole 2-3 mm long. **Inflorescence** a distantly successively and few-flowered raceme up to 7 cm long with the flowers pendent, 1.5-2.5 cm apart, borne far beyond the leaf by a slender, drooping peduncle 5-7 cm long; floral bracts 2 mm long; pedicels 2 mm long; ovary fringe-crested, 3-4 mm long; **sepals** white, striped in red-purple, minutely erose-carinate, the dorsal sepal oblong, longitudinally concave, round and apiculate at the apex, 15-17 mm long, 9-10 mm wide unexpanded, 5-veined, connate 10-12 mm to the lateral sepals to form an inflated, ovoid, saccate-ventricose tube, the lateral sepals connate 10-12 mm into a longitudinally concave, bifid lamina, 13-15 mm long, 9-10 mm wide unexpanded, 8-veined, with the apices free for 3 mm, deflexed, triangular, acute, ciliate; **petals** yellow, minute, transversely oblong with rounded ends, glabrous, 0.5 mm long, 1-1.2 mm wide; **lip** yellow-green, minute, glabrous, broadly ovoid, 0.5 mm long, 0.5 mm wide, both halves thickened, sulcate apically above a minute apiculum, connate to the base of the column; **column** 1.5 mm long, the anther dorsal with an elongate rostellum, the stigma apical.

PERU: Dept. of Huánuco: epiphytic in forest between Tingo Maria and Pucallpa, alt. 1700 m, March 1975, flowered in cultivation, *Janet Kuhn, Fred Fuchs et al.*, s. n. (Holotype: SEL), C. Luer illustr. 341; same collection, flowered in cultivation at J & L Orchids, Easton, CT, 25 Apr. 1987, C. Luer 12812 (MO).

This unique species is apparently rare and endemic in a forest in northeastern Peru where it was found by Janet Kuhn. All plants presently in cultivation descend from the original collection. Although vegetatively it does not seem distinct from numerous other species of the genus, the large, pendent, saccate, purple-striped flower is easily recognized. The dorsal sepal is connate two-thirds its length to the lateral sepals to permit an opening on the side of the convex apex with the acute, deflexed apices of the lateral sepals below the aperture. Deep within the tube the minute, seemingly inconsequential petals and lip surround the base of the much larger column.



Lepanthes carunculigera Rchb.f. *Flora* 69: 557, 1886.

Fig. 2.

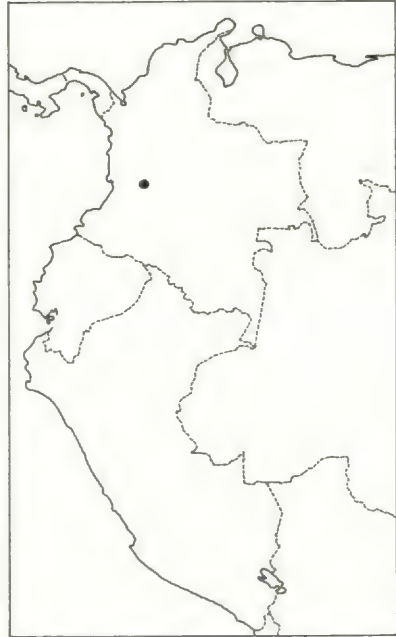
Ety.: From the Latin *carunculiger*, "caruncle-bearing," no doubt referring to the verrucose upper lobe of the petals.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 1.5-2.5 cm long, enclosed by 6-8 minutely ciliate, lepanthiform sheaths. **Leaf** erect to spreading, coriaceous, suffused with purple beneath, satiny green above, elliptical-ovate, subacute to obtuse, 15-21 mm long, 10-14 mm wide, broadly cuneate below into a petiole ca. 1 mm long. **Inflorescence** a dense, secund, successively 2- to 3-flowered raceme, borne near the tip of the leaf by a slender peduncle 12-17 mm long resting on top of the leaf; floral bracts minutely ciliate, 1.5 mm long; pedicels 2 mm long; ovary echinate-crested, 2-3 mm long; **sepals** red-purple with a transverse, yellow-white band across the middle third, concave, carinate-ciliate, glabrous, with minutely denticulate margins, the dorsal sepal broadly ovate, 10 mm long, 8 mm wide expanded, 5-veined, connate to the lateral sepals for 3 mm to form a shallow sepaline cup, the apex obtuse to rounded, apiculate, the lateral sepals ovate, acute, oblique, concave below the middle, 10 mm long, 4 mm wide, 2-veined; **petals** olive green, glabrous, thick, erect, single-lobed, oblong, 5 mm long, 2 mm wide, obliquely carinate, concave and incurved in middle third, the apical third rounded, verrucose, shortly incised on the outer margin to create an oblique apiculum; **lip** olive green, glabrous, ovate, deeply cordate, 2 mm long, the basal lobes rounded, flanking the column, the apex obtuse, shortly incised into a pair of rounded lobes, connate to the base of the column; **column** 1.5 mm long, the anther dorsal and the stigma ventral.

COLOMBIA: Without locality, *F. C. Lehmann* 3213 (Holotype: W). Dept. of Risaralda: Munic. of Pueblo Rico, La Linea, alt. ca. 2000 m, collected by E. Valencia, 16 Feb. 1985, flowered in cultivation at Colomborquídeas, 6 Apr. 1988, *C. Luer* 13017 (MO); same area, alt. 2100 m, 11 May 1993, *C. Luer*, *J. Luer*, *R. Escobar* & *J. Gómez* 16786 (MO).

This species was first collected by Lehmann, but, unusual with his collections, no data accompany the two specimens mounted on a single sheet in the Reichenbach herbarium at W. On a second sheet, also devoid of collection information save for Lehmann's name and number, Reichenbach's very serviceable sketch is mounted.

Lepanthes carunculigera has been re-discovered after the lapse of a century. Apparently it is endemic in a small area of the Western Cordillera of central Colombia. The plant is small with a proportionately large, gaping flower borne past the tip of the leaf with the peduncle lying on top. The most distinctive petals are erect and thick with the upper lobe incised with a small, erect, lateral lobule. The greater part of the lobe is verrucose. The lip is hippocrepiform with the basal lobes flanking the column.



Lepanthes equicalceolata Luer & Escobar, *Orquideología* 19: 24, 1993.

Fig. 3.

Ety.: From the Latin *equi calceolatus*, "with a little horse shoe," referring to the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-5 cm long, enclosed by 7-8 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 17-23 mm long, 10-11 mm wide, cuneate below into a petiole less than 1 mm long. **Inflorescence** a subdense, secund, successively several-flowered raceme up to 15 mm long, borne beyond the leaf by a slender peduncle 12-15 mm long; floral bracts lightly muricate, 1.5 mm long; pedicels 5-6 mm long; ovary echinate, 3 mm long; **sepals** yellow with large, irregular, brown spots below the middle, concave, carinate, glabrous, with minutely ciliate margins, the dorsal sepal transversely ovate, 8 mm long, 11 mm wide expanded, 5-veined, connate to the lateral sepals for 5 mm to form a sepaline cup, the apex obtuse, abruptly contracted into a slender tail 3 mm long, the lateral sepals broadly ovate, oblique, 6 mm long, 5 mm wide, 2-veined, the apices obtuse, contracted into slender tails 2.5 mm long; **petals** dull yellow-brown, erect, single-lobed, oblong, longitudinally carinate, glabrous, 3 mm long, 1.25 mm wide, the apex rounded; **lip** dull yellow-brown, horse shoe-shaped, surrounding the column, each half 1.25 mm long, glabrous, the apices truncate, minutely apiculate at the base, connate to the base of the column; **column** 1.5 mm long, the anther dorsal and the stigma apical.

COLOMBIA: Dept. of Chocó: Munic. of San José del Palmar, Alto Galápagos, alt. 2000 m, collected by E. Valencia, Sept. 1990, *R. Escobar* 4059 (Holotype: MO), C. Luer illustr. 14920; same area, alt. 2050 m, 13 May 1993, C. Luer, J. Luer, R. Escobar, A. De Wilde & J. Gómez 16800 (MO).

This species, known only from one locality in the Western Cordillera, is similar to *L. felis*, but it is easily distinguished by the congested, long-pedicellate raceme that eventually surpasses the tip of the leaf, the spiculate ovary, and the horse shoe-shaped lip. The dorsal sepal is concave and broadly ovate with a short, erect tail. The lateral sepals are deeply connate to the dorsal sepal but the sepaline cup so formed is not deep as in *L. felis* with the column and lip within a cavity. The petals are erect, carinate and oblong, only half as long as the petals of *L. felis*. The limbs of the lip are truncate, and a minute apiculum is present at the apex.



***Lepanthes felis* Luer & Escobar**, Amer. Orchid Soc. Bull. 52: 1264, 1983. Figs. 4., 5.
 Ety.: From the Latin *felis*, "a cat," for the fancied illusion of the flower.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 1.5-4.5 cm long, enclosed by 3-8 minutely ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, coriaceous, suffused with purple beneath, elliptical, subacute, 18-20 mm long, 10-14 mm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 5 mm long, borne by a filiform peduncle 15-18 mm long on top of the leaf; floral bracts 1.5 mm long; pedicels 2 mm long; ovary muricate-crested, 2-3.5 mm long; **sepals** yellow, suffused and veined in red-purple, minutely ciliate-pubescent, the dorsal sepal broadly ovate, concave, 13 mm long, 10 mm wide unexpanded, 3-veined, connate to the lateral sepals for 5 mm, to form a deep, sepaline cup, the apex obtuse with a short, slender tail-like apiculum 1.5 mm long, the lateral sepals ovate, oblique, acute, 8.5 mm long, 5 mm wide, connate basally and concave below a transverse fold between the middle and basal thirds, deflexed above the fold; **petals** emerald green, erect, fleshy, narrowly oblong, obtuse, sulcate, 4 mm long, 1.25 mm wide, with a minute tooth at the base; **lip** dull green, glabrous, transversely bilobed, 1 mm long, 2 mm wide expanded, the lobes ovate, obtuse, embracing the column, the apex transversely rounded, cleft to minutely apiculate, the base connate to the column above the base; **column** 1.5 mm long, the anther and stigma apical.

COLOMBIA: Dept. of Antioquia: Frontino, Alto de Cuevas, alt. 2050 m, 14 May 1983, R. Escobar & E. Valencia 2605 (Holotype: SEL); same area, 12 Apr. 1974, R. Escobar et al. 764 (JAUM); same area, 4 May 1983, C. Luer, J. Luer, R. Escobar, A. Pridgeon & E. Valencia 9017 (SEL); Mesopotamia, alt. 2050 m, Dec. 1974, R. Escobar & O. Monsalve s.n. (JAUM); Urrao, Parque Nacional "Las Orquideas," alt. 2120 m, 25 Feb. 1989, A. Cogollo, D. Cárdenas & O. Alvarez 4215 (JAUM, MO); same collection, flowered in cultivation at Colomborquídeas, 2 Jan. 1993, R. Escobar 5187 (MO); north of the pass between Urrao and Carmen de Atrato, alt. 2500 m, 30 May 1995, C. Luer, J. Luer, R. Escobar et al. 17696 (MO); "Medellín," G. Schmidtchen s.n. (W); "Medellín," Patin s.n. (W). Dept. of Chocó: San José del Palmar, Cerro Torrá, alt. 1940-2450 m, 30 Aug. 1988, A. Silverstone-Sopkin et al. 4903 (CUVC, MO); between San José del Palmar and Valle, alt. 2100 m, 22 Feb. 1992, A. DeWilde 3867 (MO). Dept. of Valle del Cauca: El Cairo, Cerro del Inglés, Serranía de los Paraguas, alt. 2260 m, 5 Jan. 1987, A. Silverstone-Sopkin et al. 2949 (CUVC, MO).



This species is beautifully illustrated with a watercolor painting in the Reichenbach herbarium at W attributed to Schmidtchen who collected in the vicinity of Medellín around 1880. Also present are two specimens attributed to Patin who lived in Medellín and dealt in orchids. It is strange that nothing was done with these collections. Certainly they were seen by both Kränzlin and Schlechter.

In this century the species was re-discovered by Rodrigo Escobar and companions in 1974. Plants soon were disseminated among enthusiasts of *Lepanthes* and became affectionately known as "the cat" because of the two green eyes that peer from the interior of the flower.

Lepanthes felis is endemic in the Western Cordillera of Colombia where it is uncommon but widely distributed. The size of the plants and flowers varies considerably. Vegetatively *L. felis* is not remarkably different from many species of the genus. The large flower is borne near or beyond the tip of the leaf. The concave sepals are connate into a deep, sepaline cup from which the tips of the oblong, green petals are visible.

Lepanthes lucifer Luer & Hirtz, Amer. Orchid Soc. Bull. 56: 1016, 1987. Fig. 6.

Ety.: Named for *Lucifer* in allusion to the red flowers with black horns within.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls more or less horizontal, slender, 2-5.5 cm long, enclosed by 4-8 lepanthiform sheaths with the ostia microscopically ciliate. **Leaf** spreading, thinly coriaceous, dark green, suffused with purple beneath, with a vein between the midvein and border, elliptical, obtuse to subacute, 27-39 mm long, 20-30 mm wide, the broadly cuneate base contracted into a petiole ca. 2 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 15-21 mm long; floral bracts 1-1.5 mm long; pedicels 2-3 mm long; ovary costate, 2.5-3 mm long; **sepals** red, carinate, glabrous, the dorsal sepal broadly ovate, concave, obtuse, shortly acuminate, 9 mm long, 8 mm wide, connate to the lateral sepals for 4 mm, to form a sepaline cup, 3-veined, the lateral veins branching, the lateral sepals ovate, oblique, acute, 8 mm long, 4.5 mm wide, concave centrally with the margins revolute, the lateral margins minutely ciliate, connate to each other for less than 1 mm; **petals** white, the upper lobe erect, oblong-sigmoid, 4 mm long, 1 mm wide, the apex black, obliquely clavate-ovoid, the lower lobe a minute, subacute angle; **lip** dull white, glabrous, bilobed or deeply cordate, 1.2 mm long, 1.8 mm wide expanded, the lobes auriculate with the rounded bases embracing the column, each lobe with a thin, auriculate lamina on the upper surface, the apex shortly incised with an uncinat apiculum protruding from below, connate to the column above the base; **column** stout, larger than the lip, 1.5 mm long, the anther and stigma apical.

ECUADOR: Imbabura: epiphytic in cloud forest south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12432 (Holotype: MO; Isotype: RPSC); between Cachaco and Santa Rosa, old trail to Río Verde, alt. 1200-1500 m, 30 Dec. 1990, C. Dodson, T. Neudecker & H. Volles 18638 (MO).

This species is apparently endemic in a wet forest on the western slopes of north-western Ecuador where it was first found by Alexander Hirtz. His photograph graced the cover of the October 1987 American Orchid Society Bulletin.

Lepanthes lucifer is characterized by the gaping, red flowers borne on top of the leaf. Two black, horn-like petals stand erect within the flower.

**Lepanthes quadricornis** Luer & Escobar, Orquideología 19(2): 108, 1994. Fig. 7.

Ety.: From the Latin *quadricornis*, "four-homed," referring to the pair of forked petals.

Plant small, epiphytic, caespitose; roots slender. Ramicauls more or less horizontal, slender, 3 cm long, enclosed by 5 densely ciliate, lepanthiform sheaths. **Leaf** spreading to pendent, coriaceous, marginate, broadly elliptical, obtuse, 20 mm long, 17 mm wide, contracted below into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively few-flowered raceme 2 mm long, borne on top of the leaf by a peduncle 14 mm long; floral bracts echinate, 1 mm long; pedicels 1 mm long; ovary 2 mm long, ciliate-carinate; **sepals** densely ciliate, echinate-carinate externally, the dorsal sepal broadly to transversely ovate, the blade 10 mm long, 10 mm wide, 5-veined, the apex obtuse, shortly acuminate into a slender tail 2.5 mm long, connate to the lateral sepals for 4 mm, the lateral sepals ovate-triangular, oblique, acute, acuminate, 11 mm long, 5 mm wide, 2-veined, connate 1 mm; **petals** glabrous, bilobed, the lobes erect, oblong, subacute, carinate, each 3 mm long, 0.8 mm wide, the base of the outer lobe acute below the insertion into the base of the column; **lip** glabrous, bilobed-hippocrepiform, 1.75 mm long, the basal lobes obtuse, encircling the column, the apex rounded, shallowly incised, the base connate to the base of the column; **column** terete, 2.5 mm long, with the anther dorsal and the stigma subapical.

COLOMBIA: Dept. of Nariño: apparently collected near Ricaurte, flowered in cultivation at the La Planada Science Station, #48, 21 July 1989, C. H. Dodson, R. Escobar & E. Valencia 18060 (Holotype: MO), C. Luer illustr. 16218. Dept. of Valle Del Cauca, El Dovio, alt. 2000 m, collected by J. Aguirre, Sept. 1995, flowered in cultivation at Colomborquí-deas, R. Escobar 8076 (JAUM).

This species from southern Colombia is distinguished by the proportionately large flower borne on top of a broadly elliptical leaf. The densely ciliate sepals form a broad, shallow cup, the dorsal sepal with a short tail. The thick, erect lobes of the forked petals are oblong and sharply carinate. The glabrous lip forms a "U" with the basal lobes encircling the column.



Lepanthes ribes Luer, Selbyana, 3: 14, 1976.

Fig. 8.

Ety.: Named for the fancied resemblance of the flower to a gooseberry of the genus *Ribes*.

Plant small to medium, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2.5-6 cm long, enclosed by 6-9 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 20-33 mm long, 8-15 mm wide, cuneate below into a petiole 2-3 mm long. **Inflorescence** a subsense, successively several-flowered raceme up to 25 mm long with the flower pendent, borne beyond the leaf by a slender, drooping peduncle 20-35 mm long; floral bracts 1.5-2 mm long; pedicels 3-3.5 mm long; ovary papillose-crested, 5-6 mm long; **sepals** heavily mottled with red-purple, minutely ciliate-carinate, the dorsal sepal ovate, concave, obtuse and apiculate at the apex, 13-15 mm long, 10 mm wide unexpanded, 5-veined, connate 6 mm to the lateral sepals to form an inflated, ovoid, saccate tube, the lateral sepals ovate oblique, 10-12 mm long, 5-6 mm wide, 2-veined, connate 3 mm, with the apices triangular, acute, reflexed; **petals** green, fleshy, semiterete or triquetrous above the middle, narrowly linear-oblong, erect, narrowly obtuse, glabrous, 6-7 mm long, 0.75 mm wide; **lip** light green, glabrous, bilobed-horse shoe-shaped, with the apices rounded, surrounding the column, the lobes 1.3-1.5 mm long, the apex round, notched, with a minute apiculum in the sinus, the base connate to the base of the column; **column** 1.5 mm long, the anther dorsal with an elongate rostellum, the stigma ventral.

ECUADOR: Prov. of Pichincha: terrestrial on the road-cut between Quito and Santo Domingo, alt. 2100 m, 10 Mar. 1975, C. Luer & R. Kent 233 (Holotype: SEL); near Chiriboga, alt. 2400 m, Sept. 1984, A. Hirtz 1901 (MO), C. Luer illustr. 16298; Mindo, alt. 1400 m, Feb. 1994, A. Hirtz 5948 (MO). COLOMBIA: Dept. of Valle Del Cauca: Serrania de Carras Pattas, alt. 1800 m, collected by J. Aguirre, June 1996, flowered in cultivation at Colomborquí-deas, R. Escobar 8075 (JAUM).

This species is uncommon in southern Colombia and northern Ecuador. Although vegetatively it is similar to many other species of the genus, the large, pendent, saccate, purple-mottled flower is easily recognized. The concave dorsal sepal is connate nearly half its length to the lateral sepals to form a gaping sepaline cup. The



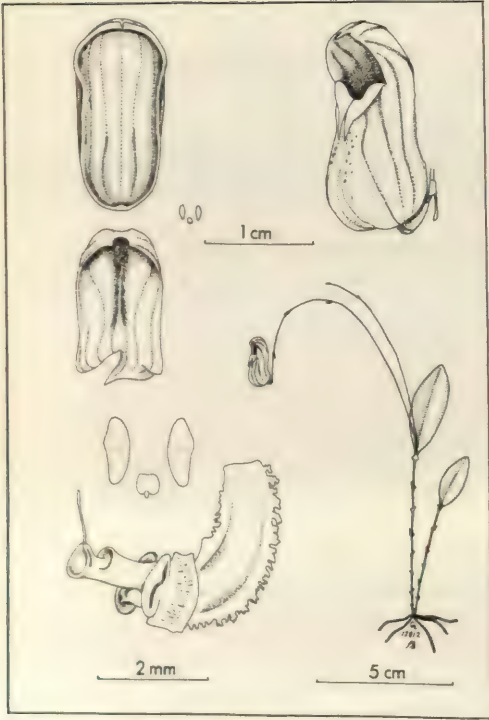


Fig. 1. *Lepanthes caprimulgus*

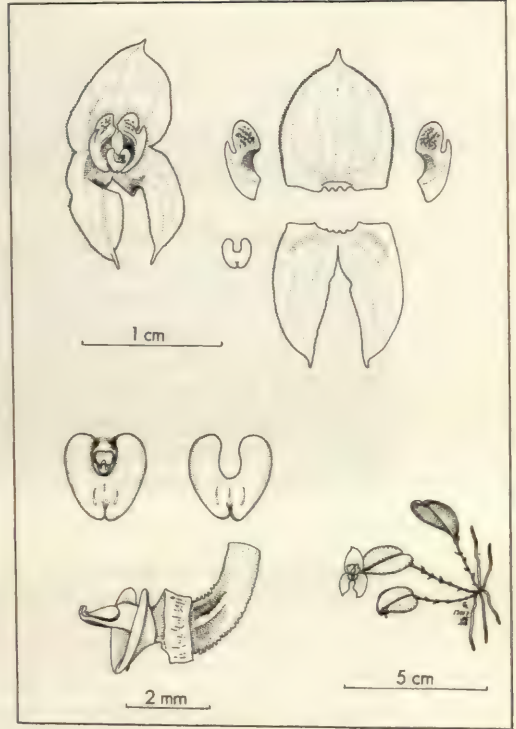


Fig. 2. *Lepanthes carunculigera*

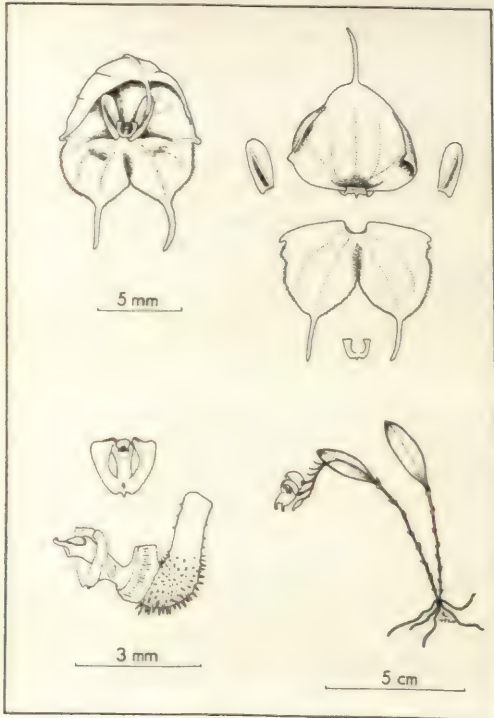


Fig. 3. *Lepanthes equicalceolata*

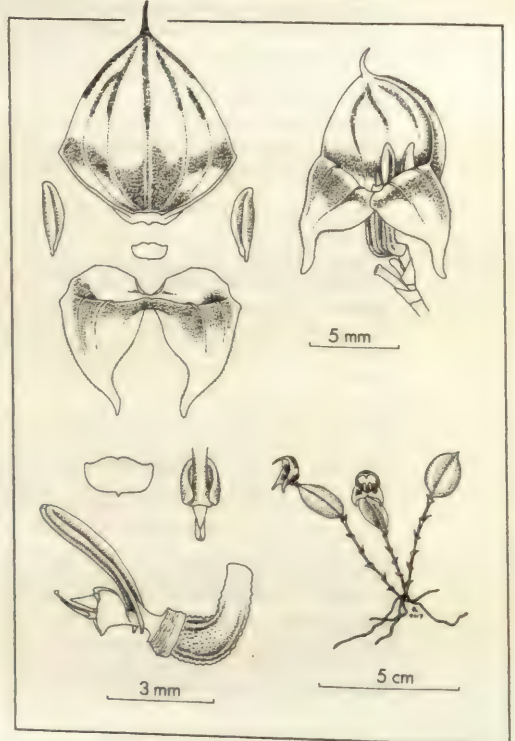


Fig. 4. *Lepanthes felis*

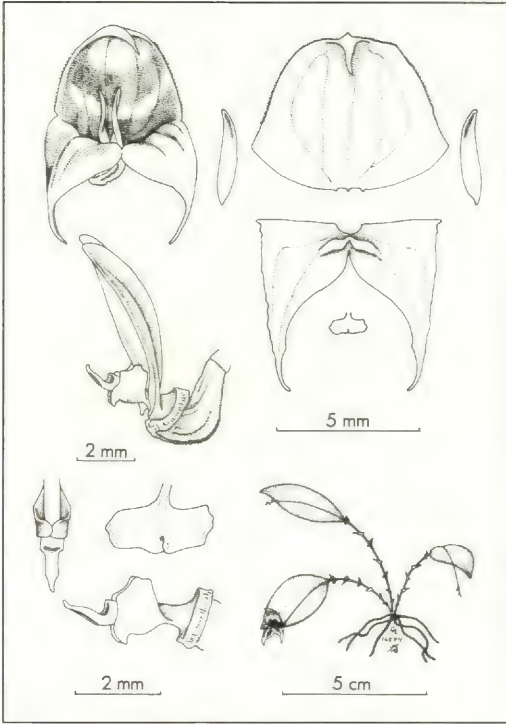


Fig. 5. *Lepanthes felis*

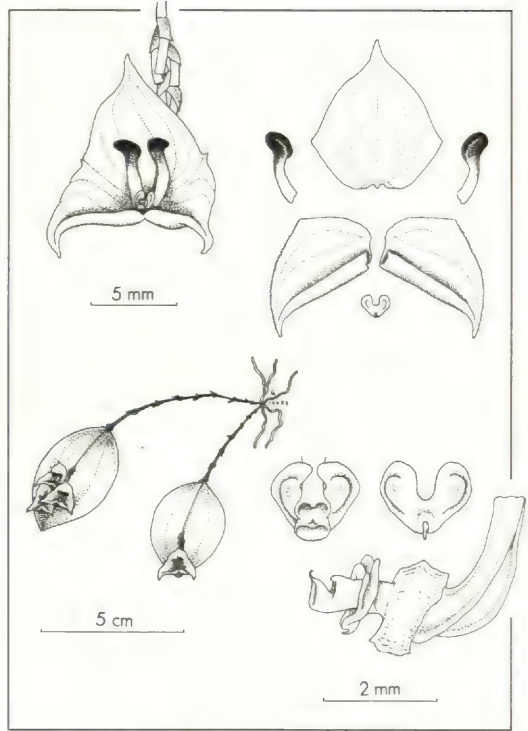


Fig. 6. *Lepanthes lucifer*

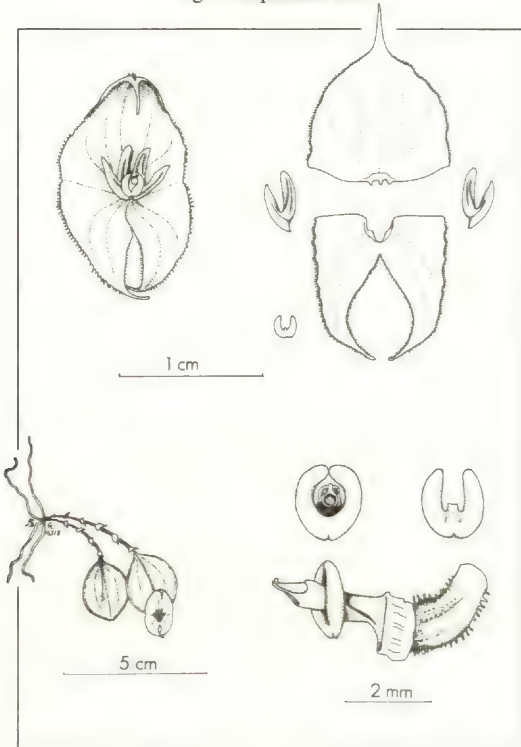


Fig. 7. *Lepanthes quadricornis*

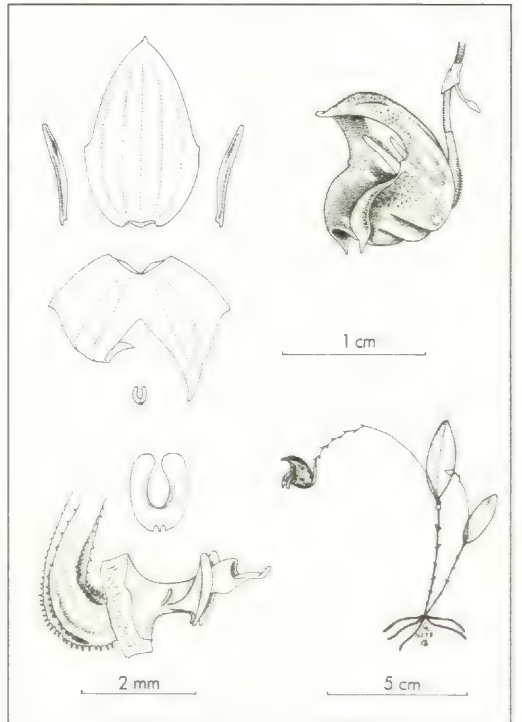


Fig. 8. *Lepanthes ribes*

apices of the lateral sepals reflex below the aperture. The long, green petals from deep within the cup reach to the opening. The lip is small and horse shoe-shaped surrounding the column.

REFERENCE

- LUER, C. A., 1986. Icones Pleurothallidinarum I. Systematics of the Pleurothallidinae. Monogr. Syst. Bot. Missouri Bot. Gard. 15: 34.

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lucifer 3, 8, 11 (Fig. 6.)
quadricornis 3, 8, 11 (Fig. 7.)
ribes 1, 2, 3, 9, 11 (Fig. 8.)

Note: To facilitate removal and binding elsewhere, should this be desired, the pages of *Systematics of subgenus Marsipanthes* are numbered 1 through 12, separate from the numbering of *Systematics of Draconanthes* and the subgenus *Lepanthes* of Ecuador.

THE GENUS *LEPANTHES* SUBGENUS *LEPANTHES*
IN ECUADOR (ORCHIDACEAE)

ABSTRACT

Following a brief history of the genus *Lepanthes* in Ecuador, the 278 species of subgenus *Lepanthes* presently known to occur in Ecuador are described and illustrated by black and white line drawings. A checklist of all epithets in *Lepanthes* ever attributed to Ecuador, and a revision of the subgeneric taxa is presented with keys to sections, subsections, series and species. In lieu of individual distribution maps, full page political and geographical maps are provided on pages 8 and 9 for orientation.

New taxa:

- Lepanthes* subsect. *Bilabiatae* Luer, subsect. nov.
Lepanthes subsect. *Breves* Luer, stat. nov.
Lepanthes ser. *Mucronatae* Luer, ser. nov.
Lepanthes *absens* Luer & Hirtz, sp. nov.
Lepanthes *adelphe* Luer & Hirtz, sp. nov.
Lepanthes *alopez* Luer & Hirtz, sp. nov.
Lepanthes *amphioxia* Luer & Hirtz, sp. nov.
Lepanthes *angulata* Luer & Hirtz, sp. nov.
Lepanthes *athena* Luer & Hirtz, sp. nov.
Lepanthes *barbelifera* Luer & Hirtz, sp. nov.
Lepanthes *caliopo* Luer & Hirtz, sp. nov.
Lepanthes *calypso* Luer & Hirtz, sp. nov.
Lepanthes *campica* Luer & Hirtz, sp. nov.
Lepanthes *cauda-avis* Luer & Hirtz, sp. nov.
Lepanthes *ciliicampa* Luer & Hirtz, sp. nov.
Lepanthes *clarkii* Luer, sp. nov.
Lepanthes *corrugata* Luer & Hirtz, sp. nov.
Lepanthes *cotylisca* Luer & Hirtz, sp. nov.
Lepanthes *cremasta* Luer & Hirtz, sp. nov.
Lepanthes *didyma* Luer & Hirtz, sp. nov.
Lepanthes *eriocampa* Luer & Hirtz, sp. nov.
Lepanthes *evansiae* Luer & Hirtz, sp. nov.
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Lepanthes *mirador* Luer & Hirtz, sp. nov.
Lepanthes *morleyi* Luer & Dalström, sp. nov.
Lepanthes *narcissus* Luer & Hirtz, sp. nov.
Lepanthes *odontocera* Luer & Hirtz, sp. nov.
Lepanthes *ortegae* Luer & Hirtz, sp. nov.
Lepanthes *pan* Luer & Dalström, sp. nov.
Lepanthes *peyx* Luer & Hirtz, sp. nov.
Lepanthes *perdita* Luer & Hirtz, sp. nov.
Lepanthes *proboscidiis* Luer & Hirtz, sp. nov.
Lepanthes *protuberans* Luer & H.P.Jesup, sp. nov.
Lepanthes *psomion* Luer & Hirtz, sp. nov.
Lepanthes *ricina* Luer & Dalström, sp. nov.
Lepanthes *rudicula* Luer & Hirtz, sp. nov.
Lepanthes *saltatrix* Luer & Hirtz, sp. nov.
Lepanthes *scapha* Luer & Hirtz, sp. nov.
Lepanthes *scrotifera* Luer & Hirtz, sp. nov.
Lepanthes *semilaminata* Luer & Hirtz, sp. nov.
Lepanthes *silenus* Luer & Hirtz, sp. nov.
Lepanthes *steliidipetala* Luer, sp. nov.
Lepanthes *suavium* Luer & Hirtz, sp. nov.
Lepanthes *sulcata* Luer & Hirtz, sp. nov.
Lepanthes *sybax* Luer & Hirtz, sp. nov.
Lepanthes *teaguei* Luer & Hirtz
Lepanthes *tentaculata* Luer & Hirtz, sp. nov.
Lepanthes *terpsichore* Luer & Hirtz, sp. nov.
Lepanthes *thalia* Luer & Hirtz, sp. nov.
Lepanthes *tortilis* Luer & Hirtz, sp. nov.
Lepanthes *unijuga* Luer & Dalström, sp. nov.
Lepanthes *urania* Luer & Hirtz, sp. nov.
Lepanthes *uxoria* Luer & Hirtz, sp. nov.
Lepanthes *vellicata* Luer & Hirtz, sp. nov.
Lepanthes *volador* Luer & Hirtz, sp. nov.
Lepanthes *zamorensis* Luer & Hirtz, sp. nov.
Lepanthes *zunagensis* Luer & Hirtz, sp. nov.

Lepanthes Sw. is one of the largest in numbers of species of the 30-odd genera of the Pleurothallidinae, exceeded only by *Pleurothallis* R.Br. and *Stelis* Sw. The genus consists of about 800 species distributed from southern Mexico and the Antilles through the Andes into Bolivia. Very few species are known from Brazil. The greatest concentration occurs in Colombia and Ecuador. Although most species are local and endemic, several species are frequent and widely distributed.

The first species of *Lepanthes* to be reported from Ecuador was *L. monoptera* by Lindley in 1834. It was discovered by Dr. Jameson near Cuenca where it is common at high altitudes around 3000 meters above sea level. The next two species were collected by a Colonel Hall in the valley of Lloa in the mountains just southwest of Quito, and described in 1836 by Lindley as *L. biloba* and *L. mucronata*. Both species are common, widely distributed in Ecuador, with variable, vegetative forms of the latter being described by Reichenbach as *L. andrenoglossa* and *L. mesochlora* in 1855 and 1856.

Lindley described no other *Lepanthes* (except for four Cuban species), but before the nineteenth century was out, Reichenbach had described 18 epithets in the genus that are now known to occur in Ecuador, and Hooker had described one, *L. calodictyon*. Mostly from collections by Jameson, the total number of names attributed to Ecuador before 1900 was 22, only 17 of which are considered valid species today. From collections by Madero, Mille and Sodiro, Schlechter added 12 epithets between 1915 and 1921, but only three remain as valid species in the genus.

The first published list of the known species of *Lepanthes* from Ecuador was by Schlechter (1921) who counted 27. This number includes two that belong to other genera and eight others regarded today as synonyms. Today about 270 species are known from Ecuador, the vast majority having been collected by Alexander C. Hirtz of Quito. The total number of names described in the genus is 980, over 600 of which are considered valid.

The comparative paucity of species of *Lepanthes* described from Ecuador prior to recent times is the result of scanty collecting, poorly preserved flowers which are the most intricate and delicate of all the Orchidaceae, and consequent neglect or disinterest by taxonomists. Old descriptions and illustrations are difficult to interpret, many types are lost, and flowers of most existing types, like all crushed and dried flowers of *Lepanthes*, are difficult to interpret. We should feel grateful that Kränzlin did not attempt to work in the genus.

The early collectors of *Lepanthes* in Ecuador include Dr. William Jameson, physician and professor at the University of Quito, Fathers Mille and Sodiro, and transient travelers such as Spruce, but their numbers of collections are extremely few considering the great number of species that were available. The early professional collectors such as Warscewicz shunned small species without commercial value. The numerous recent collectors include Ecuadorians, Swedes, Danes and North Americans, but by far the greatest collector has been Ing. Alexander C. Hirtz of Quito, who has discovered the vast majority of the newly species and who has rediscovered the "old" species as well.

Morphology

All species of *Lepanthes* are characterized by ramicauls clad in "lepanthiform sheaths." Similar sheaths clothe the ramicauls of *Lepanthopsis* and *Trichosaplinx*. The term "lepanthiform" has been used by authors since Lindley (1859). Typical lepanthiform sheaths are tubular and ribbed with oblique, dilated ostia, with thickened, ciliate or scabrous margins. However, the sheaths are variable from coarsely long-ciliate with a broadly dilated ostium to glabrous with simple, non-dilated ostia. Only rarely do ramicauls normally proliferate other ramicauls from the apex.

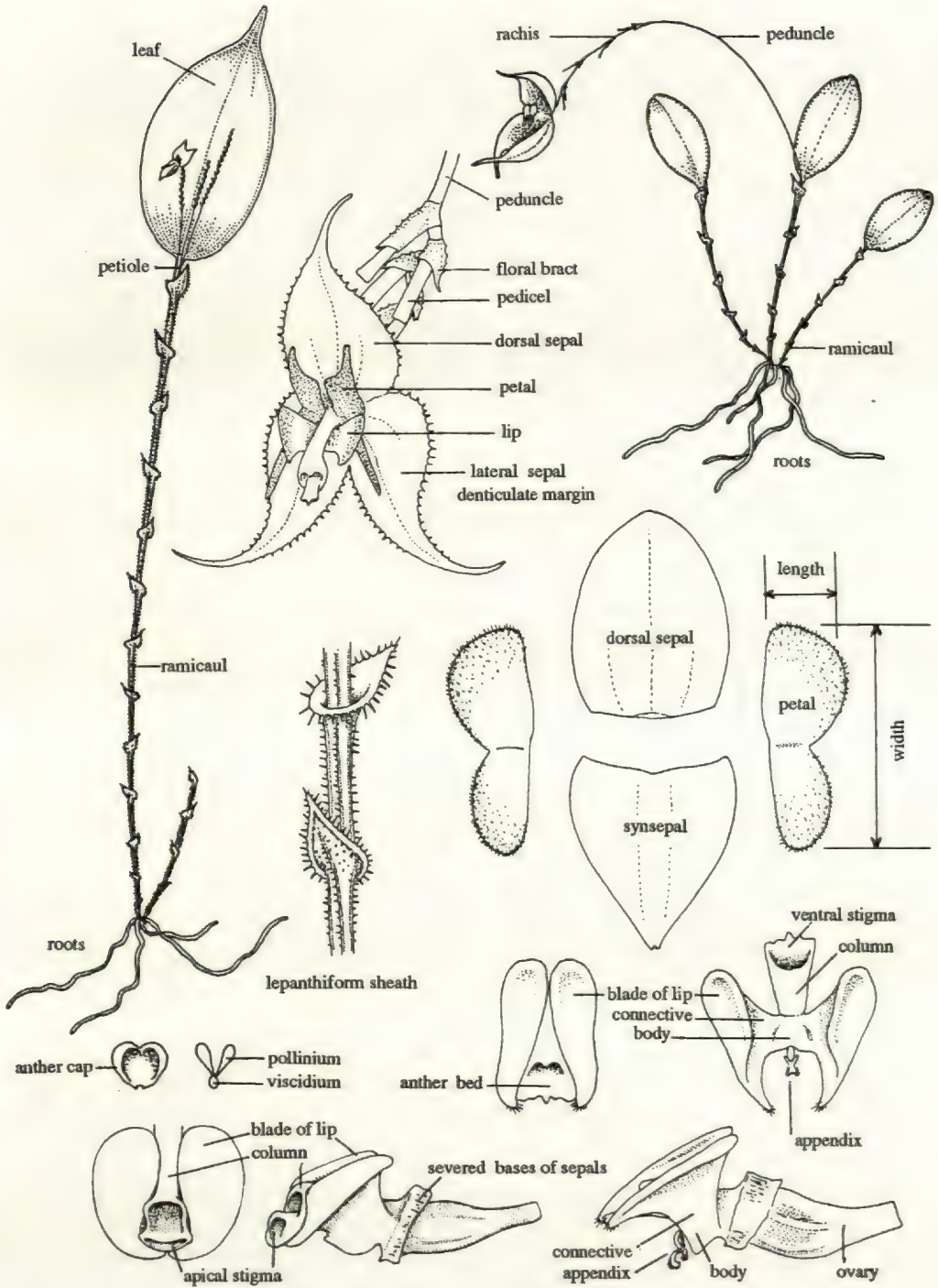


Fig. 1. Morphology of *Lepanthes*

The leaves vary greatly in size and shape, and in texture from thin to thick, sometimes even semiterete. Some species are characterized by pubescent or prickly leaves, others are characterized by reticulations or a crinkly border. The leaves are mostly green, but many are suffused with purple, sometimes on both sides.

The inflorescence is always racemose. The racemes are commonly borne behind the leaf, but sometimes the flower sits on the top surface of a horizontal leaf. In the prior case, the petiole of the leaf twists to encourage the inflorescence to rise along the back instead of the front of the blade. The flowers are borne successively (rarely simultaneously) in racemes that vary from congested to lax. The inflorescence of many species far surpasses the leaf in length.

The flower is not rotated so that the lateral sepals usually point forward, but flowers often bend to one side. Strictly speaking, the flowers are non-resupinate, but the relationship of the sepals to the observer depends upon from which direction the flower is beheld. Reichenbach and Schlechter, as well as some authors who followed, described the flowers "up-side-down," that is, with the dorsal sepal lowermost. Their orientation of the petals is also 180° contrary to the descriptions that follow in this volume. The flowers are illustrated here in the way we are accustomed to seeing orchid flowers with the dorsal sepal "dorsal" or uppermost.

Typically, the petals are transversely bilobed, with the "upper lobe" overlying the "dorsal" (unpaired) sepal. The "length" is the narrow distance between the attachment of the petal at the base of the column to the outer margin of the petal. The "width" is the usually much longer distance between the tips of the opposite lobes. Sometimes a smaller middle lobe is present on the outer margin, and sometimes the larger lobes themselves divide or fork into segments.

The colors seen in the flowers of *Lepanthes* are the most diverse and vivid in all the Orchidaceae. Every conceivable color can be found. Combinations of brilliant, clashing colors are common. The petals are the most notorious.

The lip originates from the undersurface of a footless column, most commonly at the base. It is almost always "three-lobed," and the lobes are so greatly modified that new terminology becomes necessary. Between entire or simply bilobed lips, the criterion for section *Haplocheilus*, and lips with complicated modifications, all intermediate forms imaginable occur. Hence, section *Haplocheilus* is untenable.

Most often the margin of the lateral lobes is thickened and developed into a "blade." The supporting part to the blade becomes the "connective." Together, the pair of blades are often lifted by the connectives above the column where they sometimes touch or unite to form a roof over the column. The central part of the lip from which the bases of the connectives arise is the "body." It is attached to the column with or without a claw. The angle of the body between the front margins of the connectives is the "sinus," from which or near which the middle lobe, the "appendix," is derived. This peculiar organ is subject to a myriad of forms, all presumably acting as attractants for pollinators. Great variations of the appendix occur in some species with the most intricately developed appendix.

The morphology of the majority of species follows a similar pattern which makes identification difficult with a dichotomous key. Sometimes merely combinations of not-too-unusual forms of the floral parts distinguish a species. On the other hand, however, the flowers of many species are wildly different and unique with grotesque formations of some or all floral parts.

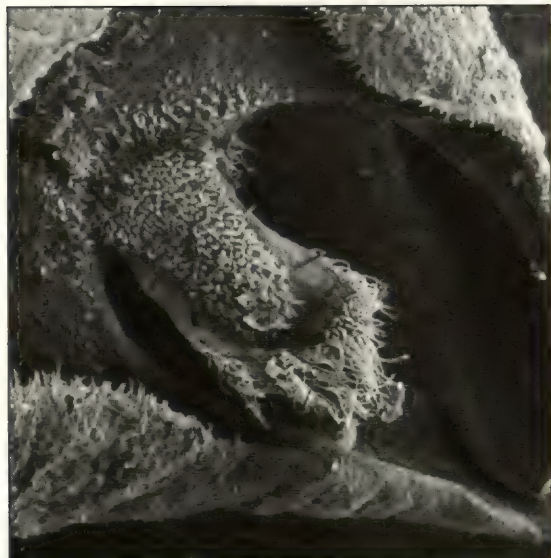


Fig. 2 (upper left) Appendix of *Lepanthes chrycina* with the blades of the lip expanded and the column elevated.
 Fig. 3 (upper right) Appendix of *Lepanthes plectilis* with the blades of the lip expanded and the column elevated.
 Fig. 4. and Fig. 5. (lower) Appendix of *Lepanthes implexa* on the anterior surface of the body.
 All scanning electron micrographs by Günter Gerlach at the
 Institut für Systematische Botanik und Pflanzengeographie der Universität Heidelberg.

The species of *Lepanthes* grow mostly in the filtered light of moist or wet forests at relatively high altitudes between 1500 and 3000 meters above sea level where a high humidity and chilly nights are guaranteed. They grow most frequently enmeshed among mosses on twigs or small branches, often in the tops of trees where a constant air movement is most likely to occur. High altitude, elfin forests are particularly suitable where all their requirements are met. Most species respond to culture in greenhouses where the above conditions can be duplicated.

LEPANTHES Sw., Nov. Act. Soc. Sci. Upsala 6: 85, 1799.

Ety.: From the Greek *lepis*, "a scale," and *anthos*, "a flower," referring to the small, "scalelike" flowers.

Type: *Epidendrum ovale* Sw., Prodr. 125, 1788 = *Lepanthes ovalis* (Sw.) Fawc. & Rendle.

The genus *Lepanthes* has been divided into subgenera, sections, subsections and series (Luer, 1986, 1987a, 1987b, 1993). Three subgenera are recognized: *Brachycladium* (11 species in Ecuador) treated in *Icones Pleurothallidinarum XI* (Luer, 1994), *Lepanthes* (ca. 265 species in Ecuador), and *Marsipanthes* (two species in Ecuador). Therefore, about 278 species are now counted in Ecuador. *Dracnanthes* (2 species in Ecuador) is elevated to genus.

Subgenus *Lepanthes*, presently with only one section, is too large to treat in one unit. For convenience it is being divided into geographical and political units: Central America, the Antilles, Colombia, Venezuela, Ecuador, etc.

Section *Lepanthes* is divisible into three subsections, with five series. This present treatment includes only the species of subgenus *Lepanthes* section *Lepanthes* found within the current political boundaries of Ecuador.

Lepanthes sect. *Lepanthes*

Syn.: *Lepanthes* sect. *Macrocladae* Rchb.f., Xenia Orch. 1: 143, 1858.

Lectotype: *Lepanthes ovalis* (Sw.) Fawc. & Rendle.

Ety.: From the Greek *makrocladium*, "a long branch," referring to the length of the ramicauls as opposed to the short ramicauls of sect. *Brachycladium* Rchb.f.

Syn.: *Lepanthes* sect. *Diplocheilus* Fawc. & Rendle, Orchids of Jamaica 67, 1910.

Lectotype: *Lepanthes ovalis* (Sw.) Fawc. & Rendle.

Ety.: From the Greek *diplocheilos*, "a double lip," referring to the lip divided into blades.

Syn.: *Lepanthes* sect. *Haptocheilus* Fawc. & Rendle, Orchids of Jamaica 68, 1910.

Lectotype: *Lepanthes brevipetala* Fawc. & Rendle, J. Bot. 46: 5, 1909.

Ety.: From the Greek *haplocheilos*, "a single lip," referring to the undivided lip.

Syn.: *Lepanthes* sect. *Fawcelepanthes* Cogn., Orch. Antill. 434, 1910.

Lectotype: *Lepanthes brevipetala* Fawc. & Rendle, J. Bot. 46: 5, 1909.

Ety.: Named in honor of William Fawcett, investigator of the orchids of Jamaica.

Syn.: *Lepanthes* sect. *Rendlelepanthes* Cogn., Orch. Antill. 435, 1910.

Lectotype: *Lepanthes ovalis* (Sw.) Fawc. & Rendle.

Ety.: Named in honor of Alfred Rendle, investigator of the orchids of Jamaica.

Plants perennial, very small to large, weak to robust, erect to pendent, epiphytic, lithophytic to terrestrial, the rhizome very short to elongate between aerial stems (ramicauls); roots few to many, slender to coarse or fleshy. Ramicauls ascending to erect, single to proliferating another ramicaul, slender to stout, non-pseudobulbous, usually longer than the leaf, unifoliate, enclosed by a series of tubular, ribbed, imbricating sheaths with oblique, more or less dilated ostia, with the ribs and thickened margins of the ostia usually scabrous or ciliate, with the inflorescence arising with an annular ring (annulus) from near the apex (the leaf-stem abscission layer). Leaf erect in relation to the ramicaul, coriaceous to thinly coriaceous, smooth, ciliate or spiculate, rarely reticulated, often suffused with purple, ovate to narrowly ovate, elliptical to narrowly elliptical to linear or rarely terete, the apex acute, obtuse to rounded, shallowly notched with a mucro in the sinus, the base rounded, cuneate or narrowly

cuneate into a short petiole. **Inflorescence** racemose, single or fasciculate, longer or shorter than the leaf, densely or distantly flowered, few- to many-flowered, usually successively-flowered, borne by a slender peduncle either on top of the leaf, behind the leaf, or far beyond the leaf; floral bracts thin and tubular to infundibular, oblique, often ciliate or echinate; pedicels slender to stout, longer or shorter than the floral bract; ovary smooth, or spiculate, trivalvate with the ribs smooth, carinate or crested; flowers variously colored; **sepals** conspicuous, usually membranous, smooth, ciliate, denticulate or pubescent, broad to narrow, obtuse to acute or acuminate, occasionally caudate, nearly free to deeply connate, 1- to 3-veined; **petals** membranous, transversely bilobed, occasionally with a marginal process or "third lobe," glabrous to pubescent; **lip** variously trilobed, with the margins of the lateral lobes most often developed into *blades* that flank or overlie the column, the portion of the lateral lobe below the blade is the *connective*, the middle lobe is variously developed into a unique structure and extremely variable structure, the *appendix*, the central portion of the lip between the two connectives and from which the appendix arises is the *body*, the body connate to the base or undersurface of a footless column; **column** more or less terete with the apex clavate, the anther dorsal or apical, unhooded, the rostellum apical, the pollinia 2, yellow, pyriform, with a common viscidium, the stigma single-lobed or bilobed, apical, subapical, or ventral, the base of the column footless, continuous with the ovary.

Lepanthes sect. **Lepanthes** subsect. **Bilabiatae** Luer, subsect. nov.

Type: *Lepanthes bifalcis* Luer, Phytologia 54: 332, 1983.

Sepala lateral in synsepalum binervum connata.

Lateral sepals completely connate into a 2-veined synsepal.

Lepanthes sect. **Lepanthes** subsect. **Breves** Luer, stat. nov.

Type: *Lepanthes monoptera* Lindl., J. Bot. 1: 10, 1834.

Bas.: *Lepanthes* ser. *Breves* Luer Novon 3: 442, 1993.

Raceme lax, the rachis between floral bracts longer than the pedicels; lateral sepals one-veined, not completely connate.

Lepanthes ser. **Breves** Luer, Novon 3: 442, 1993.

Type: *Lepanthes monoptera* Lindl., J. Bot. 1: 10, 1834.

Inflorescence shorter than the leaf.

Lepanthes ser. **Filamentosae** Luer, Novon 3: 442, 1993.

Type: *Lepanthes filamentosa* Luer & Hirtz, Novon 3: 448, 1993.

Inflorescence longer than the leaf.

Lepanthes sect. **Lepanthes** subsect. **Lepanthes**

Type: *Lepanthes ovalis* (Sw.) Fawc. & Rendle.

Raceme congested or lax, longer or shorter than the leaf; lateral sepals 2- to 3-veined, not completely connate.

Lepanthes ser. **Lepanthes**, Novon 3: 442, 1993.

Type: *Lepanthes ovalis* (Sw.) Fawcett & Rendle.

Raceme congested, the rachis between floral bracts shorter than the pedicels;

Lepanthes ser. **Elongatae** Luer, Novon 3: 442, 1993.

Type: *Lepanthes elongata* Luer & Hirtz, Lindleyana 2: 99, 1987.

Raceme lax, the rachis between floral bracts longer than the pedicels.

Lepanthes ser. **Mucronatae** Luer, ser. nov.

Type: *Lepanthes mucronata* Lindl., Comp. Bot. Mag. 2: 356, 1836.

Petala cum processu marginale.

Petals with a process on the outer margin.



Fig. 6. POLITICAL MAP OF ECUADOR

EPITHETS IN *LEPANTHES* ATTRIBUTED TO ECUADOR
AND ILLUSTRATIONS OF SPECIES OF SUBGENUS *LEPANTHES*

- Lepanthes aberrans* Schltr. =
Draconanthes aberrans (Schltr.) Luer
- Fig. 1. *Lepanthes abens* Luer & Hirtz
Fig. 2. *Lepanthes acarina* Luer
Fig. 3. *Lepanthes actias-luna* Luer & Hirtz
Fig. 4. *Lepanthes aculeata* Luer
Fig. 5. *Lepanthes adelphe* Luer & Hirtz
Fig. 6. *Lepanthes aeora* Luer & Hirtz
Fig. 7. *Lepanthes agglutinata* Luer
Fig. 8. *Lepanthes allector* Luer & Escobar
Fig. 9. *Lepanthes aloplex* Luer & Hirtz
Fig. 10. *Lepanthes alticola* C.Schweinf.
Fig. 11. *Lepanthes amphiox*a Luer & Hirtz
Fig. 12. *Lepanthes andreetae* Luer & Hirtz
Fig. 13. *Lepanthes andrenoglossa* Rchb.f. =
Lepanthes mucronata
- Fig. 14. *Lepanthes angulata* Luer & Hirtz
Fig. 15. *Lepanthes antiopa* Luer
Fig. 16. *Lepanthes aries* Luer
Fig. 17. *Lepanthes asoma* Luer & Hirtz
Fig. 18. *Lepanthes athena* Luer & Hirtz
Fig. 19. *Lepanthes auriculata* Luer
Fig. 20. *Lepanthes aurita* Luer & Escobar
Fig. 21. *Lepanthes avicularia* Luer & Hirtz
Fig. 22. *Lepanthes ballatrix* Luer
Fig. 23. *Lepanthes barbellifera* Luer & Hirtz
Fig. 24. *Lepanthes benzingii* Luer
Fig. 25. *Lepanthes bifalcis* Luer
- Lepanthes bifaria* Luer =
Lepanthes brachypogon
- Fig. 26. *Lepanthes biloba* Lindl.
Fig. 27. *Lepanthes binaria* Luer & Hirtz
Fig. 28. *Lepanthes bituberculata* Luer & Hirtz
Fig. 29. *Lepanthes brachypogon* Luer
Fig. 30. *Lepanthes breneri* Luer
- Lepanthes bufonis* Luer & Hirtz =
Draconanthes bufonis (Luer & Hirtz) Luer
- Fig. 31. *Lepanthes calliope* Luer & Hirtz
Fig. 32. *Lepanthes callisto* Luer & Hirtz
Fig. 33. *Lepanthes calodictyon* Hook.
Fig. 34. *Lepanthes caloura* Luer & Hirtz
Fig. 35. *Lepanthes calypso* Luer & Hirtz
Fig. 36. *Lepanthes campodoste*le Luer & Hirtz
Fig. 37. *Lepanthes camptica* Luer & Hirtz
Fig. 38. *Lepanthes capitanea* Rchb.f.
Fig. 39. *Lepanthes carinata* Luer & Hirtz
Fig. 40. *Lepanthes cassidea* Rchb.f.
Fig. 41. *Lepanthes cauda-avis* Luer & Hirtz
Fig. 42. *Lepanthes caudata* Luer & Escobar
Fig. 43. *Lepanthes caudatisepala* C.Schweinf.
Fig. 44. *Lepanthes celox* Luer & Hirtz
Fig. 45. *Lepanthes chimaera* Luer & Escobar
Fig. 46. *Lepanthes chorista* Luer & Hirtz
Fig. 47. *Lepanthes chrycina* Luer & Hirtz
- Lepanthes ciliaris* Luer & Hirtz
(subgen. *Brachycladium*)
- Fig. 48. *Lepanthes cilicampa* Luer & Hirtz
Fig. 49. *Lepanthes clandestina* Luer & Hirtz
Fig. 50. *Lepanthes clarkii* Luer
Fig. 51. *Lepanthes columbar* Luer
- Fig. 52. *Lepanthes condorensis* Luer & Hirtz
Fig. 53. *Lepanthes confusa* Ames & C.Schweinf.
Fig. 54. *Lepanthes conjuncta* Luer & Hirtz
Fig. 55. *Lepanthes contingens* Luer
- Lepanthes corazonis* Schltr. = *Trichosalpinx chamaelepanthes* (Rchb.f.) Luer
- Fig. 56. *Lepanthes corkyae* Luer & Hirtz
Fig. 57. *Lepanthes cornualis* Luer & Escobar
Fig. 58. *Lepanthes corrugata* Luer & Dalström
Lepanthes cosmos Luer & Escobar =
Lepanthes vesperillo
- Fig. 59. *Lepanthes cotyledon* Luer
Fig. 60. *Lepanthes cotylisca* Luer & Hirtz
Fig. 61. *Lepanthes craticia* Luer
Fig. 62. *Lepanthes cremasta* Luer & Hirtz
Fig. 63. *Lepanthes crista-pulli* Luer & Escobar
Fig. 64. *Lepanthes ctenophora* Luer & Hirtz
Fig. 65. *Lepanthes cymbium* Luer & Escobar
Fig. 66. *Lepanthes dalessandrol* Luer
- Lepanthes dalstroemii* Luer =
Lepanthes wagneri
- Fig. 67. *Lepanthes decurva* Luer & Hirtz
Fig. 68. *Lepanthes deformis* Luer & Hirtz
Fig. 69. *Lepanthes deileastes* Luer
Fig. 70. *Lepanthes delhierrol* Luer & Hirtz
Fig. 71. *Lepanthes deliqua* Luer
- Lepanthes delphax* Luer =
Lepanthes jamesonii
- Fig. 72. *Lepanthes dictydion* Luer & Hirtz
Fig. 73. *Lepanthes didyma* Luer & Hirtz
- Lepanthes dielsii* Mansf. =
Salpistele dielsii (Mansf.) Luer
- Lepanthes dipteryx* Luer & Hirtz =
Lepanthes alticola C.Schweinf.
- Fig. 74. *Lepanthes disjuncta* Luer & Hirtz
Fig. 75. *Lepanthes dodsonii* Luer
- Lepanthes drymocharis* Luer & Hirtz =
Lepanthes ophioglossa
- Fig. 76. *Lepanthes dunstervilleorum* Foldvats
Lepanthes echinocarpa L.O.Williams =
Salpistele dielsii (Mansf.) Luer
- Fig. 77. *Lepanthes echo* Luer & Hirtz
Fig. 78. *Lepanthes effusa* Schltr.
Fig. 79. *Lepanthes ejecta* Luer & Hirtz
Fig. 80. *Lepanthes elaminata* Luer & Hirtz
Fig. 81. *Lepanthes electilis* Luer
Fig. 82. *Lepanthes elegantula* Schltr.
Fig. 83. *Lepanthes elephantina* Luer & Escobar
Fig. 84. *Lepanthes elongata* Luer & Hirtz
Fig. 85. *Lepanthes embreei* Luer & Hirtz
- Lepanthes erepsis* Luer & Hirtz
(subgen. *Brachycladium*)
- Fig. 86. *Lepanthes eriocampa* Luer & Hirtz
Fig. 87. *Lepanthes eruca* Luer & Hirtz
Fig. 88. *Lepanthes emeralda* Luer & Hirtz
Fig. 89. *Lepanthes eumeces* Luer
Fig. 90. *Lepanthes evansiae* Luer & Hirtz
Fig. 91. *Lepanthes exogena* Luer & Hirtz
Fig. 92. *Lepanthes expansa* Luer & Hirtz
Fig. 93. *Lepanthes filamentosa* Luer & Hirtz

- Fig. 94. *Lepanthes fiskel* Luer
 Fig. 95. *Lepanthes fissa* Luer & Hirtz
 Fig. 96. *Lepanthes flaccida* Luer & Hirtz
 Fig. 97. *Lepanthes flexuosa* Luer
 Fig. 98. *Lepanthes floresii* Luer & Hirtz
 Fig. 99. *Lepanthes focalis* Luer
 Fig. 100. *Lepanthes frigida* Luer
 Fig. 101. *Lepanthes fusiformis* Luer
 Fig. 102. *Lepanthes gaileana* Luer & Hirtz
 Fig. 103. *Lepanthes gargantua* Rchb.f.
 Fig. 104. *Lepanthes gargoyla* Luer & Hirtz
 Fig. 105. *Lepanthes gemmula* Luer & Hirtz
 Fig. 106. *Lepanthes glabella* Luer & Hirtz
 Fig. 107. *Lepanthes glomerulosa* Luer & Hirtz
 Fig. 108. *Lepanthes gnoma* Luer & Hirtz
 Fig. 109. *Lepanthes golbasto* Luer & Hirtz
 Fig. 110. *Lepanthes grossiradix* Luer & Hirtz
 Fig. 111. *Lepanthes grypha* Luer
 Fig. 112. *Lepanthes helcium* Luer & Hirtz
 Fig. 113. *Lepanthes helicocephala* Rchb.f.
 Fig. 114. *Lepanthes hexapus* Luer & Escobar
 Lepanthes hippocrepica Luer & Escobar
 (subgen. *Brachycladium*)
 Fig. 115. *Lepanthes hirsutula* Luer & Hirtz
 Fig. 116. *Lepanthes hirtzii* Luer
 Lepanthes hispida Luer & Hirtz =
 Lepanthes dunstervilleorum
 Fig. 117. *Lepanthes hoerjjerli* Luer
 Fig. 118. *Lepanthes homotaxis* Luer & Escobar
 Fig. 119. *Lepanthes horribilis* Luer & Hirtz
 Fig. 120. *Lepanthes hymenoptera* Luer & Hirtz
 Fig. 121. *Lepanthes hystrix* Luer & Hirtz
 Fig. 122. *Lepanthes ictalurus* Luer
 Fig. 123. *Lepanthes ilensis* Dodson
 Fig. 124. *Lepanthes illinizae* Luer & Hirtz
 Fig. 125. *Lepanthes illex* Luer
 Fig. 126. *Lepanthes imitator* Luer & Hirtz
 Fig. 127. *Lepanthes implexa* Luer & Hirtz
 Fig. 128. *Lepanthes inamoena* Luer
 Fig. 129. *Lepanthes intonsa* Luer
 Fig. 130. *Lepanthes intricata* Luer
 Fig. 131. *Lepanthes iricolor* Luer
 Fig. 132. *Lepanthes jacklinpyxa* Luer & Hirtz
 Fig. 133. *Lepanthes jamboensis* Luer & Hirtz
 Fig. 134. *Lepanthes jamesonii* Lindl. ex Rchb.f.
 Fig. 135. *Lepanthes janitor* Luer & Escobar
 Fig. 136. *Lepanthes jayandella* Luer
 Fig. 137. *Lepanthes jimburae* Luer & Hirtz
 Fig. 138. *Lepanthes jubata* Luer
 Fig. 139. *Lepanthes kujitii* Luer & Hirtz
 Lepanthes lancipetala L.O. Williams =
 Salpistele pensilis
 Fig. 140. *Lepanthes llanganatensis* Luer & Hirtz
 Fig. 141. *Lepanthes lloensis* Luer
 Fig. 142. *Lepanthes lophius* Luer & Escobar
 Lepanthes lucifer Luer & Hirtz
 (subgen. *Marsipanthes*)
 Lepanthes lunaris Luer
 (subgen. *Brachycladium*)
 Lepanthes lupula Luer & Hirtz
 (subgen. *Brachycladium*)
 Fig. 143. *Lepanthes lycocephala* Luer & Escobar
 Fig. 144. *Lepanthes maccombiana* Luer
 Lepanthes macropoda Schltr. =
 Lepanthes nanegalensis
 Lepanthes macrotica Luer & Dalström
 (subgen. *Brachycladium*)
 Lepanthes macroura Schltr. =
 Lepanthes mucronata
 Fig. 145. *Lepanthes magnifica* Luer
 Fig. 146. *Lepanthes mammillata* Luer
 Fig. 147. *Lepanthes manabina* Dodson
 Fig. 148. *Lepanthes mastix* Luer & Hirtz
 Lepanthes mastodon Luer =
 Lepanthes manabina
 Fig. 149. *Lepanthes maxillaris* Luer & Hirtz
 Fig. 150. *Lepanthes megalosteale* Luer
 Fig. 151. *Lepanthes meganthera* Luer & Hirtz
 Fig. 152. *Lepanthes melpomene* Luer & Hirtz
 Fig. 153. *Lepanthes menatol* Luer & Vásquez
 Fig. 154. *Lepanthes meniscophora* Luer & Hirtz
 Fig. 155. *Lepanthes mephistopheles* Luer & Hirtz
 Lepanthes mesochlora Rchb.f. =
 Lepanthes mucronata
 Fig. 156. *Lepanthes metaxy* Luer & Hirtz =
 Lepanthes biloba
 Lepanthes micropetala L.O. Williams
 (subgenus *Brachycladium*)
 Lepanthes micropogon Luer =
 Lepanthes megalosteale
 Lepanthes millei Schltr. =
 Lepanthes effusa
 Fig. 157. *Lepanthes mirador* Luer & Hirtz
 Fig. 158. *Lepanthes monitor* Luer
 Fig. 159. *Lepanthes monoptera* Lindl.
 Fig. 160. *Lepanthes morleyi* Luer & Dalström
 Fig. 161. *Lepanthes mucronata* Lindl.
 Fig. 162. *Lepanthes muscula* Luer & Escobar
 Lepanthes nambijae Luer & Hirtz =
 Lepanthes thylax Luer & Hirtz
 Fig. 163. *Lepanthes nanegalensis* Rchb.f.
 Fig. 164. *Lepanthes narcissus* Luer & Hirtz
 Fig. 165. *Lepanthes necopina* Luer & Hirtz
 Fig. 166. *Lepanthes nematostele* Luer
 Fig. 167. *Lepanthes nivea* Luer
 Fig. 168. *Lepanthes nontecta* Luer
 Lepanthes nummularia Rchb.f.
 (subgen. *Brachycladium*)
 Fig. 169. *Lepanthes odobenella* Luer & Hirtz
 Fig. 170. *Lepanthes odontocera* Luer & Hirtz
 Fig. 171. *Lepanthes ollaris* Luer & Escobar
 Fig. 172. *Lepanthes ophioglossa* Luer
 Fig. 173. *Lepanthes orchestris* Luer & Vásquez
 Fig. 174. *Lepanthes orion* Luer & Escobar
 Fig. 175. *Lepanthes ortegae* Luer & Hirtz
 Fig. 176. *Lepanthes otara* Luer
 Lepanthes otostalix Rchb.f. =
 Lepanthes biloba
 Fig. 177. *Lepanthes oxypetala* Luer & Hirtz
 Lepanthes pachyrhiza Luer & Hirtz =
 Lepanthes gargantua
 Fig. 178. *Lepanthes pan* Luer & Dalström
 Fig. 179. *Lepanthes papallactae* Luer & Hirtz
 Fig. 180. *Lepanthes papyrophylla* Rchb.f.
 Fig. 181. *Lepanthes paradoxa* Luer
 Fig. 182. *Lepanthes pecunialis* Luer & Hirtz
 Fig. 183. *Lepanthes pelyx* Luer & Hirtz
 Lepanthes peniculus Luer =
 Lepanthes biloba
 Lepanthes pensilis Schltr. =
 Salpistele pensilis

- Fig. 184. *Lepanthes pentoxys* Luer
Lepanthes peperomioides Schltr.
(subgen. *Brachycladium*)
- Fig. 185. *Lepanthes perdita* Luer & Hirtz
- Fig. 186. *Lepanthes phrixothrix* Luer & Hirtz
Lepanthes pilosella Rchb.f.
(subgen. *Brachycladium*)
- Fig. 187. *Lepanthes plectilis* Luer & Hirtz
- Fig. 188. *Lepanthes pleurorachis* Luer
- Fig. 189. *Lepanthes plumifera* Luer
Lepanthes pollex Luer =
Lepanthes pteropogon
Lepanthes polygonoides L.B.Smith & Harris
(subgen. *Brachycladium*)
- Fig. 190. *Lepanthes polytricha* Luer
Lepanthes porcula Luer = *L. Jamesonii*
- Fig. 191. *Lepanthes posadae* Luer & Escobar
Lepanthes prionota Luer & Hirtz =
Draconanthes aberrans
- Fig. 192. *Lepanthes proboscidis* Luer & Hirtz
Lepanthes profusa Luer & Hirtz =
Lepanthes caudalisepala
- Fig. 193. *Lepanthes protuberans* Luer & P. Jesup
L. pseudocaulescens L.B.Smith & Harris
(subgen. *Brachycladium*)
- Fig. 194. *Lepanthes psomion* Luer & Hirtz
- Fig. 195. *Lepanthes pteropogon* Rchb.f.
- Fig. 196. *Lepanthes pubes* Luer & Escobar
- Fig. 197. *Lepanthes pubescens* Luer
- Fig. 198. *Lepanthes quaternaria* Luer
- Fig. 199. *Lepanthes repens* Luer
- Fig. 200. *Lepanthes reventador* Luer & Hirtz
- Fig. 201. *Lepanthes rhodophylla* Schltr.
- Fig. 202. *Lepanthes rhombipetala* Schltr.
- Fig. 203. *Lepanthes rhynchion* Luer
Lepanthes ribes Luer
(subgen. *Marsipanthes*)
- Fig. 204. *Lepanthes ricina* Luer & Dalström
Lepanthes roseola Rchb.f. =
Lepanthes monoptera
- Fig. 205. *Lepanthes rudicula* Luer & Hirtz
Lepanthes saccosepala L.B.Smith & Harris
(subgen. *Brachycladium*)
- Fig. 206. *Lepanthes saltator* Luer
- Fig. 207. *Lepanthes saltatrix* Luer & Hirtz
- Fig. 208. *Lepanthes satyrica* Luer & Hirtz
- Fig. 209. *Lepanthes scalaris* Luer
- Fig. 210. *Lepanthes scansor* Luer & Escobar
- Fig. 211. *Lepanthes scapha* Luer & Hirtz
- Fig. 212. *Lepanthes schizix* Luer
- Fig. 213. *Lepanthes schizura* Luer
- Fig. 214. *Lepanthes scrotifera* Luer & Hirtz
- Fig. 215. *Lepanthes semilaminata* Luer & Hirtz
- Fig. 216. *Lepanthes series* Luer & Hirtz
- Fig. 217. *Lepanthes setifera* Luer & Escobar
- Fig. 218. *Lepanthes sigsigensis* Luer & Hirtz
- Fig. 219. *Lepanthes silenus* Luer & Hirtz
- Fig. 220. *Lepanthes sobrina* Luer & Hirtz
- Fig. 221. *Lepanthes sororcula* Luer & Hirtz
- Fig. 222. *Lepanthes speciosa* Luer & Hirtz
- Fig. 223. *Lepanthes splendida* Luer & Hirtz
Lepanthes stalactites Luer & Hirtz
(subgen. *Brachycladium*)
- Fig. 224. *Lepanthes stegastes* Luer & Hirtz
- Fig. 225. *Lepanthes steldipetala* Luer
- Fig. 226. *Lepanthes strumosa* Luer & Escobar
- Fig. 227. *Lepanthes stupida* Luer
- Fig. 228. *Lepanthes suavium* Luer & Hirtz
Lepanthes sucula Luer & Hirtz =
Lepanthes frigida
- Fig. 229. *Lepanthes sulcata* Luer & Hirtz
- Fig. 230. *Lepanthes surrogata* Luer & Hirtz
- Fig. 231. *Lepanthes sybax* Luer & Hirtz
- Fig. 232. *Lepanthes synema* Luer & Hirtz
- Fig. 233. *Lepanthes tachirensis* Foldats
- Fig. 234. *Lepanthes teaguei* Luer & Hirtz
- Fig. 235. *Lepanthes tectorum* Luer & Hirtz
- Fig. 236. *Lepanthes tentaculata* Luer & Hirtz
- Fig. 237. *Lepanthes teres* Luer
- Fig. 238. *Lepanthes tersichore* Luer & Hirtz
- Fig. 239. *Lepanthes thalia* Luer & Hirtz
- Fig. 240. *Lepanthes thylax* Luer & Hirtz
- Fig. 241. *Lepanthes titanica* Luer & Hirtz
- Fig. 242. *Lepanthes tortillis* Luer & Hirtz
- Fig. 243. *Lepanthes tracheia* Rchb.f.
Lepanthes trachysepala Schltr. =
Draconanthes aberrans (Schltr.) Luer
- Fig. 244. *Lepanthes transparentis* Luer
- Fig. 245. *Lepanthes trimerinx* Luer
- Fig. 246. *Lepanthes tungurahuae* Luer & Hirtz
- Fig. 247. *Lepanthes unijuga* Luer & Dalström
- Fig. 248. *Lepanthes urania* Luer & Hirtz
- Fig. 249. *Lepanthes urotepala* Rchb.f.
- Fig. 250. *Lepanthes uxoria* Luer & Hirtz
- Fig. 251. *Lepanthes vaginans* Luer & Hirtz
- Fig. 252. *Lepanthes vatrax* Luer
- Fig. 253. *Lepanthes velata* Luer & Hirtz
- Fig. 254. *Lepanthes vellitata* Luer & Hirtz
- Fig. 255. *Lepanthes vermicularis* Luer
- Fig. 256. *Lepanthes vespertillo* Rchb.f.
- Fig. 257. *Lepanthes via-incarum* Luer & Hirtz
- Fig. 258. *Lepanthes vibrissa* Luer & Hirtz
Lepanthes villosa Løjtmant
(subgen. *Brachycladium*)
- Fig. 259. *Lepanthes volador* Luer & Hirtz
- Fig. 260. *Lepanthes wagneri* Rchb.f.
- Fig. 261. *Lepanthes xenos* Luer & Hirtz
- Fig. 262. *Lepanthes ximena* Luer
- Fig. 263. *Lepanthes yanganae* Luer & Hirtz
- Fig. 264. *Lepanthes zamorensis* Luer & Hirtz
- Fig. 265. *Lepanthes zunagensis* Luer & Hirtz
- Fig. 266. *Lepanthes zygon* Luer

SUMMARY OF PRESENT CLASSIFICATION OF THE GENUS *LEPANTHES*

- Subgen. *Brachycladium* (in Icones Pleurothallidinarum XI)
- Subgen. *Lepanthes*
 - Sect. *Lepanthes*
 - Subsect. *Bilabiatae*
 - Subsect. *Breves*
 - Series *Filamentosae*
 - Series *Breves*
 - Subsect. *Lepanthes*
 - Series *Elongatae*
 - Series *Lepanthes*
 - Series *Mucronatae*
- Subgen. *Marsiphanthes* (in Icones Pleurothallidinarum XIV)

KEY TO THE SUBGENERA, SECTIONS, SUBSECTIONS AND SERIES.

- 1 Plant pendent or repent; rhizome descending or ascending, longer than the ramicaulsubgen. *Brachycladium*
- 1' Plant erect, densely ascending to caespitose (rarely prolific); rhizome shorter than the ramicaul2
- 2 Sepals inflated, variously connate into a deep cup; petals thick, erect.....subgen. *Marsiphanthes*
- 2' Sepals variously connate; petals membranous, transversely lobed (subgen. *Lepanthes* sect. *Lepanthes*).
.....3
- 3 Lateral completely connate into a 2-veined synsepal.....subsect. *Bilabiatae*
- 3' Sepals spreading with the laterals connate to near the middle, or free.....4
- 4 Lateral sepals 1-veined (subsect. *Breves*).....5
- 4' Lateral sepals 2- to 3-veined (subsect. *Lepanthes*).....6
- 5 Inflorescence longer than the leaf.....ser. *Filamentosae*
- 5' Inflorescence shorter than the leaf.....ser. *Breves*
- 6 Inflorescence loose, the distance between the floral bracts longer than the pedicel.....ser. *Elongatae*
- 6' Inflorescence congested, the distance between the floral bracts shorter than the pedicel.....7
- 7 Petals without a marginal process between the lobes.....ser. *Lepanthes*
- 7' Petals with a marginal process between the lobes.....ser. *Mucronatae*

KEY TO THE SPECIES OF SECTION *LEPANTHES*Subsection *Bilabiatae*

Characterized by the lateral sepals completely connate into a 2-veined lamina.

- 1 Lip with lobes not forming blades2
- 1' Lip with lobes forming rudimentary blades4
- 2 Petals unguiculate, bifurcate, with lobes recurving; lip obovate, bilobed, unguiculate without basal lobes flanking the column.....*L. bifalcis*
- 2' Petals not unguiculate; lip broadly cordate with apex rounded, shallowly notched, with basal lobes flanking the column3
- 3 Leaves narrowly ovate, thick; petals with lobes opposite.....*L. columbar*
- 3 Leaves ovate, thick; petals with short lobes diverging 90°.....*L. homotaxis*
- 4 Petals with lobes diverging 90°; lip with blades thick, convex.....*L. clandestina*
- 4 Petals with lobes opposite, 180°; lip with blades membranous, concave below the middle5
- 5 Petals with upper lobe larger than lower lobe; column longer than blades of lip; appendix triangular.....
.....*L. narcissus*
- 5' Petals with lobes subequal; column shorter than blades of lip; appendix a small, external, tuft of cilia.....
.....*L. inamoena*

Subsection *Breves*Series *Filamentosae*

Characterized by the inflorescence surpassing the leaf, and lateral sepals with one vein.

- 1 Raceme loose, more or less flexuous, greatly exceeding the leaf.....2
 1' Raceme congested or subcongested, surpassing the leaf.....4
 2 Plant more than 5 cm tall excluding inflorescence; lip with blades triangular.....*L. vaginans*
 2 Plant less than 3 cm tall excluding inflorescence; lip with blades suboblong.....3
 3 Raceme with rachis slender, lightly flexuous; petals with lobes opposite.....*L. eumeces*
 3' Raceme with rachis stout, distinctly flexuous; petals unguiculate at base.....*L. flexuosa*
 4 Sepals shortly caudate; petals with lower lobes falcate.....*L. brenneri*
 4' Sepals with tails much longer than blades.....5
 5 Sepals denticulate; petals with lobes triangular, opposite.....*L. trimerinx*
 5' Sepals entire; petals forked with lobes elongate, diverging.....*L. filamentosa*

Series *Breves*

Characterized by a peduncle shorter than leaf, and lateral sepals with one vein.

- 1 Ramicaul with sheaths numerous, short, with ostia widely dilated; lateral sepals long-caudate
*L. caloura*
 1' Ramicaul not as above; lateral sepals with or without short tails2
 2 Raceme very congested, distichous3
 2' Raceme subcongested to lax6
 3 Raceme short-pedicellate; anther larger than blade of lip.....*L. meganthera*
 3' Raceme long-pedicellate.....4
 4 Lip bilobed with thick, narrow, rudimentary blades embracing column.....*L. morleyi*
 4' Lip bilobed without forming blades5
 5 Lip cordate with basal lobes*L. pleurorachis*
 5' Lip obcordate, unguiculate, without basal lobes.....*L. psomion*
 6 Lateral sepals opposite, 180°; petals with an incurved apical lobule.....*L. tachirensis*
 6' Lateral sepals not opposite, 180°7
 7 Sepals denticulate or pubescent8
 7' Sepals glabrous, entire19
 8 Raceme usually exceeding leaf; roots thick, fleshy.....*L. grossiradix*
 8' Raceme not usually exceeding leaf; roots slender.....9
 9 Lateral sepals pubescent internally.....*L. cristapulli*
 9' Lateral sepals glabrous internally, variously denticulate.....10
 10 Sepals densely long-spiculate externally.....*L. hystrix*
 10' Sepals not densely long-spiculate externally.....11
 11 Petals with lower lobe oblong, 4 times longer than upper lobe.....*L. hoeijeri*
 11' Petals with lobes subequal, or upper lobe larger than lower lobe.....12
 12 Petals with upper lobe suborbicular or broadly obtuse, much larger than obtusely triangular lower lobe.....13
 12' Petals with lobes subequal, or with upper lobe larger than lower lobe.....15
 13 Lip with blades long-attenuate at the base.....*L. cornualis*
 13' Lip with blades obtuse at the base14
 14 Dorsal sepal ovate, acute; petals with upper lobe not concave medially
*L. rhynchion*
 14' Dorsal sepal suborbicular, obtuse; petals with upper lobe concave medially
*L. speciosa*

- 15 Lip bilobed with lobes broadly rounded, with bases encircling column.....*L. cotylisca*
 15' Lip bilobed with blades more or less developed, flanking or covering column.....16
- 16 Lip with blades thick, broadly ovoid, descending on either side of column.....17
 16' Lip with blades not thick, broadly ovoid, and descending on either side of the column.....18
- 17 Petals and blades papillose*L. adelphae*
 17' Petals and blades minutely pubescent*L. okara*
- 18 Petals with upper lobes overlapping; lip with blades ciliate.....*L. monoptera*
 18' Petals with upper lobes not overlapping; lip with blades microscopically pubescent-ciliate
*L. frigida*
- 19 Leaves elliptical, abruptly acuminate20
 19' Leaves narrowly ovate, acute21
- 20 Raceme lax; dorsal sepal concave medially; lateral sepals with tips diverging; lip with the blades surrounding the apex of column*L. jamesonii*
 20' Raceme subdense; dorsal sepal not concave medially; lateral sepals with tips not diverging; lip with blades covering apex of column*L. yanganae*
- 21 Lip with blades complete, covering most of column.....*L. velata*
 21' Lip with blades incomplete, exposing distal half of column.....22
- 22 Lateral sepals obtuse; appendix external, pedunculate.....*L. vatrax*
 22' Lateral sepals subacute, acuminate; appendix in sinus, triangular.....*L. sybax*

Subsection *Lepanthes*Series *Elongatae*

Characterized by loose racemes (the distance between the floral bracts longer than the pedicel) usually becoming longer than the leaf, and lateral sepals with 2 veins.

- 1 Ramicauls superposed, prolific2
 1' Ramicauls approximate, caespitose4
- 2 Ramicauls 1-2 cm long; sepals denticulate.....*L. series*
 2' Ramicauls 5-10 cm long; sepals entire3
- 3 Raceme longer than the leaf*L. scalaris*
 3' Raceme shorter than the leaf*L. scansor*
- 4 Plants up to about 5 cm tall, excluding inflorescence.....5
 4' Plants about 10 cm and more tall, excluding inflorescence.....32
- (Plants less than 5 cm tall)
- 5 Sepals without tails6
 5' Sepals short- or long-caudate.....14
- 6 Leaf ovate, acute; raceme few-flowered, subflexuous, slightly surpassing the leaf.....7
 6' Leaf broadly elliptical, obtuse to orbicular; raceme flexuous.....8
- 7 Lip bilaminate*L. acarina*
 7' Lip transversely crescent-shaped*L. strumosa*
- 8 Sepals tall-carinate-crested9
 8' Sepals not tall-carinate-crested12
- 9 Petals with lower lobe shorter than upper lobe; lip bilobed, lobes transversely oblong, erect, without forming blades*L. campodostele*
 9' Petals with lower lobe long-caudate; lip with lobes forming blades.....10
- 10 Lip with blades long-caudate*L. ictalurus*
 10' Lip not with long-caudate blades.....11
- 11 Lip with body connate to a stout column near the middle.....*L. phrixothrix*
 11' Lip with body connate to a slender, elongated column above the middle.....*L. nematostele*

- 12 Sepals denticulate; lip with appendix pedunculate, external at base of body.....*L. exogena*
 12' Sepals entire; lip with appendix in sinus of body.....13
- 13 Lip with broad connectives from the blade below middle.....*L. capitanea*
 13' Lip with narrow, oblique connectives from the base of the blade.....*L. effusa*
- 14 Raceme simultaneously flowered; synsepal conspicuously larger than dorsal sepal; lip with blades attenuated*L. splendida*
 14' Raceme successively flowered, occasionally with 2 flowers open simultaneously.....15
- 15 Raceme 1- to 2-flowered; appendix concave, intricate.....*L. aeora*
 15' Raceme successively several- to many-flowered.....16
- 16 Raceme strict; sepals and blades of lip narrowly acuminate.....*L. andreetae*
 16' Raceme flexuous; sepals and blades of lip not narrowly acuminate.....17
- 17 Sepals very shortly caudate, tails about 1 mm long.....18
 17' Sepals caudate.....19
- 18 Sepal and synsepal concave below the middle to form a sepaline cup.....*L. stelidipetala*
 18 Sepals connate into a flat flower*L. floresii*
- 19 Sepals markedly erose-fimbriate*L. gailiana*
 19' Sepals denticulate or microscopically denticulate.....20
- 20 Lip with blades long-ciliate.....*L. golbasto*
 20' Lip with blades microscopically ciliate-pubescent.....21
- 21 Lip with blades developed below the middle.....*L. paradoxa*
 21' Lip with blades developed22
- 22 Lip with the connectives not forming a body.....23
 22' Lip with the connectives forming a body25
- 23 Lip with the appendix absent*L. deliqua*
 23' Lip with the appendix arising from undersurface of column.....24
- 24 Lateral sepals long-denticulate; petals with minute, marginal apiculum.....*L. avicularia*
 24' Lateral sepals minutely denticulate; petals without a marginal apiculum.....*L. alticola*
- 25 Lip with appendix very thick, incurved.....*L. caudata*
 25' Lip with appendix not thick26
- 26 Lip with blades broadly convex and decurved below middle, cucullate.....27
 26' Lip with blades not broadly convex and decurved below middle.....28
- 27 Dorsal sepal nearly flat, broader than synsepal.....*L. ophioglossa*
 27' Dorsal sepal concave, narrower than synsepal.....*L. delhierroi*
- 28 Lip with blades thick, convex29
 28' Lip with blades flat to slightly concave30
- 29 Lip with appendix digitiform*L. vermicularis*
 29' Lip with appendix triangular.....*L. jimburae*
- 30 Synsepal with apices obtuse, abruptly contracted into tails.....*L. synema*
 30' Synsepal with apices acute, acuminate into tails.....31
- 31 Lateral sepals oblong beyond union of synsepal.....*L. schizx*
 31' Lateral sepals shortly triangular beyond union of synsepal.....*L. corkyae*
- (Plants 10 cm or more tall)
- 32 Leaf broadly elliptical, obtuse to rounded at the apex.....33
 32' Leaf ovate, elliptical-ovate, obtuse, not broadly elliptical.....34

- 33 Sepals acute: lip with connectives narrow, oblique, from base of blade.....*L. effusa*
 33' Lip with connectives broad, from middle of the blade.....34
- 34 Sepals acuminate with tips of lateral sepals slender and free.....*L. elegantula*
 34' Sepals acute with the tip of the synsepal barely bifid.....*L. capitanea*
- 35 Flower large, rhomboid, more than 3 cm between tips of sepals, dorsal sepal and synsepal triangular, long acuminate; lip thick, bilobed, pubescent.....35
 35' Not as above37
- 36 Raceme lax; petals with lower lobe oblong.....*L. dalassandroi*
 36' Raceme congested; petals with lower lobe falcate, thick.....*L. echo*
- 37 Raceme distinctly flexuous38
 37' Raceme strict or slightly flexuous41
- 38 Sepals pubescent or ciliate39
 38' Sepals glabrous40
- 39 Sepals ciliate; petals with lobes obtuse.....*L. sigsigensis*
 39' Sepals pubescent; petals with lobes acuminate.....*L. papallactae*
- 40 Petals with lobes triangular, equal, acute to narrowly obtuse, arising from base of column.....*L. biloba*
 40' Petals with lobes narrowly triangular, long-acuminate, arising from column above base.....*L. oxypetala*
- 41 Leaf narrowly ovate, acute, not acuminate42
 41' Leaf elliptical to ovate, acuminate at apex.....43
- 42 Raceme lax; sepals long-acuminate; petals obtuse.....*L. rhombipetala*
 42' Raceme congested; sepals acute; petals long-acuminate.....44
- 43 Peduncle elongate, longer than the leaf.....*L. elongata*
 43' Peduncle short, much shorter than the leaf.....*L. metaxy* (between *biloba* and *elongata*)
- 44 Sepals cellular-papillose within*L. mastix*
 44' Sepals not cellular-papillose within45
- 45 Lateral sepals connate to near apex.....46
 45' Lateral sepals connate to near middle.....48
- 46 Plant large, leaves to 5 cm wide; lip with blades concave.....*L. rhombipetala*
 46' Plant medium, leaves to 2.5 cm wide; lip with blades convex.....47
- 47 Sepals ca. 10 mm long, minutely ciliate-pubescent.....*L. illex*
 47' Sepals ca. 5 mm long, glabrous.....*L. electilis*
- 48 Sepals broadly ovate, obtuse, acuminate; petals with lobes equal.....*L. nanegalensis*
 48' Sepals ovate, acute; petals with upper lobes larger than lower lobes.....49
- 49 Petals with upper lobes narrowed above the middle; lip with appendix biglandular.....*L. muscula*
 49' Petals with lobes oblong, obtuse; lip with appendix not biglandular.....*L. ilinizae*

Series *Mucronatae*

Petals with a marginal process

- 1 Petals trifid with lobes and marginal process similar and slender.....*L. hexapus*
 1' Petals not trifid.....2
- 2 Petals with upper lobes sharply truncate with acute angles.....3
 2' Petals with upper lobes obtuse to truncate.....4
- 3 Petals with upper margin more or less erose between angles, lower lobe not forked.....*L. mucronata*
 3' Petals with inner angle of upper margin elongate, lower lobe forked.....*L. pentaxys*
- 4 Lip with body broad or concave, exclusive of appendix.....5
 4' Lip with body neither broad nor concave, exclusive of appendix.....10

- 5 Lip with body narrow and concave with the appendix marginal and motile; column with elongate apical processes.....*L. jackinpyxa*
- 5' Lip and column not as above.....6
- 6 Lip with body broad, membranous, shallowly concave.....7
- 6' Lip with body broad, deeply concave.....8
- 7 Petals with upper lobes subquadrate, subtruncate.....*L. pelyx*
- 7' Petals with upper lobes triangular, acute.....*L. corrugata*
- 8 Lip with body saccate and dilated; petals truncate with inner angle higher than outer angle.....*L. ollaris*
- 8' Lip with body concave; petals truncate with outer angle higher than inner angle.....9
- 9 Plant large, ramicauls to 40 cm tall; sepals entire.....*L. rhodophylla*
- 9' Plant medium to large, ramicauls less than 20 cm tall; sepals denticulate.....*L. cotyledon*
- 10 Lip with appendix bifid or bilobed.....10
- 10' Lip with appendix oblong, concave, cymbiform.....11
- 11 Lip with body bituberculate; sepals with only the laterals sparsely denticulate.....*L. bituberculata*
- 11' Lip with body not bituberculate; sepals denticulate.....*L. sobrina*
- 12 Petals with both upper and lower lobes long-acuminate.....*L. thalia*
- 12' Petals not with lobes long-acuminate.....13
- 13 Plant small, ramicaul less than 7 cm tall.....14
- 13' Plant medium to large, ramicaul usually more than 7 cm tall.....17
- 14 Leaves ovate, acuminate, more or less horizontal.....15
- 14' Leaves ovate, acute, more or less erect.....16
- 15 Lip with blades borne by connectives from the base.....*L. andrenoglossa*
- 15' Lip with blades borne by connectives from the middle.....*L. scapha*
- 16 Leaves narrowly ovate, attenuated; petals obtuse; pedicels 1 mm long.....*L. sororcula*
- 16' Leaves ovate, acute; petals truncate; pedicels 3 mm long.....*L. ortegae*
- 17 Lip with blades adherent to middle with tips incurved below column; petals with lower lobes long-acuminate.....*L. posadae*
- 17' Lip with blades adherent to tips; petals with lower lobes oblong.....18
- 18 Ramicaul long with leaf proportionately small; sepals entire; lip with connectives from near base of blade.....*L. janitor*
- 18' Ramicaul with leaf not proportionately small; sepals denticulate; lip with connectives from near apex of blade.....*L. agglutinata*

Series *Lepanthes*

Characterized by congested racemes (the distance between the floral bracts shorter than the pedicel) with the peduncle shorter or longer than the leaf, and lateral sepals with 2 or 3 veins.

Key to convenient groups

- 1 Leaf ciliate, pubescent, verrucose, or obviously reticulate.....*the most unusual leaves*
- 1' Leaf glabrous, not obviously reticulate.....2
- 2 Leaf narrow, very thickly coriaceous, often semiterete.....*the most unusual leaves*
- 2' Leaf not thickly coriaceous.....3
- 3 Leaf with the apex obtuse, abruptly long-attenuate.....*the most unusual leaves*
- 3' Leaf with the apex acute to obtuse, acuminate or attenuate.....4
- 4 Lateral sepals 3-veined.....*Lateral sepals 3-veined*
- 4' Lateral sepals 2-veined.....5

- 5 Inflorescence as long as or longer than the leaf.....*the long-pedunculate, congested inflorescence*
 5' Inflorescence shorter than the leaf.....6
 6 Plant small, the ramicaul mostly less than 5 cm long, but sometimes up to 7 cm long.....
*the short, congested inflorescence, small plant*
 6' Plant medium to large, the plant more than 10 cm tall.....7
 7 Plant mostly 10 to 20 cm tall.....*the short, congested inflorescence, medium-sized plant*
 7' Plant more than 20 cm tall.....*the short, congested inflorescence, large plant*

The most unusual leaves
 (without regard to relationships)

- 1 Leaf obviously reticulate.....2
 1' Leaf glabrous, ciliate, pubescent or verrucose, not obviously reticulate.....8
 2 Petals with both lobes abruptly caudate; lip not bilaminate.....3
 2' Petals not abruptly caudate; lip bilaminate.....7
 3 Raceme borne beyond the tip of the leaf; petals with lower lobe very shortly caudate.....*L. volador*
 3' Raceme borne on top of the leaf; petals with lower lobe long-caudate.....4
 4 Leaf without undulate margins; petals with lower lobe subacute.....*L. saltatrix*
 4' Leaf with undulate margins; petals with lower lobe rounded.....5
 5 Lip with a slender process at each base.....*L. barbelifera*
 5' Lip without a tails.....6
 6 Lip transversely bilobed, as long as the lip.....*L. calodictyon*
 6' Lip cordate, obtuse, much shorter than the lip.....*L. tentaculata*
 7 Leaf orbicular, much shorter than the ramicaul, glabrous.....*L. dictydion*
 7' Leaf broadly ovate, not much shorter than the ramicaul, pubescent.....*L. dodsonii*
 8 Leaf with surface variously pubescent or verrucose.....9
 8' Leaf with surface glabrous.....15
 9 Leaf variously verrucose.....10
 9' Leaf variously pubescent.....11
 10 Leaf coarsely spiculate-verrucose; sepals obtuse.....*L. aculeata*
 10' Leaf finely corrugate; sepals caudate.....*L. horribilis*
 11 Leaf broadly ovate, cordate at the base, stellate-pubescent; petals 4-lobed.....*L. polytricha*
 11' Leaf ovate to narrowly ovate, cuneate to rounded at the base; petals transversely bilobed.....12
 12 Leaf ciliate-pubescent along reticulations on undersurface; sepals tailless; appendix large; ovary
 spiculate.....*L. pubes*
 12' Leaf variously pubescent; sepals caudate; appendix small; ovary not spiculate.....13
 13 Lateral sepals broadly obtuse, abruptly caudate.....*L. fiskei*
 13' Lateral sepals acute, acuminate.....14
 14 Leaf thickly coriaceous, concave centrally; lip with blades obtuse at the apex.....*L. manabina*
 14' Leaf coriaceous, not concave centrally; lip with blades narrowly obtuse at the apex.....*L. pubescens*
 15 Leaf thickly coriaceous, narrowly ovate, often semiterete.....18
 15' Leaf not thickly coriaceous, narrowly ovate, or semiterete.....16
 16 Leaf ovate with denticulate or undulate margins, not with an elongate acumen.....17
 16' Leaf with a narrow, apical acumen as long as or longer than the blade, not thickly coriaceous.....20
 17 Leaf with margins erose-ciliate; lip with blades minutely ciliate.....*L. lycocephala*
 17' Leaf with margins undulate (often smooth); lip with blades long-ciliate.....*L. jubata*

- 18 Petals with a marginal angle between the broad upper lobe and narrow lower lobe; lip with appendix biglandular at the apex *L. teres*
 18' Petals without a marginal angle between the lobes..... 19
- 19 Lip with the body broad and protuberant without an appendix..... *L. protuberans*
 19' Lip with a large appendix in a recessed sinus..... *L. fusiformis*
- 20 Leaf with blade transversely bilobed, cordate at the long-acuminate apex..... *L. unijuga*
 20' Leaf with blade broadly ovate, obtuse at the long-acuminate apex..... 21
- 21 Leaf with acumen twisted; petals long-pubescent with lower lobe uncinata..... *L. tortilis*
 21' Leaf with acumen not twisted; petals microscopically pubescent with lower lobe not uncinata
 *L. proboscidis*

Lateral sepals 3-veined

(A key-character, mostly without relationships)

- 1 Plant small, ramicauls less than 5 cm long 2
 1' Plant large, ramicauls more than 5 cm long 3
- 2 Lateral sepals narrow, free nearly to the base..... *L. scrotifera*
 2' Lateral sepals broad, deeply connate..... *L. zunagensis*
- 3 Ramicauls with sheaths pubescent; petals with the upper lobe acute..... 4
 3' Ramicauls with sheaths glabrous; petals with the upper lobe obtuse..... 5
- 4 Leaf deeply convex; petals with upper lobe narrowly acuminate..... *L. callisto*
 4' Leaf not deeply concave; petals with the upper lobe triangular..... *L. llanganatensis*
- 5 Sepals concave; appendix with a single, apical gland..... *L. teaguei*
 5' Sepals not concave; appendix with a bilobulate apical gland..... *L. decurva*

*Inflorescence congested, as long as or longer than the leaf
with the peduncle elongate*

- 1 Lateral sepals nearly free, widely diverging..... 2
 1' Lateral sepals variously connate, not widely diverging..... 3
- 2 Lateral sepals diverging 180°; lip long-pubescent, half as long as column..... *L. scrotifera*
 2' Lateral sepals diverging 90°; lip microscopically pubescent, nearly as long as column..... *L. evansiae*
- 3 Sepals deeply connate into a hemispherical sepaline cup..... *L. cymbula*
 3' Sepals not deeply connate..... 4
- 4 Dorsal sepal deeply concave, wider than the lateral sepals together..... *L. cassidea*
 4' Dorsal sepal not deeply concave, not wider than the lateral sepals together..... 5
- 5 Lip connate to about the middle of a very slender column..... *L. vespertilio*
 5' Lip connate to the base of a stout column 6
- 6 Lip bilaminate with blades distinct 7
 6' Lip bilobed, with or without indistinct blades..... 9
- 7 Lip with blades suborbicular *L. ejecta*
 7' Lip with blades ovate..... 8
- 8 Lip with appendix very small *L. zygon*
 8' Lip with appendix very long, beyond tips of blades..... *L. alopec*
- 9 Lip broadly cordate, long-ciliate, round at apex, shallowly notched..... *L. helcium*
 9' Lip bilobed, not long-ciliate 10
- 10 Lip with lobes cuneiform, shorter than the column..... *L. kuijui*
 10' Lip with lobes ovate, as long as the column..... *L. elaminata*

Inflorescence short, congested; plant small

- 1 Leaf usually less than 15 mm long..... 2
 1' Leaf usually more than 15 mm long..... 3

2 Sepals denticulate.....	3
2' Sepals entire.....	9
3 Lateral sepals acuminate.....	4
3' Lateral sepals subacute to obtuse.....	6
4 Lip with connectives narrow, deeply divided to base of column.....	<i>L. disjuncta</i>
4' Lip with connectives broad, with a body.....	5
5 Lip with blades ovate, appendix ovate, subacute.....	<i>L. iricolor</i>
5' Lip with blades obovate, appendix thick, bilobulate.....	<i>L. gemula</i>
6 Petals with outer margin deeply incised below the middle.....	<i>L. angulata</i>
6' Petals not incised on outer margin.....	7
7 Petals crescent-shaped with apices of lobes pointed outward.....	<i>L. uxoria</i>
7' Petals not crescent-shaped.....	8
8 Petals with lobes oblong, opposite.....	<i>L. stegastes</i>
8' Petals with lobes triangular, with the upper lobe oblique.....	<i>L. confusa</i>
9 Petals with lower lobe uncinata.....	<i>L. expansa</i>
9' Petals with lower lobe not uncinata.....	10
10 Petals with lobes broadly obtuse.....	11
10' Petals with lobes triangular, acute.....	12
11 Lip with blades suborbicular, long-ciliate.....	<i>L. gnoma</i>
11' Lip with blades narrowly ovate, glabrous.....	<i>L. aurita</i>
12 Lip with appendix thick, concave, pubescent.....	<i>L. thylax</i>
12' Lip with appendix reduced to a minute bristle.....	<i>L. jayandella</i>
(Leaf more than 15 mm long)	
13 Sepals denticulate.....	14
13' Sepals entire.....	30
(Sepals denticulate)	
14 Leaf narrowly ovate, more or less acuminate.....	15
14' Leaf ovate, elliptical, acute to obtuse or shortly acuminate.....	20
15 Dorsal sepal deeply concave; lip with appendix long, conical, exceeding apices of blades.....	<i>L. satyrica</i>
15' Dorsal sepal not deeply concave; lip with appendix not long, conical.....	16
16 Lateral sepals acuminate.....	17
16' Lateral sepals not acuminate.....	19
17 Petals long-ciliate; lip with connectives broad, with the body thick, protuberant.....	<i>L. hirsutula</i>
17' Petals not long-ciliate; lip with connectives narrow, from base of the blade held above the column.....	18
18 Lip with the body protuberant, appendix small.....	<i>L. grypha</i>
18' Lip with the body not protuberant, appendix large.....	<i>L. flaccida</i>
19 Lip with blades long-ciliate.....	<i>L. jubata</i>
19' Lip with blades not long-ciliate.....	<i>L. amphioxsa</i>
20 Lateral sepals distinctly acuminate.....	21
20' Lateral sepals not distinctly acuminate.....	22
21 Petals with an angle on outer margin; lip with appendix large, concave.....	<i>L. zamorensis</i>
21' Petals without an angle on outer margin; lip with appendix very small.....	<i>L. orchestris</i>
22 Leaf cordate at the base; petals with upper lobe uncinata with the tip pointed outward.....	<i>L. tracheia</i>
22' Leaf ovate, elliptic, not cordate; petals with upper lobe not uncinata.....	23
23 Petals with outer margin deeply incised between the lobes.....	<i>L. intonsa</i>
23' Petals with outer margin not deeply incised.....	24

24	Petals with upper lobe narrowly oblong, long-ciliate.....	<i>L. ciliicampa</i>	25
24'	Petals with upper lobe not narrowly oblong and long-ciliate.....		25
25	Petals with upper lobe obliquely truncate with outer angle acute, inner angle obtuse, lower lobe narrowly attenuate.....	<i>L. odobenella</i>	
25'	Petals with lobes more or less broadly oblong.....		26
26	Lip with blades long-ciliate.....	<i>L. jubata</i>	
26'	Lip with blades minutely ciliate or glabrous.....		27
27	Petals with both lobes obliquely truncate; lip with connectives deeply divided to base of the column.....	<i>L. chorista</i>	
27'	Petals with the lobes not truncate; lip with connectives forming a body.....		28
28	Petals with upper lobe transversely truncate.....	<i>L. embreei</i>	
28'	Petals with upper lobe not transversely truncate.....		29
29	Lip with lower lobe oblong, obtuse, appendix intricately lobed.....	<i>L. zunagensis</i>	
29'	Lip with lower lobe triangular, acute, appendix pedunculate with apical gland.....	<i>L. deleastes</i>	
	(Sepals entire)		
30	Leaves broadly to transversely ovate with the base broadly subcordate; petals with tips of the upper lobes deflexed.....	<i>L. maccombiana</i>	
30'	Leaves elliptical to ovate, narrow to broad; petals not with the tips of the upper lobe deflexed.....		30
31	Lateral sepals long-acuminate.....		32
31'	Lateral sepals subacute to obtuse, or shortly acuminate.....		33
32	Lip with appendix as large as the lateral lobes.....	<i>L. maxillaris</i>	
32'	Lip with appendix very small.....	<i>L. glabella</i>	
33	Lip with blades not developed above middle.....		34
33'	Lip with blades developed entire length.....		36
34	Petals with the lobes triangular, diverging 90°.....	<i>L. didyma</i>	
34'	Petals with the lobes not triangular and diverging 90°.....		35
35	Dorsal sepal narrowly ovate, laterals nearly in apposition.....	<i>L. helicocephala</i>	
35'	Dorsal sepal obtuse, laterals diverging.....	<i>L. nontecta</i>	
36	Lip with blades long-ciliate in a line across the apex and overlapping.....	<i>L. necopina</i>	
36'	Lip with blades not long-ciliate.....		37
37	Lip with connectives deeply divided to base of the column.....	<i>L. asoma</i>	
37'	Lip with connectives forming a body.....		38
38	Petals with upper lobes rounded and overlapping; lateral sepals broadly obtuse, shortly acuminate with the tips diverging ca. 180°.....		39
38'	Petals with upper lobes not rounded and overlapping; lateral sepals not broadly obtuse and acuminate.....		40
39	Petals with lower lobes acute; lip with blades oblong, concave, with the connectives broad, above the middle.....	<i>L. esmeraldae</i>	
39'	Petals with lower lobes rounded; lip with blades lunate, flat, with the connectives broad from apex to the base.....	<i>L. clarkii</i>	
40	Petals transversely oblong, long-pubescent.....	<i>L. allector</i>	
40'	Petals not transversely oblong and long-pubescent.....		41
41	Lip with appendix small, oblong, on external surface of the body.....	<i>L. rudicula</i>	
41'	Lip with appendix large, within the sinus.....		42
42	Lip with appendix thick, not concave.....	<i>L. ilensis</i>	
42'	Lip with appendix concave.....		43

- 43 Lip with appendix deeply concave with a tuft of long cilia at the apex.....*L. cauda-avis*
 43' Lip with appendix not with a tuft of long cilia at the apex.....44
- 44 Lip with the blades longitudinally concave or channeled and with the apex recurved.....*L. wagneri*
 44' Lip with the blades not longitudinally concave or channeled.....45
- 45 Petals with a marginal angle between the lobes; lip with the appendix much shorter than the tips of the blades*L. thylax*
 45' Petals without a marginal angle; lip with the appendix elongate, as long as the tips of the blades.....*L. celax*

Inflorescence short, congested;
plant medium-sized, 10-20 cm tall excluding inflorescence
 (beware of "small" specimens of "large" plants)

- 1 Sepals denticulate, may be minutely so2
 1' Sepals entire.....27

(Sepals denticulate)

- 2 Lateral sepals concave, abruptly contracted into slender tails.....*L. gargoyla*
 2' Lateral sepals not concave and contracted into slender tails.....3
- 3 Petals with lower lobe much shorter than narrowly elongated upper lobe; lip with blades long-acuminate at the apex*L. elephantina*
 3' Petals and lip not as above.....4
- 4 All 3 sepals acuminate5
 4' Dorsal sepal subacute to obtuse, laterals subacute to obtuse, shortly acuminate.....16
- 5 Leaf horizontal, inflorescence borne on top6
 5' Leaf more or less erect, inflorescence borne behind the leaf.....8
- 6 Petals with both lobes narrowly long-acuminate.....*L. meniscophora*
 6' Petals not with lobes narrowly acuminate7
- 7 Dorsal sepal triangular, acuminate; petals with upper lobe obliquely truncate.....*L. melpomene*
 7' Dorsal sepal suborbicular, shortly acuminate; petals with upper lobe subtriangular.....*L. terpsichore*
- 8 Lip with a long, slender claw9
 8' Lip without a long, slender claw.....10
- 9 Lip with the blades angled on the inner margin below the narrowed apex.....*L. contingens*
 9' Lip with the blades lunate, obtuse.....*L. transparentis*
- 10 Lip with the blades narrowly acuminate.....*L. odontocera*
 10' Lip with the blades not narrowly acuminate.....11
- 11 Petals with lower lobe obliquely triangular, much smaller than the upper lobe.....12
 11' Petals with lower lobe not obliquely triangular and much smaller than the upper lobe.....14
- 12 Lateral sepals connate above the middle with the tips more or less in apposition.....*L. calypso*
 12' Lateral sepals connate below the middle with the tips diverging.....13
- 13 Petals with upper lobe acuminate; lip with blades not thickened.....*L. mirador*
 13' Petals with upper lobe broadly rounded; lip with blades thick, narrow.....*L. cremasta*
- 14 Sepals pubescent, laterals connate above the middle; petals with upper lobe acuminate.....*L. aries*
 14' Sepals not pubescent.....15
- 15 Lateral sepals long-acuminate; petals with upper lobe truncate.....*L. lophius*
 15' Lateral sepals shortly acuminate; petals with upper lobe not truncate.....*L. grypha*
- 16 Lateral sepals obtuse, shortly acuminate17
 16' Lateral sepals acute to obtuse, not acuminate.....23
- 17 Lip with the connectives deeply divided to base of the column, with the appendix pedunculate*L. eruca*
 17' Lip with the connectives forming a body18

18	Lip with the appendix broadly triangular, ciliate; column with the stigma bilobed, and the rostellar flap elongate, ciliate.....	<i>L. surrogata</i>	19
18'	Lip with the appendix not broadly triangular; column with the stigma not bilobed.....		
19	Lip with the sinus of the body concave without an appendix.....	<i>L. absens</i>	
19'	Lip with the sinus of the body not concave, with a distinct appendix.....		20
20	Petals with upper lobes acute.....		21
20'	Petals with upper lobes obtuse.....		22
21	Lip with appendix protuberant, pedunculate, long-ciliate.....	<i>L. plumifera</i>	
21'	Lip with appendix thin, delicate, intricate, not protuberant and long-ciliate.....	<i>L. implexa</i>	
22	Lip with the connectives angled on the anterior margin, the appendix oblong, ciliate.....	<i>L. conjuncta</i>	
22'	Lip with the connectives not angled on the anterior margin, the appendix short, tripartite.....	<i>L. tectorum</i>	
23	Ramicauls conspicuously long-ciliate; petals with an angle on the outer margin between lobes.....		24
23'	Ramicauls not conspicuously long-ciliate; petals without an acute angle on the outer margin between lobes.....		25
24	Petals with the marginal angle acute; lip with blades long-ciliate.....	<i>L. silenus</i>	
24'	Petals with the marginal angle short, obtuse; lip with blades microscopically pubescent.....	<i>L. pteropogon</i>	
25	Leaf broadly elliptical; lip with blades thin, irregular, veil-like over a twisted column.....	<i>L. deformis</i>	
25'	Leaf narrowly ovate; lip with blades elliptical-ovate, well-formed.....		26
26	Lip with connectives deeply divided to base of the column, appendix pedunculate with an apical gland.....	<i>L. plectilis</i>	
26'	Lip with connectives forming a broad body with a bifid appendix.....		27
27	Lateral sepals acute; petals ciliate-pubescent.....	<i>L. brachypogon</i>	
27'	Lateral sepals obtuse; petals microscopically pubescent.....	<i>L. schizura</i>	
(Sepals entire)			
28	Leaves suborbicular, broadly obtuse or rounded at the apex.....	<i>L. pecunialis</i>	
28'	Leaves elliptical or ovate, acute, subacute or acuminate at the apex.....		29
29	Lip bilobed with rudimentary blades.....		30
29'	Lip with more or less well-developed blades.....		32
30	Lip connate to column above the base, with apex broadly rounded with microscopic appendix.....		
30'	Lip connate to column at the base.....	<i>L. focalis</i>	31
31	Lateral sepals narrowly acuminate at the apex; ovaries less than 1.5 mm long.....	<i>L. semilaminata</i>	
31'	Lateral sepals acute; ovaries 4-5 mm long.....	<i>L. pan</i>	
32	Lip with blades thin, held above the column.....		33
32'	Lip with blades not thin, held above the column.....		35
33	Lip with a long, slender claw.....		
33'	Lip without a claw.....	<i>L. contingens</i>	34
34	Petals with lower lobe long-pubescent; appendix small, slender.....	<i>L. reventador</i>	
34'	Petals with lower lobe micro-pubescent; appendix large, forked at the apex.....	<i>L. benzingii</i>	
35	Lip with blades longitudinally concave.....		35
35'	Lip with blades not longitudinally concave.....		37
36	Lip with the apex of the blades broad and decurved.....	<i>L. wagneri</i>	
36'	Lip with the apex of the blades acute and incurved.....	<i>L. perdita</i>	
37	Lip with blades long-ciliate along inner margin.....		
37'	Lip with blades not long-ciliate.....	<i>L. menatoi</i>	38

38 Lip with blades smaller than enlarged column.....	<i>L. megalostele</i>
38' Lip with blades larger than column	39
39 Petals with upper lobe erect, acute	40
39' Petals with upper lobe obtuse, rounded or truncate.....	46
40 Petals with upper lobe as long as the dorsal sepal.....	41
40' Petals with upper lobe shorter than the dorsal sepal.....	42
41 Petals with upper lobe narrowly acuminate; appendix with an erect, anterior lobule.....	<i>L. urosepala</i>
41' Petals with upper lobe narrowly triangular; appendix elongate, deflexed.....	<i>L. mephistopheles</i>
42 Leaves elliptical, acute; raceme comb-like with elongated pedicels.....	<i>L. ctenophora</i>
42' Leaves ovate, acuminate; raceme not comb-like with elongated pedicels.....	43
43 Lateral sepals with apices diverging ca. 180°; appendix narrow, forked.....	<i>L. fissa</i>
43' Lateral sepals with apices not diverging; appendix not narrowly forked.....	44
44 Petals with both lobes narrowly acuminate; appendix short, brush-like.....	<i>L. papyrophylla</i>
44' Petals with lobes more or less triangular	45
45 Lateral sepals caudate; appendix bilobulate at the apex.....	<i>L. glomerosa</i>
45' Lateral sepals acute; appendix large, concave with pubescent, apical gland.....	<i>L. camptica</i>
46 Petals distinctly narrowed near the middle.....	47
46' Petals not distinctly narrowed near the middle.....	48
47 Petals with lobes rounded, subequal.....	<i>L. binaria</i>
47' Petals with upper lobe oblique, larger than lower lobe.....	<i>L. sulcata</i>
48 Petals with upper lobe more or less angled at the apex.....	49
48' Petals with upper lobe broadly obtuse or rounded.....	50
49 Petals with upper lobe truncate, lower lobe triangular, acute; lip with connectives very broad	<i>L. suavium</i>
49' Petals with upper lobe broadly subfalcate, variable, lower lobe oblong from a broad base; lip with connectives below the middle.....	<i>L. monitor</i>
50 Petals with a decurved lobule on outer margin; appendix elongate, deflexed.....	<i>L. eriocampa</i>
50' Petals without a decurved lobule	51
51 Petals with lower lobe with a convexity; lip with the sinus protruding.....	<i>L. jamboensis</i>
51' Not the above.....	52
52 Petals with lower lobe subquadrate with a lobule at inner angle.....	<i>L. calliope</i>
52' Not the above.....	53
53 Lateral sepals acute, long-acuminate.....	<i>L. antiopa</i>
53' Lateral sepals acute.....	54
54 Dorsal sepal acute, narrowly triangular, no wider than a lateral sepal.....	<i>L. imitator</i>
54' Dorsal sepal subacute to obtuse, wider than a lateral sepal.....	55
55 Appendix minute, bilobulate	<i>L. via-incarum</i>
55' Appendix not as above.....	56
56 Appendix setiform	<i>L. setifera</i>
56' Appendix not setiform	57
57 Appendix intricate, concave with apical gland biglandular.....	<i>L. intricata</i>
57' Appendix more or less oblong, pubescent and deflexed.....	<i>L. ximena</i>

*Inflorescence short, congested;
plant large, over 20 cm tall excluding inflorescence*

1	Sepals denticulate (often minute).....	2
1'	Sepals entire.....	11
2	Leaf with sides deflexed above the base; lip broadly bilobed with rudimentary blades.....	<i>L. vellicata</i>
2'	Leaf not with deflexed sides above the base; lip with blades.....	3
3	Sepals connate into a cup with apices acuminate.....	<i>L. hirtzii</i>
3	Sepals not connate into a cup.....	4
4	Sepals tall-carinate and long-acuminate.....	<i>L. chimaera</i>
4'	Sepals not tall-carinate and long-acuminate.....	5
5	Petals with upper lobe acute or with angles.....	6
5'	Petals with upper lobe obtuse to rounded.....	10
6	Petals with upper lobe narrowly triangular.....	7
6'	Petals with upper lobe transversely or obliquely truncate, or with angles at the apex.....	8
7	Petals with both lobes narrowly acuminate.....	<i>L. vibrissa</i>
7'	Petals with upper lobe narrowly triangular, lower lobe short, transverse.....	<i>L. tungurahuae</i>
8	Petals with upper lobe transversely truncate; lip with thin blades held above the column.....	<i>L. hymenoptera</i>
8'	Petals with upper lobe obliquely lobed at the apex; lip not with thin blades held above the column.....	9
9	Petals with the outer apical angle elongate, acute, lower lobe narrowly long-triangular.....	<i>L. odobenella</i>
9'	Petals with the inner apical angle elongate, acute, variable, lower lobe short, oblique.....	<i>L. dunstervilleorum</i>
10	Petals not narrowed between lobes; lip with the bases of the blades elongate, decurved; appendix long-pedunculate.....	<i>L. cremasta</i>
10'	Petals narrowed between lobes; lip with the bases of the blades erect; appendix minute, bilobulate.....	<i>L. caudatisepala</i>
11	Plant stout, ascending-repent; lip with blades truncate.....	<i>L. repens</i>
11'	Plant caespitose; lip with blades not truncate.....	12
12	Leaves obovate; lip with broad connectives with marginal blades.....	14
12'	Leaves elliptical to ovate.....	13
13	Lip with long cilia from blades creating a curtain over the column.....	<i>L. ricina</i>
13'	Lip minutely pubescent, not with a curtain of cilia.....	<i>L. urania</i>
14	Lateral sepals visibly pubescent, apices with slender tails.....	15
14'	Lateral sepals not visibly pubescent, apices not with slender tails.....	18
15	Lateral sepals with tails approximate, antrorse; rostellum elongate.....	<i>L. xenos</i>
15'	Lateral sepals with tails not approximate and antrorse; rostellum short.....	16
16	Lateral sepals convex above the base; petals with lower lobe short, uncinata.....	<i>L. nivea</i>
16'	Lateral sepals not convex above the base; petals with lower lobe not uncinata.....	17
17	Lateral sepals concave above the base; petals with lower lobe obliquely oblong.....	<i>L. magnifica</i>
17'	Lateral sepals not concave above the base; petals with lower lobe transversely rounded.....	<i>L. stupenda</i>
18	Lateral sepals widely diverging.....	19
18'	Lateral sepals not widely diverging.....	24
19	Lip with blades with a longitudinal carina; petals not caudate.....	20
19'	Lip with blades not carinate.....	21
20	Lateral sepals with tips diverging 180°; petals with upper lobes deeply overlapping.....	<i>L. condorensis</i>
20'	Lateral sepals with tips diverging ca. 100°; petals with upper lobes barely overlapping.....	<i>L. auriculata</i>

21	Petals with both lobes caudate	22
21	Petals not caudate	23
22	Petals with upper lobes deeply overlapping, glabrous or microscopically pubescent.....	<i>L. actias-luna</i>
22'	Petals with upper lobes not overlapping, pubescent.....	<i>L. athena</i>
23	Lip with connectives and body broad, thick.....	<i>L. orion</i>
23'	Lip with connectives cuneate and body thin.....	<i>L. saltator</i>
24	Petals with both lobes narrowly acuminate.....	<i>L. papyrophylla</i>
24'	Petals not acute	25
25	Lip with blades thickly convex	26
25'	Lip with blades not thickly convex.....	27
26	Lateral sepals deeply connate with apices transversely obtuse; lip with blades convex below middle	<i>L. lloënsis</i>
26'	Lateral sepals connate to near middle with apices acute; lip with blades convex near the middle	<i>L. craticia</i>
27	Lip with blades long-ciliate on inner margin.....	28
27'	Lip with blades not long-ciliate on inner margin.....	29
28	Lip with cilia of blades transverse over the column.....	<i>L. menatoi</i>
28'	Lip with long cilia of blades descending as a curtain over the column.....	<i>L. ricina</i>
29	Lip with the body thick with anterior lobes similar to the apices of the blades.....	<i>L. quatenaria</i>
29'	Lip not as above.....	30
30	Lip with the sinus filled by a thick, nipple-like pair of lobules.....	<i>L. mamhilata</i>
30'	Lip not as above.....	31
31	Petals with upper lobe more or less broadly subfalcate, variable, lower lobe oblong from a broad base; appendix broadly triangular.....	<i>L. monitor</i>
31'	Petals with upper lobe broadly obtuse or rounded.....	32
32	Petals with a transverse carina between lobes, upper lobe transversely ovate, lower lobe narrowly oblong	<i>L. carinata</i>
32'	Not as above	33
33	Lateral sepals broadly obtuse with short, broad, diverging apicula.....	34
33'	Not as above	35
34	Dorsal sepal broadly obtuse; appendix small, triangular.....	<i>L. gargantua</i>
34'	Dorsal sepal acute; appendix oblong with a bifid, apical gland.....	<i>L. chrycina</i>
35	Dorsal sepal narrowly triangular, lateral sepals obtuse; appendix broadly triangular.....	<i>L. ballatrix</i>
35'	Dorsal sepal obtuse, shortly acuminate, lateral sepals acute, shortly acuminate.....	36
36	Petals narrowed between the lobes; appendix minute, bilobulate.....	<i>L. caudatisejala</i>
36'	Petals not narrowed between the lobes; appendix a small, pubescent lobule.....	<i>L. tianica</i>

Lepanthes absens Luer & Hirtz, sp. nov.

Fig. 1

Ety.: From the Latin *absens*, "absent," referring to the absent appendix.

Planta mediocris, inflorescentia cum racemo congesto disticho folio ovato acuminato brevior, sepalo dorsali synsepaloque late ovatis obtusis breviter acuminatis denticulatis, petalis transverse bilobis pubescentibus, lobo superiore oblongo apice oblique acuto quam lobo inferiore triangulari majore, labelli laminis oblongis minute ciliatis, connectivis late cuneatis, corpore crasso antice concavo, appendice nulla.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5.5-7 cm long, enclosed by 10-12 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, acute, long-acuminate, 4.5-5 cm long, 1.3-1.5 cm wide, the rounded base contracted into a petiole 1-1.5 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 3 or more mm long, borne on top of the leaf by a slender peduncle 10-11 mm long; floral bract 1 mm long, muriculate; pedicel 1 mm long; ovary 1 mm long; **sepals** light yellow, denticulate, the dorsal sepal broadly ovate, obtuse, abruptly short-acuminate, 3 mm long, 3.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, 3 mm long, 2 mm wide, connate 1 mm, the apices abruptly short-acuminate and diverging; **petals** yellow, minutely pubescent, transversely bilobed, 1 mm long, 3.6 mm wide, the upper lobe oblong, subacute, obtusely angled on the inner margin, larger than the lower lobe, the lower lobe triangular, oblique, narrowly obtuse; **lip** red, bilaminate, the laminae oblong, 2 mm long, the apices subacute, minutely ciliate, the bases obtuse with a short, rounded process on the inner angle, the connectives short, cuneate, the body thick, connate to the base of the column, the anterior surface concave, devoid of an appendix; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Pastaza: north of Topo, epiphytic in forest along Río Zúñag, alt. 2200 m, 23 Feb. 1990, A. Hirtz, S. Dalström, L. Årnby, J. Del Hierro, E. Astorga, S. Ortega & J. Cabezas 4697 (Holotype: MO), C. Luer illustr. 14723.

This species is known from a single collection on the eastern slope of central Ecuador. It is characterized by the congested inflorescence shorter than the ovate, acuminate leaf; broad, obtuse, denticulate sepals; transversely bilobed petals with an obtusely angled upper lobe and a triangular lower lobe; oblong blades of the lip with a thick body concave on the anterior margin without an apparent appendix.

Lepanthes acarina Luer, *Phytologia* 54: 326, 1983.

Fig. 2

Ety.: From *Acarina*, the order of mites, in allusion to the little, red, prickly flowers.

Plant minute, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 10-35 mm long, enclosed by 3-8 closely fitting, microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-ovate, subacute to obtuse, 7-10 mm long, 4-6 mm wide, the rounded base contracted into a petiole ca. 1 mm long. **Inflorescence** a subdense, successively few- to several-flowered raceme 3-10 mm long, borne by a capillary pedicel up to 10 mm long, beyond the apex of the leaf; floral bract muricate, 1 mm long; pedicel 1 mm long; ovary 1.5 mm long; **sepals** yellow or red, minutely serrulate-ciliate on the margins and carinae externally, the dorsal sepal broadly ovate-triangular, subacute, 2-2.5 mm long, 2.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, 2.5 mm long, 2.5 mm wide together, connate 1 mm; **petals** red, microscopically pubescent, transversely bilobed, 0.5 mm long, 1.75 mm wide, the upper lobe oblong, oblique, obtusely angled, subtruncate, the lower lobe smaller, narrowly oblong, subfalcate, obtuse; **lip** red, bilaminate, the blades ovate, subacute, microscopically pubescent, 1 mm long, the connectives cuneate, the body narrow, connate to the base of the lip, the sinus obtuse with the appendix bisegmented, pubescent, constricted above the middle with the apical portion deflexed, the basal portion concave; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Carchi: forest between Chical and Maldonado, alt. 1400 m, 17 Mar. 1991, C. Luer, J. Luer, J. Del Hierro, A. Hirtz & X. Hirtz 15118 (MO); between Tulcán and Maldonado, alt. 2050 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9918 (MO).

Imbabura: Selva Alegre, alt. 2500 m, 29 Sept. 1984, A. Hirtz 1927 (MO).

Pichincha: epiphytic in cloud forest near Río Silante, Finca Canchacato, alt. ca. 2000 m, 28 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4399 (Holotype: SEL); in forest between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höjjer & J. Kuijt 9851 (MO); between Calacalí and La Liberia, alt. 2200 m, 7 Apr. 1984, C. Luer, A. Hirtz, S. Dalström & T. Höjjer 10006, 10014 (MO); same area, alt. 2550, 4 Apr. 1985, C. Luer, J. Luer, A. Hirtz, C. & P. Dodson 11046 (MO); between Nono and Tandayapa, alt. 2250 m, 24 Feb. 1985, U. Molau & L. Öhman 1392 (GB); along new

road between Quito and Santo Domingo, alt. 2100 m, 31 Mar. 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9811* (MO); same area, alt. 2450 m, 1 Mar. 1986, *C. Luer, C. Dodson, A. Hirtz & A. Embree 12057* (MO); Lloa, alt. 2750 m, 5 Nov. 1984, *A. Hirtz 2056* (MO).

Napo: new road to Coca north of Archidona, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11235* (MO); Volcán Reventador, alt. 1850 m, 8 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11709* (MO).

Pastaza: Río Pastaza east of Río Negro, alt. 1150 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11186* (MO).

Morona-Santiago: between Gualaceo and Limón, alt. 2150 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11846* (MO); Río Calagrás, alt. 1500 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11868* (MO); at the pass north of Gualaquiza, alt. 1800 m, 30 Jan. 1986, *S. Dalström & T. Höijer 1123* (MO); Cordillera del Condor, east of Guismé, alt. 1500 m, 18 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11901* (MO).

Loja: above Yangana, alt. 2400 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10882* (MO).

Zamora-Chinchi: east of the pass between Loja and Zamora, alt. 2000-2500 m, 21-25 Jan. 1992, *C. Luer, J. Luer, A. Hirtz, P. & A. Jesup 16073, 16149* (MO); above Valladolid, alt. 1900 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10847* (MO); Cordillera del Condor, east of Los Encuentros, alt. 1550 m, 18 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13447* (MO); same area, 21 Jan. 1989, *C. Luer, J. Luer, A. Jesup & P. Jesup 14028; 0000* (MO).

Also Colombia (Antioquia, Cauca, Nariño), Peru (Huanuco), and Bolivia (Cochabamba).

Although uncommonly found in herbaria, this diminutive species is one of the most common in the genus in the Andes. It is usually overlooked or ignored because of its size. It usually grows on mossy twigs, often in association with other small pleurothallids. *Lepanthes acarina* is easily recognized by the tiny habit with the minute, spiculate flowers borne in a subcongested raceme beyond the apex of the leaf. Frequently racemes will also be found bearing fruit.

Lepanthes actias-luna Luer & Hirtz, *Lindleyana* 2: 30: 1987.

Fig. 3.

Ety.: Named for the similarity of the pair of petals to the long-tailed wings of the moth *Actias luna* L.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 9-25 cm long, enclosed by 9-16 coarsely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, oblong-ovate, obtuse, shortly acuminate, 8-12 cm long, 3-4.5 cm wide, the rounded base abruptly contracted into a twisted petiole 4-7 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 25-35 mm long; floral bracts 1.5 mm long; pedicels 0.75 mm long; ovary 2.5 mm long; **sepals** light yellow, glabrous, the dorsal sepal triangular, acute, 7.5 mm long, 4 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, obtuse, acuminate, diverging, 7.5 mm long, 5 mm wide, 2-veined, connate 1.5 mm; **petals** yellow with red-purple upper margins, microscopically pubescent, transversely bilobed, the upper lobe suboblong-cuneate, subtruncate, 2 mm long, 2 mm wide, with the upper inner angle acuminate into a short tail, the lower lobe transversely oblong, truncate, less than 1 mm long, with the inner corner abruptly contracted into a slender, long-acuminate tail ca. 4 mm long; **lip** light brown, bilaminar, the blades narrowly ovate, acute, glabrous, 1.6 mm long, the connectives broadly cuneate, the body broad, connate to the column above the base, the sinus broad with a comparatively large, intricate appendix, broadly hinged by a minutely pubescent membrane, the terminal segment bilobulate, pubescent; **column** stout, 2.5 mm long, the anther dorsal, the stigma ventral.

El Oro: epiphytic in cloud forest below Piñas, alt. 1000 m, 20 March 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10676* (Holotype: MO); above the Piñas shrine, 20 Apr. 1989, cultivated in Chamblee, GA, *F. L. Stevenson 89-1217-1* (MO).

This remarkable species from southwestern Ecuador is closely allied to *L. athena* from northernmost Ecuador. Vegetatively it is large with the flower borne in a congested raceme behind the leaf. The dorsal sepal is narrow and acute; the lateral sepals are broad with the acuminate apices diverging. The petals are distinctive with abruptly long-acuminate, recurving, tails of the lower lobes resembling the tails of a luna moth. The upper lobes are short-tailed on their upper, inner corner.

The upper lobes overlap above the column. The ovate blades of the lip are broadly cuneate. The appendix is an intricately contrived mechanism with a bilobed apical gland.

Lepanthes actias-luna is best distinguished from *L. athena* by the larger flowers with broad, overlapping, caudate, upper lobes, and lower lobes abruptly contracted into a slender, glabrous tail.

***Lepanthes aculeata* Luer, Phytologia 54: 327, 1983.**

Fig. 4.

Ety.: From the Latin *aculeatus*, "covered with prickles," in reference to the undersurface of the leaf.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-7.5 cm long, enclosed by 7-15 long-ciliated, lepanthiform sheaths with widely dilated ostia. **Leaf** erect, coriaceous, ovate, slightly acuminate, acute, 17-28 mm long, 10-14 mm wide, the undersurface covered by numerous small, depressions and excavations with the elevated ridges, and the dorsum of the leaf echinate-pubescent, the margins erose-lacinate, the base cuneate or rounded, contracted into a petiole 1-2 mm long. **Inflorescence** a congested, successively many-flowered raceme, up to 20 mm long, borne by a filiform peduncle 5-10 mm long, along the back surface of the leaf; floral bracts 0.75 mm long; pedicel 1-1.25 mm long; ovary 1.5 mm long; **sepals** green suffused with red, or red-purple with green margins, subequal, broadly ovate, obtuse, more or less concave, denticulate, carinate-denticulate, the dorsal sepal 2-2.5 mm long, 1.75-2.25 mm wide, connate to the lateral sepals for 0.5-0.75 mm, the lateral sepals oblique, 1.5-2.5 mm long, 1.75-2 mm wide, connate 1 mm; **petals** red-orange with red margins, microscopically pubescent, transversely bilobed, 0.8 mm long, 2.6-3.25 mm wide, the upper lobe oblong, obtuse, the lower lobe smaller, narrowly oblong, oblique, obtuse; **lip** red-orange, microscopically pubescent, bilaminar, the blades oblong, 1.3-1.5 mm long, the apices narrowly incurved, uncinat, acute, the bases rounded, the connectives broadly cuneate, lifting the blades above the column, the body broad, connate to the column above the base, the appendix strap-shaped, pubescent, recurved, flexibly hinged to the sinus; **column** 0.75 mm long, the anther dorsal, the stigma bilobed, ventral.

Pichincha: "Quito," *H. Karsten s.n.* (W).

Napo: epiphytic in cloud forest north of Baeza, alt. ca. 1500 m, 10 Aug. 1978, *C. Luer, J. Luer, A. Hirtz & A. Andreetta 3203* (Holotype: SEL); NW of El Chaco, alt. 1400 m, 12 Nov. 1980, *G. Harling & L. Andersson 16500* (GB); Borja, alt. 1600 m, 5 Oct. 1984, *A. Hirtz & A. Andreetta 1940* (MO); along Río Borja, alt. 1700 m, 16 Feb. 1990, *S. Dalström & L. Årnby 1347* (MO); east slopes of Volcán Reventador, alt. 1850 m, 8 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11716* (MO); north of El Chaco, alt. 1800 m, 11 Jan. 1986, *S. Dalström & T. Höijer 1037* (MO); new road to Coca north of Archidona, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11216* (MO).

Pastaza: Río Pastaza east of Río Negro, alt. 1150 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11192* (MO).

Morona-Santiago: Río Calagrás, alt. 1650 m, 4 Nov. 1982, *C. Luer, R. Escobar & D. D'Alessandro 8279* (SEL); north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11879* (MO).

Zamora-Chinchipe: above Valladolid, alt. 2000 m, 18 Mar. 1984, *C. Luer, S. Dalström, T. Höijer, J. Kuijt & D. D'Alessandro 9598* (MO); Cordillera del Condor, east of Los Encuentros, alt. 1650 m, 21 Jan. 1989, *C. Luer, J. Luer, A. Jesup & P. Jesup 14039* (MO).

Also Peru (Amazonas).

Lepanthes aculeata is relatively frequent on the eastern slopes of the Andes of Ecuador and Peru. The prickly-rugose leaves with minutely fringed margins are immediately recognizable. The red and green flowers are coarsely denticulate and broadly obtuse. The red and orange petals are proportionately large and transversely lobed. The connectives of the lip lift the blades with hook-shaped tips well above the column; and the large, hinged appendix is flexibly hinged in the sinus.

Lepanthes adelphe Luer & Hirtz, sp. nov.

Fig. 5.

Ety.: From the Greek *adelphē*, "a sister," referring to the similarity of the sympatric species.

Species haec *L. otarae* Luer affinis, sed foliis anguste ovatis acutis longioribus, racemis densioribus brevioribusque, petalis sine angula marginali mediali et labelli laminis valde papulosicellulari differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 6-16 cm long, enclosed by 6-11 microscopically scabrous, lepanthiform sheaths with ciliated ostia. **Leaf** erect, coriaceous, narrowly ovate, acute, more or less suffused with purple beneath, 3-6 cm long, 0.7-1.1 cm wide, the base cuneate into a petiole ca. 2 mm long. **Inflorescence** a subdense, distichous, successively many-flowered raceme up to 30 mm long, borne behind the leaf by a filiform peduncle 3-5 mm long; floral bracts 1.5 mm long; pedicels 1-1.5 mm long; ovary 1.5 mm long; **sepals** purple-brown, carinate, ovate, denticulate, the dorsal sepal subacute, acuminate, 6.5 mm long, 4 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, obtuse, abruptly contracted into slender tails 1 mm long, 7 mm long, 2.25 mm wide, 1-veined, connate 4 mm; **petals** coarsely glandular-cellular, transversely bilobed, 1.25 mm long, 4.75 mm wide, the lobes subequal, oblong with the ends rounded; **lip** purple, bilaminate, the blades thick, coarsely glandular-cellular, ovate, subacute, concave, embracing the column, 1.5 mm long, the connectives short, thick, from the base of the blade, forming a broad, thick body, connate to the column above the base, the sinus acute with a small, ovoid appendix; **column** 2 mm long, the anther dorsal, the stigma ventral.

Pastaza: forest along Río Zuñag, alt. 2000 m, 23-28 Feb. 1990, A. Hirtz, S. Dalström, J. Del Hierro et al. 4650 (MO).

Loja: epiphytic in cloud forest east of Yangana, alt. 3100 m, 22 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10783 (MO).

Zamora-Chinchi: epiphytic in cloud forest east of the pass between Loja and Zamora, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10698 (Holotype: MO); same area, alt. 2600 m, 21 Jan. 1992, C. Luer, J. Luer, A. Hirtz, P. & A. Jesup 16071 (MO).

This species grows sympatrically with *L. otara* with which it is closely allied. Although very similar, in the field the two species are readily separable. The leaves of *L. otara* are more or less oblong and blunt, while those of *L. adelphe* are narrowly ovate and acute. The racemes of *L. otara* are loosely flowered and as long as or longer than the leaf, while those of *L. adelphe* are subdensely flowered and about half the length of the leaf. The petals of *L. adelphe* lack the marginal angle seen in *L. otara*, and the blades of the lip of *L. adelphe* are covered with prominent, papular cells.

Lepanthes aeora Luer & Hirtz, Lindleyana 2: 32, 1987

Fig. 6.

Ety.: From the Greek *aiora*, "a hammock or a swing," referring to the appearance of the appendix.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-10 mm long, enclosed by 3-4 lepanthiform sheaths with minutely scabrous ostia. **Leaf** erect, coriaceous, elliptical, subacute, 8-12 mm long, 5-6.5 mm wide, the base cuneate into a 1 mm long petiole. **Inflorescence** a proportionately large flower produced in a congested, successively few-flowered raceme 1-2 mm long, borne by a filiform peduncle up to 16 mm long; floral bract 1.25 mm long; pedicel 1.5 mm long; ovary costate, 1 mm long; **sepals** yellow, suffused with red along the veins, glabrous, carinate externally, the dorsal sepal ovate, the subacute apex contracted into a slender tail 2 mm long, 8.5 mm long including the tail, 4 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, subacute, connate 4.5 mm, the subacute apices contracted into slender tails 2 mm long, 8.5 mm long including the tails, 5 mm wide together; **petals** red, microscopically pubescent, transversely bilobed, 1 mm long, 4 mm wide, the upper lobe oblong, rounded at the end, the lower lobe equally long, narrowly triangular, acute; **lip** red, bilaminate, the laminae microscopically pubescent, ovate, convex, 1.75 mm long, obtuse, with deflexed sides, the connectives from the bases of the laminae, the body connate to the column above the middle below the stigma, the sinus rounded, with an ovoid, concave, membranous appendix suspended by a pair of microscopic threads, the apex of the appendix with a bifid callus reflexed onto a minute callus within the concavity; **column** slender, 1.75 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in cloud forest on the east slopes of Volcán Reventador, alt. 1850 m, 8 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11719 (Holotype: MO).

This tiny plant with an over-sized flower is similar to that to *L. caudata* as well as some other very small species with large flowers. The sepals, however, are smooth instead of denticulate. Otherwise, the flower does not seem particularly distinctive unless the minute appendix is examined with a binocular microscope. The appendix is developed into a peculiar ovoid structure about 0.5 mm long suspended by a pair of the finest spider-weblike threads from the rounded sinus of the body of the lip. It swings loosely immediately beneath the stigma because the lip is connate to the shaft of the column above the middle just below the stigma. The body of the appendix is membranous, minutely ciliate and concave with a solid, more or less ovoid callus with a pair of microscopic processes toward the base. At the apex of the appendix a solid, horseshoe-shaped structure points upward or inward to the central callus. The reasons for the adaptation of such an intricate design are far beyond our present comprehension.

***Lepanthes agglutinata* Luer, Phytologia 52: 327, 1983.**

Fig. 7.

Ety.: From the Latin *agglutinatus*, "glued together," referring to the blades of the lip.

Syn.: *Lepanthes porphyrea* Luer & Escobar, Amer. Orchid Soc. Bull. 53: 922, 1984.

Ety.: From the Greek *porphyreos*, "purple," in reference to the leaves.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-18 cm long, enclosed by 8-16 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, often suffused with purple, ovate, acute, long-acuminate, 4-9 cm long, 1-2.7 cm wide, the base cuneate to rounded, contracted into a petiole 2-4 mm long. **Inflorescence** a congested, long-pedicellate, successively many-flowered raceme up to 25 mm long, borne by a slender peduncle 10-25 mm long, along the back of the leaf; floral bracts 1-1.5 mm long; pedicels 3-4 mm long; ovary 2-3 mm long, winged; **sepals** translucent white or light yellow, carinate, with minutely denticulate margins, acute, shortly acuminate, the dorsal sepal broadly ovate-triangular, 5.5-6 mm long, 4.25-5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique with the apices diverging, 5.5-6.5 mm long, 2.5-3 mm wide, connate 1.5-2 mm; **petals** green with the upper margin dark purple, shortly pubescent, transversely oblong, 1.5 mm long, 4.5-5 mm wide, with a 1 mm long process from the outer margin at the midvein, the upper lobe oblong, obliquely obtuse, the lower lobe smaller, oblong, obtuse; **lip** green to rose, bilaminate, the blades thin, lunate, microscopically pubescent, oblong with rounded ends, 1.5-1.75 mm long, adherent medially over the column, the connectives narrow, oblique, from the apical portion of the blade, the body narrow, connate to the base of the column, the sinus obtuse, appendix relatively large, 1 mm long, oblong, ciliate, concave, truncate-retuse, with a ciliated, apical gland; **column** 1.5-2 mm long, the anther dorsal, the stigma ventral.

Sucumbios: forested ridge above La Bonita, alt. 2300 m, 15 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2154 (MO).

Pichincha: above Chiriboga, alt. 2000 m, Sept. 1984, A. Hirtz 1897 (MO); San Juan, alt. 2800 m, Sept. 1984, A. Hirtz 1912 (MO).

Napo: Guacamayo Range between Baeza and Tena, alt. 1800 m, 18 Nov. 1984, A. Hirtz 2100 (MO); same area, alt. 1950 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11249 (MO); Volcán Reventador, alt. 1400 m, 5 Oct. 1984, A. Hirtz & A. Andreetta 1960 (MO); Río Topo, alt. 1300 m, Dec. 1984, A. Hirtz 2169 (MO); Hollin Loreto, alt. 1000 m, Nov. 1988, A. Hirtz 3923 (MO).

Morona-Santiago: between Gualaceo and Limón, alt. 2150 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11842 (MO); between Macas and Guamote, alt. 1900 m, 6 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12706 (MO); Cordillera del Condor, east of Chuchumbletza, alt. 1750 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13550 (MO).

El Oro: west of Pacha, alt. 1100 m, 23 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13620 (MO).

Zamora-Chinchipe: epiphytic in cloud forest above Valladolid, alt. ca. 2000 m, 21 Feb. 1982, D. D'Alessandro 165 (Holotype: SEL); same area, alt. 2450 m, 24 Mar. 1985, A. Hirtz, C. Luer & J. Luer 2372 (MO); Cordillera del Condor, east of Los Encuentros, alt. 1600 m, 4 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12623 (MO); Cordillera del Condor, east of Mayaicu, alt. 1300 m, 20 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13503 (MO).

Also Colombia (Santander, Antioquia, Nariño).

This species is frequent and widely distributed in Colombia and Ecuador. It is easily identified by the very congested, many-flowered raceme that lies behind the leaf that is commonly suffused with purple; rather large, translucent flowers with emerald green petals edged in dark purple, with a slender lobule on the outer margin; and a pair of thin, membranous blades of the lip that are adherent over the column. The blades are borne near their apices by narrow, oblique connectives. The appendix is comparatively large and boat-shaped.

Lepanthes allector Luer, *Phytologia* 54: 328, 1983.

Fig. 8.

Ety.: From the Latin *allector*, "an anticleric," in reference to the intricate appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 2.5-5 cm long, enclosed by 6-9 close, minutely scabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, ovate, acuminate, acute, 20-36 mm long, 8-14 mm wide, the rounded base contracted into a petiole 2 mm long. **Inflorescence** a densely several-flowered raceme up to 8 mm long, borne by a filiform peduncle 5-9 mm long up the back side of the leaf; floral bract 1.3 mm long; pedicel 1.5 mm long; ovary 2.5 mm long; **sepals** yellow, suffused with purple basally, glabrous, the dorsal sepal ovate, obtuse, 3.1 mm long, 2.75 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, 3 mm long, 2 mm wide, connate 1 mm; **petals** yellow-orange, suffused with red, long-pubescent, transversely bilobed, 0.66 mm long, 2.66 mm wide, the lobes oblong, subequal, with the apices rounded; **lip** white with red margin, bilaminar, the blades ovate, 1.3 mm long, the apices acute, incurved, ciliate, the bases rounded, the connectives broadly cuneate with an obtuse angle on the anterior margin, the body connate to the base of the column, the appendix a 2-winged, pubescent gland carried by an S-curved, straplike band from the sinus; **column** 1 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest between Gualaceo and Limón, alt. 2050 m, 29 Oct. 1982, C. Luer, R. Escobar & A. Pozo 8229 (Holotype: SEL); above San Juan Bosco, alt. 1850 m, 28 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10989 (MO).

This species is local and endemic in southeastern Ecuador. Vegetatively similar to many other species, *L. allector* is identified by the broad, smooth sepals, long-pubescent petals, and a lip with prominent angles on the front margins of the connectives between which the complicated appendix emerges. The appendix consists of a pubescent, bi-alate, terminal gland borne from the sinus by an "S-shaped" strap.

Lepanthes aloplex Luer & Hirtz, sp. nov.

Fig. 9.

Ety.: From the Latin *alopex*, "a fox," referring to the long-haired, taillike appendix.

Planta mediocris caespitosa, inflorescentia racemosa congesta longipedicellata foliis rubris ovatis acuminatis plus minusve longiore, sepalis ovatis, petalis transverse lobatis brevipubescentibus, lobo superiore dolabriformi, lobo inferiore oblongo incurvato, labelli laminae lunatis brevipubescentibus, connectivis late cuneatis, appendice longissima oblonga longipubescenti apice biglandulata.

Plant medium in size, epiphytic, caespitose; roots numerous, filamentous. Ramicauls erect to suberect, very slender, 5-9.5 cm long, enclosed by 10-12 lepanthiform sheaths with dilated, shortly ciliate ostia. **Leaf** erect, more or less suffused with red, thinly coriaceous, ovate, acute, acuminate, 3-4.5 cm long, 1-1.7 cm wide, the base cuneate, contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, long-pedicellate, successively many-flowered raceme up to 15 mm long, borne on top of the leaf by a filiform peduncle 25-40 mm long; floral bracts 1.5 mm long; pedicels 2.5 mm long; ovary 1 mm long; flowers red-purple; **sepals** ovate, subacute, entire, subcarinate, the dorsal sepal 2.75 mm long, 1.75 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 2.5 mm long, 1.25 mm wide, connate 1.5 mm; **petals** minutely pubescent, transversely bilobed, 0.5 mm long, 2.5 mm wide, the upper lobe dolabriform, the angle on the inner margin subacute, the lower lobe obliquely oblong, incurved, obtuse; **lip** minutely pubescent, bilaminar, the blades ovate-lunate with the apices acute, 1.4 mm long, the connectives broadly cuneate, forming a broad body, connate to the base of the column, the sinus occupied by a large, descending, 1 mm long, oblong, long-pubescent appendix with the apex biglandular; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest, Cordillera del Condor, east of Guismé, alt. 1600 m, 4 Feb. 1987, C. Luer, J. Luer, & A. Hirtz 12622 (Holotype: MO); same area, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13536 (MO); same area, 18 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11893 (MO).

This species is apparently endemic in the Cordillera del Condor of southeastern Ecuador. The peduncles of *L. alopes* are about as long as the leaves, but the congested, long-pedicellate racemes with a small, red-purple flower usually hang over the margin near the apex, in a manner similar to *L. vesperilio*. The most distinguishing feature of *L. alopes* is the long, bushy-tailed appendix, reminiscent of the appendix of *L. alkaia* Luer & Escobar, from the Eastern Cordillera of Colombia. *Lepanthes alopes* differs in the larger habit, longer peduncles and pedicels, and red, entire sepals.

Lepanthes alticola C.Schweinf., Bot. Mus. Leafl. 10: 121, 1942.

Ety.: From the Latin *alticola*, "a dweller of high places," referring to the habitat,

Syn.: *Lepanthes dipteryx* Luer & Hirtz, Lindleyana 2: 96, 1987.

Ety.: From the Greek *dipteryx*, "two winged," referring to the lobes of the lip.

Fig. 10.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 5-25 mm long, enclosed by 3-4 shortly ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 12-24 mm long including a petiole 2-8 mm long, 4-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a loose, flexuous, distichous, successively many-flowered raceme up to 8 cm long including the slender, filiform peduncle 1-2 cm long; floral bract 1.75-2 mm long, muriculate; pedicel 2.5-3 mm long; ovary 1 mm long; **sepals** yellow to tan, ovate, acute, long-acuminate, carinate, the dorsal sepal glabrous, 7 mm long, 2.6 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, minutely denticulate, 7.75 mm long, 2 mm wide, connate 2 mm; **petals** yellow, suffused with red medially, glandular-cellular, transversely bilobed, 1.25 mm long, 5.25 mm wide, the lobes obliquely triangular, acute, attenuate, the upper lobe larger; **lip** red or yellow, bilobate, the lobes thick, subovate, acute, minutely ciliate, 2 mm long, with a shallow channel externally demarcating a narrow, poorly defined blade from the rest of the lobe, the lobes connate to the column near the middle without forming a body except for a minute, apiculate appendix on the undersurface of the column; **column** 2 mm long, the anther dorsal, the stigma ventral.

Azuay: epiphytic in scrubby vegetation above Lago Zorrogucho, alt. 3250 m, 16 Mar. 1984, C. Luer, S. Dalström, T. Höijer & J. Kuijt 9523 (type of *L. dipteryx*: MO); same area, alt. 3200 m, 15 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11787 (MO); road to Molleturo, alt. 10,500 ft., collected by Cordelia Head, flowered in cultivation at J & L Orchids, Easton, CT, J & L 1288-302 (MO).
Loja: epiphytic in tall forest above Jimbura, alt. 3000 m, C. Luer, S. Dalström, T. Höijer & J. Kuijt 9665 (MO).

Zamora-Chinchipe: Nudo de Sabanilla, east of pass, road to Valladolid, alt. 2800 m, 4 Feb. 1985, G. Harling & L. Andersson 21591 (GB); epiphytic in cloud forest south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12016 (MO).
Also Peru (Huanuco: type) and Bolivia (Cochabamba).

This floriferous little species is widely distributed and locally abundant in the high Andes from southern Ecuador into Bolivia. Flexuous racemes far surpass the small, elliptical leaves. The sepals are denticulate and caudate. The lobes of the petals are triangular. Most distinctive are the lobes of the lip that are not well developed into blades and connectives. The lobes arise directly from the mid-shaft of the column, but labellar tissue between them forms a tiny, triangular appendix borne along the undersurface of the column.

Lepanthes amphioxys Luer & Hirtz, sp. nov.

Fig. 11.

Ety.: From the Greek *amphioxys*, "sharply pointed at both ends," referring to the petals.

Planta parva debilis caespitosa, inflorescentia racemosa congesta folio rubro marginibus viridibus anguste ovato brevior, sepalis ovatis denticulatis, petalis transverse lobatis, lobis triangularibus acutis, labelli lamina ovatis, connectivis cuneatis, appendice grandi oblonga apice obtusa longiciliata.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls suberect, very slender, 1.5-7.5 cm long, enclosed by 5-13 closely fitting, glabrous lepanthiform sheaths, with the ostia microscopically scabrous. **Leaf** spreading, green or suffused with red or red-brown with green margins, thinly coriaceous, ovate to narrowly ovate, acute, 22-45 mm long, 6-8 mm wide, the apex long-acuminate, prominently tridentate, the cuneate base contracted into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 4 mm long, borne on top of the leaf by a filiform peduncle 4-12 mm long; floral bracts 1 mm long, lightly echinate; pedicels 1 mm long; ovary 1 mm long; **sepals** yellow, ovate, subacute, denticulate, the dorsal sepal 2.75 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 2.5 mm long, 1.4 mm wide, connate 1 mm; **petals** orange, microscopically pubescent, transversely bilobed, 0.75 mm long, 3.5 mm wide, the lobes obliquely triangular, acute, the upper lobe larger; **lip** red, microscopically pubescent, bilaminar, the blades ovate, acute, not covering the column, 1 mm long, the connectives cuneate, forming a very narrow body, connate to the base of the column, the sinus obtuse, the appendix large, descending, pubescent, oblong-ovoid, the apex rounded with a dense tuft of cilia; **column** 1 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in cloud forest south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12440 (Holotype: MO); same area, C. Luer et al. 12441, 12444 (MO); same area, alt. 1300 m, 19 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15175, 15176, 15180 (MO).

This little species is apparently endemic in northwestern Ecuador. It is characterized by very thin, weak ramicauls; spreading, narrowly ovate leaves suffused with red but with the margins green; transverse petals with both lobes long-pointed; a bilaminar lip with the very small laminae flanking the column; and a large, oblong, descending appendix with a tuft of long hairs on the rounded apex.

Lepanthes andreettae Luer & Hirtz, Novon 3: 442, 1993.

Fig. 12.

Ety.: Named in honor of Father Angel Andreetta who cultivated this species at Paute, Ecuador.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-8 mm long, enclosed by 2-3 loose, microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 12-16 mm long, 6-8 mm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a loose, distichous, successively several- to many-flowered raceme up to 9 cm long, borne by a slender peduncle 15-20 mm long; floral bract 2 mm long; pedicel 1.5-2 mm long; ovary 1 mm long; **sepals** purple with broad, yellow margins, the dorsal sepal narrowly ovate, acute, acuminate, 7 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals microscopically denticulate, narrowly ovate, acute, acuminate, oblique, 8 mm long, 3 mm wide together, connate 3 mm, the apices in apposition; **petals** pale rose, microscopically pubescent, transversely bilobed, 0.75 mm long, 2.6 mm wide, the lobes triangular, the upper lobe larger; **lip** pale rose, bilaminar, the laminae narrowly ovate, 2 mm long, the bases rounded, the apices acute, long-acuminate, microscopically pubescent, the connectives narrow, from the base of the blades, the body narrow, connate to the base of the column, the appendix pubescent, narrowly linear, incurved in the natural position and in contact with the stigma; **column** 1 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago? Without locality, collected by A. Andreetta, probably in the vicinity east of Paute, flowered in cultivation at Paute by A. Andreetta, C. Luer 13855 (Holotype: MO).

This species was collected by Father Andreetta, probably east of Paute, and cultivated by him at the mission near Paute. It is distinguished by the small habit and a successively flowered raceme much longer than the leaves. The flowers are comparatively large but narrow with acuminate sepals, the laterals in apposition.

The blades of the lip are narrowly ovate with the connectives arising at the base. The appendix is narrow and curved up to be intimately associated with the stigma.

Lepanthes andrenoglossa (*Lepanthes mucronata*)

Fig. 13.

Lepanthes angulata Luer & Hirtz, sp. nov.

Fig. 14.

Ety.: From the Latin *angulatus*, "angled," referring to outer margin of the petals.

Planta parva caespitosa, inflorescentia racemosa congesta foliis ovatis brevioribus, sepalis ovatis integris, petalis transverse lobatis, lobo superiore triangulari cum angulo basali magno supra lobum inferiorem anguste ovatum, labelli lamina obovatis apice lobulatis, connectivis anguste oblongis, appendice pubescenti oblonga lata, parte terminali crassa subtrilobata.

Plant small, epiphytic, caespitose; roots numerous, slender. Ramicauls erect, slender, 10-16 mm long, enclosed by 5 shortly spiculate, lepanthiform sheaths. Leaf erect, coriaceous, suffused with purple beneath, broadly ovate, obtuse, 13-15 mm long, 11-13 mm wide, the base rounded or cordate, contracted into a petiole 2 mm long. Inflorescence a congested, successively several-flowered raceme up to 4 mm long, borne behind the leaf by a slender peduncle 4-5 mm long; floral bracts spiculate, 1 mm long; pedicels 1.5-2 mm long; ovary 1.5 mm long; sepals yellow, carinate, entire, the dorsal sepal elliptical, subacute, shortly acuminate, 4 mm long, 2.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals purple on the inner halves, ovate, oblique, obtuse, shortly acuminate, 3.5 mm long, 2 mm wide, connate 1.5 mm; petals red-orange, yellow toward the base, microscopically pubescent, transversely bilobed, 0.75 mm-1.5 mm long, 4.5 mm wide, the outer margin with a prominent decurved angle at the base of the upper lobe, the upper lobe triangular, narrowly obtuse, the lower lobe narrowly subovate, narrowly obtuse; lip purple, microscopically pubescent, bilaminar, the blades obovate, the apices more or less truncate, the outer angles narrowly obtuse, the inner angles shorter and broadly angled, 2 mm long, the connectives oblong, elevating the blades above the column, the body connate to the base of the column, the appendix comparatively large, pubescent, oblong, with the distal portion thick, subtrilobed; column 1.5 mm long, the anther apical, the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest east of the pass between Loja and Zamora, alt. 2000 m, 22 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13578 (Holotype: MO); same area, alt. 2200 m, 5 Mar. 1990, S. Dalström & Årby 1451 (MO); same area, alt. 2250 m, 25 Jan. 1992 C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16168 (MO).

This little species is apparently endemic in southeastern Ecuador. It is remarkable for the large, decurved angle on the outer margin of the petals. The sepals and petals are similar to those of *L. dictydion* Luer & Hirtz. The leaves of *L. angulata* are broadly ovate, neither orbicular nor reticulate; the racemes are short and congested; the sepals are entire and shortly acuminate; the petals are transversely bilobed with the prominent angle at the base of the triangular upper lobe; the blades of the lip are held above the column; and the appendix is comparatively large with a trilobed, distal segment.

Lepanthes antiopa Luer, *Phytologia* 54: 329, 1983.

Fig. 15.

Ety.: Named for *Nymphalis antiopa* L., The Mourning Cloak, a butterfly with purple wings bordered in yellow, familiar to all who have ventured into the temperate forests.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-8.5 cm long, enclosed by 10-12 ciliate, lepanthiform sheaths with widely dilated ostia. Leaf erect, coriaceous, ovate, acuminate, acute, 3-5.5 cm long, 1-2 cm wide, reticulate and ciliate along the veins beneath, the base broadly cuneate into a petiole 1 mm long. Inflorescence a congested, successively several-flowered raceme up to 8 mm long, borne by a filiform peduncle 5-13 mm long behind the leaf; floral bract 1 mm long; pedicel 1.25 mm long; ovary 3 mm long, sparsely papillose; sepals dark purple, edged in yellow, the margins entire, spiculate along the veins externally, the dorsal sepal ovate, concave, obtuse, acuminate, 6 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique,

acute, acuminate, 6.25 mm long, 2 mm wide, connate 1.5 mm; **petals** purple, transversely bilobed, 1 mm long, 3.75 mm wide, the upper lobe oblong, subtruncate, the lower lobe narrowly triangular, narrowly obtuse; **lip** purple, bilaminar, the blades oblong, convex, 2.2 mm long, the ends rounded, the connectives cuneate, the body narrow, connate to the base of the column, the appendix reduced to a small, shallowly concave, rounded prominence in the obtuse sinus; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Cotopaxi: epiphytic in cloud forest west of El Corazón, alt. 1200 m, 18 Feb. 1979, C. Luer, J. Luer & A. Hirtz 4020 (Holotype: SEL).

This pretty species is apparently confined to a small area on the western declivity of the Andes of central Ecuador. So far, it has not been seen since the original collection. It is characterized by a congested inflorescence borne behind minutely ciliate and reticulate leaves, somewhat similar to those of *L. pubescens*. The acuminate, shortly tailed sepals are dark purple with entire, yellow margins. The petals and lip are glabrous, and the appendix is reduced to a minute, concave lobule.

Lepanthes aries Luer, *Phytologia* 54: 329, 1983.

Fig. 16.

Ety.: From the Latin *aries*, "a ram," referring to the recurved bases of the blades of the lip.

Plant medium in size, epiphytic, caespitose; roots coarse. Ramicauls slender, erect, 8-15 cm tall, enclosed by 8-11 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, oblong, acute, acuminate, 5-6.5 cm long, 1.5-1.8 cm wide, the base cuneate into a petiole 5 mm long. **Inflorescence** a congested, distichous raceme up to 23 mm long, borne by a filiform peduncle up to 45 mm long along the back of the leaf; floral bract 1.5 mm long; pedicel 2.5-3.5 mm long; ovary 2 mm long; **sepals** orange-brown with thin yellow margins, serrulate, shortly pubescent, ovate, acute, acuminate, the dorsal sepal concave, 7.5 mm long, 3.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 7.25 mm long, connate 4 mm, 4.5 mm wide together; **petals** red-brown, ciliate, transversely bilobed, 1.2 mm long, 5 mm wide, the upper lobe elliptical, acuminate, acute, the lower lobe smaller, triangular, acute; **lip** rosy brown, bilaminar, the blades oblong, 3 mm long, the apices short, obtuse, ciliate, the bases elongate, obtuse, recurved, the connectives broadly cuneate, the body broad, connate to the column above the middle, the appendix minute, minutely pubescent, 3-lobed, one lobe beneath 2 lobes above at the sinus; **column** 2.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in cloud forest of Selva Alegre, alt. 2730 m, 1 May 1981, C. Luer, J. Luer & A. Hirtz 6044 (Holotype: SEL); near Apuela, Selva Alegre, alt. 2900 m, Apr. 1986, A. Hirtz 2880A (MO).

This species is rare, apparently endemic in a small area in northwestern Ecuador. It is recognized by the congested inflorescence borne on a peduncle nearly as long as the ovate, acuminate leaf; the serrulate, pubescent sepals; the acuminate petals; the blades of the lip with elongate, recurved bases; and a minute, tripartite appendix.

Lepanthes asoma Luer & Hirtz, *Die Orchidee* 37: 213, 1986.

Fig. 17.

Ety.: From the Greek *asoma*, "without a body," referring to the absence of the body of the lip.

Plant small, epiphytic, caespitose; roots filiform. Ramicauls slender, erect, 15-35 mm long, enclosed by 4-5 darkly colored, tightly fitting, minutely ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, coriaceous, suffused with purple, ovate, acute, 18-23 mm long, 9-10 mm wide, the base obtuse to rounded, with a petiole 2 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 4 mm long or longer, borne on top of the leaf by a filiform peduncle 4-5 mm long; floral bract 1 mm long, sparsely short-spiculate; pedicel 1.5 mm long; ovary 1.5 mm long; **sepals** light orange, glabrous, entire, the dorsal sepal oblong, obtuse, 3 mm long, 1.5 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals oblong-ovate, oblique, obtuse, 2.5 mm long, 1.5 mm wide, connate 0.5 mm; **petals** orange, suffused with red medially, minutely pubescent, transversely bilobed, 0.8 mm long, 2.75 mm wide, the lobes triangular, acute, the upper twice longer than the lower; **lip** red-orange, ciliate, minutely pubescent, bilaminar, the blades oblong, obtuse, oblique, 1.5 mm long, shallowly concave, the connectives arising from the base of the blades, not forming a body, connate to base of the

column, the appendix triangular, acute, concave, ciliate, arising externally from the bases of the connectives; **column** slender, 1 mm long, ciliate, the anther apical, the stigma ventral.

Morona-Santiago: between Gualaceo and Limón, alt. 2650 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11840* (MO).

Napo: epiphytic in trees of forest between Baeza and Cosanga, alt. 1800 m, 14 April 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11295* (Holotype: MO).

This is rare and apparently endemic in the Andes of southeastern Ecuador. It is characterized by the diminutive habit with a short inflorescence borne behind an ovate leaf. The sepals are obtuse; the red-orange upper lobes of the petals stand erect in the flower; and the oblique, diverging blades of the lip are borne by short connectives with a vestigial body, if any body at all. The appendix is external, ovate and concave, and it protrudes from the sinus between the connectives.

***Lepanthes athena* Luer, sp. nov.**

Fig. 18.

Ety.: Named for the lepidopteran genus *Athena*, "the dagger-wings," referring to the petals.

Species haec *L. actias-lunae* Luer & Hirtz affinis, sed floribus minoribus, ovario longissimo, sepalo dorsali ovato vice triangulari, petalorum lobis pubescentibus apicibus superioribus divergentibus vice superpositis differt.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender to stout, 7-28 cm long, enclosed by 9-16 coarsely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, acute, acuminate, 5-11.5 cm long, 2-5 cm wide, the base rounded, contracted into a petiole 3-5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 20 mm long, borne behind the leaf by a filiform peduncle 15-25 mm long; floral bracts 1.5-2 mm long; pedicels 1 mm long; ovary 4-5 mm long; **sepals** light yellow, glabrous, the dorsal sepal ovate, acute, 4-6.25 mm long, 2.25-3.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, obtuse, 4-5.5 mm long, 2.75-3.5 mm wide, 2-veined, connate 1.5 mm, with the apices acuminate, diverging; **petals** yellow-orange with purple margins, pubescent, transversely bilobed, 1.2-1.5 mm long, 4-7 mm wide, the upper lobe obovate with the obtuse apex contracted into a 0.5 mm long, diverging tail, the lower lobe narrower, subovate, with the apex narrowly acuminate; **lip** red, bilaminar, the blades glabrous, flat, ovate, 1.3-1.8 mm long, acute at the apex, rounded at the base, the connectives broadly cuneate, forming a broad body, connate to the column above the base, the sinus subacute with a small, ovoid, bilobed appendix; **column** 2 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest between Tulcán and Maldonado, alt. 2300 m, 2-4 Apr. 1984, *C. Luer, S. Dalström & T. Höjjer 9933* (Holotype, MO); same area, alt. 2,400 m, 2-4 Apr. 1984, *C. Luer, S. Dalström & T. Höjjer 9942* (MO); same area, alt. 1,600 m, 16 Mar. 1991, *C. Luer et al. 15099* (MO); between Maldonado and Chical, alt. 1400 m, July 1991, flowered in cultivation at Chamblee, GA, *F L Stevenson 92-0117-4* (MO); above Maldonado toward Río La Plata, alt. 2200 m, 11 Jan. 1993, *A. Hirtz 5877* (MO).

Also Colombia (Nariño).

This species from northernmost Ecuador and southern Colombia had been considered conspecific with *Lepanthes actias-luna* from the province of El Oro in southwestern Ecuador. However, now that more material has been examined, it is apparent that this species is sufficiently distinct from *L. actias-luna* to be recognized. Vegetatively the two species are inseparable from many of the large species with short, congested racemes.

The flowers of *L. athena* are distinguished from those of *L. actias-luna* by their smaller size and pubescent petals. Instead of transverse, overlapping upper lobes of the petals with incurving apices, the upper lobes are ovate with short, diverging tails. The lower lobes are slender in both species, but acuminate and broader and in *L. athena*. The lips are similar, but the microscopic morphology of the appendices differs, that of *L. athena* consisting of a smaller ovoid body bilobed at the apex.

Lepanthes auriculata Luer, *Phytologia* 54: 330, 1983.

Fig. 19.

Ety.: From the Latin *auriculatus*, "shaped like an ear," in reference to the blade of the lip.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls erect, slender to stout, 8-30 cm tall, enclosed by 10-16 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical, acute, long-acuminate, 5-13 cm long, 2.5-5 cm wide, minutely ciliate along the veins beneath, the rounded base contracted into a petiole 3-5 mm long. **Inflorescence** a dense, successively many-flowered raceme up to 20 mm long, borne by a filiform peduncle 25-50 mm long behind the leaf; floral bract 1.5 mm long; pedicel 1.25 mm long; ovary 3-4 mm long, narrowly winged; **sepals** yellow, glabrous, the dorsal sepal triangular, acute, acuminate, 9 mm long, 4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, 9 mm long, 4 mm wide, connate 3 mm, the apices acute, acuminate, diverging; **petals** yellow, suffused with purple, transversely bilobed, 1.25 mm long, 5 mm wide, the upper lobe cuneate with the apex subtruncate-rounded, the lower lobe similar but smaller and narrower; **lip** yellow, edged in purple, bilaminar, the blades thick, elliptical, longitudinally concave, 2 mm long, the apex narrowly rounded, the base rounded, the connectives broad, short, oblique, the body broad, protruding and rounded, connate to the column above the base, the appendix short, oblong, pubescent; **column** 2 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: above San Juan Bosco, alt. 1850 m, 28 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10987* (MO); north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11882* (MO); between Sigsig and Chiquinda, alt. 2600 m, 11 Aug. 1990, *A. Hirtz 5055* (MO).

Zamora-Chinchipe: epiphytic in forest above Valladolid, alt. ca. 1800 m, 21 Feb. 1983, *D. D'Alessandro 164* (Holotype: SEL), *C. Luer* illustr. 9076; same area, alt. 1900 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10858* (MO); Cordillera del Condor, east of Los Encuentros, alt. 1600 m, 4 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12625* (MO); east of Los Encuentros, alt. 1450 m, 18 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13431* (MO); between Los Encuentros and Paquisha, alt. 1600 m, flowered in Chamblee, GA, 14 Oct. 1990, *F L Stevenson 90-1014-1* (MO).

This large species, relatively frequent and apparently endemic in southeastern Ecuador, is similar to several others, e.g. *L. ballatrix*, *L. craticia* etc., but *L. auriculata* is easily distinguished by the concave, earlike blades of the lip. The connectives and body are thick with the oblong, pubescent appendix in contact with the stigma.

Lepanthes aurita Luer & Escobar, *Phytologia* 54: 330, 1983.

Fig. 20.

Ety.: From the Latin *auritus*, "with large ears," referring to the petals.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 15-20 mm long, enclosed by 3-4 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, convex, elliptical-ovate, obtuse, 10-12 mm long, 6-9 mm wide, the base broadly cuneate into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 4 mm long, borne by a filiform peduncle up to 4 mm long behind the leaf; floral bract 0.5 mm long, minutely spiculate; pedicel 0.3 mm long; ovary 1.5 mm long; **sepals** yellow-orange, glabrous, ovate, acute, the dorsal sepal 3.2 mm long, 1.8 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 3 mm long, 1.5 mm wide, connate 0.5 mm; **petals** orange, transversely bilobed, 1.2 mm long, 2.5 mm wide, with a minute apiculum on the outer margin between the lobes, the lobes oblong with the apices rounded; **lip** rose, glabrous, bilaminar, the blades flat, narrowly oblong, 2 mm long, the apex acute, incurved with a few hairs, the base rounded, the connectives shortly cuneate, the body narrow, connate to the base of the column, the appendix in the acute sinus, broadly oblong, pubescent, bisegmented, the terminal gland small; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: mossy forest east of the pass between Gualaico and Limón, alt. 2200 m, 19 Jan. 1989, *S. Dalström & T. Höjjer 1154* (MO).

Loja: epiphytic in cloud forest south of Yangana, alt. 2400 m, 1 Nov. 1982, *C. Luer & R. Escobar 8254* (Holotype: SEL).

Zamora-Chinchipe: east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz, & W. Flores 10700, 10727* (MO); south of the pass south of Yangana, alt. 2000 m, 18 Mar. 1984, *C. Luer, S. Dalström, T. Höjjer & J. Kuij 9623A* (MO).

This tiny species is apparently endemic in southeastern Ecuador. It is readily identified by the minute habit; a short, congested raceme; entire sepals; proportionately large petals with rounded lobes; and slender blades of the lip with a bisegmented appendix.

Lepanthes avicularia Luer & Hirtz, *Lindleyana* 2: 32, 1987.

Fig. 21.

Ety.: From the Latin *avicularius*, "of small birds," referring to winglike petals and lobes of the lip.

Plant very small, epiphytic, caespitose; roots proportionately thick. Ramicauls slender, erect, 3-7 mm long, enclosed by 2-4 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thickly coriaceous, elliptical to suborbicular, obtuse, 6-9 mm long, 4-6.5 mm wide, the base cuneate into a petiole ca. 1 mm long. **Inflorescence** a loose, flexuous, successively several-flowered raceme up to 35 mm long including the filiform peduncle 8-11 mm long; floral bract muriculate, 1.5 mm long; pedicel 1.5 mm long; ovary lightly muricate, 1 mm long; **sepals** bright rose with white margins, carinate, ovate, acute, acuminate, long-caudate, the dorsal sepal entire, 9 mm long including the tail 3 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals fimbriate, oblique, 9 mm long including the tails 3 mm long, 2.5 mm wide, connate 3.5 mm; **petals** bright rose, glandular-cellular, transversely bilobed, 1 mm long, 4.5 mm wide, with a small apiculum on the outer margin near the middle, the lobes about equal, obliquely narrowly triangular, acute; **lip** bright rose, glandular-cellular, bilaminate, the blades diverging, narrowly ovate with narrowly obtuse ends, 2 mm long, the connectives broadly cuneate from the basal two-thirds of the blades, connate to the column above the base without forming a body, the appendix minute, filiform, arising from the undersurface of the column; **column** 2 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: epiphytic in dwarf cloud forest east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10699 (Holotype: MO); same area, alt. 2600 m, 21 Jan. 1992, C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16072 (MO). epiphytic in cloud forest south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11998 (MO).

This tiny species is locally abundant on twigs and small branches of dwarf trees of cloud forest where several species of *Lepanthes* grow intermixed. The lateral sepals are fimbriate while the margins of the dorsal sepal are smooth. All three sepals are long-caudate. A minute apiculum is present on the outer margin of the petals. Most unusual are the connectives of the blades of the lip that are connate directly to the column without forming a body. The tiny, filiform appendix appears to emerge from the undersurface of the column, similar to that of *L. alticola*.

Lepanthes ballatrix Luer, *Phytologia* 54: 331, 1983.

Fig. 22.

Ety.: From the Latin *ballatrix*, "a dancer," in reference to the fancied illusion of the flower.

Plant medium to large in size, epiphytic, caespitose; roots coarse. Ramicauls slender to stout, 10-30 cm long, enclosed by 8-15 lepanthiform sheaths, glabrous to microscopically scabrous on the upper sheaths, more or less microscopically ciliate on some of the stomata of the lower sheaths. **Leaf** erect, thinly coriaceous, glabrous beneath, narrowly ovate-elliptical, acute, acuminate, 6-12 cm long, 2.5-4 cm wide, the base rounded, abruptly contracted into a petiole 3-4 mm long. **Inflorescence** a very congested, distichous, short-pedicellate, successively flowered raceme up to 4 cm long, borne by a filiform peduncle up to 3 cm long behind the leaf; floral bract 1-1.5 mm long; pedicel 1-1.5 mm long; ovary 2 mm long; **sepals** yellow, glabrous, carinate, the dorsal sepal triangular, acute, 7-9 mm long, 3.5-4.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, subacute, connate 2.5-3 mm, 7-8.5 mm long, 5-7 mm wide together; **petals** yellow to orange with red to purple margins, transversely bilobed, 1.5-2 mm long, 4-5 mm wide, the lobes suborbicular to broadly elliptical; **lip** orange to red, more or less suffused with purple, bilaminate, the blades oblong-lunate, 2 mm long, narrowly obtuse, minutely pubescent, the connectives broadly cuneate and short, the body broad, connate to the column below the middle, the appendix triangular, concave, ciliate; **column** 2 mm long, the anther dorsal, the stigma ventral.

- Sucumbíos:** south Santa Barbara, alt. 2700 m, 6 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11092* (MO).
- Imbabura:** above Apuela, alt. 2500 m, 24 Aug. 1978, *C. Luer, J. Luer & A. Hirtz 3349* (SEL); Selva Alegre, alt. 2430 m, 1 May 1981, *C. Luer, J. Luer & A. Hirtz 6048* (SEL).
- Pichincha:** epiphytic in cloud forest between Tandayapa and Mindo, alt. 2320 m, 13 Mar. 1982, *C. Luer, A. Hirtz & S. Dalström 7294* (Holotype: SEL); new road between Quito and Santo Domingo, alt. 1900 m, 1 Mar. 1986, *C. Luer, C. Dodson, A. Hirtz & A. Embree 12052* (MO); west of Calacalí, alt. 2550 m, 4 Apr. 1985, *C. Luer et al. 11042* (MO); between Calacalí and La Liberia, alt. 2200 m, 7 Apr. 1984, *C. Luer, S. Dalström, T. Höjjer & A. Hirtz 10015* (MO).
- Tungurahua:** slopes of Volcán Tungurahua above Baños, alt. 2700 m, 27 Mar. 1984, *C. Luer, S. Dalström, T. Höjjer, F. Freire, J. Kuijt 9772* (MO); Cordillera de los Llanganates, alt. 3100 m, 11 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11169* (MO).
- Morona-Santiago:** Gualaceo to Limón, alt. 2600 m, 26 Dec. 1982, *S. Dalström 384* (SEL).
- Loja:** west of the pass between Loja and Zamora, alt. 2700 m, 21 Sept. 1980, *C. Luer, J. Luer & C. H. Dodson 5525* (SEL); east of Yangana, alt. 2850 m, 4 Mar. 1982, *C. Luer, J. Luer & D. D' Alessandro 7156* (SEL); military road above Yangana, alt. 2700 m, 23 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10896* (MO); new road north of Loja, alt. 2700 m, 2 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12585* (MO).
- Zamora-Chinchipe:** Cajanuma Range, south of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10743* (MO); south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12002* (MO)
- Also Colombia (Putumayo).

This large species is frequent and widely distributed in the Andes of Ecuador. The specimens listed above include only one from each locality. *Lepanthes ballatrix* is similar to *L. elata* Rchb. f. of Colombia and Central America, and *L. monitor* of southern Ecuador to Bolivia, but *L. ballatrix* is distinguished by the narrow, dorsal sepal and suborbicular lobes of the petals.

***Lepanthes barbelifera* Luer & Hirtz, sp. nov.**

Fig. 23.

Ety.: From the Latin *barbelifer*, "barbel-bearing," referring to barbel-like lobes of the petals and lip

Species haec *L. calodictyonis* Hook. affinis, sed habitu minore foliorum marginibus non conspicue undulatis, petalorum lobo mediano ligulato et labello basi bicaudato differt.

Plant small, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 1-3 cm long, enclosed by 3-6 minutely ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, reticulated, elliptical, subacute to obtuse, with the margins entire or only faintly undulate, 6-15 mm long, 5-15 mm wide, the base cuneate into a petiole 0.5-2 mm long. **Inflorescence** a congested, subsecund, successively several-flowered raceme, 2-3 mm long, borne on top of the leaf by a slender peduncle 4-9 mm long; floral bracts 1-0.5 mm long, minutely echinate; pedicels 2-3 mm long; ovary spiculate, 2-2.5 mm long; **sepals** orange, membranous, reflexed, glabrous, sparsely ciliate, carinate-spiculate externally, the dorsal sepal ovate, acute, 3.25 mm long, 1.5 mm wide, 3-veined, free from the lateral sepals, the lateral sepals ovate, oblique, acute, 3.25 mm long, 1.5 mm wide, 2-veined, connate 0.25 mm; **petals** microscopically pubescent, trilobed, the middle lobe transversely oblong, ciliate, 1.75-2 mm long, 0.75-1 mm wide, 3-veined, the basal, inner, upper margin contracted into a filamentous tail 2.5-3 mm long, the basal, inner, lower margin contracted into a filamentous tail 3 mm long; **lip** orange-brown, minutely ciliate, subquadrate, the apex broadly obtuse, shallowly retuse, 1.3 mm long, 1.75 mm wide, with the basal angles produced into filamentous tails 0.6 mm long, connate by a slender claw to the column near the middle; **column** 1 mm long, the anther and the stigma apical.

Carchi: epiphytic in forest between Chical and Maldonado, alt. 1500 m, collected by J & L Orchids with A. Hirtz, alt. 1800 m, 11 Jan. 1993, *A. Hirtz 5865* (Holotype: MO); flowered in cultivation at J & L Orchids, Easton, CT, 12 Mar. 1994, *C. Luer 17132* (MO).

This species is closely related to *L. calodictyon*, but it differs from the latter in the smaller leaves with deep green reticulations and non-undulate margins. The petals consist of a single, transversely oblong lobe with filamentous tails produced from both margins above the base. Most distinguishing is the subquadrate lip with a slender tail produced from the bases that surround the column.

Lepanthes calodictyon is widely distributed in southern Colombia and western central Ecuador. Within its distribution in northern Ecuador four closely related species are recognized: this species, *L. saltatrix*, *L. tentaculata* and *L. volador*.

Lepanthes benzingii Luer, *Phytologia* 54: 331, 1983.

Fig. 24.

Ety.: Named in honor of Dr. David Benzing, professor of botany, Oberlin College, Oberlin, Ohio, co-discoverer of the species.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-9 cm long, enclosed by 7-8 close, microscopically ciliate lepanthiform sheaths. **Leaf** erect, coriaceous, broadly elliptical, 3.5-4.5 cm long, 2-2.3 cm wide, the apex shortly acuminate, abruptly acute, the base cuneate into a 2 mm long petiole. **Inflorescence** an extremely congested, distichous, successively flowered raceme up to 8 mm long, borne by a filiform peduncle 7-15 mm long, usually behind the leaf; floral bract 1 mm long, pubescent; pedicel 2 mm long; ovary 3.5 mm long; **sepals** yellow-orange, glabrous, the dorsal sepal ovate, acute, 3 mm long, 1.9 mm wide, the lateral sepals ovate, oblique, subacute, connate 1 mm, 2 mm long, 2.25 mm wide together; **petals** yellow, suffused with red, microscopically pubescent, transversely bilobed, 1.3 mm long, 3.2 mm wide, the lobes ovate, obtuse, the lower lobe smaller; **lip** red, the lobes oblong with rounded ends, 1.66 mm long, microscopically ciliate, in apposition over the column, the connectives cuneate, connate to the base of the column, the appendix pedunculate, 4-lobed, ciliate; **column** 1 mm long, the anther apical, the stigma subapical, horseshoe-shaped.

Napo: epiphytic in wet forest north of Tena, Cotundo, alt. 1130 m, 19 June 1983, *C. H. Dodson, D. Benzing & A. Hirtz 14120A* (Holotype: SEL), *C. Luer* illustr. 9091; between Cotundo and Coca, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11220* (MO); Río Cascales east of Lumbaqui, alt. 450 m, 9 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11770* (MO); Bermejo oil fields north of Lumbaqui, alt. 850 m, 9 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11737* (MO).

This species is relatively frequent in the wet forests on the lower slopes of the Andes of central Ecuador. It is recognized by the round leaves, shortly acuminate at the apex, borne by slender ramicauls; a congested, long-pedicellate raceme shorter than the leaf; oblong blades of the lip held together above the column; and a horseshoe-shaped stigma held above a stout, pubescent appendix.

Lepanthes bifalcis Luer, *Phytologia* 54: 332, 1983.

Fig. 25.

Ety.: From the Latin *bifalcis*, "like two sickles," in reference to the forked petals.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 3-8 cm long, enclosed by 6-8 minutely scabrous lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, narrowly ovate, acuminate, acute, 25-40 mm long, 7-11 mm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a weak, subdensely successively flowered raceme up to 25 mm long including the capillary peduncle, along the back of the leaf; floral bract 1.5 mm long; pedicel 1.5 mm long; ovary 0.75 mm long; **sepals** light yellow, glabrous, the dorsal sepal ovate, subacute, convex, 2.5 mm long, 1.5 mm wide, the lateral sepals connate into an ovate lamina 2.3 mm long, 2 mm wide, the subacute apex minutely bifid; **petals** dark yellow, transversely bilobed, forked, 0.5 mm long, 2.3 mm wide, the lobes equal, falcate, narrowly obtuse; **lip** orange, minutely ciliate, suborbicular, 0.75 mm long, 0.75 mm wide, incised at the apex into two rounded lobes, the base cuneate, connate to the base of the column; **column** 0.8 mm long, the anther apical, the stigma subapical.

Imbabura: south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, *C. Luer, J. Luer, C. Dodson & A. Hirtz 12442* (MO).

Napo: epiphytic in cloud forest south of Baeza, alt. 1900 m, 20 Feb. 1982, *C. Luer & A. Hirtz 6864* (Holotype: SEL); Guacamayo range, alt. 1800 m, 18 Nov. 1984, *A. Hirtz 2102* (MO); Volcán Reventador, alt. 1600 m, 5 Oct. 1984, *A. Hirtz & A. Andreetta 1962, 1963* (MO); east slopes of Volcán Reventador north of Baeza, alt. 1850 m, 8 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11717, 11780* (MO); between Tena and Baeza, alt. 2150 m, 29 Mar. 1984, *C. Luer, S. Dalström, T. Höjter & J. Kuiji 9796, 9797, 9801* (MO); between Baeza and Tena, alt. 1770, 2150, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11243, 11256* (MO).

Also Bolivia (Nor Yungas).

This little species occurs frequently on the eastern slopes of the Andes of central Ecuador, with one collection known in northwestern Ecuador, and a distant collection in the Yungas of Bolivia. It is distinguished by the small flowers with a synsepal similar to the dorsal sepal; bilobed petals with the lobes sickle-shaped, emerging beyond an unguiculate base; and an obcordate or obovate, bilobed lip without an appendix, and with the claw attached to the base of the column.

Although the lobes of the petals are variable, *L. bifalcis* is readily distinguished from its two close allies, *L. columbar* and *L. homotaxis*, by the smaller non-cordate blade of the transversely bilobed lip.

Lepanthes biloba Lindl., Comp. Bot. Mag. 2: 356, 1836.

Fig. 26.

Ety.: From the Latin *bilobus*, "bilobed," referring to the lip.

Syn.: *Lepanthes otostalyx* Rchb. f., Bonplandia 3: 241, 1855.

Ety.: From the Greek *otostalyx*, "a column with ears," referring to the column and petals.

Syn.: *Lepanthes peniculus* Luer, Phytologia 54: 362, 1983.

Ety.: From the Latin *peniculus*, "a small organ," in reference to the appendix.

Syn.: *Lepanthes metaxy* Luer & Hirtz, Die Orchidee 42: 186, 1991.

Ety.: From the Greek *metaxy*, "the middle," referring to the features intermediate among *L. biloba*, *L. electilis*, and *L. elongata*.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 3-37 cm long, enclosed by 5-17 minutely ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-oblong to elliptical-ovate, 3-8 cm long, 1-2.5 cm wide, the apex acute to obtuse, shortly or slightly acuminate, the base cuneate, contracted into a petiole 3-7 mm long. **Inflorescence** racemose, 1-5 loose, flexuous to nearly strict, flexible, successively many-flowered racemes up to 23 cm long including the filiform peduncle 1-2 cm long; floral bract 1.5-2 mm long; pedicel 1-2 mm long; ovary 1.5 mm long; **sepals** yellow, yellow-green, purple or brown, glabrous, ovate, subacute to obtuse, usually shortly acuminate, the dorsal sepal 3.5-7 mm long, 2.3-3.5 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 3.5-7 mm long, connate 1.5-3 mm into a broadly ovate, bifid lamina, 3-5 mm wide; **petals** bright purple, red, orange or brown, minutely pubescent, transversely bilobed, 0.6-1 mm long, 1.8-5 mm wide, the lobes triangular with obtuse to acute apices, sometimes long-acuminate, the lower lobe smaller; **lip** bright purple or red, or orange, minutely pubescent, bilaminate, the blades elliptical or ovate, convex, 1-2 mm long, the apices narrowly obtuse, the bases rounded, the connectives broadly oblong, short, the body broad, connate to the column near the base, the appendix oblong, long-pubescent, with apex variably rounded; **column** 1.5-2 mm long, the anther dorsal, the stigma ventral.

Carchi: between Tulcán and Maldonado, alt. 2100-2200 m, 20 May 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 6074* (AAU); above La Esperanza between El Carmelo and Tulcán, alt. 3200-3450 m, 9 Apr. 1979, *B. Løjtnant, U. Molau & M. Madison 12037* (AAU); between Playón de San Francisco and El Carmelo, alt. 3200 m, 12 Apr. 1979, *B. Løjtnant, U. Molau & M. Madison 12306* (AAU, GB); cloud forest above San Gabriel, alt. 3340 m, 16 May 1981, *C. Luer, J. Luer & A. Hirtz 6249* (SEL); between Tulcán and El Carmelo, alt. 3200 m, 6 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11077, 11121* (MO); same area, May 1985 *A. Hirtz 2576* (MO); El Mirador, alt. 3600 m, Aug. 1990, *A. Hirtz, X. Hirtz & J. Del Hierro 4939, 4951* (MO)

Sucumbios: epiphytic in cloud forest above El Playón, alt. 3200 m, 5 Nov. 1979, *C. Luer, J. Luer & A. Hirtz 4672* (SEL, type of *L. peniculus*).

Imbabura: between Mariano Acosta and Puruanta, alt. 3400 m, 2 Jan. 1991, *A. Hirtz & X. Hirtz 5119* (MO); above Mariano Acosta, near Nueva America, cloud forest, alt. 3400 m, 12 Mar. 1996, *S. Dalström, S. Ingram & K. Ferrell-Ingram 2099* (MO)

Pichincha: "trunks of trees at an elevation of 8000 ft., valley of Lloa," *Hall s.n.* (Holotype: K); "woods, western side of Pichincha," *W. Jameson 266* (G, W, type of *L. otostalyx*); woods west of Pichincha, *W. Jameson s.n.* (W); below Lloa, alt. 2700 m, 27 Oct. 1979, *C. Luer, J. Luer & A. Hirtz 4362* (SEL); San Juan, alt. 2800 m, Sept. 1984, *A. Hirtz 1911*; between San Juan and Chiriboga, alt. 2650 m, 28 May 1988, *C. Luer & A. Hirtz 13696* (MO); between Calacalí and La Liberia, alt. 2500 m, 7 Apr. 1984, *C. Luer, A. Hirtz, S. Dalström & T. Höijer 10019* (MO); western slope of Corazón, alt. 3300 m, July 1984, *A. Hirtz 1848* (MO), *C. Luer* illustr. 10464; Pululagua, alt. 3000 m, 5 Nov. 1984, *A. Hirtz 2068* (MO); western slope of Iliniza, alt. 2800 m, 5 Nov. 1984, *A. Hirtz 2066* (MO).

Napo: east of Salcedo, alt. 3500 m, 12 Nov. 1979, *C. Luer, J. Luer & A. Hirtz 4755* (SEL).

Pastaza: epiphytic in cloud forest, Llanganates Range, between Patate and Leito, alt. 3000 m, 12 Oct. 1984, *A. Hirtz 1981* (type of *L. metaxy*: MO), C. Luer illustr. 11522.

Tungurahua: Volcán Tungurahua, alt. 2800 m, Feb. 1985, *A. Hirtz 2221* (MO), C. Luer illustr. 11509; Cordillera de los Llanganates, between Patate and Leito, alt. 3000 m, 12 Oct. 1984, *A. Hirtz 1981* (MO), C. Luer illustr. 11522; Leito, alt. 3100 m, 11 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11142, 11149, 11153, 11163* (MO).

Morona-Santiago: east of Sigsig, alt. 3030 m, 6 May 1981, *C. Luer, J. Luer & A. Hirtz 6102* (SEL); epiphytic in cloud forest east of the pass between Gualaceo and Limon, alt. 2650 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11827, 11830* (MO).

Loja: Parque Nacional de Podocarpus, at "Centro de Información," alt. 2800-2950 m, 23 Feb. 1985, *B. Øllgaard et al. 57995* (AAU); Cajanuma Range south of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10754* (MO); new road north of Loja, alt. 2700 m, 2 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12587* (MO); east of Yangana, alt. 2950 m, 22 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10798* (MO).

Also Colombia (Risaralda, Putumayo, Nariño).

Lepanthes biloba is one of the more frequent species of the genus in the Andes. It is variable both vegetatively and florally. The inflorescence of Lindley's type is incompletely developed, being no longer than the leaf. The shape of the leaf varies from oblong and obtuse to narrowly ovate and acute, with all intermediate shapes commonly being found throughout the distribution. Some forms grade into *L. elongata*.

The loose, flexuous racemes sometimes begin flowering shorter than the leaf, but continue lengthening to far surpass the leaf. The flowers are small, bilabiate, and variable in color, but often yellow, with small, red or purple petals and lip. The degree of pubescence of the petals and lip varies. The lobes of the petals are triangular, but often the apices are acuminate. The body of the lip is broad, connate to the column near the base. The appendix is small, pubescent and oblong with the tip rounded but sometimes bilobed.

The large form with narrower, acute leaves and acuminate petals was segregated as *L. metaxy*, but after having examined numerous specimens from numerous localities, I find too commonly all degrees of intermediates. *Lepanthes oxypetala* is similar, but distinct with the long-acuminate petals as well as the lip attached to the slender shaft of the column above the middle.

***Lepanthes binaria* Luer & Hirtz, Die Orchidee 38: 291, 1987.**

Fig. 27.

Ety.: From the Latin *binarius*, "consisting of two parts," referring to the bilobed petals.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-23 cm long, enclosed by 6-14 dark brown, microscopically ciliate-scabrous, lepanthiform sheaths. Leaf erect, suffused with purple beneath, coriaceous, convex, oblong, obtuse, abruptly acuminate, 3-6 cm long, 1.5-2.5 cm wide, the rounded base contracted into a petiole 4-5 mm long. **Inflorescence** a very congested, successively many-flowered raceme up to 12 mm long, borne on the concave, back surface of the leaf by a filiform peduncle 12-20 mm long; floral bracts oblique, 1 mm long; pedicels 1 mm long; ovary 2 mm long; **sepals** white, sometimes suffused with red, glabrous, broadly ovate to suborbicular, the dorsal sepal obtuse, abruptly apiculate, 4 mm long, 2 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, obtuse, abruptly acute, 3.5 mm long, 2 mm wide, connate 1.5 mm; **petals** white, sometimes suffused with yellow, microscopically pubescent, transversely bilobed, 1.5 mm long, 3.25 mm wide, the lobes subequal, suborbicular; **lip** rose, bilaminar, the laminae minutely pubescent, oblong with rounded ends, 1.75 mm long, the connectives broadly oblong from the base of the lamina, connate to the base of the column, the sinus acute with a minute, oblong appendix pubescent on the end; **column** 1.5 mm long, the anther and stigma ventral.

Carchi: epiphytic in cloud forest above El Carmelo, alt. 3200 m, 6 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11080* (Holotype: MO); above La Esperanza between El Carmelo and Tulcán, alt. 3200-3450 m, 9 Apr. 1979, *B. Øllgaard, U. Molau & M. Madison 12047* (AAU).

Also Colombia (Nariño).

This species occurs in northernmost Ecuador and adjacent Colombia. The most distinctive feature is the pair of proportionately large bilobed petals, each lobe more or less round. The small, white flowers are borne within the concavity of the under surface of the leaves. The plants grow in high altitude, cool, wet, cloud forests in company with several other species of *Lepanthes*.

***Lepanthes bituberculata* Luer & Hirtz, Lindleyana 2: 125, 1987.**

Fig. 28.

Ety.: From the Latin *bituberculatus*, "with two tubercles," referring to the pair of processes on the body of the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls weak, suberect, slender, 6-12 cm long, enclosed by 7-13 closely applied, minutely ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, lightly corrugate-reticulate, ovate, acute, acuminate, 3.5-5.5 cm long, 1.2-2.6 cm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a very congested, secund, long-pedicellate, successively many-flowered raceme up to 8 mm long, borne on top of the leaf by a filiform peduncle 7-15 mm long; floral bracts 1 mm long; pedicels 3 mm long; ovary 1 mm long; **sepals** yellow-orange, the dorsal sepal broadly ovate, obtuse, minutely apiculate, 2.2 mm long, 2.2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, subacute-acuminate, subdenticulate, 2.5 mm long, 1.3 mm wide, connate 1.5 mm; **petals** purple-brown, microscopically pubescent, transversely bilobed, 1 mm long, 3.25 mm wide, with a small apiculum on the margin between the lobes, the upper lobe ovate, subacute, the lower lobe ovate-falcate, acute; **lip** purple-brown, bilaminar, the lobes thin, flat, semicircular, adherent over the column, the margins microscopically ciliate, 1.25 mm long, the connectives oblong, the body connate to the base of the column, subacutely angled or bituberculate anteriorly, the appendix beneath, pubescent, broad, sulcate, with a pair of oblong, fingerlike processes from beneath; **column** 1 mm long, the anther dorsal, the stigma ventral.

Esmeraldas: epiphytic in wet forest west of Lita, alt. 750 m, 18 Jan. 1985, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12411 (Holotype: MO); same area, C. Luer et al. 12416 (MO).

This species, apparently endemic in lowland, northwestern Ecuador, exhibits affinities with numerous other species, the most notable being the common and frequent *L. mucronata* from higher altitudes. The latter has not been seen in the coastal lowlands where *L. bituberculata* was recently discovered. The thin semicircular blades of the lip are strongly adherent over the column. The most distinctive feature of *L. bituberculata* is the pair of subacute processes on the anterior margin of the body of the lip, beneath which is positioned the pubescent, sulcate appendix with a small pair of fingerlike lobules projecting from below.

***Lepanthes brachypogon* Luer, Phytologia 54: 332, 1983.**

Fig. 29.

Ety.: From the Greek *brachypogon*, "a short beard," referring to the shortly ciliate, chinlike labellar body and appendix.

Syn.: *Lepanthes bifaria* Luer, Phytologia 55: 178, 1984.

Ety.: From the Latin *bifarius*, "double," referring to the pair of similar appendices.

Plant small to medium in size, epiphytic, caespitose; roots filamentous. Ramicauls slender, erect, 4-11 cm long, enclosed by 9-16 minutely ciliate, lepanthiform sheaths. **Leaf** suberect to horizontal, coriaceous, narrowly elliptical, 2.5-6 cm long, 0.7-1.4 cm wide, the apex acute, long-acuminate, tridentate with the middle tooth elongated, the base cuneate into a petiole 1-2 mm long. **Inflorescence** a dense, distichous, successively many-flowered raceme up to 15 mm long, borne on top of the leaf by a filiform peduncle 12-25 mm long; floral bracts 1.5 mm long; pedicel 1.5-2 mm long; ovary 1.5-2 mm long; **sepals** red-brown, or yellow or green, suffused with red or brown, denticulate, carinate-apiculate, the dorsal sepal ovate, subacute to obtuse, 3.5-5 mm long, 2-3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals long-ciliate, ovate, oblique, subacute, 3.5 mm long, 1.6 mm wide, connate 1 mm; **petals** red-purple to brown, ciliate-pubescent, transversely bilobed, 0.6-0.9 mm long, 2.1-3 mm wide, the lobes subequal, oblong-subfalcate with rounded ends; **lip** red-purple to brown, bilaminar, the blades narrowly elliptical, 1.6-2 mm long, long-ciliate, the ends narrowly obtuse, the connectives short and broad forming a broad, descending mentum and a broad body attached to the base of the column, the obtuse sinus with a pair of equal, short, oblong, ciliate appendices, sometimes more or less confluent; **column** 1.5-2 mm long, the anther dorsal, the stigma apical or subapical.

Imbabura: Selva Alegre, alt. 2500 m, 29 Sept. 1984, A. Hirtz 1921 (MO); Selva Alegre, alt. 2500 m, 11 Nov. 1984, A. Hirtz 2091 (MO).

Napo: Volcán Reventador, alt. 1400 m, 5 Nov. 1984, A. Hirtz 2052 (MO).

Pichincha: epiphytic in cloud forest between Tandayapa and Mindo, alt. 2320 m, 13 Mar. 1982, C. Luer, A. Hirtz & S. Dalström 7301 (Holotype: SEL); between San Miguel de los Bancos and Mindo, alt. 2300 m, 1 Apr. 1984 C. Luer, A. Hirtz, S. Dalström & T. Höijer 9874 (MO); between Calacalí and La Liberia, alt. 2250 m, 7 Apr. 1984, C. Luer, A. Hirtz, S. Dalström & T. Höijer 10005 (MO); Chiriboga, alt. 2400 m, Sept. 1984, A. Hirtz 1899 (MO); Tandapi, alt. 2000 m, July 1983, A. Hirtz 1013 (type of *L. bifaria*: SEL), C. Luer illustr. 9156; above Tandapi, alt. 2300 m, May 1984, A. Hirtz 1816 (MO); above Mindo, alt. 2400 m, Mar. 1984, A. Hirtz 1635 (MO).

This species is frequent in western central Ecuador. It is characterized by the weak habit; the raceme lying upon the narrow, long-acuminate leaf; ciliated floral parts; and a descending mentum of the body of the lip with a horizontal pair (sometimes in apposition) of short, pubescent appendices.

***Lepanthes brenneri* Luer, Phytologia 54: 333, 1983.**

Fig. 30.

Ety.: Named in honor of Joe Brenner, formerly of Puyo, Ecuador, who discovered this species.

Plant minute, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-2 mm long, enclosed by 2-3 minutely ciliate lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, apiculate, 6-8 mm long, 2.5-3.5 mm wide, the base cuneate into a petiole 1-1.5 mm long. **Inflorescence** a successively 2- to 3-flowered, loose, subflexuous raceme up to 13 mm long including the filiform peduncle 7-10 mm long; floral bract 1.5 mm long, spiculate; pedicel 1.25 mm long; ovary 1 mm long, spiculate; **sepals** red-purple with yellow apices, carinate-spiculate, sparsely denticulate, triangular-ovate, acute, acuminate, the dorsal sepal 7 mm long, 3 mm wide, 3-veined, the lateral sepals 7 mm long, 2 mm wide, 1-veined, connate 2 mm; **petals** red-orange, pubescent, transversely bilobed, 0.6 mm long, 3 mm wide, the upper lobe oblong, obtuse, the lower lobe broadly uncinately, acute; **lip** red-orange, minutely pubescent, bilaminar, the blades oblong with the ends rounded, 0.75 mm long, the connectives narrowly cuneate, the body narrow, connate to the base of the column, the appendix triangular with the apex ciliate, filling the obtuse sinus; **column** 0.75 mm long, the anther apical, the stigma transverse, ventral.

Pastaza: epiphytic in wet forest ca. 10 Km north of Puyo, alt. 750 m, 21 Mar. 1976, C. Luer, J. Luer, P. Taylor & J. Brenner 931 (Holotype: SEL)

This tiny plant, known only from the type-collection, produces flowers larger than the leaves on lax, few-flowered racemes barely surpassing the leaves in length. The sepals are remotely spiculate and acuminate; the petals are pubescent with the lower lobes conspicuously uncinately; and the blades of the lip are oblong with a broadly triangular, pubescent appendix.

***Lepanthes calliope* Luer & Hirtz, sp. nov.**

Fig. 31.

Ety.: Named for Calliope, one of the nine Muses, the Muse of epic poetry.

Planta medicocris, inflorescentia cum racemo congestissimo disticho folio elliptico-ovato breviter acuminato brevior, sepalo dorsali triangulari acuto, sepalis lateralibus ovatis obtusis abrupte breviter acuminatis, petalis transverse bilobis, lobo superiore late ovato obtuso, lobo inferiore subquadrato cum lobulo in margine interiore, labelli laminis oblongis minute pubescentibus, connectivis late cuneatis, sinu protuberanti cum appendice parva.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-9 cm long, enclosed by 8-12 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-ovate, subacute, shortly acuminate, 5.5-6 cm long, 1.5-1.8 cm wide, the rounded base contracted into a petiole 2-3 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 10 mm long, borne behind the leaf by a slender peduncle 20-23 mm long; floral bract 1 mm long; pedicel 0.75 mm long; ovary 2 mm long; **sepals** light yellow, glabrous, carinate, the dorsal sepal triangular, acute, 6 mm long, 3.5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, obtuse, abruptly short-acuminate, 6 mm long, connate 2.5 mm, 5.2 mm wide together, each 2-veined; **petals**

yellow with a purple edge, cellular-glandular, transversely bilobed, 1.5 mm long, 3 mm wide, the upper lobe broadly ovate, obtuse, the lower lobe subquadrate with a small lobule in the inner angle of the truncate apex; **lip** rose, bilaminate, the laminae microscopically pubescent, oblong, 2.25 mm long, with the apices and bases rounded, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus rounded and protuberant with a small, pubescent appendix; **column** 2 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: Cordillera del Condor, epiphytic in forest east of Guismé, alt. 1,750 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13566 (Holotype, MO); same area, alt. C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13540 (MO).

This species, apparently endemic in the Cordillera del Condor in southeastern Ecuador, is not remarkably distinct in habit: a congested inflorescence shorter than and behind an elliptical, acuminate leaf. The sepals are light yellow, ovate and pointed, the shortly acuminate apices of the lateral sepals diverging. The lower lobe of the transversely bilobed petals is shortly subquadrate with a small lobule on the inner corner. The lip is remarkable with a protuberant sinus with a small, pubescent nodule for an appendix at the summit.

Lepanthes calliope is similar to the frequent *L. monitor*, but it is distinguished from the latter by the petals with the transverse, lobulate lower lobes.

Lepanthes callisto Luer & Hirtz, *Die Orchidee* 38: 287, 1987.

Fig. 32.

Ety.: Named for the Greek nymph *Kallisto* who was turned into a bear, in allusion to the dark, coarsely pubescent, lepanthiform sheaths.

Plant medium in size to large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 5-20 cm long, enclosed by 6-13 blackish, coarsely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, remarkably convex, dark green, purple beneath, oblong, subacute to obtuse, abruptly short-acuminate, 4-6.5 cm long, 2-3.8 cm wide, the rounded base contracted into a petiole 4-5 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 22 mm long, borne on the concave, back surface of the leaf by a filiform peduncle 20-35 mm long; floral bracts oblique, imbricating, 1.5 mm long; pedicels 1.5 mm long; ovary 3 mm long; **sepals** dark red-purple, the dorsal sepal triangular, concave, acute, 7.5-9 mm long, 5-7 mm wide, connate to the lateral sepals for 2 mm to form a lightly concave flower, the lateral sepals pubescent within, broadly ovate, oblique, obtuse, abruptly acute, apiculate, 7-9.5 mm long, 5.5-7 mm wide, concave below the middle, convex above the middle, connate 3 mm; **petals** orange, suffused with red medially, minutely pubescent, transversely bilobed, 1 mm long, 5 mm wide, the upper lobe narrowly triangular, acute, the lower lobe smaller, oblique, triangular, obtuse; **lip** orange, bilaminate, the laminae glabrous, narrowly ovate, acute at the apex, 2.25 mm long, the connectives thick, broadly oblong from the base of the lamina, connate to the base of the column, the sinus broad with the appendix reduced to a membranous margin appressed to the stigma; **column** 2 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest above El Carmelo, alt. 3200 m, 6 April 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11076 (Holotype, MO); El Mirador between Playón de San Francisco and San Gabriel, alt. 3300 m, 9 July 1990, C. H. Dodson, E. Hagsater, D. Rubio & N. Rivera 18494 (MO); Mirador, between Julio Andrade and Playón de San Francisco, alt. 3300 m, 22 Mar. 1991, A. Hirtz, X. Hirtz, J. Del Hierro & S. Ortega 5294 (MO); above El Playón, alt. 3100 m, Feb. 1995, A. Hirtz 6213 (MO).

Tungurahua: epiphytic in cloud forest above Baños, Leito, Cordillera de los Llanganates, alt. 3200 m, 11 April 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11167 (MO).

Pichincha: "Andes of Quito," W. Jameson s.n. (W).

This unique species from the Andes of northern Ecuador is easily recognized by the stout ramicaul enclosed by dark, coarsely ciliate, lepanthiform sheaths. The thickly coriaceous, dark green leaf is convex, with the comparatively large, dark purple flower borne in the concavity of the undersurface of the leaf, which is intensely suffused with purple. This dark niche seems to be attractive to spiders that often find refuge behind the leaf for their tiny webs. The plants grow in the darker, more sheltered ravines of high-altitude cloud forests.

Lepanthes calodictyon Hook., Bot. Mag. t. 5259, 1861.

Fig. 33.

Ety.: From the Greek *calodictyon*, "a beautiful net," referring to the reticulated leaves.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 1.5-3.5 cm long, enclosed by 5-11 microscopically ciliate, lepanthiform sheaths. Leaf spreading, thinly coriaceous, light green with rose or lavender reticulation, suborbicular to broadly ovate, broadly obtuse, 10-25 mm long, 8-25 mm wide, the margins undulate outside a marginal vein, the base rounded, abruptly contracted into a petiole ca. 1 mm long. Inflorescence a congested, subsecund, successively several-flowered raceme up to 4 mm long, borne on top of the leaf by a filiform peduncle 2-6 mm long; floral bracts 0.5-1 mm long; pedicels 1-1.5 mm long; ovary 1.5-2 mm long; sepals red with yellow margins, reflexed, carinate, with the margins sparsely ciliate, the dorsal sepal obovate, obtuse, 1.5-4 mm long, 1.25-2.25 mm wide, 3-veined, free from the lateral sepals, the lateral sepals free, ovate, oblique, subacute, shortly acuminate, 1.75-4 mm long, 1-1.75 mm wide, 3-veined; petals red to purple, microscopically pubescent, ciliate, transversely bilobed, 0.5-1 mm long, 1.25-2 mm wide excluding tails, the upper lobe ovate, oblique, with apex acute, acuminate-caudate, the tail 0.5-3 mm long, the lower lobe transversely ovate, oblique, the rounded apex abruptly contracted at the base into a tail 1.25-3 mm long; lip red, minutely pubescent, transversely oblong-reniform, shallowly retuse, 0.66-1 mm long, 1.25-2 mm wide, connate to the column near the middle; column clavate, 0.75-1.25 mm long, the anther and the stigma apical.

Without collection data, Aug. 1860 (W).

Esmeraldas: west of Lita, alt. 750 m, Aug. 1986, A. Hirtz 2975 (MO); same area, road to San Lorenzo, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. Dodson, A. Hirtz et al. 12373 (MO).

Pichincha: San Miguel de Los Bancos, alt. 1400 m, Dec. 1983, flowered in cultivation in Quito, 14 Mar. 1984, A. Hirtz 1426 (MO), C. Luer illustr. 9508; between Chiriboga and Mulaite, alt. 1200 m, Aug. 1989, A. Hirtz & X. Hirtz 4308 (MO); road to Puerto Quito, July 1991, flowered in cultivation in Chamblee, GA, 29 Nov. 1991, F. L. Stevenson 91-0923-4 (MO).

Cotopaxi: between Quevedo and Latacunga, in citrus trees, alt. 900 m, 5 Apr. 1973, L. Holm-Nielsen, S. Jeppesen, B. Løjtnans & B. Øllgaard 2969 (AAU).

Bolívar: wet forest west of La Palma, alt. 1250 m, 10 Mar. 1991, C. Luer, J. Luer, A. Hirtz et al. 14979 (MO).

Also Colombia (Antioquia, Valle del Cauca)

This species is widely distributed in the Andes through the western cordillera of Colombia and the western declivity of Ecuador. It is well-known and widely cultivated because of the attractive foliage as well as the intricate flower. It was first illustrated in Curtis' Botanical Magazine where Hooker published the original description.

Lepanthes calodictyon is famous for the broad, green leaves with a network of purple, and with ruffled or scalloped margins. The flower sits on top with reflexed sepals exposing red, long-tailed petals. The lip is reniform beneath the column. Considerable variations in size of the leaves and flowers are seen throughout the range, but a few populations have diverged significantly from the forms that can be considered typical to be distinguished (*L. barbelifera*, *L. saltatrix*, *L. tentaculata* and *L. volador*).

Lepanthes caloura Luer & Hirtz, Die Orchidee 38: 285, 1987.

Fig. 34.

Ety.: From the Greek *caloura*, "with a beautiful tail," in reference to the tails of the lateral sepals.

Plant medium in size, epiphytic, caespitose; roots numerous, slender. Ramicauls slender, erect, 3-6.5 cm long, enclosed by 15-17 shortly ciliate, lepanthiform sheaths with dilated ostia. Leaf erect, coriaceous, purple beneath with green margins, elliptical, 15-25 mm long, 11-16 mm wide, the subacute apex shortly acuminate, the base cuneate into a petiole 1.5 mm long. Inflorescence a congested, secund, successively several-flowered raceme up to 10 mm long, borne beneath or on top of the leaf by a filiform peduncle 8-12 mm long; floral bract 1 mm long; pedicel 0.75 mm long; ovary 1 mm long, lightly spiculate; sepals pale yellow, lightly spiculate-carinate, minutely short-pubescent, the dorsal sepal suborbicular, 3 mm long, 3.75 mm wide, connate to the lateral sepals for 1 mm, the rounded apex abruptly contracted into a 0.5 mm long, reflexed tail, the lateral sepals ovate, oblique, ciliate-denticulate, 4 mm long,

2 mm wide, 1-veined, connate 2 mm, the acute apices contracted into recurved tails 3.5 mm long; **petals** yellow-orange, the upper lobe with red margins, microscopically pubescent, transversely bilobed, 1 mm long, 3 mm wide, the lobes subequal, suboblong-triangular, obtuse; **lip** bilaminar, light yellow, suffused with brown toward the bases, the laminae narrowly ovate, microscopically pubescent, 1.75 mm long, the bases rounded, the apices acute, ciliate, the connectives broadly cuneate, the body thick, connate to the base of the column, the sinus obtuse, with an ovoid, inflexed, pubescent appendix; **column** 1.5 mm long, the anther dorsal, the stigma transverse, apical.

Morona-Santiago: epiphytic in cloud forest north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11877 (Holotype: MO); Tumbes, north of Gualaquiza, alt. 1900 m, 14 Feb. 1993, S. Dalström, T. Höijer & H. Wannorp 1910 (MO).

Zamora-Chinchipe: Cordillera del Condor: epiphytic in forest east of Los Encuentros, alt. 1450 m, 18 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13436 (MO); epiphytic in forest east of Mayaicu, alt. 1300 m, 20 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13505 (MO).

This species is apparently endemic in southeastern Ecuador. Vegetatively it is remarkable for the numerous, closely spaced, lepanthiform sheaths with remarkably dilated ostia. The flowers, however, are most notable for the long, outwardly curved tails of the lateral sepals similar to those of *L. pubescens*, but the lateral sepals of *L. caloura* are one-veined. The dorsal sepal is suborbicular with a short, reflexed tail.

Lepanthes calypso Luer & Hirtz, sp. nov.

Fig. 35.

Ety.: Named for the beautiful mythological nymph Calypso who lived in a far away place.

Planta mediocris, inflorescentia cum racemo congesto disticho folio late ovato obtuso breviter acuminato brevior, sepalis dorsali synsepaloque late ovatis subacutis leviter acuminatis denticulatis, petalis transverse bilobis, lobo superiore oblongo acuto quam lobo inferiore triangulari obtuso ter majore, labelli laminae oblongis minute pubescentibus, connectivis latis, appendice parva pubescenti biglandulosa.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 7-8 cm long, enclosed by 10-11 ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, elliptical-ovate, subacute, acuminate, 3.5-4.5 cm long, 1.5-2.5 cm wide, the rounded base contracted into a petiole 1.5 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 5 mm long, borne behind the leaf by a slender peduncle 15 mm long; floral bract 1.5 mm long, glabrous; pedicel 1.5 mm long; ovary 1.5 mm long; **sepals** white suffused with pink, or yellow, denticulate, the dorsal sepal ovate, acute, acuminate, 5 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, 6 mm long, connate 3 mm into an ovate synsepal 4.5 wide, the apices close, acute, acuminate; **petals** orange, more or less red at the base, minutely pubescent, transversely bilobed, 1 mm long, 3 mm wide, the upper lobe oblong, thrice longer than the lower lobe, the apex oblique, acute, the lower lobe triangular, oblique, obtuse; **lip** red, bilaminar, the laminae oblong, 1.5 mm long, minutely pubescent, with the bases and apices rounded, the connectives and body broad, connate to the base of the column, the appendix oblong, bilobulate at the apex, pubescent; **column** 1.5 mm long, the anther apical, the stigma ventral.

Morona-Santiago: epiphytic in forest along the road between Limón and Gualaceo, alt. 2800 m, Feb. 1989, A. Hirtz & X. Hirtz 4215 (Holotype MO), C. Luer illustr. 14714; A. Hirtz & X. Hirtz 4216 (MO); same area, Feb. 1990, A. Hirtz 4590, 4661 (MO).

This species, apparently endemic in southeastern Ecuador, is known from several plants with differently colored flowers collected by Alexander and Ximena Hirtz. It is characterized by the congested inflorescence shorter than the broadly ovate, acuminate leaf; denticulate sepals; pointed upper lobes of the petals with a very small lower lobe; and oblong blades of the lip with a rather complicated appendix with a pair of apical lobules.

Lepanthes campodoste Luer & Hirtz, *Novon* 3: 444, 1993.

Fig. 36.

Ety.: From the Greek *campodes*, "like a caterpillar," and *stele*, "the column," referring to the unusual shape of the column.

Plant very small, epiphytic, caespitose; roots comparatively fleshy. Ramicauls erect, slender, 12-15 mm long, enclosed by 4 long-ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, orbicular, 10 mm long, 10 mm wide, the rounded base contracted into a petiole 1.5 mm long. **Inflorescence** a loose, distichous, successively few-flowered raceme up to 30 mm long including the filiform peduncle 15 mm long, sparsely pubescent; floral bracts 1.5 mm long, spiculate; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** carinate-spiculate, the margins erose-ciliate, the dorsal sepal translucent, suffused with purple, ovate, deeply concave, acuminate, acute, 5 mm long, 4 mm wide unexpanded, connate to the lateral sepals for 1 mm, the lateral sepals purple, ovate, oblique acute, 6.5 mm long, 2.25 mm wide, connate 3.5 mm, deeply concave medial to the midveins, convex lateral to the midveins, convex along the medial margins in apposition; **petals** green pubescent, transversely bilobed, 0.5 mm long, 3 mm wide, the lobes subequal, oblong with rounded ends, the apex of the upper lobe incurved; **lip** green, ciliate, bilobed, the lobes oblong with rounded apices, 1 mm long, erect to either side of the column, the body cleft anteriorly, connate to the base of the column, the appendix external, oblong, recurved, pubescent; **column** comparatively large, cylindrical, 2 mm long, the apex truncate and flat with a pair of erect angles on the upper margin, the clinandrium on the lower half of the apical surface, separated from the subapical stigma by the rostellar flap along the lower margin.

Zamora-Chinchipe: Cordillera del Condor, epiphytic in cloud forest east of Los Encuentros, alt. 1550 m, 18 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13472 (Holotype: MO).

The flower of this species, known only from the Cordillera del Condor, is large for the tiny plant with orbicular leaves. The sepals are carinate-spiculate externally with ciliate-erose margins. The dorsal sepal is deeply concave, while the lateral sepals are concave centrally between convex margins. The convex medial margins are in apposition except basally where the lateral sepals are connate and deeply concave. This unusual configuration is seen in the Bolivian *L. nycteris* Luer & Vásquez.

Most unusual is the comparatively large column. The oblong lobes of the lip are held erect to either side. The column is cylindrical with the apex flat. Two erect angles are present on the upper margin of the flat apical end. The clinandrium with the anther occupies most of the lower half of the end. The stigma is located along the lower margin. Although unrelated, the apex of the column is reminiscent of *Salpistele* Dressler.

Lepanthes camptica Luer & Hirtz, sp. nov.

Fig. 37.

Ety.: From the Greek *kamptikos*, "bent, curved, flexible," referring the appendix.

Planta mediocris debilis, inflorescentia cum racemo congesto disticho folio ovato longiacuminato breviori, sepalis late ovatis laevis, petalis minute pubescentibus transverse bilobis, lobo superiore ovato quam lobo inferiore triangulari majore, labelli lamina ovatis planis ciliatis, connectivis anguste cuneatis, appendice ciliata transverse convoluta cardinata.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, weak, erect to suberect, 3-8 cm long, enclosed by 7-10 minutely scabrous, lepanthiform sheaths. **Leaf** suberect, coriaceous, ovate, acute, long-acuminate, 3.5-5 cm long, 1.8-2.3 cm wide, the rounded base abruptly contracted into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 6 mm long, borne on top of the leaf by a slender peduncle 10-18 mm long; floral bract muriculate, 1.5 mm long; pedicel 0.75 mm long; ovary 1 mm long; **sepals** translucent yellow, carinate, ovate, acute, glabrous, the dorsal sepal 3 mm long, 2.4 mm wide, 3-veined, connate to the lateral sepals for 0.6 mm, the lateral sepals oblique, connate 1.75 mm, 3 mm long, 2.8 mm wide together, each 2-veined; **petals** orange, suffused with red medially, shortly pubescent, transversely bilobed, 0.8 mm long, 2.4 mm wide, the upper lobe ovate, the apex oblique, narrowly obtuse, the lower lobe triangular, narrowly obtuse, smaller than the upper lobe; **lip** red, bilaminate, the laminae microscopically pubescent, ciliate, ovate,

flat, 1.3 mm long, acute at the apex, round at the base, the connectives cuneate, the body narrow, connate to the base of the column, the appendix transversely convolute and hinged the margin of the broad sinus, with a pubescent terminal segment; **column** 1 mm long, the anther dorsal, the stigma ventral.

Pastaza: north of Topo, epiphytic in forest along Río Zuñag, alt. 2200 m, 23 Feb. 1990, A. Hirtz, S. Dalström, L. Årnby, J. Del Hierro, E. Astorga, S. Ortega & J. Cabezas 4662 (Holotype: MO), C. Luer illustr. 14720.

This species from the eastern slopes of the Andes of central Ecuador is most similar to *L. oscillifera* Luer & Escobar from Colombia. The habit is weak with slender stems bearing more or less spreading, long-acuminate leaves and a short inflorescence lying on top. The sepals are ovate and glabrous. The petals are transverse and more or less triangular. The lip blades of the lip are ovate and minutely pubescent. The pubescent appendix is broadly hinged to the anterior margin of the sinus. The appendix is convex below the middle, concave across the middle with a solid apical segment.

Lepanthes capitanea Rchb.f., *Bonplandia* 3: 241, 1855.

Fig. 38.

Ety.: From the Latin *capitaneus*, "large," referring to the size of the flowers.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-5 cm long, enclosed by 5-8 minutely scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 1.5-2.5 cm long, 0.8-1.2 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a loose, lightly flexuous, successively several-flowered raceme up to 10 cm long including the slender peduncle 2-5 cm long; floral bracts 1.5-2 mm long; pedicels 1.5-2 mm long; ovary 1.5-2 mm long; **sepals** brown, glabrous, the dorsal sepal triangular, acute, 9-12 mm long, 5-6 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm, the lateral sepals connate to near the apices into an ovate, acute, shortly bifid lamina, 8-12 mm long, 5-6 mm wide; **petals** yellow or orange, microscopically cellular-pubescent, transversely bilobed, 1 mm long, 4 mm wide, the lobes oblong with rounded apices, the lower lobe slightly smaller; **lip** yellow or orange, bilabiate, the blades oblong with the ends rounded, minutely ciliate, 2 mm long, the connectives broadly cuneate, from below the middle of the blade, the body broad, connate to the base of the column, the small, appendix triangular, acute; **column** terete, 2 mm long, the anther apical, the stigma ventral.

Carchi: near El Carmelo, alt. 2700 m, collected by Hans Volles, flowered in cultivation at Tuqueres, Colombia, 28 Jan. 1987, C. Luer 12555 (MO).

Imbabura: Selva Alegre, west of Otavalo, alt. 2950 m, 1 May 1981, C. Luer, J. Luer & A. Hirtz 6033 (SEL); Mojanda, alt. 3000 m, Nov. 1983, A. Hirtz 1353 (MO); Selva Alegre, alt. 2850 m, 6 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9980 (MO); same area, alt. 3000 m, 29 Sept. 1984, A. Hirtz 1920 (MO).

Pichincha: valley of Lloa, on trunks of trees, 1864, W. Jameson 268 (Holotype: W; Isotype: G); Mt. Corazón, 17 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4385 (SEL); Pasachoa, alt. 3300 m, 20 Oct. 1984, A. Hirtz 2039 (MO).

This species occurs locally and sometimes abundantly in northwestern Ecuador. It is characterized by the elliptical, obtuse leaves surpassed by a loosely flowered, more or less subflexuous raceme. The flowers are comparatively large, flat and bilabiate. The dorsal sepal is triangular and acute, opposite a similar synsepal that is minutely bifid at the tip. The lobes of the petals are oblong and obtuse. The blades of the lip are oblong, the connectives are short and broad, and the appendix is small and triangular.

Lepanthes elegantula is possibly only an unusually large form with larger, longer sepals with long-acuminate apices. It occurs within the distribution of *L. capitanea*. *Lepanthes effusa* is also similar and it too grows sympatrically with *L. capitanea*, but it is more easily distinguished from the latter by the oblong, concave blades of the lip that are borne obliquely by narrow connectives at the base of the blade.

Lepanthes carinata Luer & Hirtz, *Die Orchidee* 41: 163, 1990.

Fig. 39.

Ety.: From the Latin *carinatus*, "carinate," referring to the carina between the lobes of the petal.

Plant large, epiphytic, caespitose; roots numerous, slender. Ramicauls stout, erect, 7-21 cm long, enclosed by 11-18 long-ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, thinly coriaceous, longitudinally rugose beneath, ovate, subacute, acuminate, 6-9 cm long, 2-5 cm wide, the rounded base contracted into a petiole 3-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 2 cm long, borne behind the leaf by a slender peduncle 2.5-3 cm long; floral bract 2.5 mm long; pedicel 1 mm long; ovary 2.5 mm long; **sepals** light yellow, ovate, acute, acuminate, the dorsal sepal 11 mm long, 5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals 10 mm long, connate 4 mm, 7.5 mm wide together, microscopically denticulate; **petals** yellow, suffused with red basally and along the margins, glabrous, transversely bilobed, 2.5 mm long, 3 mm wide, with a thick, transverse carina between the lobes, the upper lobe transversely elliptical, thin, concave, the lower lobe much smaller, oblong, obtuse; **lip** bilaminate, the laminae yellow, suffused with red marginally, glabrous, oblong, 3 mm long, the bases rounded, the apices acute, the connectives cuneate, the body broad, connate to the column near the base, the sinus obtuse, with a minute, pubescent appendix with a terminal lobule; **column** 1.6 mm long, the anther dorsal, the stigma ventral.

Sucumbios: between El Carmelo and La Bonita, alt. 2600 m, Aug. 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4980 (MO).

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaceo and Limon, alt. 2650 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11833 (Holotype: MO); same area, alt. 2750 m, C. Luer et al. 11828 (MO); between Cuenca and Limón, alt. 2800 m, 20 Jan. 1989, A. Hirtz, A. Andreetta & S. Ortega 4178 (MO).

This large species from southeastern Ecuador appears very similar vegetatively and florally to many others, including several with which it grows sympatrically (e.g. *L. auriculata* and *L. craticia*). These are robust species often more than 30 cm tall, with large, relatively thin, ovate, acuminate leaves more or less rugose beneath, and the congested racemes are borne along the back surface. The flowers are large with the sepals yellow and acuminate, and yellow petals and lip suffused with red. The distinguishing feature of *L. carinata* is the thick, transverse callus across the petals between the lobes. The upper lobe is transverse, thin and concave; the lower lobe is much smaller and oblong.

Lepanthes cassidea Rchb.f., *Xenia Orch.* 1: 146, 1856.

Fig. 40.

Ety.: From the Latin *cassideus*, "helmet-shaped," referring to the concave dorsal sepal.

Plant small to medium, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-8 cm long, enclosed by 5-8 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, acute, 2.5-4 cm long, 0.8-1.5 cm wide, the base cuneate into a petiole ca. 1 mm long. **Inflorescence** a congested, distichous, long pedicellate, successively several-flowered raceme up to 10 mm long, borne near the apex of the leaf by a filiform peduncle 20-35 mm long; floral bract 1 mm long; pedicel 4 mm long; ovary 1 mm long; **sepals** yellow-green to red-brown, carinate, glabrous, the dorsal sepal elliptical-ovate, concave, with the apex obtuse, contracted into an acute, lightly reflexed apical segment, 5 mm long, 2.5 mm wide unexpanded, connate to the lateral sepals for 0.5 mm, the lateral sepals narrowly ovate-triangular, narrowly acuminate above the middle, 5 mm long, 1 mm wide, connate 1.5 mm; **petals** green or dark purple, long-pubescent, transversely bilobed, 0.5 mm long, 3.25 mm wide, the upper lobe oblong with the apex obtuse, the lower lobe narrowly triangular, acute; **lip** green or dark purple, bilaminate, the blades narrowly oblong, long-ciliate, with the ends narrow, 2 mm long, the connectives short, very broadly cuneate, the body broad, concave, connate to the base of the column, the sinus shallow with a small, bifid appendix; **column** 2.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: Los Cedros Reserve, alt. 1500-1650 m, 25 Mar. 1996, S. Dalström, S. Ingran & K. Ingran-Ferrell 2225 (MO).

Pichincha: forest of Nanegal, 1854, W. Jameson 98 (Holotype: W; Isotype: K?); between Mindo and Puerto Quito, alt. 1600 m, 13 Mar. 1982, C. Luer, J. Luer & A. Hirtz 7335 (SEL); between San Miguel de Los Bancos and Mindo, alt. 1450 m, 1 Apr. 1984, C. Luer, S. Dalström, T. Höjjer & A. Hirtz 5869 (MO); Santa Rosa de Toachi, alt. 1300 m, Mar. 1990, A. Hirtz, X. Hirtz & K.H. Baumann 4671 (MO).

El Oro: near Piñas, alt. 900 m, Dec. 1984, flowered in cultivation in Quito, A. Hirtz 2546 (MO).

This species occurs locally on the western slopes of the Andes of Ecuador. It is characterized by the elliptical, acute leaves and a short, congested, long-pedicellate raceme held near or slightly beyond the acute tip of an elliptical leaf. The dorsal sepal is concave with a narrowed, acute apex. The lateral sepals are narrowly acuminate beyond their union. The lobes of the pubescent petals are oblong. The blades of the lip are narrow along the edges of short, broad, cuneate connectives. The appendix is small and bifid.

Lepanthes cauda-avis Luer, sp. nov.

Fig. 41.

Ety.: From the Latin *cauda-avis*, "a bird tail," in reference to the appearance of the appendix.

Planta parva caespitosa, folio ovato acuminato racemo congesto longiore, sepalis late ovatis obtusis lateralibus supra medium connatis, petalis parvis transverse bilobis obtusis, lobo superiore minore, labello bilaminato, laminis ovatis pubescentibus, appendice concavo apice flabelliformi pubescenti.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-4 cm long, enclosed by 6-8 lepanthiform sheaths minutely ciliate on the margins of the ostia. **Leaf** erect, coriaceous, suffused with purple, ovate, acute, slightly acuminate, 16-25 mm long, 7-12 mm wide, the obtusely cuneate base contracted into a petiole ca. 1 mm long. **Inflorescence** a congested, more or less secund, successively several-flowered raceme up to 4 or more mm long, borne behind the leaf by a filiform peduncle 5-12 mm long; floral bracts oblique, 1-1.5 mm long; pedicels 2-2.5 mm long; ovary 1-2 mm long; **sepals** rose or light yellow, suffused with rose, glabrous, carinate, the dorsal sepal broadly ovate, obtuse, convex below the middle, concave below the middle, 3.5-4.5 mm long, 3-3.5 mm wide, connate to the lateral sepals for 0.75 mm, the lateral sepals 3.5-4.5 mm long, connate 2.5-3 mm into an ovate, bifid lamina 3.5 mm wide, with obtuse apices; **petals** yellow, microscopically pubescent, transversely bilobed, 0.5-0.8 mm long, 1.2-2.2 mm wide, the lobes oblong, with rounded apices, the lower lobe larger than the upper lobe; **lip** rose, bilaminar, the laminae oblong-ovate with rounded ends, lightly convex, minutely pubescent, 1.5 mm long, the connectives broadly cuneate, the broad body broad, connate to the column at the base, the obtuse sinus filled with a triangular, concave, pubescent appendix with a tuft of long hairs at the apex; **column** stout, 2 mm long, the anther apical, the stigma ventral.

Zamora-Chinchi: Quebrada Honda, south of pass south of Yangana, alt. 1800 m, flowered in cultivation at Predesur, Vilcabamba, 18 Mar. 1984, D. D' Alessandro 239 (MO), C. Luer illustr. 9561; Cordillera del Condor, Patchicutza, alt. 1200-1500 m, June 1991, A. Hirtz 5528 (MO); same area, alt. 1450 m, 1992, A. Hirtz 5766 (MO).

This small species, endemic in southeastern Ecuador, is characterized by a congested inflorescence shorter than the ovate, acuminate leaf. The sepals are obtuse with the laterals connate above the middle; and the petals are small, transversely oblong with the lower lobe larger than the upper lobe. The blades of the lip are ovate, and the appendix is large with a tuft of long hairs at the tip.

Lepanthes caudata Luer & Escobar, Amer. Orchid Soc. Bull. 53: 260, 1984. Fig. 42.

Ety.: From the Latin *caudatus*, "with a tail," referring to the caudate sepals.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-22 mm long, enclosed by 3-5 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 7-14 mm long including a 2-3 mm long petiole, 6-8 mm wide, cuneate below into the petiole. **Inflorescence** a loose, flexible, flexuous, successively several-flowered raceme up to 11 cm long including the filiform peduncle 2-3 cm long; floral bract 1-2 mm long, minutely spiculate; pedicel 1.5-2 mm long; ovary 1 mm long, the ribs lightly spiculate; **sepals** translucent purple to yellowish red, ovate, obtuse, abruptly caudate, carinate-spiculate, with the margins erose-fimbriate, the dorsal sepal 6-11 mm long including the 1-2.5 mm long tail, 2.5-4.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 6-12 mm long including the 1-2.5 mm long tails, connate 2.5-6 mm, 4.5-9 mm wide together; **petals** red-orange, microscopically pubescent, transversely bilobed, 1 mm long, 2.5-3 mm wide, the upper lobe oblong with the apex rounded, the lower lobe much smaller than the upper lobe, narrowly triangular, oblique; **lip** red orange, microscopically ciliate, bilaminar, the blades elliptical, lightly concave, with rounded ends, 1.5 mm long, the connectives thick, cuneate, from the basal half of the blades, the body

narrow, connate to the base of the column, the appendix glabrous, thick, uncinata, the acute apex incurved; column stout, 1 mm long, the anther apical, the stigma ventral.

Zamora-Chinchipe: epiphytic in scrub cloud forest east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10725 (MO); south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11997 (MO).

Also Colombia (Putumayo: type).

This minute species has been found in cold, wet, scrubby cloud forests at high altitudes in three distant localities in southern Colombia and southern Ecuador. It is characterized by the loose racemes much longer than the tiny leaves. The size of the denticulate sepals is variable, those of some flowers being twice the dimensions of those of others. The petals and lips, however, remain constant.

Lepanthes caudatisepala C. Schweinf., Bot. Mus. Leaflet 10: 123, 1942. Fig. 43.

Ety.: From the Latin *caudatisepalus*, "with caudate sepals," referring to the shortly acuminate sepals.

Syn.: *Lepanthes profusa* Luer & Hirtz, Die Orchidee 41: 10, 1990.

Ety.: From the Latin *profusus*, "profuse," referring to the floriferous character of the species.

Plant large, epiphytic, shortly ascending, caespitose; roots coarse. Ramicauls stout, erect, 10-40 cm long, enclosed by 10-14 glabrous, closely fitting lepanthiform sheaths, microscopically ciliate on the margins of the upper ostia. **Leaf** erect, coriaceous, elliptical-ovate, acute, lightly acuminate, 7-12 cm long, 2-5 cm wide, the base rounded or broadly cuneate, contracted into a petiole 3-6 mm long. **Inflor-escence** racemose, successively many-flowered, congested, up to 5 cm long including the peduncle 1.5-2 cm long, borne behind the leaf; floral bracts 1.5 mm long; pedicel 1 mm long; ovary 2.5 mm long; **sepals** pale yellow, glabrous or denticulate, carinate, ovate-triangular, acute, slightly acuminate, the dorsal sepal 6-7 mm long, 4-5 mm wide, connate to the lateral sepals for 1.5-2 mm, the lateral sepals oblique, 6.5-7 mm long, 3 mm wide, connate 1.5-2.5 mm, 2-veined; petals yellow with red inner margin, glabrous, transversely bilobed, 1-1.5 mm long, 3.5-4 mm wide, narrowed between the lobes, the lobes subequal, the upper lobe broadly ovate, the lower lobe oblong, narrower, with the ends rounded; **lip** bilaminata, the lamina red-purple, elliptical, 2.25 mm long, glabrous, the rounded apices ciliate, the connectives shortly cuneate, the body broad, connate to the base of the column, the sinus obtuse, with a minute, biglandular appendix; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Carchi: El Mirador, between Julio Andrade and Playón de San Francisco, alt. 3300 m, 22 Mar. 1991, A. Hirtz, X. Hirtz, J. Del Hierro & S. Ortega 5291 (MO).

Sucumbios: elfin forest between El Playón and Santa Barbara, alt. 3400 m, 20 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15215 (MO).

Napo: Cerro Sumaco, alt. 2900-3050 m, 1 May 1979, B. Løjtnant & U. Molau 13039 (AAU).

Loja: epiphytic in cloud forest, Cajanuma Range, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz, W. Flores 10751 (type of *L. profusa*: MO); cloud forest above Yangana north of the pass, alt. 2400 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10890 (MO); above Jimbura, alt. 3000 m, 21 Mar. 1984, C. Luer, S. Dalström, T. Höjjer & J. Kuijt 9659 (MO); north of the pass south of Jimbura, alt. 2900 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11991 (MO).

Azuay: Río Cumbe Valley, ca. 5 Km south of Cumbe, epiphytic in mossy forest, alt. 2900-3000 m, 9 June 1979, B. Løjtnant, A. & U. Molau 14363 (AAU).

Zamora-Chinchipe: cloud forest south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12003, 12015 (MO).

Also Peru (Cuzco, type; Huánuco), Bolivia (Cochabamba) and Colombia (Nariño).

This large, robust species is widely distributed in moist forests at altitudes around 3000 meters above sea level from southern Colombia into Bolivia. It is identified by tall, stout ramicauls clad in essentially glabrous, non-dilated, lepanthiform sheaths; elliptical-ovate, acuminate leaves; short inflorescences laxly flowered below, becoming congested above; glabrous to denticulate, broad but acuminate sepals; glabrous, bilobed, petals with a constriction near the middle; elliptical blades of the lip ciliate at the apex; and a minute, biglandular appendix.

The sepals of the type of *L. caudatisepala* from central Peru are apparently

entire, but forms with microscopically denticulate to visibly denticulate sepals are seen in populations in Ecuador. A form with distinctly denticulate sepals was segregated as *L. profusa*. *Lepanthes decurva* with three-veined lateral sepals may be merely a local variation.

Lepanthes celox Luer & Hirtz, *Lindleyana* 2: 36, 1987.

Fig. 44.

Ety.: From the Latin *celox*, "a cutter, or a yacht," referring to the appearance of the appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 20-30 mm long, enclosed by 5-6 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, purplish beneath, broadly oblong, obtuse, shortly acuminate, 20-23 mm long, 12-15 mm wide, the rounded base contracted into a petiole 3-4 mm long. **Inflorescence** a very congested, distichous, successively several-flowered raceme up to 7 mm long, borne beneath the leaf by a filiform peduncle 7-9 mm long; floral bracts 1 mm long, spiculate; pedicels 1-1.5 mm long; ovary 2.5 mm long; **sepals** light rose, ovate, acute, shortly acuminate, carinate, the dorsal sepal 5.5 mm long, 3.8 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 5.5 mm long, 2.4 mm wide, connate 2.5 mm; **petals** dark rose, transversely bilobed, 1 mm long, 5.5 mm wide, 3-veined, minutely pubescent, the lobes nearly equal, obliquely triangular, acute, the upper lobe slightly larger; **lip** bilaminar, dark rose, the laminae microscopically pubescent, ovate, convex, 1.1 mm long, the apices acute, the bases obtuse, the connectives shortly and broadly cuneate, the body connate to the base of the column, the sinus obtuse with a long, narrowly ovoid, concave, pubescent appendix with a solid apiculum reaching to the viscidium; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Esmeraldas: epiphytic in wet forest west of Lita, alt. 800 m, 13 Aug. 1986, A. Hirtz 2960 (MO), C. Luer illustr. 13773; west of Lita, alt. 600 m, cultivated at Río Palenque, C. H. Dodson s.n., 11 Jan. 1989, C. Luer 13850 (MO); west of Lita, alt. 700 m, 19 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15164 (MO).

Imbabura: epiphytic in forest near Estación Cachaco, alt. 800 m, Dec. 1983, A. Hirtz 1461 (Holotype: MO), C. Luer illustr. 11513.

This small species, recently discovered by Hirtz in the northwestern humid lowlands, is characterized by the short, distichous raceme with a pinkish flower with long-pointed lobes of the petals. Most distinguishing, however, is the long, boat-shaped appendix with a solid prow that reaches to just beneath the viscidium.

Lepanthes chimaera Luer & Escobar, *Orquideología* 16: 130, 1984.

Fig. 45.

Ety.: Named for the *chimaera*, the mythological fire-breathing monster.

Plant large, robust, epiphytic, caespitose; roots coarse. Ramicauls erect, stout, caespitose, occasionally proliferating other ramicauls, 20-58 cm long, enclosed by 8-15 close, microscopically scabrous, lepanthiform sheaths with oblique apices. **Leaf** erect, coriaceous, elliptical, acute, acuminate, 11-14 cm long, 3.5-6 cm wide, the base broadly cuneate into a petiole ca. 1 cm long. **Inflorescence** a congested, distichous, successively many-flowered raceme to 5 cm long, borne by a slender peduncle 3-6 cm long, 2-3 flowers open simultaneously; floral bract 5 mm long; pedicel 2 mm long; ovary 4 mm long, narrowly winged; **sepals** yellow or rose, tall-carinate, ciliate-denticulate, the dorsal sepal triangular, concave, acute, long-acuminate, 20 mm long, 5 mm wide, connate to the lateral sepals for 2 mm to form a concave cup, the lateral sepals pubescent within, ovate, oblique, deeply concave basally, acute, long-acuminate, 19 mm long, 5 mm wide, connate 5 mm; **petals** orange with red margin, minutely pubescent, transversely elliptical, bilobed, 1.5 mm long, 2.25 mm wide, the lobes about equal, broadly ovate, rounded on the ends; **lip** orange with or without red margin, bilaminar, the blades elliptical-ovate, 2 mm long, minutely ciliate, the ends rounded, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse with a minute, capitate appendix; **column** 2 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest between Tulcán and El Carmelo, alt. 3200 m, 5 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11086 (MO); El Mirador, alt. 3600 m, Aug. 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4941 (MO); between El Playón and Santa Barbara, alt. 3400 m, 20 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15214 (MO).

Also Colombia (Nariño, type).

This large, grotesque species is found at high altitudes on both sides of the border between Colombia and Ecuador. The large, long-tailed flowers are produced in a congested raceme borne behind the leaf. The sepals are tall-carinate and inflated toward their bases. The petals are proportionately very small, and the oblong blades of the lip are not remarkable.

Lepanthes chorista Luer & Hirtz, *Die Orchidee* 43: 13, 1992.

Fig. 46.

Ety.: From the Latin *celax*, "a cutter, or a yacht," referring to the appearance of the appendix.

Plant small to medium, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-8.5 cm long, enclosed by 7-10 ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, purplish beneath, ovate, subacute, shortly acuminate, 20-32 mm long, 15-18 mm wide, the base broadly cuneate to rounded, contracted into a petiole ca. 3 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 7-10 mm long; floral bracts 1 mm long; pedicels 1 mm long; ovary 2 mm long; **sepals** dark red with a narrow, green margin, subcarinate, ovate, subacute, with margins microscopically cellular-denticulate, the dorsal sepal 3 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 3 mm long, 1.5 mm wide, connate 1 mm; **petals** orange, microscopically pubescent, transversely bilobed, 1 mm long, 2.5 mm wide, with a small, obtuse angle on the margin between the lobes, the lobes oblong, obliquely truncate, the lower lobe smaller than the upper lobe; **lip** red, bilaminar, the laminae elliptical with rounded ends, thin, glabrous, ciliate at the apex, adherent medially to each other over the column, 1.2 mm long, the connectives cuneate, connate to the base of the column without forming a body, the appendix pedunculate, clavate, shallowly cleft, pubescent, connate to the column at the insertion of the connectives; **column** clavate, 1.5 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: epiphytic in forest near Nambija, alt. 1200 m, flowered in cultivation in Quito, A. Hirtz 2419 (Holotype: MO), C. Luer illustr. 11010; same area, alt. 1200 m, May 1985, A. Hirtz 2568 (MO); Cordillera del Condor, east of Los Encuentros, alt. 1550 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13449, 13457 (MO); same area, alt. 1650 m, 21 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14045 (MO).

Also Peru (Amazonas).

This species occurs in southeastern Ecuador and northwestern Peru. It is distinguished by the ovate, purplish leaves borne by relatively stout, ciliate, lepanthiform-sheathed ramicauls, and a short, congested raceme borne behind the leaf. The red, green-edged sepals are microscopically denticulate. The orange petals are oblong with truncate ends. The thin blades of the lip are adherent to each other over the column. The connectives are free from each other, being connate individually to the base of the column with the pedunculated appendix between. A similar absence of a body is seen in *L. disjuncta*.

Lepanthes chrysinia Luer & Hirtz, *Lindleyana* 2: 128, 1987.

Fig. 47.

Ety.: From the Greek *chrysinos*, "pertaining to gold," referring to the color of the flowers as well as to the area of numerous gold mines near the forest where the species was discovered.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 14-31 cm long, enclosed by 12-20 ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, ovate, acute, acuminate, 10-13 cm long, 3-4.5 cm wide, the rounded base contracted into a petiole 3-4 mm long. **Inflorescence** a very congested, successively many-flowered raceme, up to 20 mm long, borne behind the leaf by a slender peduncle 25-30 mm long; floral bract 1 mm long; pedicel 0.75 mm long; ovary 2.5 mm long; **sepals** yellow, entire, the dorsal sepal triangular, acute, 7 mm long, 3.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals broadly ovate, obtuse, shortly acuminate, 6 mm long, 5 mm wide, connate 3.5 mm, the acuminate apices recurved; **petals** yellow with red margins, glabrous, transversely bilobed, 1.5 mm long, 4 mm wide, the upper lobe oblong, obtuse, the lower lobe obliquely triangular, obtuse; **lip** shortly cuneate, the body connate to the base of the column, the bases rounded, the connectives minutely pubescent appendix thickened at the apex with a pair of minute, fingerlike processes; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Bolivar: wet forest west of Salinas and La Palma, alt. 1250 m, 12 Mar. 1991, C. Luer, J. Luer, A. Hirtz et al. 15019 (MO).

El Oro: epiphytic in cloud forest above Zaruma, alt. 1800 m, 23 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 12023 (Holotype: MO).

This species is another of the crowd distinguished by a large habit with thinly coriaceous, ovate, acuminate leaves longer than the congested racemes of large yellow flowers with red-rimmed petals. *Lepanthes chrycina* is most similar to *L. lloensis* and *L. magnifica*. These three species have broad, obtuse lateral sepals shortly acuminate at the apex, but *L. chrycina* is distinguished by the essentially glabrous petals and lip, and the oblong, membranous appendix with an apical gland with a pair of minute fingerlike processes. The appendix is similar to that of the much smaller *L. intricata*.

***Lepanthes ciliicampa* Luer & Hirtz, sp. nov.**

Fig. 48.

Ety.: From the Latin *ciliicampa*, "a ciliated caterpillar," referring to the long-ciliate petals.

Planta parva, inflorescentia cum racemo congesto disticho folio elliptico brevior, sepalo dorsali triangulari acuto, sepalis lateralibus ovatis obtusis obtusis, petalis transverse bilobis, lobo superiore elongato longiciliato, lobo inferiore parvo pubescenti, labelli laminae oblongis ciliatis, connectivis latissime cuneatis, appendice segmentata pubescenti.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3.5 cm long, enclosed by 6-12 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, acute, 15-20 mm long, 8-10 mm wide, the base cuneate into a petiole ca. 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 5 mm long, borne behind the leaf by a slender peduncle 3-4 mm long; floral bract echinate, 0.75 mm long; pedicel 0.75 mm long; ovary 0.75 mm long; **sepals** purple, carinate, glabrous with the margins shortly ciliate, the dorsal sepal triangular-ovate, acute, 3 mm long, 1.5 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, obtuse, 2.5 mm long, connate 1 mm, 2.5 mm wide together, each 2-veined; **petals** red, pubescent, transversely bilobed, 0.5 mm long, 2.8 mm wide, 3-veined, the upper lobe narrowly oblong, obtuse, long-ciliate, the lower lobe much smaller, densely pubescent; **lip** red, bilaminar, the laminae oblong-elliptical with rounded ends, 0.8 mm long, ciliate with the apices long-ciliate, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus acute with a pedunculated, segmented, pubescent appendix; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Esmeraldas: along the new road from Lita to San Lorenzo, alt. 60 m, 25 Jan. 1996, A. Hirtz, X. Hirtz & J. Del Hierro 6273 (Holotype: MO), C. Luer illustr. 17919.

Carchi: off road to Lita, north of Río Mira, between Gualupe and Parambas, alt. 900 m, 16 Feb. 1996, A. Hirtz & X. Hirtz 6302 (MO).

This species is apparently endemic in lowland western Ecuador. It is characterized by the small habit, acute, elliptical leaves; and a short, congested inflorescence. The sepals are shortly ciliate; the dorsal sepal is acute and the laterals are obtuse. The upper lobe of the petals is erect, narrowly oblong, and long-ciliate. The elliptical blades of the lip are also ciliate with the apices long-ciliate on the specimen collected at 60 meters above sea level, and shortly ciliate on the specimen collected farther inland at 900 meters above sea level.

***Lepanthes clandestina* Luer & Hirtz, Die Orchidee 42: 183, 1991.**

Fig. 49.

Ety.: From the Latin *clandestinus*, "hidden," referring to the small flowers behind the leaf, and the minute lip obscured by the column.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-5 cm long, enclosed by 4-8 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly ovate, acute, 20-33 mm long, 5-8 mm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** racemose, 1-3 subcongested, successively few- to many-flowered racemes up to 20 mm long, borne behind the leaf by a filiform

peduncle 5-11 mm long; floral bract 0.75 mm long; pedicel 1 mm long; ovary 0.75 mm long; **sepals** yellow, glabrous, carinate, the dorsal sepal ovate, obtuse, 2.25 mm long, 1.6 mm wide, 3-veined, the lateral sepals connate into an ovate lamina 2 mm long, 1.6 mm wide, 2-veined, with a broad, red, central stripe, the apex subacute, minutely notched; **petals** dark yellow, minutely pubescent, bilobed, the lobes oblong, about equal, with rounded ends, diverging about 90°, 0.4 mm across the middle, each lobe 0.6 mm long; **lip** dark yellow, minutely pubescent, bilobed, the lobes cuneate, thickened across the apex without forming a true blade, 0.6 mm long, the ends rounded, the body connate to the base of the column, the sinus with a minute, ovoid, pubescent appendix; **column** stout, terete, 0.8 mm long, the anther and stigma apical.

Pastaza: epiphytic in cloud forest north of Mera, alt. 1350 m, 12 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11201 (Holotype: MO).

This species is known only from the type-collection. It is allied to *L. columbar* which is distributed on both sides of the Andes of Ecuador, and with which it is sympatric in its only known locality. The possibility of a hybrid origin exists. Both species are characterized by the lateral sepals connate into an ovate synsepal, but the lip of *P. columbar* is transversely reniform or broadly cordate without forming blades, although vestigial, and an appendix.

Lepanthes clarkii Luer, sp. nov.

Ety.: Named in honor of John L. Clark who discovered this species.

Fig. 50.

Species haec *Lepanthes ilensis* Dodson affinis, sed labello carnosio lamellae glabris supra columnam adherentibus, connectivis corpore latissimis et appendice oblonga pubescenti differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-5 cm long, enclosed by 6-7 long-ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical-ovate, acute, slightly acuminate, 3-4 cm long, 1-1.7 cm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, successively many-flowered raceme up to 10 mm long, borne by a slender peduncle ca. 18 mm long, along the back of the leaf; floral bracts echinate, 3 mm long; pedicels 2 mm long; ovary 1.3 mm long, winged; **sepals** colors not stated, carinate, margins microscopically cellular, broadly ovate, acute, acuminate, the dorsal sepal broadly ovate-triangular, 4 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique with the apices diverging, 4 mm long, 2.5 mm wide, connate 1 mm; **petals** microscopically pubescent, transversely oblong, 1.1 mm long, 2.2 mm wide, with a minute process from the outer margin at the midvein, the lobes oblong with rounded apices, the lower lobe smaller; **lip** bilaminar, the blades lunate, 1 mm long, fleshy, glabrous, adherent medially over the column, the connectives broad from apex to base, the body broad, fleshy, connate to the base of the column, the sinus broad with an oblong, pubescent appendix; **column** 1 mm long, the anther dorsal, the stigma ventral.

Esmeraldas: Bilsa Biological Station, Mache Mountains, west of Santa Isabel, alt. 400-600 m, 14 Nov. 1994, J. L. Clark & N. Pitman 254 (Holotype: MO; Isotype: QCNE), C. Luer illustr. 17996.

This species is apparently endemic in lowland western Ecuador. It is related to *L. ilensis*, also from the lowland western forests. *Lepanthes clarkii* is distinguished by the small habit; long-ciliate sheaths of the ramicauls; elliptical-ovate leaves; a congested raceme shorter than the leaf; broad, acuminate sepals; oblong petals; and a small, fleshy lip with the glabrous blades adherent over the column.

Lepanthes columbar Luer, *Phytologia* 54: 334, 1983.

Ety.: From the Latin *columbar*, "a pillory-like yoke," in reference to the collarlike lip.

Fig. 51.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-7 cm long, enclosed by 6-8 close lepanthiform sheaths, microscopically scabrous. **Leaf** erect, thickly coriaceous, narrowly linear-ovate to narrowly ovate, acute, 24-27 mm long, 5 mm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a successively few-flowered raceme up to 6 mm long, borne by a capillary peduncle up to 6 mm long behind the leaf; floral bract 0.8 mm long; pedicel 0.75 mm long; ovary 1 mm long;

sepals yellow, glabrous, the dorsal sepal elliptical, obtuse, 1.8 mm long, 1.2 mm wide, 1-nerved, the lateral sepals connate into a broadly ovate lamina 1.75 mm long and wide, 2-nerved, the obtuse apex minutely notched; petals orange, transversely oblong-bilobed, 0.4 mm long, 1.66 mm wide, the lobes about equal with the ends obtuse; lip red-orange, transversely ovate-oblong, 0.75 mm long, 1 mm wide, ciliate, the apex broadly rounded, shallowly bilobed, the basal lobes rounded, to either side of the column, the base connate to undersurface of the column; column 0.8 mm long, the anther and stigma apical.

Imbabura: Selva Alegre, alt. 2600 m, 29 Sept. 1984, A. Hirtz 1930 (MO).

Napo: between Baeza and Papallacta, alt. 2600 m, 14 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11282 (MO); Cuyuja, alt. 2500 m, May 1984, A. Hirtz 1766 (MO).

Pichincha: epiphytic in cloud forest between Quito and Santo Domingo, alt. 3000 m, 28 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4396 (Holotype: SEL); above Tandapi, alt. 2600 m, Mar. 1984, A. Hirtz 1649 (MO); between Calacali and La Liberia, alt. 2200 m, 7 Apr. 1984, C. Luer, S. Dalström, T. Höijer & A. Hirtz 10000 (MO); west of Calacali, alt. 1800 m, 14 May 1988, C. Luer, A. Hirtz & W. Flores 13322 (MO); new road between Quito and Santo Domingo, alt. 2450 m, 1 Mar. 1986, C. Luer, C. Dodson, A. Hirtz & A. Embree 12047 (MO).

Pastaza: north of Mera, alt. 1350 m, 12 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11198 (MO).

Morona-Santiago: new road west of Macas toward Guamote, alt. 1500 m, 6 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12711 (MO).

This small species is widely distributed on both sides of the Andes of central Ecuador. The leaves are narrowly ovate and thick, the subcongested inflorescence much shorter. The lateral sepals are connate into a synsepal similar to the dorsal sepal. The lobes of the petals are opposite, but vary from oblong to subfalcate. The lip is broadly cordate and notched at the rounded apex, the basal lobes embracing the column. It is related to *L. bifalcis*, but distinguished from it by the larger cordate lip. It is also similar to *L. homotaxis* from which it is distinguished by the larger, non-forked petals and a larger cordate lip exceeding the column.

***Lepanthes condorensis* Luer & Hirtz, Die Orchidee 38: 283, 1987.**

Fig. 52.

Ety.: Named for the Cordillera del Condor where this species was recently discovered.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 10-30 cm long, enclosed by 11-18 ciliate, lepanthiform sheaths. Leaf erect, coriaceous, longitudinally furrowed beneath, elliptical-ovate, 7-10 cm long, 3-4.5 cm wide, the apex subacute, acuminate, the rounded base contracted into a petiole 3 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 20 mm long, borne beneath the leaf by a slender peduncle up to 40 mm long; floral bract 1.25 mm long; pedicel 1 mm long; ovary 2 mm long; sepals pale yellow, entire, the dorsal sepal triangular, acute, 5.5 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, 1 mm, the lateral sepals ovate, oblique, acute, widely spread, 6 mm long, 2.8 mm wide, connate 0.5 mm; petals transversely bilobed, 1.5 mm long, 3.5 mm wide, microscopically pubescent, the lobe upper lobe oblong with the apex broadly rounded, with a broad purple margin and white centrally, the lower lobe, yellow, narrowly oblong, obtuse, curved; lip bilaminar, purple, the laminae oblong with the ends obtuse, thick, with a longitudinal, orange carina, microscopically pubescent, 2 mm long, the connectives broadly cuneate, the body connate to the base of the column, the sinus obtuse, with an oblong, membranous, ciliate appendix in apposition to the stigma; column 1 mm long, stout, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest, Cordillera del Condor east of Guismé, alt. 1500 m, 18 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11916 (Holotype: MO); same area, alt. 1650 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreitta & W. Teague 13528 (MO); between Macas and Guamote, alt. 1750 m, 6 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12699 (MO).

Zamora-Chinchipe: Nudo de Sabanilla, alt. 2400 m, 20 Jan. 1986, S. Dalström & T. Höijer 1084 (MO).

This colorful species is related to the *L. orion-panope-steyermarii* complex of the Eastern Cordillera of Colombia. The longitudinal carina of the thick blades of the lip is seen in all four of these species, but this is the first of the group found in Ecuador. The membranous appendix applied to the stigma is also similar. The acute lateral sepals are widely spread as in *L. tachirensis* which is common and widely distributed from Venezuela through Colombia and Ecuador.

Lepanthes confusa Ames & C. Schweinf., Sched. Orch. 10: 40, 1930.

Fig. 53.

Ety.: From the Latin *confusus*, "confused," no doubt referring to some confusing aspect.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 7-25 mm cm long, enclosed by 2-6 ciliate, lepanthiform sheaths. **Leaf** erect to spreading, coriaceous, suffused with purple beneath, elliptical, subacute to obtuse, lightly convex, 9-15 mm long, 4-11 mm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 3 mm long, borne beneath the leaf by a filiform peduncle 3-5 mm long; floral bracts 1 mm long, echinate; pedicels 1.5 mm long; ovary 0.75 mm long; **sepals** pale dull purple, ovate, acute, denticulate, the dorsal sepal 3-3.75 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 3-3.5 mm long, 1.5-1.75 mm wide, connate 1-1.5 mm; **petals** transversely bilobed, 1 mm long, 3 mm wide, the lobes obliquely triangular, acute, the upper lobe dark red-purple, conspicuously pubescent, the lower lobe orange, microscopically pubescent; **lip** red-purple with yellow margins, bilaminate, the blades ovate, with rounded ends, pubescent, 1 mm long, the connectives broadly cuneate, thick, the body broad, connate to the base of the column, the sinus obtuse with the appendix thick, oblong, obtuse, incurved, long-ciliate beneath; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Emeraldas: epiphytic in wet forest west of Lita, alt. 800 m, 13 Aug. 1986, A. Hirtz 2964 (MO), C. Luer illustr. 13375; same area, alt. 750 m, 18 Jan. 1985, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12381 (MO).

Also: Costa Rica (Limón, type; Alajuela, San José, Cartago), Panama (Chiriquí), and Colombia (Antioquia).

This little species is widely distributed in relatively low forests from Costa Rica, where it was described, through Panama and Colombia into northwestern Ecuador. It is one of the very few species that range from Central America well into the Andes. It is characterized by the very small, elliptical, lightly convex leaves that bear a proportionately large, colorful flower on the purple under surface of the blade. The sepals are usually denticulate. The lobes of the petals are obliquely triangular and pubescent. The blades of the lip are long-pubescent, and the appendix is thick and incurved with either an entire or minutely bifid at the tip.

Lepanthes conjuncta Luer & Hirtz, Lindleyana, 2: 128, 1987.

Fig. 54.

Ety.: From the Latin *conjunctus*, "joined," referring to the union of the blades of the lip over the column.

Plant medium in size, epiphytic, caespitose; roots coarse. Ramicauls erect, slender, 4-14 cm long, enclosed by 7-12 glabrous to microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, acute, acuminate, 3.5-5 cm long, 1.4-1.8 cm wide, the rounded base contracted into a petiole 2 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 12 mm long, borne behind the leaf by a filiform peduncle 5-17 mm long; floral bracts 1 mm long; pedicels 3 mm long; ovary 1 mm long; **sepals** translucent light green, subcarinate, broadly ovate, obtuse, the dorsal sepal 3.25 mm long, 3.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, abruptly short-acuminate, minutely denticulate, 3.5 mm long, 2.25 mm wide, connate 1 mm; **petals** orange, transversely bilobed, 1.25 mm long, 3.5 mm wide, the upper lobe with red margin, obliquely oblong, obtuse, short-pubescent, the lower lobe obliquely triangular, acute, long-pubescent; **lip** purple, minutely pubescent, bilaminate, the blades thin, elliptical with rounded ends, connate over the column, 1.5 mm long, the connectives broadly oblong, forming a broad, thick body, connate to the base of the column, the margins of the sinus subacutely angled with the appendix oblong, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipec: epiphytic in cloud forest above Valladolid, alt. 2450 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz, W. Flores 10856 (Holotype: MO); same area, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10916 (MO).

Apparently endemic in southern Ecuador, this species is characterized by the weak, slender ramicauls that bear thin, elliptical-ovate leaves with a long-acuminate

apex. The flowers are distinguished by the broad sepals, pubescent petals, and thin elliptical lobes of the lip densely fused over the column. Blades adherent over the column are not uncommon in the genus. This adherence is seen in the ubiquitous *L. mucronata* and its numerous allies, as well as several other less closely related species. In the case of *L. conjuncta*, however, the union is so solid that the blades must be cut or torn apart to expose the column.

Lepanthes contingens Luer, *Phytologia* 54: 335, 1983.

Fig. 55.

Ety.: From the Latin *contingens*, "in contact with," in reference to the process from the stigma in contact with the apical gland of the appendix.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect to suberect, 5-11 cm long, enclosed by 9-11 ciliate lepanthiform sheaths with broadly dilated ostia. **Leaf** erect, coriaceous, variable in size and shape, from broadly ovate to narrowly elliptical, from 3.5 cm long, 2 cm wide, to 5.5 cm long, 1 cm wide, the apex obtuse to acute, the base cuneate or rounded, contracted into a petiole 2-3 mm long. **Inflorescence** a congested, successively flowered raceme up to 12 mm long, borne by a filiform peduncle up to 10 mm long up the back of the leaf; floral bract 2 mm long; pedicel 1.25 mm long; ovary 2 mm long; **sepals** yellow with purple stripes along the veins, entire to minutely denticulate, the dorsal sepal triangular, 5 mm long, 3.75 mm wide, connate to the lateral sepals for 1 mm, the subacute apex shortly acuminate, the lateral sepals connate 2 mm into an ovate, acute synsepal, 5 mm long, 4 mm wide, the acuminate apices approximate; **petals** yellow, suffused with red-brown, transversely oblong, 1.1 mm long, 4 mm wide, with a small, obtuse angle on the margin at the midvein, the upper lobe oblong, truncate, the lower lobe smaller, triangular, acute; **lip** red-brown, the blades narrowly oblong, thin, membranous, transparent, 2.2 mm long, acutely angled on the inner margin near the narrowly obtuse apex, the connectives oblong, erect, lifting the blades above the column, the body with a slender, basal claw connate to the base of the column, the appendix oblong, pubescent, terminated by a small gland which is in contact with a strap-shaped process from the cavity of the stigma; **column** slender, clavate, 2 mm long, the anther dorsal, the stigma ventral.

Carchi: near El Carmelo, alt. 2400 m, May 1985, A. Hirtz 2648 (MO).

Sucumbios: south of Santa Barbara, alt. 2700 m, 5 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9965 (MO); near Papallacta, alt. 2600 m, 14 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11281 (MO); same area, 29 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4448 (SEL).

Pichincha: below San Juan, alt. 3200 m, Oct. 1983, A. Hirtz 1311 (MO); west slopes of Mt. Corazón, alt. 3100 m, July 1984, A. Hirtz 1849 (MO); West Iliniza, alt. 2800 m, 5 Nov. 1984, A. Hirtz 2065 (MO); west slopes of Volcán Iliniza, Cerro Azul, alt. 2800 m, 23 Jan. 1987, C. Luer, J. Luer & A. Hirtz 12466 (MO).

Napo: Guacamayo Range between Tena and Baeza, alt. 2150 m, 29 Mar. 1984, C. Luer, S. Dalström, T. Höijer & J. Kuijt 9803 (MO); same area, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11258 (MO); Papallacta, alt. 2700 m, May 1984, A. Hirtz 1805 (MO); west of Baeza, alt. 2600 m, 14 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11281 (MO).

Loja: epiphytic in cloud forest east of Yangana, alt. 2850 m, 4 Mar. 1982, C. Luer, S. Dalström & D. D' Alessandro 7152 (Holotype: SEL); same area, alt. 2950 m, 22 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10796 (MO).

Tungurahua: west slope of Volcán Tungurahua, alt. 2400 m, 8 Jan. 1986, S. Dalström & T. Höijer 999 (MO).

Zamora-Chinchi: Cajanuma Range, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10742 (MO); east of pass east of Loja, alt. 2300 m, 21 Jan. 1992, C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16087 (MO).

Also Colombia (Nariño).

This species is frequent and widely distributed in forests on both sides of the Andes from Colombia to Peru. The leaves of immature plants are broadly elliptical and obtuse, but all shapes are seen between these and some narrowly ovate, acuminate forms of most mature plants. The lip of the delicate flowers is most distinctive. The narrow, translucent blades, angled on the inner margins below the apex, are held over the column by short connectives. The body is attached to the base of a

long, slender column by a long, slender claw. The pubescent, apical segment of the appendix is in contact with a tongue-like process that descends from the stigma. *Lepanthes contingens* is closely related to *L. transparens* that is distinguished by broader, entire, lunate blades of the lip.

***Lepanthes corkyae* Luer & Hirtz, Novon 3: 444, 1993.**

Fig. 56.

Ety.: Named for Corky, Skeezi's sister, a character from Frank King's *Gasoline Alley*.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 20-30 mm long, enclosed by 5-6 close, minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 10-12 mm long, 5-8 mm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a loose, flexuous, successively several-flowered raceme up to 6 cm long, including the slender peduncle 1-2 cm long; floral bract 1 mm long; pedicel 2-3 mm long; ovary 1.5 mm long; **sepals** orange to red-brown, carinate, glabrous, the dorsal sepal ovate, obtuse, concave, 5 mm long, 3.5 mm wide unexpanded, the apex abruptly acuminate into a slender tail 2-3 mm long, the lateral sepals 11-12 mm long including the slender tails 5-6 mm long, the blades connate 4.5 mm into an oblong, bifid lamina 6 mm long, 4 mm wide, the free portions acute, contracted into non-approximate tails; **petals** yellow-orange to brown, transversely bilobed, 0.8 mm long, 4 mm wide, the upper lobe oblong with the apex rounded, the lower lobe narrowly triangular with the apex acute, lightly recurved; **lip** yellow-orange to brown, bilaminate, the blades oblong, lightly concave, glabrous, 1.5 mm long, with the apices subtruncate, the connectives cuneate, the body narrow, connate to the column above the base, the appendix small, triangular, concave, with an uncinata, apical segment; **column** 1 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest between Tulcán and Maldonado, alt. 2300 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9934 (Holotype: MO); same area, alt. 2050 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9919 (MO); same area, alt. 2300 m, 17 Mar. 1991, C. Luer, J. Luer, A. Hirtz, X. Hirtz & J. Del Hierro 15147 (MO).

Imbabura: Selva Alegre, alt. 1400 m, May 1989, A. Hirtz & X. Hirtz 4250 (MO).

This species is very similar to *L. schizix*, and for years was considered to be the same. However, a re-examination of pickled flowers reveals subtle differences. The sepals of *L. corkyae* are not ciliate; the synsepal is proportionately shorter and broadly concave with short, acute apices contracted into longer tails. *Lepanthes corkyae* occurs on the western slopes of northern Ecuador in the provinces of Carchi and Imbabura. *Lepanthes schizix* occurs on the western slopes of Pichincha.

***Lepanthes cornualis* Luer & Escobar, Orquideología 18: 36, 1991.**

Fig. 57.

Ety.: From the Latin *cornualis*, "with horns," referring to the appearance of the blades of the lip.

Plant large to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 10-35 cm long, enclosed by 8-16 glabrous to microscopically scabrous lepanthiform sheaths. **Leaf** erect, coriaceous, suffused with purple beneath, narrowly elliptical, acute, 7-11 cm long, 1-1.7 cm wide, the base cuneate to a petiole 3-4 mm long. **Inflorescence** 1-3 loose, successively several-flowered racemes up to 8 cm long, borne behind the leaf by a slender peduncle ca. 1 cm long; floral bract 2-3 mm long; pedicel 2-3 mm long; ovary 3 mm long, with 3 fringed wings; **sepals** rose, carinate-strigose, minutely denticulate, the dorsal sepal triangular, subacute, shortly acuminate, 8 mm long, 5.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, obtuse, shortly acuminate, 7.5 mm long, connate 2 mm, 7.25 mm wide together, each 1-veined; **petals** dull yellow with purple edges, minutely pubescent, transversely bilobed, 1.5 mm long, 7.5 mm wide, the lobes narrowly triangular, obtuse, subequal in size; **lip** rose, bilaminate, the blades ciliate, narrowly obovate, obtuse or rounded apices, and with attenuate, acute bases, more or less recurved, 4.5 mm long, the connectives obliquely cuneate, from the anterior half of the blades, the body narrow, connate to the column near the base, the appendix minute with a bilobed apex; **column** slender, 2 mm long, the anther dorsal, the stigma ventral.

Tungurahua: Llanganates Range, Leito, alt. 3000 m, 12 Oct. 1984, A. Hirtz 1968 (MO).
Also Colombia (Putumayo: type).

This tall, slender species, found in southern Colombia and central Ecuador, is recognized by the narrowly elliptical leaves, considerably shorter than the long ramicauls; the loose racemes shorter than the leaves; fringed ovaries; broad, minutely denticulate sepals, the laterals one-veined; and narrow blades of the lip with attenuate, more or less recurved bases that resemble horns.

***Lepanthes corrugata* Luer & Dalström, sp. nov.**

Fig. 58.

Ety.: From the Latin *corrugatus*, "with wrinkles," referring to the wrinkles of the leaves.

Planta grande caespitosa, inflorescentia racemosa congestissima folio tenui corrugato ovato acuminato brevior, sepalis ovatis carinatis, petalis transverse lobatis cum apiculo deflexo brevi inter lobos, lobo superiore triangulari, lobo inferiore majore, labelli laminis lunatis connectivis latis et corpore lato membranacei, appendice marginali.

Plant large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 15-18 cm long, enclosed by 20-22 microscopically scabrous, lepanthiform sheaths with dilated ostia. **Leaf** suberect, thinly coriaceous, purple reticulate-veined, ovate, acuminate, 8-9 cm long, 3.5-4.5 cm wide, broadly cuneate below into a petiole 2-3 mm long. **Inflorescence** an extremely congested raceme of successive flowers, up to 10 mm long, borne by a filiform peduncle 3-4 cm long along the back of the leaf; floral bract acuminate, recurved, 2.5 mm long; pedicel 3-4 mm long; ovary 3 mm long; **sepals** reddish, glabrous, carinate, the dorsal sepal ovate, narrowly obtuse, apiculate, 6 mm long, 4.25 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, shortly acuminate, subacute, 6 mm long, 2.75 mm wide, connate 2 mm; **petals** olive green, microscopically pubescent, transversely bilobed, 1.5 mm long, 5.5 mm wide, with a filament 0.6 mm long from the margin near the middle, the lobes triangular, the upper lobe slightly larger; **lip** olive green, bilaminar, the blades thin, glabrous, lunate, 2.5 mm long, the connectives broadly cuneate, the body broad, membranous, slightly concave, protruding, connate to the column at the base, the appendix ciliate, triangular, acute, on the protruding margin of the body; **column** 2 mm long, with the anther dorsal, and the stigma ventral.

Sucumbios: forested ridge above La Bonita, alt. 2300 m, 15 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2153 (MO), C. Luer illustr. 17917.

This large species is known only from the original collection. It is related to *L. cotyledon* from farther south on the eastern slopes, but it is distinguished from the latter by the longer, multisheathed ramicauls and larger leaves that are similarly thin, crinkly and purple; a congested, long-pedicellate raceme shorter than the leaf; petals with a thin, lateral process; and a lip with thin, transparent blades adherent over the column, and a large concavity filling the body behind a relatively large, oblong appendix with a lobulate apex.

***Lepanthes cotyledon* Luer, Phytologia 54: 336, 1983.**

Fig. 59.

Ety.: From the Latin *cotyledon*, "a cup-shaped cavity," referring to the cavity of the lip.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 7-15 cm long, enclosed by 8-11 close minutely ciliate lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, purple beneath, reticulate-veined, elliptical, 6-7 cm long, 2.5-4.5 cm wide, the apex long-acuminate, the bases rounded, abruptly contracted into a petiole 2 mm long. **Inflorescence** an extremely congested, secund raceme of successive, long-pedicellate flowers, up to 10 mm long, borne by a filiform peduncle up to 30 mm long along the back of the leaf; floral bract 1.5 mm long; pedicel 5-6 mm long; ovary 2.5 mm long; **sepals** brown, minutely ciliate, the dorsal sepal broadly ovate, acute, 4.75 mm long, 4.5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, lightly acuminate, acute, 5 mm long, 2.5 mm wide, connate 2 mm; **petals** greenish brown, transversely oblong, bilobed, 1 mm long, 4 mm wide, with a filament 0.5 mm long from the margin near the middle, the dorsal lobe dolabriform, the lower lobe oblong, rounded; **lip** brown, bilaminar, the blades thin, glabrous, lunate, adherent medially over the column, 2 mm long, the connective broadly cuneate, the body with a central, cup-shaped cavity, connate to the column above the base, the appendix ciliate, ligulate, concave, acute, nearly 1 mm long, the column 1.5 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest between Tena and Baeza, alt. 1000 m, 23 Feb. 1982, C. Luer & A. Hirtz 6975 (Holotype: SEL); new road between Cotunda and Coca, alt. 1000 m, July 1984, A. Hirtz 1859 (MO); same area, alt. 1200 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11231 (MO).

Pastaza: above Mera, alt. 1000 m, 13 Oct. 1984, A. Hirtz & C. Dodson 2011 (MO), C. Luer illustr. 10509.

This species occurs in forests on the eastern slopes of the Ecuadorian Andes. It is distinguished by the broad, thin, crinkly, purple leaves; a congested, long-pedicellate raceme shorter than the leaf; petals with a thin, lateral process; and a lip with thin, transparent blades adherent over the column, and a large concavity filling the body behind a relatively large, oblong appendix with a lobulate apex.

***Lepanthes cotylisca* Luer & Hirtz, sp. nov.**

Fig. 60.

Ety.: From the Greek *kotyliskos*, "a little cup," referring to the cuplike lip.

Planta parva debilis, inflorescentia laxiflora folio anguste ovato leviter brevior, sepalis late ovatis leviter acuminatis, petalis bilobis, labello bilobo suborbiculato vel late subcordato inciso, appendice oblonga pubescenti.

Plant small to medium in size, weak, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 6-9 cm long, enclosed by 8-10 microscopically scabrous, lepanthiform sheaths. Leaf suberect, coriaceous, narrowly ovate, acute, apiculate, 2.5-5.5 cm long, 8-11 mm wide, the base cuneate into a petiole 2-3 mm long. Inflorescence a weak, loose, successively several-flowered raceme, up to 4 cm long including the peduncle 0.5-1 cm long, borne behind the leaf; floral bracts 1.5 mm long; pedicels 2 mm long; ovary 0.75 mm long; sepals yellow, minutely ciliate, carinate-spiculate externally along the veins, the dorsal sepal broadly ovate, obtuse, lightly acuminate, 2.75 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, subacute, lightly acuminate, 2.5 mm long, 1.25 mm wide, 1-veined, connate 0.5 mm; petals red, microscopically pubescent, transversely bilobed, 0.5 mm long, 2.25 mm wide, the lobes subequal, oblong with rounded ends; lip orange, microscopically pubescent, broadly subcordate or suborbicular, 1 mm long and slightly wider expanded, curved around the column to form a cup, with the basal lobes in apposition above the column, the broad, bilobed apex incised, with an oblong, pubescent appendix in the sinus, the body connate to the base of the column; column 1 mm long, the anther and stigma apical.

Carchi: epiphytic wet forest east of the pass east of Maldonado, alt. 2300 m, 17 Mar. 1991, C. Luer, J. Luer, A. Hirtz, X. Hirtz & J. Del Hierro 15140 (Holotype: MO); east of Maldonado, alt. 2200 m, 25 Feb. 1992, S. Dalström et al. 1575 (MO).

This weak species is distinguished by the thin ramicauls, narrowly ovate leaves and a distantly flowered raceme that eventually nearly reaches the apex of the leaf in length. The flower is distinguished by one-veined lateral sepals and a suborbicular lip that forms a cup surrounding the column. The apex of the lip is bilobed with a small appendix in the sinus.

***Lepanthes craticia* Luer, Phytologia 54: 337, 1983.**

Fig. 61.

Ety.: From the Latin *craticius*, "lattice," in reference to the densely flowered rachis.

Plant large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 12-25 cm long, enclosed by 10-18 close, glabrous lepanthiform sheaths. Leaf erect, thinly coriaceous, elliptical, acuminate, acute, 5-8 cm long, 1.8-2.6 cm wide, the base cuneate into a petiole 3 mm long. Inflorescence a congested, distichous, successively flowered raceme up to 35 mm long, borne by a filiform peduncle up to 25 mm long behind the leaf; floral bract and pedicel each 1.25 mm long; ovary 2 mm long; sepals yellow, glabrous, the dorsal sepal ovate, acuminate, acute, 11 mm long, 4.75 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals oblong, oblique, 11 mm long, connate 4 mm, 8 mm wide together, the apices acuminate acute; petals yellow with red margins, transversely bilobed, reniform, 2.5 mm long, 5.5 mm wide, the lobes equal, oblong with rounded apices; lip orange with red-orange margins, bilaminar, the blades glabrous, elliptical with rounded ends, 2 mm long, the connectives short, broad, the body broad, connate to the column above the base, the appendix broadly oblong with a short, truncate, terminal gland; column 2.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: between Gualaceo and Limón, alt. 2650 m, 29 Oct. 1982, *C. Luer & A. Pozo 8215* (SEL); same area, alt. 2750 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11812, 11826* (MO).

Loja: Parque Nacional Podocarpus at "Centro de Información," alt. 2800-2950 m, 23 Feb. 1985, *B. Øllgaard et al. 58001, 58142* (AAU).

Zamora-Chinchipe: east of the pass between Loja and Zamora, elfin forest, alt. 2750 m, 17 Apr. 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 3673* (AAU); epiphytic in scrub vegetation between Loja and Zamora, alt. 2700 m, 21 Sept. 1980, *C. Luer, J. Luer, C. Dodson et al. 5523* (Holotype: SEL); same area, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10707* (MO); south of Zamora, alt. 1500 m, 27 Jan. 1989, *S. Dalström & T. Höjjer 1205* (MO).

This large species occurs at high elevations in a relatively restricted area on the eastern slope of the Andes of southern Ecuador. It is similar to many of the other large species characterized by a congested, distichous raceme of flowers with yellow sepals and orange petals with a red border. *Lepanthes craticia* is distinguished by the congested, distichous raceme shorter than the leaf; reniform petals; glabrous blades of the lip with an oblong appendix with a truncate, apical segment.

***Lepanthes cremasta* Luer & Hirtz, sp. nov.**

Fig. 62.

Ety.: From the Greek *kremastos*, "hanging," referring to the pedunculated appendix.

Planta mediocris caespitosa, inflorescentia racemosa congesta folio elliptico brevior, sepalis anguste ovatis denticulatis, petalis transverse lobatis brevipubescenti, lobo superiore oblique ovato rotundato, lobo inferiore multiminore oblique triangulari obtuso, labelli laminis anguste oblongis basi uncinatis apice brevibus subacutis ciliatis, appendice pedunculata pensili pubescenti.

Plant medium in size, epiphytic, caespitose; roots numerous, capillary. Ramicauls erect, stout, 6-17 cm long, enclosed by 9-16 ciliate, lepanthiform sheaths, the ostia minimally dilated. **Leaf** erect, thinly coriaceous, elliptical, acute, 5-6 cm long, 1.5-2 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 20 mm long, borne behind the leaf by a filiform peduncle 20-25 mm long; floral bracts 2 mm long, echinate; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** yellow, denticulate, the dorsal sepal broadly ovate, acute, 5 mm long, 3 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals narrowly ovate, oblique, attenuate-acute, 6 mm long, 2.25 mm wide, connate 1 mm; **petals** yellow, shortly pubescent, transversely bilobed, 1.5 mm long, 3 mm wide, the upper lobe ovate, rounded, oblique, the lower lobe much smaller, obliquely triangular, obtuse; **lip** yellow, bilobed, the lobes elliptical-oblong, 2 mm long, erect, embracing the column, the bases uncinatate, the apices subacute, ciliate, connate to the base of the column, the sinus obtusely acute, the appendix ovoid, bifid, pubescent, attached to the sinus by a slender peduncle, suspended between the apices of the labellar lobes; **column** 1.5 mm long, the anther dorsal, the stigma apical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 800 m, 13 Aug. 1986, *A. Hirtz 2963* (Holotype: MO), *C. Luer* illustr. 13772.

This species is characterized by stout ramicauls much longer than the leaves; congested inflorescences shorter than the leaves; narrowly ovate, denticulate sepals; obliquely bilobed, obtuse, pubescent petals; and erect, oblong lobes of the lip embracing the column, uncinatate at the base, and with short apices with a long-pedunculated, pubescent appendix suspended between them.

***Lepanthes crista-pulli* Luer & Escobar, Phytologia 54: 338, 1983.**

Fig. 63.

Ety.: From the Latin *crista pulli*, "the comb of a chick," referring to the small crest on the undersurface of the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-3.5 cm tall, enclosed by 3-4 minutely scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly elliptical-ovate, acute, 3.5-4 cm long, 0.6-0.8 cm wide, the base narrowly cuneate into a petiole ca. 5 mm long. **Inflorescence** a loose, few-flowered, flexuous raceme up to 2 cm long including the filiform peduncle along the back of the leaf; floral bract and pedicel each 1.5 mm long; ovary 1 mm long; **sepals** yellow, suffused with

brown toward the base, minutely pubescent, the dorsal sepal ovate, acute, 3 mm long, 2.33 mm wide, the lateral sepals ovate, oblique, acute, 3 mm long, 1.25 mm wide, connate 1 mm; **petals** purple, transversely oblong, 0.5 mm long, 2.33 mm wide, the upper lobe oblong, obtusely angled on the inner margin, the apex rounded, the lower lobe smaller, narrowly oblong, obtuse; **lip** purple, bilaminate, the blades oblong, glabrous, 1 mm long, the apex acute, the base round, the connectives broadly cuneate, the body connate to the column near the base, the body with a forked crest externally, only slightly protruding beyond the sinus; **column** 1 mm long, the anther and stigma apical.

Morona-Santiago: epiphytic in wet forest north of Gualaquiza, alt. 1650 m, 4 Nov. 1982, *C. Luer, R. Escobar & D. D'Alexandro* 8280 (Holotype: SEL).

This small species, known only from the type-collection, is identified by the narrowly elliptical leaf with a short, loose inflorescence; minutely pubescent, ovate sepals; transversely oblong petals; and a bilaminate lip with a forked, crest-like appendix on the external surface of the body.

***Lepanthes ctenophora* Luer & Hirtz, Lindleyana 2: 129, 1987.**

Fig. 64.

Ety.: From the Greek *ctenophoros*, "comb-bearing," referring to the appearance of the raceme.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-9 cm long, enclosed by 5-9 dark brown, minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 2-4 cm long, 1.2-2 cm wide, the cuneate base contracted into a petiole 2-3 mm long. **Inflorescence** a very congested, long-pedicellate, distichous, successively many-flowered raceme up to 5 mm long, borne behind the leaf by a filiform peduncle 14-20 mm long; floral bracts 1 mm long, echinate; pedicels 2.5-3 mm long; ovary 2 mm long; **sepals** light yellow, ovate, subacute, entire, the dorsal sepal 3.75 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 3.75 mm long, 1.4 mm wide, connate 1 mm; **petals** yellow-orange with the border red, minutely pubescent, transversely bilobed, 1 mm long, 3.25 mm wide, the lobes obliquely triangular, subacute, the upper lobe twice larger; **lip** orange-rose, minutely pubescent, bilobed, the lobes ovate, narrowly obtuse above the middle with the ciliate apices beneath the column, laminate below the middle, 1.2 mm long, the connectives broadly cuneate, forming a broad body, connate to the base of the column, the sinus obtuse with the appendix minute, ovoid, pubescent; **column** 1 mm long, the anther and the stigma apical.

Esmeraldas: west of Lita, alt. 800 m, 13 Aug. 1986, *A. Hirtz* 2962 (MO); Alto Tambo, alt. 800 m, Feb. 1987, *A. Hirtz* 3293 (MO).

El Oro: epiphytic in cloud forest south of Piñas, alt. 950-1000 m, 20 Mar. 1985, *C. Luer, J. Luer, A. Hirtz, W. Flores* 10661 (Holotype: MO); between Santa Rosa and Loja, alt. 830 m, 20 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 10683 (MO).

This species is very similar to a group of many species found in Central America commonly referred to as *L. turialvae* Rchb. f. The ramicauls are clothed in dark brown sheaths and the leaves are elliptical and rigidly coriaceous. The racemes are short and compact with two rows of long pedicels. The sepals are ovate, and the petals relatively large. The lip, however, differs in that the lamina are only poorly developed on the lower parts of the lobes while the narrowed portion above the middle curves under the column. The appendix is reduced to a minute clump of hairs.

***Lepanthes cymbium* Luer & Escobar, Orquideología 19(2): 91, 1994.**

Fig. 65.

Ety.: From the Latin *cymbium*, "a little bowl," referring to the cup-shaped flower.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 15-18 mm long, enclosed by 4-5 long-ciliate, lepanthiform sheaths. **Leaf** erect, thickly coriaceous, elliptical, lens-shaped, acute, 11-13 mm long, 5-6 mm wide, cuneate below into a petiole 2 mm long. **Inflorescence** a subdense, distichous, successively many-flowered raceme up to 10 mm long, borne well beyond the leaf by a slender peduncle 15-25 mm long; floral bracts echinate, 1 mm long; pedicels 1.5 mm long; ovary 0.5 mm long; **sepals** yellow, carinate, concave, glabrous, with minutely erose margins, the dorsal sepal transversely

triangular, 9.5 mm long, 10 mm wide, 3-veined, connate to the lateral sepals for 5 mm to form a cup-shaped flower, the apex obtuse, contracted into a narrowly triangular apiculum, the lateral sepals connate 5 mm into a transversely triangular, bifid lamina, 9.5 mm long, 12 mm wide, 4-veined, the apices sub-acute, free for 3 mm; **petals** red medially, orange laterally, minutely pubescent, transversely bilobed, 0.75 mm long, 4.5 mm wide, the lobes nearly equally long, the upper lobe narrowly oblong, obtuse, the lower lobe narrowly triangular, the apex acute, long-ciliate; **lip** bilaminate, with the blades red toward the base, yellow-white toward the apex, glabrous, long-ciliate at the apices, narrowly oblong, 2 mm long, the connectives very short, cuneate, the body connate to the base of the column, the sinus broad with the appendix oblong, long-pubescent; **column** 1.25 mm long, the anther apical and the stigma ventral.

Pichincha: without specific locality, alt. 2600-2800 m, June 1990, collected by J. Aguirre, flowered in cultivation at Colomborquideas, 27 Dec. 1990, *R. Escobar 4062* (MO), C. Luer illustr. 14924.

Also Colombia (Quindio, type).

This species is distinguished by the relatively large, cup-shaped flower borne above the little, lens-shaped leaves in a successively flowered distichous raceme by a slender peduncle longer than the leaves. The central apparatus is held out from the back of the sepaline cup. The apices of the sepals are obtuse, the laterals connate to near the apices. The petals are slender and erect. The blades of the lip are slender and long-ciliate at the apices. The appendix is oblong and pubescent.

Lepanthes cymbium is closely allied to the rare *L. chelonion* Luer & Escobar from the Eastern Cordillera of Colombia, but the latter differs in a deeply concave synsepal at the base with long apices with revolute margins.

Lepanthes dalessandroi Luer, *Phytologia* 54: 338, 1983.

Fig. 66.

Ety.: Named in honor of Dennis D'Alessandro formerly of Vilcabamba, Ecuador, who discovered this species.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender to comparatively stout, 3-8 cm long, enclosed by 3-6 close, microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly oblong, subacute to obtuse, 2-5 cm long, 0.7-1.1 mm wide, the base narrowly cuneate into a petiole 3-5 mm long. **Inflorescence** a progressively lengthening, subflexuous, loosely flowered raceme up to 33 cm long including the peduncle 7-12.5 cm long; flowers large, orange-brown, 2-3 open simultaneously; floral bract 2.5-3 mm long; pedicel 4-10 mm long; ovary, costate, 2-4 mm long; **sepals** glabrous, the dorsal sepal triangular, 10-17 mm long, 8-14 mm wide, connate to the lateral sepals for 3-5 mm, the acute apex attenuated into a slender tail 4-13 mm long, the lateral sepals oblique, connate 7-12 mm into an ovate-triangular lamina similar to the dorsal sepal, 10-19 mm long, 9-14 mm wide, the attenuated apex bifurcated, with tails 4-18 mm long; **petals** yellow, pubescent, transversely oblong, bilobed, 1 mm long, 3-4 mm wide, the lobes equal, oblong, with rounded ends; **lip** orange or purple, bilaminate, the laminae thick, lumate, convex, pubescent, 1-1.5 mm long, 2-2.5 mm wide expanded, the connective broadly cuneate, the body broad, connate to the column above the base, the appendix triangular, pubescent, in the sinus, with a minute apiculum; **column** 1.5-2 mm long, stout, the anther and stigma apical.

Loja: epiphytic in cloud forest south of Yangana, alt. 2400 m, 3 Mar. 1982, *C. Luer, D. D'Alessandro & S. Dalström 7087* (Holotype: SEL).

Zamora-Chinchipe: forest east of the pass east of Loja, alt. 2000 m, 22 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13577* (MO); between Loja and Zamora, alt. 2000-2400 m, 4 Mar. 1990, *S. Dalström & L. Årnby 1450* (MO).

This spectacular species was probably first discovered east of Loja about 1975 by Walter Teague who has successfully cultivated the plant in San Francisco. It was later discovered in a different locality by Dennis D'Alessandro who led me to the spot. Unaware of Teague's cultivated specimen, this species was named in honor of D'Alessandro.

The flowers of this species are some of the largest known in the genus. Long, loose racemes produce 1 to 3 flowers simultaneously. The synsepal is similar to the dorsal sepal except for the bifid apex. The blades of the lip are thick, pubescent, crescent-shaped margins of the connectives.

Lepanthes decurva Luer & Hirtz, *Die Orchidee* 38: 38, 1987.

Fig. 67.

Ety.: From the Latin *decurvus*, "curved downward," referring to the inflorescence.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 10-32 cm long, enclosed by 10-14 glabrous, closely fitting lepanthiform sheaths, microscopically ciliate on the margins of the upper ostia. **Leaf** erect, coriaceous, narrowly ovate, acute, acuminate, 7-10 cm long, 1.5-3 cm wide, the rounded base contracted into a petiole 5-9 mm long. **Inflorescence** racemose, successively many-flowered, laxly flowered below, becoming congested above, up to 5 cm long, decurved near the middle, borne behind the leaf by a slender peduncle 1.5-3 cm long; floral bract 2.5-3 mm long; pedicel 2.4-4 mm long; ovary 3 mm long; **sepals** yellow, suffused with brown, minutely short-ciliate, ovate-triangular, acute, shortly acuminate, carinate, the dorsal sepal 8 mm long, 5 mm wide, connate to the lateral sepals for 2 mm, the lateral sepals oblique, 7 mm long, 4.5 mm wide, connate 1.5 mm, 3-veined; petals yellow with the margin dark red-purple, glabrous, transversely bilobed, 1.5 mm long, 5 mm wide, narrowed between the lobes, the lobes subequal, triangular with the ends rounded; **lip** bilaminar, the lamina shiny maroon, oblong, glabrous, the rounded apices ciliate, the connectives cuneate, the body broad, connate to the base of the column, the sinus acute, with a minute, biglandular appendix; **column** 2 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: east of the pass between Gualaceo and Limón, alt. 3180 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11810 (Holotype: MO).

This large, robust species is closely allied to *L. caudatisejala*. It also occurs at a high altitude about 3000 meters above sea level, but only in a limited area of southeastern Ecuador. Vegetatively indistinguishable with the stout ramicauls clad in glabrous, non-dilated sheaths, it is identified by the shorter inflorescence decurved near the middle, and denticulate sepals with the laterals three-veined. The sepals of *L. caudatisejala* are either smooth-margined or microscopically denticulate. The minute, biglandular appendices of the two taxa are also similar.

Lepanthes deformis Luer & Hirtz, *Die Orchidee* 38: 38, 1987.

Fig. 68.

Ety.: From the Latin *deformis*, "misshapen," in allusion to the appearance of the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 2-6.5 cm long, enclosed by 6-7 blackish, tightly fitting, shortly pubescent, lepanthiform sheaths. **Leaf** erect in relation to the ramicaul, brown, thickly coriaceous, broadly elliptical to suborbicular, 2.5-4 cm long, 1.2-3 cm wide, the obtuse apex shortly acuminate, the rounded base contracted into a petiole 1.5-3 mm long. **Inflorescence** a very dense, distichous, successively flowered raceme up to 6 mm long, borne beneath the leaf by a filiform peduncle 9-11 mm long; floral bract echinate, 1 mm long; pedicel 2 mm long; ovary 1 mm long; **sepals** dull yellow, ovate, obtuse, the dorsal sepal 3.5 mm long, 2.25 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, minutely denticulate, 3.25 mm long, 2 mm wide, connate 1.5 mm; **petals** yellow-orange with a red border, microscopically pubescent, transversely bilobed, 1.25 mm long, 4 mm wide, the lobes oblong with rounded ends, the lower lobes ciliate; **lip** rosy orange, bilaminar, the blades connate into a membranous, irregularly veined veil 1.25 mm long over the column, the apical margin erose, the bases rounded, thickened, ciliate, the connectives oblong, connate to the base of the column, the body and sinus pubescent, protuberant with a minute, ovoid, ciliate appendix; **column** 1.5 mm long, twisted to one side, the anther dorsal, the stigma apical.

Esmeraldas: west of Lita toward San Lorenzo, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, A. Hirtz & C. Dodson 12409 (MO).

Pichincha: epiphytic above San Miguel de los Bancos, alt. 1100 m, 1 Apr. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9857 (Holotype: MO).
Also Costa Rica.

Several distant populations of this peculiar species have been found in relative lowland western Ecuador. An illustration was made by Endres in Costa Rica ca. 1867, but no other collections are known in Central America. Plants in all the populations are found to exhibit the same apparent deformity of the lip. The blades are united into a thin, irregularly veined veil overlying the column which is twisted about 45 degrees and bent to the left.

Lepanthes deleastes Luer, *Phytologia* 53: 339, 1983.

Fig. 69.

Ety.: From the Greek *deleastes*, "a baiter," alluding to the presumed function of the appendix.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-12 cm long, enclosed by 6-13 close, minutely ciliate lepanthiform sheaths. **Leaf** erect, coriaceous, more or less reticulated with purple beneath, ovate, 2-4 cm long, 1.5-2.5 cm wide, the apex acute to shortly acuminate, the rounded base abruptly contracted into a petiole 2-4 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 10 mm long, borne by a filiform peduncle up to 12 mm long along the back of the leaf; floral bract 1 mm long; pedicel 0.5 mm long; ovary 1.5 mm long; **sepals** purple with a yellow border, microscopically ciliate, ovate, subacute to acute, the dorsal sepal 3 mm long, 2 mm wide, connate 0.5 mm to the lateral sepals, the lateral sepals oblique, 3 mm long, 1.5 mm wide, connate 0.5 mm; **petals** orange with a red border, transversely oblong, bilobed, 1 mm long, 2.5 mm wide, with a small, obtuse angle on the outer margin at the midvein, the upper lobe broadly ovate, obtuse, the lower lobe smaller, oblong, obtuse; **lip** purple, bilaminar, the blades oblong with obtuse ends, 1.5 mm long, ciliate on inner margin, the connectives short, cuneate, the body very narrow, connate to the column above the base, the appendix pubescent, oblong, with an ovoid gland below the apex; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest north of Tena, alt. 1100 m, 22 Feb. 1982, *C. Luer & A. Hirtz 6937* (Holotype: SEL); between Cotundo and Coca, alt. 1000 m, Feb. 1984, *A. Hirtz 1520, 1862* (MO); Río Topo, alt. 1300 m, 5 Nov. 1984, *A. Hirtz 2072* (MO); between Cotundo and Coca, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11224* (MO).

Pastaza: along Río Pastaza east of Río Negro, alt. 1150 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11190* (MO); along Río Negro, alt. 1500 m, 13 Oct. 1984, *A. Hirtz & C. Dodson 2013* (MO).

Morona-Santiago: Cordillera del Condor east of Chuchumbletza, alt. 1650 m, 21 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13538* (MO); Cordillera del Cutucú east of Mendez, alt. 1000 m, 5 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12655* (MO); north of the pass north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11883* (MO); Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 18 Jan. 1989, *C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 13978* (MO).

Zamora-Chinchipe: Quebrada Honda, alt. 1100 m, 18 Jan. 1982, *D. D' Alessandro 122* (SEL); Nudo de Sabanilla, alt. 2400 m, 20 Jan. 1986, *S. Dalström & T. Höijer 1083, 1085* (MO).

This colorful species is frequent in the forests of the lower, eastern slopes of southern Ecuador. It is one of several species characterized by a purple dorsal sepal with yellow or green margins. The congested racemes are shorter than the ovate leaves; the ovate sepals are minutely denticulate; the petals are broadly transversely oblong; and connectives of the lip are very short with a pubescent, segmented appendix between.

Lepanthes delhierroi Luer & Hirtz, *Novon* 3: 445, 1993.

Fig. 70.

Ety.: Named in honor of Juan Del Hierro of Quito, Ecuador, who discovered this species.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-3.5 cm long, enclosed by 5-7 lepanthiform sheaths with minutely scabrous margins of the ostia. **Leaf** erect, coriaceous, suffused with purple beneath, elliptical, obtuse, 1.7-2.8 cm long, 0.7-1.2 cm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a loose, distichous, successively several-flowered raceme up to 6 cm long including the slender peduncle 2-3 cm long; floral bracts 1.5 mm long; pedicels 2-3 mm long; ovary costate, 1.5 mm long; **sepals** red-purple, glabrous, ovate, long-acuminate, acute, the dorsal sepal, 13 mm long, 5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals, oblique, 14 mm long, connate 6 mm, 7 mm wide together; **petals** orange-brown, minutely pubescent, transversely bilobed, 1.5 mm long, 4.25 mm wide, the upper lobe oblong, obtuse, the lower lobe smaller, narrowly triangular; **lip** orange-brown, microscopically pubescent, bilaminar, the blades narrowly oblong-ovate, with the apices slightly everted, narrowly rounded, 2 mm long, the connectives broad, from below the middle, the body broad, connate to near the middle of the column, the appendix pubescent, oblong, incurved, the apex with a two-horned gland; **column** terete, 2 mm long, the anther apical, the stigma ventral.

Napo: epiphytic in cloud forest between El Carmelo and La Bonita, alt. 2400 m, Aug. 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4965 (Holotype: MO), C. Luer illustr. 15282.

Morona-Santiago: epiphytic in cloud forest, Valle del Paute, alt. 2200-2400 m, flowered in cultivation by A. Andreetta at Paute, 16 May 1988, C. Luer 13366 (Holotype: MO).

This showy species is distinguished by a loose, flexible, successively few-flowered raceme much longer than the elliptical leaf. The large red flower with yellow veins is characterized by broad, concave sepals that are abruptly acuminate into short tails. The petals are red and bilobed. The blades of the lip are red and longitudinally callous toward the base. Most remarkable in the membranous, sling-like appendix with a knoblike apex that holds a long, curved process that descends from the stigma. A form with narrower sepals occurs farther south.

In habit this species is superficially similar to other medium-sized species with relatively large flowers borne in a long, loose raceme (e.g. *L. capitanea* Rchb. f. and *L. effusa* Schltr.). *Lepanthes delhierroi* is distinguished by the long-acuminate apices of the sepals, simple petals, blades of the lip with everted apices, and with an involute appendix with a minute, two-horned gland at the apex.

***Lepanthes deliqua* Luer, Phytologia 55: 181, 1984.**

Fig. 71.

Ety.: From the Latin *deliquis*, "lacking, wanting," referring to the total absence of the body and appendix of the lip.

Plant small, epiphytic, caespitose; roots filiform. Ramicauls slender, erect, 3.5-5.5 cm tall, enclosed by 5-7 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-oblong, obtuse, 22-25 mm long, 8-12 mm wide, cuneate below to the subpetiolate base. **Inflorescence** a loose, flexuous, progressively lengthening raceme 1.5-5 cm long including the filiform peduncle ca. 1 cm long; floral bract 1.5 mm long, mucronate; pedicel 1.5 mm long; ovary 1 mm long; **sepals** yellow, diffusely suffused with purple, carinate, minutely denticulate, the dorsal sepal ovate, concave, acute, acuminate, 6 mm long, 2.5 mm wide, connate basally for 0.75 mm to the lateral sepals, the lateral sepals ovate, oblique, connate 3 mm, 6.5 mm long, 3.75 mm wide together, the apices acute, acuminate into slender, incurved tails; **petals** yellow, suffused with purple medially, narrowly transversely oblong, minutely pubescent, 0.6 mm long, 3.5 mm wide, the lobes narrowly triangular-oblong, narrowly obtuse, the lower lobe longer; **lip** purple, bilobed, the lobes minutely pubescent, suborbicular, 1.33 mm long and wide, deflexed to surround the apical half of the column, the connectives narrowly cuneate from the bases of the blades directly to the undersurface of the column near the middle without forming a body or appendix; **column** 1.5 mm long, decurved-arcuate, the anther dorsal with a large, bifurcated cap, the stigma ventral.

Pichincha: road to Mindo, alt. 2400 m, Aug. 1990, A. Hirtz, X. Hirtz & J. Del Hierro 4932 (MO).

Chimborazo: La Palma, alt. 2800 m, July 1983, A. Hirtz 1255 (Holotype: SEL), C. Luer illustr. 9155.

This species is rare, having been found on only two occasions in distant localities. It is identified by the loose, flexuous raceme that surpasses the elliptical-oblong leaf; acuminate, denticulate sepals; narrowly transverse petals; and a lip with rounded blades borne by slender connectives connate directly to the column above the middle without forming a body or appendix.

***Lepanthes dictydion* Luer & Hirtz, Amer. Orchid Soc. Bull. 54: 161, 1985.** Fig. 72.

Ety.: From the Greek *dictydion*, "a little net," referring to the reticulated leaves.

Plant small, epiphytic, caespitose; roots relatively coarse. Ramicaul suberect to erect, 3-7 cm long, enclosed by 6-8 long-ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, purple-reticulated, suborbicular, 12-13 mm long, 11-15 mm wide, the rounded apex obtusely apiculate, the rounded base contracted into a 2 mm long petiole. **Inflorescence** a subdense, distichous, successively flowered raceme up to 5 mm long, borne beneath the leaf by a filiform peduncle 5-9 mm long; floral bract 1 mm long; pedicel 1.5-2 mm long; ovary 2 mm long; **sepals** light yellow, ovate-triangular, carinate, acute, the

dorsal sepal white toward the base, 3 mm long, 1.75 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals 3 mm long, 1 mm wide, connate 0.75 mm; **petals** yellow, suffused with orange on the margins, glabrous, transversely bilobed, 0.8 mm long, 3.5 mm wide, with a broad, obtuse angle on the outer margin between the lobes, the lobes triangular, acute, the upper lobe broader; **lip** orange, suffused with rose, glabrous, the blades narrowly ovate, 2 mm long, the apices acute, microscopically ciliate medially, the bases round, the connectives short, cuneate, connate to the base of the column, the sinus cleft with a sigmoid, ciliate appendix, column 2 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: Cordillera del Condor, east of Guismé, alt. 1500 m, 18 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11911 (MO); above pass north of Gualaquiza, alt. 1800 m, 17 Feb. 1986, S. Dalström & T. Höjjer 1069 (MO); between Macas and Guamate, alt. 1750 m, 6 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12702 (MO).

Pastaza: epiphytic in cloud forest north of Tena, alt. 1500 m, March 1984, A. Hirtz 1769, (Holotype: MO), C. Luer illustr. 10028.

Tungurahua: between Río Verde and Río Negro, alt. 1500 m, 12 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11178 (MO).

Zamora-Chinchipec: Cordillera del Condor, east of Los Encuentros, alt. 1600 m, 4 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12626 (MO); same area, alt. 1550 m, 18 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13448 (MO).

This species is not uncommon in the forests of the eastern lowlands of Ecuador. The round, purple-reticulated leaves of this delicate, distinctive little species are borne by much longer, frail, long-ciliate stems. The subdense raceme is borne behind the leaf. The sepals and lobes of the petals are acute, the blades of the lip are narrowly ovate, and from the cleft sinus protrudes an S-shaped appendix.

Lepanthes didyma Luer & Hirtz, sp. nov.

Fig. 73.

Ety.: From the Greek *didymus*, "divided into two equal parts," referring to the shape of the petals.

Planta mediocris, inflorescentia cum racemo congestissimo disticho longipedicellata folio late elliptico obtuso brevior, sepalis ovatis subacutis, petalis grandibus transverse bilobis, lobis triangularibus divergentibus, labello bilobo laminis tantum infra medium oblongis columnam cingentibus ad apices appositis, connectivis nullis, appendice extus elongata sigmoidea pubescenti.

Plant medium in size, epiphytic, presumably caespitose. Ramicauls lacking a short distance below the leaf, lepanthiform sheaths minutely ciliate. **Leaf** presumably erect, coriaceous, broadly elliptical, obtuse, 2.5-3.5 cm long, 1.5-2.2 cm wide, the base cuneate into a petiole 1.5 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 5 mm long, borne behind the leaf by a slender peduncle 13-18 mm long; floral bracts imbricating, 1 mm long, muriculate; pedicel 2.5-3 mm long; ovary 3 mm long; **sepals** glabrous, the dorsal sepal ovate, acute, 3 mm long, 1.8 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, obtuse, 2.5 mm long, 1.5 mm wide, connate 0.4 mm, each 2-veined; **petals** microscopically pubescent, transversely bilobed, 1 mm long, 3 mm wide, the lobes nearly equal, triangular, diverging; **lip** bilobed with poorly formed laminae below the middle, cellular pubescent, elliptical-oblong, 1.8 mm long, with the apices and bases rounded, the apices in apposition below and in front of the column, the connectives lacking, the body broad, connate to the base of the column, the sinus closed with the appendix external, the appendix elongated, sigmoid, pubescent; **column** 1 mm long, the anther and stigma apical.

Pichincha: Río Toachi, alt. 1000 m, Feb. 1987, A. Hirtz 3189 (Holotype, MO), C. Luer illustr. 14724.

This species is apparently rare in an area that has been intensively collected, especially during the recent years, but it has been found but once by Hirtz. Unfortunately, only a leaf with inflorescence is preserved, the dried plant having disappeared. With the broadly elliptical, obtuse leaves and a very congested, long-pedicellate inflorescence, this species is superficially similar to the sympatric *L. pecunialis*. *Lepanthes didyma* is distinguished by the large petals with forked, diverging lobes, and a suborbicular lip that embraces the column and is cleft anteriorly. The appendix is long, sigmoid in profile, and pubescent.

Lepanthes disjuncta Luer & Hirtz, *Lindleyana* 2: 129, 1987.

Fig. 74.

Ety.: From the Latin *disjunctus*, "separate," referring to the free lobes of the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 15-33 mm long, enclosed by 6-10 ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, ovate, subacute, 8-15 mm long, 5-7.5 mm wide, the rounded or broadly cuneate base contracted into the petiole 1-1.5 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 8 mm long including the filiform peduncle 3-5 mm long; floral bract 0.75-1 mm long, sparsely pubescent; pedicel 1 mm long; ovary 1 mm long; **sepals** deep red with a yellow or green border, ovate, acute, carinate-spiculate, denticulate, the dorsal sepal 5 mm long, 2.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, acuminate, 4.5-5.5 mm long, 2 mm wide, 2-veined, connate 1 mm; **petals** bright orange-brown or yellow suffused with red medially, glabrous, transversely bilobed, 1 mm long, 3.5 mm wide, the lobes obliquely triangular, subacute, the upper lobe larger; **lip** bright orange-brown or red, bilobate, the blades narrowly oblong, concave, 2 mm long, the apex acute-acuminate, ciliate, the base rounded, the connectives narrowly cuneate, connate to the column above the base barely forming a body except for an oblong, bisegmented, pubescent appendix arising from the undersurface of the column; **column** slender, 2.5 mm long, the anther apical, the stigma ventral.

Morona-Santiago: epiphytic in wet forest southeast of Sigsig, alt. 2400 m, 13 Jan. 1989, *C. Luer, J. Luer, A. Jesup, P. Jesup, A. Hirtz & S. Ortega 13869* (MO); between Sigsig and Chiquinda, alt. 2000 m, 11 Aug. 1990, *A. Hirtz 5057* (MO).

Loja: epiphytic in cloud forest above Yangana north of the pass, alt. 2400 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10881* (Holotype: MO); Parque Nacional Podocarpus between Yangana and Valladolid, alt. 2600 m, 25 Jan. 1989, *J.E. Madsen 85671* (AAU, QCA).

Zamora-Chinchipe: epiphytic in cloud forest above Valladolid, alt. 2700 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10909, 10941* (MO); east of the pass east of Loja, alt. 2600 m, 21 Jan. 1992, *C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16065* (MO).

This little species is relatively frequent in the mountainous forests of southeast-Ecuador. It is identified by the ovate leaves that are eventually surpassed by a congested, distichous, successively flowered raceme of comparatively large, colorful flowers. The sepals are acute and minutely denticulate; the lobes of the petals are acute, the upper larger than the lower; the blades of the lip are narrowly ovate with acuminate apices; the narrow connectives meet at the base of the column barely forming a body where a bisegmented, pubescent appendix is borne.

Lepanthes dodsonii Luer, *Phytologia* 54: 340, 1983.

Fig. 75.

Ety.: Named in honor of Calaway H. Dodson, investigator of the flora of Ecuador, who discovered this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 15-30 mm long, enclosed by 8-12 ciliate, lepanthiform sheaths, widely dilated at the ostia. **Leaf** erect, coriaceous, pubescent-ciliate, reticulate-rugose, the elevated veins red on green, ovate-cordate, obtuse, 15-18 mm long, 13-17 mm wide, the base broadly cordate, abruptly contracted into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 5 mm long, borne by a filiform peduncle 6 mm long, on the dorsum of the leaf; floral bract 1 mm long; pedicel 1.5 mm long; ovary 1 mm long, ciliate on the ribs; **sepals** green, suffused with red centrally, denticulate, carinate-ciliate along the veins externally, the dorsal sepal ovate, obtuse, shortly acuminate, 5 mm long, 3.25 mm wide, connate 1 mm to the lateral sepals, the lateral sepals ovate, oblique, connate 2 mm, 6 mm long, 4 mm wide together, the acute apices attenuate; **petals** green, pubescent, transversely oblong, bilobed, 0.8 mm long, 4.5 mm wide, the upper lobe oblong, acute, the lower lobe smaller, narrowly acute; **lip** red, bilaminar, the blades narrowly oblong, 1.75 mm long, obtusely angled on the inner margin below the apex, minutely ciliate, the connectives short, cuneate, from the posterior portion of the blade, the body narrow, connate to the base of the column, the appendix flat, oblong, obtuse, ciliate; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Esmeraldas: northwest of Cristal, alt. 1450 m, 29 Dec. 1990, *C. H. Dodson & T. Neudecker 18616* (MO).

Imbabura: south of Lita, alt. 1250 m, collected Jan. 1967, flowered in cultivation by P. Jesup in Bristol, CT, *C. Luer 12853* (MO); southeast of Lita toward Santa Rosa de Cachaco, alt. 1300 m, 19 Mar. 1991. *C. Luer, J. Luer & A. Hirtz 15174* (MO).

El Oro: epiphytic in an orange tree 10 Km west of Piñas, alt. 900 m, 19 July 1979, *C. H. Dodson et al. 8475* (Holotype: SEL), *C. Luer 9085*; below Piñas, alt. 1200 m, Dec. 1984, *A. Hirtz 2218* (MO). Also Colombia (Antioquia, Risaralda)

This species is uncommon but widely distributed in Ecuador and Colombia. It is easily distinguished by the bluntly cordate, rugose-pubescent leaves often with red veins. Borne on top of the leaf is the green flower with acuminate, denticulate sepals; narrow, pubescent petals; narrow, angled blades of the lip with an oblong appendix.

Lepanthes dunstervilleorum Foldats, *Acta. Bot. Venez.* 3: 333, 1968. Fig. 76.

Ety.: Named in honor of Mr. and Mrs. Dunsterville, indefatigable collectors of Venezuelan orchids.

Syn.: *Lepanthes hispida* Luer & Escobar, *Orquideología* 16: 146, 1984.

Ety.: From the Latin *hispidus*, "hispid," referring to the particularly coarsely pubescent sheaths of the ramicauls of the clone described,

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5-18 cm long, enclosed by 10-16 ciliate (sometimes coarsely), lepanthiform sheaths with dilated ostia. **Leaf** erect, often suffused with purple beneath, coriaceous, elliptical-ovate, subacute, acuminate, 3-8 cm long, 1.5-4 cm wide, the base broadly cuneate or rounded, contracted into a petiole 3-5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 20 mm long, borne behind the leaf by a filiform peduncle 10-20 mm long, up to 3 flowers open simultaneously; floral bracts 1.5-2 mm long; pedicels 1-1.5 mm long; ovary 2 mm long; **sepals** light yellow to greenish white, sometimes suffused with light purple, carinate, glabrous, minutely denticulate, the dorsal sepal ovate, subacute, acuminate, 6-8 mm long, 3-4.5 mm wide, connate to the lateral sepals for 0.5-1 mm, the lateral sepals oblique, ovate, subacute to obtuse, acuminate, 6-8 mm long, 2.5-3.5 mm wide, connate 2-3 mm; **petals** yellow, suffused with red, brown or purple, minutely pubescent, transversely bilobed, 1-1.5 mm long, 3.5-4.5 mm wide, the upper lobe oblong with the apex variable from rounded to contracted on the medial half, the lower lobe obtusely triangular, shorter than the upper lobe, often with a small, obtuse, marginal angle between the lobes; **lip** rose to red-brown, bilaminate, the blades pubescent, oblong with rounded ends, 1.7-2 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse with the appendix more or less oblong with modifications, long-pubescent; **column** stout, 1.5 mm long, the anther apical and the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaceo and Limón, alt. 3180 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11807* (MO).

Also Venezuela (Táchira, type) and Colombia (Norte de Santander, Santander, Cundinamarca, Antioquia, Tolima, Quindío and Cauca).

This species is relatively frequent and widely distributed from Venezuela into Ecuador. It is variable in size, but most variable in the shape of the petals. The illustration published by Foldats with his description reflect very well some of the forms encountered in Ecuador. Dunsterville's illustration in the Venezuelan field guide was identified as the Ecuadorian *L. pteropogon* Rchb.f. The petals are relatively small with an oblong upper lobe that varies from obtuse to contracted medially into a short lobule; the lower lobe is obliquely triangular; and often a marginal angle exists between the lobes. Otherwise, the sepals are minutely denticulate and subacute-acuminate; and the blades of the lip are oblong and pubescent. The appendix ovoid, pubescent is modified in various ways throughout the range.

Lepanthes echo Luer & Hirtz, *Novon* 3: 447, 1993.

Fig. 77.

Ety.: Named for the mythological nymph Echo, the large flower remindful of *L. dalessandroi*.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-7 cm long, enclosed by 4-7 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 2.5-4.5 cm long, 0.8-1 cm wide, the base cuneate into a petiole 2-4 mm long. **Inflorescence** a subcongested, distichous, successively few-flowered raceme up to 10 mm long, borne beyond the leaf by a slender peduncle 4-5 cm long; floral bract 1.5-2 mm long, lightly muriculate; pedicel 1.5-2 mm long; ovary 2.5 mm long; **sepals** glabrous, the dorsal sepal triangular, acute, lightly acuminate, 17 mm long, 11 mm wide, connate to the lateral sepals for 4 mm, the lateral sepals connate 12 mm into a triangular synsepal 18 mm long, 11 mm wide, the apices in apposition, acute, lightly acuminate, free for 4 mm; **petals** minutely pubescent, transversely bilobed, 1 mm long, 4 mm wide, the upper lobe, ovate, oblique, acute, the lower lobe suboblong, incurved near the middle with the incurved apical portion thickened, the lower lobe thrice longer than the upper lobe; **lip** red, bilobed, pubescent, the lobes flabellate with rounded, thickened margins as rudimentary blades, 1.9 mm long, 3.6 mm wide expanded, the lobes (connectives) cuneate to form the narrow body, connate to the base of the column, the appendix small, oblong, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma apical.

Zamora-Chinchipe: epiphytic in forest near Nambija, alt. 1300 m, Feb. 1987, *A. Hirtz 3315* (Holotype MO), *C. Luer* illustr. 14712; same area, alt. 1300 m, June 1991, *A. Hirtz 5507* (MO).

This species is known only by the type-collection by Alexander Hirtz. It is similar to *L. dalessandroi*, known from nearby localities, but it is easily distinguished by the short, more or less congested raceme borne by a peduncle beyond the leaf. The flower is large, with the triangular dorsal sepal and synsepal spreading widely in opposite directions. The incurved, apical portion of the lower lobe of the petal is thickened. The blades of the lip consist merely of the thickened margins of fan-shaped lobes of the lip.

Lepanthes effusa Schltr., *Repert. Spec. Nov. Regni Veg.* 14: 126, 1915.

Fig. 78.

Ety.: From the Latin *effusus*, "spread out," referring to the loose inflorescence.Syn.: *Lepanthes millei* Schltr., *Repert. Spec. Nov. Regni Veg.* 14: 127, 1915.

Ety.: Named for Father Louis Mille of Quito, Ecuador, who collected this species.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-8 cm long, enclosed by 5-8 minutely ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical, obtuse, 1.5-3.5 cm long, 0.5-1.7 cm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a loose, flexuous, successively several- to many-flowered raceme up to 22 cm long including the slender peduncle 1-5 cm long; floral bracts 0.75-1.75 mm long; pedicels 1-2 mm long; ovary 1-1.5 mm long; **sepals** yellow, orange, orange-brown, red-brown, or brown, glabrous, the dorsal sepal triangular, concave below the middle, acute, 5-10 mm long, 3-5.5 mm wide, connate to the lateral sepals for 1-1.5 mm, the lateral sepals connate to near the apices into an ovate, acute, bifid lamina, 4.75-11 mm long, 3-6 mm wide; **petals** yellow with purple on edge or base, minutely pubescent, transversely bilobed, 1-1.5 mm long, 3.75-4.75 mm wide, the lobes oblong, obtuse, oblique, the lower lobe smaller; **lip** yellow, suffused with purple, bilaminar, the blades oblong with the ends rounded, more or less concave, minutely ciliate, 1.3-2 mm long, the connectives narrow, obliquely backward from the base of the blade to the base of the column, the body narrow, the appendix minute, triangular; **column** terete, 1 mm long, the anther apical, the stigma ventral.

Imbabura: Selva Alegre, alt. 3000 m, 7 Feb. 1979, *C. Luer, J. Luer & A. Hirtz 3872, 3873* (SEL); same area, 2600 m, Apr. 1984, *A. Hirtz 1680* (MO); same area, alt. 2850 m, 6-7 Apr. 1984, *C. Luer, S. Dalström & T. Höjjer 9979, 9984, 9997* (MO).

Pichincha: valley of Lloa, near Palmira, July 1873, *A. Sodiro 25* (Holotype destroyed at B); Lloa, alt. 2750 m, 5 Nov. 1984, *A. Hirtz 2057* (Lectotype here designated: MO); without locality, epiphytic in subandine forest, alt. 2600 m, *L. Mille 8* (type of *L. millei*: B, destroyed); between Calacalí and La Libertad, alt. 2400 m, 7 Apr. 1984, *C. Luer, S. Dalström, T. Höjjer & A. Hirtz 9994* (MO); west of Calacalí, alt. 2100 m, 4 Apr. 1985, *C. Luer, J. Luer, A. Hirtz, C. Dodson & P. Dodson 11038A* (MO); West Illiniza, alt. 2700 m, 20 Oct. 1984, *A. Hirtz 2035* (MO); west slopes of Volcán Illiniza, Cerro Azul, alt. 2800-

2900 m, 23 Jan. 1987, *C. Luer, J. Luer & A. Hirtz 12452* (MO); Pasachoa, alt. 3300 m, Feb. 1984, *A. Hirtz 1551* (MO); Ruminiahui, Pasachoa, alt. 2800-3500 m, 7 Feb. 1988, *C. Cerón & R. Alarcón 3548* (MO).

Bolívar: cloud forest at the pass north of Chillanes, alt. 2650 m, 25 Mar. 1984, *C. Luer, S. Dalström, T. Höijer, A. Hirtz & J. Kuijt 9720* (MO); south of San Miguel, alt. 2650 m, 25 Mar. 1984, *C. Luer, S. Dalström, T. Höijer, A. Hirtz & J. Kuijt 9695* (MO).

Morona-Santiago: Sigsigpamba, alt. 2700 m, 9 Feb. 1979, *C. Luer, J. Luer & A. Hirtz 3945* (SEL).

This species occurs locally on both sides of the Andes of Ecuador. It is characterized by elliptical leaves and relatively large flowers borne in a loose, flexuous raceme. The size of the plant, the length of the inflorescence, and the size of the flowers vary considerably. Sometimes the tip of an entire raceme with small flowers barely surpasses the leaf, but usually the raceme does not begin to bear flowers until beyond the leaf. Schlechter described simultaneously a small-flowered form as *L. millei* following a description of a larger-flowered form as *L. effusa*.

The flowers of *.effusa* are distinguished by an acute dorsal sepal and a similar but shortly bifid synsepal. Their non-caudate apices easily distinguish *L. effusa* from other similar species with loose racemes (some forms of *L. capitanea*, *L. corkyae*, *L. delhierroi*, and *L. schizix*). The lobes of the petals are narrowly oblong and opposite. The blades of the lip are oblong and borne by narrow, obliquely backward connectives from their bases.

Lepanthes ejecta Luer & Hirtz, *Die Orchidee* 38: 36, 1987.

Fig. 79.

Ety.: From the Latin *ejectus*, "cast out," referring to the appearance of the raceme borne beyond the apex of the leaf.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls very slender, erect to suberect, 5-13 cm long, enclosed by 8-13 tightly fitting lepanthiform sheaths with microscopically ciliate, dilated ostia. **Leaf** sub-erect to spreading, thinly coriaceous, ovate, acute, long-acuminate, 3-4.5 cm long, 1.2-1.8 cm wide, the base cuneate into the petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 20 mm long, borne often beyond the apex of the leaf by a filiform peduncle 25-42 mm long on top of the leaf; floral bract 1 mm long; pedicel 2.5 mm long; ovary 1 mm long; **sepals** light orange, ovate, acute, the dorsal sepal 4 mm long, 3 mm wide, connate to the lateral sepals for less than 1 mm, the lateral sepals oblique, 4 mm long, 2 mm wide, connate 2 mm; **petals** red-orange, microscopically pubescent, transversely bilobed, 1 mm long, 4 mm wide, the lobes subequal, narrowly triangular, narrowly obtuse; **lip** dark red, shortly pubescent, bilaminar, the blades suborbicular, ciliate, 1 mm long, the connectives thick, oblong, connate to the base of the column, the obtuse sinus with a comparatively large, pubescent, triangular, concave appendix; column stout, 0.8 mm long, the anther apical, the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest above Valladolid, alt. 2450 m, 17 March 1984, *C. Luer, S. Dalström, T. Höijer, J. Kuijt & D. D'Alessandro 9589* (Holotype: MO); same area, 23 March 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10935* (MO); Nudo de Sabanilla, alt. 2400 m, 20 Jan. 1986, *S. Dalström & T. Höijer 1080* (MO).

This species is one of several characterized by an elongated peduncle with the densely flowered raceme hanging over the acuminate apex of the leaf, a characteristic similar to that of *L. vespertilio* Rchb. f. *Lepanthes ejecta* is distinguished by the ovate, glabrous sepals; transversely narrowly bilobed petals; ciliate, suborbicular blades of the lip with a cymbiform appendix. It is locally abundant in cloud forests of southern Ecuador.

Lepanthes elaminata Luer & Hirtz, *Lindleyana* 2: 132, 1987.

Fig. 80.

Ety.: From the Latin *elaminatus*, "without lamina," referring to the lateral lobes of the lip that do not form distinct laminae.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-5 mm long, enclosed by 6-10 microscopically ciliate-scabrous, lepanthiform sheaths. **Leaf** more or less spreading, coriaceous, ovate, acute, lightly acuminate, 16-22 mm long, 7-15 mm wide, the rounded base contracted into a petiole 1.5 mm long. **Inflorescence** a dense, distichous, successively several-flowered raceme up to 10 mm long, borne on top of the leaf or shortly beyond the apex by a filiform peduncle 10-25 mm long; floral bracts 1 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** light yellow, more or less suffused with purple, carinate, ovate, acute, lightly acuminate, the dorsal sepal 3 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, sparsely denticulate, 3 mm long, 1.5 mm wide, connate 1 mm; **petals** yellow, microscopically pubescent, transversely bilobed, 0.6 mm long, 2 mm wide, the upper lobe obliquely oblong, subacute, with an obtuse angle on the inner margin, the lower lobe triangular, acute; **lip** purple, microscopically pubescent, bilobed, the lobes thickened, ovate, acute at the apex, obtuse at the base, 1 mm long, the connectives cuneate, forming a broad body, connate to the base of the column, the appendix small, oblong, pubescent; **column** 1 mm long, the anther and the stigma apical.

Imbabura: Los Cedros Reserve, wet forest, alt. 2100 m, 26 Jan. 1993, S. Dalström, T. Höijer & H. Wannorp 1771 (MO).

Pichincha: epiphytic in cloud forest near Mindo, alt. 2000 m, 6 Dec. 1984, A. Hirtz 2149 (Holotype: MO), C. Luer illustr. 11505.

Lepanthes elaminata is apparently infrequent and confined to the forests of the western slopes of northern Ecuador. It is identified by the small habit, and spreading ovate leaves with the congested raceme of little flowers reaching or overhanging the tip. The thickened, ovate lobes of the lip flank the sides of the column, but they are not developed into blades that cover the column. A small, oblong appendix is present.

Lepanthes electilis Luer, *Phytologia* 54: 341, 1983.

Fig. 81.

Ety.: From the Latin *electilis*, "choice," alluding to the attractive qualities of the plant.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, enclosed by 5-9 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-ovate, acute, acuminate, 2.5-7.5 cm long, 1-2.8 cm wide, the base broadly cuneate into a pedicel 3-5 mm long. **Inflorescence** a progressively lengthening, lightly flexuous, distantly-flowered raceme up to 15 cm long including the peduncle about half as long as the leaf, 1-2 flowers open simultaneously, 1-2 racemes produces simultaneously; **sepals** rosy white or yellow-white, glabrous, triangular, acute, the dorsal sepal 4-5.5 mm long, 2.5-3.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 3 mm into a triangular, bifid lamina 4-5.5 mm long, 3-4 mm wide together, the apices acute; **petals** transversely oblong, bilobed, 1 mm long, 3.5 mm wide, microscopically pubescent, the upper lobe dark purple, ovate, obtuse, the lower lobe yellow, smaller, triangular, narrowly obtuse; **lip** dark rose or yellow, bilaminar, the blades lunate, convex, 1.66 mm long, microscopically pubescent, the ends rounded, the connectives short, broadly cuneate, the body broad, connate to the column near the middle, the appendix broadly triangular, ciliate; **column** 1.5 mm long, the anther apical, the stigma ventral.

Napo: epiphytic in cloud forest east of Salcedo, alt. 3000 m, 12 Nov. 1979, C. Luer, J. Luer & A. Hirtz 4766 (Holotype: SEL).

Tungurahua: Cordillera de los Llanganates, alt. 3000 m, 18 Nov. 1984, A. Hirtz 2123 (MO), C. Luer illustr. 10511.

Morona-Santiago: Saraguro, alt. 2400 m, 5 Jan. 1995, A. Hirtz, X. Hirtz & E. Sanchez 6091 (MO).

This species is uncommonly collected, apparently restricted to forests at a high altitude on the eastern declivities of central Ecuador. It is distinguished by the loose raceme that exceeds the leaf in length; triangular, entire, acute sepals; transversely oblong petals; and broad labellar blades with short connectives and an oblong appendix.

Lepanthes elegantula Schltr., Repert. Spec. Nov. Regni Veg. 14: 127, 1915. Fig. 82
 Ety.: From the Latin *elegantulus*, "elegant," referring to the large-flowered inflorescence.

Plant medium to relatively large in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-8 cm long, enclosed by 5-8 minutely ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 3-4 cm long, 1-1.7 cm wide, the base cuneate into a petiole 2-4 mm long. **Inflorescence** a loose, strict, successively several- to many-flowered raceme up to 15 cm long including the slender peduncle 5-6 cm long; floral bracts 1.5-2 mm long; pedicels 1.5-2 mm long; ovary 1.5-2 mm long; **sepals** brown, glabrous, the dorsal sepal triangular, acute, long-acuminate, 16-18 mm long, 7-8 mm wide, 3-veined, connate to the lateral sepals for 2 mm, the lateral sepals connate ca. 10 mm into an ovate, acute, long-acuminate lamina, 16-20 mm long, 7-8 mm wide, with the free portions narrowly acute, 4-5 mm long; **petals** yellow or orange-brown, microscopically pubescent, transversely bilobed, 1.5 mm long, 4 mm wide, the lobes oblong with rounded apices, the lower lobe slightly smaller; **lip** yellow or orange-brown, bilaminate, the blades oblong-obovate with the ends rounded, minutely ciliate, 2.25 mm long, the connectives broadly cuneate, from the middle of the blade, the body connate to the base of the column, the appendix narrowly triangular, acute; **column** terete, 2 mm long, the anther apical, the stigma ventral.

Pichincha: in forests of Mt. Corazón and Mt. Pichincha, May 1885, *A. Sodiro 24* (Holotype: destroyed at B); West Iliniza, alt. 2800 m, 5 Nov. 1984, *A. Hirtz 2063* (Lectotype here designated: MO); Mt. Corazón, alt. 3000 m, collected by A. Hirtz, 17 Oct. 1979, *C. Luer 4385* (SEL).

Pastaza: Cordillera de Llanganates, above Triunfo, collected by Monica and Fernando Navarro, flowered in cultivation in Quito, 24 Mar. 1991, *C. Luer 15260* (MO).

This species occurs locally at high altitudes in central Ecuador. It is very similar to *L. capitanea* and could be considered to be nothing more than an exceptionally large-flowered variation. It is distinguished from the latter by the larger habit with twice larger leaves; a loose, strict rachis; and larger, bilabiate flowers with acuminate sepals about 17 millimeters long with free apices of the lateral sepals. The sepals of *L. capitanea* are less than 12 millimeters long, usually about nine, and the sepals are merely acute with the apex of the synsepal barely bifid.

Lepanthes elephantina Luer & Escobar, Orquideología 16: 141, 1984. Fig. 83
 Ety.: From the Latin *elephantinus*, "of an elephant," referring to the tusklike blades of the lip.

Plant medium to large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 5-19 cm long, enclosed by 7-12 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, suffused with purple beneath, elliptical, 3.5-6 cm long, 1.7-2.6 cm wide, the apex obtuse, contracted into a narrow, apical segment 1-1.5 cm long, mucronate, the base rounded, contracted into a petiole 3-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 3.5 cm long, borne behind the leaf by a slender peduncle 1-1.5 cm long; floral bract 1.5 mm long; pedicel 1 mm long; ovary 2 mm long; **sepals** purple, edged in yellow, denticulate, the dorsal sepal ovate-triangular, acute, acuminate, 7.5 mm long, 4.5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals narrowly triangular, oblique, acute, 8 mm long, 2.25 mm wide, connate 1 mm; **petals** bright rose, minutely pubescent, transversely bilobed, 0.8 mm long, 4 mm wide, the upper lobe narrowly oblong, obtuse, the lower lobe very short, subquadrate, truncate; **lip** bright rose, bilaminate, the blades glabrous, narrowly ovate, acute, narrowly acuminate, incurved, 3 mm long, obtuse at the base, the connectives narrowly cuneate, from the center of the blades, the body narrow, connate to the column near the base, the sinus obtuse, traversed by a broad membrane with a minute, slender, clavate, pubescent appendix; **column** stout, 2 mm long, the anther dorsal, the stigma ventral.

Imbabura: above Mariano Acosta, near Nueva America, alt. 3400-3500 m, 11 Mar. 1996, *S. Dalström, S. Ingram & K. Ingram-Ferrell 2095* (MO).

Also Colombia (Nariño, type).

This species of high altitudes was first found on Volcán Galeras in the nearby province of Nariño, Colombia. It is characterized by a congested raceme shorter than the elliptical, acuminate leaf. The sepals are acute and denticulate, and the upper lobes of the petals are erect and narrowly oblong while the lower lobes are very short and broad. The blades of the lip are narrowly ovate with attenuated apices that more or less curve up resembling minute elephant-tusks.

Lepanthes elongata Luer & Hirtz, *Lindleyana* 2: 99, 1987.

Fig. 84.

Ety.: From the Latin *elongatus*, "elongated," referring to the length of the ramicauls, inflorescence and upper lobes of the petals.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 8-23 cm long, enclosed by 8-13 closely fitting, microscopically ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly ovate, acute, 4-9 cm long, 1-1.7 cm wide, the base cuneate into a petiole 5-10 mm long. **Inflorescence** a loose, flexible, strict, successively many-flowered raceme up to 30 cm long including the slender peduncle 8-15 cm long, distantly flowered below, subdensely flowered above; floral bracts oblique, 2-3 mm long; pedicels 1.5-2 mm long; ovary costate, 1 mm long; **sepals** red-purple, with the margins entire, ovate, acute, acuminate, the dorsal sepal 5-7 mm long, 3-4 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 5-7.5 mm long, 2-2.5 mm wide, connate 1.5-2.5 mm; **petals** red-purple, glandular-cellular, transversely bilobed, 0.75-1 mm long, 3-4 mm wide, the lobes triangular, oblique, long-acuminate, the upper lobe longer; **lip** red-purple, bilaminar, the laminae shortly pubescent, ovate, convex, obtuse, 1.5 mm long, the connectives broad, short, the body broad, connate to the column above the base, the sinus obtuse with a pubescent, triangular appendix; **column** 1.5 mm long, the anther apical, the stigma ventral.

Pichincha: "Andes of Quito," *W. Jameson s.n.* (W).

Napo: epiphytic in cloud forest near Papallacta, alt. 2700 m, May 1984, *A. Hirtz 1811* (Holotype: MO), *C. Luer* illustr. 11521; same area, alt. 3000 m, 29 Oct. 1979, *C. Luer, J. Luer & A. Hirtz 4429* (SEL); east of the pass east of Salcedo, alt. 3100 m, 12 Nov. 1979, *C. Luer, J. Luer & A. Hirtz 4772* (SEL); Salcedo-Napo road, Río Anatenario, alt. 2800 m, 27 May 1979, *B. Løjnant, A. & U. Molau 13814* (AAU, GB).

Also Colombia (Nariño).

This species of the high, eastern slopes of the Andes of northcentral Ecuador and southern Colombia is distinguished by the long ramicauls, narrowly ovate leaves, and a long, straight, many-flowered inflorescence borne by a peduncle as long as or much longer than the leaf. Low in the raceme the flowers are distant, but high in the raceme the flowers are borne much more closely together, and sometimes two or three flowers open simultaneously. The upper lobes of the petals are long-acuminate. The lip is very similar to that of *L. biloba* Lindl., which also has long inflorescences, but they are flexuous and borne by short peduncles.

Lepanthes embreei Luer & Hirtz, *Lindleyana* 2: 132, 1987.

Fig. 85.

Ety.: Named in honor of Alvin Embree of Altadena, California, co-discoverer of this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 2-6 cm long, enclosed by 6-11 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, reticulated in purple beneath, ovate, subacute, 17-28 mm long, 10-17 mm wide, the rounded base contracted into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 5-6 mm long; floral bract 0.75-1.25 mm long, echinate; pedicel 1 mm long; ovary 1.5 mm long; **sepals** denticulate, ovate, subacute, the dorsal sepal deep red with green margins, 2.25-3 mm long, 1.75-2 mm wide, connate to the lateral sepals for ca. 0.5 mm, the lateral sepals yellow, 2-3 mm long, 1.4 mm wide, connate 0.5-1 mm; **petals** orange, suffused with red marginally, microscopically pubescent, transversely bilobed, 0.6-1 mm long, 1.9-2 mm wide, the upper lobe oblong, truncate, the lower lobe triangular; **lip** red-orange, bilaminar, the laminae microscopically pubescent, elliptical with rounded ends, 1.5 mm long, the connectives cuneate, the body narrow, connate to the base of the column, the sinus obtuse, with an ovoid, pubescent appendix more or less transversely partially divided; **column** 1 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest along Río Cascales east of Lumbaqui, alt. 450 m, 9 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11752* (Holotype: MO).

Morona-Santiago: Cordillera del Cuncú, epiphytic in forest along the new road between Mendez and Morona, alt. 950 m, 17 Jan. 1989, *C. Luer, J. Luer, P. Jesup, A. Jesup, A. Hirtz & S. Ortega 13965* (MO).

This species from low altitudes of southeastern Ecuador including the Cordillera del Cutucú is identified by the congested raceme of an inflorescence shorter than the purple-reticulated leaves; ovate, denticulate sepals; petals with the upper lobe rectangular-truncate; oblong blades of the lip with a bisegmented, long-pubescent appendix. The hairy appendix is held beneath the stigma as if to entice a pollinator.

Lepanthes eriocampa Luer & Hirtz, sp. nov

Fig. 86.

Ety.: From the Greek *eriokampe*, "wooly caterpillar," referring to the appearance of the appendix.

Planta mediocris, inflorescentia cum racemo congestissimo secundo folio late ovato purpureo suffuso breviori, sepalis late ovatis acutis glabris, petalis grandibus transverse bilobis cum lobulo marginali parvo acuto deflexo, lobo superiore late rotundato, lobo inferiore minore triangulari, labelli laminae lunatis minute pubescentibus, connectivis oblongis, appendice vermiformi deflexa pubescenti.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-10 cm long, enclosed by 5-11 ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, reticulated in purple beneath, broadly ovate, obtuse, shortly acuminate, 3.5-5.5 cm long, 18-32 mm wide, the rounded base abruptly contracted into a petiole 2 mm long. **Inflorescence** a very congested, secund, successively several-flowered raceme up to 5 mm long, borne behind the leaf by a slender peduncle 3-16 mm long; floral bract 1 mm long; pedicel 2 mm long; ovary 1 mm long; **sepals** translucent orange, broadly ovate, obtuse, glabrous, the dorsal sepal 3 mm long, 2.6 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, abruptly short-acuminate, 2.5 mm long, 1.75 mm wide, 2-veined, connate 1.5 mm; **petals** brown, minutely pubescent, transversely bilobed, 1.5 mm long, 2.6 mm wide, with a small, deflexed marginal lobule on the outer margin below the middle, the upper broadly rounded, the lower lobe triangular; **lip** dull purple, bilaminar, the laminae lunate with the inner margins in apposition, covering the column, minutely pubescent, 1.6 mm long, the connectives oblong, the body broad, connate to the base of the column, the appendix wormlike, deflexed, bisegmented, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: Cordillera del Cutucú, epiphytic in forest along the new road between Mendez and Morona, alt. 750 m, 18 Jan. 1989, *C. Luer, J. Luer, P. Jesup, A. Jesup, A. Hirtz & S. Ortega 13879* (Holotype: MO).

This species from a low altitude in the Cordillera del Cutucú is identified by the very congested raceme of an inflorescence shorter than the broad, thinly coriaceous leaves; broadly ovate, glabrous sepals; large petals with the upper lobe broadly rounded; lunate blades of the lip covering the column, and a hinged, hairy, worm-like appendix reminiscent of the bait of an angler fish.

Lepanthes eruca Luer & Hirtz, *Lindleyana* 2: 135, 1987.

Fig. 87.

Ety.: From the Latin *eruca*, "a caterpillar," referring to the appearance of the appendix.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-11.5 cm long, enclosed by 7-11 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, acute, suffused with purple beneath and along the margins above, 3-6 cm long, 1.3-2.8 cm wide, the rounded base contracted into a petiole 2 mm long. **Inflorescence** a dense, distichous, successively many-flowered raceme up to 15 mm long, borne beneath the leaf by a filiform peduncle 6-18 mm long; floral bracts 1 mm long, echinate; pedicels 1.5-2.5 mm long; ovary 2.5 mm long; **sepals** yellow, suffused with purple medially, carinate, ovate, subacute, the dorsal sepal 5 mm long, 3.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, denticulate, 4.5 mm long, 2.75 mm wide, connate 1.5 mm; **petals** orange with the border red, minutely pubescent, transversely bilobed, 1.5 mm long, 4 mm wide, the upper lobe obliquely triangular, subacute, with an obtuse angle on the inner margin, the lower lobe broadly uncinat, obtuse; **lip** red, bilaminar, the blades ovate, obtuse, flat, microscopically pubescent, 2.4 mm long, the connectives shortly cuneate, connate to the column above the base barely forming a body, the appendix oblong-sigmoid, pubescent; **column** 2 mm long, the anther dorsal and the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest, Cajanuma Range, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10753* (Holotype: MO).

This pretty, purple-leaved species is locally abundant, but apparently restricted to one mountain range. The sepals are ovate, the laterals denticulate. The upper lobe of the petals is broadly angled medially, and the lower lobe is broadly unciniate. The connectives barely unite at their junction with the column where a caterpillar-like appendix is found. The non-union of the connectives suggests a relationship with a couple other species found nearby (*L. chorista* and *L. disjuncta*).

***Lepanthes esmeralda* Luer & Hirtz, Die Orchidee 43: 15, 1992.**

Fig. 88.

Ety.: From the Spanish *esmeralda*, "an emerald," referring to the large, green petals, and for the province of Esmeraldas where the species was discovered,

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-2.5 cm long, enclosed by 5-7 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, suffused with purple beneath, coriaceous, ovate, acute, 22-28 mm long, 12-15 mm wide, the cuneate broadly base contracted into a petiole ca. 3 mm long. **Inflorescence** a dense, distichous, successively many-flowered raceme up to 10 mm or more long, borne behind the leaf by a filiform peduncle 11-20 mm long; floral bracts 1.5 mm long, echinate; pedicels 1.5 mm long; ovary 2 mm long; **sepals** light orange, carinate, glabrous, broadly ovate, obtuse, abruptly and shortly acuminate, the dorsal sepal 3 mm long, 2.8 mm wide, connate to the lateral sepals for 0.75 mm, the lateral sepals transversely ovate, oblique, 3 mm long, 3.25 mm wide, connate 1.5 mm; **petals** emerald green, suffused along the inner margin with purple, transversely bilobed, 1.75 mm long, 3.5 mm wide, the upper lobe obliquely ovate, rounded, the lower lobe smaller, narrowly triangular; **lip** green with the inner margin red, bilaminiate, the blades narrowly oblong, adherent medially to each other over the column, 2 mm long, with the bases rounded and the apices narrowly acute, the connectives broad, from above the middle of the blades, the body broad, protuberant, pubescent, connate to the column above the base, the appendix small, pubescent, bifurcate; **column** 2 mm long, the anther and stigma apical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12364 (Holotype: MO).

This colorful species, recently discovered in the orchid-rich lowlands of north-western Ecuador by Alexander Hirtz, is easily recognized by the very broad, oblique, shortly acuminate lateral sepals; the large, bright emerald green petals; and an emerald green lip with oblong blades red along the inner border and adherent over the column. The body of the lip is protuberant with a small, bifid appendix.

***Lepanthes eumeces* Luer, Phytologia 54: 342, 1983.**

Fig. 89.

Ety.: From the Greek *eumekes*, "of good length," referring to the exceedingly long inflorescence.

Plant very small, epiphytic, caespitose; roots slender but coarse for the plant. Ramicauls abbreviated, 2-4 mm long, enclosed by 2-3 microscopically ciliate, ribbed sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 8-15 mm long including a petiole 1-5 mm long, 5-7 mm wide, the base cuneate. **Inflorescence** a progressively lengthening, flexible, loose, lightly flexuous raceme up to 17 cm long including the filiform peduncle, 2-3 cm long, 2-3 flowers open simultaneously; floral bract 1-1.5 mm long; pedicel 1.5-2 mm long; ovary 0.75 mm long, spiculate; **sepals** dull red-brown, the margins and carinae along the wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblong, oblique, obtuse, abruptly short-acuminate, connate 2 mm, 3.75 mm long, 3.75 mm wide together, each 1-veined; **petals** red-brown, microscopically pubescent, transversely narrowly oblong, bilobed, 0.5 mm long, 3.5 mm wide, the lobes subequal, lightly curved, obtuse; **lip** red-brown, bilaminiate, the blades narrowly oblong with rounded ends, the apices sparsely long-ciliate, the connectives short, broadly cuneate, the body broad, connate to the basal third of the column, the appendix minute, pubescent, double, the anterior of the two parts clavate, protruding beyond the sinus; **column** 0.75 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest between Tena and Baeza, alt. 1000 m, 23 Feb. 1982, C. Luer & A. Hirtz 6974 (Holotype: SEL).

This little species is related to the sympatric, but larger-flowered *L.* . Both species occur rarely on the eastern slopes of the Andes of central Ecuador at relatively low altitudes. *Lepanthes eumeces* is distinguished by the exceedingly long, loose inflorescence far surpassing the tiny leaves; obtuse, abruptly short-acuminate sepals; single-veined lateral sepals; narrow, transverse petals; oblong blades of the lip with long-ciliate apices; and a pair of minute appendices, one behind the other.

***Lepanthes evansiae* Luer & Hirtz, sp. nov.**

Fig. 90.

Ety.: Named for Mary Evans of Quito, Ecuador, co-discoverer of this species.

Planta parva, inflorescentia congesta disticha longipedicellata parviflora folio ovato plus minusve aequilonga, sepalis acuminatis, petalis bilobis minutis, labello bilobo lobis triangularibus minutis, appendice oblonga pubescenti.

Plant small, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 20-35 mm long, enclosed by 7-8 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, acute, 20-23 mm long, 7-10 mm wide, the base cuneate into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme, up to 8 mm long, borne behind the leaf by a slender peduncle 10-15 mm long; floral bracts 1 mm long, muricate; pedicels 2-3 mm long; ovary 0.75 mm long; **sepals** yellow, suffused with rose medially, carinate externally along the veins, the dorsal sepal oblong-ovate, acute, lightly contracted in the distal third, 2.5 mm long, 1 mm wide, 3-veined, connate to the lateral sepals for 0.25 mm, the lateral sepals ciliate on the outer margin near the base, triangular, oblique, acute, acuminate, 2.75 mm long, 1 mm wide, 2-veined, essentially free, spreading; **petals** red, microscopically pubescent, transversely bilobed, 0.25 mm long, 1.2 mm wide, the upper lobe obliquely oblong, obtuse, the lower lobe longer, triangular, narrowly obtuse; **lip** red, cellular-pubescent, bilobed, the lobes triangular with the outer margin thickened, 0.75 mm long, the apex and base narrowly rounded, the body connate to the base of the column, the sinus protuberant with a minute, oblong, pubescent appendix; **column** stout, 0.75 mm long, the anther and stigma apical.

Bolivar: epiphytic wet virgin forest west of La Palma, alt. 1250 m, 10 Mar. 1991, *C. Luer, J. Luer, A. Hirtz, X. Hirtz, F. Navarro, M. Navarro, J. Del Hierro & M. Evans 14972* (Holotype: MO).

The lobes of the very small lip of this species have not evolved well-developed laminae, the outer margin being merely thickened. Similar poorly developed blades are seen in *L. kuijittii*, and *L. elaminata*. Otherwise, *L. evansiae* is characterized by congested, distichous, long-pedicellate raceme that eventually surpasses the leaf. The sepals are narrow and acute, and the petals are minute. The stout column is larger than the lip.

***Lepanthes exogena* Luer & Hirtz, Novon 3: 448, 1993.**

Fig. 91.

Ety.: From the Latin *exogenus*, "on the outside," referring to the appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-3 cm long, enclosed by 5-8 lepanthiform sheaths with conspicuously dilated, ciliated ostia. **Leaf** erect, coriaceous, broadly ovate, subacute to obtuse, 7-13 mm long, 7-12 mm wide, the rounded base contracted into a petiole 1.5-2 mm long. **Inflorescence** a loose, flexuous, distichous, successively many-flowered raceme up to 12 cm long, borne by a filiform peduncle about the length of the leaf; floral bract 1.25-2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** dark red with green, denticulate margins, carinate-denticulate externally, ovate, acute, the dorsal sepal 4-5 mm long, 2.5-3.3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4-5 mm long, 1.5-2 mm wide, connate 1 mm; **petals** orange, transversely bilobed, 0.5 mm long, 3 mm wide, the upper lobe obliquely oblong, obtuse, the lower lobe broadly oblong with the apex rounded; **lip** yellow, glabrous (microscopically cellular-pubescent), bilaminar, the blades ovate, the apex narrowly obtuse, 2 mm long, the connectives cuneate, short, forming a narrow body, connate to the base of the column, the appendix ovoid, pedunculate, pubescent, originating externally at the base of the body; **column** 2 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest south of Yangana south of the pass, alt. 2450 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz, W. Flores 10944 (Holotype: MO); same area, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10852 (MO); same area, May 1985, A. Hirtz 2632 (MO); above Valladolid on road to Yangana, alt. 2700 m, 2 Feb. 1985, G. Harling & L. Andersson 21463 (GB).

This little species with long, loose, flexuous racemes has small, red flowers with green or yellow margins, very similar to those of *L. disjuncta* from the same area. *Lepanthes disjuncta*, however, has short, congested racemes. The connectives of the lip of *L. exogena* form a narrow body with the appendix located externally at the base. The connectives of the lip of *L. disjuncta* are not united into a body, the similar appendix originating from beneath the column in approximately the same position as that of *L. exogena*.

***Lepanthes expansa* Luer & Hirtz, sp. nov.**

Fig. 92.

Ety.: From the Latin *expansus*, "spread out," referring to the widely expanded petals.

Planta parvula caespitosa, inflorescentia racemosa congesta folio elliptico brevior, sepalis ovatis obtusis, petalis transverse lobatis minute pubescentibus expansis, lobo superiore triangulo acuto, lobo inferiore anguste triangulo-falcato, labelli laminis ellipticis brevipubescentibus, connectivis late oblongis, corpore lato, appendice crassa oblonga pubescenti.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-3 cm long, enclosed by 5-7 minutely ciliate, lepanthiform sheaths. Leaf spreading, coriaceous, elliptical, acute, purplish, 8-13 mm long, 4-6 mm wide, the cuneate base contracted into a petiole 1 mm long. Inflorescence a congested, successively several-flowered raceme up to 2 mm long, borne on top of the leaf by a filiform peduncle 2-4 mm long; floral bracts 0.75 mm long; pedicels 1 mm long; ovary 1 mm long; dull white, elliptical, obtuse, the dorsal sepal 2.5 mm long, 1.5 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, subacute, 2.5 mm long, 1.25 mm wide, connate 1 mm; petals bright dark purple, transversely bilobed, 1 mm long, 4 mm wide, the upper lobe triangular, acute, the lower lobe narrowly triangular-falcate, acute; lip bright dark purple, bilaminate, the blades minutely pubescent, convex, elliptical with rounded ends, 1.25 mm long, the connectives broadly oblong, from the blades below the middle, the body broad, connate to the base of the column, the appendix broad, thick, oblong, pubescent; column 1 mm long, the anther subapical, the stigma ventral.

Esmeraldas: epiphytic in wet forest west of Lita, alt. 750 m, 18 Jan. 1985, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12414 (Holotype: MO); west of Lita, alt. 800 m, 13 Aug. 1986, A. Hirtz 2961 (MO).

This very small species was recently discovered by Alexander Hirtz in the wet, lowland forest of northwestern Ecuador. The flowers with bright purple, widely spread petals, are large compared to the small, spreading leaf upon which they lie. The lower lobes of the petals are prominently falcate. The blades of the lip are convex and minutely pubescent.

***Lepanthes filamentosa* Luer & Hirtz, Novon 3: 448, 1993.**

Fig. 93.

Ety.: From the Latin *filamentosus*, "filamentous," referring to the long-acuminate sepals and lobes of the petals.

Plant minute, epiphytic, caespitose; roots comparatively thick. Ramicauls erect, slender, 4-10 mm long, enclosed by 3-5 microscopically ciliate, lepanthiform sheaths. Leaf erect, coriaceous, elliptical, 3-7 mm long, 2.5-5 mm wide, the apex obtuse to subacute, prominently apiculate, the margins microscopically cellular-ciliate, the base cuneate into a petiole up to 1 mm long. Inflorescence a subdense, distichous, successively several-flowered raceme up to 7 mm long, borne by a filiform peduncle 10-18 mm long; floral bracts 1-1.5 mm long, muciculate; pedicels 1.5-2.5 mm long; ovary 1 mm long, with the ribs cellular-papular; sepals yellow to white suffused with purple centrally, carinate, ovate, with the acute apices extremely long-attenuate, the dorsal sepal 10-17 mm long, 1.25-1.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 10-16 mm long, 1-1.25 mm wide, connate 0.5 mm; petals yellow, bifurcate 1 mm above the base, the divisions filiform, 3-5.5 mm long; lip yellow, gla-

brous, bilobed, the lobes auricular, 1.25 mm long, with the half above the column thickened to form an ill-defined lamina, the half below the middle falcate with broadly rounded, incurved, overlapping apices, without an appendix, the body connate to the base of the column; **column** 1 mm long, the anther and the stigma apical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Bermudez & D. Bermudes 12378* (Holotype: MO); same area, color forms, *C. Luer et al. 12377, 12408* (MO).

Mature plants of this species are some of the smallest known in the genus. The flowers are also minute, but the lengths of the exceedingly long, filamentous tails of the sepals and the filamentous lobes of the petals create dimensions comparable to flowers of species with much larger plants. *Lepanthes filamentosa* grows relatively frequently in the wet forest of northwestern Ecuador where it is nevertheless difficult to find. It grows buried in thick layers of moss on small branches of trees. Sometimes only the minute, spiderlike flowers are visible, but then a distance of two or three centimeters from the hidden plant.

Lepanthes fiskei Luer, Amer. Orchid Soc. Bull. 1989.

Fig. 94.

Ety.: Named in honor of Milan D. Fiske of Burnt Hills, NY, who with Padre Angel Andreetta and others discovered this species.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, suberect to horizontal, slender, 3-8.5 cm long, enclosed by 7-14 whitish, ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect in relationship to the ramicaul, coriaceous, pubescent, suffused with purple, elliptical, acute, with the sides lightly revolute, 23-35 mm cm long, 11-16 mm wide, expanded, the base cuneate into a petiole ca. 1 mm long. **Inflorescence** a congested, secund, successively several-flowered raceme up to 7 mm long, borne on top of the leaf by a filiform peduncle 7-15 mm long; floral bracts 2 mm long, minutely scabrous; pedicels 2.5 mm long; ovary 1 mm long; **sepals** red-brown, yellow on the outer third, carinate-spiculate, denticulate, caudate, transversely ovate, obtuse, concave, the blade of the dorsal sepal 4.5 mm long, 5 mm wide, connate to the lateral sepals for 1.5 mm, the apex abruptly contracted into a tail 2 mm long, the lateral sepals oblique, the blades 4.5 mm long, 4 mm wide, connate 1.5 mm, the apices abruptly contracted into tails 3.5 mm long; **petals** dull green, the apices more or less suffused with purple, minutely pubescent, transversely bilobed, 0.75 mm long, 3.5 mm wide, the upper lobe oblong-uncinate, the apex subacute, incurved, the lower lobe narrowly triangular, acute; **lip** red-brown, glabrous, bilaminar, the blades oblong with the ends obtuse, the apices minutely ciliate, 2.2 mm long, the connectives shortly cuneate, supporting the blades above the middle, forming a narrow body, connate to the base of the column, the sinus obtuse, the appendix small, tridentate, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: Cordillera del Condor, collected Jan. 1973 by M. Fiske, A. Andreetta et al., cultivated by J & L Orchids, Easton, CT, flowered in cultivation 25 April 1987, *C. Luer 12811* (Holotype: MO).

Lepanthes fiskei is characterized by the pubescent leaves and a comparatively large, yellow, brown and green flower borne on top of the leaf. The sepals are concave, denticulate and caudate. The curved tips of the green petals overlap above the lip. The red-brown, oblong blades of the lip are glabrous except for the microscopically ciliate apex. The appendix is small and tridentate.

Lepanthes fissa Luer & Hirtz, Amer. Orchid Soc. Bull. 54: 162, 1985.

Fig. 95.

Ety.: From the Latin *fissus*, "cleft," referring to the split appendix.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 8-11 cm long, enclosed by 10-14 coarsely pubescent, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, convex centrally, ovate, acute, acuminate, 5-6 cm long, 2-2.3 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a dense, distichous, successively flowered raceme up to 12 mm long, borne on the

concave back surface of the leaf by a filiform peduncle 13-17 mm long; floral bract 1 mm long; pedicel 1.5 mm long; ovary 1 mm long; **sepals** light yellow, the dorsal sepal ovate-triangular, acute, 4.5 mm long, 2.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals broadly ovate, oblique, 4.5 mm long, 3.5 mm wide, connate 2 mm, the apices obtuse, shortly acuminate, everted, petals yellow, suffused with purple on the inner margin, minutely pubescent, transversely bilobed, 1 mm long, 4 mm wide with an obtuse angle on the outer margin between the lobes, the lobes triangular, narrowly obtuse, the lower lobes shorter; **lip** white with rose margins, shortly pubescent, the laminae lunate with acute ends, 1.6 mm long, the connectives broadly cuneate, connate to the base of the column, the sinus protuberant with the appendix narrow, cleft, ciliate, and in apposition with the stigma; **column** 1.6 mm long, stout, the anther dorsal, the stigma ventral.

Pichincha: epiphytic in cloud forest above Tandapi, alt. 2600 m, March 1984, *A. Hirtz 1658* (Holotype: MO), *C. Luer* illustr. 10022; same area, alt. 2450 m, 1 Mar. 1986, *C. Luer, C. Dodson, A. Hirtz & A. Embree 12049* (MO); west flank of Volcán Iliniza, Cerro Azul, alt. 2800-2900 m, 23 Jan. 1987, *C. Luer, J. Luer & A. Hirtz 12472* (MO).

The flowers of this species are borne in the concavity of the back side of the thinly coriaceous, convex leaf. The lateral sepals are broadly ovate with diverging apices. The lobes of the petals are narrowly triangular, the blades of the lip are lunate and pubescent, and the protuberant body holds the split, ciliate appendix beneath the stigma.

***Lepanthes flaccida* Luer & Hirtz, sp. nov.**

Fig. 96.

Ety.: From the Latin *flaccidus*, "flabby, weak," referring the blades of the lip.

Planta mediocrius debilis, inflorescentia cum racemo congesto disticho folio anguste ovato acuminato breviori, sepalis late ovatis denticulatis, petalis glabris transverse bilobis, lobis plus minusve oblongis obtusis, labelli laminis tenuis debilis ciliatis, connectivis angustissimis ab basibus, corpore suborbiculari, appendice ciliata transverse convoluta cardinata.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, weak, erect to suberect, 5-6 cm long, enclosed by 6-8 minutely ciliate, lepanthiform sheaths. **Leaf** suberect, coriaceous, narrowly ovate, acute, acuminate, 3.5 cm long, 1 cm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to x mm long, borne on top of the leaf by a slender peduncle 10 mm long; floral bract muriculate, 1.5 mm long; pedicel 1 mm long; ovary 2 mm long; **sepals** dark brown, denticulate, carinate, ovate, acute, lightly acuminate, the dorsal sepal 4 mm long, 3.5 mm wide, 3-veined, connate to the lateral sepals for 0.75 mm, the lateral sepals oblique, 4 mm long, 2 mm wide, 2-veined, connate 1.5 mm; **petals** orange, glabrous, transversely bilobed, 1.25 mm long, 4.5 mm wide, the lobes oblong, oblique, obtuse, the upper lobe with an obtuse angle on the inner margin, larger than the lower lobe; **lip** orange, bilaminate, the laminae obliquely oblong, obtuse, 1.25 mm long, minutely ciliate, thin, weak, membranous, held above the column by narrow connectives from the bases of the blades, the body suborbicular, connate to the base of the column, the appendix pubescent, transversely hinged the anterior surface of the body, convex below the middle, concave across the middle, with a terminal segment; **column** 1 mm long, the anther dorsal, the stigma ventral.

Pastaza: north of Topo, epiphytic in forest along Río Zuñag, alt. 2200 m, 23 Feb. 1990, *A. Hirtz, S. Dalström, L. Årnby, J. Del Hierro, E. Astorga, S. Ortega & J. Cabezas 4647* (Holotype: MO), *C. Luer* illustr. 14722.

This species from the eastern slopes of the Andes of central Ecuador has features reminiscent of several distantly related concepts of *Lepanthes*. The habit is weak with slender stems bearing more or less spreading, acuminate leaves and a short inflorescence lying on top. The sepals are ovate and minutely denticulate. The petals are transverse with more or less oblong, oblique, obtuse lobes. The lip blades of the lip are thin and membranous, held above the column by slender, weak connectives from the base. The connectives form a suborbicular body connate to the base of the column. The large, pubescent appendix, similar to that of *L. camptica*, is broadly hinged to the anterior margin. The appendix is convex below the middle, concave across the middle with a solid apical segment.

Lepanthes flexuosa Luer, *Phytologia* 54: 343, 1983.

Fig. 97.

Ety.: From the Latin *flexuosus*, "zigzag," referring to the rachis.

Plant small, epiphytic to terrestrial, caespitose; roots proportionately coarse. Ramicaul erect to suberect, stout, 5-25 mm long, enclosed by 3-4 scabrous, lepanthiform sheaths. Leaf erect, coriaceous, sometimes purple beneath, the blade elliptical, obtuse, 6-20 mm long, 5-9 mm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a gradually lengthening, successively flowered, flexuous raceme up to 9 cm long including the peduncle, the rachis and peduncle comparatively stout; floral bract echinate, 1.5-2 mm long; pedicel 1.25 mm long; ovary 1.25 mm long; **sepals** red or purple, triangular, acuminate, acute, minutely spiculate along the margins and carinate nerves externally, the dorsal sepal 6.5 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals 6.5 mm long, 2.25 mm wide, connate 1 mm, 1-veined; **petals** red or orange, microscopically pubescent, transversely oblong, bilobed, 1 mm long, 3.5 mm wide, the lobes equal, lightly recurved with rounded ends; **lip** red or purple, bilaminate, the blades oblong-subfalcate, 3.5 mm long, surrounding the column just below its apex with the rounded apices overlapping, the bases also rounded, the connectives short, broadly cuneate, the body broad, connate to the column above the middle, the appendix a longitudinal, oblong body beneath the body, the pubescent apex barely protruding beyond the sinus; **column** 2.5 mm long, the anther and stigma apical.

Morona-Santiago: terrestrial on the road-embankment east of the pass east of Sigsig, alt. 2850 m, 6 May 1981, C. Luer & J. Luer 6110 (Holotype: SEL); east of the pass east of Sigsig, epiphytic in scrub forest, alt. 2950 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13345 (MO); east of the pass between Gualaceo and Limón, alt. 2150 m, 16 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13399 (MO); same area, lithophytic, alt. 3200 m, 16 Jan. 1986, S. Dalström & T. Höijer 1041 (MO).

Loja: Altos de Numbala, east of Yangana, alt. 2500-2900 m, May 1985, D. D'Alessandro 409 (MO).

This small species is apparently endemic on the eastern slopes of the Andes of southern Ecuador. It is distinguished by the small habit; a comparatively stout, flexuous raceme considerably longer than the leaf; spiculate sepals, the laterals one-veined; a comparatively large lip with blunt apices curved beneath the column; and an external, oblong appendix connate to the body for nearly the entire length.

Lepanthes floresii Luer & Hirtz, *Die Orchidee* 42: 183, 1992.

Fig. 98.

Ety.: Named in honor of Washington Flores of Quito, Ecuador, who discovered this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 10-17 mm long, enclosed by 3-4 minutely ciliate, lepanthiform sheaths. Leaf erect, coriaceous, elliptical-obovate, obtuse, 10-13 mm long, 5-7 mm wide, the base cuneate, contracted into a petiole 2 mm long. **Inflorescence** a loose, distichous, lightly flexuous, successively several-flowered raceme up to 7 cm long, borne by a filiform peduncle 2-2.5 cm long; floral bracts 1-1.5 mm long; pedicels 1.5 mm long; ovary 0.5 mm long; **sepals** orange, denticulate, carinate-spiculate, broadly ovate, obtuse, the apices contracted into apicula, the dorsal sepal 4 mm long, 2.4 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4.25 mm long, 2 mm wide, connate 2 mm; **petals** orange, transversely bilobed, 0.5 mm long, 2.5 mm wide, microscopically pubescent, the lobes subequal, the upper lobe narrowly oblong, obtuse, the lower lobe narrowly triangular, acute; **lip** orange, microscopically pubescent, bilaminate, the blades elliptical with rounded ends, 1 mm long, the connectives oblong, forming an oblong body, connate to the base of the column, the sinus obtuse with the appendix oblong, obtuse, pubescent; **column** 1 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipec: epiphytic in cloud forest above Valladolid, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz, W. Flores 10903 (Holotype: MO).

This little species occurs in the Andes of southern Ecuador where it was found by Washington Flores. *Lepanthes floresii* is characterized by the long, loose raceme of small, orange flowers. It is related to *L. caudata* Luer & Escobar, which is also found in the same area. It differs from *L. caudata* in the much smaller flowers, obtuse, apiculate instead of acute, caudate sepals, and an obtuse, oblong appendix of the lip instead of an acute, thick, incurved appendix.

Lepanthes focalis Luer, *Phytologia* 54: 343, 1983.

Fig. 99.

Ety.: From the Latin *focale*, "a muffler to keep the neck warm," referring to the lip.

Plant medium in size, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 4-15 cm long, enclosed by 7-13 ciliated, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, veined, oblong-ovate, 3.5-6.5 cm long, 1.6-3.2 cm wide, the rounded apex abruptly constricted into a narrow acumen ca. 1 cm long, the rounded base abruptly contracted into a twisted petiole 2-4 mm long. **Inflorescence** a successively flowered, markedly congested, distichous raceme up to 12 mm long, borne beneath the leaf by a slender peduncle up to 20 mm long; floral bract 1.5 mm long; pedicel 1 mm long; ovary 1.25 mm long; **sepals** entire, yellow-white, lightly suffused with rose centrally, the dorsal sepal ovate, acuminate, acute, 7 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, obtuse with shortly acuminate, diverging apices, 7 mm long, 3 mm wide, connate 3 mm; **petals** light yellow with or without purple edges, cellular-glandular, narrowly transversely oblong, bilobed, 1.25 mm long, 5 mm wide, the upper lobe ovate, obtuse, the lower lobe longer, narrowly linear, obtuse; **lip** purple or yellow, fleshy, pubescent, transversely cordate, 1.5 mm long, 1.75 mm wide expanded, the broadly rounded apex lightly retuse with a tiny tuft of hairs, the rounded, concave basal lobes embracing the column, the base connate to the column near the middle; **column** cylindrical, 1.75 mm long, the anther apical, the stigma ventral.

Morona-Santiago: east of the pass east of Sigsig, alt. 2700 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13358 (MO).

Loja: epiphytic in cloud forest west of pass between Loja and Zamora, alt. 2700 m, 21 Sept. 1980, C. Luer, J. Luer, C. H. Dodson et al. 5524 (Holotype: SEL);

Zamora-Chinchipe: elfin forest between Loja and Zamora, alt. 2750 m, 19 Apr. 1973, L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 3843 (AAU); east of the pass between Loja and Zamora, alt. 2250 m, 22 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13596 (MO); above Valladolid, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10915 (MO); Cordillera del Condor, Patchicutza, alt. 1500 m, Nov. 1991, A. Hirtz 5665 (MO).

Also Colombia (Risaralda).

This species occurs locally in from Colombia to southernmost Ecuador. It is identified by the thin, oblong, obtuse leaves with a prominent, apical acumen; entire, acuminate sepals with the tips of the laterals diverging; narrowly oblong petals; and a thick, pubescent, broadly cordate lip without the development of blades.

Lepanthes frigida Luer, *Phytologia* 55: 185, 1984.

Fig. 100.

Ety.: From the Latin *frigidus*, "cold," referring to the cold, high altitude of the habitat.

Lepanthes sucula Luer & Hirtz, *Die Orchidee* 43: 158, 1992.

Ety.: From the Latin *suculus*, "a little pig," referring to the snoutlike, apical anther and stigma.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls relatively stout, erect, 5-13 cm long, enclosed by 6-10 close, lepanthiform sheaths with oblique, ciliate ostia. **Leaf** erect, coriaceous, narrowly elliptical, acute, 3-6.5 cm long, 7-13 mm wide, the base cuneate into a petiole 2-4 mm long. **Inflorescence** racemose, 2-3 loose, distichous, successively several-flowered racemes up to 9 cm long including the 1-1.5 cm long, slender peduncle; floral bract 1.5-2 mm long; pedicel 1-2 mm long; ovary 1 mm long; **sepals** yellow to orange, minutely denticulate, the dorsal sepal elliptic-ovate, subacute to obtuse, shortly acuminate, 4-4.75 mm long, 2.5-3 mm wide, connate basally to the lateral sepals for 0.75 mm, the lateral sepals ovate, acute, oblique, 4-4.5 mm long, 1.5-2 mm wide, 1-veined, connate 1-1.5 mm; **petals** yellow with red or purple margins, microscopically pubescent, transversely oblong, 0.75-0.9 mm long, 2.5 mm wide, the upper lobe oblong, obtuse, the lower lobe smaller, sub-triangular, obtuse; **lip** yellow with red margins, microscopically pubescent, bilaminar, the blades indistinct thickened margins of the broadly cuneate connectives below the middle, the apices uncinat, incurved, free of any blade, the bases obtuse, the body broad, connate to the column below the middle, the sinus obtuse, with a minute, pedunculated, bifid, ciliate appendix; **column** 1.5-2 mm long, the anther and stigma apical.

Bolivar: La Palma, alt. 3600 m, July 1983 A. Hirtz 1249 (Holotype: SEL), C. Luer illustr. 9158; cloud forest west of Salinas toward La Palma, alt. 3400 m, 12 Mar. 1991, C. Luer, J. Luer, A. Hirtz, X. Hirtz et al. 14950 (MO); alt. 2900 m, C. Luer et al. 15001, 15002 (MO); epiphytic in cloud forest north of Chillanes, alt. 2650 m, 25 Mar. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9712 (MO, type of *L. sucula*); same area, alt. 2800 m, 11 Feb. 1990, S. Dalström & L. Årnby 1322 (MO).

Cotopaxi: near Pilalo, alt. 3200 m, Dec. 1984, A. Hirtz 2181 (MO); between Angamarca and Corazon, alt. 3000 m, 17 Feb. 1979, C. Luer, J. Luer & A. Hirtz 3984 (SEL).

This species is apparently endemic at high altitudes on the western slopes of central Ecuador. It is most closely allied to *L. jamesonii* from farther north, but it is distinguished from the latter by shortly acuminate, denticulate sepals. Both species are related to *L. monoptera* which has narrower, completely developed blades of the lip without incurved apices. All three have single-veined lateral sepals.

Lepanthes fusiformis Luer, *Phytologia* 54: 344, 1983.

Fig. 101.

Ety.: From the Latin *fusiformis*, "narrowly ellipsoid," referring to the leaf.

Plant small, epiphytic, caespitose; roots very slender. Ramicauls slender, erect, 3-9 cm long, enclosed by 4-8 finely long-ciliate, lepanthiform sheaths. **Leaf** erect, often suffused with purple, narrowly ovate, acute, fleshy-thickened to terete, sometimes with microscopically ciliate margins, 20-47 mm long, 3-6 mm wide, 2-5 mm thick, the base narrowly cuneate into a 2-3 mm long petiole. **Inflorescence** a congested, distichous, lightly flexuous, successively flowered raceme up to 10 mm long, borne by a filiform peduncle 8-18 mm long; floral bract ciliate or scabrous, 1 mm long; pedicel 1.5 mm long; ovary 2.5 mm long; **sepals** red with yellow or green margins, carinate-spiculate, denticulate, ovate, acute to sub-acute, the dorsal sepal 2.5-3.6 mm long, 1.6-2.5 mm wide, the lateral sepals oblique, 2.5-3 mm long, 1.6-2 mm wide, connate to about the middle; **petals** red, edged in yellow, transversely oblong, bilobed, 0.5-1 mm long, 1-6-3.75 mm wide, the upper lobe oblong with the apex rounded, the lower lobe shorter, oblong or triangular, obtuse; **lip** red-orange, bilaminar, the blades ovate, 1.2-1.75 mm long, the apices acute, ciliate, the bases rounded, the connectives oblong-cuneate, the body broad, connate to the column above the base, the appendix large, oblong, arcuate, ciliate, 0.5 mm long, protruding from the external surface beyond the sinus; **column** 1 mm long, the anther apical, the stigma subapical to ventral.

Loja: epiphytic in cloud forest south of Yangana, alt. 2450 m, 12 May 1981, C. Luer, J. Luer & D. D'Alessandro 6210 (Holotype: SEL); same area, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10875 (MO); north of Loja, alt. 2900 m, 1 May 1973, L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 4651 (AAU).

Zamora-Chinchi: above Valladolid, alt. 2450 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10925, 10950, 10951 (MO).

This species is apparently endemic in southern Ecuador. It is recognized by thick, narrowly ovate leaves that are often terete; a congested inflorescence shorter than the leaf; small spiculate-denticulate flowers; transverse petals that vary considerably in size; ovate blades of the lip with ciliate apices; and a comparatively large, pubescent appendix that is attached externally to the sinus, but which protrudes well beyond the sinus.

Lepanthes gaileana Luer & Hirtz, sp. nov.

Fig. 102.

Ety.: Named in honor of Gail Furniss of Atlanta, Georgia, whose enthusiasm for the genus *Lepanthes* has contributed greatly to the completion of this work.

Planta parva racemo laxo paucifloro folio elliptico superanti, sepalis in cupulam profunde connatis marginibus conspicue erosissimis tenuicaudatis, petalis oblongis transversis, labelli lamini oblonga planis glabris apice ciliatis, appendice grandi crassa oblonga pubescenti apice glandulosa.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-4.5 cm long, enclosed by 5-6 minutely ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 15-18 mm long, 6-8 mm wide, the base cuneate, contracted into a petiole ca. 2 mm long. **Inflorescence** a loose, successively few-flowered raceme up to 6 cm long including the filiform peduncle 2-2.5 cm long, borne beyond the leaf; floral bract minutely mucronate, 1.5 mm long; pedicel 3 mm long; ovary 2 mm long; **sepals** dark red, membranous, deeply connate into a gaping cup, markedly erose, the blade of the dorsal sepal transversely ovate, concave, 6 mm long, 8 mm wide, with the apex obtusely acuminate into a slender tail 4 mm long, connate to the lateral sepals for 5 mm, the lateral sepals connate 6 mm into a transversely subovate, bifid lamina, 8 mm long, 11 mm wide, with the apices irregularly acute, contracted into slender tails 7 mm long; **petals** olive green, microscopically pubescent, transversely bilobed, 0.8 mm long, 5 mm wide, the upper lobe oblong with the end rounded, the lower lobe equally long, narrower, slightly recurved; **lip** olive green, bilaminar, the blades oblong with the ends rounded, glabrous, flat, with the apices minutely ciliate, 1.5 mm long, the connectives cuneate, the body connate to the base of the column, the appendix oblong, thick, pubescent, 0.5 mm long, the apex with a glabrous, bilobulate gland; **column** 1.5 mm long, winged at the apex, the anther dorsal, the stigma ventral.

Carchi: above Maldonado, alt. 2500 m, July 1995, A. Hirtz, X. Hirtz & J. Del Hierro 6226 (Holotype: MO), C. Luer illustr. 17749.

This species is apparently rare and endemic in northernmost Ecuador where it was recently collected for the first time. It is related to a small group of Colombian species characterized by a sepaline cup, e.g. the Colombian *L. chelonion* Luer & Escobar. This species, however, is readily distinguished from them by the prominently erose margins of the sepals.

In habit the plant is small with a loose, successively flowered raceme far surpassing the elliptical leaf. The dark red sepals are deeply connate into a gaping cup with markedly erose margins, and slender tails. The olive green petals are transversely oblong, and the flat, oblong blades of the lip are also olive green. The appendix is thick, oblong and pubescent with a glabrous apical, bilobulate gland.

Lepanthes gargantua Rchb.f., *Xenia Orch.* 1: 150, 1856.

Fig. 103.

Ety.: Named for the monstrous Gargantua in allusion to the size of the species.

Syn.: *Lepanthes pachyrhiza* Luer & Hirtz, *Lindleyana* 2: 138, 1987.

Ety.: From the Greek *pachyrhiza*, "thick root," referring to the thick, coarse roots of the species.

Plant large, robust, epiphytic, caespitose; roots thick, coarse. Ramicauls erect, stout, 10-58 cm long, enclosed by 11-16 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, oblong-ovate, subacute to obtuse, acuminate, 6-15 cm long, 3.5-8 cm wide, the rounded base contracted into a petiole 0.5-1 cm long. **Inflorescence** racemose, 1- to several simultaneous, congested, distichous, successively many-flowered racemes up to 6 cm long, borne behind the leaf by slender peduncles 2-3 cm long; floral bracts 1.5-2 mm long; pedicels 2-3 mm long; ovary 10-16 mm long; **sepals** yellow-orange, broadly ovate, obtuse, shortly thick-caudate or apiculate, entire, the dorsal sepal 5.5-7 mm long, 5.5-8 mm wide, connate to the lateral sepals for 1.5-2 mm, the lateral sepals oblique, 5-7 mm long, 3-4.5 mm wide, connate 1.75-2 mm; **petals** orange with purple margins, microscopically pubescent, transversely bilobed, 1-2 mm long, 4-6 mm wide, with an obtuse angle between the lobes on the outer margin, the upper lobe obliquely oblong, obtuse, the lower lobe smaller, narrowly triangular; **lip** purple, bilaminate, the blades oblong with the ends rounded, concave near the middle, minutely ciliate, 1.8-2.2 mm long, the connectives short, cuneate, forming a broad body, connate to the base of the column, the sinus obtuse with a small, triangular, minutely ciliate appendix; **column** 1.5-2 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in cloud forest, Selva Alegre, alt. 2800 m, 29 Sept. 1984, A. Hirtz 1916 (type of *L. pachyrhiza*: MO), C. Luer illustr. 11504; same area, 6 April 1984, C. Luer, S. Dalström, & T. Höijer 9992 (MO).

Pichincha: "Andes of Quito", 1855, J. P. Courthoy s.n. (AMES); valley of Lloa, Mar. 1864, W. Jameson 110 (Holotype: W); "Lloa," W. Jameson 429 (K); near Isubamba and Pellagalle near Calacalí, alt. 2800 m, 28 Nov. 1879, F. C. Lehmann 387 (W); between San Juan and Chiriboga, alt. 2100-2400 m, 3 May 1955, E. Asplund 16187 (S); Mindo road near Nono, alt. ca. 2700 m, 6 Mar. 1972, G. Harling 11136 (GB); between Calacalí and La Liberia, alt. 2400 m, 7 Apr. 1984, C. Luer, S. Dalström, T. Höijer & A. Hirtz 9995 (MO); west of Calacalí, alt. 2550 m, 4 Apr. 1985, C. Luer, J. Luer, A. Hirtz, C. & P. Dodson 11041 (MO).

Cotopaxi: west slope of Mt. Iliniza, alt. 2800 m, 5 Nov. 1984, A. Hirtz 2071 (MO).

Napo: Baeza road between Papallacta and Cuyuja, alt. 2650 m, 26 Mar. 1979, B. Løjtnant & U. Molau 11409 (AAU, GB); south side of Cerro Sumaco, alt. 2900-3050 m, 1-2 May 1979, B. Løjtnant & U. Molau 13039 (AAU, GB).

Tungurahua: along Río Ulba, alt. 2200-2500 m, 3 June 1985, B. Stein 2951 (MO).

Morona-Santiago: forest east of Sigsig, alt. 2750 m, 15 May 1988, C. Luer, A. Hirtz et al. 13332 (MO).

Cañar: between Pindilig and Rivera, alt. 2800-3000 m, 8 June 1979, B. Løjtnant, A. & U. Molau 14306 (AAU, GB).

Loja: along new road north of Loja, alt. 2700 m, 2 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12584 (MO).

Zamora-Chinchipec: along Río Zamora, alt. 1500 m, 20 Feb. 1986, C. Luer, J. Luer, A. Hirtz et al. 11961 (MO); between Yangana and Valladolid, alt. 2550 m, 2 Dec. 1988, J.E. Madsen, C. Bloch & H. Christensen 75779 (AAU).

Also Colombia (Antioquia).

This robust species is relatively frequent and widely distributed in the Andes of Colombia and Ecuador. It is characterized by the habit that can produce one of the largest of the genus, but many plants attain only half the apparent maximum size. Thick, coarse roots support stout ramicauls that sometimes reach half a meter in length. The leaves vary in size with the strength of the ramicaul, but large leaves 15 centimeters long are not rare. Yellow-orange, flat flowers, sometimes in profusion, are produced on congested racemes behind the leaf. The sepals are obtuse with short tails. The bilobed petals and bilaminar lip are not remarkably different from many others.

Lepanthes gargoyla Luer & Hirtz, *Die Orchidee* 39: 59, 1988.

Fig. 104.

Ety.: From the medieval word "gargoyle," for a grotesquely ornamented rain spout.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 4-10 cm long, enclosed by 7-11 thin, glabrous, long-acuminate, lepanthiform sheaths. **Leaf** suberect to spreading, coriaceous, suffused with purple, ovate with recurved margins, acute, 3-5.5 cm long, 1.7-2.76 cm wide, the cuneate base contracted into a petiole 1 mm long. **Inflorescence** a congested, secund, successively several-flowered raceme up to 15 mm long, borne on top of the leaf by a filiform peduncle 10-25 mm long; floral bracts oblique, 1 mm long; pedicels 2-3 mm long; ovary 2 mm long; **sepals** brown, undulate, carinate-spiculate, denticulate, ovate, obtuse, the dorsal sepal 8 mm long, 4 mm wide, connate to the lateral sepals for 1.5 mm, the apex acuminate into a slender tail ca. 1 mm long, the lateral sepals oblique, 9 mm long, 4 mm wide, connate 1 mm, more or less concave with the central portion convex, the apical portion more or less conduplicate, abruptly contracted into slender tails 2 mm long; **petals** green, minutely pubescent, transversely bilobed, 1 mm long, 5 mm wide, the upper lobe obliquely oblong-truncate, obtusely angled or dolabriform, the lower lobe smaller, oblong, obtuse; **lip** purple, bilaminar, the laminae oblong with the apices subtruncate, incurved, ciliate, 3 mm long, the connectives oblique, short, arising from the blades above the middle, connate to the base of the column, the sinus obtuse with a small, oblong, apiculate appendix; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest between Gualaquiza and Zamora, alt. 900 m, 27 Mar. 1895, C. Luer, J. Luer, A. Hirtz & W. Flores 10973 (Holotype: MO).

Plants of this unusual species have been found on only one occasion. Vegetatively it resembles *L. pubescens* Luer, but the comparatively large, brown flowers with green petals are distinct. The sepals are oddly undulate, and the apices of the laterals are conduplicate, reminiscent of the many species related to *L. complicata* Luer & Vásquez from Bolivia.

Lepanthes gemmula Luer & Hirtz, *Die Orchidee* 39: 59, 1988.

Fig. 105.

Ety.: From the Latin *gemmula*, "a little gem," referring to the beauty of the tiny species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-22 mm long, enclosed by 3-6 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, broadly elliptical-ovate, obtuse, 5-10 mm long, 4-9 mm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a subaxillary, successively several-flowered, distichous raceme up to 5 mm long, borne behind the leaf by a slender peduncle 3-6 mm long; floral bract 1 mm long, lightly echinate; pedicel 0.75-1 mm long; ovary 1 mm long; **sepals** ovate, acute, acuminate, denticulate, the dorsal sepal light yellow, purple centrally, 4.25 mm long, 2 mm wide, connate to the lateral sepals for 0.3 mm, the lateral sepals purple with a green edge, oblique, 4.25 mm long, 1.75 mm wide, connate 1 mm; **petals** yellow with the inner margin red, transversely bilobed, 0.9 mm long, 2.5 mm wide, microscopically pubescent, the lobe upper lobe oblong with the apex broadly rounded, the lower lobe similar but shorter; **lip** bilaminar, red, the laminae broadly obovate with the ends rounded, minutely pubescent, 1 mm long, the connectives broadly cuneate, the body connate to the base of the column, the sinus obtuse, with a broad, oblong, appendix bilobed and ciliate at the apex; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest, Cordillera del Condor east of Guismé, alt. 1500 m, 18 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11909 (Holotype: MO); same area, alt. 1650 m, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13531 (MO).

This pretty species may be distinguished by the small habit with broadly ovate leaves and a colorful flower about as long as the leaves. The acuminate sepals are denticulate, the blades of the lip are broadly obovate, and the short appendix is terminated by a broadly bilobed, ciliate apex.

Lepanthes glabella Luer & Hirtz, sp. nov.

Fig. 106.

Ety.: From the diminutive of the Latin *glaber*, "smooth, without hair," referring to the glabrous properties of this species.

Planta parva, inflorescentia congesta secunda parviflora folio ovato brevior, sepalis ovatis acuminatis glabris, petalis bilobatis lobis triangularibus glabris, labelli laminae oblongis glabris, appendice parva rotundata.

Plant small, epiphytic, caespitose, roots slender. Ramicauls slender, suberect, 3-7 cm long, enclosed by 7-10 lepanthiform sheaths, with the dilated ostia sparsely ciliate. **Leaf** spreading, coriaceous, suffused with purple beneath, ovate, acute, 3-4.5 cm long, 1-1.3 cm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, secund, successively several-flowered raceme, up to 6 mm long, borne on top of the leaf by a slender peduncle 3-6 mm long; floral bracts 1 mm long; pedicels 1.5-2 mm long; ovary 2.5-3 mm long; **sepals** ovate, acute, acuminate, carinate externally along the veins, glabrous, the dorsal sepal purple, concave, 5.5 mm long, 2.5 mm wide, 3-veined, connate to the lateral sepals for 0.75 mm, the lateral sepals yellow, oblique, 6 mm long, 2 mm wide, 2-veined, connate 1 mm, spreading; **petals** green, glabrous, transversely bilobed, 0.75 mm long, 3.5 mm wide, the upper lobe obliquely triangular, obtuse, the lower lobe triangular, narrowly obtuse; **lip** green with the inner margins of the blades purple, glabrous, bilaminar, the blades oblong with rounded ends, 2 mm long, the body narrow, connate to the base of the column, the sinus with a small, rounded appendix; **column** stout, 1 mm long, the anther dorsal, the stigma ventral with a pedunculated process in association with the appendix.

Bolivar: epiphytic wet virgin forest west of La Palma, alt. 1250 m, 12 Mar. 1991, C. Luer, J. Luer, A. Hirtz, X. Hirtz, F. Navarro, M. Navarro, J. Del Hierro & M. Evans 14972 (Holotype: MO).

This species is characterized by the colorful, glabrous flower with acuminate sepals that is produced successively upon the dorsum of the leaf. The dorsal sepal is purple, the lateral sepals are yellow, and the petals are green. The oblong blades of the lip are green with purple inner margins. The column is short and stout with a ventral stigma. From within the stigmatic cavity along the inner margin a pedunculated process is held in front of the small, rounded appendix.

Lepanthes glomerulosa Luer & Hirtz, sp. nov.

Fig. 107.

Ety.: From the Latin *glomerulosus*, "with little balls," referring to the appendix.

Planta mediocris, ramicalium vaginis magnis late dilatis, inflorescentia cum racemo congesto disticho folio ovato acuminato brevior, sepalis late ovatis obtusis acuminatis breviter caudatis minutissime denticulatis, petalis transverse bilobis, lobis triangularibus obliquis, superiore ter majore, labelli laminae ovatis minute pubescentibus, connectivis cuneatis, appendice parva biglomerulosa.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 6-8.5 cm long, enclosed by 9-11 ciliate, lepanthiform sheaths with widely dilated ostia. **Leaf** erect, coriaceous, oblong, acute, acuminate, 5-7 cm long, 2-2.5 cm wide, the rounded base contracted into a petiole 4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 10 mm long, borne behind the leaf by a slender peduncle 10-15 mm long; floral bract 2 mm long, glabrous; pedicel 1.5 mm long; ovary 1.5 mm long; **sepals** light green, suffused with pink, broadly ovate, microscopically denticulate, the apices obtuse, acuminate into tails 1.5-2 mm long, the dorsal sepal 6-8 mm long, 4-4.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 6-8 mm long, 2.75-3 mm wide, 2-veined, connate 2 mm; **petals** yellow with red at the base, microscopically pubescent, transversely bilobed, 1.2 mm long, 4 mm wide, the lobes triangular, oblique, acute, the upper lobe thrice larger than the lower lobe; **lip** red, bilaminar, the laminae ovate, minutely pubescent, 2 mm long, with the bases rounded and the apices acute, the connectives cuneate, the body broad, connate to the base of the column, the appendix acutely deflexed, consisting of an adjacent pair of minute, pedunculate globules with pubescent stalks; **column** 2 mm long, the anther apical, the stigma ventral.

Morona-Santiago: epiphytic in forest along the road between Limón and Gualaceo, alt. 2800 m, 20 Jan. 1989, A. Hirtz, A. Andreetta & S. Ortega 4177 (Holotype MO), C. Luer illustr. 14711; between Cuenca and Limón, alt. 2800 m, flowered in Quito, 1989-90, A. Hirtz & X. Hirtz 4269, 4724 (MO);

This species is characterized by the large, widely dilated, lepanthiform sheaths; the inflorescence with a congested raceme shorter than the oblong, acuminate leaf; broadly ovate, shortly caudate sepals; and an unremarkable pair of labellar blades. The appendix, however, is distinct. It consists of a pair of tiny, stalked globules.

***Lepanthes gnoma* Luer & Hirtz, sp. nov.**

Fig. 108.

Ety.: From the Latin *gnomus*, "a fabled dwarf," referring to the small size of the habit.

Planta perparva caespitosa, racemo paucifloro parvifloro foliis ellipticis crassis multibreuiore, sepalis uninervis, petalis transversis pubescentibus, labelli laminis suborbiculatis pubescentibus, connectivis anguste cylindricis, appendice oblonga pubescenti.

Plant very small, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 10-18 mm long, enclosed by 3-5 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thickly coriaceous, suffused with purple, elliptical, subacute, 6-10 mm long including a 1 mm long petiole, 3-4.5 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, successively 2- to 3-flowered raceme, up to 4 mm long, borne behind the leaf by a slender peduncle 2 mm long; floral bracts 1 mm long; pedicels 1 mm long; ovary costate, 0.5 mm long; **sepals** light yellow, glabrous, 1-veined, the dorsal ovate, acute, 2.75 mm long, 1.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals connate 1 mm into a broadly ovate, bifid lamina, 2.5 mm long, 2.5 mm wide, with the apices acute; **petals** yellow, suffused with red, minutely pubescent, transversely obovate, 0.75 mm long, 1.25 mm wide, the apex transversely obtuse; **lip** pink, bilaminar, the laminae ciliate-pubescent, elliptical-suborbicular, 0.8 mm long, the connectives narrowly cylindrical, from near the base, the body thick, connate to the base of the column, with a proportionately large, oblong, pubescent appendix; **column** terete, 1 mm long, the anther apical, the stigma ventral.

Carchi: epiphytic in cloud forest near El Mirador, alt. 3300 m, Aug. 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4936 (MO), C. Luer illustr. 15281.

This minute species is distinguished by ramicauls less than 18 millimeters long and thick, elliptical leaves less than 10 millimeters long. Only two or three little flowers are produced successively on a very short peduncle. The sepals are acute and one-veined; the petals are transverse and pubescent; the blades of the lip borne by cylindrical connectives are suborbicular and pubescent; and the appendix is proportionately large and oblong.

***Lepanthes golbasto* Luer & Hirtz, Amer. Orchid Soc. Bull. 54: 164, 1985. Fig. 109.**

Ety.: Named for Golbasto, the emperor of Lilliput.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 8-16 mm long, enclosed by 4-5 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, purple beneath, margined, shortly ciliate, broadly elliptical to suborbicular, 6-9 mm long, 4-7 mm wide, the rounded apex notched, the rounded base abruptly contracted into a petiole 1-1.5 mm long. **Inflorescence** a subraceme, successively several-flowered raceme up to 20 mm long, borne by a filiform peduncle 10-15 mm long; floral bract 1 mm long, echinate; pedicel 0.5 mm long; ovary 1.5 mm long, echinate; **sepals** purple, carinate-spiculate, with denticulate margins, ovate, with acute, shortly acuminate apices, the dorsal sepal 5 mm long, 2.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 4.75 mm long, 1.75 mm wide, connate 1.25 mm; **petals** orange, suffused with purple, pubescent, transversely narrowly oblong, 0.6 mm long, 3.75 mm wide, the lobes subequal, narrowly obtuse; **lip** red-orange, pubescent, the blades long-ciliate, ovate, 1 mm long, the apices and bases narrowly obtuse, the connectives broadly oblong, connate to the column above the base, the appendix short, thick, uncinat, pubescent; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in cloud forest near Papallacta, alt. 1850 m, April 1984, A. Hirtz 1692 (Holotype: MO), C. Luer illustr. 10458; Cuyuja, alt. 2500 m, May 1984, A. Hirtz 1764 (MO).

Pichincha: West Ilimiza, alt. 3500 m, 20 Oct. 1984, A. Hirtz 2034 (MO).

This very small species seems related to the Colombian *L. caudata*, but vegetatively *L. golbasto* is recognized by the tiny, round, ciliate leaves. These marginal hairs, however, are nearly invisible to the naked eye. The petals of *L. golbasto* are transversely narrowly oblong, and the ovate blades of the lip are long-ciliate. The appendices of the two species are similar.

Lepanthes grossiradix Luer & Hirtz, Novon 3: 449, 1993.

Fig. 110.

Ety.: From the Latin *grossiradix*, "a thick root," referring to the thick, coarse, purplish roots.

Plant medium in size, epiphytic, caespitose; roots purple, coarse, thick. Ramicauls erect, slender, 3-6 cm long, enclosed by 6-8 ciliate, lepanthiform sheaths dilated at the ostia. **Leaf** erect, coriaceous, elliptical-ovate, acute, slightly acuminate, 2.5-4 cm long, 0.9-1.2 cm wide, the base cuneate into a petiole 2-4 mm long. **Inflorescence** a loose, distichous, successively many-flowered raceme up to 6 cm long including the slender peduncle ca. 1 cm long; floral bracts 1.5 mm long; pedicels 1.5 mm long; ovary 0.5 mm long; **sepals** brown with yellow margins, sparsely ciliate, the dorsal sepal ovate, concave, acute, 3 mm long, 2 mm wide expanded, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, 3 mm long, 1.2 mm wide, 1-veined, connate 1 mm; **petals** brown, minutely pubescent, transversely bilobed, 0.5 mm long, 1.9 mm wide, the upper lobe oblong, obtuse, the lower lobe triangular; **lip** brown, minutely pubescent, bilaminar, the laminae lunate with indistinct blades, 1.5 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the appendix minute, oblong, cleft down the middle; **column** terete, 1.5 mm long, the anther dorsal, the stigma apical.

El Oro: epiphytic in forest remnant west of Pacha, alt. 2250 m, 23 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreaea & W. Teague 13613 (Holotype: MO).

Most remarkable of this species are the roots that are extremely thick for the size of the plant. The racemes are loosely flowered, beginning much shorter than the leaf, but eventually lengthening to about twice the length of the leaf. The sepals are acute and sparsely ciliate, the laterals with only one vein. The lobes of the lip are lunate, surrounding the apex of the column with a dorsal anther and apical stigma. The appendix is a minute, oblong structure with a cleft down the center.

Lepanthes grypha Luer, Phytologia 54: 344, 1983.

Fig. 111.

Ety.: Named for a *grypha*, a mythological creature, half lion and half eagle, referring to the appearance of the central apparatus.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, weak, 5-11.5 cm long, enclosed by 9-11 microscopically scabrous, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, narrowly elliptical-ovate, acute, acuminate, 4-7 cm long, 1-1.5 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a very congested, distichous, successively flowered raceme up to 15 mm long, borne by a filiform peduncle 10-25 mm long on top of the leaf; floral bract 1.25 mm long; pedicel 1.5-2 mm long; ovary 2 mm long; **sepals** light green, sometimes lightly suffused with purple, glabrous, ovate, obtuse, shortly acuminate, the dorsal sepal 3.25-4 mm long, 2.5-3.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 3.5-4.5 mm long, connate 1.5 mm, 3.75-4 mm wide together, wide together, the margins minutely denticulate; **petals** greenish to yellowish with a dark purple margin on the upper lobe, pubescent, transversely oblong, bilobed, 1-1.25 mm long, 3-3.5 mm wide, the upper lobe oblong, obtuse, the lower lobe smaller, triangular, obtuse; **lip** greenish brown, minutely pubescent, bilaminar, the blades flat, oblong, adherent medially over the middle of the blades, lifting the blades above the column, the body broad, thick, bilobulate, pubescent, connate to the column at the base, the appendix short, thick, subconical, pubescent, protruding from the cleftlike sinus of the body; **column** 2 mm long, the anther dorsal, the stigma ventral.

Carchi: between Tulcán and Maldonado, alt. 2050 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9925 (MO).

Pichincha: epiphytic in cloud forest between San Juan and Chiriboga, alt. ca. 2000 m, 7 Mar. 1982, A. Hirtz & X. Leon 210 (Holotype: SEL), C. Luer illustr. 9073; same area, alt. 2000 m, Sept. 1984, A. Hirtz 1896 (MO).

This species occurs on the western slopes of the Andes of northern Ecuador. It is recognized by the congested raceme borne on top of the leaf; broad, shortly acuminate sepals, the laterals denticulate; comparatively large, pubescent petals; flat blades of the lip held over the column; and a thick, bilobular body with a small, thick appendix protruding from the cleftlike sinus.

Lepanthes helcium Luer & Hirtz, Amer. Orch. Soc. Bull. 53: 1156, 1984. Fig. 112.

Ety.: From the Latin *helcium*, "horse-collar," referring to the position of the "U-shaped" lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-6 cm long, enclosed by 10-11 minutely ciliate, lepanthiform sheaths. **Leaf** suberect, coriaceous, elliptical, acute, acuminate, 15-28 mm long, 8-14 mm wide, the base cuneate, contracted into a petiole 2 mm long. **Inflorescence** a congested, lightly flexuous, successively few-flowered raceme up to 15 mm long, borne near the tip of the leaf and often beyond the tip a filiform peduncle 15-27 mm long; floral bract 1.5 mm long; pedicel 2.5 mm long; ovary 1 mm long; **sepals** red-brown with yellow border, denticulate-spiculate, carinate, ovate, acute, acuminate, the dorsal sepal 7 mm long, 2.8 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 6.5 mm long, 2 mm wide, 2-veined, connate 1 mm; **petals** orange, minutely pubescent, transversely bilobed-reniform, 0.66 mm long, 1.33 mm wide, the upper lobe oblong with the apex rounded, the lower lobe smaller, incurved; **lip** rose, ciliate, reniform, 1.5 mm long, 2 mm wide expanded, the sides broadly rounded, embracing the column in the natural position, the apex broadly rounded with a small, shallow notch, connate to the column above the base, the appendix minute, pubescent, ovoid, external below the apical notch; **column** clavate, 1.5 mm long, the anther and stigma apical.

Pichincha: epiphytic in cloud forest near Mindo, alt. 2300 m, 1 Apr. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9875 (Holotype: MO; Isotype: SEL); above Mindo, alt. 2400 m, Mar. 1984, A. Hirtz 1650 (MO); above Mindo, alt. 2000 m, 6 Dec. 1984, A. Hirtz 2150 (MO).

This species is apparently endemic in northwestern Ecuador. It is characterized by a red and yellow flower with long-denticulate, lateral sepals that is borne near or past the acuminate tip of the leaf. The petals are very small and reniform. The lip is also reniform with the sides surrounding the column like a collar.

Lepanthes helicocephala Rchb.f., Xenia Orch. 1: 150, 1856.

Fig. 113.

Ety.: From the Greek *helicocephale*, "a twisted head," probably referring to the petiole of the leaf with the flowers borne along the backside.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-6 cm long, enclosed by 6-9 glabrous to microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-ovate, obtuse, 2-3 cm long, 1.5-2 cm wide, the base broadly cuneate or rounded, contracted into a petiole 1-1.5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 7-12 mm long; floral bract 1 mm long; pedicel 1.5 mm long; ovary 2.5 mm long; **sepals** light yellow-brown, glabrous, carinate, the dorsal sepal narrowly triangular, acute, 5.5 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, in apposition, 4.75 mm long, 2.25 mm wide, connate at the base; **petals** orange-brown, minutely pubescent, transversely bilobed, 1.4 mm long, 2.6 mm wide, the upper lobe oblong-ovate, rounded at the apex, the lower lobe broad at the base but contracted about midway into a narrow apex; **lip** orange-brown, minutely pubescent, bilaminar, the blades convex, ovoid, the labellar lobe contracted above the middle to a narrow apex without forming a blade, 1.5 mm long, the connectives broadly cuneate, the body broad, connate to the column at the base, the appendix short, ovate, concave, pubescent, incurved, in an association with a stigmatic process; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Sucumbios: Imuya Cocha on Río Lararto, alt. 220 m, 30 July 1991, *C. H. Dodson, P. Scharff & M. Ryan* 18860 (MO).

Napo: La Cruz, downstream from Misahualli, alt. 400 m, collected by A. Suarez, flowered in cultivation at Misahualli, 29 Mar. 1984, *C. Luer* 9787 (MO); Cabañas Allinahui, near Hatun-Sacha, alt 450 m, Mar. 1991, *A. Hirtz & X. Hirtz* 5337 (MO).

Morona-Santiago: Cordillera del Cutucú, epiphytic in wet forest along the new road between Mendez and Morona, alt. 950 m, 19 Jan. 1989, *C. Luer, J. Luer, P. Jesup, A. Jesup, A. Hirtz & S. Ortega* 13991 (MO); same area, collected by *C. H. Dodson*, flowered in cultivation at Río Palenque, 11 Jan. 1989, *C. Luer* 13849 (MO).

Also Suriname (type), Guyana, Venezuela, Brazil, Ecuador, Peru and Bolivia.

This species is widely distributed in lowland, Amazonian South America from the Guyanas, through Brazil to Ecuador and Peru. In spite of the extensive range, it remains vegetatively and florally stable. The flowers are borne behind the leaf in a congested raceme. The sepals are acute, with the dorsal sepal narrow and the lateral broad at the base and held in apposition. Very characteristically, the lower lobes of the petals and the apices of the blades of the lip are contracted above the middle into narrow portions, with the apices of the labellar lobes without forming blades.

Lepanthes hexapus Luer & Escobar, *Orquideología* 16: 144, 1984. Fig. 114.

Ety.: From the Greek *hexapous*, "six-footed," referring to the six segments of a pair of petals.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-2 cm long, enclosed by 5-6 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, veined in purple, ovate, acute, 10-17 mm long, 7 mm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 4 mm long, borne behind the leaf by a filiform peduncle 5-6 mm long; floral bract 1 mm long; pedicel 2 mm long; ovary 1 mm long; **sepals** denticulate, the dorsal sepal red, obovate, obtuse, shortly acuminate, 5 mm long, 2.25 mm wide, free from the lateral sepals, the lateral sepals yellow, free except at the base, oblong, acute, 5 mm long, 1.5 mm wide; **petals** bright orange, tripartite, the parts filiform, 2 mm long, the uppermost ciliate; **lip** purple, bilaminar, the blades narrowly elliptical-oblong, minutely ciliate, 2.25 mm long, the connectives short, broadly cuneate, connate to the column near the middle, the sinus acute with the appendix pubescent, ovoid, bilobulate at the apex; **column** slender, 2.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, *C. Luer, J. Luer, A. Hirtz et al.* 12439 (MO); *Hirtz* 2989, 3049; *Los Cedros Reserve*, alt. 1850 m, 29 Jan. 1993, *S. Dalström, T. Höijer & H. Wanntorp* 1807 (MO).

Pichincha: Santa Rosa de Toachi, alt. 1300 m, Mar. 1990, *A. Hirtz, X. Hirtz & K.H. Baumann* 4696 (MO).

Also Colombia (Nariño, type; Risaralda).

This tiny species occurs sporadically in the Andes from central Colombia to central Ecuador. It is characterized by a congested raceme shorter than the ovate leaf. The sepals are narrow with the laterals denticulate. They are essentially free from each other. The petals are divided into three, slender, diverging, nearly equal parts. The upper segment is ciliate. The blades of the lip are narrowly oblong and the appendix is ovoid and pubescent.

Lepanthes hirsutula Luer & Hirtz, *Lindleyana* 2: 135, 1987. Fig. 115.

Ety.: From the Latin *hirsutulus*, "a little hairy," referring to the petals, the lip and appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 10-27 mm long, enclosed by 5-6 ciliate, lepanthiform sheaths. **Leaf** erect, suffused with purple beneath, coriaceous, narrowly ovate, acute, 18-25 mm long, 4-7 mm wide, the cuneate base contracted into a petiole ca. 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 8 mm long, borne on top of the leaf by a filiform peduncle 10-18 mm long; floral bracts 0.75-1 mm long, lightly

muricate; pedicels 1.5-2 mm long; ovary 1 mm long; **sepals** yellow, suffused with red medially, carinate, the margins microscopically cellular-denticulate, the dorsal sepal elliptical, concave, 5 mm long, 3.5 mm wide expanded, the obtuse apex abruptly contracted into a 1 mm long apiculum, connate to the lateral sepals for 0.5 mm, the lateral sepals oblong, oblique, 5.5 mm long, 2.25 mm wide, connate 1 mm, the acute apices contracted into 1 mm long apicula; **petals** orange, long-ciliate, transversely bilobed, 0.5 mm long, 2.75 mm wide, the lobes narrowly oblong, narrowly obtuse, the lower lobe lightly falcate, smaller; **lip** red, bilaminate, the blades narrowly oblong with rounded ends, pubescent, 1.75 mm long, the connectives broadly cuneate, the thick body connate to the base of the column, the appendix equally large, broadly oblong, shallowly grooved, pubescent, protuberant; **column** 1.5 mm long, the anther and the stigma apical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12365* (Holotype: MO).

Imbabura: epiphytic in forest southeast of Lita on road to Santa Rosa de Cachaco, alt. 1300 m, 19 Mar. 1991, *C. Luer, J. Luer & A. Hirtz 15179* (MO).

This small, delicate species is apparently endemic in the wet forest of north-western Ecuador. It is distinguished by the small habit with very narrowly ovate leaves and a shorter raceme borne along the dorsal surface of the leaf. The sepals are ovate, acuminate and denticulate; the petals are transversely oblong and long-pubescent; and the blades of the lip are elliptical and also pubescent. The connectives are exceptionally broad with a broad, rounded, protuberant, pubescent body without an appendix.

Lepanthes hirtzii Luer, *Phytologia* 54: 345, 1983.

Fig. 116.

Ety.: Named in honor of Alexander C. Hirtz of Quito, Ecuador, who has discovered innumerable species of orchids new to science.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, slender to stout, 7-38 cm long, enclosed by 8-15 close, glabrous to microscopically scabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical, 8-13 cm long, 2-5.5 cm wide, the apex long-acuminate, the base broadly cuneate into a petiole 5-7 mm long. **Inflorescence** a subdensely flowered raceme 8-15 cm long, including the peduncle 5-8 cm long, 2-3 flowers open simultaneously; floral bract 2 mm long; pedicel 3 mm long; ovary 1.5 mm long, narrowly winged; **sepals** orange with brown or purple veins, carinate, ovate, acute, acuminate, minutely ciliate or glabrous, the dorsal sepal 11 mm long, 9 mm wide, connate to the lateral sepals for 4 mm to form a broad, shallow cup, the margins of all 3 sepals more or less erose and dilated above the angles of connation, the lateral sepals oblique, 11 mm long, 6 mm wide, connate 3 mm; **petals** yellow, more or less suffused with brown or purple, transversely elliptical, bilobed, 1.25 mm long, 2.75 mm wide, minutely pubescent, the lobes about equal, subtriangular, obtuse; **lip** orange to brown, bilaminate, the blades elliptical-ovate, lightly concave, 2 mm long, minutely ciliate, the ends rounded, the connectives broadly cuneate, the body broad, connate to the column above the base, the appendix very small, suborbicular, bearing a pair of even smaller terminal rounded lobules, glabrous; **column** 2 mm long, the anther dorsal, the stigma ventral.

Pichincha: epiphytic in cloud forest between Quito and Tandapi, alt. ca. 3000 m, 28 Oct. 1979, *C. Luer, J. Luer & A. Hirtz 4394* (Holotype: SEL); same area, alt. 2600 m, 31 Mar. 1984, *C. Luer, S. Dalström, J. Kuijt & A. Hirtz 9810* (MO); same area, alt. 2450 m, 1 Mar. 1986, *C. Luer, C. Dodson, A. Hirtz & A. Embree 12048* (MO); West Iliniza, alt. 2800 m, 5 Nov. 1984, *A. Hirtz 2070* (MO); west flank of Volcán Iliniza, Cerro Azul, alt. 2800 m, 23 Jan. 1987, *C. Luer, J. Luer & A. Hirtz 12467* (MO).

Loja: cloud forest at the pass north of Loja, alt. 3100 m, 30 Oct. 1982, *C. Luer & R. Escobar 8246* (SEL).

Morona-Santiago: east of the pass east of Sigsig, alt. 2700 m, 15 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13360* (MO); between Cuenca and Limón, alt. 2800 m, *A. Hirtz, A. Andreetta & S. Ortega 4175* (MO).

Zamora-Chinchipec: east of Yangana, alt. 2650 m, 4 Mar. 1982, *C. Luer, D. D'Alessandro & S. Dalström 7145* (SEL); Cajanuma Range, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10750* (MO).

Also Colombia (Putumayo).

This large, handsome species is found relatively frequently on both sides of the Andes in northern Ecuador and on the eastern slopes in southern Ecuador. It is recognized by the large habit, a subdense raceme of large, red, orange to purple flowers that equals or surpasses the leaf in length. The sepals are deeply connate into a cup; the petals are very small; and the lip is not remarkable except for the tiny "two-eared" appendix.

Lepanthes hoeijeri Luer, *Orchideer* 5: 178, 1984.

Fig. 117.

Ety.: Named in honor of Thomas Höijer of Stockholm, Sweden, who discovered this species.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-14 cm long, enclosed by 7-10 lepanthiform sheaths with dilated, ciliate margins. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4-8 cm long, 1-1.5 cm wide, the base narrowly cuneate into the petiole 4-5 mm long. **Inflorescence** racemose, 1-3 loose, successively several-flowered, subflexuous racemes 4-9 cm long including the filiform peduncle 1.5-2.5 cm long; floral bract 2.5 mm long; pedicel 1.5 mm long; ovary 2 mm long; **sepals** purple, glabrous, the dorsal sepal ovate, acute, concave, cymbiform, 7 mm long, 3 mm wide unexpanded, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate-triangular, oblique, acute, denticulate, 6 mm long, 2.5 mm wide, connate 1 mm, 1-veined; **petals** red-orange, shortly pubescent, transversely oblong, 0.8 mm long, 3.5 mm wide, the upper lobe oblong, oblique, obtuse, less than 1 mm long, the lower lobe oblong, obtuse, 3 mm long; **lip** red-orange, glabrous, bilaminar, the blades oblong with rounded ends, 2.6 mm long, the connectives broadly oblong with a broad body, connate to the column above the base, the sinus obtuse with a minute, triangular, pubescent appendix; **column** slender, 2.5 mm long, the anther and stigma apical.

Loja: epiphytic in cloud forest above Jimbura, alt. 3000 m, 21 Mar. 1984, C. Luer, S. Dalström, T. Höijer & J. Kuiji 9656 (Holotype: MO; Isotype: SEL); north of the pass south of Jimbura, alt. 2900 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11990 (MO).

This showy, floriferous species with relatively large, purple flowers with red-orange petals and lip occurs locally but abundantly at high altitudes near the Peruvian border south of Jimbura. The flowers are borne in loose racemes shorter than, but occasionally surpassing the narrow leaf. The dorsal sepal is boat-shaped and the lateral sepals are denticulate and single-veined. The lower lobes of the petals are much longer than the upper lobes. The oblong blades of the lip are borne by short, broad connectives.

Lepanthes homotaxis Luer & Escobar, *Phytologia* 54: 346, 1983.

Fig. 118.

Ety.: From the Greek *homo-*, "similar," and *taxis*, "an arrangement," referring to the similarity of the halves of the floral parts.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-5.5 cm long, enclosed by 6-9 close, microscopically scabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical, acute, 13-28 mm long, 7-11 mm wide, the base cuneate into a petiole 1-3 mm long. **Inflorescence** a subdense, distichous, successively flowered raceme up to 22 mm long including the filiform peduncle 3-10 mm long, along the back side of the leaf; flowers very small, light yellow-green; floral bract less than 1 mm long; pedicel ca. 1 mm long; ovary 1 mm long; dorsal sepal ovate, acute, 1.75 mm-2.25 mm long, 1.2 mm wide, 1-veined, the lateral sepals connate into a synsepal similar to the dorsal sepal, ovate, the acute apex minutely notched, 1.75-2.25 mm long, 1.25-1.5 mm wide, each 1-veined; **petals** forked, bilobed, 0.6 mm long, 1 mm wide, the lobes equal, oblong-triangular, subacute, spreading 90 degrees; **lip** transversely cordate-bilobed, 0.6 mm long, 0.9 mm wide, minutely pubescent, the rounded apex cleft with a minute apiculum in the sinus, the apices and bases of the lobes rounded, the lower lobes flanking the column, the base connate to the middle of the column; **column** 0.8 mm long, cylindrical, the anther and stigma apical.

Napo: Volcán Reventador, alt. 1400 m, 5 Oct. 1984, A. Hirtz & A. Andreetta 1961 (MO), C. Luer illustr. 10507; east slopes of Reventador, alt. 1850 m, 11 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11781 (MO).

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaceo and Limón, alt. 2050

m, 29 Oct. 1982, C. Luer, R. Escobar & A. Pozo 8228 (Holotype: SEL); same area, alt. 1850 m, 28 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10990 (MO); new road west of Macas toward same area, alt. 2100 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11850 (MO); new road west of Macas toward Guamote, alt. 1900 m, 16 Jan. 1989, C. Luer, J. Luer, A. Jesup, P. Jesup, A. Hirtz & S. Ortega 13934 (MO).

Zamora-Chinchi: Cordillera del Condor, east of Los Encuentros, alt. 1650 m, 21 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14046 (MO); same area, alt. 1800 m, 22 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14051 (MO).

This little species occurs locally in the mountains of southeastern Ecuador. It is identified by the small habit; a subdense raceme shorter than the leaf, of tiny, bilabiate flowers; petals forked 90°; and a transversely cordate, pubescent lip connate to the middle of the cylindrical column. It is closely related to *L. bifalcis* from which it is distinguished by the smaller, forked petals, and cordate lip. From *L. columbar* it is distinguished by the broader leaves that are not thickly coriaceous, the forked petals, and cordate lip connate to the shaft of the column.

***Lepanthes horribilis* Luer & Hirtz, sp. nov.**

Fig. 119.

Ety.: From the Latin *horribilis*, "frightful," referring to the appearance of the flower.

Species haec *L. fiskei* Luer affinis, sed sepalorum marginibus revolutis cum apicibus lateralium approximatis, petalorum lobo superiore uncinato differt.

Plant medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, suberect, 4-9 cm long, enclosed by 10-14 lepanthiform sheaths with dilated, acuminate, ciliate ostia. **Leaf** more or less horizontal, coriaceous, suffused with purple, rugose-verrucose with minutely ciliate margins, ovate, acute, lightly acuminate, with the sides recurved, 4.5-8 cm long, 1.5-2.4 cm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, secund, successively few-flowered raceme, up to 5 mm long, borne on top of the leaf by a slender peduncle 15-20 mm long; floral bracts 1.5 mm long, submucronate; pedicels 1.5 mm long; ovary 5 mm long; **sepals** red-brown, with erose-ciliate margins, the dorsal ovate, broadly obtuse, 8 mm long, 6 mm wide expanded, 3-veined, with the apex abruptly contracted into a tail 2 mm long, with the sides revolute, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, 8 mm long, connate 4 mm into a bifid lamina 8 mm wide expanded, 4-veined, concave in the distal third to form a midline carina, with the sides undulate, the apices approximate, acute, acuminate into slender tails 6 mm long; **petals** green, microscopically pubescent, transversely bilobed, 1 mm long, 4.5 mm wide, the upper lobe obovate, subtruncate, with the inner angle uncinately, the lower lobe equally long, narrowly triangular, narrowly obtuse; **lip** green, suffused with rose, glabrous, bilaminar, the laminae oblong with rounded ends, 3 mm long, longitudinally carinate along on the basal two-thirds, with the apical thirds concave, the body broad, from above the middle of the blades, connate to the base of the column, the sinus with a small, oblong appendix; **column** terete, 1.5 mm long, the anther dorsal, the stigma apical.

Bolivar: epiphytic wet virgin forest west of La Palma, alt. 1250 m, 10 Mar. 1991, C. Luer, J. Luer, A. Hirtz, X. Hirtz, F. Navarro, M. Navarro, J. Del Hierro & M. Evans 14973 (Holotype: MO).

Cotopaxi: trail from Corazón to Facundo Vela, alt. 1300-1400 m, 17 May 1980, G. Harling & L. Anderson 19196 (GB).

This species from the western slopes of Ecuador is related to *L. fiskei* and *L. gargoylea* from the eastern declivities. From them *L. horribilis* is distinguished by the roughly corrugated leaves and a fierce-looking, brown flower lying upon the prickly surface. The sides of the dorsal sepal are markedly revolute while the sides of the lateral sepals are undulate. The lateral sepals are concave below the middle and form a tall, carina-like fold in the midline. The apices of the lateral sepals are approximate and acuminate into slender tails.

In the center of the flower the prominent, green petals flank the lip. The upper lobes of the petals are hook-shaped. The blades of the not-too-unusual are oblong with a carina down the middle. The small, oblong appendix is not remarkable.

Lepanthes hymenoptera Luer & Hirtz, *Die Orchidee* 39: 101, 1988.

Fig. 120.

Ety.: From the Greek *hymenoptera*, "with membranous wings," referring to the thin, transparent blades of the lip.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-20 cm long, enclosed by 8-15 thin, microscopically ciliate, lepanthiform sheaths with oblique ostia. **Leaf** erect, thinly coriaceous, suffused with purple beneath, ovate to narrowly ovate, acute, 3-7.5 cm long, 0.7-2 cm wide, the cuneate base contracted into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 15 mm long, borne on top of the leaf by a filiform peduncle 10-38 mm long; floral bracts oblique, 1-1.5 mm long; pedicels 2-2.5 mm long; ovary 2 mm long; **sepals** translucent light green to light orange-brown, ovate, subacute, the dorsal sepal 4.25-5 mm long, 3.25-4.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, minutely denticulate, 4-5 mm long, 2-2.5 mm wide, connate 1.5 mm; **petals** dark purple to dark orange-brown, pubescent, especially on lower lobe, transversely bilobed, 1-1.5 mm long, 4 mm wide, the upper lobe oblong, more or less truncate, the lower lobe smaller, triangular, acute or obtuse; **lip** dark purple to dark orange-brown, bilaminar, the laminae thin, translucent, microscopically ciliate-erose, oblong with the ends obtuse, 2 mm long, the connectives oblong, from the lamina below the middle, connate to the base of the column, the sinus protuberant and cleft, the appendix ovoid, oblong, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in cloud forest between Tena and Baeza, alt. 2150 m, 29 Mar. 1984, *C. Luer, S. Dalström, T. Höjjer & J. Kuijt* 9799 (MO).

Morona Santiago: epiphytic in cloud forest between San Juan Bosco and Gualaceo, alt. 2800 m, 28 Mar. 1895, *C. Luer, J. Luer, A. Hirtz & W. Flores* 11002 (Holotype: MO); same area, alt. 2100 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree* 11851 (MO); epiphytic in cloud forest east of Gualaceo, alt. 2150 m, 16 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andretta & W. Teague* 13406 (MO); Cordillera del Cutucú, alt. 800 m, 1898, *A. Hirtz & X. Hirtz* 4262 (MO).

This species shows some distant affinity with the common *L. mucronata* Lindl. as evidenced by the process between the lobes of the petals, and the membranous blades of the lip. The former, however, occurs locally in the wet forests on the eastern slopes of the Andes of central Ecuador, where it has been discovered several times in recent years. Vegetatively it is somewhat variable, narrowly ovate leaves may be borne by long, slender ramicauls, or wider, ovate leaves may be borne by much shorter, slender ramicauls. The flower rests on top of the leaf. The thin, transparent blades of the lip are held above the column, and the sinus of the body of the lip is bifid with an ovoid appendix in the cleft.

Lepanthes hystrix Luer & Hirtz, *Amer. Orch. Soc. Bull.* 53: 1158, 1984.

Fig. 121.

Ety.: From the Latin *hystrix*, "a porcupine," referring to the prickly exterior of the flower.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-15 cm long, enclosed by 7-12 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, acuminate, 4-8 cm long, 0.8-1.1 cm wide, the base cuneate into a petiole 3-5 mm long. **Inflorescence** racemose, 2-4 loose, lightly flexuous, successively several-flowered racemes up to 3.5 cm long, borne behind the leaf by a filiform peduncle 0.5-2.5 cm long; floral bract 2 mm long; pedicel 1.5 mm long; ovary echinate, 1.5 mm long; **sepals** yellow, echinate-spiculate externally, ovate, acute, the dorsal sepal 3.5 mm long, 1.25 mm wide, 1-veined, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, 3.25 mm long, 1 mm wide, 1-veined, connate 1.25 mm, the lateral margins conduplicate; **petals** yellow, suffused with red-brown, microscopically pubescent, transversely oblong, bilobed, 0.4 mm long, 3 mm wide, the lobes about equal in length, obtuse, the upper lobe slightly narrower than the lower lobe; **lip** brown, microscopically pubescent, bilaminar, the blades narrowly ovate, 1.5 mm long, with the apices acute, bases rounded, the connectives short, oblong-cuneate, the body broad, connate to the column above the base, the sinus obtuse with the appendix minute, ovoid, pubescent; **column** slender, 1.75 mm long, the anther and stigma apical.

Carchi: epiphytic in cloud forest above Maldonado, alt. 2400 m, 4 Apr. 1984, C. Luer, S. Dalström, T. Höjjer & J. Kuijt 9951 (MO).

Pichincha: epiphytic in cloud forest near Mindo, alt. 2300 m, 1 Apr. 1984, C. Luer, S. Dalström, T. Höjjer & J. Kuijt 9880 (Holotype: MO; Isotype: SEL); Mindo, alt. 2400 m, 1984, A. Hirtz 1634, 2161 (MO); Chiriboga, alt. 2000 m, Sept. 1984, A. Hirtz 1898 (MO).

This species is apparently endemic in northwestern Ecuador. It is characterized by the yellow, long-spiculate flowers borne successively in a loose raceme shorter than the narrow leaf. The lateral margins of the lateral sepals are sharply folded inward as seen in several Bolivian species such as *L. complicata* Luer & Vásquez. The petals are transversely narrowly oblong. The blades of the lip are narrowly ovate, and the appendix is reduced to a minute, pubescent lobule.

Lepanthes ictalurus Luer, *Phytologia* 54: 346, 1983.

Fig. 122.

Ety.: Named for the genus *Ictalurus*, the genus of the common catfish.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect to suberect, 2.5-8 cm long, enclosed by 5-15 long-ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical to broadly elliptical or suborbicular, 10-20 mm long, 8-11 mm wide, the apex obtuse to rounded, the rounded base contracted into a petiole 1-2 mm long. **Inflorescence** a progressively lengthening, successively flowered, flexuous, distichous raceme up to 14 cm long including the filiform peduncle 2-2.5 cm long; floral bract 1.5 mm long; pedicel 2-4 mm long; ovary 1.5 mm long, with serrulate wings; **sepals** purple to red-brown with yellow margins, spiculate along the edges and carinate nerves externally, the dorsal sepal narrowly triangular, concave, 7 mm long, 2.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 5 mm into an ovate, bifid lamina 7 mm long, 3.5 mm wide, the apices approximate, acute; **petals** yellow to orange, suffused with rose, long-ciliate-pubescent, markedly unequally transversely bilobed, 0.75 mm long, 4.5 mm wide, the upper lobes short, more or less truncate, incurved into apposition over the column, the lower lobes attenuate, linear triangular; **lip** red-brown to yellow, suffused with rose, bilaminar, the blades elliptical, glabrous, 2 mm long, the apex of each abruptly contracted into a filiform appendage 2 mm long, the connectives short, broadly rectangular, the body broad, connate to the column above the middle, the sinus pubescent with the appendix reduced to a minute apiculum; **column** slender, cylindrical, 2.5 mm long, the anther dorsal, the stigma ventral.

Pastaza: cloud forest along Río Zuñag, alt. 2000 m, 23-28 Feb. 1990, A. Hirtz, S. Dalström et al. 4646 (MO).

Morona-Santiago: east of the pass between Gualaceo and Limón, alt. 2900 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11814 (MO); between Limón and Cuenca, alt. 2800 m, 20 Jan. 1989, A. Hirtz, A. Andreaetta & S. Ortega 4174 (MO).

Loja: epiphytic in cloud forest east of Yangana, alt. 2650 m, 4 Mar. 1982, C. Luer, D. D'Alessandro & S. Dalström 7151 (Holotype: SEL); south of Yangana, alt. 2400 m, 22 Sept. 1980, C. Luer, J. Luer & H. H. Morgan 5530 (SEL).

Zamora-Chinchipe: east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10726 (MO); Cajanuma Range, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10759 (MO); above Valladolid, alt. 2600 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10892 (MO).

Also Colombia (Putumayo).

This grotesquely flowered species is widely distributed in the Andes of Ecuador. It is one of the most distinguished species, being easily identified by the long, flexuous racemes of yellow-bordered, red, prickly flowers with long-acuminate lower lobes of petals with abbreviated, obtuse, incurved upper lobes. Each of the anterior lobes of the lip has a long, slender process, reminiscent of the barbels of a catfish.

Lepanthes ilensis Dodson, *Icones Pl. Trop.* 127, 1980.

Fig. 123.

Ety.: Named for Montañas de Ila where the species was first found.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-6.5 cm long, enclosed by 9-11 microscopically ciliate, lepanthiform sheaths with oblique ostia. **Leaf** erect, coriaceous, elliptical-ovate, obtuse, shortly acuminate, 2-4 cm long, 1.2-2 cm wide, the base rounded, contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 10-15 mm long; floral bracts 1 mm long; pedicels 1.5-2 mm long; ovary 1.5 mm long; **sepals** translucent light yellow, ovate, obtuse, shortly acuminate, the dorsal sepal 3.3 mm long, 2.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique with the apices diverging, 2.5 mm long, 3.3 mm wide, connate 1 mm; **petals** dark yellow, purple at the base, microscopically pubescent, transversely bilobed, 1.3 mm long, 3 mm wide, the upper lobe oblong, rounded at the apex, the lower lobe smaller, subtriangular, narrowly rounded at the apex; **lip** purple, bilaminate, the laminae elliptical, minutely pubescent, with the ends narrowly rounded, 1.3 mm long, the connectives cuneate, from the center of the lamina, the body narrow, thick, rounded externally, connate to the column above the base, the sinus protuberant, pubescent, the appendix small, ovoid, pubescent; **column** 1.3 mm long, the anther dorsal, the stigma ventral.

Pichincha: Centinela, Montañas de Ila, east of Patricia Pilar, alt. 600 m, 3 July 1979, C. H. Dodson & M. Fallen 7772 (Holotype: SEL); Silver mining road above Toachi, alt. 1200 m, 27 Feb. 1982, A. Hirtz 108 (SEL), C. Luer illustr. 9074.

This species is apparently endemic at relatively low altitudes on the west slopes of central Ecuador. It is characterized by a congested, small-flowered raceme shorter than the elliptical, shortly acuminate leaf. The sepals are obtuse and shortly acuminate; the petals are large with rounded ends of the lobes; and the blades of the lip are elliptical with the body narrow but thick, protuberant and rounded with a small appendix.

Lepanthes ilinizae Luer & Hirtz, *Novon* 3: 449, 1993

Fig. 124.

Ety.: Named for Volcán Iliniza, on which this species was discovered.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect stout, 5-12.5 cm long, enclosed by 10-14 dark, loose, ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-ovate, acute, acuminate, 4-6.5 cm long, 1.5-2 cm wide, the base cuneate to rounded, contracted into a petiole ca. 4 mm long. **Inflorescence** an elongating, loose, distichous, lightly flexuous, successively many-flowered raceme up to 14 cm long including the pedicel 1.5-2.5 cm long; floral bracts 3 mm long, pedicels 1.5 mm long; ovary 2 mm long; flowers yellow to orange-brown; **sepals** ovate, acute, lightly acuminate, carinate, denticulate, the dorsal sepal 7 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 7 mm long, 2.25 mm wide, connate 2.5 mm; **petals** microscopically pubescent, transversely bilobed, 1 mm long, 3 mm wide, the upper lobe oblong with the end rounded, the lower lobe triangular with the end rounded, shorter than the upper lobe; **lip** microscopically pubescent, bilaminate, the blades narrowly oblong with rounded ends, 2.25 mm long, the connectives cuneate, the body narrow, connate to the base of the column, the appendix small, ovoid, pubescent; **column** 2 mm long, the anther dorsal, the stigma ventral.

Pichincha: epiphytic in wet forest, west flank of Volcán Iliniza, Cerro Azul, alt. 2900 m, 23 Jan. 1987, C. Luer, J. Luer & A. Hirtz 12478 (Holotype: MO).

This species is similar to *L. biloba* and *L. elongata*. The loosely flowered racemes begin flowering shorter than the leaves, but eventually attain lengths exceeding the leaves several times. The sepals are acute and lightly acuminate and denticulate; the lobes of the petals are rounded; the blades of the lip are narrowly oblong, and the appendix small and ovoid.

Lepanthes illex Luer, *Phytologia* 54: 347, 1983.

Fig. 125.

Ety.: From the Latin *illex*, "seductive," referring to a presumed attractive function of the appendix.

Plant medium in size to large, epiphytic, caespitose; roots coarse. Ramicauls slender to stout, erect, 6-35 cm long, enclosed by 7-16 glabrous to microscopically scabrous, lepanthiform sheaths, minimally dilated at the orifice. **Leaf** thinly coriaceous, veined, erect, narrowly elliptical, acute, acuminate, 4-15 cm long, 1.5-3.5 cm wide, the base cuneate into the petiole 4-5 mm long. **Inflorescence** a subclax, successively many-flowered raceme up to 18 cm long including the slender peduncle ca. 5 cm long behind the leaf; floral bract 2 mm long; pedicel 1.5 mm long; ovary 2 mm long, irregularly erose-winged; **sepals** yellow, suffused with purple centrally, carinate-ciliate externally, the margins microscopically ciliate, microscopically pubescent within, the dorsal sepal triangular, acute, 10 mm long, 4 mm wide, connate 1.5 mm to the lateral sepals, the lateral sepals connate 6 mm into an ovate, shortly bifid lamina 9.5 mm long, 5 mm wide, the apices acute; **petals** orange, suffused with purple medially, cellular-glandular, transversely panduriform, bilobed, 0.6 mm long, 2 mm wide, the lobes ovate, obtuse, the lower lobe slightly smaller; **lip** bright purple or orange, bilaminate, the blades oblong-ovate, convex, 1.5 mm long, glabrous, the apices subacute, the bases rounded, the connectives broadly cuneate, the body broad, connate to the column above the base, the appendix ovate, ciliate, pedunculate; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Sucumbios: between El Playón and Santa Barbara, alt. 3400 m, *C. Luer, J. Luer & A. Hirtz 15213* (MO); El Mirador, alt. 3400 m, June 1991, *A. Hirtz 5562* (MO).

Carchi: epiphytic in cloud forest above El Carmelo, alt. 3200 m, 17 May 1981, *C. Luer, J. Luer, A. Hirtz 6263* (Holotype: SEL); same area, alt. 3200 m, 6 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11081* (MO).

This robust species, endemic at high altitudes of northern Ecuador, is identified by the large habit; bilabiate flowers borne in a subclax raceme equaling or surpassing the acuminate leaf in length; small, transverse petals; and a lip with convex lobes and a pedunculate, pubescent appendix.

Lepanthes imitator Luer & Hirtz, sp. nov.

Fig. 126.

Ety.: From the Latin *imitator*, "an imitator," referring to the similarity to the common *L. monitor*.

Planta mediocris, inflorescentia cum racemo congesto disticho folio elliptico-ovato breviter acuminato brevior, sepalis ovatis acutis glabris, petalis transverse bilobis, lobis ovatis apice rotundatis, labelli laminis oblongis minute pubescentibus, connectivis cuneatis, appendice crassa oblonga pubescenti.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-11 cm long, enclosed by 8-10 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical-ovate, subacute, shortly acuminate, 3.5-4 cm long, 1.5 cm wide, the rounded base contracted into a petiole 4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 8 mm long, borne behind the leaf by a slender peduncle 20-25 mm long; floral bract 1.5-2 mm long; pedicel 1.5 mm long; ovary 2 mm long; **sepals** translucent white, glabrous, carinate, the dorsal sepal ovate, acute, 7 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, 7.5 mm long, connate 2.5 mm, 6 mm wide together, each 2-veined; **petals** pale yellow with a thin, purple edge, minutely pubescent, transversely bilobed, 1.5 mm long, 3.5 mm wide, the lobes suborbicular to broadly ovate with rounded apices, the upper lobe slightly larger than the lower lobe; **lip** white, bilaminate, the laminae minutely pubescent, ovate, 2 mm long, with the apices and bases rounded, the connectives cuneate, the body broad, connate to the base of the column, the appendix pubescent, thick, oblong-triangular, with an apical segment; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in forest between Gualaceo and Limón, alt. 2,150 m, 16 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13401* (Holotype: MO);

Although superficially similar to *L. monitor*, this considerably smaller species from southeastern Ecuador is distinguished by the white sepals and lip, and yellow petals edged in purple. The flowers are borne in a congested raceme behind an elliptical leaf. The lobes of the petals are suborbicular, and the blades of the lip are ovate. The appendix is thick, oblong and pubescent with a terminal segment.

Lepanthes implexa Luer & Hirtz, *Lindleyana* 2: 36, 1987.

Fig. 127.

Ety.: From the Latin *implexus*, "entwined, interwoven," referring to the intricacies of the appendix.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-8 cm long, enclosed by 8-11 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, acute, acuminate, 2.5-3.5 cm long, 1.2-1.5 cm wide, the base cuneate into a petiole 1.5-2.5 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 10-20 mm long; floral bract 1 mm long; pedicel 1.5-2 mm long; ovary 1.5 mm long; **sepals** light tan, minutely denticulate, broadly ovate, subacute to obtuse, carinate, the dorsal sepal 4 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals shortly acuminate, 4 mm long, 2 mm wide, connate 1.5 mm; **petals** yellow, suffused with red-brown on the inner margin, microscopically pubescent, transversely bilobed, 1 mm long, 3.5 mm wide, the lobes triangular, acute, the upper lobe larger than the lower; **lip** bilaminiate, red-brown, the laminae narrowly ovate, glabrous, 1.6 mm long, the bases rounded, the apices subacute, ciliate, the connectives cuneate, the body thick, connate to the base of the column, the sinus obtuse, with an intricately sculpted appendix hinged from the margin, the appendix membranous, oblong and convex with a midrib below the middle, with the margins surrounding the midrib which becomes deflexed above the middle and terminated below the margins in a pubescent, clavate apex, the margins uniting beyond the midrib into a pubescent, decurved apex; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaquico and Limón, alt. 2150 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11841 (Holotype: MO); same area, 8 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12726 (MO).

Although vegetatively somewhat smaller, this species is similar to *L. urotepala*. *Lepanthes implexa* differs in having minutely denticulate sepals; upper lobes of the petals neither as narrow nor as long; and the appendix differently sculpted from that of *L. urotepala*. The appendix of *L. implexa* is a delicately and intricately sculpted organ that appears to be interwoven.

Lepanthes inamoena Luer, *Phytologia* 54: 347, 1983.

Fig. 128.

Ety.: From the Latin *inamoenus*, "not pretty," referring to the drab little flower.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-11 cm long, enclosed by 6-10 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly elliptical-ovate, acute, 2.5-6 cm long, 1-1.7 cm wide, the base cuneate into a 3-4 mm long petiole. **Inflorescence** a weak, successively several-flowered, subdense raceme, up to 3 cm long, borne behind the leaf by a filiform peduncle ca. 5 mm long; floral bract 1 mm long; pedicel 0.75-1 mm long; ovary 0.75 mm long; **sepals** translucent yellow, glabrous, the dorsal sepal ovate, acute or obtuse, 2.2-2.5 mm long, 1.5-1.75 mm wide, connate to the lateral sepals for 0.3 mm, the lateral sepals connate into an ovate, narrowly obtuse lamina 2-2.25 mm long, 1.6-1.75 mm wide; **petals** yellow with red margins, microscopically pubescent, transversely oblong, bilobed, 0.75-1 mm long, 2-2.5 mm wide, the lobes elliptical with the apices rounded, the upper lobe slightly larger than the lower; **lip**: yellow with red margins, microscopically pubescent, bilaminiate, the blades poorly developed, subfalcate, 1 mm long, minutely ciliate, the apices obtuse to acute, the bases rounded, the connectives narrowly cuneate from the blades below the middle, the body narrow, connate to the base of the column, the appendix a minute, pubescent apiculum in the sinus; **column** scarcely 1 mm long, the anther and stigma apical.

Morona-Santiago: epiphytic in tall forest near Río Calagrás, alt. 1600 m, 19 Sept. 1980, C. Luer, J. Luer, C. H. Dodson et al. 5501 (Holotype: SEL); pass north of Gualaquiza, alt. 1800 m, S. Dalström & T. Höijer 1056 (MO); Cordillera del Condor, east of Guismé, alt. 1500 m, 18 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11894 (MO).

Zamora-Chinchipec: Cordillera del Condor, east of Los Encuentros, alt. 1450 m, 4 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12620 (MO); same area, alt. 1500 m, 19 May 1988, C. Luer, A. Hirtz, W. Teague, A. Andreetta & W. Flores 13486 (MO); Cordillera del Condor, near Patchicutza, alt. 1200-1500 m, June 1991, A. Hirtz 5530 (MO).

This species is apparently endemic in southeastern Ecuador at relatively low altitudes. It is distinguished by the narrowly elliptical leaf with a weak, subdense

raceme of very small flowers clinging to the back surface of the blade as if it had insufficient strength to stand alone. The flowers are bilabiate with the lateral sepals connate to the tip; the petals are relatively large with the obtuse lobes opposite; the oblong lobes of the lip are poorly developed into blades; and the appendix is little more than a tiny tuft of external hairs.

Lepanthes intonsa Luer, *Phytologia* 54: 348, 1983.

Fig. 129.

Ety.: From the Latin *intonsus*, "unshaven," referring to the long hairs on the lip.

Syn.: *Lepanthes doloma* Luer & Vásquez, *Phytologia* 54: 341, 1983.

Ety.: From the Greek *doloma*, "a bait, a decoy," referring to a possible role of the appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-4.5 cm long, enclosed by 5-7 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, more or less suffused with purple, ovate, acuminate, acute, 2.5-3 cm long, 1.2-1.7 cm wide, the rounded bases abruptly contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 10 mm long, borne by a filiform peduncle 5-8 mm long along the back side of the leaf; floral bract echinate, 1-1.25 mm long; pedicel 1.5-2 mm long; ovary 2.5 mm long; **sepals** yellow, suffused with purple, minutely ciliate, broadly ovate, obtuse, the dorsal sepal 3.5-4 mm long, 3.1 mm wide, connate 0.5 mm to the lateral sepals, the lateral sepals oblique, 3-3.5 mm long, 2.25 mm wide, connate 1 mm; **petals** yellow, suffused with orange, microscopically pubescent, transversely oblong, bilobed, 1.25 mm long, 3.75 mm wide, the outer margin acutely angled at the junction between the oblong, apically rounded, upper lobe and the smaller, oblique, obtuse, lower lobe; **lip** yellow, suffused with rose, bilaminate, the blades oblong-obovate, concave, with both ends rounded, 1.3 mm long, the apical margin with a few, very long cilia, the connectives oblong, elongated, lifting the blades above the column, the body connate to the column near the middle, the appendix straplike, sigmoid in the lateral view, pubescent, terminating in a small gland, hinged to the sinus; **column** stout, 1.5 mm long, the anther apical, the stigma ventral.

Carchi: above Maldonado, collected with A. Hirtz, flowered in cultivation at J & L Orchids, Easton, CT, 12 Mar. 1994, *C. Luer* 17130 (MO).

Loja: epiphytic in cloud forest south of Yangana, alt. 2450 m, 12 May 1981, *C. Luer, J. Luer & D. D' Alessandro* 6212 (Holotype: SEL).

Zamora-Chinchipe: east of the pass between Loja and Zamora, alt. 2250 m, 22 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague* 13593 (MO); above Valladolid, alt. 2450 m, 19 Mar. 1984, *C. Luer, S. Dalström, T. Höijer, D. D' Alessandro & J. Kuijt* 9576, 9588 (MO); same area, 24 Mar. 1985, *A. Hirtz, C. Luer & J. Luer* 2363 (MO).

Also Colombia (Cauca), Bolivia (Cochabamba).

This species occurs locally in southern Ecuador, as well as in Colombia and northcentral Bolivia. Intensive collecting of the genus in Peru should eventually connect the two localities. *Lepanthes intonsa* is identified by the congested inflorescence shorter than the ovate leaf; broad, minutely denticulate sepals; large petals with a prominent angle on the outer margin; oblong labellar blades with long cilia along the apical margin held high above the column; and a large, hinged, sigmoid appendix.

Lepanthes intricata Luer, *Phytologia* 54: 349, 1983.

Fig. 130.

Ety.: From the Latin *intricatus*, "intricate," referring to the appendix of the lip.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-9 cm long, enclosed by 8-11 minutely ciliate, lepanthiform sheaths, the ostia markedly dilated. **Leaf** erect, thinly coriaceous, more or less suffused with purple, ovate, lightly acuminate, acute, 4-5.5 cm long, 1-2.2 cm wide, the rounded base contracted into a petiole 2 mm long. **Inflorescence** a congested, flexuous, distichous, successively flowered raceme up to 20 mm long, borne by a filiform peduncle 5-20 mm long behind the leaf; floral bract 1 mm long; pedicel 1 mm long; ovary 1.5 mm long; **sepals** pale yellow, green or orange, suffused with orange or rose centrally, carinate externally along the veins, the dorsal

sepal ovate, subacute to acute, sometimes shortly acuminate, 2.5-4 mm long, 1.75 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, subacute to acute, 2.3-4 mm long, 1.3-1.75 mm wide, connate 0.5 mm. **petals** yellow-orange, microscopically pubescent, transversely oblong, bilobed, 1 mm long, 2-2.75 mm wide, the upper lobe oblong, obtuse, the lower lobe half as large, triangular, obtuse; **lip** orange or rose-purple, the laminae ovate-subfalcate, 1.5 mm long, the apices acute, the bases obtuse, the connectives short, cuneate, the body narrow, connate to the column in the lower third, the appendix proportionately large, pubescent, ligulate, with a more or less 4-lobed, pedunculated, long-ciliate, apical gland; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Carchi: above Maldonado, collected by J & L Orchids with A. Hirtz, 12 Mar. 1994, flowered at J & L Orchids 1292-399, 12 Mar. 1984, *C. Luer* 17130 (MO).

Napo: wet forest between Archidona and Coca, alt. 1000 m, 17 Feb. 1990, *S. Dalström* & *L. Årby* 1361, 1370 (MO).

Pastaza: north of Mera, alt. 1350 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz* & *W. Flores* 11195 (MO).

Loja: epiphytic in cloud forest south of Yangana, alt. 2450 m, 12 May 1981, *C. Luer, J. Luer* & *D. D'Alexandro* 6209 (Holotype: SEL).

Morona-Santiago: Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 18 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, A. Jesup* & *P. Jesup* 13993 (MO).

Zamora-Chinipe: Cordillera del Condor east of Los Encuentros, alt. 1300 m, 19 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta* & *W. Teague* 13479 (MO); Cordillera del Condor east of Paquisha, alt. 1450 m, 19 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz* & *W. Flores* 11941 (Holotype: MO); above Valladolid, alt. 2450 m, 18 Mar. 1984, *C. Luer, S. Dalström, et al.* 9588 (MO); same area, alt. 2450 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz* & *W. Flores* 10904, 10936 (MO).

Also Peru (Amazonas).

This species is found relatively frequently in the forests of southeastern Ecuador, with one disjunct collection in northwestern Ecuador. It is identified by the congested inflorescence shorter than the ovate, acuminate leaf; entire sepals; transverse petals with upper lobes large and obtuse; the lip with a narrow body and an intricate appendix with an apical segment more or less with four tufts of hairs.

Lepanthes iricolor Luer, *Phytologia* 54: 349, 1983.

Fig. 131.

Ety.: From the Latin *iricolor*, "with the colors of the rainbow," referring to the multiple colors of the flowers.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 0.5-2.5 cm long, enclosed by 4-6 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, purple-reticulate, ovate, subacute, 7-14 mm long, 5-9 mm wide, the broadly cuneate base contracted into a twisted petiole 1 mm long. **Inflorescence** a congested, distichous raceme of successive flowers, up to 3 mm or more long, borne by a filiform peduncle up to 3 mm long, along the back of the leaf; floral bract 1 mm long; pedicel 0.75 mm long; ovary 1 mm long, narrowly winged; **sepals** ovate, acute, shortly acuminate, denticulate, the dorsal sepal purple with green margins, 2.1 mm long, 1.3 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, yellow with the midvein red, 2 mm long, 1.1 mm wide, connate 0.25 mm; **petals** orange, transversely oblong, 0.6 mm long, 2 mm wide, obtusely angled on the outer margin at the midvein, the upper lobe oblong, truncate, the lower lobe triangular, obtuse; **lip** orange, bilaminar, the blades ovate, 1.25 mm long, the apices acute, the bases rounded, glabrous, the connectives broadly cuneate, ciliate, the body narrow, connate to the column above the base, the appendix small, triangular, ciliate; **column** 1 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest west of Tena near Río Jatunyacu, alt. 600 m, 21 Feb. 1982, *C. Luer* & *A. Hirtz* 6895 (Holotype: SEL).

This tiny species is known only from the type-collection, probably because it occurs in the eastern lowlands where fewer collections have been made. *Lepanthes iricolor* is mostly distinguished by the bright, multiple colors of the flower parts. Unfortunately, these colors may vary greatly as they do in other species of the genus. Otherwise this species is distinguished by the tiny habit; short, congested racemes; ovate, denticulate sepals connate only at the base; comparatively large, transverse petals; and a lip with ovate blades and a small, triangular appendix.

Lepanthes jacksonyxa Luer & Hirtz, *Lindleyana* 2: 38, 1987.

Fig. 132.

Ety.: Named for the similarity of the appendix to a jack-in-the-box.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 11-15 cm long, enclosed by 13-15 glabrous, lepanthiform sheaths with long-acuminate ostia microscopically scabrous. **Leaf** erect, thinly coriaceous, suffused with purple beneath, suborbicular, obtuse, abruptly long-acuminate, 6-7 cm long, 3-3.5 cm wide, the rounded base contracted into a petiole 3 mm long. **Inflorescence** a congested, secund, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 3-3.5 cm long; floral bract 2 mm long; pedicel 2 mm long; ovary 3.5 mm long; **sepals** light yellow-green, glabrous, ovate, acute, carinate, the dorsal sepal 7 mm long, 4 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals 7 mm long, 2.75 mm wide, connate 2 mm; **petals** microscopically pubescent, transversely bilobed, 2 mm long, 5.25 mm wide, with a setiform midlobe 0.5 mm long, the upper lobe light brown, oblong, obliquely truncate, the lower lobe smaller, narrowly triangular, acute; **lip** bilaminar, red-brown, the laminae oblong, thinly membranous, glandular-cellular, connate medially over the column, 2.25 mm long, the bases rounded, the apices subacute, ciliate, the connectives cuneate, the body connate to the base of the column, the sinus obtuse above a saccate dilatation of the center of the body, with an oblong, pubescent, segmented appendix from the margin of the sinus, either folded backward into the cavity or swung forward; **column** 3 mm long, the anther dorsal, the clinandrium with a long process protruding from either side, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaceo and Limón, alt. 2100 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11847 (Holotype: MO); same area, 8 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12727 (MO).

This species is recognized by the orbicular, long-pointed leaves; a short, congested inflorescence; ovate acute sepals; petals not unlike those of the common *L. mucronata* with a setiform middle lobe and a truncate upper lobe; thin, membranous blades of the lip so thoroughly adnate medially over the column that they cannot be separated without tearing the margins; an oscillating, segmented appendix that folds back into a sac in the body of the lip; and a pair of long teeth from the apex of the column that protrude beyond the margins of the united blades of the lip.

Lepanthes jamboensis Luer & Hirtz, sp. nov.

Fig. 133.

Ety.: Named for the area along Río Jamboe south of Zamora in the province of Zamora-Chinchiipe.

Planta mediocris, inflorescentia racemosa congestissima folio ovato leviter acuminato brevior, sepalis ovatis acutis lateralibus pubescentibus infra medium glabris concavis, petalis bilobis, lobo superiore cuneato, lobo inferiore oblongo convexo, labello bilaminato, laminis pubescentibus anguste oblongis, corpore latissimo, sinu protuberanti cum appendice minuta globosa pubescenti.

Plant medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 3-10 cm long, enclosed by 9-13 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, acute, acuminate, 3.5-6.5 cm long, 2-2.8 cm wide, the base rounded or subcordate, abruptly contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme, 5 mm or more long, borne behind the leaf by a peduncle up to 25 mm long or longer; floral bracts 1.5 mm long; pedicels stout, 1 mm long; ovary 3 mm long; **sepals** yellow, carinate externally along the veins, the dorsal sepal ovate-triangular, acute, 8 mm long, 3.75 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals yellow, suffused with pink, ovate, oblique, connate 4 mm into a bifid synsepal, 8 mm long, 6.5 mm wide, 4-veined, concave and glabrous below the middle, pubescent above the middle, with the apices acute, diverging; **petals** minutely pubescent, transversely bilobed, 1.5 mm long, 4 mm wide, the upper lobe red, cuneate, subtruncate, the lower lobe yellow, suboblong with an area of convexity below the middle; **lip** pink, bilaminar, the blades pubescent, narrowly oblong, 3 mm long, the apices and bases narrowly rounded, the connectives broadly cuneate, the body broad, connate to the base of the column, with a protruding, triangular sinus with a minute, pubescent, globose appendix at the tip; **column** 3 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchiipe: epiphytic in forest south of Zamora, above Río Jamboe, alt. 1550 m, 22 Jan. 1992, C. Luer, J. Luer, P. Jesup, A. Jesup & A. Hirtz 16098 (Holotype: MO).

This species is distinguished by the congested inflorescence shorter than the ovate leaf and a relatively large flower. The dorsal sepal is triangular and acute; the laterals are deeply connate, pubescent above the middle, concave and glabrous below the middle. The upper lobe of the petals is cuneate, the lower lobe is oblong with a convex area toward the base. The blades of the lip are narrowly oblong; the body is wide with a protuberant sinus with a minute, globose appendix.

***Lepanthes jamesonii* Lindl. ex Rchb.f., Xenia Orch. 1: 152, 1856.**

Fig. 134.

Ety.: Named in honor of John Lindley whose reputed drawing bears a likeness of this species.

Syn.: *Lepanthes delphax* Luer, Phytologia 54: 339, 1983.

Ety.: From the Greek *delphax*, "a little pig," in reference to the similarity of the apical stigma to the snout of a pig.

Syn.: *Lepanthes porcula* Luer, Phytologia 54: 365, 1983.

Ety.: From the Latin *porculus*, "a little pig," in reference to the protruding apical stigma that resembles the snout of a pig.

Plant medium in size to large, epiphytic, caespitose; roots coarse. Ramicauls slender to stout, erect, 5-18 cm long, enclosed by 6-10 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, oblong, shortly acuminate, acute, 3-8 cm long, 1.3-2.5 cm wide, the base cuneate into the petiole 5-7 mm long. **Inflorescence** a loose, successively several-flowered, subflexuous raceme up to 6 cm long including the filiform peduncle up to 1 cm long; floral bract 1.5 mm long, inflated; pedicel 1 mm long; ovary 1.5-2 mm long; **sepals** yellow, sometimes suffused with purple, glabrous, the dorsal sepal broadly ovate to suborbicular, concave, 2.75-3.35 mm long, 2.5-3 mm wide, connate to the lateral sepals for 0.5-0.75 mm, the lateral sepals ovate, oblique, subacute, shortly acuminate, 2.75-3 mm long, 1-1.75 mm wide, connate 1 mm, 1-veined; **petals** yellow or orange with purple border, microscopically pubescent, transversely oblong, 0.75-0.9 mm long, 2.25-3 mm wide, the lobes oblong-elliptical with rounded apices, about equal in size and shape, or the lower lobe smaller or narrower, **lip** yellow or orange with purple border, bilaminar, the blades ovate, 1.5 mm long, the apices acute, incurved, the bases rounded, the connectives broadly cuneate-oblong, the body broad, connate to the base of the column, the appendix small, pubescent or reduced to a minute angle in the sinus; **column** stout, 1.25 mm long, the anther and stigma apical.

Without locality, probably received by Kew Gardens from Jameson in Ecuador, and with an illustration in the Lindley herbarium (Holotype: K).

Carchi: Páramo de Boliche near Tulcán, 2800-3200 m, Aug. 1894, *F. C. Lehmann 7179* (W); forest in the paramo between Al Angel and Tulcán, alt. 3350 m, 5 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11064* (MO).

Pichincha: epiphytic in cloud forest between Quito and Chiriboga, alt. 2700 m, 6 Feb. 1979, *C. Luer, J. Luer & R. Escobar 3852* (type of *L. porcula*: SEL); Pasachoa, alt. 3300 m, 20 Oct. 1984, *A. Hirtz 2040* (MO); Mojanda, alt. 3300 m, 29 Sept. 1984, *A. Hirtz 1933* (MO).

Cotopaxi: epiphytic in cloud forest between Angamarca and Corazón, alt. 3000 m, 17 Feb. 1979, *C. Luer, J. Luer & A. Hirtz 3986* (type of *L. delphax*: SEL); terrestrial on the roadcut above Pilaló, alt. 3300 m, 26 Feb. 1986, *C. Luer, J. Luer & A. Embree 12042* (MO).

Bolivar: epiphytic at the pass north of Chillanes, alt. 2650 m, 25 Mar. 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9708* (MO); same area, alt. 2800 m, 11 Feb. 1990, *S. Dalström & L. Åraby 1312* (MO); north of Guaranda toward Facundo Vela, alt. 2800 m, 24 Mar. 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9691, 9693* (MO); tall forest south of Chillanes, alt. 2400 m, 11 Mar. 1991, *C. Luer, J. Luer, A. Hirtz & J. Del Hierro 14994* (MO); west of Salinas toward Las Palma, alt. 3400 m, 10 Mar. 1991, *C. Luer, J. Luer, A. Hirtz & J. Del Hierro 14951* (MO).

What appears to be this species is illustrated as the center-piece of a collage of several species. It is simply identified as "Jamesoni." In his *Xenia Orchidaceae* Reichenbach published the name *L. jamesonii* with a brief description in Latin drawn from this illustration, and citing the illustration from Lindley as the type.

Although there is no proof, this illustration most likely represents a widely distributed, variable species from the high Andes of Ecuador. Two forms of this species have been described as *L. delphax* and *L. porcula*. The names of both these taxa refer to the column with the apical stigma that resembles the snout of a pig.

The differences given in separating the two have subsequently proven to be inconsequential among variations in the wide distribution.

Lepanthes jamesonii is characterized by the loose, several-flowered racemes that are shorter than the oblong, shortly acuminate leaf. The dorsal sepal is broad and obtuse; the laterals are connate to near the middle with the apices varying in width and often diverging. The petals are transversely oblong; the blades of the lip are ovate and supported by broad connectives, and the appendix is minute.

***Lepanthes janitor* Luer & Escobar, Amer. Orchid Soc. Bull. 53: 476, 1984. Fig. 135.**

Ety.: From the Latin *janitor*, "a doorkeeper," referring to the blades of the lip that close over the column.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 10-18 cm long, enclosed by 11-19 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, narrowly ovate, acute, acuminate, 4-5 cm long, 1-1.7 cm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 7-25 mm long; floral bract 1.5 mm long; pedicel 2.5-4.5 mm long; ovary 2 mm long; **sepals** glabrous, cellular-denticulate, translucent light yellow-green, the dorsal sepal triangular, acute, 5-5.5 mm long, 3-4.25 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals oblique, ovate, acute, 5-6 mm long, 2-2.2 mm wide, connate 2 mm; **petals** green, pubescent, transversely bilobed, 1-1.5 mm long, 4-4.5 mm wide, with an uncinata, marginal lobule between the lobes, the upper lobe oblong, truncate, suffused with purple-brown across the truncate apex, the lower lobe smaller, triangular, acute; **lip** translucent green, suffused with red-purple, bilaminate, the blades semi-orbicular with rounded ends, adherent to each other over the column, 1.5-1.8 mm long, the connectives narrow with a narrow body connate to the base of the column, the sinus filled with a large, oblong, concave, pubescent appendix, 1 mm long, with a truncate, long-ciliate apex; **column** 1.5 mm long, with the anther dorsal, the stigma ventral.

Esmeraldas: epiphytic in wet forest west of Lita toward San Lorenzo, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, A. Hirtz et al. 12400 (MO).

Also Colombia (Antioquia, type; and Risaralda).

This species, locally but widely distributed in the Andes of Colombia and Ecuador, is distinguished by the long, slender ramicauls and a proportionately small, narrowly ovate leaf with the congested raceme borne behind. The color of the flowers is similar to others also characterized by an uncinata, marginal lobule. The sepals are translucent while the petals are green with a dark, purple-brown, truncate, upper lobe. The blades of the lip are translucent and adherent over the column. The appendix is large, oblong and concave with a long-ciliate apex. The plants examined are very stable morphologically through their range.

***Lepanthes jayandella* Luer, sp. nov.**

Fig. 136.

Ety.: Named for J & L Orchids where the species is cultivated.

Species haec *L. thylaci* Luer & Hirtz similis, sed sepalis latioribus, labelli lamini apicibus angustioribus et appendice subnulla differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 10-16 mm long, enclosed by 4-5 minutely ciliate lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, subacute, 12-17 mm long, 5-12 mm wide, the base broadly cuneate, contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme to ca. 5 mm long, borne behind the leaf by a filiform peduncle 10 mm long; floral bract 1.5 mm long; pedicel 1.5 mm long; ovary 1 mm long; **sepals** rosy tan, glabrous, ovate, slightly acuminate, acute, slightly concave, the dorsal sepal 3 mm long, 1.8 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals 3 mm long, 1.4 mm wide, connate 0.5 mm; **petals** yellow with the tips of both lobes purple-brown, minutely pubescent, transversely bilobed, the lobes oblong, narrowly obtuse, opposite, 0.4 mm long, 2.4 mm wide, the upper lobe slightly larger than

the lower lobe; **lip** orange, purple-brown toward the base, bilaminate, the laminae microscopically pubescent, narrowly ovate-oblong with narrowly obtuse apices, 1.5 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse with the appendix reduced to a minute hair; **column** slender, clavate, 1 mm long, the anther dorsal, the stigma apical.

Without locality, probably collected by Cordelia Head or Marguerite Webb, flowered in cultivation by J & L Orchids, Easton, CT, 12 Mar. 1994, *C. Luer 17129* (Holotype: MO).

This small species has been in cultivation at J & L Orchids for several years. It was collected in Ecuador, but unfortunately, the label was lost. It grows well, many divisions of the plant having been made. It is identified by the minute habit with the short raceme bearing a colorful flower behind the ovate leaves. The sepals are rosy tan and acute; the lobes of the yellow petals are oblong with purple tips; the blades of the lip are narrowly ovate; and the appendix is merely a minute, cellular process.

***Lepanthes jimburae* Luer & Hirtz, Die Orchidee 42: 189, 1991.**

Fig. 137.

Ety.: Named for the community of Jimbura below the pass where this species was discovered.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 10-25 mm long, enclosed by 3-4 ciliate, lepanthiform sheaths, more or less dilated, especially at the ostia. **Leaf** erect, coriaceous, obovate, obtuse, 7-18 mm long, 4-8 mm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a loose, flexuous, distichous, successively several-flowered raceme up to 6 cm long including the slender, filiform peduncle 1-2 cm long; floral bract 3 mm long, spiculate; pedicel 1.5-2 mm long; ovary 1.5 mm long, subdenticulate on the ribs; **sepals** red-brown, narrowly ovate, acute, caudate, carinate, denticulate-erose, the dorsal sepal concave, the blade 4.5 mm long, 2.5 mm wide, connate to the lateral sepals for 1 mm, the tail 4.5 mm long, the lateral sepals 11 mm long including the tail 2 mm long, 2.5 mm wide, connate 2.5 mm; **petals** orange-brown, transversely bilobed, 0.8 mm long, 3 mm wide, microscopically pubescent, the lobes obliquely triangular, acute, the upper lobe larger; **lip** bilaminate, orange-brown, the laminae microscopically pubescent, oblong, convex, 1.5 mm long, the ends obtuse, the connectives shortly cuneate, the body connate to the column above the base, the sinus narrow with an ovoid, pubescent appendix; **column** stout, 1.5 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest south of the pass above Jimbura, alt. 3050 m, 21 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11999* (Holotype: MO).

In one area of cold cloud forest in southern Ecuador, this little species grows intermixed with several other small species characterized by large flowers borne in loose, flexuous, successively flowered racemes much longer than the leaves. A very large-flowered form of *L. caudata* and *L. avicularia* are abundant, but this species, *L. alticola* and *L. vermicularis* are less frequent. Except for *L. jimburae* all the others are also known from other localities in southern Ecuador. *Lepanthes jimburae* is distinguished by the fewer, loose, lepanthiform sheaths; obovate leaves; long-caudate sepals, convex blades of the lip with short connectives; and an ovoid, pubescent appendix.

***Lepanthes jubata* Luer, Phytologia 54: 350, 1983.**

Fig. 138.

Ety.: From the Latin *jubatus*, "crested with hairs," referring to the long hairs on the margins of the laminae of the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 2-7 cm long, enclosed by 5-9 minutely ciliate, lepanthiform sheaths. **Leaf** erect to suberect, coriaceous, more or less suffused with purple, ovate, acuminate, acute, 10-28 mm long, 7-13 mm wide, the margins smooth or minutely denticulate-undulate, the rounded base abruptly contracted into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 8 mm long, borne by a filiform peduncle up to 12 mm long up the back of the leaf; floral bract 1-1.25 mm long, minutely spiculate; pedicel 0.5-1 mm

long; ovary 0.5-1.5 mm long, echinate; flower parts red to yellow; **sepals** ovate, shortly acuminate, the margins shortly lacinate, the carinae along the nerves spiculate, the dorsal sepal acute, 3-4 mm long, 1.8-2.25 mm wide, connate basally, the lateral sepals oblique, obtuse, connate to about the middle, 3-4 mm long, 3.5-4 mm wide together; **petals** transversely oblong, bilobed, 1 mm long, 3.25-4.25 mm long, both lobes obtuse, the upper longer; **lip** bilaminiate, the laminae oblong, oblique, the margins with long, straight hairs, the apices narrowly obtuse, the bases rounded, the connectives broad, rectangular, erect, lifting the laminae above the column, the body broad, connate to the base of the column, the sinus broadly rounded and protruding with a minute, pedunculated, bilobed appendix; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Carchi: cloud forest between Tulcán and Maldonado, alt. 3300 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9885 (MO).

Sucumbios: south of Santa Barbara, alt. 2700 m, 20 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15203 (MO).

Imbabura: Selva Alegre, alt. 2850 m, 6 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9981 (MO); same area, Apr. and Sept. 1984, A. Hirtz 1682, 1922 (MO).

Pichincha: West Iliniza, alt. 2700 m, 20 Oct. 1984, A. Hirtz 2045 (MO); west slopes of Volcán Iliniza, Cerro Azul, alt. 2800 m, 23 Jan. 1987, C. Luer, J. Luer & A. Hirtz 12465 (MO).

Napo: epiphytic in cloud forest near Papallacta, alt. 2500 m, 29 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4447 (Holotype: SEL); Papallacta, alt. 2700 m, May 1984, A. Hirtz 1809 (NO); west of Baeza, alt. 2600 m, 14 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11280 (MO).

Morona-Santiago: east of the pass between Gualaceo and Limón, alt. 2650 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11836 (MO); east of the pass east of Sigsig, alt. 2700 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13353 (MO); east of Paute toward dam site, alt. 2580 m, 25 Jan. 1989, C. Luer, J. Luer, P. Jesup, A. Jesup & A. Andreetta 14064 (MO).

Zamora-Chinchipec: above Valladolid, alt. 2450 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10931 (MO).

Also Peru (Amazonas).

This pretty little species is relatively frequent and widely distributed through Ecuador and northern Peru. The margins of the leaves are usually smooth, but occasionally they are minutely denticulate or undulate. The congested raceme is shorter than the leaf; the sepals are ovate and denticulate; the petals are transversely oblong; the blades of the lip are long-ciliate and held above the column by rectangular connectives; the body of the lip is protuberant with a minute, pedunculate, bilobed appendix.

Lepanthes kuijtii Luer & Hirtz, Amer. Orch. Soc. Bull. 53: 1160, 1984. Fig. 139.

Ety.: Named in honor of Job Kuijt, co-discoverer of this species.

Plant small to medium, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-5 cm long, enclosed by 7-10 minutely ciliate, lepanthiform sheaths. Leaf erect, coriaceous, suffused with purple beneath, ovate, acute, shortly acuminate, 18-25 mm long, 8-14 mm wide, the base rounded, contracted into a petiole 2 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 15-20 mm long; floral bract 1 mm long; pedicel 2 mm long; ovary sparsely echinate, 1.2 mm long; **sepals** red with yellow, denticulate margins, carinate-echinate, ovate, acute, acuminate-caudate, the dorsal sepal 4.25 mm long, 2.25 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique with diverging tails, 4.25 mm long, 1.75 mm wide, 2-veined, connate 0.75 mm; **petals** dark red, minutely pubescent, transversely bilobed, 0.75 mm long, 3 mm wide, the upper lobe oblong, obliquely truncate with the outer angle elongated, the lower lobe narrowly linear-oblong; **lip** red-purple, minutely pubescent, bilobed with the blades reduced to thickened margins of spreading, cuneate lobes, 1 mm long, body connate to the base of the column, the sinus obtuse, with the appendix large, ovoid, long-pubescent, protuberant; **column** clavate, 2 mm long, the anther and stigma apical.

Imbabura: epiphytic in wet forest along Río Los Cedros, alt. 1500-1800 m, 16 Mar. 1992, S. Dalström et al. 1640 (MO); Los Cedros Reserve, alt. 1900 m, 22 Jan. 1923, S. Dalström, T. Höijer & H. Wanniorp 1728 (MO); same area, alt. 1500-1650 m, 25 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2220 (MO).

Pichincha: epiphytic in cloud forest along the old road between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9842 (Holotype: MO; Isotype: SEL); above Mindo, alt. 2000 m, 6 Dec. 1984, A. Hirtz 2148 (MO).

This species is apparently endemic in northwestern Ecuador. It is characterized by the red and yellow, flowers with denticulate, shortly caudate sepals, that are borne in short racemes on top of an ovate, shortly acuminate leaf. The upper lobes of the sepals are obliquely truncate with the outer corner elongated. The lobes of the lip are cuneate and spreading to either side of the column. The outer, truncate margin is thickened as rudimentary blades. The appendix is comparatively large, ovoid and long-pubescent.

Lepanthes llanganatensis Luer & Hirtz, *Die Orchidee* 41: 161, 1991. Fig. 140.

Ety.: Named for the Llanganates Mountain Range where the species was discovered.

Plant medium in size, epiphytic, caespitose; roots coarse. Ramicauls erect, stout, 6-9 cm long, enclosed by 8-11 blackish, coarsely long-ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, oblong-ovate, subacute, lightly acuminate, 3.5-5 cm long, 1.5-2.4 cm wide, the rounded base contracted into a petiole 4-5 mm long. **Inflorescence** a dense, distichous, successively flowered raceme up to 5 mm long or longer, borne behind the leaf by a filiform peduncle 15-18 mm long; floral bracts 2 mm long; pedicels 1.5 mm long; ovary 2.5 mm long; **sepals** yellow, subcarinate, ovate, entire, the dorsal sepal subacute, 6 mm long, 4.5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals cellular-papular, oblique, obtuse, abruptly short-acuminate, 6 mm long, 4.5 mm wide, 3-veined, connate 2 mm; **petals** shortly pubescent, transversely bilobed, 1.5 mm long, 5 mm wide, the lobes triangular-falcate, acute, the upper lobe red, the lower lobe smaller, yellow; **lip** orange with red margins, minutely pubescent, bilaminate, the blades ovate, with the apices acute and the bases rounded, 2 mm long, the connectives broadly oblong, forming a broad, thick body, connate to the base of the column, the sinus protuberant with a small, bisegmented, pubescent appendix; **column** 1 mm long, the anther dorsal, the stigma ventral.

Tungurahua: epiphytic in cloud forest, Llanganates Range, alt. 3000 m, Feb. 1985, A. Hirtz 2202 (Holotype: MO), C. Luer illustr. 11508.

Cotopaxi: cloud forest on the western slopes of Mt. Iliniza, alt. 2800 m, 5 Nov. 1984, A. Hirtz 2061 (MO).

Recently this heretofore unknown species has been found twice by Alexander Hirtz in distant localities in the Andes of central Ecuador. It is recognized by the dark, coarsely ciliate sheaths of the ramicauls; short, congested racemes; broad sepals, the laterals three-veined, cellular-papular; pointed, falcate lobes of the petals; ovate, acute blades of the lip; and a small bisegmented appendix. It is related to *L. callisto* of northernmost Ecuador.

Lepanthes hoensis Luer, *Phytologia* 54: 350, 1983. Fig. 141.

Ety.: Named for the community of Lloa, near Quito, where the species was discovered.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 9-38 cm long, enclosed by 8-18 minutely ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, ovate-oblong, acuminate, acute, 8-11 cm long, 2-3.5 cm wide, the base rounded or lightly cordate, abruptly contracted into a petiole 2-4 mm long. **Inflorescence** an extremely congested, distichous, successively many-flowered raceme up to 20 mm long, borne by a filiform peduncle up to 30 mm long, along the back of the leaf; floral bract 1.5-2 mm long; pedicel 0.5-1 mm long; ovary 1.5 mm long; **sepals** translucent light yellow, glabrous, the dorsal sepal triangular, acute, 8 mm long, 5.75 mm wide, connate 1.5 mm to the lateral sepals, the lateral sepals broadly ovate, oblique, connate 5 mm into a transversely ovate lamina 8 mm long, 8-9.5 mm wide expanded, the obtuse apices distant; **petals** bright yellow with purple margins, transversely oblong, bilobed, 1.66 mm long, 3.5 mm wide, the upper lobe triangular with the apex rounded or contracted into a diverging subacute apex, the lower lobe narrow, falcate, acute; **lip** yellow, suffused with purple, bilaminate, the blades ovate-lunate, convex, 2 mm long, the apices acute, minutely ciliate, the bases rounded, the connectives broadly cuneate, the body broad, connate to the column below the middle, the appendix a minute, slender filament from a minutely pubescent membrane in the sinus; **column** stout, 1.5 mm long, the anther dorsal, the stigma ventral.

Carchi: scrub forest north of El Playón, alt. 3100 m, 20 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15191 (MO).

Sucumbíos: cloud forest south of Santa Barbara east of Tulcán, alt. 2700 m, 5 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9968 (MO).

Pichincha: epiphytic in cloud forest remnant below Lloa, alt. 2700 m, 27 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4363 (Holotype: SEL); Lloa, alt. 2750 m, 5 Nov. 1984, A. Hirtz 2055 (MO); between San Juan and Chiriboga, alt. 2650 m, 28 Mar. 1988, C. Luer & A. Hirtz 13698 (MO).

This usually large species occurs in the area around the old village of Lloa, but one collection has been made on the eastern slope of the Andes farther north. It is identified by the large habit; a very congested raceme shorter than the acuminate leaf; broad sepals, the laterals deeply connate with distant, obtuse apices; petals with falcate lower lobes and sometimes with an attempt to make the upper lobes falcate as well; and convex blades of the lip with a tiny, filamentous appendix.

Lepanthes lophius Luer & Escobar, *Phytologia* 54: 351, 1983.

Fig. 142.

Ety.: Named for the genus of common anglers (*Lophius*) because of the similarity of the appendix to the pedunculated "bait" peculiar to these fish.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-8.5 cm long, enclosed by 10-14 ciliated, lepanthiform sheaths with markedly dilated ostia. Leaf erect, coriaceous, purple beneath, narrowly ovate, acute, 3-5 cm long, 1.2-1.5 cm wide, cuneate below into a petiole 3-4 mm long. **Inflorescence** a congested, flexuous, successively flowered raceme up to 2 cm long, borne by a filiform peduncle up to 2.5 cm long, up the back of the leaf; floral bract 1.5 mm long; pedicel 1.25 mm long; ovary 2 mm long, papillose; sepals purple with the outer thirds cream, carinate-spiculate, the dorsal sepal triangular, slightly concave, acute, attenuate, 11 mm long, 5 mm wide, connate 1.5 mm to the lateral sepals, the margins distantly subserrulate, the lateral sepals narrowly ovate, oblique, acute, attenuate, 11 mm long, 3 mm wide, connate 1.5 mm, the margins serrulate; petals orange, suffused with red-purple, transversely oblong, bilobed, 2 mm long, 5 mm wide, the upper lobe more or less quadrate, truncate, the lower lobe shorter, narrowly oblong, obtuse; lip rose, bilaminar, the blades oblong with rounded ends, slightly concave, 2.66 mm long, ciliate anteriorly, the connectives cuneate, the body narrow, connate to the column above the base, the appendix spatulate, pubescent; column stout, 2 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaico and Limón, alt. 2650 m, 29 Oct. 1982, C. Luer, R. Escobar & A. Pozo 8212 (Holotype: SEL); same area, alt. 2650 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11832 (MO).

This very pretty species is known from only one locality in southeastern Ecuador. It is identified by the relatively large, purple and yellow flowers with attenuated, minutely serrulate sepals, borne in a flexuous raceme shorter than the leaf. The transverse petals are truncate; the blades of the lip are ovate and ciliate; and the appendix is spatulate.

Lepanthes lycocephala Luer & Escobar, *Orquideología* 16: 147, 1984.

Fig. 143.

Ety.: From the Greek *lycocephalos*, "wolf-headed," referring to the fancied appearance of the lip.

Plant small, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 5-15 mm long, enclosed by 4-5 microscopically ciliate, lepanthiform sheaths. Leaf erect, coriaceous, margined, minutely crose, elliptical, subacute, 7-10 mm long, 5-6 mm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively few-flowered raceme, up to 3 mm long, borne behind the leaf by a peduncle 3 mm long; floral bracts 0.5 mm long; pedicels 0.5 mm long; ovary 1 mm long, lightly papillose; sepals rosy red, denticulate-fimbriate, spiculate-carinate externally along the veins, the dorsal sepal ovate, obtuse, 5 mm long, 3 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the obtuse apex abruptly acuminate into a tail 1 mm long, the lateral sepals connate 3 mm into a transverse lamina 4.5 mm long, 5 mm wide, 4-veined, the apices obtuse, abruptly contracted into narrow tails 1 mm long;

petals red, pubescent, transversely bilobed, 1 mm long, 4 mm wide, the upper lobe triangular, the lower lobe narrowly oblong, longer than the wider upper lobe; **lip** red, bilaminate, the blades ciliate, pubescent, obovate, 1.5 mm long, the apices broadly subtruncate, the bases acute, erect, the connectives obliquely cuneate, the body broad, connate to the base of the column, the sinus pubescent without a distinct appendix, **column** narrowly terete, 2 mm long, the anther apical, the stigma apical, transversely bilobed.

Imbabura: epiphytic in wet forest southeast of Lita, alt. 1200 m, 11 Jan. 1992, C. Luer, J. Luer, A. Hirtz, X. Hirtz, P. Jesup, A. Jesup, M. Evans & J. Del Hierro 15554 (Holotype: MO).

Also Colombia (Antioquia, Chocó, Valle del Cauca and Nariño, type).

This tiny species is distinguished by the elliptical leaves with erose margins, and a proportionately large, red flower borne in a congested raceme shorter than the leaf. The margins of the sepals are denticulate. The apices of the laterals are contracted into short tails. The apices of the blades of the lip are broadly subtruncate while the bases are acute and erect. The appendix is represented by a mass of long hairs. The column is slender with an apical anther and a transversely bilobed stigma similar to those seen in many species of *Pleurothallis* and most species of *Stelis*.

***Lepanthes maccolmiana* Luer, sp. nov.**

Fig. 144.

Ety.: Named in honor of Mike McColm, creator and administrator of the Bilsa Biological Station where this species was discovered.

Species haec *L. larvinae* Luer & Escobar affinis, sed foliis late ovatis subcordatis et labelli connectivis latioribus basalibus differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-5 cm long, enclosed by 6-8 dark, microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, transversely ovate, obtuse, 1.5-2 cm long, 1.7-2.4 mm wide, the base transverse or subcordate, abruptly contracted into a petiole 1.5-2 mm long. **Inflorescence** a very congested, distichous, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 5-10 mm long; floral bracts slightly echinate, 1-1.25 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; sepals with red margins, glabrous, ovate, obtuse, shortly acuminate, the dorsal sepal 3.75 mm long, 3 mm wide, connate to the lateral sepals for ca. 0.5 mm, the lateral sepals 3 mm long, 1.5 mm wide, connate 1.5 mm; **petals** red, microscopically pubescent, transversely bilobed, 1.25 mm long, 5 mm wide, 3-veined, the upper lobe obliquely oblong, with the narrowly obtuse apex shortly decurved in the natural position, the lower lobe triangular; **lip** red, bilaminate, the laminae microscopically pubescent, elliptical with narrowly rounded ends, 2 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse, with a protuberant, ovoid, pubescent appendix, with a smaller, basal segment beneath; **column** 2 mm long, the anther and the stigma apical.

Esmeraldas: Bilsa Biological Station, Montañas de Mache, west of Santa Isabel, alt. 400-600 m, 9 May 1985, J. L. Clark & C. Watt 838 (MO; QCNE), C. Luer illustr. 17995.

This species is apparently endemic in lowland western Ecuador. In habit it resembles *L. tracheia* Rchb.f. with the transversely ovate leaves broadly subcordate at the base. The flowers, however, are very similar to those of *L. larvina* Luer & Escobar from a higher altitude in the Western Cordillera of Colombia. The sepals are obtuse and very shortly acuminate. In both species the petals are large with the tips of the elongate upper lobes deflexed in the natural position. The connectives of the blades of the lip are broad and above the middle, and the appendix is protuberant. The connectives of *L. larvina* are slender and near the middle, and the appendix lies against the outer surface of the body.

Lepanthes magnifica Luer, *Phytologia* 54: 351, 1983.

Fig. 145.

Ety.: From the Latin *magnificus*, "magnificent," referring to the large habit with large white and purple flowers.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 20-30 cm long, enclosed by 15-19 ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, ciliate along the veins beneath, ovate, acute, lightly acuminate, 12-15 cm long, 5-6.5 cm wide, the base rounded to subcordate, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 3 cm long, borne by a filiform peduncle up to 4 cm long along the back of the leaf; floral bract 1.5 mm long; pedicel 2 mm long; ovary 3 mm long; **sepals** white, the dorsal sepal glabrous, triangular, the acute apex shortly acuminate, 12 mm long, 5.5 mm wide, connate basally to the lateral sepals for 2 mm, the lateral sepals elliptical-oblong, shortly pubescent, concave basally, 10.5 mm long, 5 mm wide, connate 3.5 mm, the obtuse apices abruptly contracted into short, recurved tails 1.5 mm long; **petals** white with a broad red margin, minutely pubescent, transversely oblong, bilobed, the lobes oblong, oblique, obtuse, the lower lobe smaller; **lip** rose, bilaminar, the blades narrowly oblong-ovate, obtuse, glabrous, 2.25 mm long, the connectives shortly cuneate, the body connate to the column above the base, the appendix oblong, ciliate, with a pair of diverging, terminal lobules; **column** stout, 2 mm long, the anther dorsal, the stigma ventral.

Imbabura: Los Cedros Reserve, Río Los Cedros, wet forest, alt. 1500-1800 m, 16 Mar. 1992, S. Dalström 1650 (MO); same area, alt. 1700 m, 21 Jan. 1993, S. Dalström, T. Höijer & H. Wanntorp 1703 (MO).

Pichincha: epiphytic in cloud forest between Mindo and Puerto Quito, alt. 1600 m, 13 Mar. 1982, C. Luer, A. Hirtz & S. Dalström 7333 (Holotype: SEL); between Mindo and San Miguel de los Bancos, alt. 1450 m, 1 Apr. 1984, C. Luer, A. Hirtz, S. Dalström & T. Höijer 9868 (MO).

This large species is apparently confined to a small area on the western slopes of Pichincha. It is recognized by the size of the habit and large flowers borne in a congested raceme shorter than the leaf. The sepals are white with the apices produced into short tails; the lateral sepals are shortly pubescent; the petals are transversely oblong; and the pubescent appendix is terminated by a diverging pair of lobules.

Lepanthes mammillata Luer, sp. nov.

Fig. 146.

Ety.: From the Latin *mammillatus*, "nipple-bearing," referring to the tips of the blades of the lip and the appendix.

Planta grandis, inflorescentia racemosa congestissima disticha folio ovato acuto brevior, sepalis ovatis acutis lateralibus minute pubescentibus, petalis transverse bilobis obtusis, labello bilaminato, laminis glabris anguste ovatis, appendice bipartito partibus mammiliformibus.

Plant large, epiphytic, caespitose, roots stout. Ramicauls stout, erect, 14-30 cm long, enclosed by up to 22 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, acute, 8.5 cm long, 2.4 cm wide (only one leaf present), the base cuneate into a petiole ca. 2 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme, up to 30 mm long, borne behind the leaf by a peduncle 25-30 mm long; floral bracts 1.75 mm long; pedicels 1 mm long; ovary 3.5 mm long; **sepals** yellow, entire, carinate externally, the dorsal sepal ovate, acute, 8 mm long, 4.25 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, acute, minutely pubescent, 8 mm long, 3.5 mm wide, 2-veined, connate 3.5 mm; **petals** pink, cellular-pubescent, transversely bilobed, 1 mm long, 3 mm wide, the lobes oblong, with the apices rounded and slightly dilated, the upper lobe slightly larger than the lower lobe; **lip** pink, glabrous, bilaminar, the blades narrowly ovate, with the bases rounded and the apices elongated, narrowly rounded, 2.25 mm long, the connectives broad and short, the body broad, connate to the base of the column, with the appendix divided medially into two mammiliform lobules; **column** 2 mm long, the anther apical, the stigma ventral.

ECUADOR: Prov. of Carchi: epiphytic in forest east of Maldonado, alt. 2500 m, 24 Feb. 1992, S. Dalström 1562 (Holotype: MO), C. Luer illustr. 16221.

This species is known only from the type-collection. It is similar to the host of other large members of the genus with a tall, robust ramicaul that bears a very congested, successively flowered raceme behind an ovate leaf. The relatively large flower is also superficially similar to those of the others with ovate, acute sepals. *Lepanthes mammillata* is distinguished by the short pubescence of the lateral sepals; petals with slightly dilated, rounded ends; a glabrous lip with the apices of the laminae narrow and rounded; and an appendix divided into a pair of nipple-like processes. In the natural position, the tips of the laminae of the lip are held beside the processes of the appendix.

Lepanthes manabina Dodson, *Icones Pl. Trop.* 128, 1980.

Fig. 147.

Ety.: Named for the province of Manabi where the species was collected.

Syn.: *Lepanthes mastodon* Luer, *Phytologia* 54: 352, 1983.

Ety.: Named for the elephantlike Mastodon, referring to the tusklike tails of the lateral sepals.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls suberect to erect, slender, 2-10 cm long, enclosed by 4-12 minutely pubescent, lepanthiform sheaths, markedly dilated and acuminate at the ostia. **Leaf** dark green, purple beneath, more or less reticulate, suberect to horizontal, coriaceous, microscopically pubescent, subreticulate, more or less sulcate dorsally between convex halves, ovate, 2-6 cm long, 1.5-2.2 cm wide expanded, the apex acuminate, acute, the base broadly cuneate or rounded, sessile. **Inflorescence** a congested, subsecund, successively many-flowered raceme up to 22 mm long, borne by a filiform peduncle 5-12 mm long, lying in the sulcus of the dorsum of the leaf; floral bract 1 mm long; pedicel 1.5 mm long; ovary 2.5 mm long; **sepals** purple-black or dark red-brown, with or without yellow or green margins, ovate, obtusely acuminate into tails, carinate-spiculate along the veins, the margins ciliate, the dorsal sepal concave, 6 mm long, 3.5 mm wide expanded, the lateral sepals oblique, 6 mm long, 2 mm wide, connate 2 mm, with incurved tails 4-6 mm long; **petals** green, yellow or purple, minutely pubescent, transversely oblong-bilobed, 1.25 mm long, 4.25 mm wide, the upper lobe oblong, obtuse, the lower lobe narrowly triangular, oblique, obtuse; **lip** metallic greenish brown, bilaminate, the blades oblong, 2 mm long, minutely ciliate, the connectives cuneate, the body broad, connate to the column above the base, the appendix reduced to an obtuse angle in the sinus; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest above Maldonado, alt. 2000 m, 25 Aug. 1978, C. Luer, J. Luer & A. Hirtz 3381 (SEL, type of *L. mastodon*); between Tulcán and Maldonado, alt. 2400 m, 20 May 1973, L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 6145 (AAU); same area, alt. 2500 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9893, 9929 (MO); between Maldonado and Chical, alt. 1400 m, 21 Mar. 1991, C. Luer, J. Luer, J. Del Hierro, A. & X. Hirtz 15117 (MO); same area, alt. 2500 m, 24 Feb. 1992, S. Dalström 1554 (MO).

Imbabura: Selva Alegre, alt. 1900 m, 2 May 1981, C. Luer, J. Luer & A. Hirtz 6085 (SEL); south of Lita, alt 1250 m, 19 Jan. 1987, C. Luer, J. Luer, A. Hirtz & C. Dodson 12427 (MO); Los Cedros Reserve, alt. 1850 m, 27 Jan. 1993, S. Dalström, T. Höijer & H. Wanntorp 1811 (MO).

Manabi: forest at summit of Monticristi, alt. 600 m, 26 Dec. 1961, C. H. Dodson & L. B. Thien 1725 (Holotype: SEL); seasonally dry cloud forest, Monticristi, alt. 500 m, 27 Feb. 1977, C. Luer, J. Luer & K. Cordoba 1475 (SEL).

Also Colombia (Antioquia, Tolima, Risaralda, Nariño).

This species is widely distributed in the western and central cordilleras of Colombia and northern Ecuador. The illustration of *L. manabina* published by Dodson is deceiving, which led to the description of *L. mastodon*.

Lepanthes manabina is recognized by the metallic greenish brown, flower resting in the sulcus on top of a convex leaf. The lepanthiform sheaths are marked dilated and acuminate at the apex. The apices of the sepals are acuminate-caudate, which are often, but not always, incurved like elephant-tusks; the petals are transverse with a proportionately large upper lobe; the blades of the lip are oblong; and the appendix is triangular in the sinus of the body.

Lepanthes mastix Luer & Hirtz, *Lindleyana* 2: 99, 1987.

Fig. 148.

Ety.: From the Greek *mastix*, "a whip," referring to the long, flexible inflorescence.

Plant medium in size to large, epiphytic, caespitose; roots coarse, densely fasciculate. Ramicauls stout, erect, 5-16 cm long, enclosed by 6-13 dark brown, closely fitting, hispid, lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, narrowly ovate, acuminate, acute, 5-10 cm long, 1.5-2 cm wide, the base cuneate into a petiole 5-8 mm long. **Inflorescence** a loose, flexible, lightly flexuous, successively many-flowered raceme up to 35 cm long including the slender peduncle 3.5-7 cm long; floral bracts oblique, 4 mm long; pedicels 1 mm long; ovary costate, 2.5 mm long; **sepals** dark red, orange toward the base, minutely glandular-pubescent, with the margins minutely short-ciliate, the dorsal sepal triangular, acuminate, acute, 13 mm long, 5 mm wide, connate to the lateral sepals for 2 mm, the lateral sepals ovate, oblique, acuminate, acute, 13 mm long, 3.5 mm wide, connate 6 mm; **petals** orange, densely pubescent, transversely bilobed, 0.5 mm long, 2 mm wide, the lobes oblique, obtuse, the upper lobe 1.5 mm long, the lower, 0.5 mm long; **lip** orange, bilaminar, the laminae shortly pubescent, narrowly oblong, obtuse, 1.5 mm long, the connectives short, the body connate to the base of the column, the sinus acute with a pubescent, oblong appendix; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest between Tulcán and El Carmelo, alt. 3200 m, 6 April 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11075 (Holotype: MO); above La Esperanza between El Carmelo and Tulcán, alt. 3200-3450 m, 9 Apr. 1979, B. Løjtnant, U. Molau & M. Madison 12055 (AAU); NW of El Carmelo, alt. 3150-3300 m, 15 Apr. 1979, B. Løjtnant, U. Molau & M. Madison 12553 (AAU, GB); same area, 16 Apr. 1979, B. Løjtnant, U. Molau & M. Madison 12610 (AAU, GB); El Mirador, alt. 3400 m, June 1991, A. Hirtz et al. 5566 (MO).

This species is capable of producing excessively long racemes, many times longer than the leaf. Often two, sometimes three of the large, dark red flowers are open simultaneously. The sepals are minutely pubescent within. The densely pubescent petals are proportionately very small. The laminae of the lip are oblong and the appendix is short and pubescent.

Lepanthes maxillaris Luer & Hirtz, sp. nov.

Fig. 149.

Ety.: From the Latin *maxillaris*, "with jaws," referring to the pincerlike shape of the lip.

Planta mediocris, inflorescentia cum racemo congesto disticho folio ovato purpureo reticulato breviori, sepalis ovatis glabris, petalis transverse bilobis, lobis similibus triangularibus obtusis evertis, labello trilobato, lobis lateralibus glabris unciniformibus, lobo mediano pubescenti late ovato obtuso.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-4.5 cm long, enclosed by 7-8 ciliate, lepanthiform sheaths. **Leaf** erect, reticulated in purple beneath, coriaceous, ovate, acute, 18-22 mm long, 12-16 mm wide, the rounded base abruptly contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 8 mm long, borne behind the leaf by a slender peduncle 3-6 mm long; floral bract 1 mm long, muriculate; pedicel 1.25 mm long; ovary 2 mm long; **sepals** translucent yellow-orange, ovate, acute, acuminate, glabrous, the dorsal sepal suffused with red medially, 3.5 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 3.75 mm long, 1.75 mm wide, 2-veined, connate 0.4 mm; **petals** yellow-orange, microscopically pubescent, transversely bilobed, 1 mm long, 2.8 mm wide, the lobes about equal in size and shape, triangular, with the obtuse apices everted; **lip** 3-lobed, the lateral lobes yellow, glabrous, hook-shaped, the acute apices incurved, 1.4 mm long, 1.75 mm wide, the middle lobe pink, pubescent, especially on the distal third, connate to the base of the column; **column** 0.3 mm long, the anther and stigma apical.

Morona-Santiago: Cordillera del Cutucú, epiphytic in forest along the new road between Mendez and Morona, alt. 750 m, 17 Jan. 1989, C. Luer, J. Luer, P. Jesup, A. Jesup, A. Hirtz & S. Ortega 13990 (Holotype: MO).

This species from a low altitude in the Cordillera del Cutucú is identified by the congested raceme of an inflorescence shorter than the purple-reticulated leaves; ovate, acuminate, glabrous sepals; boomerang-like petals; and a three-lobed lip. The lateral lobes are hook-shaped like pincers. The large middle lobe is really a huge, ovate appendix with a densely pubescent, obtuse apical third.

Lepanthes megalosteale Luer, *Phytologia* 54: 352, 1983.

Fig. 150.

Ety.: From the Greek *megalosteale*, "a large column," referring to the size of the column.Syn.: *Lepanthes micropogon* Luer, *Phytologia* 54: 353, 1983.Ety.: From the Greek *micropogon*, "a small beard," referring to the ciliate appendix.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-9 cm long, enclosed by 5-8 blackish, close, microscopically ciliate, lepanthiform sheaths, with the ostia essentially not dilated. **Leaf** erect, coriaceous, elliptical, acute, 2-4 cm long, 1-1.8 cm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a congested, distichous, long-pedicellate, successively flowered raceme up to 7 mm long, borne behind the leaf by a filiiform pedicel 10-22 mm long; floral bract 1 mm long, echinate; pedicel 2 mm long; ovary 2 mm long; **sepals** light yellow, glabrous, carinate, subacute to obtuse, the dorsal sepal ovate-triangular, 2.5 mm long, 1.5-1.9 mm wide, connate to the lateral sepals for 0.75 mm, the lateral sepals ovate, connate 1.5 mm, 2.5 mm long, 2.25-2.5 mm wide together; **petals** yellow or orange, suffused with red, transversely oblong, 0.8-1 mm long, 3.5 mm wide, microscopically pubescent, the upper lobe elliptical, obtuse, the lower lobe smaller, oblong, obtuse; **lip** red, bilaminate, the blades elliptical, poorly developed above the middle, 1 mm long, the apices acute, ciliate, the bases rounded, the connectives cuneate, the body narrow, connate to the base of the column, the appendix thick, broadly triangular, pubescent, with an acute, ciliate, incurved apex; **column** proportionately large, 1.5 mm long, the anther and stigma apical.

Napo: epiphytic in wet forest along the new road between Cotundo and Coca, alt. 1100 m, June 1983, A. Hirtz 917B (Holotype: SEL), C. Luer illustr. 9090; same area, alt 1100 m, 22 Feb. 1982, C. Luer & A. Hirtz 6952 (SEL, holotype of *L. micropogon*); same area, alt 1200 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11225 (MO); between Cotundo and Coca, alt. 1000 m, July 1984, A. Hirtz 1858 (MO)

This species is known from only one area of relatively lowland forest on the eastern slope of central Ecuador. It is recognized by the dark, non-dilated, lepanthiform sheaths; elliptical leaves; short, congested, distichous, long-pedicellate racemes; entire, ovate sepals; and small blades of the lip flanking a considerably larger column. The appendix is thick and pubescent with an incurved apex.

Lepanthes meganthera Luer & Hirtz, *Lindleyana* 3: 38, 1987.

Fig. 151.

Ety.: From the Greek *meganthera*, "with a large anther," referring to the large size of the anther.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-3 cm long, enclosed by 7-8 coarsely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, with purple veins, ovate, subacute, 10-15 mm long, 7-9 mm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a very congested, successively several-flowered raceme up to 3 mm long, borne behind the leaf by a filiiform peduncle 3-5 mm long; floral bract 0.75 mm long, microscopically sparsely spiculate; pedicel 1-1.5 mm long; ovary 1.5 mm long; **sepals** yellow, the dorsal sepal elliptical, subacute, 4.5 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblong, oblique, subacute, 4 mm long, 1.5 mm wide, connate 0.5 mm, microscopically subdentuplicate; **petals** orange, suffused with darker orange on the margins, microscopically pubescent, transversely bilobed, 1 mm long, 3.5 mm wide, the lobes oblong, oblique, obtuse, the upper slightly longer than the lower; **lip** bilaminate, orange, the laminae ovate, glabrous, acuminate at the apices, 1.5 mm long, connectives cuneate, connate to the base of the column, the sinus obtuse with a large, oblong, pubescent appendix with a trilobed terminal gland; **column** 2 mm long, the anther dorsal, 1 mm long, 1 mm wide, the stigma equally large, ventral.

Morona-Santiago: southeast of Sigsig, alt. 2400 m, C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 13879 (MO).

Loja: epiphytic in cloud forest south of Yangana, alt. 2450 m, May 1985, A. Hirtz 2569 (Holotype: MO), C. Luer illustr. 11695.

This small species is not particularly remarkable except for the lip and column. The blades of the lip are glabrous, ovate and acuminate. The appendix is proportionately large, oblong, and pubescent, with a trilobed gland at the apex. The appendix is held beneath the large stigmatic surface that occupies the area below the large clinandrium. The anther is larger than the blades of the lip.

Lepanthes melpomene Luer & Hirtz, sp. nov.

Fig. 152.

Ety.: Named for *Melpomene* the Muse of tragedy of Greek mythology.

Planta mediocris caespitosa, inflorescentia racemosa congesta secunda foliis patentibus sulcatis insidenti, sepalis ovatis acuminatis denticulatis, petalis transverse lobatis, lobo superiore oblongo truncato, lobo inferiore anguste oblongo obtuso, labelli laminae glabris anguste oblongis infra medium leviter inflexis, connectivis latis brevibus, appendice hastata.

Plant medium in size, epiphytic, caespitose; roots numerous, slender. Ramicauls suberect, slender, 4-7 cm long, enclosed by 10-15 long-ciliate, lepanthiform sheaths with markedly dilated ostia. **Leaf** spreading, suffused with purple, thickly coriaceous, elliptical-ovate, acute, 4-6 cm long, 1.5-2 cm wide expanded, sulcate medially with both halves convex, the base cuneate into a petiole 1-1.5 mm long. **Inflorescence** a congested, secund, successively many-flowered raceme up to 2 cm long, borne by a slender peduncle ca. 1 cm long, lying in the sulcus on top of the leaf; floral bracts 1.5 mm long; pedicels 1.5 mm long; ovary 1.25 mm long; **sepals** light yellow, denticulate, the dorsal sepal ovate, acuminate, acute, 8.5 mm long, 5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, acuminate, acute, 8 mm long, 2.75 mm wide, connate 1.5 mm; **petals** yellow, cellular-glandular, transversely bilobed, 1 mm long, 4.5 mm wide, the upper lobe oblong, obliquely truncate, the lower lobe narrowly oblong, obtuse; **lip** light rose on white medially, glabrous, bilaminate, the laminae narrowly oblong, narrowly obtuse, slightly concave, 3.5 mm long, lightly adherent over the column, the connectives broadly and shortly cuneate, the body broad, connate to the base of the column, the appendix in the sinus, hastate; **column** terete, 1.5 mm long, the anther apical, the stigma subapical.

Morona-Santiago: epiphytic in cloud forest east of Sigsig, alt. 2700 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13355 (Holotype: MO); between Sigsig and Chiguinda, alt. 2600 m, 11 Aug. 1990, A. Hirtz 5056 (MO); between Limón and Cuenca, alt. 2200 m, 7 Jan. 1995, A. Hirtz, X. Hirtz & E. Sanchez 6105 (MO).

This species is similar in habit to *L. manabina* Luer and its relatives with the thick, heavy, dark green, more or less pendent leaves. The leaves are sulcate centrally wherein is borne the ghoulish-appearing flower. The denticulate sepals are acuminate; the upper lobes of the petals are obliquely truncate; the blades of the lip, adherent over the column, are narrowly oblong; and the minute appendix is arrow-shaped.

Lepanthes menatoi Luer & Vásquez, *Phytologia* 55: 189, 1984.

Fig. 153.

Ety.: Named in honor of Dino Menato of Chulumani, Bolivia, who discovered this species.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 10-25 cm long, enclosed by 10-15 pale, ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, more or less suffused with purple, elliptical-ovate, obtuse, shortly acuminate, 6-11 cm long, 2.5-6 cm wide, the base rounded, contracted into a twisted petiole 3-5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 6 cm long, borne behind the leaf by a filiform peduncle 1.5-3.5 cm long; floral bract 1.5 mm long; pedicel 1-1.5 mm long; ovary 3 mm long; **sepals** yellow, glabrous, the dorsal sepal triangular, acute or subacute, 8 mm long, 5.5 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals oblique, ovate, subacute, in apposition, 8 mm long, 3-3.5 mm wide, connate 2-3 mm; **petals** yellow or orange, with red margin, glabrous, transversely bilobed, 1.25-1.75 mm long, 4-4.75 mm wide, the upper lobe oblong, truncate, the lower lobe smaller, narrowly triangular, **lip** yellow, sometimes suffused with rose, bilaminate, the blades oblong, convex, with rounded ends, 1.5 mm long, the surfaces and outer margins glabrous, the inner margins long-ciliate, covering the column, the connectives narrow from the bases of the blades, the body connate to the base of the column, the sinus obtuse with a small oblong, pubescent appendix; **column** stout, 1 mm long, the anther dorsal, the stigma ventral.

Napo: Cosanga, alt. 2000 m, July 1984, A. Hirtz 1868 (MO), C. Luer illustr. 10462; along road south of Baeza, alt. 1800 m, 14 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11269 (MO); along river between Quito and Baeza, alt. 1800 m, 17 Nov. 1985, C. Dodson, P. Dodson & A. Embree 16225 (MO); epiphytic in forest, east slope of Volcán Reventador, alt. 1850 m, 11 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11777 (MO);

Tungurahua: Llanganates, alt. 3000 m, Feb. 1985, *A. Hirtz* 2241 (MO).

Morona-Santiago: Cordillera del Condor east of Guismé, alt. 1500 m, 18 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree* 11898 (MO);

Also Bolivia (La Paz, type) and Peru (Amazonas).

This large species is widely distributed on the eastern slopes of the Andes of Ecuador, Peru and Bolivia. It is stable morphologically, recognized by the usually robust, large size with a broad, shortly acuminate leaf with a congested raceme borne along the back surface. The sepals are subacute; the upper lobe of the petals is oblong and truncate, and the lower lobe is narrowly triangular. Most distinctive are the oblong, curved blades of the lip that are long-ciliate along the inner margins creating a feathery roof over the column.

***Lepanthes meniscophora* Luer & Hirtz, sp. nov.**

Fig. 154.

Ety.: From the Greek *meniskophoros*, "meniscus-bearing," referring to the petals.

Planta mediocris, inflorescentia racemosa subdensa secunda folio ovato purpureo brevior, sepalis ovatis acuminatis denticulatis, petalis pubescentibus bilobis anguste crescentiformibus, labello bilaminato, lamina pubescentibus oblongis, appendice oblonga pubescenti.

Plant small to medium in size, weak, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 2.5-8 cm long, enclosed by 8-10 lepanthiform sheaths with oblique, dilated, ciliate, long-acuminate ostia. **Leaf** spreading, coriaceous, suffused with purple, ovate, acute, lightly acuminate, 3-5 cm long, 1-1.6 cm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a subdense, secund, successively several-flowered raceme, 15 mm or more long, borne on top of the leaf by a peduncle 5-10 mm long; floral bracts 1 mm long; pedicels 1.5 mm long; ovary 4 mm long; **sepals** light yellow, suffused with purple, denticulate, carinate-spiculate externally along the veins, the dorsal sepal ovate, obtuse, shortly acuminate, 6.5 mm long, 4 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, 5 mm long, 3 mm wide, 2-veined, connate 2 mm, the apices acute, acuminate; **petals** purple, pubescent, transversely bilobed, narrowly crescent-shaped, 1 mm long, 8 mm wide, the lobes slender, acute, the lower lobe slightly longer than the upper lobe; **lip** purple, bilaminate, the blades pubescent, oblong with rounded ends, 2 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, with an oblong, pubescent appendix in the acute sinus; **column** 2 mm long, the anther dorsal, the stigma ventral with a pedunculate processes in association with the appendix.

Carchi: epiphytic in forest east of Maldonado, alt. 2500 m, Nov. 1991, *A. Hirtz* 5420 (Holotype: MO), *C. Luer* illustr. 16205; above Maldonado toward Rio La Plata, alt. 2200 m, 11 Jan. 1993, *A. Hirtz* 5873 (MO); above Maldonado, alt. 2500 m, July 1995, *A. Hirtz & J. Del Hierro* 6227 (MO).

Imbabura: Los Cedros Reserve, wet forest, alt. 2100 m, 26 Jan. 1993, *S. Dalström, T. Höjjer & H. Wannorp* 1770 (MO), *C. Luer* illustr. 16597.

This species, endemic in northwestern Ecuador, is distinguished by the secund inflorescence lying on top of a purplish leaf. The sepals are denticulate and shortly acuminate. The petals are crescent-shaped. Similar petals are seen in the Colombian *L. antennifera* Luer & Escobar and the Bolivian *L. barbatula* Luer & Vásquez.

***Lepanthes mephistopheles* Luer & Hirtz, Die Orchidee 38: 34, 1987.**

Fig. 155.

Ety.: Named for *Mephistopheles*, a devil, alluding to the pair of erect, red, upper lobes of the petals reminiscent of a pair of red horns.

Plant small, epiphytic, caespitose; roots filiform. Ramicauls very slender, suberect, 4-7.5 cm long, enclosed by 7-11 tightly fitting lepanthiform sheaths with dilated, shortly ciliate ostia. **Leaf** suberect to spreading, thinly coriaceous, purple beneath, elliptical-ovate, obtuse, abruptly acuminate, 3-4 cm long, 1.5-2 cm wide, the rounded base contracted into a petiole ca. 1 mm long. **Inflorescence** a congested, secund, successively flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 13-18 mm long, floral bracts 1.5 mm long; pedicels 1.5 mm long; ovary 2.5 mm long; **sepals** yellow, glabrous, ovate, subacute, carinate, the dorsal sepal 4.75 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4 mm long, connate 2 mm, 4.5 mm wide together; **petals** red-

orange, minutely pubescent, transversely bilobed, the lobes narrowly triangular, acute, 1.25 mm long, 6.25 mm wide, the upper lobe erect, much larger than the lower lobe, 2-veined; **lip** red-purple, bilaminate, the laminae narrowly oblong, 2 mm long, with obtuse ends, microscopically pubescent, the connectives broadly cuneate forming a broad, notched body, connate to the base of the column, the appendix ligulate, concave, ciliate, with the apex biglandular; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in the Guacamayo Range, alt. 1800 m, 18 Nov. 1984, A. Hirtz 2098 (MO), flowered in cultivation in Quito, 14 April 1985, C. Luer 10504 (Holotype: MO).

This floriferous little species bears a frequent succession of colorful flowers on top of the blade of the leaf which is held more or less transversely. The erect pair of large, red, pointed petals look like a pair of prominent red ears. *Lepanthes mephistopheles* is most similar to *L. urotepala*, a larger, less floriferous species with a complicated appendix of a completely different nature.

Lepanthes metaxy (*Lepanthes biloba*)

Fig. 156.

Lepanthes mirador Luer & Hirtz, sp. nov.

Fig. 157.

Ety.: Named for El Mirador where the species was collected.

Ramicaules desunt, inflorescentia racemosa densa disticha folio elliptico acuto brevior, sepalis ovatis leviter acuminatis denticulatis, petalorum lobis inaequalibus, lobo superiore anguste triangulari acuto erecto quam lobo inferiore multum majore, lobo inferiore breviter triangulari obtuso, labello bilaminato laminae oblongis, appendice biglanduliferi pubescenti.

Plant probably medium in size, ramicauls missing. **Leaf** coriaceous, elliptical, acute, lightly acuminate, the only leaf 5.7 cm long, 1.7 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a dense, distichous, successively many-flowered raceme, 12 mm or more long, borne behind the leaf by a filiform peduncle 20-23 mm long; floral bracts 1.5-2 mm long; pedicels 1-1.5 mm long; ovary 2 mm long; **sepals** yellow, denticulate, the dorsal sepal ovate-triangular, subacute, shortly acuminate, 6 mm long, 3 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, lightly acuminate, 5 mm long, 3 mm wide, 2-veined, connate 1.5 mm; **petals** dark brown, microscopically pubescent, transversely bilobed, 1 mm long, 3.5 mm wide, the upper lobe erect, narrowly triangular, acute, attenuate, the lower lobe much smaller, broadly triangular, obtuse; **lip** dark brown, bilaminate, the blades microscopically pubescent, oblong with the apices narrowly rounded, 2 mm long, the connectives short, broadly cuneate, the body broad, connate to the base of the column, the sinus incised with the appendix small, oblong, pubescent with a bilobed, apical segment; **column** 2 mm long, the anther dorsal, the stigma ventral.

Carchi: El Mirador, alt. 3300-3600 m, August 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4940 (Holotype: MO), C. Luer illustr. 15280.

Although this species is known from only a leaf with a complete inflorescence collected at a high altitude over 3000 meters above sea level in northernmost Ecuador, the combination of morphological features distinguishes it from all other species from Ecuador and Colombia. It is distinguished by a narrowly elliptical leaf; a congested raceme borne behind the leaf; acute, shortly acuminate, denticulate sepals with the laterals shortly connate; petals with a long-acuminate upper lobe and a very short, transversely obtuse lower lobe; and a lip with oblong blades and an appendix with a bilobed, apical segment.

Lepanthes tungurahuae from a high altitude in central Ecuador has the most similar flowers because of similar petals. It is distinguished from *L. mirador* by the broader, acuminate leaf, deeply connate lateral sepals, and an entire appendix.

Lepanthes monitor, Luer, *Phytologia* 54: 354, 1983.

Fig. 158.

Ety.: From the Latin *monitor*, "a reminder," referring to the morphological features reminiscent of *L. elata* Rchb. f. and its relatives.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 6-28 cm long, enclosed by 9-14 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, oblong-ovate, acute, acuminate, 6-12 cm long, 2-6 cm wide, the base cuneate or rounded, contracted into a petiole 3-5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 40 mm long, borne by a filiform peduncle up to 40 mm long behind the leaf; floral bract 1.5 mm long; pedicel 1 mm long; ovary 2 mm long; **sepals** pale yellow, glabrous, ovate, acute, the dorsal sepal triangular-ovate, 5-7 mm long, 2.5-4 mm wide, connate to the lateral sepals for 1.5-2 mm, the lateral sepals oblique 5-7 mm long, connate 2.5-5 mm into an ovate, bifid lamina 4-8 mm wide, the acute apices shortly acuminate; **petals** yellow or white with purple margins, cellular-glandular, transversely bilobed, 1.25-1.5 mm long, 3.5-4 mm wide, the upper lobe ovate-oblong with the apex more or less slightly narrowed and everted, the lower lobe obliquely and narrowly contracted below the middle; **lip** orange, white or purple, bilaminar, blades ovate, minutely pubescent, 1.5-2 mm long, microscopically pubescent, the apices narrowly rounded, the bases rounded, the connectives short, cuneate, the body connate to the base of the column, the sinus obtuse with the appendix small, triangular, pubescent, with a minute apical lobule; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Napo: south of Baeza, alt. 1900 m, 20 Feb. 1982, *C. Luer & A. Hirtz 6863* (SEL); Guacamayo Range, alt. 1800 m, 18 Nov. 1984, *A. Hirtz 2097* (MO); same area, alt. 1950 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11254* (MO); new road from Cotunda to Coca, alt. 1000 m, July 1984, *A. Hirtz 1872* (MO); same area, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11227* (MO).

Morona-Santiago: east of the pass east of Sigsig, alt. 2700 m, 15 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13362* (MO); east of the pass between Gualaceo and Limón, alt. 2100 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11849* (MO); same area, alt. 2200 m, 16 Jan. 1986, *S. Dalström & T. Höijer 1043* (MO); at pass north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz et al. 11881* (MO); same area, alt. 1600 m, 17 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13423* (MO); same area, alt. 1800 m, 30 Jan. 1986, *S. Dalström & T. Höijer 1121* (MO); Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 17 Jan. 1989, *C. Luer, J. Luer, A. Hirtz et al. 13968* (MO); Cordillera del Condor, east of Chuchumbletza, alt. 1650 m, 21 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13540* (MO).

Loja: epiphytic in cloud forest south of Yangana, alt. 1400 m, 3 Mar. 1982, *C. Luer, D. D'Alessandro & S. Dalström 7096* (Holotype: SEL); same area, alt. 2600 m, 27 Jan. 1986, *S. Dalström & T. Höijer 1107* (MO).

Zamora-Chinchipe: along Río Zamora, alt. 1500 m, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11958* (MO); new road between Loja and Zamora, alt. 2250 m, 22 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13601* (MO); Cordillera del Condor, east of Los Encuentros, alt. 1600 m, 4 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12630* (MO); same area, alt. 1550 m, 18 May 1988, *C. Luer, A. Hirtz et al. 13468* (MO); Cordillera del Condor, east of Paquisha, alt. 1450 m, 19 Feb. 1986, *C. Luer, J. Luer, A. Hirtz et al. 11936* (MO).

Also Colombia (Antioquia, Quindío), Peru, and Bolivia (Cochabamba, Santa Cruz).

This species is the austral counterpart of *L. elata* Rchb. f. from Central America and northern Colombia. The two concepts are similar in appearance both vegetatively and florally. The best differentiating feature is the appendix which is pedunculate and narrowly hinged in the sinus of the lip in *L. elata*, while in *L. monitor*, it is broadly triangular and pubescent.

Lepanthes monitor is frequent and widely distributed from Colombia into Bolivia. It is variable vegetatively and florally, especially in the shape of the petals. Although the oblique apices of the upper lobes of typical *L. monitor* are easily recognized, sometimes the shape is obscure.

Lepanthes monoptera, Lindl., *J. Bot.* 1: 10, 1834.

Fig. 159.

Ety.: From the Greek *monopteron*, "single-wing," referring to an ovarian carina which was prominent on the dorsum of the ovary of his only flower.

Syn.: *Lepanthes roseola* Rchb.f., *Linnaea* 41: 46, 1877.

Ety.: From the Latin *roseolus*, "rosy," referring to the flowers.

Syn.: *Lepanthes dolichopus* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 7: 96, 1920.

Ety.: From the Greek *dolichopus*, "with long foot," referring to the proportionately long ramicaul.

Plant small to large, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 6-30 cm long, enclosed by 7-11 lightly colored, microscopically scabrous, lepanthiform sheaths with slightly dilated ostia. **Leaf** erect, coriaceous, often suffused with purple beneath, narrowly elliptical, acute, 4-13 cm long, 0.5-1.3 mm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a subcongested, successively several- to many-flowered raceme 1-9 cm long, borne behind the leaf by a filiform peduncle ca. 1 cm long; floral bracts 2-3 mm long, enclosing the pedicel 1 mm long; ovary tri-late, 1.5-2 mm long; flowers variable in color from green, yellow, rose, to purple-brown; **sepals** denticulate, carinate, ovate, acute, slightly acuminate, the dorsal sepal 4.75-7 mm long, 3-3.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 4.75-7 mm long, 2 mm wide, connate 1-1.5 mm, each 1-veined; **petals** minutely pubescent, transversely bilobed, 1-1.3 mm long, 3-4 mm wide, the lobes oblong to triangular, obtuse, subequal; **lip** bilaminate, the laminae oblong to ovate, long-ciliate, 2-3 mm long, the bases rounded, the apices narrowly obtuse, the connectives short, from near or below the middle of the blades, the body broad, connate to the base of the column, the sinus obtuse, with a minute, ovate, pubescent appendix; **column** slender, clavate, 2-3 mm long, the anther dorsal, the stigma ventral.

Carchi: El Mirador, alt. 3600 m, 11 Aug. 1990, A. Hirtz, X. Hirtz & J. Del Hierro, 4940, 5093 (MO); same area, alt. 3400 m, June 1991, A. Hirtz et al. 5563 (MO); below paramo above Maldonado, alt. 3200 m, 22 Feb. 1992, S. Dalström 1530 (MO).

Sucumbios: south of Santa Barbara, alt. 2700 m, 5 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9966 (MO); same area, alt. 2700 m, 6 Apr. 1985, C. Luer, J. Luer, A. Hirtz & X. Hirtz 11079, 11095 (MO).

Imbabura: paramo north of Ibarra, alt. 3700-3800 m, 25 May 1973, L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 6479 (AAU, S); Selva Alegre, alt. 2850 m, 6 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9982, 9983 (MO).

Pichincha: Andes of Quito, Guayrapata, *Spruce 5954* (type of *L. roseola*: W); Puhulagua, alt. 3000 m, 5 Nov. 1984, A. Hirtz 2067, C. Luer illustr. 10505; west slope of Corazón, alt. 3500 m, July 1984, A. Hirtz 1871 (MO); Mojanda, alt. 3300 m, A. Hirtz 1931 (MO).

Tungurahua: above Baños, alt. 2700 m, 27 Mar. 1984, C. Luer, S. Dalström, T. Höijer & F. Freire 9771 (MO); Cordillera de los Llanganates, alt. 3100 m, 11 Apr. 1985, C. Luer, J. Luer & A. Hirtz 11152, 11168 (MO).

Cañar: between Taday and Pindilig, alt. 2800 m, 4 Apr. 1974, G. Harling & L. Andersson 13155 (GB).

Azuay: near Cuenca, *W. Jameson s.n.* (Holotype: K); Laguna Llaviucu, WNW of Sayausí, alt. 3200 m, 14 June 1979, B. Løjtnant, A. & U. Molau 14733 (AAU, GB); NW of Sayausí to Cajas, alt. 3000 m, 15 June 1979, B. Løjtnant, A. & U. Molau 14831 (AAU, GB); Laguna Llaviucu, east of Las Cajas Park, alt. 3100 m, 31 Jan. 1988, U. Molau, B. Eriksen & M. Fredrikson 2817 (GB); new road west of Zorrogucho, alt. 3250 m, 16 Mar. 1984, C. Luer, S. Dalström, T. Höijer & J. Kuijt 9524 (MO); Santa Rosa near Cuenca, alt. 3000 m, Feb. 1985, A. Hirtz 2233 (MO).

Morona-Santiago: east of pass between Gualaceo and Limón, alt. 3180 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz & A. Embree 11802, 11809 (MO).

Zamora-Chinchipe: east of pass east of Loja, alt. 2750 m, Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10717 (MO); Nudo da Cajanuma, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10760 (MO); above Valladolid, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10898, 10952 (MO); south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz & A. Embree 12006 (MO).

Also Colombia (Norte de Santander, Cundinamarca, Quindío, Cauca: type of *L. dolichopus*)

This species was described and illustrated by Lindley from a single plant and a single flower. Although crude, enough details are included to leave no doubt about the identity. Jameson had collected the plant near Cuenca where it is known to be especially common today. It is common at high altitudes in much of Ecuador, but less common in Colombia.

The leaves are narrowly elliptical, not much longer than the ramicaul when the plant is small, but in larger plants the ramicaul is noticeably much longer than the leaves. The subcongested racemes reach about half the length of the leaf. The sepals are denticulate, and the laterals are with only one vein. The transverse petals are oblong but variously shaped, often overlapping above the column. The blades of the lip are elliptical or ovate and ciliate, and the appendix is short and pubescent.

Lepanthes morleyi Luer & Dalström, sp. nov.

Fig. 160.

Ety.: Named for Morley Read, co-discoverer of this species.

Planta mediocris, foliis ellipticis acuminatis racemo disticho congesto longioribus, floribus parvis, sepalis ovatis obtusis glabris, petalis transverse bilobis lobo superiore majore, labelli laminiis angustissime oblongis apice incurvis, corpore crassissimo appendice parva ciliata.

Plant medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 6-13 cm long, enclosed by 10-16 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical, acute, acuminate, 6-8 cm long, 1.5-2.8 cm wide, the base broadly cuneate to rounded into a petiole 2-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme, up to 10 mm long, borne behind the leaf by a slender peduncle 18-25 mm long; floral bracts muricate, less than 1 mm long; pedicels 2-2.5 mm long; ovary 1 mm long; **sepals** membranous, translucent pale orange to pale green, glabrous, the dorsal sepal ovate, obtuse, 1.8 mm long, 1.3 mm wide, 3-veined, connate to the lateral sepals for 0.25 mm, the lateral sepals ovate, oblique, obtuse, 1.6 mm long, 0.9 mm wide, 1-veined, connate 0.5 mm; **petals** red-orange, microscopically pubescent, transversely bilobed, 0.8 mm long, 2.25 mm wide, the upper lobe oblong, subtruncate, much larger than the lower lobe, the lower lobe narrowly triangular, acute; **lip** red-orange, bilaminate, the blades ciliate, narrowly oblong, 0.9 mm long, the apices uncinately, incurved beneath the column, the connectives cuneate, the body very thick, connate to the base of the column, the sinus obtuse, with a small, ovoid, pubescent appendix; **column** 0.9 mm long, the anther apical, the stigma subapical.

Carchi: plateau above Chical, alt. 1800 m, 11 Jan. 1993, A. Hirtz 5856 (MO).

Imbabura: epiphytic wet forest, Los Cedros Reserve, alt. 1,850 m, 27 Jan. 1993, S. Dalström, T. Höijer & H. Wannorp 1806 (holotype, MO); same area, alt. 1,900 m, 22 Jan. 1993, S. Dalström, T. Höijer & H. Wannorp 1729 (MO).

Vegetatively this species is similar to many others with a congested raceme borne behind an elliptical, acuminate leaf. The flowers are very small with obtuse, glabrous sepals. The petals are proportionately large with the oblong upper lobe about as large as a lateral sepal. The blades of the lip are little more than the longitudinally thickened margins of the connectives. The body is remarkably thick with a small, ovoid, pubescent appendix.

Lepanthes mucronata, Lindl., Comp. Bot. Mag. 2: 356, 1836.

Fig. 161.

Ety.: From the Latin *mucronatus*, "mucronate," referring to the tip of the leaves.

Syn.: *Lepanthes andrenoglossa* Rchb.f., Bonplandia 3: 241, 1855.

Ety.: From the Greek *andrenoglossa*, an indecipherable word.

Syn.: *Lepanthes mesochlora* Rchb.f., Xenia Orch. 1: 147, 1856.

Ety.: From the Greek *mesochloros*, "green in the middle," referring to the colors of the flower.

Syn.: *Lepanthes macrourea* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 8: 55, 1921.

Ety.: From the Greek *makrourea*, "large or long tail," referring to the mucronate tip of the leaf.

Plant small to large, epiphytic, caespitose; roots slender. Ramicauls slender erect, 2-23 cm long, enclosed by 7-12 closely fitting, microscopically ciliate-scabrous, lepanthiform sheaths with narrowly dilated, acuminate ostia. **Leaf** more or less horizontal, often purple beneath, thinly coriaceous, ovate to narrowly ovate, acute, acuminate, 1-8 cm long, 0.5-2 cm wide, the base broadly to narrowly cuneate into a petiole 1-2 mm long. **Inflorescence** a congested, successively many-flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 3-20 mm long, a short and a long peduncle frequently co-existing; floral bract 1-2 mm long; pedicel 2-4 mm long; ovary 1.5-2 mm long; **sepals** yellow, brown or purple, glabrous, the dorsal sepal ovate, obtuse, 3-4 mm long, 2.75-3.25 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals connate into a broadly ovate, 3-4 mm long, 3-3.75 mm wide, the apex obtuse, often shortly bifid; **petals** green, brown or purple, microscopically pubescent, transversely bilobed, with a slender, marginal process between the lobes, 1-1.5 mm long, 3-5 mm wide, the upper lobe oblong, truncate, with the angles often shortly acuminate, sometimes erose, the lower lobe triangular, acute; **lip** purple or brown, bilaminate, blades thin, elliptical with rounded ends, minutely ciliate, 1.5-2.25 mm long, borne at the base by short connectives, the body narrow, connate to the base of the column, the sinus obtuse with a comparatively large, oblong, concave, ciliate appendix; **column** 1.5-2.5 mm long, the anther dorsal, the stigma ventral.

Sucumbíos: south of Santa Barbara, alt. 2700 m, 5 Apr. 1984, *C. Luer, S. Dalström & T. Höijer* 9971 (MO); same area, alt. 2700 m, *C. Luer, J. Luer, A. Hirtz & X. Hirtz* 11097 (MO).

Carchi: above La Esperanza between El Carmelo and Tulcán, alt. 3200-3450 m, 9 Apr. 1979, *B. Løjnant, U. Molau & M. Madison* 12046 (AAU, GB); between Tulcán and El Carmelo, alt. 3200 m, 6 Apr. 1985, *C. Luer, J. Luer, A. Hirtz, & W. Flores* 11085, 11120 (MO); between Tulcán and Maldonado, alt. 2050 m, 2 Apr. 1984, *C. Luer, S. Dalström & T. Höijer* 9930, 9935 (MO).

Imbabura: paramo north of Ibarra, alt. 3700-3800 m, 25 May 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjnant & B. Øllgaard* 6483 (AAU).

Pichincha: Valley of Lloa, trunks of trees, alt. 8,000 ft., *Col. Hall s.n.* (Holotype: K); "Quito," 1848, *W. Jameson R-114* (K); Forest of Nanegal, 1854, *W. Jameson s.n.* (K); Andes of Quito, alt. 11,000 ft., Dec. 1859, *W. Jameson s.n.* (C); Andes of Quito, *W. Jameson* 66 (W); "Quito," *W. Jameson* 78 (type of *L. andrenoglossa*, W); eastern slopes of the Andes of Quito, *W. Jameson* 27 (type of *L. mesochlora*: W); epiphytic along Río Napa, Sept. 1892, *A. Sodiro 2a* (type of *L. macroura*, destroyed at B); above Tandapi, alt. 2300-2400 m, 12 June 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjnant & B. Øllgaard* 7110 (AAU); between Cotacollao and Nono, alt. 3200-3300 m, 29 Jan. 1974, *G. Harling & L. Andersson* 11660 (GB); between Calacali and La Iberia, alt. 2500 m, Apr. 1985, *C. Luer, J. Luer, A. Hirtz, C & P. Dodson* 11047 (MO); between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt* 9856 (MO); above Tandapi, alt. 1500 m, 31 Mar. 1985, *C. Luer, J. Luer & A. Hirtz* 11016A (MO).

Napo: between Cuyuja and Papallacta, alt. 2800-2900 m, 5 June 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjnant & B. Øllgaard* 6878 (AAU); Río Anatenario, east of Salcedo, alt. 2800 m, 27 May 1979, *B. Løjnant, A. & U. Molau* 13834 (AAU, GB); Cerro Mirador south of El Playón de San Francisco, alt. 3300-3600 m, 29 Dec. 1980, *L. Holm-Nielsen, J. Jaramillo & F. Coello* 29945, 29952 (AAU); between Papallacta and Baeza, alt. 2600 m, 14 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 11283 (MO); Guacamayo Range, alt. 1800 m, 18 Nov. 1984, *A. Hirtz* 2103 (MO); same area, alt. 1850 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 11250, 11257 (MO).

Pastaza: Río Zuñag, alt. 2200 m, Feb. 1990, *A. Hirtz* 4845 (MO).

Tungurahua: Cordillera del Llanganates, Leito, alt. 3000 m, 12 Oct. 1984, *A. Hirtz* 1989 (MO); same area, alt. 3100 m, 11 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 11143, 11144 (MO).

Azuay: South of Cumbe between Cuenca and Loja, alt. 3300 m, 9 June 1979, *B. Løjnant, A. & U. Molau* 14405 (AAU, GB); Laguna Llavicu, east of Las Cajas Park, alt. 3100 m, 31 Jan. 1988, *U. Molau, B. Eriksen & M. Fredrikson* 2818 (GB); Santa Rosa near Cuenca, alt. 3000 m, Feb. 1985, *A. Hirtz* 2232 (MO).

Morona-Santiago: between Limón and Gualaceo, alt. 2900-3100 m, 12 June 1979, *B. Løjnant, A. & U. Molau* 14681 (AAU, GB); same area, alt. 3180 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree* 11801 (MO); northern slopes of Nudo de Sabanilla south of Yangana, alt. 2500 m, 24 Feb. 1988, *U. Molau & B. Eriksen* 3192 (GB).

Loja: west of pass between Loja and Zamora, alt. 2800 m, 17 June 1979, *B. Løjnant, A. & U. Molau* 15046 (AAU, GB); same area, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 10702 (MO); Parque Nacional Podocarpus, at "Centro de Información," alt. 2800-2950 m, 23 Feb. 1985, *B. Øllgaard et al.* 58000 (AAU); Cajanuma Range south of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 10752 (MO).

Zamora-Chinchi: Nudo de Sabanilla, east of pass to Valladolid, alt. 2800 m, 4 Feb. 1985, *G. Harling & L. Andersson* 21538 (GB); Cerro Toledo, Parque Nacional Podocarpus, alt. 2500-3400 m, 30 Oct. 1989, *J.E. Madsen* 86286 (AAU, QCA); south of Yangana, above Valladolid, alt. 2700 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 10859, 10908 (MO); between Yangana and Valladolid, alt. 2700 m, 24 Feb. 1990, *J.E. Madsen* 86878 (AAU, QCA).

Also Colombia (Santander, Boyacá, Antioquia, Chocó, Cundinamarca, Quindío, Cauca, Nariño, Putumayo).

Lepanthes mucronata is one of the most frequent species of the genus in the Andes. It is exceedingly variable vegetatively, no two populations being alike. The plants vary from small to relatively large, but always with very slender ramicauls with the leaves more or less horizontal. The leaves are thin and they vary from ovate, short- to long-acuminate, to narrowly ovate, and to nearly linear. Small forms with ovate leaves were recognized by Reichenbach as *L. andrenoglossa*; he recognized tall forms with narrow leaves as *L. mesochlora*. The tips of the leaves are often prominently mucronate, but this feature occurs in varying degrees in all species of the genus.

The inflorescences lie upon the upper surface of the leaf, commonly within in the central groove. Curiously, a raceme borne by a short peduncle usually accompanies a second raceme with a twice longer peduncle. The racemes commonly bear

their single, brownish or greenish flower simultaneously. Double racemes are also sometimes seen in related species. The flowers vary somewhat, especially in the upper margin of the upper lobe of the petals, but the flower is always readily recognized. The upper margin varies from broadly obtuse to truncate, sometimes with the corners narrowly pointed, and sometimes erose. A narrow process, or a third lobe, projects laterally from the margin between the two lobes, indicating its membership in an large alliance of species. The lip is distinct with the pair of thin, fragile blades overlying a proportionately large, scaphoid appendix.

Lepanthes muscula Luer & Escobar, *Phytologia* 54: 354, 1983.

Fig. 162.

Ety.: From the Latin *musculus*, "a little mouse," in reference to the trilobed appendix.

Plant medium to large in size, epiphytic, caespitose; roots coarse. Ramicauls erect, slender to stout, 5-22 cm long, enclosed by 10-14 ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical-ovate, acute, acuminate, 4-7 cm long, 1.5-2 cm wide, the base cuneate into the petiole 2-3 mm long. **Inflorescence** a progressively lengthening, loose, lightly flexuous raceme up to 20 cm long including the peduncle ca. 2 cm long, 2-3 flowers open simultaneously; floral bract 1.5-2 mm long; pedicel 0.75-1.5 mm long; ovary 1.5-2 mm long; **sepals** purple-brown or yellow-orange, glabrous or microscopically cellular denticulate, narrowly ovate, acute, lightly acuminate, the dorsal sepal 5-7.5 mm long, 2.5-3 mm wide, connate 1.5 mm to the lateral sepals, the lateral sepals 5-7 mm long, 1.5-2.25 mm wide, connate 2 mm; **petals** dark red or yellow-orange, cellular-glandular, transversely oblong, bilobed, 1-1.25 mm long, 2.5-3.75 mm wide, the upper lobe oblong, the apex obliquely narrowed, obtuse, the lower lobe smaller, obliquely triangular, obtuse; **lip** dark red or purple, bilaminar, the blades oblong with rounded ends, 1.75 mm long, microscopically ciliate-pubescent, the connectives cuneate, the body narrow, connate to the base of the column, the appendix minute, pubescent, orbicular with a pair of rounded, terminal lobules; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Sucumbios: south of Santa Barbara east of Tulcán, alt. 2700 m, 6 Apr. 1985, C. Luer, J. Luer & A. Hirtz 11094 (MO); between El Carmelo and La Bonita, alt. 2600 m, Aug. 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4979 (MO).

Carchi: epiphytic in cloud forest above San Gabriel, alt. 3400 m, 8 Nov. 1982, C. Luer & R. Escobar 8300 (Holotype: SEL); El Mirador, alt. 3600 m, Aug. 1990, A. Hirtz, X. Hirtz, J. Del Hierro & F. Sarmiento 4937 (MO).

Also Colombia (Cauca).

This species occurs at high altitudes in northernmost Ecuador and southern Colombia. It is identified by the loose, elongated raceme; ovate, acuminate sepals; transverse petals with the upper lobe reminiscent of that of *L. monitor*; and an appendix with a terminal pair of lobules similar to that of *L. hirtzii*. The colors of the flower parts vary greatly through its distribution.

Lepanthes nanegalensis Rchb.f., *Linnaea* 41: 46, 1877.

Fig. 163.

Ety.: Named for the community of Nanegal near Quito where the species was collected.

Syn.: *Lepanthes rhombipetala* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 7: 98, 1920.

Ety.: From the Latin *rhombipetalus*, "with rhomboid petals," referring to the petals.

Syn.: *Lepanthes macropoda* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 8: 54, 1921.

Ety.: From the Greek *makropodion*, "big footed," referring to the long ramicauls.

Plant medium to large, epiphytic to terrestrial or lithophytic, caespitose; roots coarse. Ramicauls erect, slender to stout, 10-30 cm long, enclosed by 10-15 microscopically ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, elliptical-ovate, acute to subacute, acuminate, 7-13 cm long, 2.5-6 cm wide, the base cuneate or rounded, contracted into a petiole 3-5 mm long. **Inflorescence** a progressively lengthening, loose, distichous, slightly flexuous raceme up to 40 cm long including the peduncle 2-8 cm long, 2-3 flowers open simultaneously; floral bract 2-2.5 mm long; pedicel 1.5-2 mm long; ovary 1.5 mm long, with crested ribs; **sepals** purple or yellow, microscopically ciliate, the dorsal sepal ovate-

triangular, acute, acuminate, concave above the base, erose-carinate, 6-8 mm long, 4-5 mm wide, connate 1.5 mm to the lateral sepals, the lateral sepals ovate, acute, acuminate, oblique, 5-8.5 mm long, connate 2-5 cm into a bifid lamina, 4.5-6 mm wide; **petals** dark red, yellow, or orange, minutely pubescent, transversely bilobed, 1-1.25 mm long, 2.1-2.75 mm wide, the lobes subequal, broadly triangular, broadly obtuse; **lip** dark red or purple, bilaminar, the blades oblong with rounded ends, 1.75-2.4 mm long, minutely ciliate-pubescent, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse, with the appendix oblong, pubescent, biglandular at the summit; **column** stout, 1.5 mm long, the anther dorsal, the stigma ventral.

Pichincha: Nanegal, region of Quito, Apr. 1864, *W. Jameson s.n.* (Holotype: W);

Napo: "Papallacta, Quito," *W. Jameson s.n.* (type of *L. macropoda*: destroyed at B); Papallacta, alt. 2700 m, May 1984, *A. Hirtz 1812* (MO), *C. Luer* illustr. 10461; between Papallacta and Baeza, alt. 2600 m, 14 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11278, 11284, 11285* (MO); south side of Cerro Sumaco, alt. 2900-3050 m, 1-2 May 1979, *B. Løjtnant & U. Molau 13044* (AAU, GB); Guagra Urcu, SW of summit, alt. 3000 m, 28 Sept. 1980, *L. Holm-Nielsen et al. 27478* (AAU).

Tungurahua: Cordillera de los Llanganates, Leito, alt. 3000 m, 12 Oct. 1984, *A. Hirtz 1990* (MO); same area, alt. 3100 m, 11 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11141* (MO).

Morona-Santiago: Campamento San Miguel between Sigsig and Gualaquiza, alt. 3000 m, 8 Apr. 1968, *G. Harling, G. Storm & B. Strom 8059* (GB); SE of Sigsig, road to Chiguinda, alt. 2500-2700 m, 5 Feb. 1988, *U. Molau, B. Eriksen & M. Fredrikson 2965* (GB); between Limón and Gualaquiza, alt. 2900-3100 m, 12 June 1979, *B. Løjtnant, A. & U. Molau 14683* (AAU, GB); between Limón and Gualaquiza, east of pass, alt. 3350-3450 m, 10 June 1979, *B. Løjtnant, A. & U. Molau 14495* (AAU, GB); same area, alt. 3180 m, 16 Feb. 1985, *C. Luer, J. Luer, A. Hirtz et al. 11804* (MO).

Loja: Parque Nacional Podocarpus near "Centro de Información," alt. 2900 m, 21-22 Feb. 1985, *B. Øllgaard et al. 57889* (AAU); Parque Nacional Podocarpus near "Centro de Información," alt. 2900 m, Mar. 1989, *B. Eriksen 134* (AAU); 1 Apr. 1989, *B. Eriksen 91167* (AAU); at the pass north of Loja, alt. 3150 m, 17 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuiji 9552* (MO).

Also Colombia (Antioquia, Cauca: type of *L. rhombipetala*, and Nariño).

This species is variable in its wide distribution through the Andes of Colombia and Ecuador. It is characterized by the large habit; elliptical-ovate, acuminate leaves; and a gradually lengthening, long-lasting, loosely flowered inflorescence. The raceme begins flowering while still shorter than the leaf, but if unmolested it attains a length up to 40 centimeters. The sepals vary, mostly in the depth of connation of the laterals. They are sometimes deeply connate into a triangular, shortly bifid lamina, but sometimes they are connate only below the middle with free, acuminate apices. The form with the deeply connate sepals was illustrated and described by Schlechter as *L. rhombipetala*. Reichenbach's sketch of *L. nanegalen-sis* shows the sepals free to below the middle. However, variations of these differences occur throughout the distribution. The petals are small and "rhomboid" with the opposite lobes short and obtuse.

***Lepanthes narcissus* Luer & Hirtz, sp. nov.**

Fig. 164.

Ety.: Named for *Narcissus* of Greek mythology, noted for the love of his own reflection in a pool.

Species haec *L. inamoena* Luer affinis sed petalorum lobis inferioribus multiminoribus, labelli laminis minoribus et appendice majore in sulco labelli differt.

Plant medium in size, epiphytic, caespitose; roots numerous, slender. Ramicauls erect, slender, 7-11 cm long, enclosed by 8-11 minutely ciliate, lepanthiform sheaths, minimally dilated at the ostia. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5-6 cm long, 1.5 cm wide, the base cuneate into a petiole ca. 0.5 cm long. **Inflorescence** a loose, distichous, successively several-flowered raceme up to 5 cm long including the filiform peduncle 2.5-3 cm long, borne along the back surface of the leaf; floral bracts 1.5 mm long; pedicels 2.5 mm long; ovary 1 mm long; sepals yellow, membranous, the dorsal sepal ovate, subacute, 3.5 mm long, 2.4 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals completely connate into an ovate-triangular, acute synsepal, 3 mm long, 2.5 mm wide; **petals** dark yellow with the margin purple, cellular-glandular, transversely bilobed, 1.2 mm long, 3 mm wide, the lobes ovate-oblong with the apices rounded, the upper lobe much larger, 3 times longer; **lip** red-purple, cellular-glandular, bilaminar, the laminae ovate, acute, slightly concave, less than 1 mm long, to either side of the column, the connectives cuneate, the body narrow, connate to the base of the column, the appendix triangular, pubescent, in the sinus; **column** comparatively large, cylindrical, 1.5 mm long, the anther dorsal, the stigma apical.

Morona-Santiago: Cordillera del Condor, epiphytic in cloud forest east of Chuchumbletza, alt. 1650 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13537 (MO); Cordillera del Condor east of Guisamé, alt. 1650 m, 20 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14013 (MO).

Zamora-Chinchipe: Cordillera del Condor, epiphytic in cloud forest east of Los Encuentros, alt. 1550 m, 18 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13469 (Holotype: MO).

This species is closely related to *L. inamoena*, but *L. narcissus* is distinguished by the larger upper lobes and the smaller lower lobes of the petals, smaller blades of the lip with a much larger, triangular appendix located in the sinus of the lip. The appendix of *L. inamoena* consists of only a few hairs located externally on the body of the lip. The apex of the column protrudes beyond the lip in *L. narcissus*, whereas the apices of the lobes of the lip protrude beyond the column in *L. narcissus*. Superficially, the two species appear similar: slender, erect ramicauls with a weak, loose inflorescence borne on the back side of a narrowly elliptical leaf. Both species grow in the same forests.

Lepanthes necopina Luer & Hirtz, *Lindleyana* 2: 42, 1987.

Fig. 165.

Ety.: From the Latin *necopinus*, "unexpected," in allusion to the most peculiar column.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-5 cm long, enclosed by 6-9 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, subacute, 15-21 mm long, 11-14 mm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 8 mm long, borne behind the leaf by a filiform peduncle 6-9 mm long; floral bract 1 mm long, microscopically sparsely spiculate; pedicel 2 mm long; ovary 2 mm long; **sepals** light yellow, ovate, acute, low-carinate, the dorsal sepal 2.5 mm long, 1.5 mm wide, connate to the lateral sepals for 0.3 mm, the lateral sepals oblique, 2.25 mm long, 1.25 mm wide, connate 0.5 mm; **petals** orange, suffused with red on the margins, microscopically pubescent, transversely bilobed, 0.9 mm long, 2.5 mm wide, the lobes oblong, obtuse, the upper longer than the lower; **lip** bilaminar, red-orange, the laminae thick, obliquely trapeziform, microscopically pubescent, 1 mm long, the anterior margins obliquely truncate and with a row of long, stiff cilia overlying the protruding column, the connectives broadly rounded the body broad, connate to the base of the column, the sinus obtuse with a minute appendix with a terminal gland; **column** 1 mm long, the anther dorsal, flanked by stigmatic lobes that curve over the dorsal surface of the anther, the rostellum oblong, pubescent, channeled, with a triangular gland at the apex, the stigma bilobed with the receptive surfaces curved over the anther.

Zamora-Chinchipe: epiphytic in cloud forest south of Yangana, alt. 2200 m, May 1985, A. Hirtz 2631 (Holotype: MO), C. Luer illustr. 11696; between Loja and Zamora, alt. 2250 m, 22 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13611 (MO); same area, 4 Mar. 1990, S. Dalström & L. Arnby 1428 (MO).

This species is related to the much larger Central American *L. mystax* Luer & Escobar. Both have a row of long, stiff cilia along the anterior margin of the blades of the lip. The underlying column is most remarkable in that the receptive surfaces of the bilobed stigma curve around and over the dorsal anther. The rostellum, upon which the anther rests, is thick, oblong, channeled and pubescent with a terminal triangular gland, very similar to the appearance of many appendices of other species. The appendix of *L. necopina* is a minute structure, apparently vestigial, away from the area of expected pollination activity.

Lepanthes nematostele Luer, *Novon* 3: 449, 1993.

Fig. 166.

Ety.: From the Greek *nematostele*, "a threadlike column," referring to column.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 cm long, enclosed by 7-8 long-ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 10-15 mm long excluding the petiole 1-1.5 mm long, 8-10 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, loose, successively several-flowered raceme up to 5 cm long including the slender peduncle 2-2.5

cm long; floral bract 1.5 mm long; pedicel 1.5-2 mm long; ovary 3.5 mm long, lightly ribbed; **sepals** dark red, concave, crested along the veins and margins, the dorsal sepal ovoid, acute, 6 mm long, 2.5 mm wide unexpanded, connate to the lateral sepals for 1 mm, the lateral sepals connate 5 mm into an ovoid synsepal similar to the dorsal sepal, 6 mm long, 4 mm wide unexpanded, the apices free for less than 1 mm; **petals** transversely bilobed, long-pubescent on the back surface, 1 mm long, 5 mm wide, the upper lobe short, semicircular, the lower lobe triangular, acute, long acuminate; **lip** bilaminar, the laminae glabrous, arcuate, firmly agglutinated to each other below the middle over the column, 1.25 mm long, the apices everted, rounded, ciliate, the connectives and body short, connate to the column near the apex, the appendix triangular, retrorse; **column** weak, proportionately very long and very slender, 3.5 mm long, the anther dorsal, the stigma ventral with a prominent, descending process.

Carchi: epiphytic in wet, mossy forest east of Maldonado, alt. 1900 m, 15 Feb. 1989, *S. Dalström & T. Höijer 1234* (Holotype: MO), *C. Luer* illustr. 14715; above Maldonado, alt. 1500-1700 m, 17 Mar. 1996, *S. Dalström, S. Ingram & K. Ferrell-Ingram 2170* (MO).

This remarkable species is characterized by the small vegetative habit with long-ciliate, lepanthiform sheaths; a loose inflorescence longer than the leaves; concave, crested sepals; petals with a long-acuminate lower lobe; and a long, threadlike column bearing near the tip a tiny lip. The blades of the lip are solidly agglutinated over the column. A prominent stigmatic process as large as the retrorse appendix descends from between the blades.

Lepanthes nivea Luer, *Phytologia* 54: 356, 1983.

Fig. 167.

Ety.: From the Latin *niveus*, "snow-white," in allusion to the sepals.

Plant large, epiphytic, densely caespitose; roots numerous, coarse. Ramicauls erect, slender, 12-30 cm long, enclosed by 12-17 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, purple beneath, oblong-ovate, 7-11 cm long, 2.5-3.5 cm wide, the apex acuminate, acute, the base rounded, abruptly contracted into a petiole 3-4 mm long. **Inflorescence** a successively flowered, congested, subsecund raceme up to 3.5 cm long, borne by a filiform peduncle up to 2.5 cm long behind the leaf; floral bract 1.5 mm long; pedicel 2 mm long; ovary 5 mm long; **sepals** snow-white, microscopically pubescent within, the dorsal sepal triangular, 13 mm long including the attenuate apex ca. 5 mm long, 7.25 mm wide, connate to the lateral sepals for 3 mm, the lateral sepals ovate, oblique, 14 mm long including the tails, connate 5 mm, 9.5 mm wide together, with a pair of rounded convexities at the base below the central apparatus; **petals** white, edged in purple, cellular-glandular, transversely oblong, bilobed, 1.75 mm long, 2.75 mm wide, the upper lobe oblong, oblique, obtuse, the lower lobe shorter, subfalcate; **lip** cream, bilaminar, the blades lunate-oblong, glabrous, 2 mm long, the apices narrowly obtuse, the bases rounded, the connectives broadly cuneate, the body broad, connate to the base of the column, the appendix triangular, pubescent, with a minute, terminal, pubescent segment; **column** flat, 1.5 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchi: epiphytic in cloud forest near the pass south of Yangana, alt. 2730 m, 12 May 1981, *C. Luer, J. Luer & D. D'Alessandro 6205* (Holotype: SEL); same locality, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10905* (MO); Nudo de Sabanilla, east of pass, alt. 2800 m, 4 Feb. 1985, *G. Harling & L. Andersson 21582* (GB); between Yangana and Valladolid, alt. 2700 m, 17 Feb. 1989, *J.E. Madsen 85779* (AAU, QCA); south slope of Nudo de Sabanilla, alt. 2600 m, 20 Jan. 1986, *S. Dalström & T. Höijer 1078* (MO).

This pretty species is locally abundant in cold, wet forests of southern Ecuador. It is recognized by the slender ramicauls bearing thin leaves suffused with purple. Against the purple the comparatively large snow white flower is born in a congested raceme. The sepals are minutely pubescent and caudate; the petals are small; and the appendix is minute with a terminal, tufted segment.

Lepanthes nontecta Luer, *Phytologia* 54: 356, 1983.

Fig. 168.

Ety.: From the Latin *nontectus*, "uncovered," referring to the blades of the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-6 cm long, enclosed by 5-6 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, purple beneath, ovate, subacute to obtuse, 12-30 mm long, 10-20 mm wide, the base broadly cuneate into a twisted petiole ca. 1 mm long. **Inflorescence** a subdense, successively few-flowered raceme up to 5 mm long, borne by a filiform peduncle 3-6 mm long behind the leaf; floral bract and pedicel each 1 mm long; ovary 1.5 mm long; **sepals** glabrous, translucent light rose, ovate, subacute to obtuse, the dorsal sepal 3.5-5 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals 3-4.75 mm long, 2-2.25 mm wide, connate 1 mm; **petals** red-orange, minutely pubescent, transversely oblong, 1 mm long, 2.5-3 mm wide, the upper lobe oblong, subtruncate, the lower lobe triangular, acute; **lip** red, microscopically pubescent, bilaminate, the blades subovate, incompletely developed, 1.6 mm long, the acute, apical third not covered by the more or less involute or broadened surface of the lower two thirds of the blade, the bases rounded, the connectives broadly cuneate; the body narrow, connate to the base of the column, the appendix membranous, suborbicular, concave, ciliate; **column** 1.25 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest near Río Jatunyacu, alt. 600 m, 21 Feb. 1982, C. Luer & A. Hirtz 6887 (Holotype: SEL); La Cruz, downstream from Misahualli, alt. 400 m, collected by C. & A. Suarez 109, flowered in cultivation 29 Mar. 1984, C. Luer 9787 (MO); Cabañas Allinahui near Hatun-Sacha, alt. 450 m, Mar. 1991, A. Hirtz & X. Hirtz 5338 (MO).

This species occurs in the lowland forests of eastern Ecuador, where it is sympatric with, and closely related to *L. helicocephala*. *Lepanthes nontecta* is distinguished by the smaller habit with an ovate leaf; broadly ovate, obtuse sepals with the laterals not in apposition; transverse, subtruncate petals; and a similar lip with blades developed only on the lower two thirds, the exposed, acute, apical third extending beyond the anther.

Lepanthes helicocephala is very constant in morphology throughout its wide distribution in Amazonian lowlands, so this species with a similar lip but with broadly obtuse sepals is readily distinguishable.

Lepanthes odobenella Luer & Hirtz, *Die Orchidee* 37: 217, 1986.

Fig. 169.

Ety.: Named for *Odobenus*, the genus of walrus, referring the tusklake lower lobes of the petals.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicaul slender, erect, 4-18 cm long, enclosed by 5-17 tightly fitting, minutely ciliate-scabrous, lepanthiform sheaths with dilated, long-acuminate ostia. **Leaf** erect to suberect, thinly coriaceous, purplish, ovate, acute, acuminate, 2-6 cm long, 0.7-2.2 cm wide, the base broadly cuneate, rounded, or subcordate, contracted into a petiole 1-1.5 mm long. **Inflorescence** a congested, successively flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 5-30 mm long; floral bract 1-1.5 mm long, minutely echinate; pedicel 1-2 mm long; ovary 1.5 mm long; **sepals** light brownish yellow, denticulate, low-carinate, the dorsal sepal broadly ovate, obtuse, 3-3.25 mm long, 2.3-3.25 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals connate to above the middle, ovate, oblique, subacute, 3 mm long, 1.3-1.75 mm wide; **petals** red to purple, minutely pubescent, transversely bilobed, 0.75-1.25 mm long, 3.75-4.25 mm wide, the upper lobe oblong, with the apex obliquely truncate with the outer angle more or less elongate, the lower lobe much longer, narrowly triangular, acute; **lip** red to brown, bilaminate, the laminae shortly pubescent, flat, ovate with the obtuse ends incurved, 1.2-1.6 mm long, the connectives short, oblong, connate to the base of the column, the sinus obtuse with a pubescent, ovoid, concave appendix, bilobed at the apex; **column** 1 mm long, expanded at the apex, the anther dorsal, the stigma subapical.

Carchi: Plateau above Chical, alt. 1800 m, 11 Jan. 1993, A. Hirtz 5855 (MO).

Pichincha: epiphytic in cloud forest, Los Faisanes, alt. 1650 m, flowered in cultivation in Quito, April 1984, A. Hirtz 1669 (Holotype: MO), C. Luer illustr. 10465; below Chiriboga, alt. 1650 m, 31 Mar. 1984, C. Luer, S. Dalström, T. Höjjer, J. Kuijt & A. Hirtz 9843 (MO); Santa Rosa de Toachi, alt. 1400 m, Mar. 1990, A. Hirtz, X. Hirtz & K. Baumann 4669 (MO).

This species was described from a small, cultivated plant beginning to flower for the first time. Subsequent collections exhibit a larger habit with longer peduncles with congested racemes. The leaf is indeed thin, purplish, more or less crinkly, long-acuminate at the apex with the base rounded. The base of the leaf is occasionally subcordate and abruptly contracted into the short petiole. The broadly ovate, minutely denticulate sepals, and the petals with the tusk-like, long descending lower lobes are characteristic. The blades of the lip are variable, sometimes covering the column, and sometimes more or less surrounding the column. The connectives vary from broad to narrow. The well-developed ovoid, pubescent appendix with a bilobulate apex remains constant in the populations seen. The stigma varies from apical to subapical.

Lepanthes odontocera Luer & Hirtz, sp. nov.

Fig. 170.

Ety.: From the Greek *odontoceras*, "tooth-homed," referring to the tusklike blades of the lip.

Planta mediocris, racemo congesto folio elliptico breviter acuminato brevior, sepalis acutis minute denticulatis, petalorum lobis triangularibus lobo superiore ter majore, labelli lamina anguste ovatis acuminatis et appendice filiformi.

Plant small to medium, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 3-9.5 cm long, enclosed by 7-10 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical, 2-5 cm long, 1.5-2.5 cm wide, the apex subacute to obtuse, acuminate, the base broadly cuneate or rounded, contracted into a petiole 3-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 15 mm long, borne behind the leaf by a slender peduncle 10-12 mm long; floral bract 1.5-2 mm long; pedicel 1.5 mm long; ovary 1.5 mm long; **sepals** yellow, minutely denticulate, the dorsal sepal ovate, acute, slightly acuminate, 6 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, approximate, acute, slightly acuminate, 5.5 mm long, 2 mm wide, connate 1 mm; **petals** yellow, variously to wholly suffused with red-purple, microscopically pubescent, transversely bilobed, 1 mm long, 3.75 mm wide, the lobes narrowly triangular, obtuse, the upper lobe thrice larger, with a small, obtuse, marginal angle between the lobes; **lip** yellow, bilaminar, the blades microscopically pubescent, narrowly ovate, acute, narrowly acuminate, 2.6 mm long, the bases rounded, the connectives cuneate, from below the middle of the blades, the body narrow, connate to the base of the column, the sinus obtuse, with a small but elongated, slender, appendix, in contact with a stigmatic process; **column** stout, 2 mm long, the anther dorsal, the stigma ventral.

Tungurahua: Llanganates Range, Leito, alt. 3000 m, 11 Oct. 1984, A. Hirtz 1984 (MO); same area, alt. 3000 m, 6 Dec. 1984, A. Hirtz 2129 (MO); same area, alt. 3100 m, 11 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11173 (Holotype: MO); same data, C. Luer et al. 11151, 11154, 11164, 11172 (MO).

This species is apparently endemic in forests of the eastern declivity of central Ecuador at altitudes over 3000 meters above sea level. Vegetatively it is variable in size, and is similar to many other species with the elliptical, acuminate leaves and a shorter, congested raceme of colorful flowers. The sepals are acute and minutely denticulate and the petals are bilobed with opposite, triangular lobes. Most distinguishing are the pair of tusklike blades of the lip. The tip of the small, slender appendix is associated with a stigmatic process,

Lepanthes ollaris Luer & Escobar, Amer. Orchid Soc. Bull. 53: 920, 1984. Fig. 171.

Ety.: From the Latin *ollaris*, "pertaining to a pot," referring to the deep cavity of the body of the lip.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 10-18 cm long, enclosed by 10-14 shortly ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, ovate, acute, acuminate, 8-10 cm long, 2.5-3 cm wide, the base rounded, contracted into a petiole 3-4 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 25 mm long, borne behind the leaf by a filiform peduncle 10-25 mm long; floral bract 1-1.5 mm long; pedicel 4-5 mm long; ovary 2.5 mm long; **sepals** greenish white, glabrous, the dorsal sepal broadly ovate, obtuse, 5.5 mm long, 4.5 mm wide,

connate 1.5 mm to the lateral sepals, the lateral sepals oblique, ovate, acute, 5.75 mm long, 2.75 mm wide, connate 2.5 mm; **petals** light green with the upper margin purple, pubescent, transversely bilobed, 1.25 mm long, 5 mm wide, with an uncinuate, marginal lobule between the lobes, the upper lobe oblong, truncate, the lower lobe narrowly falcate-triangular, acute; **lip** red, bilaminar, the blades translucent, oblong-lunate with rounded ends, adherent to each other over the column, 2 mm long, the connectives narrow, oblique, from the middle of the blades, the connectives and body connate to the column just above the base, the body greatly dilated, saccate, 1.5 mm wide, with a minute, pubescent appendix on the anterior rim of the body; **column** flat, 2 mm long, with the anther dorsal, the stigma ventral.

Carchi: forested ridge above Maldonado, alt. 1700 m, 17 Mar. 1996, S. Dalström, S. Ingram & K. Ingram-Ferrell 2182 (MO).

Also Colombia (Antioquia, type; and Valle del Cauca).

This species is found locally in the Western Cordillera of Colombia and northernmost Ecuador. It is distinguished by the rather large, thin, elliptical, acuminate leaves borne by tall ramicauls. The flowers are borne in a congested raceme near the center of the back of the leaf. The flowers are large and basically similar to those of *L. agglutinata* with translucent sepals, and green petals with a dark purple margin, and an uncinuate process from the margin between the lobes. The lower lobes of the petals are elongate and subfalcate to either side of the lip. The lip is most distinctive with the body dilated into a large, saccate structure beneath the column.

Lepanthes ophioglossa Luer, *Phytologia* 54: 358, 1983.

Fig. 172.

Ety.: From the Greek *ophioglossa*, "a snake tongue," in allusion to the bilabiate flower with the forked apex of the synsepal resembling the tongue of a serpent.

Syn.: *Lepanthes drymocharis* Luer & Hirtz, *Novon* 3: 447, 1993.

Ety.: From the Greek *drymocharis*, "a woodland grace," referring to the beauty of the flowers.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-4.5 cm long, enclosed by 4-6 microscopically ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 1.5-2.5 cm long, 0.6-1 cm wide, the base cuneate into a 1-3 mm long petiole. **Inflorescence** a loose, flexuous, successively several-flowered raceme up to 9 cm long including the filiform peduncle 2-3 cm long, 2 flowers often produced simultaneously; floral bract 1.5-2 mm long; pedicel 1.5-2.5 mm long; ovary 1-1.25 mm long; **sepals** brown with yellow or darker brown along veins, the dorsal sepal ovate, subacute to obtuse, slightly concave, 8-9 mm long with tail, the blade 6-8 mm long, 4-6 mm wide expanded, the apex contracted into a slender tail 3-4 mm long, the lateral sepals connate 5-6 mm into a more or less flat lamina 10-15 mm long including tails, the blades 7-8 mm long, 3.25-5 mm wide, minutely ciliate, the apices approximate, acute, contracted into tails 2-4 mm long; **petals** red-brown, minutely pubescent, transversely bilobed, 1 mm long, 3.5-4.5 mm wide, the upper lobe oblong, obtuse to rounded, the lower lobe smaller, narrowly oblong, obtuse, slightly incurved; **lip** red-brown, bilaminar, the laminae ovate, 2.25 mm long, glabrous, longitudinally channeled, the apices narrowly obtuse, the bases continuous with short connectives, the body connate to the base of the column, the appendix strap-like, folded upward upon itself, with a pubescent apical segment; **column** 1 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest above Maldonado, alt. ca. 2000 m, 25 Aug. 1978, C. Luer, J. Luer & A. Hirtz 3400 (Holotype: SEL); epiphytic in cloud forest east of Maldonado, alt. 2300 m, 17 Mar. 1991, C. Luer, J. Luer, A. Hirtz, X. Hirtz & J. Del Hierro 15152 (type of *L. drymocharis*: MO).

This species, apparently endemic in northwesternmost Ecuador, is related to *L. corkyae*, with which it is sympatric, and *L. schizix* from farther south. *Lepanthes ophioglossa* is distinguished by the loose, flexuous raceme longer than the small, elliptical leaf and a proportionately large flower with a broad, minimally concave dorsal sepal with a slender, recurved tail. The sepals are minutely ciliate, and the synsepal is oblong terminated by a pair of shorter, adjacent tails. The blades of the lip differ from those of the two related species in the broad, deflexed sides. The appendix is acutely inflexed. The differences noted between *L. drymocharis* and *L. ophioccephala* are no longer considered specific.

Lepanthes orchestris Luer & Vásquez, *Phytologia* 54: 358, 1983.

Fig. 173.

Ety.: From the Greek *orchestris*, "a dancer," in allusion to the dainty, tailed flowers.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-4 cm long, enclosed by 5-7 thin, pale, ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, subacute, 2-3 cm long, 1.5-1.9 cm wide, the rounded base contracted into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively few-flowered raceme up to 8 mm long, borne on top of the leaf by a filiform peduncle 5-10 mm long; floral bracts oblique, 1 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** dull rose, ovate, acute, acuminate, carinate, denticulate, the dorsal sepal 4.25 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 4.5 mm long, 2 mm wide, connate 1 mm, long-acuminate, the taillike apices diverging; **petals** purple with yellow margins, minutely pubescent, transversely bilobed, 0.5 mm long, 2.5 mm wide, the upper lobe oblong, subtruncate, the lower lobe smaller, triangular, obtuse; lip purple, bilaminar, the laminae microscopically ciliate-pubescent, oblong-subulate, with the ends obtuse, 1.6 mm long, the connectives short, thick, from the middle of the lamina, connate to the base of the column, the sinus broad with the appendix small, oblong, ciliate; **column** 1 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in cloud forest, Guacamayo Range, alt. 1950 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11248 (MO); same area, 18 Nov. 1984 A. Hirtz 2099 (MO); east slopes of Volcán Reventador, alt. 1850 m, 11 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11778 (MO).

Also Bolivia (La Paz, type).

This species occurs locally in the wet forests on the eastern slopes of the Andes of northern Ecuador, where it has been discovered several times in recent years. It was originally described from Bolivia. Vegetatively it is recognized by the thin, pale, lepanthiform sheaths with dilated ostia. The flower sits more or less erect with the long-acuminate apices of the minutely toothed lateral sepals spreading upon the dorsum of the ovate leaf.

Lepanthes orion Luer & Escobar, *Amer. Orchid Soc. Bull.* 54: 316, 1985. Fig. 174.

Ety.: Named for Orion, the mythological giant known for his beauty.

Plant large, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 10-38 cm long, enclosed by 11-18 pale tan, glabrous, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, prominently veined beneath, ovate, acute, acuminate, 6-13 cm long, 2.5-4.3 cm wide, the base rounded, contracted into a petiole 2-3 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 25 mm long, borne behind the leaf by a filiform peduncle 18-40 mm long; floral bract 1.5 mm long; pedicel 1.5 mm long; ovary 4 mm long; **sepals** yellow, glabrous, ovate, acute, the dorsal sepal triangular-ovate, 6 mm long, 3.75 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals oblique, obtuse, shortly acuminate, diverging, 5.5 mm long, 3.75 mm wide, connate 1.5 mm; **petals** yellow with purple-brown margins, microscopically pubescent, transversely bilobed, 1.75 mm wide, 5.25 mm wide, the upper lobe oblong with the apex rounded, the lower similar but smaller; lip yellow with red-purple margins, bilaminar, blades glabrous, ovate, 1.5 mm long, with a longitudinal callus, the apices very short, obtuse, the bases rounded, the connectives short, thick, cuneate, from the apical halves of the blades, the body thick, connate to the column above the base, the sinus protuberant, filled with a thin, flabellate, erose appendix lying appressed to the stigma in the natural position; **column** clavate, 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in wet forest east of the pass east of Sigsig, alt. 2700 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13354 (MO).

Also Colombia (Santander: type).

This large species is known from two distant localities, one in the Eastern Cordillera of Colombia, the other on the eastern slopes of the central Ecuador. It is distinguished by the pale, glabrous sheaths of the ramicauls; a thin, ovate, acuminate leaf with a very congested raceme borne along the back surface; obtuse sepals; oblong lobes of the petals; and thick, carinate blades of the lip. The thick, protuberant body bears a thin, fan-shaped appendix in contact with the ventral stigma.

Lepanthes ortegae Luer & Hirtz, sp. nov.

Fig. 175.

Ety.: Named in honor of Santiago Ortega of Quito, Ecuador, co-discoverer of this species.

Species haec *L. cotyledonis* Luer affinis, sed habitu minore, foliis ellipticis acutis, sepalis integris, sepalo dorsali anguste ovate, petalorum lobo superiore truncato, lobo inferiore anguste oblongo acuto, processu marginali longiore, et labelli laminae convexis corpore non concavo differt.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls very slender, erect, 6-7.5 cm long, enclosed by 9-10 close, thin, microscopically scabrous, lepanthiform sheaths with long-acuminate apices. **Leaf** erect to suberect, thinly coriaceous, suffused with purple, reticulate-veined, elliptical, 3-4 cm long, 1.5 cm wide, the apex acute, the bases cuneate into a petiole ca. 2 mm long. **Inflorescence** an extremely congested, secund raceme of successive, long-pedicellate flowers, up to 5 mm long, borne by a filiform peduncle 12-18 mm long along the back of the leaf; floral bracts 1 mm long; pedicels 3 mm long; ovary 1.5 mm long; **sepals** pale brown, entire, glabrous, the dorsal sepal ovate, acute, 5.5 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, lightly acuminate, acute, 5 mm long, 2 mm wide, connate 0.5 mm; **petals** light yellow, finely pubescent, transversely bilobed, 1 mm long, 4.5 mm wide, with a narrow process 1.5 mm long from the margin near the middle, the dorsal lobe subquadrate, truncate, the lower lobe narrowly oblong, acute; **lip** dark brown, bilaminate, the blades thin, glabrous, lunate, convex, above the column, 2 mm long, the connectives thin, broadly cuneate, the body connate to the base of the column, the sinus obtuse, the appendix oblong, protuberant, ciliate-pubescent, concave centrally, the apex obtuse, minutely glandular, 0.5 mm long, the column 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: forest along the new road between Mendez and Morona, alt. <1000 m, 19 Jan. 1989, A. Hirtz, A. Andreetta & S. Ortega 4137 (Holotype: MO), C. Luer illustr. 17908.

This species is apparently endemic in low-land eastern Ecuador where it is known only from the original collection by Hirtz and companions. It is most closely related to *L. cotyledon*. *Lepanthes ortegae* is distinguished by the small habit with very slender, weak ramicauls that bear a thin, purple, reticulated leaf. The long-pedicellate raceme is very congested, borne near the middle of the back of the leaf. The sepals are smooth and acute; the upper lobe of the petals is truncate while the lower lobe is much longer, narrow and acute; the blades of the lip are thin and convex above the column; and the appendix is protuberant with a central cavity and apical glands.

Lepanthes otara Luer, *Phytologia* 54: 359, 1983.

Fig. 176.

Ety.: From the Greek *otaras*, "with large ears," in reference to the lobes of the lip.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-8 cm long, enclosed by 4-8 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, oblong-elliptical, subacute, 17-34 mm long, 6-8 mm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a loose, successively few-flowered, flexuous raceme up to 5 cm long including the filiform peduncle ca. 1 cm long; floral bract 2 mm long, pubescent; pedicel 1 mm long; ovary 1.5 mm long, irregularly carinate; **sepals** dull red-brown, carinate, ovate, acute, shortly caudate, the dorsal sepal concave, 7 mm long, 4.25 mm wide unexpanded, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, minutely denticulate, connate 4 mm into a bifid lamina 8 mm long, 5 mm wide; **petals** bright rose, cellular pubescent, transversely oblong, bilobed, 1.66 mm long, 2.33 mm wide, with a short, acute angle on the outer margin opposite the midvein, the upper lobe oblong-ovate with the apex rounded, the lower lobe similar but slightly smaller than the upper lobe; **lip** bright rose, cellular pubescent, bilaminate, the blades broadly elliptical to suborbicular, concave, rounded at the apex and base, 1.3 mm long, 1 mm broad, clasping the column, the connectives cuneate, very short, the body narrow, connate to the column above the middle, the appendix short, conical, pubescent; **column** 1.5 mm long, the anther apical, the stigma ventral.

Loja: epiphytic in cloud forest east of Yangana, alt. 2850 m, 4 Mar. 1982, C. Luer, D. D'Alessandro & S. Dalström 7163 (Holotype: SEL); same area, alt. 3100 m, 22 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10782 (MO); same area, alt. 2950 m, 22 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10793 (MO); Cerro Toledo SE of Yangana, alt. 3000-3200 m, 6 Apr. 1985, G. Harling & L. Andersson 23799 (GB).

Zamora-Chinchi: scrub cloud forest east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10697 (MO); same area, 11 Apr. 1988, W. Teague 104 (MO).

This species is apparently endemic in cold, cloud forests of southern Ecuador. It is identified by the narrowly elliptical leaves usually equaled or surpassed by a loose raceme of flowers with shortly caudate sepals. The petals are transverse with an acute angle on the outer margin; the blades of the lip are broadly elliptical, resembling a pair of large ears as they embrace the column.

***Lepanthes oxypetala* Luer & Hirtz, Die Orchidee 39: 57, 1988.**

Fig. 177.

Ety.: From the Greek *oxypetala*, "with long-pointed petals," referring to the shape of the petals.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 4-13 cm long, enclosed by 5-11 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-oblong, 3-5 cm long, 1.2-2.2 cm wide, the apex obtuse, shortly acuminate, the base broadly cuneate, contracted into a petiole 4-8 mm long. **Inflorescence** racemose, 1-4 loose, flexuous, flexible, successively many-flowered racemes up to 10 cm long including the slender peduncle 1-2 cm long; floral bract 1.5-2 mm long; pedicel 1-1.5 mm long; ovary 1.5 mm long; **sepals** red-purple, glabrous, oblong-ovate, subacute to obtuse, shortly acuminate, the dorsal sepal 5-7 mm long, 2.5-2.75 mm wide, 3-veined, connate to the lateral sepals for 1-2 mm, the lateral sepals oblique, 5-6 mm long, connate 3-4 mm into a broadly ovate, bifid lamina, 4.5 mm wide; **petals** orange-brown, minutely pubescent, transversely bilobed, inserted above the base of the column, 0.75-1 mm long, 5 mm wide, the lobes narrowly triangular, acute, long-acuminate, the lower lobe smaller; **lip** orange-brown, minutely pubescent, bilaminar, the blades elliptical or ovate, convex, 1.75 mm long, the apices narrowly obtuse, the bases rounded, the connectives broadly oblong from the bases of the blades, short, the body broad, connate to the column above the middle, the appendix thick, oblong, long-pubescent, rounded at the apex; **column** 2.5 mm long, slender, the anther dorsal, the stigma ventral.

Carchi: between Tulcán and El Carmelo, alt. 3200 m, 6 April 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11113 (Holotype: MO); same data, C. Luer, J. Luer, A. Hirtz & W. Flores 11119 (MO).

Also Colombia (Nariño).

Lepanthes oxypetala grows intermixed with *L. biloba* in northernmost Ecuador. In habit it is indistinguishable from the variable *L. biloba*. The flowers are also similar, the long-acuminate upper lobes of the petals resembling those of the forms that were segregated into *L. metaxy*. The petals of *L. oxypetala*, however, originate from the shaft of an elongated column above the base. The convex, pubescent blades of the lip are also similar to those of *L. biloba*, but the connectives support the bases of the blades, and the body originates from above the middle of the column.

***Lepanthes pan* Luer & Dalström, sp. nov.**

Fig. 178.

Ety.: Named for *Pan*, the mythological Greek king of the satyrs, because of the long-ciliate sheaths of the ramicauls and pubescent sepals and petals.

Planta mediocris caespitosa, ramicaulis vaginis cum ostiis late dilatatis longiciliatis, inflorescentia racemosa congesta disticha folio orbiculatis breviori, sepalis ovatis subacutis lateralibus pubescentibus, petalis transverse lobatis, lobo superiori microscopice pubescentibus cum lobo apicali interiore, lobo inferiore oblongo longipubescenti, labello hemisphaerico apice breviter inciso apicibus apiculatis cum lobulo inter eos minuto triangulari, lobis lunatis marginibus incrassatis.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 8-10 cm long, enclosed by 10-15 long-ciliate, lepanthiform sheaths, with long-ciliate, markedly dilated ostia. **Leaf** erect, coriaceous, orbicular, with the rounded apex contracted into a short acuminate portion, 4-4.5 cm long, 2.7-3 cm wide, the base rounded contracted into a petiole 3-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme, up to 1 cm long, borne behind the leaf by a filiform peduncle 18-20 mm long; floral bracts sparsely long-ciliate, oblique, acute, 1.5 mm long; pedicels 2.5 mm long; ovary 4-4.5 mm long; **sepals** peach colored, ovate, subacute, entire, the dorsal sepal 4 mm long, 3 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals pubescent, oblique, 4 mm long, 2 mm wide, 2-veined, connate 1.5 mm; **petals** red, transversely bilobed, 1 mm long, 3.25 mm wide, the upper lobe microscopically pubescent, oblong, obliquely truncate, with a lobule at the inner,

apical corner, the lower lobe oblong, narrowly obtuse, long-pubescent on the outer half; lip red, microscopically pubescent, semicircular, 1.5 mm long, 2.75 mm wide expanded, the rounded apex shallowly cleft, forming 2 lobes that clasp the column, with the obtuse apices apiculate and in apposition, with a minute, triangular lobule (appendix) between, the broadly rounded margins thickened, the base connate to the base of the column; column 1.5 mm long, with the anther and stigma apical.

Imbabura: Los Cedros Reserve, wet forest near Río Los Cedros, alt. 1200-1300 m, 24 Mar. 1996, S. Dalström, S. Ingram & K. Ingram-Ferrell 2200 (Holotype: MO), C. Luer illustr. 17914.

This species is apparently endemic in northwestern Ecuador. It is distinguished by the long-ciliate, lepanthiform sheaths with markedly dilated, long-ciliate ostia. The leaves are suborbicular with shortly acuminate apices. The congested racemes are borne by peduncles shorter peduncles. The sepals are subacute with the laterals pubescent. The upper lobes of the petals overlap with a lobule on the inner margin of the apex similar to that seen in *L. tachirensis*. The oblong lower lobe is long-pubescent. The lip is hemispherical with the rounded sides with thickened margins embracing the column. The apex is shallowly cleft with the apiculate apices in apposition. In the narrow space between the apices a small triangular lobe, the appendix, is present.

***Lepanthes papallactae* Luer & Hirtz, Lindleyana 2: 102, 1987.**

Fig. 179.

Ety.: Named for the mountain community of Papallacta near where this species is found.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 4-16 cm long, enclosed by 6-12 dark brown, ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, oblong, acute to subacute, shortly acuminate, 3.5-6.5 cm long, 1.2-2.8 cm wide, the base rounded, contracted into a petiole 2-8 mm long. **Inflorescence** a loose, flexible, lightly flexuous, successively many-flowered raceme up to 22 cm long including the slender peduncle ca. 3 cm long; floral bracts oblique, 1.5-2.5 mm long; pedicels 1.5 mm long; ovary costate, 1.5 mm long; **sepals** dull red-brown with yellow margins, denticulate, carinate-denticulate externally, shortly pubescent within, the dorsal sepal triangular, acuminate, acute, 6.5 mm long, 3.5-4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, obtuse, shortly acuminate into slender 0.5 mm long tails, 5.5 mm long, connate 3 mm, 4.5 mm wide together; **petals** purple-brown, shortly pubescent, transversely bilobed, 0.75 mm long, 4.5 mm wide, the lobes subequal, narrowly triangular with acute, long-acuminate apices; **lip** purple-brown, glabrous (microscopically cellular-pubescent), bilaminate, the laminae narrowly elliptical-oblong, 2.6 mm long, obtuse, the connectives broadly cuneate, the body connate to the column above the middle, the sinus obtuse with a minute, recurved, pedunculate, biglandular appendix; **column** slender, 2 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in cloud forest near Papallacta, alt. 2700 m, May 1984, A. Hirtz 1810 (Holotype: MO), C. Luer illustr. 10463; same locality, alt. 3000 m, 29 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4431 (SEL); same locality, alt. 2700 m, March 1984, A. Hirtz 1693 (MO).

In habit this species resembles *L. biloba* which is widely distributed and relatively frequent in northern Ecuador on both sides of the Andes. *Lepanthes papallactae* is apparently endemic in one valley on the eastern slope of central Ecuador. It is distinguished by the purplish, pubescent sepals denticulate and edged in yellow. The tips of the transverse petals are long-acuminate, and the bilaminate lip, connate high on the column, is essentially glabrous with a minute, biglandular appendix.

***Lepanthes papyrophylla* Rchb.f., Xenia Orch. 1: 151, 1856.**

Fig. 180.

Ety.: From the Greek *papyrophyllon*, "a paperlike leaf," referring to the thinly coriaceous leaf.

Plant medium to large, epiphytic, caespitose; roots slender to coarse. Ramicauls slender, erect, 8-17 cm long, enclosed by 11-16 coarsely ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, elliptical, acute to subacute, acuminate, 5-7.5 cm long, 2-2.7 cm wide, the base rounded, contracted into a petiole 2-3 mm long. **Inflorescence** a congested, distichous, successively many-flowered

raceme, up to 10 mm long, borne behind the leaf by a filiform peduncle 20-25 mm long; floral bracts 1.5 mm long; pedicels 1 mm long; ovary 1.5-2 mm long; **sepals** light yellow-green, carinate, dorsal sepal ovate-triangular, concave above the base, acute, acuminate, 5.5-6.5 mm long, 2.5-3 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, acuminate, 6-6.5 mm long, 2 mm wide, 2-veined, connate 2 mm; **petals** red or orange with red margins, microscopically pubescent, transversely bilobed, 1 mm long, 5-6 mm wide, the lobes opposite, narrowly triangular, acuminate, the upper lobe longer; **lip** red or orange with red margins, bilaminar, the blades microscopically pubescent, oblong, with the ends rounded, 1.5 mm long, the connectives cuneate, the body broad, connate to the base of the column, the sinus obtuse with an ovoid, pubescent appendix; **column** 1.5 mm long, with the anther dorsal and the stigma ventral.

Pichincha: "Andes of Quito," *W. Jameson s.n.* (Holotype: W).

Napo: epiphytic in forest between Tena and Baeza, alt. 2150 m, 28 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuijt 9802* (MO).

Zamora-Chinchipe: cloud forest south of the pass south of Yangana, alt. 2450 m, 18 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuijt 9585* (MO); above Valladolid, alt. 2450 m, 24 Mar. 1985, *A. Hirtz, C. Luer & J. Luer 2374* (MO).

This species occurs on the eastern slopes of the Andes of Ecuador. It is distinguished by a congested raceme borne behind an elliptical, acuminate leaf. The sepals are acuminate, but most distinctive are the two narrowly triangular and acuminate lobes of the petals. The blades of the lip are oblong and the appendix is thick and long-pubescent.

Lepanthes papyrophylla is similar to *L. urotepala*, but the latter differs with obtuse lateral sepals and upper lobes of the petals much longer and more attenuated.

Lepanthes paradoxa Luer, *Phytologia* 54: 361, 1983.

Fig. 181.

Ety.: From the Latin *paradoxus*, "contrary to expectation," referring to the inflorescence, huge for the size of the plant.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-8 mm long, enclosed by 2-3 microscopically scabrous sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 6-11 mm long, 4-6 mm wide, the base cuneate into a petiole 1 mm long. **Inflorescence** a loose, flexuous raceme up to 5 cm long including the peduncle ca. 1.5 cm long, with up to 10 flowers, several (3-4) open simultaneously; floral bract 1.5 mm long, minutely pubescent; pedicel 1.5 mm long; ovary winged, 1 mm long; **sepals** light red-brown, ovate, carinate, ovate, acute, acuminate into slender tails ca. 2.5 mm long, microscopically denticulate, the dorsal sepal 7 mm long including the tail, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, 7.75 mm long including the tails, connate 1.5 mm, 5 mm wide together; **petals** red-brown, transversely oblong, bilobed, 0.5 mm long, 1.75 mm wide, the lobes subequal, oblong-ovate, with rounded apices; **lip** red-brown or yellow, microscopically pubescent, bilaminar, the blades poorly developed, narrowly oblong, obtuse, 2 mm long, the medial margins obtusely angled near the middle, prolonged beyond the column, the connectives posterior, cuneate, the body narrow, connate to the column below the middle, the appendix small, narrowly linear; **column** 1 mm long, the anther apical, the stigma ventral.

Napo: epiphytic in cloud forest near Cosanga, alt. 1850 m, 17 June 1983, *C. H. Dodson, P. Dodson, D. Benzing & A. Hirtz 14033A* (Holotype: SEL), *C. Luer* illustr. 9088; same area, alt. 2000 m, May 1984, *A. Hirtz 1765* (MO), *C. Luer* illustr. 11506; south of Baeza, alt. 1800 m, 14 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11270* (MO).

This little species is apparently endemic in the wet forests of moderately high altitudes of central, eastern Ecuador. It is identified by the minute habit with flexuous racemes far surpassing the leaves. The sepals are ovate and shortly caudate, and the blades of the lip are developed only below the middle, similar to those of *L. nontecta*.

Lepanthes pecunialis Luer & Hirtz, *Die Orchidee* 37: 219, 1986.

Fig. 182.

Ety.: From the Latin *pecunialis*, "pertaining to money," referring to the resemblance of the stiff, rounded, coppery leaves to coins.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 5-13 cm long, enclosed by 7-10 dark brown, tightly fitting, minutely ciliate, lepanthiform sheaths. **Leaf** erect to spreading, thickly coriaceous, often coppery in color, broadly ovate to suborbicular, obtuse, 20-35 mm long, 15-30 mm wide, the rounded base contracted into a petiole 2-3 mm long. **Inflorescence** a very congested, distichous, long-pedicellate, successively flowered raceme up to 10 mm long, borne beneath the leaf by a filiform peduncle 10-15 mm long; floral bract 1.5 mm long, scabrous; pedicel 3-4.5 mm long; ovary 2 mm long; **sepals** light yellow, glabrous, ovate, obtuse, the dorsal sepal 3 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals 2.75 mm long, connate 1.75 mm, 2.75 mm wide together; **petals** yellow orange, suffused with red, pubescent, transversely bilobed, acute, 1.5 mm wide, 4.4 mm wide, the lobes narrowly triangular, the upper larger than the lower; **lip** red, bilaminate, the blades narrowly ovate, obtuse, 1 mm long, ciliate, the connectives narrowly cuneate forming a narrow body, connate to the base of the column, the appendix small oblong, pubescent; **column** clavate, 1 mm long, the anther dorsal, the stigma apical.

Carchi: along Río de la Plata near Lita, alt. 512 m, 19 Jan. 1987, *C. Luer, J. Luer & A. Hirtz* 12426 (MO); between Chical and Maldonado, alt. 1300 m, 15 Feb. 1989, *S. Dalström & T. Höijer* 1230 (MO); off road to Lita, north of Río Mira, between Guallupe and Parambas, alt. 900 m, 16 Feb. 1996, *A. Hirtz & X. Hirtz* 6293 (MO).

Esmeraldas: west of Lita, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer & A. Hirtz* 12422 (MO).

Imbabura: Los Cedros Reseve, wet forest, alt. 1400 m, 23 Jan. 1993, *S. Dalström, T. Höijer & H. Wannatorp* 1737 (MO).

Pichincha: Palmitopamba NW of Nanegal, alt. ca. 1300 m, 23 Jan. 1974, *G. Harling & L. Andersson* 11559 (GB); between Nanegal and Nanigalito, alt. 1200-1550 m, 24 Jan. 1974, *G. Harling & L. Andersson* 11572 (GB); between Calacalí and Nanegalito, alt. 1800 m, 3 Mar. 1992, *S. Dalström et al.* 1609 (MO); epiphytic in citrus trees above Tandapi, alt. 1500 m, 31 March 1985, *C. Luer, J. Luer, A. Hirtz & X. Hirtz* 11016 (Holotype: MO); farm road south of Tandapi, alt. 1600 m, 1 Mar. 1986, *C. Luer, C. Dodson, A. Hirtz & A. Embree* 12060 (MO); epiphytic along a stream below Tandapi, alt. 1180 m, 31 Jan. 1987, *C. Luer, J. Luer & A. Hirtz* 12559 (MO); Río Toachi, alt. 1000 m, Feb. 1987, *A. Hirtz* 3189 (MO); between Chiriboga and Santo Domingo, alt. 1300 m, 28 May 1988, *C. Luer & A. Hirtz* 13717 (MO).

Cotopaxi: Río Pilalo between Quevedo and Latacunga, alt. 1200-1300 m, 7 Apr. 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øilgaard* 3114 (AAU);

Bolivar: wet forest west of Salinas and La Palma, alt. 1150 m, 10-12 Mar. 1991, *C. Luer, J. Luer, A. Hirtz et al.* 14977, 15010 (MO); between Guaranda and Catarama, alt. 900 m, flowered in Chamblee, GA, May 1992, *F. L. Stevenson* 91-1212-6 (MO).

This species, previously identified as *L. rotundifolia* L.O. Williams, is frequent and abundant in forests and cultivated groves of citrus and guava on the western slopes of northcentral Ecuador at moderate altitudes up to 1500 meters above sea level. It commonly grows on low, mossy twigs.

Lepanthes pecunialis is distinguished from the Panamanian *L. rotundifolia* by the larger habit, and thicker, larger, copper-colored leaves more ovate and obtuse than nearly perfectly round. The small but colorful flowers are borne in congested, successively flowered racemes behind the leaf.

Lepanthes pelyx Luer & Hirtz, sp. nov.

Fig. 183.

Ety.: From the Greek *pelyx*, "a basin," referring to the broadly concave body of the lip.

Species haec *L. cotyledonis* Luer affinis, sed pedicelis brevioribus, petalorum lobo superiore subquadrato non dolabriformi, labelli laminis minutissime ciliatis apicibus acutis incurvis et corpore late concavo distinguitur.

Plant medium in size to large, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 7-15 cm long, enclosed by 13-15 ciliate, lepanthiform sheaths. **Leaf** suberect to more or less horizontal, thinly coriaceous, suffused with purple, lightly reticulated, ovate, acute, long-acuminate, 5-7.5 cm long, 2-5 cm

wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a congested, successively several to many-flowered raceme, up to 10 mm long, borne beneath the leaf by a slender peduncle 1.5-3 cm long; floral bracts 1.5 mm long, minutely ciliate; pedicels 2.5-3 mm long; ovary 1.5 mm long; **sepals** light brown, with minutely ciliate margins, the dorsal broadly ovate, obtuse, apiculate, 4.5 mm long, 4 mm wide 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals connate 2.5 mm into an ovate, bifid lamina, 4.5 mm long, 4.5 mm wide, with the apices shortly acute; **petals** trilobed, green, microscopically pubescent, transversely bilobed, 1 mm long, 4 mm wide, the upper lobe subquadrate, subtruncate, the lower lobe longer, triangular, acute, the middle lobe uncinata, 1 mm long; **lip** rose, suffused with purple, suffused with rose, bilaminata, the laminae thin, membranous, minutely ciliate, lunate with apices acute and incurved, lightly adherent to each below the middle other over the column, 2 mm long, the body broadly concave, connate to the base of the column, the sinus protuberant with an obscurely 3-lobed, pubescent appendix; **column** terete, 1.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in wet virgin forest southeast of Lita toward Santa Rosa de Cachaco, alt. 1250 m, 19 Jan. 1987, C. Luer, J. Luer, A. Hirtz, C. Dodson, D. Benzing & D. Bermudes 12431 (Holotype: MO); same area, alt. 1300 m, 19 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15168, 15170 (MO); between Cachaco and Santa Rosa, alt. 1200-1500 m, 30 Dec. 1990, C. H. Dodson & T. Neudecker 18639 (MO).

This species is apparently endemic on the western slopes of the Andes of northern Ecuador. It is closely related to *L. cotyledon* from the eastern declivities. The two species are similar with thin, purplish, broad, long-acuminate leaves, but the ostia of the lepanthiform sheaths of *L. cotyledon* are much more dilated. *Lepanthes pelyx* is further distinguished by shorter pedicels, subquadrate instead of hatchet-shaped upper lobes of the petals, minutely ciliate blades of the lip with acute, incurved apices, and a broad, shallowly concave body. The body of *L. cotyledon* is similar, but the edges of the deeper cavity are well-defined.

Lepanthes pentoxys Luer, *Phytologia* 54: 362, 1983.

Fig. 184.

Ety.: From the Greek *pentoxys*, "five-pointed," referring to the 5-lobed petals.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 8-22 cm long, enclosed by 10-18 minutely scabrous, lepanthiform sheaths. **Leaf** erect to suberect, thinly coriaceous, purple beneath, ovate, 7-13 cm long, 2.5-5.5 cm wide, the apex long-acuminate, conspicuously tridenticulate, the base obtuse to rounded, contracted into a petiole 2-5 mm long. **Inflorescence** an extremely congested, secund, long-pedicellate, successively many-flowered raceme up to 1.5 cm long, borne by a slender peduncle up to 5 cm long along the back of the leaf; floral bract 1.5 mm long; pedicel 4-4.5 mm long; ovary 2 mm long; **sepals** rose, suffused with orange-brown, glabrous, dorsal sepal broad-ly ovate, convex, obtuse, apiculate, 4 mm long, 3 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals connate 2.5 mm into a broadly ovate or suborbicular, convex lamina 4 mm long, 3.5 mm wide, the apices obtuse, close, shortly acuminate; **petals** yellow, transversely bilobed, 0.6 mm long, 2.8 mm wide, with a slender appendage 1 mm long from the middle of the outer margin, the upper lobe suboblong, acuminate, acute, with an obtuse angle midway on the inner margin, the lower lobe triangular, narrowly acute with an acute tooth about midway on the inner margin; **lip** bright rose, bilaminata, the laminae lunate, 2 mm long, glabrous, adherent medially over the column, the connectives short, broadly cuneate, the body broad, connate to the lower third of the column, the appendix pubescent, broadly oblong, with a minute, apical lobule; **column** 2 mm long, the anther dorsal, the stigma ventral.

Carchi: Mariano Acosta above El Carmelo, alt. 2400 m, collected by A. Hirtz, flowered in Enfield, England, 31 July 1994, J. Hermans 2702 (MO).

Pichincha: epiphytic in cloud forest above Mindo, alt. 2000 m, 11 Nov. 1979, C. Luer, J. Luer & A. Hirtz 4730 (Holotype: SEL); between Mindo and Puerto Quito, alt. 1600 m, 13 Mar. 1982, C. Luer, A. Hirtz & S. Dalström 7338 (SEL); above Tandapi, alt. 2300 m, May 1984, A. Hirtz 1815 (MO).

This species occurs infrequently on the western slopes of Pichincha. The flowers are borne beneath large, thin, purplish leaves. The dorsal sepal and the synsepal are similar to each other. The most distinctive petals possess in addition to a pair of angles on each lobe a slender process on the outer margin indicating a relationship with *L. mucronata*. The thin labellar blades are similarly adherent over the column.

Lepanthes perdita Luer & Hirtz, sp. nov.

Fig. 185.

Ety.: From the Latin *perditus*, "lost," referring to the lost collection data.

Species haec *L. ximena*e Luer & Hirtz affinis, sed foliis ovatis, floribus minoribus. petalis proportionate majoribus et labelli laminae lunatis imperfectis concavis apicibus acutis incurvis differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, to 9 cm long, enclosed by up to 10 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly ovate, acute, 5 cm long, 1.5 cm wide, the base cuneate into a petiole 3 mm long. **Inflorescence** a congested, distichous, successively flowered raceme, up to 1 cm long, borne by a filiform peduncle 15 mm long; floral bract 1 mm long; pedicel 1.5 mm long; ovary 1 mm long; **sepals** yellow, broadly ovate, obtuse, the dorsal sepal 2.4 mm long, 2.4 mm wide, connate to the lateral sepals for 0.75 mm, the lateral sepals 2.4 mm long, 1.6 mm wide, connate for 1 mm; **petals** yellow with red border, cellular pubescent, transversely bilobed, 0.75 mm long, 3.75 mm wide, the upper lobe broadly and obliquely ovate, obtuse, the lower obliquely oblong, obtuse, much smaller than the upper lobe; **lip** microscopically pubescent, bilaminar, the laminae lunate, concave, incomplete above the middle, 1.2 mm long, both the apices and bases acute, incurved, the connectives short, broadly cuneate, the body, connate to the base of the column, the sinus obtuse with a short, oblong appendix; **column** stout, 0.75 mm long, the anther and stigma apical.

Without locality, 5 Nov. 1984, A. Hirtz 2053 (Holotype: MO), C. Luer illustr. 11507.

The locality of this species was lost. A subsequent collection has not been made to date. It is characterized by a small to medium-sized habit with a congested raceme of successive, very small flowers borne behind an ovate, acute leaf. The sepals are broadly ovate and obtuse. The petals are proportionately large with the upper lobes overlapping above the column. The blades of the lip are lunate and incomplete above the middle with both ends acute and incurved.

Lepanthes phrixothrix Luer & Hirtz, Novon 3: 451, 1993.

Fig. 186.

Ety.: From the Greek *phrixothrix*, "with bristling hair," referring to the lepanthiform sheaths.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-6 cm long, enclosed by 5-8 densely and coarsely long-ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, suborbicular, obtuse to rounded, 7-15 mm long, 7-11 mm wide, the rounded base contracted into a 1 mm long petiole. **Inflorescence** an arching, loose, successively many-flowered raceme, up to 5 cm long including the slender peduncle 10-15 mm long; floral bract 0.5 mm long; pedicel 0.75 mm long; ovary 1 mm long, lightly ribbed; **sepals** costate-crested, the dorsal sepal red, triangular, acute, concave, 3 mm long, 1.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals completely connate into an ovoid, boat-shaped synsepal, 3 mm long, 1.5 mm wide unexpanded, the apex narrowly obtuse; **petals** yellow, minutely pubescent, transversely bilobed, 0.5 mm long, 3 mm wide, the upper lobe triangular, the lower lobe oblong, the acute apex attenuate into an equally long, slender tail, the lower lobe much longer than the upper lobe; **lip** red, bilaminar, the laminae glabrous, oblong, 1 mm long, the apices rounded, the connectives broad, quadrate, forming a broad body, connate to the middle of the slender column; **column** 1.5 mm long, the anther apical, the stigma ventral.

Morona-Santiago: Cordillera del Condor, epiphytic in forest east of Guismé, alt. 1650 m, 20 Jan. 1989, C. Luer, J. Luer, P. Jesup & A. Jesup 14014 (Holotype: MO); east of Chuchumbletza, alt. 1650 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, W. Teague & A. Andreaetta 13539 (MO).

This little species is known only from the Cordillera del Condor. It is characterized by the small vegetative habit with long-ciliate, lepanthiform sheaths; a loose, successively flowered raceme eventually reaching far beyond the small, round leaf; costate-crested sepals, the laterals connate into a boat-shaped synsepal; petals with the lower lobes long-tailed; and glabrous, oblong blades of the lip with a pubescent, protruding, triangular appendix.

Lepanthes plectilis Luer & Hirtz, Amer. Orchid Soc. Bull. 54: 166, 1985. Fig. 187.
Ety.: From the Latin *plectilis*, "intricate," in reference to the complicated appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 2-8 cm long, enclosed by 5-9 close, microscopically scabrous, lepanthiform sheaths. **Leaf** coriaceous, spreading to horizontal, margined, with purple reticulation, especially beneath, narrowly ovate, acute, 2.5-4.5 cm long, 0.6-1.0 cm wide, the base narrowly cuneate into a petiole 1.5 mm long. **Inflorescence** a congested, flexuous, successively flowered raceme up to 8 mm long, borne on top of the leaf by a filiform peduncle 4-20 mm long, commonly produced in pairs, one with a short peduncle, the other with a longer peduncle; floral bract 1 mm long, lightly echinate; pedicel 1.25 mm long; ovary 2 mm long; **sepals** yellow, carinate, with microscopically cellular-denticulate margins, ovate, subacute to obtuse, the dorsal sepal 2.5 mm long, 1.75 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals suffused with orange along the midvein, oblique, 2.25 mm long, 1.5 mm wide, connate 0.5 mm; **petals** orange, microscopically pubescent, transversely oblong-bilobed, 0.75 mm long, 1.75 mm wide, the ends rounded, the upper lobe larger; **lip** orange-brown, microscopically pubescent, the blades ovate with rounded ends, the triangular connectives forming a narrow body, connate to the base of the column, the appendix pubescent, oblong, with a terminal, bifid segment with a pair of microscopic, pedunculate lobules; **column** clavate, 1 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in forest near Cotundo, alt. 1000 m, July 1984, A. Hirtz 1861 (Holotype: MO), C. Luer illustr. 10460.

Pastaza: Mera, alt. 1270 m, 13 Oct. 1984, A. Hirtz & C. Dodson 2015 (MO).

This lowland species, which superficially resembles *L. mucronata* Lindl., is related to *L. intricata* Luer from a much higher altitude. *Lepanthes plectilis* differs in having narrow, reticulate leaves, smaller flowers, non-acuminate, minutely denticulate sepals, and obtuse blades of the lip. The triangular connectives, narrow bodies, and intricate, segmented appendices of the two species are very similar.

Lepanthes pleurorachis Luer, Phytologia 54: 363, 1983.

Fig. 188.

Ety.: From the Greek *pleurorachis*, "a ribbed rachis," in allusion to the inflorescence.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-6 cm long, enclosed by 6-8 minutely scabrous, lepanthiform sheaths. **Leaf** erect to suberect, thinly coriaceous, narrowly ovate, acuminate, acute, 16-28 mm long, 8-10 mm wide, the base obtuse to rounded, contracted into a petiole 1-2 mm long. **Inflorescence** an extremely congested, distichous, long-pedicellate, successively many-flowered raceme up to 5 mm long, borne by a slender peduncle up to 6 mm long along the back of the leaf; floral bract 0.5 mm long; pedicels 1 mm long, closely arranged in 2 rows; ovary 1 mm long; **sepals** yellow, glabrous, elliptical, subequal, subacute, 1-veined, reflexed, free nearly to the base, the dorsal sepal 1.5 mm long, 0.8 mm wide, the lateral sepals 1.25 mm long, 0.8 mm wide; **petals** orange, transversely bilobed, 0.3 mm long, 2 mm wide, the upper lobe triangular, oblique, acute, with a second point midway on the inner margin, the lower lobe equally long, falcate, acute; **lip** red-brown, ciliate, transversely bilobed-cordate, 0.6 mm long, 0.6 mm wide, the apex retuse between 2 rounded lobes and with a minute apiculum in the sinus, the basal lobes rounded, to either side of the column, the base connate to the undersurface of the basal third of the column; **column** 0.5 mm long, the anther and stigma apical.

Pichincha: epiphytic in cloud forest along the road to the silver mine above Toachi, alt. 1500 m, 14 Mar. 1982, C. Luer, A. Hirtz & S. Dalström 7373 (Holotype: SEL); same area, 27 Feb. 1982, A. Hirtz & X. Leon 109 (SEL); old road between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höjjer & J. Kuijt 9844 (MO); same area, alt. 1300 m, A. Hirtz 3980 (MO); same area, alt. 1500 m, 28 May 1988, C. Luer & A. Hirtz 13719 (MO).

Also Colombia (Antioquia).

This delicate, little species occurs locally in forests of the western slopes of Pichincha with one known collection in Colombia. It is related to *L. columbar* and its relatives, but easily distinguished by the dense, distichous, comb-like raceme borne behind a small, narrowly ovate leaf. The flowers are minute; the three sepals

are similar, elliptical, and essentially free; the transverse petals are acute, the upper lobe inconstantly bearing a small angle on the inner edge of the upper lobe; and a cordate, bladeless lip shallowly retuse at the rounded apex with a minute apiculum.

Lepanthes plumifera Luer, *Phytologia* 55: 190, 1984.

Fig. 189.

Ety.: From the Latin *plumifer*, "feather bearing," referring to the featherlike appendix.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-16 cm long, enclosed by 6-11 tightly fitting, minutely ciliate, lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, ovate, obtuse, long-acuminate, 4-5.5 cm long, 2.2-2.5 cm wide, the round base abruptly contracted into a petiole 2 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 8 mm long, borne behind the leaf by a filiform peduncle up to 10 mm long; floral bract 1 mm long, muricate; pedicel 1.5 mm long; ovary 1 mm long; **sepals** yellow, minutely denticulate, the dorsal sepal transversely ovate, obtuse, 2.66 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, connate 1.5 mm into a transversely ovate, bifid lamina 2.8 mm long, 3.2 mm wide, the apices acute, oblique, free for 0.66 mm; **petals** orange, suffused with purple medially, transversely bilobed, minutely pubescent, 1 mm long, 3.5 mm wide, the upper lobe triangular-oblong, acute, the lower lobe shorter, triangular, acute; **lip** orange, suffused with purple, bilaminar, the blades fusiform, 1 mm long with acute ends, embracing the column, the connectives obliquely cuneate from the apical halves of the blades, the body broad, each half with a rounded callus below the attachment to the undersurface of the column below the middle, the appendix comparatively large, pilose, triangular, acute, protruding forward beyond the apices of the blades; **column** 0.75 mm long, the anther dorsal, the stigma ventral.

Pichincha: between Chiriboga and Santo Domingo, alt. 1300 m, Jan. 1989, A. Hirtz 3966 (MO).

Azuay: Cordillera de Molloturo, above Río Shumiral, alt. 650 m, 27 Jan. 1992, C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16178 (MO).

El Oro: epiphytic in cloud forest west of Piñas, alt. 1000 m, 25 Sept. 1980, C. Luer, J. Luer, C. H. Dodson et al. 5542 (Holotype: SEL); forest south of Piñas, alt. 900-1000 m, 20 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10675 (MO); near Piñas shrine, flowered in Chamblee, GA, 18 Apr. 1990, F. L. Stevenson 90-0418-1 (MO).

Vegetatively this species resembles *L. vespertilio*, but the peduncles of *L. plumifera* are not as long. Most distinctive is the large, protuberant, fringed appendix. *Lepanthes plumifera* is apparently endemic in the humid forests of southwestern Ecuador at a relatively low altitude.

Lepanthes polytricha Luer, *Phytologia* 54: 364, 1983.

Fig. 190.

Ety.: From the Greek *polytrichos*, "with many hairs," referring to the many kinds of hair found on the species.

Plant medium in size, epiphytic, caespitose; roots coarse. Ramicauls stout, erect to suberect, 3-9 cm long, enclosed by 4-13 lepanthiform sheaths with markedly dilated ostia, the margins and ribs ciliate. **Leaf** erect, coriaceous, pubescent beneath, minutely verrucose dorsally, transversely cordate-ovate, narrowly margined, 2.5-4 cm long, 2.5-4 cm wide, the apex obtuse to rounded, the cordate base abruptly contracted into a petiole 4 mm long. **Inflorescence** a congested, successively few-flowered raceme up to 7 mm long, borne by a filiform peduncle up to 12 mm long, produced in a fascicle behind the leaf; floral bract 1.5 mm long; pedicel 1 mm long; ovary 2 mm long; **sepals** red-purple, ciliate, pilose externally, ovate, acute to subacute, acuminate, the dorsal sepal concave, 4.5 mm long, 2.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4 mm long, 1.75 mm wide, connate 1 mm; **petals** cream colored, transversely oblong, 4-pronged, 1 mm long, 2.5 mm wide unspread, both lobes terminating in a slender, recurved, tapering tail, and each with a shorter process near the middle; **lip** purple, bilaminar, the blades stout, oblong, 2 mm long with rounded ends, the upper surface of the apical halves densely hispid, the connectives cuneate, short, the body narrow, connate to the column above the base, the appendix small, pubescent, narrowly forked; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: north of the pass north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11872* (MO); north of Gualaquiza, alt. 1900 m, 7 Mar. 1992, *S. Dalström et al. 1625* (MO).

Loja: epiphytic in cloud forest south of Yangana, alt. ca. 2500 m, D. D'Alessandro 81-104, flowered in cultivation at the Predesur Orquideario at Vilcabamba, *C. Luer 6134* (Holotype: SEL).

This most unusual species is apparently endemic in southern Ecuador where it is seldom found. It is recognized by the coarse, suborbicular leaves and short inflorescences of pubescent flowers. The petals are four-pronged. The apical upper surfaces of the blades of the lip resemble a tooth brush.

***Lepanthes posadae* Luer & Escobar, Amer. Orchid Soc. Bull. 53: 479, 1984. Fig. 191.**

Ety.: Named in honor of Sr. Jaime Posada of Medellín, Colombia, in whose Colombrorquídeas this species was cultivated.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-20 cm long, enclosed by 11-23 minutely ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, convex, elliptical-ovate, acute, acuminate, 5-10 cm long, 1.5-3.5 cm wide, the base cuneate to rounded, contracted into a petiole 3-4 mm long. **Inflorescence** a congested, successively many-flowered raceme up to 15 mm long, borne by a slender peduncle 1.5-5 cm long along the back of the leaf; floral bract 1-1.5 mm long; pedicel 3-4 mm long; ovary 2-4 mm long; **sepals** light green, glabrous, carinate, ovate, the dorsal sepal 3.5-5.5 mm long, 2.75-3.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 2-2.5 mm into a broadly ovate, bifid lamina, 3.6-5.5 mm long, 3.2-4.5 mm wide, the apices acute; **petals** green with purple margins, pubescent, transversely bilobed, 1.5 mm long, 5-6 mm wide, with a slender, marginal, purple appendage 1-1.5 mm long, between the lobes, the upper lobe oblong, truncate to rounded, the lower lobe narrowly triangular, oblique, long-attenuate; **lip** yellow, suffused with purple, bilaminate, the blades thin, oblong, with rounded ends, 1.5-2 mm long, minutely ciliate, adherent medially over the column, the connectives narrowly oblong, oblique, the body connate to the base of the column, the sinus filled with a large, oblong, ciliate, concave appendix with a truncate, bilobulate apex; **column** bright purple, 2-2.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: southeast of Lita, between Santa Rosa and Cachaco, alt. 1300 m, 19 Mar. 1991, *C. Luer, J. Luer & A. Hirtz 15169* (MO); wet forest, Los Cedros Reserve, alt. 1850 m, 27 Jan. 1993, *S. Dalström, T. Höijer & H. Wannorp 1805* (MO).

Also Colombia (Chocó, type; Cauca).

This species occurs locally on the western declivities of the Andes of Colombia and Ecuador. It is characterized by the large habit; thin ovate, acuminate leaves with the congested inflorescence borne along the back side; green petals with a purple margin and a marginal, finger-like process; and thin blades of the lip adherent over the column. The appendix is large, oblong and ciliate.

***Lepanthes proboscidis* Luer & Hirtz, sp. nov.**

Fig. 192.

Ety.: From the Latin *proboscis*, "a long snout," referring to the elongated apex of the leaves.

Species haec *L. gryphae* Luer affinis, sed foliis obtusis abrupte longi-acuminatis racemo congesto secundo longioribus, petalis quam sepalis subacutis longioribus (latioribus), labelli laminis membranaeis minutissime ciliatis, connectivis angustis, corpore crassissimo protuberanti cum appendice pedunculata pubescenti interius cardinata differt.

Plant small, weak, epiphytic, caespitose, roots slender. Ramicauls very slender, erect, 3-5.5 cm long, enclosed by 8-10 tightly appressed, lepanthiform sheaths with minutely ciliate ostia. **Leaf** suberect to spreading, thinly coriaceous, suffused with purple, ovate, obtuse, abruptly contracted into a subulate, apiculate, apical segment 1.5 cm long, the blade 1.5 cm long, 1-1.2 cm wide, the rounded base contracted into a petiole less than 1 mm long. **Inflorescence** a congested, second, successively several-flowered raceme, up to 6 mm long, borne on top of the leaf by a slender peduncle 1 cm long; floral bracts 0.8 mm long; pedicels 1.25 mm long; ovary 1 mm long; **sepals** yellow, glabrous, carinate, the dorsal broadly ovate, subacute, 3 mm long, 2.75 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals connate 1.5 mm into a broadly ovate, bifid lamina, 3 mm long, 3.5 mm wide, with the apices shortly acuminate; **petals** red-brown, microscopically pubescent, transversely bilobed, 1 mm long, 4 mm wide, the upper lobe triangular, narrowly obtuse, the lower lobe similar but smaller; **lip** purple, bilami-

nate, the laminae thin, membranous, minutely ciliate, lunate with the inner margins lightly adherent over the column, with the ends rounded, 1.25 mm long, the connectives narrow, the body thick, suborbicular, connate to the base of the column, with a pedunculated, pubescent appendix hinged within and prolapsed over the protuberant sinus; **column** terete, 1.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in wet virgin forest southeast of Lita toward Santa Rosa de Cachaco, alt. alt. 1300 m, 19 Mar. 1991, *C. Luer, J. Luer & A. Hirtz 15178* (MO).

Vegetatively this species resembles the sympatric *L. tortilis* with the long-acuminate apical segment of the leaf. The apex is as long as the blade of the thin, purple, little leaf. It is apparently endemic on the western slopes of the Andes of northern Ecuador where it is known only from the original collection. Florally it resembles *L. grypha*, but *L. proboscidis* is distinguished by entire, glabrous sepals; petals wider than the petals are long; and the pedunculated appendix delicately hinged from within. to *Lepanthes cotyledon* from the eastern declivities. The two species are very similar with thin, purplish, broad, long-acuminate leaves, but the ostia of the lepanthiform sheaths of *L. cotyledon* are much more dilated. *Lepanthes pelyx* is further distinguished by the shorter pedicels, subquadrate instead of hatchet-shaped upper lobes of the petals, minutely ciliate blades of the lip with acute, incurved apices, and a broad, concave body. The body of *L. cotyledon* is similar, but the edges of the cavity are well-defined.

***Lepanthes protuberans* Luer & P. Jesup, sp. nov.**

Fig. 193.

Ety.: From the Latin *protuberans*, "protuberant," referring to the body of the lip.

Planta parva caespitosa, ramicaulibus gracilibus, racemo subdenso foliis anguste ellipticis semiteretibus brevioribus, sepalis ovatis carinatis spiculatis, petalis grandibus microscopicis pubescentibus transverse bilobis, lobis subaequalibus subtriangularibus obtusis, labelli laminae oblongis pubescentibus, connectivis latis, corpore lato protuberanti rotundato sine appendice.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5.5 cm long, enclosed by 5-7 ciliated, lepanthiform sheaths. **Leaf** erect, thickly coriaceous, narrowly elliptical, acute, 2-3 cm long, 4 mm wide, 2 mm thick, the base narrowly cuneate into a petiole 1.5 mm long. **Inflorescence** a subdense, distichous, successively several-flowered raceme up to 8 mm long, borne behind the leaf by a slender peduncle 12 mm long; floral bract muriculate, 1 mm long; pedicel 1.5 mm long; ovary 1.5 mm long; **sepals** red with greenish white margins, carinate, spiculate, the dorsal sepal ovate, acute, slightly acuminate, 2.5 mm long, 1.5 mm wide, 3-veined, connate to the lateral sepals for 0.25 mm, the lateral sepals ovate, oblique, acute, ciliate, 2.2 mm long, 1.4 mm wide, 2-veined, connate 0.8 mm; **petals** greenish white with red borders, microscopically pubescent, transversely bilobed, 0.8 mm long, 2.5 mm wide, the lobes subtriangular, about equally long, the apices rounded; **lip** rose, bilaminate, pubescent, ciliate anteriorly, the laminae oblong, with the apices and bases rounded, 1 mm long, the connectives broadly oblong, oblique, forming a broadly rounded, protuberant body connate to the base of the column, the apex minimally retuse without an appendix; **column** 0.75 mm long, the anther apical, the rostellum fringed, the stigma ventral.

Morona-Santiago: epiphytic in forest along the new road between Macas and Guamote, alt. 1450 m, collected 16 Jan. 1989 by P. Jesup, flowered in cultivation 5 May 1990 in Bristol, CT, *C. Luer 14739* (Holotype: MO)

Zamora-Chinchipe: east of the pass east of Loja, alt. 2500 m, 21 Jan. 1992, *C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16083* (MO).

This species is characterized by the narrow, semiterete leaves and a shorter subdense inflorescence of colorful flowers. The sepals are sharply carinate and spiculate, the laterals being ciliate-spiculate; the petals are large and transverse. The small, pubescent blades of the lip are borne above the column by broadly oblong connectives that form a broadly rounded, protuberant body beneath the column. No appendix is present. This body without an appendix immediately distinguishes *L. protuberans* from the other semiterete-leaved species.

Lepanthes psomion Luer & Hirtz, sp. nov.

Fig. 194.

Ety.: From the Greek *psomion*, "a tiny bit," referring to the extremely small size of the flowers.

Planta mediocris caespitosa, inflorescentia racemosa congestissima disticha longipedicellata folio ovato acuminato breviori, floribus minutissimis, sepalis ellipticis lateralibus unimeris, petalis transverse lobatis, lobis oblique oblongis obtusis subaequalibus ciliolati-erosis, labello ciliolato bilobato apice retuso cum apiculo minuto, lobis tenuibus oblique ovatis obtusis.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-6 cm long, enclosed by 7-10 closely applied, lepanthiform sheaths with microscopically ciliate ostia. **Leaf** erect, thinly coriaceous, suffused with purple beneath, narrowly ovate, acute, acuminate, 3-6 cm long, 1-1.5 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a very congested, distichous, long-pedicellate, successively many-flowered raceme or racemes up to 5 mm long, the flowers extremely small, borne behind the leaf by a filiform peduncle 9-17 mm long; floral bracts 1 mm long, spiculate; pedicels 1.5 mm long; ovary 0.5 mm long; **sepals** green, carinate-spiculate, elliptical, obtuse, 1-veined, the dorsal sepal 1.2 mm long, 0.6 mm wide, connate to the lateral sepals for 0.1 mm, the lateral sepals 1 mm long, 0.6 mm wide, connate 0.2 mm; **petals** yellow, transversely bilobed, 0.3 mm long, 1 mm wide, the lobes subequal, oblong, oblique, obtuse, ciliolate-erose; **lip** red, thin, ciliate, bilobed, the apex retuse, minutely apiculate, the lobes obliquely ovate, obtuse, 0.5 mm long, 0.5 mm wide, the unguiculate base connate to the base of the column; **column** 0.6 mm long, the anther and the stigma apical.

Esmeraldas: epiphytic in wet forest west of Lita, alt. 750 m, 18 Jan. 1985, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12421 (Holotype: MO).

Imbabura: southeast of Lita toward Santa Rosa de Cachaco, alt. 1300 m, 19 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15181 (MO).

This extremely small-flowered species, known only from a single collection in northwestern Ecuador, is related to tiny-flowered *L. pleurorachis*, but the flowers of *L. psomion* are even smaller. In addition, the lobes of the petals are obliquely and broadly oblong, obtuse and erose-ciliate; and the lip is bilobed and unguiculate, not cordate with basal lobes flanking the column.

Lepanthes pteropogon Rchb. f., *Xenia* Orchidaceae 1: 146, 1856.

Fig. 195.

Ety.: From the Greek *pteropogon*, "a wingedlike beard," in allusion to the lip.Syn.: *Lepanthes pollex* Luer, *Phytologia* 54: 364, 1983.Ety.: From the Latin *pollex*, "a thumb," referring to the appendix.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls slender or stout, erect, 7-17 cm long, enclosed by 9-12 long-pubescent, lepanthiform sheaths. **Leaf** erect, coriaceous, oblong-ovate, acute, acuminate, 3-6.5 cm long, 1-2 cm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 20 mm long, borne by a filiform peduncle 5-10 mm long along the back of the leaf; floral bract 1 mm long, minutely spiculate; pedicel 1.5 mm long; ovary 1.25 mm long; **sepals** pale yellow, ovate, subacute, the veins spiculate externally, the margins denticulate, the dorsal sepal 4 mm long, 2.2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, 4 mm long, connate 2 mm, 3.75 mm wide together; **petals** yellow, suffused with bright purple, transversely oblong, bilobed, 1 mm long, 3 mm wide, obtusely angled on the outer margin at the midvein, the upper lobe oblong with the apex rounded, the lower lobe triangular, narrowly obtuse, smaller than the upper lobe; **lip** yellow, suffused with bright purple, microscopically pubescent, bilaminar, the blades ovate, 1.5 mm long, the apices narrow, acute, shortly ciliate, the bases rounded, the connectives broadly cuneate, the body broad, connate to the base of the column, the appendix large, oblong, pubescent, ca. 0.5 mm long, with an apical lobule; **column** 1.25 mm long, the anther apical, the stigma ventral.

Pichincha, without locality, *W. Jameson* 113 (Holotype: K); "Quito," *H. Karsten s.n.* (W); epiphytic in cloud forest below Lloa, alt. 2700 m, 27 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4360 (SEL, type of *L. pollex*); west of Lloa, alt. 2850 m, 16 Jan. 1987, C. Luer, J. Luer & C. Dodson 12343 (MO); west slope of Corazón, alt. 3300 m, July 1984, A. Hirtz 1873 (MO); between Calacalí and La Liberia, C. Luer, A. Hirtz, S. Dalström & T. Höijer 9993 (MO).

Tungurahua: Cordillera de los Llanganates, Leito, alt. 3000 m, 12 Oct. 1984, A. Hirtz 1982 (MO); same area, alt. 3100 m, 11 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11160 (MO); west slope of Tungurahua, alt. 3000 m, 11 Nov. 1984, A. Hirtz 2088 (MO);

Loja: new road north of Loja, alt. 2700 m, 2 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12588 (MO).
Also Colombia (Antioquia).

This species occurs frequently in the forests of the western slopes of Mt. Pichincha, but it occurs infrequently as far south as Loja, and as far north as Antioquia, Colombia. It is not known to occur in Venezuela. Another species was erroneously identified as *L. pteropogon* in *Venezuelan Orchids Illustrated* which led to the spurious description of *L. pollex*.

Lepanthes pteropogon is recognized by the gray, shaggy-pubescent sheaths of the ramicauls; denticulate sepals; and a lip with ovate, acuminate blades, and a comparatively large pubescent appendix with an apical lobule.

***Lepanthes pubes* Luer & Escobar, Phytologia 54: 366, 1983.**

Fig. 196.

Ety.: From the Latin *pubes*, "pubescent," referring to the pubescent lobes of the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-12 cm long, enclosed by 7-12 ciliate, lepanthiform sheaths with widely dilated ostia. **Leaf** erect, coriaceous, purple, reticulate-ciliate beneath, narrowly ovate, lightly acuminate, acute, 3-7 cm long, 1-1.8 cm wide, the base cuneate into a petiole 2 mm long. **Inflorescence** a congested, flexuous, successively flowered raceme up to 10 mm long, borne by a filiform peduncle up to 10 mm long, along the back of the leaf; floral bract and pedicel each 1 mm long; ovary 2 mm long, densely spiculate; **sepals** bright purple with white margins, carinate-spiculate, the margins denticulate, ovate, shortly apiculate at the subacute apex, the dorsal sepal 4 mm long, 2.5 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, 4 mm long, connate 2-3 mm, 3.5 mm wide together; **petals** orange with red margins, microscopically pubescent, transversely oblong, bilobed, 1.33 mm long, 3.33 mm wide, the upper lobe more or less obliquely ovate, obtuse, the lower lobe smaller, oblong with the apex rounded; **lip** rosy white, bilaminate, the blades thick, fleshy, oblong with rounded ends, convex, long-pubescent, the connectives oblong, erect, lifting the blades above the column, the body broad, connate to the column above the base, the appendix obovate, obtusely angled above the middle, pubescent, 0.3 mm long, hinged at the sinus; **column** 1 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaceo and Limón, alt. 2050 m, 29 Oct. 1982, *C. Luer, R. Escobar & A. Pozo 8230* (Holotype: SEL); same area, alt. 2200 m, 16 Jan. 1986, *S. Dalström & T. Höijer 1047* (MO); same area, alt. 2100 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11848* (MO); above San Juan Bosco, alt. 1850 m, 28 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10988* (MO).

This species is apparently confined to the wooded valleys in southeastern Ecuador. It is characterized by the narrow leaves, purple, reticulate and pubescent beneath; the denticulate sepals bright purple with yellow margins; large transverse petals and broad, thick, convex, pubescent blades of the lip.

***Lepanthes pubescens* Luer, Phytologia 54: 366, 1983.**

Fig. 197.

Ety.: From the Latin *pubescens*, "becoming hairy," referring to the pubescent leaves.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls suberect to erect, slender, 3-8 cm long, enclosed by 8-10 ciliate, lepanthiform sheaths, with dilated ostia. **Leaf** suberect to spreading, softly coriaceous, purple-reticulate, more or less pubescent, elliptical-ovate, acute, lightly acuminate, 3-5 cm long, 1.6-2.4 cm wide, the base cuneate into the petiole 2 mm long. **Inflorescence** a congested, second, successively flowered raceme up to 10 mm long, borne by a filiform peduncle 15-20 mm long, on the dorsum of the leaf; floral bract 1.5 mm long, sparsely ciliate; pedicel 2 mm long, ciliate at the junction with the ovary; ovary 1 mm long, ciliate along the ribs; **sepals** green, more or less suffused with red-brown, ciliate, carinate-ciliate externally along the veins, the dorsal sepal ovate, subacute, attenuate, 8 mm long including the subulate tail 2.5 mm long, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, long-attenuate, 9 mm long including the 4 mm long tails in apposition, connate 2 mm, 4.5 mm wide together; **petals** transversely oblong, microscopically pubescent, bilobed, 1 mm long, 3.5 mm wide, the upper lobe oblong, more or less incurved, subtruncate, the lower lobe smaller, narrowly oblong, incurved, narrowly subtruncate; **lip** red-brown, essentially glabrous, bilaminate, the blades narrowly oblong, 2.5 mm long, angled on the inner margin below the apex, the connectives shortly cuneate, the body connate to the column near the base, the appendix flat, ciliate, oblong, obscurely 3-lobed at the apex; **column** 2 mm long, the anther dorsal, the stigma ventral.

Pichincha: above Tandapi, alt. 2600 m, 31 March 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9809A* (MO); Tandapi, alt. 2600 m, Mar. 1984, *A. Hirtz 1651* (MO).

Morona-Santiago: epiphytic in cloud forest near Río Calagrás, alt. 1600 m, 19 Sept. 1980, *C. H. Dodson, C. Luer et al. 10486* (Holotype: SEL); between Cuenca and Limón, alt. 2200 m, 7 Jan. 1995, *A. Hirtz, X. Hirtz & E. Sanchez 6106* (MO).

This species is known from both sides of the Andes of Ecuador. It is characterized by the relatively soft, purple-reticulated leaves that are usually, but not always pubescent, even on the same plant. The flowers with denticulate, caudate sepals is borne on top of the leaf. The upper lobes of the petals are sometimes held with the apical margins in apposition. The apices of the oblong blades of the lip more or less recurve.

***Lepanthes quaternaria* Luer, Phytologia 54: 367, 1983.**

Fig. 198.

Ety.: From the Latin *quaternarius*, "consisting of four," in reference to the four lobes of the lip.

Plant medium in size to large, epiphytic, caespitose; roots coarse. Ramicauls slender, erect, 16-27 cm long, enclosed by 12-15 close lepanthiform sheaths, glabrous to microscopically scabrous. **Leaf** erect, thinly coriaceous, oblong, 8-10.5 cm long, 2.5-3.5 cm wide, the acute apex long-acuminate, the rounded base abruptly contracted into a petiole 4-5 mm long. **Inflorescence** racemose, 2-8 congested, distichous, successively flowered racemes up to 2 cm long, borne by peduncles up to 2 cm long, in a fascicle along the back of the leaf; floral bract and pedicel each 1 mm long; ovary 2 mm long; **sepals** yellow-white, glabrous, the dorsal sepal ovate, acute, acuminate, 6 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 3 mm into an ovate, bifurcated lamina 5.5 mm long, 5 mm wide, the apices acuminate, acute, diverging; **petals** yellow, suffused with purple medially, microscopically pubescent, transversely oblong, bilobed, 1.2 mm long, 6 mm wide, the upper lobe oblong-subfalcate, obtuse, the lower lobe similar but smaller; **lip** yellow, suffused with brown, bilaminate, the blades oblong, convex, pubescent, 1.2 mm long, the ends obtuse, the connectives broad, erect, the body transversely subquadrate, pubescent, bilobed anteriorly beneath the apical lobes of the blades above, the lobes falcate, incurved, obtuse, the body connate posteriorly to the column above the base, the appendix a minute nubb in the sinus; **column** stout, 1.5 mm long, the anther apical, the stigma ventral.

Sucumbios: epiphytic in cloud forest southeast of El Carmelo, alt. 2050 m, 17 May 1981, *C. Luer, J. Luer & A. Hirtz 6307* (Holotype: SEL); south of Santa Barbara, alt. 2600 m, 5 Apr. 1964, *C. Luer, S. Dalström & T. Höijer 9974* (MO); same area, alt. 2700 m, 6 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11107* (MO).

Tungurahua: Cordillera de los Llanganates, alt. 3100 m, 11 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11155* (MO).

Morona-Santiago: between Gualaceo and Limón, alt. 2200 m, 8 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12721* (MO).

This species occurs locally on the western slopes of the Andes of Ecuador. It is distinguished by the congested, distichous raceme shorter than the leaf with a long-acuminate apex; ovate, acute sepals; transversely oblong petals; and a distinctive lip with thick blades, thick connectives and a thick body with a pair of thick, anterior protuberances, one to either side of the minute appendix.

***Lepanthes repens* Luer, Phytologia 54: 368, 1983.**

Fig. 199.

Ety.: From the Latin *repens*, "creeping," referring to the repent rhizome.

Plant large, epiphytic to terrestrial, repent, the rhizome 1-3 cm long between ramicauls; roots coarse. Ramicauls stout, ascending to erect, 15-33 cm tall, enclosed by 10-13 microscopically scabrous lepanthiform sheaths. **Leaf** erect, thinly coriaceous, ovate-elliptical, acute, acuminate, 8-11.5 cm long, 2-3.3 cm wide, the base broadly cuneate into a petiole 5-9 mm long. **Inflorescence** a congested, distichous raceme up to 40 mm long, borne by a filiform peduncle 15-40 mm long, 1-3 racemes behind the leaf; floral bract 2.5 mm long; pedicel 3 mm long; ovary 3 mm long; **sepals** light yellow, glabrous, ovate, acute, attenuate, the dorsal sepal 10 mm long, 6 mm wide, connate to the lateral sepals for 2 mm, the lateral sepals oblique, 9.5 mm long, connate for 3 mm, 7.5 mm wide together; petals yellow, edged in purple, transversely oblong, 1.9 mm long, 3.75 mm wide, the upper lobes triangular, obtuse, the outer

margin rounded, the lower lobe smaller, acute; **lip** orange, edged in purple, the blades trapeziform, 2.8 mm long, in apposition over the column, the ends obliquely truncate, the apex weakly ciliate, the connectives short, cuneate, connate to the base of the column, the appendix minute, pedunculate in the sinus; **column** 2 mm long, the anther apical, the stigma ventral.

Carchi: terrestrial on the roadcut above El Camelo, alt. 3200 m, 17 May 1981, *C. Luer, J. Luer & A. Hirtz 6261* (Holotype: SEL); between Tulcán and Maldonado, alt. 3000 m, 2 Apr. 1984, *C. Luer, S. Dalström & T. Höjter 9957* (MO); epiphytic in subparamo forest, between El Angel and Tulcán, alt. 3350 m, 5 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11065* (MO); east of Maldonado, alt. 1600 m, 16 Mar. 1991, *C. Luer, J. Luer, J. Del Hierro, A. Hirtz & X. Hirtz 15098* (MO); El Mirador, alt. 3400 m, June 1991, *A. Hirtz 5564* (MO).

Imbabura: above Mariano Acosta near Nueva America, alt. 3400 m, 11 Mar. 1966, *S. Dalström, S. Ingram & K. Ingram-Ferrell 2097* (MO).

Napo: cloud forest east of Yangana, alt. 2800 m, 23 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 11511* (MO).

Loja: army road east of Yangana, alt. 2800 m, 23 Mar. 1985, *A. Hirtz, C. Luer & J. Luer 2294* (MO).

This robust species occurs at high altitudes where it grows either epiphytically or terrestrially. Plants form dense fascicles of ramicauls produced by ascending, long-creeping rhizomes. The congested, distichous racemes are shorter than the shortly acuminate, elliptical leaves; the sepals are broadly ovate and shortly acuminate; the petals are transverse and broadly oblong. The blades of the lip are oblong with long-ciliate, obliquely subtruncate apices and bases; the connectives are short with a minute appendix.

***Lepanthes reventador* Luer & Hirtz, Die Orchidee 41: 8, 1990.**

Fig. 200.

Ety.: Named for Volcán Reventador where the species was discovered.

Plant medium in size, weak, epiphytic, caespitose; roots slender. Ramicauls slender, erect, to suberect, 6-16 cm long, enclosed by 9-15 tightly fitting, lepanthiform sheaths, glabrous except for microscopically scabrous margins of long-acuminate ostia. **Leaf** erect to spreading, thinly coriaceous, suffused with purple beneath, narrowly ovate, acute-acuminate, 3-4.5 cm long, 1-1.5 cm wide, the base cuneate into a petiole 1-1.5 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 10 mm long, borne on top of the leaf by a filiform peduncle 8-20 mm long; floral bract 1 mm long; pedicel 1.5-2 mm long; ovary 1 mm long; **sepals** dull light green, broadly ovate, obtuse, low-carinate, the dorsal sepal 3.5 mm long, 3 mm wide, entire, connate to the lateral sepals for 1 mm, the lateral sepals oblique, shortly acuminate, 3.5 mm long, connate 1.5 mm, 3.5 mm wide together, the margins microscopically subdenticulate; **petals** green, transversely bilobed, 1.3 mm long, 3 mm wide, the upper lobe oblong, truncate, suffused with purple, short-pubescent, the lower lobe triangular, long-pubescent; **lip** bilaminate, green, suffused with purple, the laminae thin, ovate with rounded ends, adherent medially, minutely pubescent, 1.75 mm long, held above the column by narrowly oblong connectives, the body thick, bilobulate, connate to the base of the column, the sinus retuse between the rounded halves of the body, with a transparent, filiform appendix ciliate on the under side; **column** thick, 1.5 mm long, the anther apical, the stigma ventral.

Napo: epiphytic in cloud forest on the eastern slopes of Volcán Reventador, alt. 1850 m, 8 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11718* (Holotype: MO).

This species appears similar to *L. mucronata* with its weak habit and green, truncate petals of flowers borne on top of the leaf. The lobes of the lip are also membranous and adherent over the column. In this respect it is also similar to *L. grypha* and *L. tectorum*, but the appendix, an extremely thin ciliated thread, is totally different from the thick appendices of the last two.

Lepanthes rhodophylla Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 8: 56, 1921.Ety.: From the Greek *rhodophyllos*, "red leaf," referring to the leaves.

Fig. 201.

Plant large, epiphytic, caespitose; roots numerous, very slender. Ramicauls stout, erect, 15-40 cm long, enclosed by 13-30 long-acuminate, glabrous, lepanthiform sheaths. **Leaf** more or less bent from the axis of the ramicaul, thinly coriaceous, subplicate, purplish, elliptical, 8-16 cm long, 3.5-9 cm wide, the apex subacute, long-acuminate, the base cuneate into a petiole 2 mm long. **Inflorescence** an erect, congested, distichous, successively many-flowered raceme up to 2.5 cm long, borne by a slender peduncle 4.5-6.5 cm long; floral bract 3 mm long; pedicel 2.5-3 mm long; ovary 5 mm long, costate; **sepals** yellow, suffused with light brown on the outer thirds, carinate, glabrous, ovate, subacute, the dorsal sepal 8 mm long, 6 mm wide, connate to the lateral sepals for 2 mm, the lateral sepals oblique, 7.5 mm long, 4 mm wide, connate 3 mm; **petals** green, pubescent, transversely bilobed, 1.25 mm long, 5 mm wide, with a 1 mm long, uncinat lobule on the outer margin between the lobes, the upper lobe oblong, the apex obliquely truncate, the lower lobe obliquely triangular, acute; **lip** brown, minutely pubescent, bilaminat, the laminae oblong, 2 mm long, lightly adherent over the column, the apices obtuse, the connectives thin, from below the middle, greatly inflated with the membranous body, connate to the column above the base, the appendix pubescent, oblong, hinged to the anterior margin and in contact with the stigma; **column** large, 2 mm long, the anther dorsal, the stigma ventral.

Pichincha: valley of Nanegal, western slopes of the Cordillera Teguá near Río Frio, Nov. 1902, A. Sodiro 1896 (Lectotype: BR); epiphytic in forest near Santa Rosa de Toachi, alt. 1400 m, March 1990, A. Hirtz, X. Hirtz & K. H. Baumann 4666 (MO), C. Luer illustr. 14719; same area, alt. 1300 m, A. Hirtz, X. Hirtz & K. H. Baumann 4693 (MO).

This huge species is most closely related to *L. cotyledon* from the eastern slopes of the Andes. Although the forests on the western slopes of Pichincha have been searched by Hirtz since his childhood, he had never encountered this spectacular species until March 1990 when it was discovered twice in different localities in the same area.

Lepanthes rhodophylla is characterized by the tall habit with large, purple, subplicate, long-acuminate leaves that glow red when back-lit; a long-pedunculate, congested inflorescence; and flowers superficially not unlike those of *L. cotyledon* and its relatives characterized by petals with a small lateral, hooklike lobule. The blades of the lip of *L. rhodophylla* form a lid over an inflated sac composed of thinly dilated connectives and body which contains the column. The stigma is in contact with the appendix which is hinged to the anterior margin of the sac.

Lepanthes rhombipetala Schltr. (*L. nanegalensis*)

Fig. 202.

Lepanthes rhynchion Luer, *Phytologia* 54: 368, 1983.

Fig. 203.

Ety.: From the Greek *rhynchion*, "a little snout," referring to the protruding stigma.

Plant medium to large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 6-37 cm long, enclosed by 7-15 glabrous to microscopically ciliate, lepanthiform sheaths with oblique, non-dilated ostia. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical-ovate, acuminate, acute, 3-11 cm long, 1.5-3.5 cm wide, the base cuneate into a petiole 3-5 mm long. **Inflorescence** a subsense, distichous, successively flowered raceme, up to 3 cm long, borne by a filiform peduncle up to 3 cm long, in a fascicle of up to 10 along the back of the leaf, occasionally 2 flowers sometimes open simultaneously; floral bracts 1.5-2 mm long, more or less spiculate; pedicel 1-2 mm long; ovary 1.5-2 mm long, more or less spiculate; **sepals** yellow, sometimes suffused with rose, denticulate, carinate-laciniate, ovate, acute, shortly acuminate, the dorsal sepal 4.5-5.75 mm long, 2.25-3.6 mm wide, connate 0.5-1 mm to the lateral sepals, the lateral sepals oblique, 4-4.5 mm long, 2-2.5 mm wide, 1-veined, connate 1 mm; **petals** yellow, sometimes edged in purple, transversely bilobed, 1-1.25 mm long, 2.5-3 mm wide, the upper lobe broadly oblong, the apex rounded, the lower lobe smaller, narrowly oblong with the apex rounded; **lip** red to orange to red, bilaminat, the blades narrowly elliptical, 2 mm long,

glabrous, the apices acute, the bases narrowly obtuse to round, the connectives broadly cuneate, the body broad, connate to the column above the base, the appendix a minute, pubescent lobule; column 2 mm long, the anther dorsal, the stigma protuberant, apical, narrowly transverse.

Carchi: epiphytic in cloud forest between Tulcán and Maldonado, alt. 3300 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9884 (MO).

Sucumbíos: south of Santa Barbara, alt. 2700 m, 6 Apr. 1985, C. Luer, J. Luer & A. Hirtz 11112 (MO);

Imbabura: Selva Alegre, alt. 3000 m, 7 Feb. 1979, C. Luer, J. Luer, A. Hirtz & R. Escobar 3885 (SEL); same area, alt. 2800 m, 28 Sept. 1984, A. Hirtz 1917 (MO).

Pichincha: epiphytic in cloud forest between San José de Minas and Otavalo, alt. 2800 m, 24 Aug. 1978, C. Luer, J. Luer & A. Hirtz 3333 (Holotype: SEL).

Napo: Guacamayo Range, alt. 1800 m, 18 Nov. 1984, A. Hirtz 2111 (MO).

Tungurahua: Cordillera de los Llanganates, alt. 3000 m, 12 Oct. 1984, A. Hirtz 1982 (MO).

Loja: south of Yangana, alt. 2250 m, 11 May 1981, C. Luer, J. Luer & D. D'Alessandro 6141 (SEL).

Zamora-Chinchipe: above Valladolid, alt. 2450 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10919, 10948 (MO).

Also Colombia (Antioquia, Chocó, Quindío, Nariño) and Peru.

This species is widely distributed in the Andes of Colombia, Ecuador and Peru. It is one of the most beautiful of the genus, the colorful flowers borne in a short but subdensely flowered raceme, contrasting against the purple back-surface of the leaves. The widely spread, denticulate, lateral sepals are one-veined; the upper lobes of the petals are large, more or less overlapping; and the blades of the lip are narrow with acute apices flanking the snout-like stigma.

Lepanthes ricina Luer & Dalström, sp. nov.

Fig. 204.

Ety.: From the Latin *ricinus*, "with a veil," referring to the curtain-like covering over the column.

Planta mediocris grandisve, foliis obovatis abrupte acuminatis racemo congestissimo longioribus, sepalis late ovatis breviter acuminatis glabris, petalis transverse oblongis, labelli lamini lunatis marginibus interioribus cum velo diaphano supra columnam.

Plant medium is size, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 12-18 cm long, enclosed by 14-20 long-ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical to obovate, subacute, abruptly acuminate, 5-8 cm long, 1.5-3 cm wide, the base broadly cuneate to rounded into a petiole 2-3 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme, up to 15 mm long, borne behind the leaf by a slender peduncle 15-20 mm long; floral bracts 1.5 mm long; pedicels 2 mm long; ovary 2 mm long; **sepals** yellow, glabrous, the dorsal sepal broadly ovate, obtuse, lightly acuminate, 5 mm long, 4.75 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, subacute, lightly acuminate, 5 mm long, 2.5 mm wide, 2-veined, connate 1.5 mm; **petals** orange, tipped with red, densely cellular-pubescent, transversely bilobed, 1 mm long, 4 mm wide, the lobes subequal, the upper lobe oblong with the apex rounded, the lower lobe similar but smaller and slightly curved inward; **lip** purple, bilaminar, the blades pubescent, thick, lunate, 1.25 mm long, the inner margins with a common, transparent veil with a jagged edge that descends to cover the column, the connectives thick, broadly cuneate, forming a broad, thick body, connate to the base of the column, the sinus thick, protuberant, with the three-parted, brush-like appendix hinged to the lower margin; **column** thick, 1 mm long, the anther apical, the stigma ventral.

Imbabura: epiphytic wet forest, Los Cedros Reserve, along trail to Río Los Cedros, alt. 1,200 m, 20 Jan. 1993, S. Dalström, T. Höjjer & H. Wanntorp 1700 (Holotype, MO).

This species is distinguished by the tall ramicauls, and an obovate, abruptly acuminate leaf. The congested raceme is borne behind the leaf. The sepals are smooth, broad, and lightly acuminate; the petals are transversely oblong. Most unusual is the transparent veil that descends from the inner margins of the thick, lunate blades of the lip to cover the thick column. The veil from the two blades is united in the center, and the distal margin is ragged. It appears to be made of a thin,

cellular substance.

Two other, apparently not closely related species are known to have developed independently a similar veil over the column: *L. deformis* from Ecuador and Costa Rica, and *L. velifera* Luer & Béhar from Guatemala. To investigate the function or necessity of such a strange structure would be an interesting challenge.

Lepanthes rudicula Luer & Hirtz, sp. nov.

Fig. 205.

Ety.: From the Latin *rudicula*, "a small spatula," referring to the small paddle-like leaves.

Planta parva caespitosa, racemis congestissimis foliis suborbicularibus brevioribus, floribus parvis, petalis transversis pubescentibus sepalis longioribus, labelli laminae anguste oblongis cum connectivis cuneatis, corpore lato cum appendice parva extus

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 2-5 cm long, enclosed by 4-8 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, broadly elliptical to suborbicular, obtuse, 11-17 mm long, 10-15 mm wide, the rounded base abruptly contracted into a petiole 2 mm long. **Inflorescence** a very congested, distichous, successively many-flowered raceme up to 12 mm long, borne behind the leaf by a filiform peduncle 5-7 mm long; floral bracts 1 mm long, scabrous; pedicel 1-1.25 mm long; ovary 0.8 mm long; **sepals** yellow, ovate, acute to subacute, entire, the dorsal sepal 2.5 mm long, 1.5 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, 2.2 mm long, connate 1 mm, 2 mm wide together; **petals** yellow with red margins, minutely pubescent, transversely bilobed, 0.6 mm long, 3.2 mm wide, the upper lobe oblong-triangular, narrowly obtuse, the lower lobe narrower but about as long, narrowly triangular; **lip** red, minutely pubescent, bilaminate, the laminae oblong, barely more than thickened margins of the connectives, 1 mm long, the apices narrowly obtuse, the connectives cuneate, body broad, connate to the base of the column, the appendix small, oblong, ciliate, at the base of the body externally; **column** red, 1 mm long, the anther and stigma apical.

Pastaza: epiphytic in guava trees near Río Negro, alt. 1500 m, 28 Mar. 1984, C. Luer, S. Dalström, T. Höijer & J. Kuijt 9773 (Holotype: MO).

Morona-Santiago: north of Limón, alt. 1000 m, 5 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12635 (MO); Cordillera del Cutucú east of Méndez, alt. 1000 m, 5 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12646 (MO); epiphytic along Río Yunganza below Limón, alt. 950 m, 17 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11860 (MO); same area, alt. 1000 m, 5 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12635 (MO).

This little species occurs at moderately low altitudes in eastcentral Ecuador. Florally it is similar to the larger, elliptical-leaved *L. cercion* Luer & Escobar from Colombia. *Lepanthes rudicula* is distinguished by the small, suborbicular leaves; a short, congested, distichous raceme; ovate sepals, the laterals deeply connate; large petals longer than the sepals; narrow, pubescent blades of the lip on the margins of the connectives; and a small, oblong appendix on the external surface of the body at the base.

Fig. 206.

Lepanthes saltator Luer, *Phytologia* 54: 369, 1983.

Ety.: From the Latin *saltator*, "a male dancer," referring to the fancied appearance of the flower.

Plant large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-25 cm tall, enclosed by 9-16 ciliate lepanthiform sheaths. **Leaf** erect, thinly coriaceous, sparsely ciliate along the veins beneath, elliptic-ovate, acute, long-acuminate, 5-12 cm long, 2-5.5 cm wide, the base rounded to subcordate, abruptly contracted into a petiole 4 mm long. **Inflorescence** a very congested, distichous, successively flowered raceme up to 25 mm long, borne by a filiform peduncle up to 40 mm long along the back of the leaf; floral bract 1.25 mm long; pedicel 1-1.25 mm long; ovary 2.5 mm long; **sepals** yellow, glabrous, the dorsal sepal narrowly triangular, acute, 6.5 mm long, 3.25 mm wide, connate basally to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, 6 mm long, 3.5 mm wide, connate 1 mm, the subacute apices shortly acuminate, widely spread; petals yellow, edged in purple, broadly transversely elliptical,

bilobed, 2.1 mm long, 4.1 mm wide, the upper lobe ovate, obtuse, the lower lobe smaller, triangular, acuminate, obtuse; **lip** rose, suffused with purple, bilaminate, the blades narrowly oblong, 2.2 mm long, the apices acute, the bases narrowly obtuse, the connectives cuneate, connate to the column at the base, the appendix oblong, channeled, with a ciliate, apical gland; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: Los Cedros Reserve, wet forest, alt. 1700 m, 21 Jan. 1993, *S. Dalström, T. Höijer & H. Wanntorp 1707* (MO).

Pichincha: epiphytic in cloud forest toward the silver mine above Toachi, alt. 1500 m, 14 Mar. 1982, *C. Luer, A. Hirtz & S. Dalström 7372* (Holotype: SEL); same area, alt. 1300 m, 21 May 1983, *C. H. Dodson & A. Gentry 13696* (SEL); between Chiriboga and Santo Domingo, alt. 1500 m, 28 May 1988, *C. Luer & A. Hirtz 13718* (MO); above Tinalandia, alt. 1200 m, Apr. 1984, *A. Hirtz 1733* (MO).

Cotopaxi: west of El Corazón, alt. 1200 m, 18 Feb. 1979, *C. Luer, J. Luer & A. Hirtz 4019* (SEL).

Bolívar: wet forest west of Salinas and La Palma, alt. 1250 m, 10-12 Mar. 1991, *C. Luer, J. Luer, A. Hirtz et al. 14975, 15021* (MO).

This large species is apparently endemic on the western slopes of the Andes of central Ecuador. It is identified by the congested raceme shorter than the long-acuminate leaf that is ciliate on the veins on the undersurface. The lateral sepals are broad with diverging, acuminate apices. The petals are proportionately broad and large. The blades of the lip are narrow and glabrous, and the appendix is oblong with a terminal, pubescent segment.

***Lepanthes saltatrix* Luer & Hirtz, sp. nov.**

Fig. 207.

Ety.: From the Latin *saltatrix*, "a female dancer," referring to the fancied appearance of the flower.

Species haec *L. calodictyonis* Hook. affinis, sed foliis roseis marginibus non undulatis, sepalis lateralibus 3-nerviis, petalis minute pubescentibus non ciliatis, et labello bis majore differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 2.5-4 cm long, enclosed by 7-8 minutely ciliate, lepanthiform sheaths. **Leaf** spreading, thinly coriaceous, pale rose or lavender, with rose or lavender reticulation, ovate, subacute, 18-22 mm long, 15-18 mm wide, the margins smooth, not undulate, the base cordate, **Inflorescence** a congested, distichous, successively several-flowered raceme up to 7 mm long, borne on top of the leaf by a filiform peduncle 2-5 mm long; floral bracts 1.5 mm long, echinate; pedicels 1 mm long; ovary 2 mm long; **sepals** yellow, reflexed, ovate, obtuse, shortly acuminate-acute, carinate, with the margins sparsely ciliate, the dorsal sepal 5 mm long, 3.5 mm wide, free from the lateral sepals, the lateral sepals oblique, 5 mm long, 3.25 mm wide, connate 0.5 mm, 3-veined; **petals** red-orange with yellow tails, minutely pubescent, transversely bilobed, 2 mm long, 10.5 mm wide, the upper lobe ovate, oblique, with acute apex long-acuminate-caudate, the lower lobe transversely ovate, oblique, the obtuse apex abruptly contracted into a filamentous tail 4 mm long; **lip** red-orange, minutely ciliate, transversely oblong, shallowly retuse, 2 mm long, 3 mm wide, connate to the column above the middle; **column** 1.5 mm long, the anther and the stigma apical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12424* (Holotype: MO).

Manabí: Pedemales, Cerro Pata de Pájaro east of Pedemales, finca of family Arroyo, alt. 300-700 m, 19 June 1996, *J. L. Clark, E. Arroyo & P. Hibbs 2728* (MO; QCNE).

This species, apparently endemic in lowland western Ecuador, is closely related to *L. calodictyon*, but it differs in the reticulated, pale lavender, non-undulate-margined leaves; three-veined lateral sepals; shortly pubescent petals without coarse cilia on the margins; and a lip more than twice as large. *Lepanthes calodictyon* is widely distributed from southern Colombia to central Ecuador, and it grows sympatrically with *L. saltatrix*. Although extremely similar, the two species are easily distinguished.

Lepanthes satyrica Luer & Hirtz, *Lindleyana* 2: 141, 1987,
Ety.: Named for the mythological Greek, woodland deity, a *Satyr*.

Fig. 208.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls suberect, very slender, 1-5 cm long, enclosed by 8-10 tightly fitting, minutely ciliate, lepanthiform sheaths. **Leaf** suberect, coriaceous, striped in purple, very narrowly ovate, acute, 12-30 mm long, 4-5 mm wide, the sides more or less decurved, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, successively few-flowered raceme up to 3 mm long, borne on top of the leaf by a filiform peduncle 4-5 mm long; floral bracts 0.75 mm long, minutely ciliate; pedicels 1.25 mm long; ovary 1 mm long; **sepals** red-orange, minutely cellular-denticulate, the dorsal sepal ovate, obtuse, deeply concave below the middle, 3 mm long, 2.5 mm wide unexpanded, connate to the lateral sepals for less than 1 mm, the lateral sepals connate into an ovate, obtuse synsepal 2.75 mm long, 2.25 mm wide, the apex shortly bifid; **petals** yellow, transversely bilobed, 0.25 mm long, 3 mm wide, with a minute apiculum on the margin between the lobes, the upper lobe narrowly oblong, obtuse, long-pubescent, the lower lobe longer, narrowly linear-triangular, acute, short-pubescent; **lip** purple, minutely pubescent, bilaminate, the blades thick, narrowly elliptical with the apices acute, 1.6 mm long, the connectives broadly cuneate, oblique, connate above the base of the column, the body with an elongated, descending, triangular process with an apical appendix vertically bilobed; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in wet forest south of Lita, alt. 1250 m, 19 Jan. 1987, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12430 (Holotype: MO).

This weak, little species is characterized by the very slender, almost hairlike ramicauls that bend with the weight of the narrow, purple-striped leaves. The flowers are borne by a short peduncle. The dorsal sepal is deeply concave and the laterals are connate into a bifid synsepal. The bilobed petals are very slender and pubescent. The blades of the lip are thickened margins of the broad, cuneate connectives, and a long, triangular process descends from the body, with the appendix at the apex. The appendix is divided vertically into two segments.

Lepanthes scalaris Luer, *Phytologia* 54: 369, 1983.

Fig. 209.

Ety.: From the Latin *scalaris*, "ladderlike," referring the prolific habit of growth.

Plant medium in size, epiphytic, scandent; roots slender. Ramicauls slender, erect, prolific, 5.5-9.5 cm long, enclosed by 5-7 close lepanthiform sheaths, minutely ciliate at the ostia. **Leaf** erect, coriaceous, elliptical, acute, 20-36 mm long, 9-12 mm wide, cuneate below into a petiole 3-4 mm long. **Inflorescence** a loose, successively flowered raceme up to 7 cm long, the peduncle filiform, ca. 3 cm long; floral bract 2.5 mm long; pedicel curved, 1.2 mm long; ovary 1.5 mm long; **sepals** glabrous, rosy long; salmon in color, the veins prominent externally, the dorsal sepal ovate, 7 mm long, 4.75 mm wide, the apex shortly acuminate, acute, the lateral sepals oblong, oblique, 8 mm long, 6 mm wide together, connate to near the middle, the apices shortly acuminate; **petals** transversely oblong, 1.25 mm long, 5 mm wide, the upper lobe purple, the lower lobe smaller, orange; **lip** rosy brown, bilaminate, the blades of the oblong-lunate, the ends rounded, 2.2 mm long, the connectives cuneate, the body broad, connate to the base of the column, the appendix cup-shaped with a ciliate margin; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in scrub cloud forest above San Gabriel, alt. 3340 m, 16 May 1981, C. Luer, J. Luer & A. Hirtz 6255 (Holotype: SEL); El Mirador, between Julio Andrade and Playón de San Francisco, alt. 3300 m, 22 Mar. 1991, A. Hirtz, X. Hirtz, J. Del Hierro & S. Ortega 5289 (MO).

Also Colombia (Nariño).

This species is apparently endemic in high altitude, cloud forests of southern Colombia and northern Ecuador. It is identified by the prolific habit and loose racemes that far exceed the leaf in length. The sepals are shortly acuminate; the petals are oblong and obtuse; and the blades of the lip are ovate and obtuse. The appendix, hinged in the sinus, is globular and concave with marginal tufts of hairs.

Lepanthes scansor Luer & Escobar, *Phytologia* 54: 370, 1983.

Fig. 210.

Ety.: From the Latin *scansor*, "a climber," referring to the scandent habit.

Plant medium in size, epiphytic, scandent; roots slender. Ramicauls erect, slender, prolific, 4-16 cm long, enclosed by 6-8 close, lepanthiform sheaths minutely ciliate at the ostia. **Leaf** erect, coriaceous, elliptical, acute, 2-5 cm long, 1-1.5 cm wide, cuneate below into the petiole 3-4 mm long. **Inflorescence** a subdense, distichous, successively flowered, lightly flexuous raceme up to 3 cm long, the peduncle filiform, ca. 1 cm long; floral bract 2 mm long; pedicel 1 mm long; ovary 1.5 mm long, ribbed; **sepals** glabrous, yellow, suffused with purple centrally, the veins prominent externally, the dorsal sepal broadly ovate, acute, 4.75 mm long, 3.75 mm wide, the lateral sepals ovate, oblique, subfalcate, acute, connate to the middle, 4.75 mm wide together; **petals** yellow-orange, suffused with red medially, transversely oblong, 1.1 mm long, 3.5 mm wide, the upper lobe oblong, the lower lobe smaller, narrowly oblong, slightly incurved; **lip** red, bilaminate, the laminae oblong-falcate, 2 mm long, the apices acute, incurved, minutely pubescent, the bases rounded, the connectives broadly cuneate, the body wide, connate to the column above the base, the appendix small, rounded, densely pubescent; column 1.5 mm long, the anther apical, the stigma apical and protruding.

Loja: epiphytic in cloud forest at the pass north of Loja, alt. 3100 m, 30 Oct. 1982, C. Luer & R. Escobar 8240 (Holotype: SEL).

This species is known only from the type-collection. It is identified by the prolific habit and loose racemes shorter than the leaves. The sepals are acute; the petals are oblong; and the blades of the lip are ovate with acute, incurved apices. The appendix is small, globular, pubescent and sessile.

Lepanthes scapha Luer & Hirtz, sp. nov.

Fig. 211.

Ety.: From the Latin (Greek) *scapha*, "a boat," referring to the shape of the appendix.

Planta parva debilis caespitosa, inflorescentia racemosa congesta folio anguste ovato attenuato breviori, sepalis ovatis, petalis transverse lobatis cum lobo marginali parvo, lobo superiore oblongo truncato, lobo inferiore anguste triangulari, labelli laminae oblongis tenuibus, connectivis oblongis, appendice grandi pubescenti scaphoidea.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, very slender, 3-7.5 cm long, enclosed by 7-12 closely fitting, glabrous lepanthiform sheaths, with the ostia microscopically ciliate. **Leaf** spreading, thinly coriaceous, narrowly ovate, 3-4.5 cm long, 9-15 mm wide, the apex acute, long-attenuate, tridentate, the base rounded, contracted into a petiole less than 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 5 mm long, borne on top of the leaf by a filiform peduncle 3-10 mm long; floral bracts 1 mm long, lightly echinate; pedicels 1 mm long; ovary 1 mm long; **sepals** tan, the dorsal sepal broadly ovate, obtuse, 3 mm long, 3 mm wide, connate to the lateral sepals for 0.75 mm, the lateral sepals minutely sparsely ciliate, ovate, oblique, 3 mm long, 1.5 mm wide, connate 1.5 mm; **petals** dull red-orange, minutely pubescent, transversely bilobed with a small lobule on the margin between the lobes, 1 mm long, 4 mm wide, the upper lobe oblong, truncate, the lower lobe narrowly triangular, acute; **lip** dull red-orange, minutely pubescent, bilaminate, the blades thin, oblong with rounded ends, 1.4 mm long, the connectives narrow, oblong, supporting the middle of the blades, the body connate to the base of the column, the sinus obtuse with marginal angles, the appendix large, pubescent, oblong, subacute, concave or scaphoid; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in cloud forest south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12443 (Holotype: MO).

This little species is very closely allied to the literally ubiquitous *L. mucronata* of higher altitudes, as well as its numerous allies typified by the marginal lobule between the lobes of the petals. *Lepanthes scapha* is distinguished from its Ecuadorian and Colombian relatives by the short marginal lobe of the petals; narrowly oblong connectives supporting the middle of the blades of the lip, and a boat-shaped appendix with a subacute prow.

Lepanthes schizix Luer, *Phytologia* 54: 370, 1983.

Fig. 212.

Ety.: Named for the similarity to the star of Frank King's *Gasoline Alley*.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 10-30 mm long, enclosed by 4-6 close, lepanthiform sheaths, the markedly dilated ostia ciliate. **Leaf** erect, coriaceous, elliptical, obtuse, 12-15 mm long, 7-9 mm wide, the base broadly cuneate into a petiole ca. 2 mm long. **Inflorescence** a loose, successively flowered, zigzag raceme 3-5 cm long, the peduncle filamentous, ca. 2 cm long; floral bract pubescent, 1 mm long; pedicel 1.75-2 mm long; ovary 1.25 mm long; **sepals** dark purple or orange, carinate, the margins minutely ciliate, the dorsal sepal ovate, concave, 5.5 mm long, 3 mm wide unexpanded, the apex attenuated into a short, decurved tail, the lateral sepals 10 mm long, 3 mm wide together, connate 5 mm into an oblong lamina, the acute apices tapered into slender, approximate tails ca. 3 mm long; **petals** dark purple, transversely oblong, 1.1 mm long, 4 mm wide, the upper lobe oblong with the apex rounded, the lower lobe falcate, acute; **lip** rose, bilaminate, the blades lunate, glabrous, 1.75 mm long, the connectives narrowly cuneate, the body narrow, connate to the column above the base, the appendix small, oblong, concave, with an apical segment; **column** 1 mm long, the anther dorsal, the stigma ventral.

Pichincha: epiphytic in cloud forest near Río Silante, Chanchacato, alt. ca. 2000 m, 28 Oct. 1979, C. Luer, J. Luer & A. Hirtz 4411 (Holotype: SEL); new road between Quito and Santo Domingo, alt. 2100 m, 31 Mar. 1984, C. Luer, S. Dalström, T. Höijer, J. Kuijt & A. Hirtz 9815 (MO); same area, alt. 2450 m, 1 Mar. 1986, C. Luer, C. Dodson, A. Hirtz & A. Embree 12053 (MO); west of Lloa along along Río Cinto, alt. 2200 m, 20 Feb. 1992, S. Dalström et al. 1519 (MO).

This delicate, little species occurs locally on the western slopes of northern Ecuador. It is recognized by the loose, flexuous racemes more than twice as long as the small, elliptical leaves. The dorsal sepal is concave with an acuminate apex; the lateral sepals are connate into an oblong bifid lamina; the petals are transversely oblong, the lower lobe narrowly acute. The blades of the lip are glabrous and lunate with a small, segmented appendix.

Lepanthes schizura Luer, *Phytologia* 54: 371, 1983.

Fig. 213.

Ety.: From the Greek *schizura*, "a cleft tail," in reference to the split appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2.5-5.5 cm long, enclosed by 5-7 close, minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly ovate, acute, 3-5.5 cm long, 0.8-1.4 cm wide, the base cuneate into the petiole ca. 1 mm long. **Inflorescence** a congested, distichous raceme of successive flowers, up to 6 mm long, borne by a filiform peduncle 8-11 mm long behind the leaf; floral bract 1.5 mm, minutely spiculate; pedicel 1.5 mm long; ovary 2 mm long, long behind the leaf; **sepals** orange-brown with light green margins, ovate, obtuse, serrulate, carinate-cisarsely papillose; **petals** orange, suffused with brown, transversely oblong, 1.2 mm long, connate 1.5 mm, 4 mm wide together; **lip** brown, long, 3 mm wide, the apices rounded, the upper lobe slightly larger than the lower lobe; **lip** brown, bilaminate, the blades lunate, thick, convex, 1.3 mm long, in apposition over the column, the connectives stout, erect, elevating the blades over the column, the body broad, connate to the column above the base, the appendix more or less rounded, broadly cleft centrally, ciliate; **column** 1 mm long, stout, the anther subapical, the stigma ventral.

Napo: new road, Cotunda to Coca, alt. 1200 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11238 (MO).

Morona-Santiago: epiphytic in forest north of Gualaquiza near Río Calagrás, alt. 1650 m, 4 Nov. 1982, C. Luer, R. Escobar & D. D'Alessandro 8278 (Holotype: SEL); forest north of Gualaquiza, alt. 1600 m, 17 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreaetta & W. Teague 13422 (MO).

This species occurs locally on the eastern slopes of the Andes at relatively low altitudes. It is identified by the narrowly ovate leaf with a shorter, congested raceme; broad, obtuse, denticulate sepals; large, transversely oblong petals; and a lip with fleshy blades held over the column and a thick, bifid appendix beneath the column.

Lepanthes scrotifera Luer & Hirtz, sp. nov.

Fig. 214.

Ety.: From the Latin *scrotifer*, "scrotum-bearing," referring to the pubescent lip.

Planta parva caespitosa, inflorescentia racemosa densa, pedunculo folio ovato acuto subaequilongu, sepalis anguste triangularibus ciliatis, petalis minutis, transverse bilobis, lobis oblongis longipubescentibus subaequalibus, labello minuto oblongo apice bilobato, lobis suborbiculatis concavis columnam amplectentibus longipubescentibus, cum callo ligulato supra basim longipubescenti.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 15-27 mm long, enclosed by 7-9 minutely ciliate, lepanthiform sheaths; **Leaf** erect, suffused with purple beneath, coriaceous, ovate, acute, 10-14 mm long, 5-7 mm wide, the cuneate base contracted into a petiole 1 mm long. **Inflorescence** a congested, secund, successively several-flowered raceme up to 8 mm long, borne on top of the leaf at or beyond the apex by a filiform peduncle 4-9 mm long; floral bracts 1 mm long, lightly echinate; pedicels 1.5-2 mm long; ovary 1 mm long; **sepals** yellow, suffused with red-brown on the inner two thirds, low-echinate-carinate, narrowly triangular, acute, the margins thickened, irregularly ciliate, the dorsal sepal 5 mm long, 1.25 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals widely spreading, 5.5 mm long, 1.25 mm wide, connate 0.5 mm, 3(4)-veined; **petals** yellow-orange, long-pubescent, transversely bilobed, 0.25 mm long, 1.5 mm wide, the lobes oblong, narrowly obtuse, equal in size; **lip** red, oblong, 0.9 mm long, bilobed at the apex, long-pubescent, the lobes suborbicular, concave, embracing the column, the base connate to the base of the column, with a descending, ligulate callus above the base; **column** slender, clavate, 2 mm long, the anther and the stigma apical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12389 (Holotype: MO).

This little species from the wet, lowland forest of northwestern Ecuador, is easily identified by the congested raceme borne near the apex of the little, ovate leaf by a long, slender peduncle; narrowly triangular, widely spread sepals; minute, long-pubescent petals; and a tiny lip appressed to the undersurface of a much larger and twice longer column that protrudes from the center of the flower. The apex of the lip is bilobed, with the lobes suborbicular, concave and long-pubescent, embracing the middle of the column. Above the base externally is a ligulate, long-pubescent callus, undoubtedly analogous to the appendix of other species.

Lepanthes semilaminata Luer & Hirtz, sp. nov.

Fig. 215.

Ety.: From the Latin *semilaminatus*, "only half-way produced into laminae," referring to the incomplete formation of labellar laminae.

Planta mediocris, inflorescentia congestissima folio elliptico breviter acuminato brevior, sepalis acutis lateralibus acuminatis, petalis bilobis, lobis oblongis lobo superiore latiore, labello suborbiculato laminis subnullis, apice retuso cum appendice flabellata.

Plant medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 4-9 cm long, enclosed by 9-11 ciliate, lepanthiform sheaths with oblique, dilated ostia. **Leaf** erect, coriaceous, elliptical, subacute, shortly acuminate, 4-6 cm long, 1.8-2.5 cm wide, the base cuneate into a petiole 2-3 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme, 5 mm or more long, borne behind the leaf by a peduncle 1 cm long or longer; floral bracts 1.5 mm long; pedicels 0.75 mm long; ovary 1.5 mm long; **sepals** yellow, glabrous, carinate externally along the veins, the dorsal sepal triangular, acute, 6.5 mm long, 3 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, connate 4 mm into a bifid lamina, 7 mm long, 6 mm wide together, each 2-veined, the apices diverging, acute, acuminate; **petals** pink with yellow margins, microscopically pubescent, transversely bilobed, 1 mm long, 6 mm wide, the lobes equal in length, oblong with rounded ends, the upper lobe broader than the lower lobe; **lip** pink with yellow margins, microscopically cellular-pubescent, suborbicular, 2 mm long, with medial folds (incomplete laminae) below the middle that clasp the column below the middle, intact above the middle beneath the column, the apex retuse with a thin flabellate appendix on the margin and in contact with the stigma, the body connate to the base of the column; **column** 2 mm long, the anther apical, the stigma ventral.

Zamora-Chinchipe: Cordillera del Condor, Patchicutza, alt. 1200-1500 m, June 1991, A. Hirtz 5522 (Holotype: MO), C. Luer illustr 15320.

In habit this species is similar to numerous others: a short, congested, distichous raceme borne behind the leaf. The flower is distinguished by the acute sepals, oblong petals, and a suborbicular lip that is incompletely formed into laminae. Thickened margins of the lip below the middle flank the column. Above the middle the lip is entire beneath the column. The bilobed apex is notched with a thin, flabellate appendix in apposition with the stigma. *Lepanthes semilaminata* is similar to *L. focalis*, but the latter differs with an entire lip without and appendix.

Lepanthes series Luer & Hirtz, *Lindleyana* 2: 105, 1987.

Fig. 216.

Ety.: From the Latin *series*, "a series," referring to the prolific habit in which the ramicauls are produced in a series.

Plant small, epiphytic, sparsely caespitose, primarily scandent; roots slender. Ramicauls comparatively stout, suberect, prolific, 10-12 mm long, enclosed by 3-4 minutely ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 10-12 mm long, 8-10 mm wide, the base broadly cuneate into the petiole 2 mm long. **Inflorescence** a loose, flexuous, flexible, successively several-flowered raceme up to 35 mm long including the filiform peduncle ca. 15 mm long; floral bract 1.5 mm long, minutely ciliate; pedicel 1.5 mm long; ovary 1 mm long; **sepals** red-brown, ovate, acute, shortly acuminate, carinate-spiculate, the dorsal sepal entire, concave, 5 mm long, 2.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals denticulate, oblique, 5 mm long, 2 mm wide, connate 0.5 mm; **petals** red-brown, microscopically pubescent, reniform-transversely bilobed, 0.75 mm long, 1.25 mm wide, the lobes equal, obliquely and broadly triangular-uncinate, with the incurved apices rounded; **lip** red-brown, bilaminar, the laminae oblong, 2.5 mm long, microscopically pubescent, the apex narrowly obtuse, incurved, the base obtuse, the connectives broadly cuneate, connate to the column near the middle, the body broad with the sinus obtuse, the appendix minute, ovoid, pubescent; **column** 3 mm long, the anther and stigma apical.

Loja: epiphytic in cloud forest above Yangana north of the pass, alt. 2400 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10864 (Holotype: MO).

Only one specimen of this little, climbing species has been found. The ramicauls are prolific, forming leafy stems. It is possible that much longer series of ramicauls are produced than the mere three segments on one piece of the solitary specimen. The sepals are denticulate and shortly acuminate; the petals are very small and reniform; and the blades of the lip are narrowly oblong. The appendix is minute and pubescent.

Lepanthes setifera Luer & Escobar, *Amer. Orchid Soc. Bull.* 53: 822, 1984. Fig. 217.

Ety.: From the Latin *setifer*, "bristle bearing," referring to the setiform appendix.

Plant medium to large, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 5-16 cm long, enclosed by 9-18 minutely ciliate, lepanthiform sheaths. **Leaf** erect, thinly coriaceous, often suffused with purple beneath, ovate, acute, lightly acuminate, 5-9.5 cm long, 1.8-3 cm wide, the base cuneate or rounded, contracted into a petiole 2-4 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme, up to 25 mm long, borne behind the leaf by a slender peduncle 10-25 mm long; floral bracts 1-1.5 mm long, muricate; pedicels 1 mm long; ovary 1.5-2 mm long; **sepals** translucent greenish white, glabrous, the dorsal ovate, acute, slightly acuminate, 2.75-3.5 mm long, 1.75-2.25 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, slightly acuminate, 2.75-3.25 mm long, connate 1.5-2 mm into a bifid lamina 2.75 mm wide, 4-veined; **petals** pale green to white with purple upper margins, microscopically pubescent, transversely bilobed, 1-1.25 mm long, 3-3.5 mm wide, the upper lobe oblong, obtuse, the lower lobe triangular, obtuse; **lip** greenish purple to rose-brown, microscopically pubescent, bilaminar, the laminae ovate, concave, carinate along the inner margin, 1.5 mm long, the apex acute, incurved, with a few longer hairs, the base rounded, the connectives broadly cuneate, the body connate to the base of the column, the sinus protuberant with a small, erect, slender appendix; **column** terete, 1 mm long, the anther and stigma apical.

Imbabura: wet forest south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, *C. Luer, J. Luer, A. Hirtz, C. Dodson et al. 12428* (MO); southeast of Lita, alt. 1200 m, 11 Jan. 1922, *C. Luer, J. Luer, A. Hirtz et al. 15555* (MO).

Pichincha: epiphytic in forest above San Miguel de los Bancos, alt. 1450 m, 1 Apr. 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9863* (Holotype: MO); old road between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, *C. Luer, A. Hirtz, S. Dalström, T. Höijer & J. Kuijt 9849* (MO).

Bolívar: epiphytic in wet virgin forest west of La Palma, alt. 1250 m, 10 Mar. 1991, *C. Luer, J. Luer, A. Hirtz, X. Hirtz, F. Navarro, M. Navarro, J. Del Hierro & M. Evans 14968* (MO).

Also Colombia (Antioquia).

This species is not uncommon in the Andes of Colombia and western Ecuador. The small flowers are similar to those of the Central American *L. disticha* (A. Rich. & Galeotti) Garay & Sweet. *Lepanthes setifera* is distinguished by a congested raceme shorter than the ovate, acuminate leaves (instead of elliptical, non-acuminate). The sepals are translucent and acute and the petals are greenish and bordered in purple. The lip is most distinctive with the slender, bristle-like appendix.

***Lepanthes sigsigensis* Luer & Hirtz, Novon 3: 451, 1993.**

Fig. 218.

Ety.: Named for the town of Sigisig, near the area where this species was discovered.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-7.5 cm long, enclosed by 7-10 ciliate, lepanthiform sheaths dilated at the ostia. **Leaf** erect, coriaceous, ovate, acute, slightly acuminate, 3-4 cm long, 1.3-1.7 cm wide, the rounded base contracted into a petiole 2-3 mm long. **Inflorescence** a loose, distichous, successively several-flowered raceme up to 10 cm long including the slender peduncle 2-2.5 cm long; floral bracts 2.5-3 mm long, crested; pedicels 3.5-4.5 mm long; ovary alate, 1 mm long; **sepals** light yellow, minutely denticulate, the dorsal sepal with a broad, central, purple stripe, triangular-ovate, acute, 8 mm long, 4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, acute, 8 mm long, 3 mm wide, connate 2 mm; **petals** orange, suffused with purple medially, microscopically cellular-glandular, transversely bilobed, 1.25 mm long, 5.5 mm wide, the lobes oblong, obtuse, the upper lobe longer; **lip** red-orange, essentially glabrous, bilaminar, the laminae narrowly ovate, with the apex narrowly rounded, 3 mm long, the connectives shortly cuneate, the body narrow, connate to the base of the column, the appendix slender, sigmoid, minutely pubescent; **column** terete, 2 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass east of Sigisig, alt. 2700 m, 15 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreaetta & W. Teague 13350* (MO); SE of Sigisig, road to Chiguinda, alt. 2500-2700 m, 5 Feb. 1988, *U. Molau, B. Eriksen & M. Fredrikson 2964* (GB); between Sigisig and Chiguinda, alt. 2600 m, 11 Aug. 1990, *A. Hirtz 5059* (MO).

Although superficially similar to other medium-sized species with relatively large flowers borne in a long, loose raceme (e.g. *L. capitanea* and *L. effusa*), this species is distinguished by the ovate leaves, minutely denticulate sepals, simple petals and blades of the lip, but with a slender, sigmoid appendix borne in the sinus.

***Lepanthes silenus* Luer & Hirtz, sp. nov.**

Fig. 219.

Ety.: Named for *Silenus*, in Greek mythology the companion of Bacchus and leader of the satyrs.

Planta mediocris caespitosa, inflorescentia racemosa laxa foliis anguste ellipticis brevioribus, sepalis ovatis longiciliatis, petalis glabris transverse lobatis cum dente acuto marginali, lobo superiore oblongo, lobo inferiore minore anguste triangulari, labelli laminis ellipticis longiciliatis, connectivis late oblongis, appendice spatulata longipubescentibus.

Plant small to medium in size, epiphytic, caespitose; roots numerous, filamentous. Ramicauls erect, slender, 2-8 cm long, enclosed by 5-9 long-pubescent, lepanthiform sheaths. **Leaf** erect, suffused with purple beneath, thickly coriaceous, rigid, narrowly ovate, acute, 2-4.5 cm long, 0.5-1 cm wide, the base cuneate, contracted into a petiole 2 mm long. **Inflorescence** a loose, weak, distichous, successively many-flowered raceme up to 35 mm long including the filiform peduncle 5-6 mm long, borne behind the

leaf; floral bracts 1.5 mm long, spiculate; pedicels 1.5 mm long; ovary 2.5 mm long; **sepals** red-purple with a thin white margin, ovate, subacute, long-ciliate, carinate-spiculate, the dorsal sepal concave, 4.5 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4.5 mm long, 1.8 mm wide, connate 1.5 mm; **petals** purple, glabrous, transversely bilobed, 1 mm long, 4.5 mm wide, the upper lobe oblong with the apex rounded, with an acute angle on the outer margin between the lobes, the lower lobe smaller, narrowly triangular, acute; **lip** yellow, long-ciliate, bilaminate, the blades elliptical with rounded ends, slightly concave, 1.2 mm long, the connectives broadly oblong, forming a narrow body, connate to the base of the column, the appendix comparatively large, ovoid, long-pubescent, hinged to a flat, oblong segment from the sinus; **column** stout, 1.5 mm long, the anther and stigma apical.

Morona-Santiago: epiphytic in cloud forest east of Sigsig, alt. 2750 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreitta & W. Teague 13331 (Holotype: MO); southeast of Sigsig, alt. 2800 m, 13 Jan. 1989, C. Luer, J. Luer, A. Jesup, P. Jesup, A. Hirtz & S. Ortega 13860 (MO); between Gualaceo and Limón, alt. 2150 m, 14 Jan. 1989, C. Luer, J. Luer, A. Jesup, P. Jesup, A. Hirtz & S. Ortega 13884 (MO).

Vegetatively this species is similar to *L. pteropogon* Rchb. f. with the long-pubescent, lepanthiform sheaths, and a narrow leaf with the inflorescence borne along the back surface. The flowers, however, suggest a relationship with *L. intonsa* Luer: ovoid, slightly concave, long-ciliate blades of the lip borne by broad connectives, and a hinged appendix. *Lepanthes silenus* differs in the long-ciliate sepals and the acute process on the outer margin of the petals.

Lepanthes sobrina Luer & Hirtz, *Lindleyana* 2: 141, 1987.

Fig. 220.

Ety.: From the Latin *sobrina*, "a cousin," referring to the relationship of the species to *Lepanthes mucronata* Lindl.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls weak, suberect, slender, 5-18 cm long, enclosed by 7-21 closely applied, minutely ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, corrugate, ovate, obtuse, abruptly acuminate, 3.5-4.5 cm long, 1.5-2.8 cm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 7 mm long, borne on top of the leaf by a filiform peduncle 9-32 mm long; floral bracts 1.5 mm long, echinate; pedicels 2.5 mm long; ovary 1.5 mm long; **sepals** light orange-brown, carinate, broadly ovate, obtuse, apiculate, denticulate, the dorsal sepal 3 mm long, 2.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 3 mm long, 2 mm wide, with a small, mm; **petals** orange, long-pubescent, transversely bilobed, 1 mm long, 3.75 mm wide, with a small, decurved process on the margin between the lobes, the upper lobe oblong, truncate, the lower lobe triangular, acute; **lip** red-brown, bilaminate, the blades obovate with the ends rounded, minutely pubescent, 1.25 mm long, the connectives narrowly oblong, the body connate to the base of the column, the appendix external, pedunculate, ovoid, pubescent, with a pair of pubescent, fingerlike, terminal lobules; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Esmeraldas: epiphytic in wet forest west of Lita, alt. 750 m, 18 Jan. 1985, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12407 (Holotype: MO); same collection data, C. Luer et al. 12369, 12376, 12412, 12415 (MO); west of Lita, alt. 800 m, 13 Aug. 1986, A. Hirtz 2965 (MO).

This species occurs in the low wet forests of northwestern Ecuador. It is notable for the thin, leaves with crinkly veins. The sepals are broad and denticulate; the petals are long-pubescent with a small, decurved lobule on the outer margin between the truncate upper lobe and the triangular lower lobe; the pedunculated appendix of the lip is located on the external surface of the body, and the appendix is terminated by a pair of fingerlike processes.

The species was described from the smallest of those collected on the same date. The larger specimens were thought at that time to represent another species.

Lepanthes sororcula Luer & Hirtz, *Lindleyana* 2: 144, 1987.

Fig. 221.

Ety.: From the Latin *sororcula*, "a little sister," referring to the similarity of the species to *L. mucronata*.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls suberect, slender, 3-6 cm long, enclosed by 9-11 closely fitting lepanthiform sheaths with the ostia minutely ciliate. **Leaf** suberect to horizontal, thinly coriaceous, reticulate, narrowly ovate, acute, 3-5 cm long, 0.7-0.9 cm wide, the cuneate base contracted into a petiole 1.5-2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 5 mm long, borne on top of the leaf by a filiform peduncle 4-16 mm long; floral bracts 0.6 mm long; pedicels 0.5 mm long; ovary 1 mm long; **sepals** greenish white, ovate, entire, subacute, the dorsal sepal 2.4 mm long, 2 mm wide, connate to the lateral sepals for 0.3 mm, the lateral sepals oblique, 2.4 mm long, 1.4 mm wide, connate 1.2 mm; **petals** rose, minutely pubescent transversely bilobed, 0.5 mm long, 2.75 mm wide, the upper lobe oblong, obtuse, the lower lobe obliquely oblong, obtuse; **lip** rose, minutely pubescent, bilaminar, the blades ovate, with the ends rounded, 1 mm long, the connectives oblong, forming a narrow body, connate to the base of the column, the sinus obtuse, the appendix ovoid, concave, pubescent, with a small, apical segment; **column** 1 mm long, the anther dorsal, the stigma ventral.

El Oro: epiphytic in cloud forest south of Piñas, alt. 950-1000 m, 20 Mar. 1985, C. Luer, J. Luer, A. Hirtz, W. Flores 10677 (Holotype: MO).

Superficially, this species appears very similar to the common, widespread *Lepanthes mucronata*. The narrowly ovate leaves are held horizontally by weak stems, and the flowers are produced in congested racemes on top. Also as commonly seen in *L. mucronata*, two racemes may occur simultaneously, one borne by a shorter peduncle. The sepals and petals of the two species are similar except that the apices of the petals are not truncate in *L. sororcula*. Instead of thin and adherent over the column, the blades of the lip are more or less fleshy and held to either side of the column.

Lepanthes speciosa Luer & Hirtz, *Die Orchidee* 43: 67, 1992.

Fig. 222.

Ety.: From the Latin *speciosus*, "splendid," referring to the beauty of the flowers.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-16 cm long, enclosed by 7-14 microscopically ciliate, lepanthiform sheaths with oblique, dilated ostia. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical-ovate, acuminate, acute, 3-8.5 cm long, 1.5-3 cm wide, the base cuneate into a petiole 4-5 mm long. **Inflorescence** a loose, distichous, successively flowered raceme, up to 6 cm long, borne by a filiform peduncle up to 3 cm long, in a fascicle along the back of the leaf, 2-3 flowers open simultaneously; floral bracts infundibular, 2-3 mm long; pedicel 2 mm long; ovary 2 mm long; **sepals** yellow, suffused with rose, denticulate, carinate-denticulate, broadly ovate, obtuse, shortly acuminate, the dorsal sepal 4 mm long, 3.3 mm wide, connate 1 mm to the lateral sepals, the lateral sepals oblique, 4 mm long, 3.3 mm wide, 1-veined, connate 1 mm; **petals** orange with purple border, transversely bilobed, 2 mm long, 3 mm wide, the upper lobe broadly oblong, the apex rounded, concave below the middle, the lower lobe smaller, triangular; **lip** white suffused with rose centrally, bilaminar, the blades narrowly elliptical, 2 mm long, glabrous, the apices acute, the bases narrowly obtuse to round, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus protuberant with the appendix minute, pubescent bilobulate; **column** 2 mm long, the anther dorsal, the stigma protuberant, apical, narrowly transverse.

Carchi: epiphytic in cloud forest between Tulcán and Maldonado, alt. 2050 m, 2 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9884 (Holotype: MO); same area, alt. 2500 m, Nov, 1991, A. Hirtz 5622 (MO).

This species is closely allied, if not merely a variation of the widely distributed and frequent *L. rhynchion*. In the only known area in northwestern Colombia where *L. speciosa* has been found is about 1000 meters lower than the area where the usual *L. rhynchion* occurs. *Lepanthes speciosa* is distinguished from the latter by sheaths

of the ramicaul with dilated ostia; a more distantly flowered and longer inflorescence; broadly ovate, obtuse sepals; petals with the upper lobes concave below the middle; and a protuberant appendix.

Lepanthes splendida Luer & Hirtz, *Novon* 3: 452, 1993.

Fig. 223.

Ety.: From the Latin *splendidus*, "splendid, elegant," referring to the beauty of the species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 10-15 mm long, enclosed by 3-4 minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 17-22 mm long excluding the petiole 2 mm long, 6-8 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, loose, simultaneously flowered raceme of 5-6 large, red-purple flowers, up to 9.5 cm long including the slender peduncle 3 cm long; floral bract 2 mm long; pedicel 3-4 mm long; ovary 1 mm long, lightly ribbed; **sepals** red-purple, glabrous, the dorsal sepal triangular, acute, acuminate, 9.5 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 8 mm into a broad lamina 13 mm long, 7 mm wide, the apices free for 3 mm, subacute, shortly apiculate; **petals** yellow-white, microscopically cellular pubescent, transversely bilobed, 1 mm long, 2.25 mm wide, the upper lobe ovoid, obtuse, the lower lobe triangular, obtuse, much smaller than the upper lobe; **lip** rose, bilaminate, the laminae glabrous, subfalcate, 1.25 mm long, the bases rounded, the apices narrowly acuminate, the connectives short, forming a narrow body with a two-parted appendix beneath the column; **column** 1.5 mm long, the anther apical, the stigma ventral.

Morona-Santiago: epiphytic in wet forest along the new road west of Macas toward Guamote, alt. 1900 m, 16 Jan. 1989, C. Luer, J. Luer, P. Jesup, A. Jesup, A. Hirtz & S. Ortega 13937 (Holotype: MO).

This remarkable species is characterized by the small vegetative habit and an imposing, erect inflorescence of several, large, simultaneous, purple flowers. Unfortunately, the only known plant failed to survive. It was found by Santiago Ortega in the forest along the road under construction between Macas and Guamote.

The broad synsepal is considerably larger than the acute dorsal sepal. The lower lobe of the petals is minute. The blades of the lip are falcate, and the short, two-parted appendix is held between the blades beneath the column.

Lepanthes stegastes Luer & Hirtz, *Lindleyana* 2: 144, 1987.

Fig. 224.

Ety.: From the Greek *stegastes*, "one that covers," in allusion to the protected inflorescence under the horizontal, convex leaves.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 20-25 mm long, enclosed by 7-8 microscopically scabrous, lepanthiform sheaths. **Leaf** spreading, more or less horizontal, coriaceous, suborbicular, 7-8 mm long, 6-7 mm wide, the rounded base contracted into the petiole 1 mm long. **Inflorescence** a very congested, distichous, successively several-flowered raceme up to 4 mm long, borne under the leaf by a filiform peduncle 2-3 mm long; floral bract 0.8 mm long; pedicel 0.8-1 mm long; ovary 0.8 mm long; **sepals** rose, ovate, subacute, minutely denticulate, the dorsal sepal 1.6 mm long, 1.2 mm wide, connate to the lateral sepals for 0.4 mm, the lateral sepals oblique, 1.6 mm long, 1 mm wide, connate 0.6 mm; **petals** purple, microscopically pubescent, transversely bilobed, oblique, 0.4 mm long, 1.5 mm wide, the lobes oblong with the ends rounded, the upper lobe larger; **lip** purple, bilaminate, the lobes ovate, 0.8 mm long, microscopically pubescent, the apex narrowly obtuse, the base rounded, the connectives short, cuneate, connate to the column at the base, the body broad with the sinus obtuse, the appendix triangular, concave, long-pubescent; **column** 0.8 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in cloud forest along the new road between Cotundo and Coca, alt. 1200 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11237 (Holotype: MO); same area, 18 Nov. 1984, A. Hirtz 2113 (MO); Hollin Loreto, alt. 1000 m, Nov. 1988, A. Hirtz 3921 (MO).

So far, this tiny species is known from only one locality, but because of its diminutive size, it is easily overlooked. It is distinguished by the very small, convex, orbicular leaves that are held horizontally. The minute flowers are borne within the concavity beneath. The most remarkable feature is the concave, long-pubescent appendix of the lip.

Lepanthes stelidipetala Luer, sp. nov.

Fig. 225.

Ety.: From the genus *Stelis* and the Greek *petalon*, "a petal," in reference to the small, transverse petals.

Planta mediocris caespitosa, inflorescentia racemosa laxa pauciflora foliis anguste ellipticis longiore, sepalis ovatis acutis breviter acuminatis in cupulam connatis, petalis parvis reniformibus obtusis, labelli lamina pubescentibus lunatis, corpore lato, appendice nulla.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3 cm long, enclosed by 4-5 minutely ciliate, lepanthiform sheaths minimally dilated at the ostia. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, 28 mm long, 6.5 mm wide, the base narrowly cuneate into a petiole 3-4 mm long. **Inflorescence** an erect, loose, distichous, successively few-flowered raceme up to 2 cm long, borne by a slender peduncle ca. 3 cm long; floral bracts 1.5 mm long; pedicels 3 mm long; ovary 1.5 mm long; **sepals** yellow, suffused with brown between the veins, entire, carinate, the middle sepal ovate, acute, shortly acuminate, concave below the middle, 11 mm long, 7.5 mm wide expanded, connate to the lateral sepals for 3 mm to form a gaping cup, the lateral sepals ovate, oblique, connate 8 mm into a synsepal similar to the middle sepal, 11 mm long, 8 mm wide expanded, the apices in apposition, acute, shortly acuminate; **petals** red-purple, minutely pubescent, reniform, obtuse, 1 mm long, 1.5 mm wide, the basal angles narrowly rounded or obtuse; **lip** red-purple, pubescent, bilobed, sub-bilaminated, the lobes cuneate with poorly developed marginal blades embracing the column, 1.25 mm long, the body broad, connate to the base of the column, the sinus pubescent without an appendix; **column** 1.5 mm long, the anther and stigma apical.

Zamora-Chinchipe: epiphytic in forest above Valladolid, alt. ca. 2000 m, collected by W. Teague, 1975, flowered in cultivation in San Francisco, CA. 13 Dec, 1988, *C. Luer 13838* (Holotype, MO).

This species was collected by Walter Teague in southernmost Ecuador along the trail from Valladolid to Yangana in 1975 before the construction of the road. Since that time, it has flourished in cultivation in San Francisco. It is characterized by the loose, few-flowered raceme longer than the leaf; large, cup-shaped flowers with the synsepal with a bifid apex similar to the middle sepal; very small, reniform petals; and a bilobed lip with poorly developed, marginal blades embracing the column.

Lepanthes strumosa Luer & Escobar, *Orquideología* 16: 151, 1984.

Fig. 226.

Ety.: From the Latin *strumosus*, "with a goiter," in allusion to the fancied appearance of the transverse lip beneath the column.

Plant small, epiphytic, caespitose; roots thick. Ramicauls slender, erect, 0.5-5 cm long, enclosed by 3-7 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, suffused with purple, ovate, acute, acuminate, 10-22 mm long, 5-10 mm wide, the base cuneate, contracted into a petiole 1 mm long. **Inflorescence** a congested, successively few-flowered raceme up to 5 mm long, borne behind the leaf by a filiform peduncle 4-10 mm long; floral bract 1 mm long; pedicel 2 mm long; ovary 0.5 mm long, with low, irregular wings; **sepals** glabrous, translucent light yellow or white, ovate, carinate, acute, shortly acuminate, the dorsal sepal concave, 2.5 mm long, 1.5 mm wide, the lateral sepals oblique, 2.5 mm long, 1 mm wide, connate 1 mm; **petals** brown or orange, microscopically pubescent, transversely bilobed, 0.3 mm long, 1.6 mm wide, the lobes opposite, narrowly triangular, narrowly obtuse, the upper lobe slightly larger than the lower lobe; **lip** magenta, cellular glandular, transversely cordate, or lunate, 0.4 mm long, 0.75 mm wide, the apex broadly rounded, the lateral angles narrowly obtuse, the base connate to the undersurface of the column; column stout, terete, 0.5 mm long, with the anther and stigma apical.

Napo: forest between Tena and Baeza, alt. 2150 m, 29 Mar. 1984, C. Luer, S. Dalström, T. Höijer & J. Kuiji 9800 (MO); east slopes of Volcán Reventador, alt. 1850 m, 8 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11712 (MO); Guacamayo Range south of Baeza, alt. 1800 m, 18 Nov. 1984, A. Hirtz 2104 (MO); same area, alt. 1950 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11247 (MO).

Pastaza: Mera, alt. 1250 m, Dec. 1984, A. Hirtz 2177 (MO).

Morona-Santiago: east of Gualaceo toward Limón, alt. 2150 m, 16 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13407 (MO); Cordillera del Condor, east of Chuchumbletza, alt. 1750 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13570, 13575 (MO).

Also Colombia (Antioquia: type),

Although first discovered in the Central Cordillera of Colombia, this little species has been found locally on the both the eastern and western slopes of the Andes of Ecuador. It is characterized by the small, weak habit with ovate, acuminate leaves and a somewhat shorter inflorescence of a few small flowers. Most distinguishing is the tiny, transverse lip almost hidden beneath a larger column, like a bow-tie beneath a fat chin.

Lepanthes stupenda Luer, *Phytologia* 54: 372, 1983.

Fig. 227.

Ety.: From the Latin *stupendus*, "stupendous," referring to the size of the flower.

Plant medium in size to large, epiphytic, caespitose; roots thick, coarse. Ramicauls slender, erect, 5-28 cm long, enclosed by 8-14 lepanthiform sheaths with microscopically ciliate stomal margins. **Leaf** erect, thinly coriaceous, reticulated, elliptical-ovate, acute, acuminate, 5-15 cm long, 2-5.5 cm wide, the broadly cuneate to rounded base contracted into a petiole 4-5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 30 mm long, borne by a filiform peduncle 15-28 mm long behind the leaf; floral bract 2 mm long; pedicel 1.5 mm long; ovary 2 mm long, 10 mm wide together; **sepals** light yellow to greenish white, papillose-pubescent below the middle, the dorsal sepal winged; **petals** yellow, edged in purple, transversely elliptical, bilobed, 1.66-2 mm long, 3-3.2 mm wide, the lobes triangular-ovate, obtuse, the lower lobe much shorter; **lip** white, edged in purple, bilaminate, the blades ovate-oblong, narrowly obtuse to acute, microscopically pubescent, 2.5-3 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse, protuberant and membranous, bearing a minute, pedunculate, pubescent, bifid appendix; **column** 2 mm long, the anther dorsal, the stigma ventral.

Imbabura: Selva Alegre, epiphytic in cloud forest, alt. 2730 m, 1 May 1981, C. Luer, J. Luer & A. Hirtz 6042 (Holotype: SEL).

Pichincha: San Juan, alt. 3200 m, Oct. 1983, A. Hirtz 1310 (MO); La Liberia, alt. 2700 m, Nov. 1983, A. Hirtz 1414 (MO); Pelagallo, alt. 2800 m, 6 Dec. 1984, A. Hirtz 2163 (MO); between Calacali and La Liberia, alt. 2500 m, 7 Apr. 1984, C. Luer, S. Dalström, T. Höijer & A. Hirtz 10020 (MO).

Also Colombia (Santander).

This large species occurs locally in forests on the western slopes of the Andes of northern Ecuador. It is identified by the congested raceme much shorter than the large leaf with an acuminate apex. The flowers are large, more than three centimeters from the tips of the dorsal and lateral sepals. The sepals are pubescent within below the middle; the petals are small and obtuse; and the blades of the lip are ovate.

In the type-description the appendix was thought to be the membranous protrusion of the sinus, but later collections indicate that the appendix is a minute, pedunculate organ at the apex of this membrane. The appendix no doubt had been lost from the flower originally described.

Lepanthes suavium Luer & Hirtz, sp. nov.

Fig. 228.

Ety.: From the Latin *suavium*, "a kiss," referring to the apposition of two parts of the appendix.

Planta mediocris caespitosa, inflorescentia racemosa congestissima longipedicellata foliis ovatis acuminatis brevioribus, sepalis ovatis acutis integris, petalis transverse lobatis, lobo superiore oblongo subtruncato, lobo inferiore triangulari acuto, labelli laminis minute pubescentibus obovatis, connectivis late cuneatis, appendice bipartita, parte superiore pedunculata cum parte inferiore pubescenti apposita.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-8 cm long, enclosed by 5-8 ciliate, lepanthiform sheaths with long-acuminate ostia. **Leaf** erect, thinly coriaceous, suffused with purple beneath, ovate, acuminate, acute, 3-5 cm long, 1.4-1.8 cm wide, the base rounded or broadly cuneate into a petiole 2 mm long. **Inflorescence** a very crowded, successively many-flowered raceme up to 8 mm long, borne behind the leaf by a slender peduncle 15-20 mm long; floral bracts 1 mm long; pedicels 2 mm long; ovary 1.25 mm long; **sepals** orange, glabrous, the dorsal sepal ovate, acute, 3 mm long, 2 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, shortly acuminate, acute, 3 mm long, 1.5 mm wide, connate 1 mm; **petals** red-orange, minutely pubescent, transversely bilobed, 0.75 mm long, 2 mm wide, the upper lobe oblong, truncate, the lower lobe triangular, acute; **lip** red-orange, minutely pubescent, bilaminar, the laminae obovate, obtuse, 1.2 mm long, the connectives broadly cuneate, surrounding the swollen apex of the column, the body broad, connate to the base of the column, the appendix in two parts, the superior part concave, ciliate, terminated by a decurved, pedunculated process in apposition with the long-pubescent inferior part; **column** 1 mm long, enlarged above the base with a large, apical anther, the stigma ventral.

Zamora-Chinchipe: Cordillera del Condor, epiphytic in cloud forest east of Mayaicu, alt. 1300 m, 20 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13502 (Holotype: MO); Napintza, alt. 1000 m, June 1991, A. Hirtz 5546 (MO).

Although not particularly remarkable in the appearance of the habit or inflorescence (small flowers produced on a congested raceme behind an ovate, acuminate leaf), the appendix is most unusual. As with many others, it is pubescent and originates from the protuberant margin of the body of the lip. On top of the margin a cavity continues forward as a sulcus onto the appendix with two ciliate margins. It is terminated by a decurved, pedunculate lobule that is in apposition with a long-ciliate, inferior portion of the appendix.

Lepanthes sulcata Luer & Hirtz, sp. nov.

Fig. 229.

Ety.: From the Latin *sulcatus*, "sulcate," referring to the longitudinally concave blades of the lip.

Planta mediocris caespitosa, inflorescentia racemosa congesta folio elliptico subacuto brevioribus, sepalis ovatis, petalis transverse lobatis margine indentato, lobo superiore oblique late ovato, lobo inferiore oblique oblongo, labelli laminis ovatis longitudinaliter concavis, connectivis cuneatis, appendice oblonga bisegmentata biglandulata pubescenti.

Plant medium in size, epiphytic, caespitose; roots numerous, very slender. Ramicauls erect, slender, 5-11 cm long, enclosed by 7-10 long-ciliate, lepanthiform sheaths, occasionally glabrous. **Leaf** erect, coriaceous, elliptical, equally subacute at both ends, 3-4.5 cm long, 1.3-1.7 cm wide, the cuneate base contracted into a petiole 3-5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 25 mm long, borne behind the leaf by a filiform peduncle 5-17 mm long; floral bracts 1.75-2.5 mm long, finely ciliate; pedicels 1.5-2 mm long; ovary 1.5-2 mm long; **sepals** pinkish white, carinate, entire, the dorsal sepal ovate, acute, 7-8 mm long, 3-3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, the apices approximate, subacute, abruptly short-acuminate, 6 mm long, 2.75-3 mm wide, connate 1.5 mm; **petals** yellow laterally, orange medially, transversely bilobed, 1.5 mm long, 3 mm wide, microscopically pubescent, the margin indented between the lobes, the upper lobe obliquely broadly ovate, rounded, the lower lobe obliquely oblong, rounded; **lip** red-orange, glabrous (microscopically pubescent), bilaminar, the blades ovate with rounded ends, longitudinally concave, 2 mm long, the connectives cuneate, forming a narrow body, connate to the base of the column, the sinus obtuse, with the appendix oblong, pubescent, bisegmented, with a pair of minute, pubescent lobules on the dorsum, the dorsum adherent to the sticky surface of the stigma; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Loja: epiphytic in forest north of Loja toward Saraguro, alt. 2700 m, 2 Feb. 1987, *C. Luer, J. Luer, & A. Hirtz 12586* (Holotype: MO); east of Yangana, alt. 2500 m, collected by D. D'Alessandro 240, flowered in cultivation at Predesur in Vilcabamba, 17 Mar. 1984, *C. Luer 9560* (MO).

This very pretty, floriferous species has rather coarsely ciliate lepanthiform sheaths, but the sheaths of some stems are lacking cilia. The leaves are elliptical and the relatively large, colorful flowers are borne along the back surface of the blade in a congested raceme. The floral bracts are finely ciliate, an unusual morphological feature. The sepals are pinkish white, contrasting with the yellow and orange petals and red-orange lip. The margin of the petals is indented between the blunt lobes. The blades of the lip are longitudinally sulcate, and the bisegmented appendix is adherent to the sticky surface of the stigma.

***Lepanthes surrogata* Luer & Hirtz, Lindleyana 2: 42, 1987.**

Fig. 230.

Ety.: From the Latin *surrogatus*, "chosen in place of another," referring to the modification of the rostellar flap.

Plant medium in size, epiphytic, caespitose; roots filiform. Ramicauls slender, suberect to erect, 4-9 cm long, enclosed by 10-13 ciliate, lepanthiform sheaths. **Leaf** suberect, coriaceous, narrowly ovate, acute, 2.5-6 cm long, 0.8-1.3 cm wide, the base cuneate into a petiole 1-1.5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 20 mm long, borne behind the leaf by a filiform peduncle 10-20 mm long; floral bract 1 mm long, spiculate; pedicel 1.5 mm long; ovary 2 mm long; **sepals** red with orange border, ovate, subacute, denticulate, carinate-spiculate, the dorsal sepal 3.5 mm long, 2.4 mm wide, connate to the lateral sepals for 0.6 mm, the lateral sepals oblique, shortly acuminate, 3 mm long, 2 mm wide, connate 1 mm; **petals** red on the outer half, orange on the inner half, transversely bilobed, 1 mm long, 3 mm wide, microscopically pubescent, the lobe upper lobe oblong with the apex broadly rounded, the lower lobe similar but shorter; **lip** bilaminar, the laminae glabrous, shiny red, lunate, concave, lightly adherent, 1.25 mm long, the connectives broadly cuneate, the body connate to the base of the column, the sinus transverse with a triangular ciliate appendix; **column** stout, 0.75 mm long, the anther apical, the stigma apical, transversely bilobed, the overlying rostellar flap oblong, truncate, ciliate.

Morona-Santiago: epiphytic in cloud forest, Cordillera del Condor east of Guismé, alt. 1500 m, 18 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11910* (Holotype: MO).

Although not very different vegetatively or florally from many of the other species, *L. surrogata* is most remarkable in the morphology of the lip and column. The smooth, semicircular blades of the lip are lightly adherent over the column. The column is short, the anther and stigma located near the center of the lip over the sinus of the body. The appendix on the margin of the sinus is triangular and ciliate.

Located immediately above the appendix, and resembling it, is the protruding rostellar flap from the floor of the anther cavity. This flap overlies the narrow central portion of the transversely bilobed stigma between the lateral lobes, very much as it does in many species of the genera *Pleurothallis* and *Stelis*. The rostellar flap appears very much like a second appendix. A bilobed stigma is known in a few species of *Lepanthes*, and the rostellum is commonly lobed, forked, apiculate, or pubescent, but in only two other species is the rostellum thought to be modified to take part in luring a pollinator. These other two species are the Central American *L. mystax* Luer & Escobar and *L. necopina*.

Lepanthes sybax Luer & Hirtz, sp. nov.

Fig. 231.

Ety.: From the Greek *sybax*, "like a pig," referring to the snoutlike apex of the column.

Planta mediocris caespitosa, inflorescentia racemosa subdensa folio ovato acuto brevior, sepalis ovatis breviter acuminatis integris, sepalis lateralibus uninervatis, petalis transverse oblongis apicibus rotundatis, labelli laminae ellipticis, connectivis late cuneatis, appendice parva triangulari.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-9 cm long, enclosed by 6-8 glabrous lepanthiform sheaths with dilated, ciliate ostia. Leaf erect, coriaceous, suffused with purple, narrowly ovate, acute, 3-5 cm long, 0.6-1.1 cm wide, the cuneate base contracted into a petiole ca. 3 mm long. Inflorescence 1-6 subdense, distichous, successively several-flowered racemes up to 35 mm long including the peduncle 3-5 mm long, borne behind the leaf; floral bracts 1.5-2 mm long; pedicels 1 mm long; ovary 1 mm long; sepals yellow to red-brown, carinate, entire, the dorsal sepal broadly ovate, concave, obtuse, lightly acuminate, 3.75 mm long, 2.75 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, subacute, oblique, lightly acuminate, 3.5 mm long, 2 mm wide, connate 1 mm; petals orange with a red margin, or orange-brown, minutely pubescent, transversely bilobed, 0.6 mm long, 2.5 mm wide, the lobes oblong with rounded ends, about equal in length; lip yellow to orange-brown, microscopically pubescent, bilaminar, the blades oblong, 1.6 mm long, the apices subacute, incurved, the connectives broadly cuneate, forming a broad body, connate to the base of the column, the sinus acute, with a small triangular, microscopically pubescent appendix; column 1.5 mm long, the anther and the stigma apical.

Azuay: epiphytic in remnant of cloud forest north of Cuenca, alt. 2900 m, 8 Feb. 1987, sepals red-brown, C. Luer, J. Luer, & A. Hirtz 12734 (Holotype: MO); same data, sepals yellow, C. Luer et al. 12733 (MO).

This species is yet another in the group related to the frequent *L. monoptera* Lindl. All are characterized by subdense inflorescences usually shorter than the leaf, one-veined lateral sepals, and a snoutlike, apical anther and stigma. From the others in the group, *L. sybax* is distinguished by the entire sepals; oblong, nearly equal lobes of the petals; and a small, triangular appendix.

Lepanthes synema Luer & Hirtz, Novon 3: 452, 1993.

Fig. 232.

Ety.: From the Greek *synaimos*, "a kinsman," referring to the similarity to some other small species

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-7 mm long, enclosed by 2-4 minutely ciliate, lepanthiform sheaths. Leaf erect, coriaceous, suborbicular, obtuse to rounded, 6-8 mm long, 4.5-6 mm wide, the rounded base contracted into a 1 mm long petiole. Inflorescence a loose, successively few-flowered raceme, up to 2 cm long including the slender peduncle 8-10 mm long; floral bract 1.5 mm long; pedicel 1.5 mm long; ovary 0.5 mm long; sepals yellow, subcarinate, the dorsal sepal suffused with red centrally, suborbicular, 4.5 mm long, 4.5 mm wide, with the rounded apex abruptly contracted into a slender tail 2.5 mm long, connate to the lateral sepals for 1 mm, the lateral sepals oblong, oblique, connate 3 mm into an oblong, bifid lamina, 5 mm long, 5 mm wide together, the apices obtuse, contracted into slender tails 3 mm long; petals yellow, cellular-glandular, transversely bilobed, 0.75 mm long, 4 mm wide, the lobes subequal, oblong, narrowly obtuse; lip yellow, bilaminar, the laminae glabrous, oblong, 1.8 mm long, the apices rounded, the connectives cuneate, forming a narrow body, connate to the base of the column, the appendix small, oblong, incurved, pubescent; column 1 mm long, the anther apical, the stigma ventral.

Zamora-Chinchipe: epiphytic in elfin forest east of the pass east of Loja, alt. 2,750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10724 (Holotype, MO).

This tiny twig-epiphyte of subparamo, elfin forests is closely related to several other minute, sympatric species, e.g. *L. caudata* Luer & Escobar, *L. floresii* Luer & Hirtz, *L. jimburae* Luer & Hirtz, *L. paradoxa* Luer & Hirtz, and *L. vermicularis*. From all of them *L. synema* is distinguished by the smaller habit; round, abruptly caudate sepals; and flat, oblong blades of the lip with a small, oblong appendix.

Lepanthes tachirensis Foldats, Acta Bot. Venez. 3: 348, 1968.

Fig. 233.

Ety.: Named for the Venezuelan state of Táchira where the species was collected.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 5-35 cm tall, enclosed by 10-18 pale tan, glabrous, lepanthiform sheaths with non-dilated ostia. **Leaf** erect, coriaceous, narrowly ovate-elliptical, acute, 5-9 cm long, 1-2.5 cm wide, the base cuneate into a petiole 3-4 mm long. **Inflorescence** a subcongested, distichous few- to many-flowered raceme up to 30 mm long, borne by a slender peduncle 10-35 mm long, borne behind the leaf; floral bract 1.5-2 mm long; pedicel 1.5-2 mm long; ovary 2-2.5 mm long; **sepals** light yellow, light tan, to white, minutely denticulate, ovate, subacute, slightly acuminate, the dorsal sepal 4.5-5 mm long, 2-3 mm wide, 3-veined, connate to the lateral sepals for 1-0.5 mm, the lateral sepals oblique, diverging 180°, 4.5-5 mm long, 2-3.75 mm wide, 1-veined, connate for 1 mm; petals orange with purple margin, transversely bilobed, 1-1.5 mm long, 3-4.5 mm wide, the upper lobe oblong, subtruncate, with a prominent, fingerlike lobule on the inner, apical angle, overlapping, the lower lobe smaller, triangular; **lip** usually red or purple, bilobed with blades narrowly elliptical for the basal two-thirds, the apical third obtuse without forming a blade, the base narrowly obtuse, 2-2.25 mm long, the connectives short, broadly cuneate, the body broad, connate to the base of the column, the appendix small, ovoid, pubescent in the sinus; **column** 2 mm long, the anther dorsal, elongate, stigma apical.

Carchi: forest between Tulcán and El Camelo, alt. 3200 m, 6 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11074 (MO).

Imbabura: Selva Alegre, alt. 2600 m, Apr. 1984, A. Hirtz 1681 (MO); same area, alt. 2600 m, 29 Sept. 1984, A. Hirtz 1919 (MO).

Pichincha: West Corazón, alt. 3400 m, July 1984, A. Hirtz 1869 (MO).

Morona-Santiago: cloud forest east of the pass between Gualaceo and Limón, alt. 2650 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz et al. 11835 (MO); same area, alt. 2200 m, 8 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12723 (MO); east of the pass east of Sigsig, alt. 2700 m, 15 May 1988, C. Luer, A. Hirtz et al. 13357 (MO).

Loja: along new road north of Loja, alt. 2700 m, 2 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12594 (MO).

Zamora-Chinchipe: cloud forest east of the pass between Loja and Zamora, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10710 (MO); same area, alt. 2650 m, 20 Feb. 1986, C. Luer, J. Luer, A. Hirtz et al. 11966 (MO); same area, alt. 2400 m, 19 Jan. 1986, S. Dalström & T. Höijer 1075 (MO); south of Yangana above Valladolid, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10823 (MO).

Also Venezuela (Táchira: type) and Colombia (Norte de Santander, Antioquia, Chocó, Quindío, Nariño).

This species is frequent and widely distributed at high altitudes through the Andes from Venezuela to southernmost Ecuador. Beyond a doubt it also occurs in adjacent Peru. The ramicauls are tall and clad in pale, glabrous, non-dilated sheaths. The inflorescence bears colorful flowers in a subdense raceme that may equal the slender leaf in length. The sepals are acute and minutely denticulate with the laterals spreading in opposite directions. The characteristic petals are provided with a fingerlike lobule on the upper inner margin of the upper lobe, which overlap in the natural position. The blades of the lip are narrow with the acute apices devoid of the blade.

Lepanthes teaguei Luer, sp. nov.

Fig. 234.

Ety.: Named in honor of the discoverer, Walter Teague of San Francisco, California.

Planta grandis, racemo congesto folio ovato acuminato brevior, sepalis intus glandulosis, laterali-bus trinervis, petalis transverse bilobis lobis anguste obtusis, labelli laminis ovatis, appendice protuberanti glandulosa.

Plant medium to large, epiphytic, caespitose; roots coarse. Ramicauls erect, slender, 8-23 cm long, enclosed by 9-16 closely fitting, glabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-ovate, acute to subacute, 5-11 cm long, 2-4 cm wide, the base rounded, contracted into a petiole 3-9 mm long.

Inflorescence a congested, distichous, successively many-flowered raceme up to 3 cm long, borne by a slender peduncle 3-5 cm long; floral bracts 1 mm long; pedicels 1-1.5 mm long; ovary 3 mm long; **sepals** red, minutely ciliate, carinate, glandular-pubescent within, the dorsal sepal ovate-triangular, acute, 7.5 mm long, 5.5 mm wide, 3-veined, connate to the lateral sepals for 2 mm, the lateral sepals concave, oblique, broadly ovate, obtuse, subapiculate, 7 mm long, 5 mm wide, 3-veined, connate 3 mm; **petals** red-orange, minutely pubescent, transversely bilobed, 1.5 mm long, 4.5 mm wide, 3-veined, the upper lobe oblong, obtuse, the lower lobe narrowly triangular, obtuse; **lip** yellow with red margins, minutely pubescent, bilaminar, the blades ovate with the ends rounded, 1.5 mm long, the connectives and body broad, connate to the base of the column, the sinus obtuse with a protruding, pubescent appendix with an apical gland; **column** stout, 1.5 mm long, the anther dorsal and the stigma ventral.

Zamora-Chinchipe: Cordillera del Condor, east of Los Encuentros, wet forest, alt. 1650 m, 21 June 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14038 (Holotype: MO).

This handsome species was first discovered by Walter Teague in the company of A. Hirtz and C. Luer, but not one satisfactory flower could be found. The exact locality was successfully revisited the following year to find better material. *Lepanthes teaguei* is distinguished by the large habit with large, red flowers produced in a congested raceme behind the leaf. The sepals are shortly pubescent within with the laterals broad, obtuse and concave.

***Lepanthes tectorum* Luer & Hirtz, Lindleyana 2: 147, 1987.**

Fig. 235.

Ety.: From the Latin *tectorum*, "of roofs," referring to the pair of blades of the lip over the column.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 7-17 cm long, enclosed by 8-10 tightly fitting, lepanthiform sheaths, glabrous except for microscopically scabrous margins of long-acuminate ostia. **Leaf** erect, thinly coriaceous, suffused with purple beneath, elliptical-ovate, acute-acuminate, 4.6-6 cm long, 1.5-2 cm wide, the base broadly cuneate or rounded, contracted into a petiole 3 mm long. **Inflorescence** a very congested, secund, successively many-flowered raceme up to 10 mm long, borne beneath the leaf by a filiform peduncle 2-4 cm long; floral bract 1.5 mm long; pedicel 3.5-4 mm long; ovary 2 mm long, costate; **sepals** pale yellow, broadly ovate, subacute, denticulate, low-carinate, the dorsal sepal 4 mm long, 3.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, shortly acuminate, 4 mm long, 2.5 mm wide, connate 1.25 mm, petals yellow-brown, minutely pubescent, transversely bilobed, 1.75 mm long, 4.5 mm wide, the upper lobe oblong, oblique, obtuse, the lower lobe oblong-triangular, obtuse; **lip** bilaminar, purple, the laminae thin, broadly ovate with rounded ends, adherent medially, minutely pubescent, 1.5 mm long, held above the column by narrowly oblong connectives, the body thick, bilobulate, pubescent, connate to the base of the column, the sinus cleftlike between the rounded halves of the body, with a pubescent appendix, longitudinally tripartite, protruding from the cleftlike sinus; **column** 2 mm long, the anther dorsal, the stigma subapical.

Napo: epiphytic in cloud forest near Cotundo, alt. 1000 m, July 1984, A. Hirtz 1860 (Holotype: MO), C. Luer illustr. 10459.

This species, from the eastern declivity of the Andes, is very similar to *L. grypha* from an altitude 1000 meters higher on the western slopes. The former is distinguished by the more oblong leaves instead of narrowly ovate, shortly pubescent petals instead of long-pubescent, broader blades of the lip, a tripartite appendix instead of oblong with an apical glandule, and a thicker column with a subapical stigma instead of a completely flat, ventral anther. In both species the blades of the lip are thin and adherent in a suborbicular plane held above the column by pillar-like connectives.

Lepanthes tectorum is also closely allied to *L. reventador*, also from the western declivities of the Andes. The flowers of the former are long-pedicellate and borne behind the leaf, while those of the latter are short-pedicellate and borne on top of the leaf, and the appendix is a minute filament.

Lepanthes tentaculata Luer & Hirtz, sp. nov.

Fig. 236.

Ety.: From the Latin *tentaculatus*, "with feelers," referring to the filamentous tails of the petals.

Species haec *L. calodictyonis* Hook. affinis, sed petalis breviter ciliatis, et labello minuto glabro cordato differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 1.5-4 cm long, enclosed by 7-9 shortly pubescent, lepanthiform sheaths. **Leaf** spreading, thinly coriaceous, green with brownish or purplish reticulation, suborbicular, 18-25 mm long, 16-25 mm wide, the margins undulate, the apex rounded, the base broadly cordate. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 3 mm long, borne on top of the leaf by a filiform peduncle 5-8 mm long; floral bracts 1 mm long, echinate; pedicels 2 mm long; ovary 2.5 mm long; **sepals** yellow to yellow-orange, reflexed, obovate, obtuse, carinate, with the margins sparsely ciliate, the dorsal sepal 3.3 mm long, 2.25 mm wide, free from the lateral sepals, the lateral sepals 3.3 mm long, 1.5 mm wide, connate 0.3 mm, 2-veined; **petals** red-orange, minutely pubescent, shortly ciliate, transversely bilobed, 1 mm long, 4.5 mm wide, the upper lobe ovate, oblique, with obtuse apex contracted into a slender tail, the lower lobe similar, the obtuse apex abruptly contracted into a filamentous tail 2 mm long; **lip** red to purple, glabrous, transversely cordate, obtuse, 0.5 mm long, 0.7 mm wide, connate to the column above the middle; **column** 1.5 mm long, the anther apical, the stigma subapical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12387 (Holotype: MO); same data, various colors, C. Luer et al. 12375, 12425, 12367 (MO).

This species is extremely similar to *L. calodictyon*, with which it grows intermixed along with two other very closely allied species. In spite of its similarity to the other species, *L. tentaculata* is easily recognized, it being the most frequent of the clan in the area where it grows. The suborbicular, reticulated leaves; the long, filiform processes of the petals; and the tiny, heart-shaped lip beneath the middle of the column immediately distinguish it.

Lepanthes teres Luer, *Phytologia* 54: 373, 1983.

Fig. 237.

Ety.: From the Latin *teres*, "cylindrical, round in cross section," in reference to the leaf.

Plant small, epiphytic, caespitose; roots very slender. Ramicauls slender, erect, 2-4 cm long, enclosed by 4-5 close, lepanthiform sheaths, microscopically scabrous along the ribs and margins of the ostia. **Leaf** red-purple, erect, fleshy, narrowly ovoid, terete, 25-35 mm long, 3-5.5 mm wide and deep, shallowly sulcate, gradually narrowed from above the base to the acute apex, the base cuneate into the 1.5 mm long petiole. **Inflorescence** an extremely congested, distichous, successively flowered raceme up to 8 mm long, borne by a filiform peduncle up to 5 mm long along the undersurface of the leaf; floral bract 0.5 mm long; pedicel 0.5 mm long; ovary 1.3 mm long; **sepals** yellow-white with bright red margins, the dorsal sepal oblong, acute, glabrous, 2.8 mm long, 1.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, obtuse, coarsely ciliate, 2.5 mm long, 1.25 mm wide, connate for 0.5 mm; **petals** large, light yellow with red margins, transversely bilobed, dolabriform, 1.3 mm long, 3.66 mm wide, the margin acutely angled at the midvein below the middle, the upper lobe oblong with the apex rounded, the lower lobe considerably smaller, narrowly triangular, obtuse; **lip** yellow with red margins, bilaminar, the blades oblong, 2 mm long, the apex rounded, ciliate, the base rounded, the connectives short, cuneate, the body broad, connate to the base of the column, the appendix a subspherical, bilobed body accommodated in a cavity in the sinus; **column** 1 mm long, the anther dorsal, the stigma ventral.

Loja: epiphytic in cloud forest south of Yangana, alt. 2250 m, 11 May 1981, C. Luer, J. Luer & D. D'Alessandro 6144 (Holotype: SEL); same area, alt 2400 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10876 (MO).

This distinctive, little species is known from only one locality in southern Ecuador. It is easily distinguished by the ovoid-terete leaves and short, congested inflorescences. The lateral sepals are fringed; the dorsal sepal is entire. The upper

lobe of the petals is proportionately very large; the lower lobe is narrow. The apices of the blades of the lip are ciliate; the appendix is bilobed and fitted into a receptacle in the body.

Lepanthes terpsichore Luer & Hirtz, sp. nov.

Fig. 238.

Ety.: Named for *Terpsichore*, Greek mythological Muse of music and dancing.

Planta mediocris caespitosa, inflorescentia racemosa congesta secunda foliis patentibus sulcatis insidenti, sepalis ovatis acuminatis denticulatis, petalis transverse lobatis, lobo superiore oblongo obtuso, lobo inferiore anguste triangulari, labelli laminis glabris anguste oblongis, connectivis brevibus anguste cuneatis, appendice triangulari cum lobulis duobus minutis basalibus.

Plant medium in size, epiphytic, caespitose; roots numerous, slender. Ramicauls suberect, slender, 3-11 cm long, enclosed by 8-11 lepanthiform sheaths with markedly dilated, minutely ciliated ostia. **Leaf** spreading, suffused with purple, thickly coriaceous, elliptical-ovate, acute, 3.5-6.5 cm long, 1.3-1.6 cm wide expanded, sulcate medially with both halves convex, the base cuneate into a petiole 1 mm long. **Inflorescence** a congested, secund, successively many-flowered raceme up to 25 mm long, borne by a slender peduncle 15-25 mm long, lying in the sulcus on top of the leaf; floral bracts 1.5 mm long; pedicels 2-2.5 mm long; ovary 3 mm long; **sepals** translucent light green, suffused with light brown, minutely denticulate, the dorsal sepal broadly ovate, obtuse, shortly acute-acuminate, 6 mm long, 4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, 7 mm long, 2.5 mm wide, connate 1.5 mm, the apices acute, acuminate, in apposition; **petals** green, suffused with brown on the inner third, microscopically pubescent, transversely bilobed, 1 mm long, 5 mm wide, the upper lobe oblong, oblique, obtuse, the lower lobe narrowly triangular, acute; **lip** shiny greenish brown, glabrous, bilaminar, the laminae narrowly oblong, slightly concave, 3 mm long, the apices incurved, the connectives narrowly cuneate, the body narrow, connate to the base of the column, the appendix in the sinus, small, triangular, with a pair of minute, pubescent lobules at the base; **column** 2.5 mm long, the anther apical, the stigma ventral.

El Oro: epiphytic in forest remnant west of Pacha, alt. 1850 m, 23 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13615 (Holotype: MO); between Zaruma and Buena Vista, alt. 2400 m, 1989, A. Hirtz & X. Hirtz 4217 (MO).

This species is similar in habit to *L. manabina* and its relatives with the thick, heavy, dark green, more or less pendent leaves. The leaves are sulcate centrally wherein lies the raceme with its flower. The denticulate sepals are acuminate, the upper lobes of the petals are oblong, the lower lobes triangular, and the blades of the lip are narrowly oblong with incurved apices. Two minute, pubescent nodules are at the base of the tiny, triangular appendix.

Lepanthes thalia Luer & Hirtz, sp. nov.

Fig. 239.

Ety.: Named for *Thalia*, the Greek mythological Muse of comedy.

Planta mediocris debilis caespitosa, inflorescentia racemosa congestissima longipedicellata folio ovato tenui brevior, sepalis ovatis obtusis, petalis transverse lobatis brevipubescenti cum apiculo acuto marginali, lobis angustissime oblique triangularibus acutis, lobo superiore majore, labelli laminis obovatis adherentibus, appendice grandi oblonga concava cum glandula terminali.

Plant medium in size, weak, epiphytic, caespitose; roots numerous, capillary. Ramicauls erect, slender, 6-10 cm long, enclosed by 10-12 microscopically ciliate, lepanthiform sheaths. **Leaf** suberect to spreading, thinly coriaceous, reticulated, suffused with purple beneath, ovate, acute, 3-4.5 cm long, 1.5-2.5 cm wide, the base broadly cuneate into a petiole 0.5 mm long. **Inflorescence** a very congested, successively many-flowered raceme up to 5 mm long, borne on top of the leaf by a filiform peduncle 10-25 mm long; floral bracts 1-1.5 mm long, minutely echinate; pedicels 3.5-4 mm long; ovary 1 mm long; **sepals** light brown, entire, the dorsal sepal broadly ovate, obtuse, 3 mm long, 2.25 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblong-ovate, oblique, obtuse, 3.25 mm long, connate 2 mm, 2.5 mm wide together; **petals** purple, shortly pubescent, transversely bilobed, 0.5 mm long, 3.5 mm

wide, with an acute apiculum on the outer margin, the lobes narrowly triangular, oblique, acute, the upper lobe larger; **lip** purple, bilaminate, the blades obovate, thin, adherent over the column, obovate, 1.4 mm long, the apices rounded, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse, filled with a comparatively large, oblong, concave, pubescent appendix with an apical, ovoid, lobule; **column** 1 mm long, the anther dorsal, the stigma subapical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 800 m, 13 Aug. 1986, A. Hirtz 2966 (Holotype: MO), C. Luer illustr. 13774.

This species is another of the many relatives of *L. mucronata* Lindley. It is characterized by thin, reticulate leaves, weakly borne by slender ramicauls. The flowers are borne on top of the leaf in a dense, long-pedicellate raceme; the sepals are entire and obtuse; the lateral lobules of the petals are reduced to apicula; the lobes of the petals are narrowly pointed; the thin blades of the lip are adherent over the column; and the appendix is large, oblong, and protruding beyond the column.

Lepanthes thylax Luer & Hirtz, *Lindleyana* 2: 45, 1987.

Fig. 240.

Ety.: From the Greek *thylax*, "a sack, or a pouch," referring to the appendix.

Syn.: *Lepanthes nambijae* Luer & Hirtz, *Lindleyana* 2: 138, 1987.

Ety.: Named for the community of Nambija where the species was collected.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 15-40 mm long, enclosed by 6-9 minutely ciliate lepanthiform sheaths. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, margined, subacute to obtuse, 10-14 mm long, 7-11 mm wide, the rounded base contracted into a 1 mm long petiole. **Inflorescence** a congested, successively few-flowered raceme 2-5 mm long, borne behind the leaf by a filiform peduncle 2-5 mm long; floral bract 0.8-1.25 mm long; pedicel 0.6-1.5 mm long; ovary 1 mm long; **sepals** translucent yellow, glabrous, narrowly ovate, acuminate, acute, the lateral dorsal sepal 4.5-5 mm long, 1.5-2 mm wide, connate to the lateral sepals for ca. 0.3 mm, the lateral sepals 5 mm long, 1.5 mm wide, connate 0.5 mm; **petals** yellow-orange, suffused with red basally, microscopically pubescent, transversely bilobed, subfalcate, 0.75-1 mm long, 2.6-4 mm wide, the upper lobe falcate-oblong, narrowly obtuse, the lower lobe shorter, triangular, narrowly obtuse; **lip** red or yellow-orange suffused with red at the base, bilaminate, the laminae microscopically pubescent, oblong with rounded ends, 1-1.5 mm long, the apices ciliate, the connectives cuneate, the body narrow, connate to the base of the column, the sinus obtuse, the appendix external, oblong, saclike, membranous, pubescent; **column** slender, clavate, 1 mm long, the anther dorsal, the stigma ventral.

Napo: epiphytic in wet forest around the Bermejo oil fields, alt. 850 m, 9 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11744 (MO).

Zamora-Chinchipe: epiphytic in trees along Rio Zamora west of Zamora, alt. 900 m, 20 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11950 (Holotype: MO); along Rio Jamboe south of Zamora, alt. 1250 m, 22 Jan. 1992, C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16117 (MO); same area, alt. 1400 m, 24 Jan. 1992, C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16146 (MO); Cordillera del Condor, near Nambija, alt. 1200 m, Feb. 1985, A. Hirtz 2217 (type of *L. nambijae*: MO); C. Luer illustr. 11510; Cordillera del Condor, epiphytic in forest east of Los Encuentros, alt. 1550 m, 18 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13455, 13456 (MO); same area, alt. 1500 m, 21 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14030, 14031 (MO).

This small species is identified by the ovate leaves, each bearing on the purple undersurface one or two colorful flowers nearly as large as the leaf itself. The sepals are long-acuminate, the petals are falcate, and the blades of the lip are oblong. The appendix is a minute, membranous, pubescent, oblong, saclike structure attached to the external surface of the body of the lip, the opening to the sac protruding forward below the sinus, but still a considerable distance beyond the stigma.

Lepanthes titanica Luer & Hirtz, *Lindleyana* 2: 147, 1987.

Fig. 241.

Ety.: Named for the mythological giant *Titan* and for the ocean liner *Titanic* that was sunk in 1912, the remains of which have recently been discovered.

Plant large, robust, epiphytic, caespitose; roots coarse. Ramicauls erect, stout, 20-43 cm long, enclosed by 11-16 microscopically ciliate-scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, oblong, subacute, acuminate, 9-12 cm long, 4-5.5 cm wide, the base cuneate into a petiole ca. 1 cm long. **Inflorescence** a distichous, successively many-flowered raceme up to 4 cm long, loosely flowered near the base, densely flowered above the base, two flowers frequently open simultaneously, borne behind the leaf by relatively stout peduncle 3-4 mm long; floral bracts 4 mm long; pedicels 3 mm long; ovary 3 mm long; **sepals** translucent yellow-green, ovate, acute, acuminate, entire, the dorsal sepal 7.5 mm long, 5.25 mm wide, the apex reflexed, connate to the lateral sepals for 2 mm, the lateral sepals oblique, 8.5 mm long, 3.5 mm wide, connate 2 mm; **petals** yellow with purple margins, microscopically pubescent, transversely bilobed, 1.75 mm long, 3.5 mm wide, the upper lobe obliquely ovate, obtuse, the lower lobe smaller, triangular; **lip** rose, bilaminate, the blades oblong, with the ends rounded, glabrous except for shortly ciliate apices, 2.25 mm long, the connectives cuneate, forming a broad, thick body, connate to the base of the column, the sinus obtuse with a small, ovoid, pubescent appendix; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Boliviar: epiphytic in cloud forest near Fecundo Vela, alt. 2800 m, 24 Mar. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höjler & J. Kuijt 9690 (Holotype MO).

Vegetatively this species is one of the largest, the stout, multisheathed ramicauls reaching nearly half a meter in length, the total height with the large leaves well exceeding half a meter. The flowers, only medium in size and not particularly remarkable, are spaced distantly at the base of the raceme, but the far majority of the flowers are congested in the raceme. The sepals are broad and shortly acuminate; the petals are bilobed with the lower lobes small and triangular; and the oblong blades of the lip are supported by short, broadly cuneate connectives.

Lepanthes tortilis Luer & Hirtz, sp. nov.

Fig. 242.

Ety.: From the Latin *tortilis*, "twisted," referring to the narrowly long-attenuate apex of the leaves.

Planta parva debilis caespitosa, inflorescentia racemosa congesta folio suborbiculato brevior, folium apice anguste longi-attenuato tortili, sepalis ovatis, petalis transverse lobatis, lobo superiore oblique ovato brevipubescenti, lobo inferiore oblique triangulari longiciliato longipubescenti apice angusto recurvo, labelli laminis ellipticis ciliatis connectivis cuneatis, appendice ovoidea concava longipubescenti. pubescenti.

Plant small, weak, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, very slender, 4-10 cm long, enclosed by 7-12 closely fitting, glabrous lepanthiform sheaths, the ostia microscopically scabrous. **Leaf** spreading, thinly coriaceous, suborbicular, the obtuse apex contracted into a slender, 1 mm wide, attenuated, twisted segment, the total length 25-37 mm, 10-15 mm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 4 mm long, borne on top of the leaf by a filiform peduncle 2-8 mm long; floral bracts 1 mm long, lightly echinate; pedicels 1.5 mm long; ovary 1 mm long; **sepals** dull yellow, entire, the dorsal sepal broadly ovate, obtuse, 2.5 mm long, 2.25 mm wide, connate to the lateral sepals for 0.25 mm, the lateral sepals ovate, oblique, acute, 2.2 mm long, 1.1 mm wide, connate 1 mm; **petals** transversely bilobed, 1 mm long, 3.5 mm wide, the upper lobe dark yellow, ovate, narrowly obtuse, short-pubescent, ciliate, the lower lobe red-orange, obliquely triangular, long-pubescent, the apex acuminate, acute, recurved; **lip** red, ciliate, microscopically pubescent, bilaminate, the blades elliptical with acute ends, 1.25 mm long, the connectives cuneate, forming a narrow body, connate to the base of the column, the margins of the sinus obtusely angled, long-ciliate, the appendix oblong, concave, pubescent, with a small, apical segment, with a tuft of hairs below the appendix on the external surface of the body; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Imbabura: epiphytic in cloud forest south of Lita between Santa Rosa and Cachabi, alt. 1250 m, 19 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12445 (Holotype: MO; Isotype: RPSC); southeast of Lita on road to Santa Rosa de Cachaeco, alt. 1300 m, 19 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15177 (MO).

This frail, little species is characterized by very thin, threadlike ramicauls; spreading, orbicular leaves with a long, narrow, twisted apical segment; pubescent petals with uncinat apices of the lower lobes; and a bilaminate lip with an ovoid, concave, long-pubescent appendix.

Lepanthes tracheia Rchb.f., *Flora* 69: 557, 1886.

Fig. 243.

Ety.: From the Greek *tracheia*, "the trachea," possibly alluding to the lepanthiform-sheathed ramicaul.

Syn.: *Lepanthes caucana* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 27: 159, 1924.

Ety.: Named for the department of Cauca where the species was collected.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-7 cm long, enclosed by 8-12 minutely ciliate, lepanthiform sheaths. **Leaf** erect, rigidly coriaceous, suffused with purple, broadly ovate to suborbicular, obtuse, slightly convex, base rounded to cordate, contracted into a petiole 1-2 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 10 mm long, borne behind the leaf by a filiform peduncle 8-12 mm long; floral bracts muricate, 1 mm long; pedicels 0.75 mm long; ovary 1 mm long; **sepals** yellow, orange to dull red, denticulate, the dorsal sepal broadly ovate, obtuse, 3 mm long, 2.3 mm wide, 3-veined, connate to the lateral sepals for 0.75 mm, the lateral sepals broadly ovate, oblique, subacute, 2.6 mm long, 3 mm wide, 2-veined, connate 0.5-1 mm; **petals** red-orange, or orange with red border, microscopically pubescent, transversely bilobed, 1 mm long, 3.75 mm wide, the upper lobe oblong-falcate with the acute apex everted, the lower lobe red-orange, oblong-triangular, obtuse; **lip** red-orange to purple, microscopically pubescent, bilaminate, the blades elliptical, concave, with narrowly rounded ends, 1.75 mm long, the connectives cuneate, forming a narrow body, connate to the column above the base, the sinus filled with a large, oblong, 1 mm long, pubescent appendix with a terminal, pubescent segment; **column** stout, 2 mm long, the anther dorsal, the stigma ventral.

Sucumbios: between La Bonita and Rosa Florida, alt. 1400 m, 14 Mar. 1996, *S. Dalström, S. Ingram & K. Ferrell-Ingram 2143* (MO).

Carchi: forest east of Maldonado, alt. 1700 m, 17 Mar. 1991, *C. Luer, J. Luer, J. Del Hierro, A. Hirtz & X. Hirtz 15134* (MO).

Napo: El Chaco, alt. 1400 m, Apr. 1984, *A. Hirtz 1691* (MO); new road to Coca north of Archidona, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11239* (MO).

Morona-Santiago: Cordillera del Condor, east of Guismé, alt. 1500 m, 18 Feb. 1986, *C. Luer, J. Luer, A. Hirtz & W. Flores 11900* (MO).

Zamora-Chinchipe: along Río Zamora west of Zamora, alt. 1500 m, 3 Nov. 1982, *C. Luer, J. Luer & A. Hirtz 8270* (SEL); same area, alt. 1500 m, 20 Feb. 1986, *C. Luer, J. Luer, A. Hirtz & W. Flores 11959* (MO); Quebrada Honda, collected by D. D'Alessandro, flowered at Predesur in Vilcabamba, 26 Mar. 1985, *C. Luer 10956* (MO).

Also Venezuela (Táchira), Colombia (Cauca: type) and Peru.

This species is widely distributed in the Andes from Venezuela into Peru, but encountered only occasionally. It is characterized by the small, rigid, purplish, broadly ovate, obtuse leaf subcordate at the base and slightly convex with a congested raceme of colorful flowers borne beneath. The sepals are coarsely denticulate. The upper lobes of the petals are uncinatate with the apices pointed outward. The blades of the lip are ovate and concave, and the appendix is large, pubescent and oblong with a terminal gland.

Lepanthes transparens Luer, *Phytologia* 54: 374, 1983.

Fig. 244.

Ety.: From the Latin *transparens*, "transparent," referring to the thin, membranous blades of the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls suberect, slender, 5-12 cm long, enclosed by 9-11 close, ciliate lepanthiform sheaths with markedly dilated ostia. **Leaf** suberect, thinly coriaceous, reticulate, ovate, acuminate, acute, 3.5-5 cm long, 1.8-2.5 cm wide, the rounded base abruptly contracted into a petiole 2-3 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 5 mm long, borne by a filiform peduncle up to 12 mm long along the back of the leaf; floral bract 1.5 mm long; pedicel 1 mm long; ovary 2.5 mm long; **sepals** light greenish tan, carinate, denticulate-serrulate, the dorsal sepal triangular, 6 mm long, 4.5 mm wide, connate to the lateral sepals for 1.5 mm, the acute apex shortly acuminate, the lateral sepals connate 2 mm into an ovate, acute, bifid lamina, 5.75 mm long, 4.75 mm wide, the shortly acuminate apices approximate; **petals** yellow, suffused with purple, microscopically pubescent, transversely oblong, 1.2 mm long, 4.25 mm wide, the upper lobe oblong, truncate, the lower lobe smaller, narrowly falcate, acute; **lip** brown, bilaminate, the blades lunate, thin, membranous, transparent, minutely ciliate, 2 mm long, 0.75 mm wide, the connectives

lives narrow, erect, elevating the blades over the column, the body more or less rounded, with a slender, basal claw parallel to the column and connate at the base, the appendix oblong, shortly pubescent, associated with an appendage from the stigma; column slender, clavate, 2 mm long, the anther dorsal, the stigma ventral.

Carchi: epiphytic in cloud forest above El Carmelo, alt. 3200 m, 17 May 1981, *C. Luer, J. Luer & A. Hirtz 6260* (Holotype: SEL); same area, alt. 3200 m, 6 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11084* (MO); above La Esperanza between El Carmelo and Tulcán, alt. 3200-3450 m, 9 Apr. 1979, *B. Lojani, U. Molau & M. Madison 12057* (AAU).

Pastaza: epiphytic along Río Pastaza east of Río Negro, alt. 1150 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11189* (MO).
Also Colombia (Cauca).

This species, found occasionally on the eastern slopes of the Andes from southern Colombia and northern Ecuador, is similar to the frequent *L. contingens* found in southern Ecuador and much of Ecuador. The two concepts are very similar and might be merely two variations of one species, but the lips are either notched or entire without intermediates being seen. *Lepanthes transparens* is distinguished by the entire, lunate blades of the lip instead of narrowly oblong and strongly angled on the inner margins below the apex.

***Lepanthes trimerinx* Luer, Phytologia 54: 374, 1983.**

Fig. 245.

Ety.: From the Greek *tri-* "three-," and *merinx*, "a bristle," referring to the three slender tails of the flower.

Plant minute, epiphytic, caespitose; roots proportionately fleshy. Ramicauls 1-2 mm long, enclosed by 2 imbricating sheaths with sparsely ciliate ribs and margins. Leaf erect, coriaceous, elliptical, obtuse, 6-8 mm long, 4 mm wide, the base cuneate into a petiole 1 mm long. Inflorescence a congested, few-flowered raceme borne by a filiform peduncle up to 10 mm long; floral bract 0.5 mm long; pedicel 2 mm long; ovary 0.75 mm long, ribbed; sepals yellow, ovate, 2 mm long, 1.5 mm wide, connate basally, the margins serrulate-ciliate, the acute apices contracted into slender tails, 1.5-5 mm long; petals yellow, suffused with red, minutely pubescent, transversely bilobed, 0.5 mm long, 1.75 mm wide, the upper lobe narrowly triangular, obtuse, the lower lobes smaller, triangular, acute; lip red with yellow margins, minutely pubescent, 4-lobed, ("H-shaped"), 1.5 mm long, 1.5 mm wide, the halves transversely oblong or bilobed with rounded anterior and posterior lobes, the posterior lobes embracing the column, the base between them connate to the undersurface of the column near the middle, with a minute apiculum in the sinus between the anterior lobes; column 0.75 mm long, the anther and stigma apical.

Pastaza: epiphytic in trees along the Río Pastaza between Baños and Puyo, alt. ca. 1500 m, collected March 1976, flowered in cultivation 12 July 1976, *C. Luer 1019* (Holotype: SEL).

This tiny species is rare, not having been seen since July 1976 when it flowered in cultivation from a single collection made the previous March in the province of Pastaza, Ecuador. *Lepanthes trimerinx* is distinguished by the abbreviated ramicauls; a few-flowered raceme longer than the minute leaf; long-tailed, fringed sepals; and an "H-shaped" lip without blades.

***Lepanthes tungurahuae* Luer & Hirtz, Lindleyana 2: 151, 1987.**

Fig. 246.

Ety.: Named for Volcán Tungurahua, where this species was discovered.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 7-14 cm long, enclosed by 9-14 blackish, coarsely ciliate, lepanthiform sheaths. Leaf erect, coriaceous, elliptical, subacute, acuminate, 5-6 cm long, 2.5-2.8 cm wide, the rounded or broadly cuneate base contracted into the petiole 4-5 mm long. Inflorescence a dense, distichous, successively many-flowered raceme up to 25 mm long, borne behind the leaf by a filiform peduncle 15-20 mm long; floral bract 1.5-2 mm long; pedicel 1-1.5 mm long; ovary 1 mm long; sepals yellow, ovate, with the margins cellular, carinate, the dorsal sepal triangular, acute, 5.5 mm long, 3.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, shortly acuminate, 5.5 mm long, 2.25 mm wide, connate 2.5 mm;

petals yellow-orange, suffused with red basally, microscopically pubescent, transversely bilobed, 0.8 mm long, 3 mm wide, the upper lobe triangular, acute, long-acuminate, the lower lobe very short, transversely triangular, oblique, obtuse; **lip** purple, bilaminate, the blades narrowly oblong-ovate, 1.6 mm long, microscopically pubescent, the apex narrowly obtuse, the base rounded, the connectives short, broad, the body broad, connate to the base of the column, the sinus obtuse with the appendix small, oblong, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Tungurahua: epiphytic in cloud forest on the slopes of Volcán Tungurahua, alt. 3000 m, 11 Nov. 1984, A. Hirtz 2090 (Holotype: MO), C. Luer illustr. 11512.

This species occurs at altitudes over 3000 meters above sea level in central Ecuador where it is probably endemic. It is distinguished by the dark, coarsely pubescent, lepanthiform sheaths, and a congested, distichous raceme with a medium sized yellow flower; acute sepals with the laterals deeply connate; petals with a long-pointed, upper lobe and a very short, oblique, broad lower lobe. The appendix is short, oblong and pubescent.

Lepanthes unijuga Luer & Dalström, sp. nov.

Fig. 247.

Ety.: From the Latin *unijugus*, "with a pair of leaflets," referring to the bilobed leaf.

Planta parva debilis, foliis bilobatis basi cordatis obovatis et apice cordatis abrupte longi-acuminatis, lobis suborbicularibus, racemo congesto folio brevioribus, sepalis ovatis ciliatis pubescentibus, petalis transverse bilobis, labelli laminis ovoideis apice anguste obtusis ciliatis, appendice bipartita intricata ciliata. marginibus interioribus cum velo diaphano supra columnam.

Plant small to medium size, epiphytic, caespitose, roots slender. Ramicauls very slender, weak, suberect, 5-10 cm long, enclosed by 8-14 microscopically scabrous, lepanthiform sheaths. **Leaf** spreading or horizontal, thinly coriaceous, bilobed, cordate at the base, cordate at the apex, abruptly contracted into a slender, linear apical segment 20-25 mm long, the lobes suborbicular, 10-12 mm long, 18-21 mm wide across the two lobes, the abruptly acuminate base terminating in a petiole 1 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme, up to 5 mm long, borne on top of the attenuated segment of the leaf by a slender peduncle 15-20 mm long; floral bracts 1 mm long; pedicels 1 mm long; ovary 1.25 mm long; **sepals** tan, ciliate, shortly pubescent, the dorsal sepal ovate, acute, 3 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, acute, 3 mm long, 2.5 mm wide, 2-veined, connate 1.2 mm; **petals** purple, minutely pubescent, transversely bilobed, 0.9 mm long, 3.5 mm wide, the lobes unequal, the upper lobe trapeziform with the apex obliquely truncate, the upper-outer angle being acuminate, the lower lobe narrowly oblong; **lip** purple, bilaminate, the blades glabrous, ovoid, with the apices narrowly obtuse, ciliate, 1.2 mm long, the connectives broadly cuneate, forming a narrow body, connate to the base of the column, the sinus acute, with a complicated, bipartite appendix with brush-like segments; column 1 mm long, the anther and stigma apical.

Imbabura: epiphytic wet forest, Los Cedros Reserve, alt. 2,100 m, 26 Jan. 1993, S. Dalström, T. Höjjer & H. Wanntorp 1798 (holotype, MO).

The leaves of this species are unique in the Pleurothallidinae. Like a two-leaved clover, the thin blade is produced into a pair of rounded lobes above the cordate base. From incurved margins the apex is abruptly contracted into a very slender segment considerably longer than the basal lobes. As in other leaves of *Lepanthes*, the tip of the apex is three-pronged. The ramicauls are very slender.

The congested raceme is borne on top of the leaf by a peduncle longer than the basal lobes so that the flower is borne about midway along the narrow, apical segment. The sepals are ovate, ciliate and pubescent; the petals are transversely bilobed; and the blades of the lip are ovoid. The appendix is unusually intricately sculpted with two brush-like segments.

Lepanthes urania Luer & Hirtz, sp. nov.

Fig. 248.

Ety.: Named for *Urania*, Greek mythological Muse of astronomy, suggested by the rounded, moon-like flowers.

Planta grandis caespitosa, inflorescentia racemosa congesta foliis obovatis acuminatis brevioribus, sepalis late ovatis obtusis, petalis transverse lobis, lobis oblongis subaequalibus cum superioribus supra columnam superpositis, labelli laminis indistinctis connectivis latis, sinu anguste inciso appendice pubescenti.

Plant medium to large, epiphytic, caespitose; roots numerous, slender. Ramicauls erect, stout, 5-18 cm long, enclosed by 10-15 minutely ciliate, lepanthiform sheaths. Leaf erect, thickly coriaceous, elliptical-obovate, subacute, acuminate, 6-8.5 cm long, 2-3.5 cm wide, more or less lightly convex toward the base, the base cuneate into a petiole 2-3 mm long. Inflorescence a congested, successively many-flowered raceme up to 25 mm long, borne by a slender peduncle 17-22 mm long, borne behind the leaf; floral bracts sparsely ciliate, 2 mm long; pedicels 2-3 mm long; ovary 2 mm long; sepals translucent light yellow, entire, carinate, the dorsal sepal broadly triangular-ovate, obtuse, shortly acute-acuminate, 4 mm long, 4.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, acute, oblique, 4.5 mm long, 2.5 mm wide, connate 1.5 mm; petals orange with red inner margin, microscopically pubescent, transversely oblong with rounded ends, bilobed, 1 mm long, 4 mm wide, the upper lobe slightly larger than the lower lobe, the upper lobes overlapping above the column; lip orange, red medially, minutely ciliate, bilaminate, the laminae indistinctly demarcated, elliptical-oblong with rounded ends, slightly concave, 1.5 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus incised, ciliate, the appendix ovoid, pubescent; column 1 mm long, the anther and stigma apical.

Carchi: east of Lita, epiphytic in forest north of Río Mira, between Guallope and Pasambas, alt. 900 m, 16 Feb. 1996, A. Hirtz & X. Hirtz 6291 (Holotype: MO), C. Luer illustr. 12920.

This species is apparently endemic in lowland western Ecuador. It is characterized by a large habit with obovate, acuminate leaves that are more or less convex basally with the congested inflorescence borne on the concave back side. The sepals are transparent with broad, acute apices. The petals are transversely oblong with the upper ends overlapping above the column. The blades of the lip are indistinctly demarcated, being broad, flattened ends of broad connectives. The body is broad with an incised sinus, and an ovoid, pubescent appendix.

Lepanthes urotepala Rchb.f., *Xenia Orch.* 1: 151, 1856.

Fig. 249.

Ety.: From the Greek *urotepalon*, "a tail-like petal," referring to the long-acuminate upper lobe of the petal.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 7-12 cm long, enclosed by 8-11 microscopically scabrous, lepanthiform sheaths. Leaf erect, thinly coriaceous, elliptical, acute to subacute, acuminate, 5-7 cm long, 1.5-2.5 cm wide, the base cuneate or rounded, contracted into a petiole 1 mm long. Inflorescence a congested, distichous, successively many-flowered raceme, up to 10 mm long, borne on top of the leaf by a filiform peduncle 15-30 mm long; floral bracts 1.5 mm long; pedicels 2 mm long; ovary 1.5 mm long; sepals light yellow, carinate, dorsal sepal ovate-triangular, subacute, 5 mm long, 4 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, obtuse, 4.5 mm long, 2.4 mm wide, 2-veined, connate 2 mm; petals yellow or orange with red at the base, microscopically pubescent, transversely bilobed, 1.25 mm long, 7 mm wide, the lobes opposite, narrowly triangular, acuminate, the upper lobe acuminate, 5 mm long, the lower lobe less than 2 mm long; lip pink, bilaminate, the blades microscopically pubescent, oblong, with the ends narrowly obtuse, 1.8 mm long, the connectives broadly cuneate, the body broad, connate to the base of the column, the sinus obtuse with the appendix oblong, ciliate with a terminal, inflexed segment; column 1.5 mm long, with the anther dorsal and the stigma ventral.

Pichincha: western declivities of Pichincha, near Mindo, alt. 7,000 ft., W. Jameson 45 (Holotype: W); above Tandapi, alt. 2600 m, 8 Apr. 1984, A. Hirtz 1635 (MO).

Imbabura: Selva Alegre, alt. 2600 m, 29 Sept. 1984, A. Hirtz 1915 (MO), C. Luer illustr. 10506.

Pastaza: Río Zuñag, alt. 2300 m, flowered in cultivation in Quito, Mar. 1990, A. Hirtz 4722 (MO), C. Luer illustr. 17838.

This species occurs on both slopes of the Andes of northern and central Ecuador. It is distinguished by a congested raceme borne behind an elliptical, acuminate leaf. The sepals are obtuse, and the most distinctive feature is the long-acuminate upper lobes of the petals that exceed the dorsal sepal. The lower lobes are less than a third as long. The blades of the lip are oblong and the appendix is bisegmented.

Lepanthes wrotepala is similar to *L. papyrophylla*, both having been collected by Jameson and described by Reichenbach. The latter differs with acute, acuminate lateral sepals and narrowly triangular lobes of the petals about equal to each other.

***Lepanthes uxoria* Luer & Hirtz, sp. nov.**

Fig. 250.

Ety.: From the Latin *uxorius*, "of the wife," referring to the discoverer of this species.

Planta parva caespitosa, inflorescentia racemosa congesta foliis patentibus orbiculatis convexis brevioribus, sepalis late ovatis minute denticulatis, petalis transverse lobatis, lobis subaequalibus oblique triangularibus acutis, labelli laminis minute pubescentibus ovatis, connectivis brevibus late cuneatis, appendice pubescenti ciliata saccata.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-2 cm long, enclosed by 3-4 minutely ciliate, lepanthiform sheaths. **Leaf** spreading, suffused with purple beneath, coriaceous, suborbicular, convex, 10-12 mm long, 10-12 mm wide, the rounded base contracted into a petiole 1 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 5 mm long, borne under the leaf by a slender peduncle 4-6 mm long; floral bracts spiculate, 1 mm long; pedicels 1 mm long; ovary 2 mm long; **sepals** yellow, minutely denticulate, the dorsal sepal broadly ovate, obtuse or subacute, the sides more or less recurved, 4 mm long, 3.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, 4 mm long, 2.5 mm wide, connate 1 mm; **petals** orange, microscopically pubescent, transversely bilobed, 1.5 mm long between the lobes, the lobes subequal, obliquely triangular, acute, 2-2.25 mm long; **lip** red, microscopically pubescent, bilaminar, the blades ovate, convex, with narrowly obtuse apices, 1.75 mm long, the connectives short, broadly cuneate, the body narrow, connate to the base of the column, the appendix pubescent, subglobose, deeply saccate, the apex protuberant, tufted-ciliate; **column** 1.5 mm long, the anther apical, the stigma ventral.

Morona-Santiago: Cordillera del Condor, epiphytic in cloud forest east of Guismé, alt. 1500 m, 18 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11907 (Holotype: MO).

Only one plant of this colorful little species was discovered by Jane Luer. Several subsequent searches have failed to produce another. It is easily recognized by the small, round, convex leaves with the flower borne beneath; yellow, minutely denticulate sepals; orange, forked petals; and a lip with a saccate appendix with a ciliated, protruding apex.

***Lepanthes vaginans* Luer & Hirtz, Novon 3: 454, 1933.**

Fig. 251.

Ety.: From the Latin *vaginans*, "sheathing," referring to the column covered by the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-8 cm long, enclosed by 8-11 microscopically scabrous, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, elliptical, narrowly obtuse, 3-3.5 cm long, 1-1.3 mm wide, the base cuneate into a petiole ca. 3 mm long. **Inflorescence** a loose, flexuous, successively several- to many-flowered raceme up to 9 cm long, including the slender peduncle ca. 1 cm long, 2-4 flowers often produced simultaneously; floral bracts 1.25 mm long; pedicel 2-2.5 mm long; ovary 0.75 mm long; **sepals** yellow, suffused with rose medially, carinate, coarsely ciliate, broadly ovate, subacute, lightly acuminate, the dorsal sepal 2-2.5 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm with the sides reflexed, the lateral sepals 2-2.5 mm long, 1.5 mm wide, 1-veined, connate 0.5 mm; **petals** rose, cellular glandular, transversely bilobed, 0.25 mm long, 1.4 mm wide, the upper lobe narrowly oblong, obtuse, the lower lobe similar but much shorter; **lip** rose, bilobed, the lobes obliquely obtuse, 1 mm long, surrounding the column, with cuneate connectives forming a broad body, connate to the base of the column, the sinus narrow with a small, oblong, pubescent appendix; **column** 1 mm long, the anther and the stigma apical.

Carchi: epiphytic in cloud forest east of Maldonado, alt. 2300 m, 17 Mar. 1991, *C. Luer, J. Luer, A. Hirtz, X. Hirtz & J. Del Hierro 15156* (Holotype: MO).

This species has features that seem to ally it with several diverse groups. The loose, flexuous, successively flowered racemes begin flowering while much shorter than the leaf, but continue to flower until much exceeding the leaf. As may as four flowers are often produced simultaneously. The small sepals are coarsely dentate, and the laterals are one-veined. The petals are minute and slender. The lip is bilobed without any development of marginal blades. The lobes are obtuse and sheathe the gynostemium. A rudimentary appendix (or middle lobe) is present in the sinus between the lobes.

***Lepanthes vatrax* Luer, *Phytologia* 54: 376, 1983.**

Fig. 252.

Ety.: From the Latin *vatrax*, "a clubbed foot," in reference to the shape of the appendix.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-4.5 cm long, enclosed by 4-5 close, microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, narrowly ovate, acute, 27-43 mm long, 6-7 mm wide, the base narrowly cuneate into a petiole ca. 3 mm long. **Inflorescence** a subdense, subflexuous, successively flowered raceme up to 10 mm long, borne by a filiform peduncle 12-15 mm long up the back of the leaf; floral bract 1.25 mm long, ciliate; pedicel and ovary each 1 mm long; **sepals** glabrous, the dorsal sepal purple with the apex yellow, ovate, acute, 3 mm long, 2.5 mm wide, connate basally to the lateral sepals for 1 mm, the lateral sepals yellow, ovate, oblique, acute, connate 1.3 mm, 2.5 mm long, 2.5 mm wide together, each 1-veined; **petals** yellow, suffused with purple, transversely oblong-bilobed, 1 mm long, 2.66 mm wide, the upper lobe oblong with the apex rounded, the lower lobe narrower; **lip** orange, bilaminate, the blades ovate, 1.3 mm long with the obtuse ends microscopically ciliate, the connectives short, very broadly cuneate, connate to the base of the column, the appendix a pendent, pedunculated, bilobed gland near the middle of the undersurface of the body; **column** 1 mm long, the anther and stigma apical.

Zamora-Chinchipe: Quebrada Honda, epiphytic in cloud forest, alt. 1100 m, *D. D'Alessandro 120* (Holotype: SEL), *C. Luer* illustr. 9077.

This species is known from only the type-collection. It is distinguished by the narrow leaf with a shorter, subdense, lightly flexuous raceme. The ovate sepals and transverse petals are not remarkable, but characters of the lip are distinctive. The apices of the blades of the lip curve under the column and the appendix, located externally on the body, is pedunculate and bilobed.

***Lepanthes velata* Luer & Hirtz, *Lindleyana* 2: 108, 1987.**

Fig. 253.

Ety.: From the Latin *velatus*, "covered," referring to the petals behind the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 12-18 cm long, enclosed by 11-13 dark brown, minutely ciliate-scabrous, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, narrowly ovate, acute, 5-7.5 cm long, 8-13 mm wide, the base cuneate into a 2 mm long petiole. **Inflorescence** a subcongested, successively several-flowered raceme 10-18 mm long, borne behind the leaf by a filiform peduncle 5-8 mm long; floral bracts 1.5 mm long, carinate, enclosing the pedicel 1 mm long; ovary 2 mm long; **sepals** yellow, suffused with red-brown medially, glabrous, carinate externally, the dorsal sepal triangular, acute, 5 mm long, 4.25 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, acute, connate 2.5 mm, 5 mm long, 4.75 mm wide together, each 1-veined; **petals** orange, minutely pubescent, transversely bilobed, 1 mm long, 3 mm wide, the lobes subequal, oblong, angled inward, with the ends rounded; **lip** yellow with purple margins, bilaminate, the laminae minutely pubescent, ovate, 1.75 mm long, the bases rounded, the apices narrowly obtuse, ciliate, the connectives from above the middle of the blades, the body narrow, connate to the base of the column, the sinus obtuse, with a minute, bilobulate appendix on the thickened, anterior surface and flanked by a pair of minute cavities; **column** slender, 1.75 mm long, the anther dorsal, the stigma ventral.

Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaceo and Limón, alt. 3180 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11803 (Holotype: MO).

Vegetatively this species is similar to *L. monoptera* with which it is sympatric, but the flowers of *L. velata* are more closely spaced. The length of the rachis between bracts is slightly longer than the short pedicels. In addition, the sepals of *L. velata* are entire instead of denticulate, and the appendix is a minute, bilobulate organ on the front surface of the body of the lip. As in all these related species, the lateral sepals are single-veined.

The most conspicuous feature of this species is the pair of petals mostly hidden behind the blades of the lip. The upper lobes cross above the lip in all flowers examined, a feature often seen in buds and aging flowers of some other species, but uncommonly in the natural position in fresh flowers.

***Lepanthes vellicata* Luer & Hirtz, sp. nov.**

Fig. 254.

Ety.: From the Latin *vellicatus*, "pinched," referring to the appearance of the deflexed bases of the blade of the leaf.

Planta mediocris caespitosa, inflorescentia racemosa congesta folio elliptico acuto ad basim vellicato brevior, sepalis ovatis acutis ciliatis, petalis transverse lobatis, lobo superiore suborbiculato, lobo inferiore oblique late triangulari, labello crasso bilobato, lobis columnam amplectentibus, corpore crasso protuberanti cum appendice ovoidea pubescenti.

Plant medium in size, epiphytic, caespitose; roots numerous, slender. Ramicauls stout, erect, 5-15 cm long, enclosed by 8-15 ciliate, lepanthiform sheaths. **Leaf** erect thinly coriaceous, elliptical, acute, the blade deflexed above the base, 5-8 cm long, 1.5-2.5 cm wide, the base cuneate into a petiole 2-2.5 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 15 mm long, borne behind the leaf by a filiform peduncle 20-25 mm long; floral bracts 2-2.5 mm long, ciliate; pedicels 2-2.5 mm long; ovary 1.5 mm long; **sepals** yellow-white, ovate, acute, ciliate, the dorsal sepal 8 mm long, 3.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 8 mm long, 2.75 mm wide, connate 2 mm; **petals** orange with a red border, or green with a purple border, minutely pubescent, transversely bilobed, 1.75 mm long, 3 mm wide, the upper lobe suborbicular, the lower lobe obliquely broadly triangular, obtuse; **lip** white, suffused with rose below the middle, thick, bilobed, the lobes broadly rounded, embracing the column, 1.8 mm long, the body fleshy, connate to the base of the column, the sinus protuberant with a small, deflexed, ovoid, pubescent appendix; **column** 1.5 mm long, the anther dorsal, the stigma apical.

Esmeraldas: epiphytic in wet forest west of Lita, alt. 750 m, 18 Jan. 1985, C. Luer, J. Luer, A. Hirtz, C. H. Dodson, D. Benzing & D. Bermudes 12419 (Holotype: MO); same data, C. Luer et al. 12382 (MO).

Also Colombia (Chocó).

This species is related to the Panamanian *L. pachyglossa* Luer and the western Colombian *L. troglodytes* Luer & Escobar. All three are relatively lowland species characterized by the deflexed sides of the base of the leaf, imparting a "pinched" appearance. *Lepanthes vellicata* differs from the other two in having ciliate sepals, those of the others are glabrous. The appendix of *L. vellicata* is minute, deflexed, ovoid and pubescent.

***Lepanthes vermicularis* Luer, Phytologia 54: 376, 1983.**

Fig. 255.

Ety.: From the Latin *vermicularis*, "wormlike," in reference to the appendix.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, 10-15 mm long, enclosed by 3-4 close, minutely ciliate, lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, obovate, petiolate, obtuse, 10-13 mm long including the petiole 2-3 mm long, 5-6 mm wide, cuneate below into the petiole.

Inflorescence a progressively lengthening, loose, flexuous raceme up to 5 cm long including the filiform peduncle; floral bract 2 mm long; pedicel 1.5 mm long; ovary 1 mm long; **sepals** pale orange, carinate-serrulate, ovate with the subacute apices contracted into setaceous tails ca. 2 mm long, the dorsal sepal concave, 6 mm long, 2.5 mm wide, connate to the lateral sepals for 0.5 mm, the lateral sepals oblique, connate 2 mm, 6.5 mm long, 3.75 mm wide together, the margins irregularly serrulate; **petals** red-orange, transversely oblong, bilobed, 0.8 mm long, 2.25 mm wide, the upper lobe elliptic with the apex rounded or earlike, the lower lobe shorter, narrowly oblong, obtuse; **lip** red-orange, bilaminar, the blades oblong, 1.25 mm long with rounded ends, minutely ciliate, the connectives short, narrowly cuneate, the body narrow, connate to the column at the base, the appendix glabrous, cylindrical, incurved, acute; **column** 0.75 mm long, the anther apical, the stigma ventral.

Zamora-Chinchipe: epiphytic in cloud forest south of the pass south of Yangana, alt. 2600 m, 3 Mar. 1982, C. Luer, D. D'Alessandro & S. Dalström 7122 (Holotype: SEL); south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12017 (MO).

This little species is rarely found in the high-altitude forests of southern Ecuador. It is recognized by the loose, flexuous raceme much longer than the leaves. The sepals are shortly caudate; the rounded, upper lobes of the petals are prominent; and the appendix is stout, glabrous and incurved.

Lepanthes vespertilio Rchb. f., *Xenia* Orchidaceae 1: 143, 1856.

Fig. 256.

Ety.: From the Latin *vespertilio*, "a bat," in allusion to the fancied appearance of the inflorescence.

Syn.: *Lepanthes cosmos* Luer & Escobar, *Phytologia* 54:336, 1983.

Ety.: From the Greek *kosmos*, "an ornament," referring to the intricately decorated appendix.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect to suberect, 3-16 cm long, enclosed by 7-13 tightly fitting, minutely scabrous, lepanthiform sheaths. **Leaf** suberect, coriaceous, broadly ovate, obtuse, 2.5-6.5 cm long, 1.5-3 cm wide, the apex long-acuminate, the base rounded, abruptly contracted into a petiole 1-2 mm long. **Inflorescence** a very congested, successively many-flowered raceme up to 2.5 cm long, borne by a filiform peduncle 1.5-5 cm long, up the back of the leaf, the inflorescence often surpassing the leaf; floral bracts 0.5-1 mm long, minutely pubescent; pedicels 0.5-1 mm long; ovary 1.5-2 mm long; **sepals** red to yellow, minutely short-ciliate, ovate, acute to subacute, the dorsal sepal 4.25-5 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4.25-5.5 mm long, 2 mm wide, connate 2-2.5 mm; **petals** rose, or yellow suffused with red, transversely oblong, 1 mm long, 3.25 mm wide, with a minute marginal lobe on the outer margin between the lobes, the upper lobe oblong, the apex acute, oblique, the lower lobe shorter, triangular, acute; **lip** deep red, pubescent-ciliate, bilaminar, the blades ovate, acute, 1.5-2 mm long, the bases rounded, the connectives broadly cuneate, erect, the body densely pubescent externally, connate to the middle of the column, the appendix broadly oblong, decurved-sigmoid, convex, pubescent, with a terminal pair of adjacent, oblong processes; **column** 1.5-2 mm long, the shaft slender, the anther dorsal, the stigma ventral.

Sucumbios: epiphytic in forest south of Santa Barbara, alt. 2700 m, 5 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9964 (MO); same area, 6 Apr. 1985, C. Luer, J. Luer & A. Hirtz 11110 (MO); same area, alt. 2700 m, 30 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15204 (MO).

Pichincha: Andes of Quito, without locality, W. Jameson 96 (Holotype: K); "Peru," W. Jameson s.n. (W); "Quito," H. Karsten s.n. (W).

Tungurahua: Cordillera de Llanganates, alt. 3200 m, 20 Jan. 1939, E. Asplund 9803 (S).

Pastaza: Rio Zuñag, alt. 2200 m, Feb. 1990, A. Hirtz et al. 4857 (MO).

Morona-Santiago: epiphytic in forest between Gualaceo and Limón, alt. 2650 m, 29 Oct. 1982, C. Luer, R. Escobar & A. Pozo 8219 (type of *L. cosmos*: SEL); same area, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11831 (MO); epiphytic in wet forest east of Sigsig, alt. 2700 m, 15 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13359, 13361 (MO); SE of Sigsig, road to Chiguinda, alt. 2500-2700 m, 5 Feb. 1988, U. Molau, B. Eriksen & M. Fredrikson 2963 (GB); between Sigsig and Chiguinda, alt. 2600 m, 11 Aug. 1990.

This distinctive species was first discovered by Jameson, presumably near Quito where most of his collecting was carried out. Reichenbach described the species from the specimen in Lindley's herbarium at Kew. Although it was found again in 1982, its identity was not realized until 1984 when more plants were discovered.

The plant is recognized by the broad, abruptly long-acuminate leaves topped by a long-pedunculate, congested raceme. The distinctive column is long and slender. Although the appendix was mentioned by Reichenbach, it is not seen on the drawing of the sepals, petals and lip on the type-sheet.

Lepanthes via-incarum Luer & Hirtz, *Lindleyana* 2: 151, 1987.

Fig. 257.

Ety.: Named for the "Inca Way" (way of the Incas), the ancient, stone road along which this species was discovered.

Plant medium in size, epiphytic, caespitose; roots thick, fleshy; Ramicauls slender, erect, 6-11 cm long, enclosed by 7-9 pale brown, minutely ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, shortly acuminate, 3.5-5 cm long, 1.5-2.4 cm wide, the rounded or broadly cuneate base contracted into the petiole 3 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 7 mm long, borne behind the leaf by a filiform peduncle up to 15 mm long; floral bract 1.25 mm long; pedicel 1.25 mm long; ovary 1.5 mm long; **sepals** yellow, ovate, subacute, entire, the dorsal sepal 6.25 mm long, 5 mm wide, connate to the lateral sepals for 2 mm, the lateral sepals oblique, 6.5 mm long, 3 mm wide, connate 2 mm; **petals** orange with a purple border, glabrous, transversely bilobed, 1.5 mm long, 3.75 mm wide, the upper lobe oblong with the apex rounded, the lower lobe smaller, oblique, triangular, narrowly obtuse; **lip** purple, bilaminar, the blades oblong, 1.8 mm long, microscopically pubescent, both ends rounded, the apex ciliate, the connectives short, from below the middle of the blades, connate to the column at the base, the body broad with the sinus obtuse, the appendix minute, bilobulate; **column** 1.5 mm long, the anther dorsal, the stigma ventral.

Azuay: Patacocha, above Hda. Tarqui, alt. 3050-3100 m, 29 Jan. 1988, *U. Molau, B. Eriksen & M. Fredrikson* 2763 (GB).

Zamora-Chinchi: epiphytic in cloud forest above Valladolid, alt. 2450 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 10853 (Holotype: MO); above Valladolid toward Yangana, alt. 2700 m, 2 Feb. 1985, *G. Harling & L. Andersson* 21459 (GB).

This species is not remarkably distinct, but it is distinguished by a combination of common characters. The habit is average, and the smooth, yellow flower of average size with purple bordered petals is not unusual. The blades of the lip are oblong with the rounded apices ciliate, but the most distinct feature is the minute, bilobulate appendix.

Lepanthes vibrissa Luer & Hirtz, *Lindleyana* 2: 155, 1987.

Fig. 258.

Ety.: From the Latin *vibrissa*, "a whisker," referring to the long, pointed lobes of the petals.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 15-20 cm long, enclosed by 12-14 long-ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, thinly coriaceous, ovate, acute, long-acuminate, 9-10.5 cm long, 4.5-5 cm wide, the rounded base contracted into a petiole 3 mm long. **Inflorescence** a congested, distichous, successively many-flowered raceme up to 4 cm long, borne behind the leaf by a slender peduncle 3-4 cm long; floral bracts 2 mm long; pedicels 1.5 mm long; ovary 2 mm long; **sepals** yellow, carinate, minutely denticulate, ovate, acute, acuminate, the dorsal sepal 9 mm long, 4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals oblique, 9 mm long, 3 mm wide, 4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals oblique, 1 mm long, 7 mm connate 3 mm; **petals** red-purple, microscopically pubescent, transversely bilobed, 1 mm long, 7 mm wide, the lobes obliquely and narrowly triangular, acute, the upper lobe much longer; **lip** red-purple, bilaminar, the laminae shortly pubescent, subovate, convex, obtuse, 1.9 mm long, the connectives cuneate, connate to the base of the column, the sinus obtuse with an oblong, ciliate appendix with a bilobulate apex; **column** 2 mm long, the anther apical, the stigma ventral.

Napo: epiphytic in cloud forest in the Guacamayo Range, alt. 2250 m, 13 April 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 11263 (Holotype: MO).

Also Colombia (Antioquia).

Although long-pointed lobes of the petals are present in several species, this species differs from the others in the large habit and congested racemes. The large sepals are minutely denticulate and acuminate. The minutely pubescent blades of the lip are longitudinally convex. The appendix is pubescent and minutely bilobate at the apex.

***Lepanthes volador* Luer & Hirtz, sp. nov.**

Fig. 259.

Ety.: From the Latin *volador*, "one that flies," referring to the flower carried beyond the leaf.

Species haec *L. calodictyonis* Hook. affinis, sed foliis multiminoribus, pedunculo folio plus minusve aequilongo, flore minore, petalorum cauda inferiore brevissima, labello suborbiculato differt.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect to suberect, slender, 5-15 mm long, enclosed by 4-6 microscopically ciliate-scabrous, lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, green with brown reticulation, orbicular, 6-9 mm long, 6-8 mm wide, the margins undulate, the apex rounded, the base rounded. **Inflorescence** a congested, distichous, successively several-flowered raceme up to 4 mm long, borne on top and beyond the apex of the leaf by a filiform peduncle 7-9 mm long; floral bracts 0.5 mm long, echinate; pedicels 1 mm long; ovary 1.5 mm long; **sepals** light yellow, reflexed, obovate, acute, carinate, with the margins sparsely short-ciliate, the dorsal sepal 2.5 mm long, 1.5 mm wide, free from the lateral sepals, the lateral sepals 2.5 mm long, 1.25 mm wide, connate 0.1 mm, 2-veined; **petals** orange, microscopically pubescent, transversely bilobed, 1 mm long, 3 mm wide, the upper lobe triangular, oblique, with acute apex contracted into a slender tail, the lower lobe obliquely oblong with the end rounded, with a short, slender, transverse process from near the base; **lip** red, microscopically ciliate, suborbicular-cordate, 0.9 mm long, 0.9 mm wide, the apex rounded, the base cordate with rounded lobes embracing the column, connate to the column near the middle; **column** 1.5 mm long, the anther apical, the stigma subapical.

Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12374 (Holotype: MO).

This tiny species is closely allied to *L. calodictyon*, but distinguished easily by the very small habit, with a very small flower protruding beyond the apex of the little, round leaf. The tail of the lower lobe of the petal is short and slender, and it arises from near the base. The lip is round with rounded basal lobes embracing the column.

***Lepanthes wagneri* Rchb.f., Bonplandia 3: 70, 1855.**

Fig. 260.

Ety.: Named for the traveler Hermann Wagner who first collected this species.

Syn.: *Lepanthes dalstroemii* Luer, Orchideer 4: sub 192, 1983,

Ety.: Named for Stig Dalström who collected this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-7 cm long, enclosed by 4-8 minutely ciliate, lepanthiform sheaths. **Leaf** erect, suffused with purple, thickly coriaceous, elliptical, subacute to obtuse, 1.5-3.5 cm long, 7-16 mm wide, the base broadly cuneate into a petiole 1-2 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 8 mm long, borne behind the leaf by a slender peduncle 3-10 mm long; floral bracts 0.5-1.25 mm long; pedicels 0.75-1.25 mm long; ovary 1-2 mm long; **sepals** yellow, variously suffused with red, the dorsal sepal ovate to obovate, obtuse, sometimes shortly acuminate, 3.5-5 mm long, 1.5-2.5 mm wide, barely connate to the lateral sepals, the lateral sepals ovate, oblique, acute to subacute, sometimes shortly acuminate, 2.5-4.5 mm long, 1.5-2 mm wide, connate about 0.5 mm; **petals** yellow or orange, variously suffused with red, minutely pubescent, transversely bilobed, 1-1.3 mm long, 2.25-4 mm wide, the upper lobe ovate-triangular to oblong, obtuse, sometimes acute, the lower lobe usually similar; **lip** orange to red, cellular-pubescent, bilaminar, the blades more or less oblong, longitudinally concave, 1.5 mm long, with everted or revolute, obtuse to truncate apices and rounded bases, the connectives posterior, obliquely cuneate, the body narrow but with an external, boat-shaped appendix that protrudes forward beyond the sinus; the body connate to the base of the column; **column** 1.5 mm long, the anther apical, the stigma ventral.

Pastaza: north of Mera, alt. 1350 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11265* (MO).

Tungurahua: Volcán Tungurahua, alt. 2200 m, 1984, *A. Hirtz 1611* (MO); Volcán Tungurahua above Baños, alt. 2700 m, 27 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuijt 9767* (MO); Baños, alt. 2000 m, Feb. 1984, *A. Hirtz 1553* (MO); Volcán Tungurahua, alt. 2200 m, Feb. 1984, *A. Hirtz 1611* (MO); guava trees along Río Negro, alt. 1500 m, 28 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuijt 9775* (MO); between Río Verde and Río Negro, alt. 1500 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11174* (MO).

Morona-Santiago: between Sigsig and Chiguinda, alt. 2600 m, 11 Aug. 1990, *A. Hirtz 5058* (MO); southeast of Sigsig, alt. 2800 m, 13 Jan. 1989, *C. Luer, J. Luer, A. Jesup, P. Jesup, A. Hirtz & S. Ortega 13861* (MO); between Macas and Guamote, alt. 1500 m, 26 Dec. 1994, *A. Hirtz 6060* (MO).

Azuay: south of Cuenca toward Saraguro, alt. 3000 m, *C. Luer, S. Dalström, T. Höijer & J. Kuijt 9538, 9542* (MO).

Loja: above San Pedro, alt. 2400 m, 17 Feb. 1983, *S. Dalström 495* (SEL, type of *L. dalstroemii*), *C. Luer* illustr. 9071; new road north of Loja, alt. 2600 m, 2 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12576* (MO); between Loja and Saraguro, 4 Nov. 1988, *W. Teague 101* (MO); south of Saraguro, alt. 3000 m, 6 Feb. 1993, *S. Dalström, T. Höijer & H. Wanntorp 1857* (MO); east of Yangana, alt. 2400 m, 22 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10815* (MO); above Vilcabamba, alt. 2000-2400 m, May 1985, *D. D'Alessandro 345* (MO); Nudo de Sabanilla above Yangana, alt. 2300-2500 m, 2 Apr. 1985, *G. Harling & L. Andersson 23514* (GB).

Zamora-Chinchipec: south of pass south of Jimbura, alt. 2800 m, 24 Jan. 1986, *S. Dalström & T. Höijer 1100* (MO).

Also Venezuela (Táchira), Colombia (Norte de Santander: type, Santander, Boyacá, Antioquia), and Bolivia (La Paz).

This species is frequent and locally common in its wide distribution in the Andes from Venezuela into Bolivia. Although it is variable both vegetatively and florally, it is usually easily recognized. The leaves are small, thick, elliptical, and suffused with purple. The inflorescence is short and behind the lead. The flowers are colorful with various combinations of yellow, orange, red and purple. The sepals are very shallowly connate, and sometimes shortly acuminate. The petals are very variable in size and shape, in no two populations being the same. The lip, however, is easily recognized by the oblong blades that are longitudinally channeled or concave with the obtuse or truncate apex more or less recurved. The appendix is longitudinal and boat-shaped on the external surface of the body and extending forward beyond the sinus. It can be recognized easily from a lateral view when the blade of the lip is lifted.

The vegetative form described as *L. dalstroemii* is considerably larger with elliptical leaves borne by longer ramicauls.

***Lepanthes xenos* Luer & Hirtz, Die Orchidee 38: 32, 1987.**

Fig. 261.

Ety.: From the Greek *xenos*, "a stranger," referring to the unusual characters of the flowers.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls erect, robust, 16-25 cm tall, enclosed by 13-15 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, ovate, acute, acuminate, 11-14 cm long, 4-5.5 cm wide, the rounded base abruptly contracted into a petiole 4-5 mm long. **Inflorescence** a very congested, distichous, successively flowered raceme up to 20 mm long, borne behind the leaf by a filiform peduncle up to 30 mm long; floral bract 2 mm long; pedicel 1.5 mm long; ovary 2 mm long; **sepals** form peduncle up to 30 mm long; dorsal sepal narrowly triangular, acute, 14 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, 14 mm long, 4.5 mm wide, lightly adherent below the middle with the inner halves concave and with the back surfaces in apposition, the outer halves convex, shortly pubescent, the acute apices shortly caudate, incurved; **petals** white with purple border, microscopically pubescent, transversely oblong, oblique, 2 mm long, 4 mm wide, 3-veined, the upper lobe oblong, oblique, obtuse, twice as large as the lower lobe, with a transverse, lunate callus above the midvein; **lip** white with purple border, microscopically pubescent, bilaminate, the blades oblong, 2.2 mm long, convex with rounded ends, the connectives cuneate, from the apical half of the blades, the body broad, the sinus retuse with a protruding, boat-shaped, obtuse appendix appressed to the undersurface of the column behind the stigma; **column** 2 mm long, the anther apical with a long, protuberant anther-bed, 1.5 mm long with the stigma beneath.

Napo: epiphytic in forest, Guacamayo Range, alt. 2150 m, *C. Luer, J. Luer, A. Hirtz & W. Flores 11264* (MO).

Zamora-Chinchipe: epiphytic in cloud forest above Valladolid, alt. 2450 m, 17 March 1984, *C. Luer, S. Dalström, T. Höijer, J. Kuijt & D. D' Alessandro 9582* (Holotype: MO); same area, 24 March 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10942A* (MO).

Vegetatively this species is indistinguishable from most of the other large species of the genus, but the unique flower immediately identifies the species. The caudate lateral sepals are concave with their back surfaces touching, the lower lobe of the petals is minute, and the elongated rostellum protrudes from between the lobes of the lip. *Lepanthes xenos* has been found in two widely separated areas of the eastern slopes of the Andes.

***Lepanthes ximenaë* Luer, Phytologia 54: 377, 1983.**

Fig. 262.

Ety.: Named in honor of Ximena Leon de Hirtz of Quito, Ecuador, who has participated in collecting numerous specimens in remote regions of Ecuador.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender to stout, erect, 5-9 cm long, enclosed by 8-12 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, acute, lightly acuminate, 4-6 cm long, 1-1.8 cm wide, cuneate below into a petiole, ca. 3 mm long. **Inflorescence** a congested, distichous, successively flowered raceme up to 20 mm long, borne by a filiform peduncle 10-20 mm long up the back of the leaf; floral bract 1.3 mm long; pedicel 2 mm long; ovary 1.5 mm long; **sepals** orange, glabrous, the dorsal sepal triangular, acute, 3.5 mm long, 3.1 mm wide, connate basally for 1 mm to the lateral sepals, the lateral sepals ovate, oblique, acute, 3.5 mm long, 1.75 mm wide, connate 1 mm; **petals** orange with red margins, transversely oblong-bilobed, 1.3 mm long, 3 mm wide, the upper lobe elliptical with the apex rounded, the lower lobe smaller, subfalcate, obtuse; **lip** red, bilobed, the blades glabrous, ovate, 1.5 mm long, the apices acute, the bases rounded, the connectives broadly cuneate, the body broad, connate to the column above the base, the appendix minute, external, short, oblong, pubescent; **column** 1.25 mm long, the anther and stigma apical.

Napo: epiphytic in wet forest near Río Jatunyacu west of Tena, alt. 600 m, 21 Feb. 1982, *C. Luer & A. Hirtz 6915* (Holotype: SEL); along Río Cascales east of Lumbaqui, alt. 450 m, 9 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11768* (MO); new road between Archidona and Coca, alt. 1000 m, 17 Feb. 1990, *S. Dalström & L. Årnby 1367* (MO).

Pastaza: along Río Topo, alt. 1400 m, July 1984, *A. Hirtz 1870* (MO); north of Mera, alt. 1000 m, 13 Oct. 1984, *A. Hirtz & C. Dodson 2021* (MO), *C. Luer* illustr. 10510; along Río Pastaza east of Río Negro, alt. 1150 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11191* (MO).

Morona-Santiago: Cordillera del Cutucú, between Santiago and Yaupi, alt. 400 m, Aug. 1989 m, *A. Hirtz & X. Hirtz 4370* (MO), *C. Luer* illustr. 14713.

This colorful species occurs in forests on the eastern slopes of the Andes of Ecuador at relatively low altitudes. It is not distinguished by a single, unique character, but by the combination of a narrowly elliptical leaf borne by a relatively stout ramicaul; a congested, distichous inflorescence shorter than the leaf; broad, obtuse sepals; large, oblong-rounded upper lobes of the petals; ovate blades of the lip and a small, pubescent appendix.

***Lepanthes yanganaë* Luer & Hirtz, Lindleyana 2: 108, 1987.**

Fig. 263.

Ety.: Named for the community of Yangana, near the locality where this species occurs.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-14 cm long, enclosed by 7-11 glabrous to microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, subacute, acuminate, 2-4.5 cm long, 1.5-1.8 cm wide, the rounded or broadly cuneate base contracted into the petiole 2-3 mm long. **Inflorescence** a subdense, distichous, successively several-flowered raceme up to 15 mm long, borne behind the leaf by a filiform peduncle 5-12 mm long; floral bract 1 mm long; pedicel 1 mm long; ovary 1 mm long; **sepals** yellow-white, ovate, subacute, entire,

carinate, the dorsal sepal 4.75 mm long, 3.5 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals oblique, 4.75 mm long, 2 mm wide, 1-veined, connate 1.5 mm; **petals** yellow with a thin, purple border, microscopically pubescent, transversely bilobed, 1 mm long, 3.3 mm wide, the lobes about equal, oblong with the ends rounded, with a minute angle on the outer margin between the lobes; **lip** purple, bilaminate, the blades ovate, 1.8 mm long, microscopically pubescent, the apex incurved, narrowly obtuse, the base rounded, the connectives short, broad, connate to the column at the base, the body broad with the sinus obtuse, shortly cleft, the appendix oblong, pubescent; **column** 1.5 mm long, the anther dorsal, the stigma apical.

Loja: epiphytic in cloud forest above Yangana north of the pass, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10899 (Holotype: MO).

Zamora-Chinchipe: epiphytic in cloud forest above Valladolid, alt. 2700 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10917 (MO).

This species is related to the narrow-leaved *L. monoptera*, sharing the short, subdense racemes and single-veined lateral sepals. The sepals of the elliptical-leaved *L. yanganae* are entire and the apices of the petals are broadly rounded, while the sepals of *L. monoptera* are denticulate and the lobes of the lip are narrowly obtuse.

Fig. 264.

Lepanthes zamorensis Luer & Hirtz, sp. nov.

Ety.: Named for the Río Zamora along which this species was discovered.

Planta mediocris, inflorescentia congesta folio ovato leviter acuminato purpureo suffuso brevior, sepalis ovatis acutis acuminatis denticulatis, petalis bilobis cum angulo marginali, lobo superiore oblongo, lobo inferiore triangulari, labello bilaminato, laminis glabris tenuibus oblongis supra columnam convexis, appendice oblonga pubescenti ad basim concava.

Plant small to medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 1.5-7 cm long, enclosed by 5-12 ciliate, lepanthiform sheaths with oblique, dilated ostia. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, acute, lightly acuminate, 1.5-4.5 cm long, 0.9-2.5 cm wide, the rounded base contracted into a petiole 1-3 mm long. **Inflorescence** a congested, distichous, successively several-flowered raceme, 10 mm or more long, borne behind the leaf by a peduncle 8-12 mm long or longer; floral bracts 1-1.5 mm long; pedicels 1 mm long; ovary 2 mm long, lightly papillose; **sepals** or longer; floral bracts 1-1.5 mm long; pedicels 1 mm long; ovary 2 mm long, lightly papillose; **sepals** or longer; floral bracts 1-1.5 mm long; pedicels 1 mm long; ovary 2 mm long, lightly papillose; **sepals** yellow, suffused with brown or purple, denticulate-fimbriate, carinate externally along the veins, the dorsal sepal ovate-triangular, acute, acuminate, 4.5-6 mm long, 3-4.5 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals ovate, oblique, 5-6 mm long, 2-2.5 mm wide, 2-veined, the apices acute, acuminate into tails 1.5-2 mm long; **petals** orange with red margins, microscopically pubescent, transversely bilobed, 1 mm long, 3 mm wide, the upper lobe suboblong, subtruncate, the outer margin of the petal with an obtuse angle between the lobes, the lower lobe triangular; **lip** yellow suffused with red medially, bilaminate, the blades glabrous, oblong, 1.5-2 mm long, the apices rounded, ciliate, the connectives cuneate, the body narrow with an oblong, pubescent appendix that is concave at the base; **column** 2 mm long, the anther dorsal, the stigma ventral.

Zamora-Chinchipe: epiphytic in forest east of the pass between Loja and Zamora, alt. 2000 m, 25 Jan. 1992, C. Luer, J. Luer, P. Jesup, A. Jesup & A. Hirtz 16152 (Holotype: MO); east of the pass between Loja and Zamora, alt. 2030 m, 8 Mar. 1989, B. Øllgaard, J. Madsen & L. Ellemann 90839 (AAU); epiphytic in forest south of Zamora, above Río Jamboe, alt. 1550 m, 22 Jan. 1992, C. Luer, J. Luer, P. Jesup, A. Jesup & A. Hirtz 16098 (MO); same area, alt. 1400 m, 22 Jan. 1992, C. Luer et al. 16104 (MO).

This species is related to *L. chorista* which is also known to occur in the province of Zamora-Chinchipe. *Lepanthes zamorensis* differs in the acute, acuminate, denticulate sepals, and the larger petals that are not oblique above the lip. The lobes of the petals of *L. chorista* are obliquely short-rectangular; the upper lobe of the lip of *L. zamorensis* is oblong while the lower lobe is triangular. The lips and columns are very similar to those of *L. chorista*.

Lepanthes zunagensis Luer & Hirtz, sp. nov.

Fig. 265.

Ety.: Named for Río Zuñag where the species was discovered.

Planta parva, inflorescentia cum racemo congesto folio ovato acuminato brevior, sepalis late ovatis minute denticulatis, petalis labelloque ruberrimis, petalis glabris transverse bilobis, lobo superiore oblongo anguste obtuso, lobo inferiore triangulari, labelli laminis ovatis planis apice minute ciliatis, connectivis anguste cuneatis, appendice ciliata intricata.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-2 cm long, enclosed by 6-7 minutely ciliate, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, ovate, acute, acuminate, 3 cm long, 1.5 cm wide, the rounded base abruptly contracted into a petiole 1 mm long. **Inflorescence** a congested, successively several-flowered raceme up to 4 mm long, borne on top of the leaf by a slender peduncle 11 mm long; floral bract 1-1.5 mm long; pedicel 1-1.5 mm long; ovary 1 mm long; **sepals** white, broadly ovate, subacute, minutely denticulate, the dorsal sepal 4 mm long, 3.5 mm wide, 5-veined, connate to the lateral sepals for 1.5 mm, the lateral sepals oblique, connate 2.5 mm, 4 mm long, 4.5 mm wide together, each 3-veined; **petals** dark red, glabrous, transversely bilobed, 1 mm long, 5 mm wide, the upper lobe oblong, the apex oblique, narrowly obtuse, the lower lobe triangular, narrowly obtuse, smaller than the upper lobe; **lip** dark red, bilaminar, the laminae glabrous, ovate, flat, minutely ciliate at the acute apex, rounded at the base, 1.75 mm long, the connectives narrowly cuneate, the body narrow, connate to the base of the column, the appendix longitudinally bisegmented, pubescent; **column** 1 mm long, the anther dorsal, the stigma ventral.

Pastaza: north of Topo, epiphytic in forest along Río Zuñag, alt. 2200 m, 23 Feb. 1990, A. Hirtz, S. Dalström, L. Årnby, J. Del Hierro, E Astorga, S. Ortega & J. Cabezas 4723 (Holotype: MO), C. Luer illustr. 14721.

This species from the eastern slopes of the Andes of central Ecuador is most similar to *L. deficiens* Luer & Escobar from Colombia. The habit is small with markedly dilated ostia of the lepanthiform sheaths. The flowers with intensely dark red petals and lip are borne in a short raceme on top of the leaf. The sepals are broadly ovate and minutely denticulate. The petals are large, longer than a sepal. The lip is bilaminar with a longitudinally bisegmented appendix.

Lepanthes zygon Luer, *Phytologia* 54: 378, 1983.

Fig. 266.

Ety.: From the Greek *zygon*, "a little yoke," referring to the blades of the lip surrounding the column.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, suberect, 3.5-6.5 cm long, enclosed by 7-10 close, microscopically ciliate, lepanthiform sheaths. **Leaf** suberect, thinly coriaceous, ovate, acuminate, acute, 18-28 mm long, 9-11 mm wide, the obtuse base contracted into a 2 mm long petiole. **Inflorescence** a congested, distichous, successively flowered raceme up to 15 mm long, borne by a filiform peduncle up to 20 mm long; floral bract 0.75 mm long; pedicel 2-3 mm long; ovary 1.25 mm long, winged; **sepals** yellow, suffused with red-brown centrally, carinate, the dorsal sepal triangular-ovate, acute, shortly acuminate, 3.5 mm long, 2.25 mm wide, connate 0.6 mm to the lateral sepals, the lateral sepals ovate, oblique, 3.6 mm long, 1.5 mm wide, connate for 0.6 mm, the acute apices acuminate, the margins minutely ciliate; **petals** orange, transversely oblong, 0.5 mm long, 3 mm wide, the upper lobe oblong, obtusely angled on the inner margin near the apex, the lower lobe shorter, narrowly oblong, obtuse; **lip** orange, bilaminar, the blades oblong-subfalcate, 1 mm long, glabrous, obliquely clasping the column near the middle, the connectives short, broad, the body broad, connate to the column near the base, the appendix small, oblong, pubescent, from the under surface of the sinus; **column** 1 mm long, the anther and stigma apical.

Pichincha: epiphytic in cloud forest above Mindo, alt. 2000 m, 11 Nov. 1979, C. Luer & A. Hirtz 4731 (Holotype: SEL); old road between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, C. Luer, A. Hirtz, S. Dalström, T. Höjjer & J. Kuijt 9850 (MO).

This species occurs locally on the western slopes of Mt. Pichincha. It is identified by the ovate leaf more or less equaled in length by a congested, distichous, long-pedicellate inflorescence. The sepals are acuminate; the upper lobes of the petals are obliquely truncate; and the subfalcate blades of the lip clasp the column, the appendix being small and pubescent.

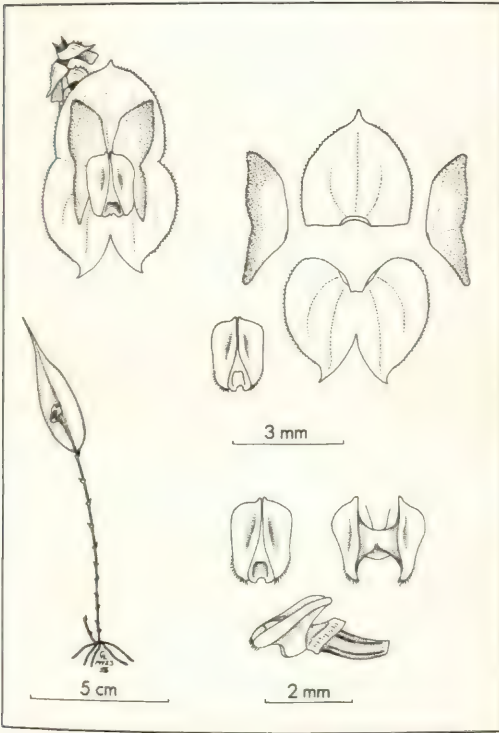


Fig. 1. *Lepanthes absens*

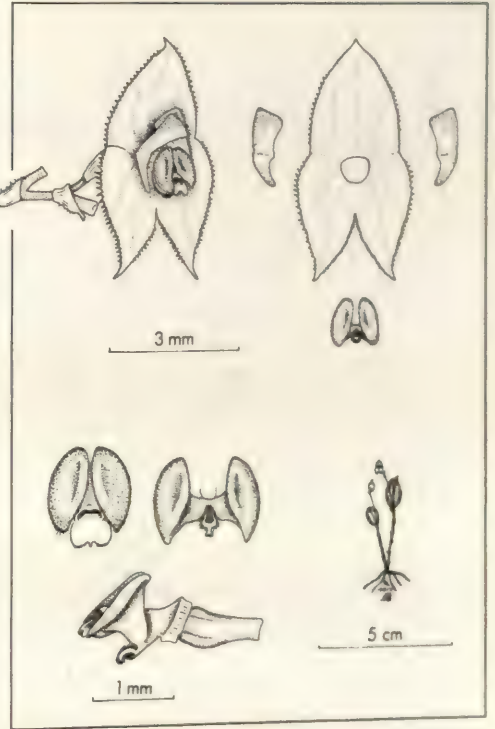


Fig. 2. *Lepanthes acarina*

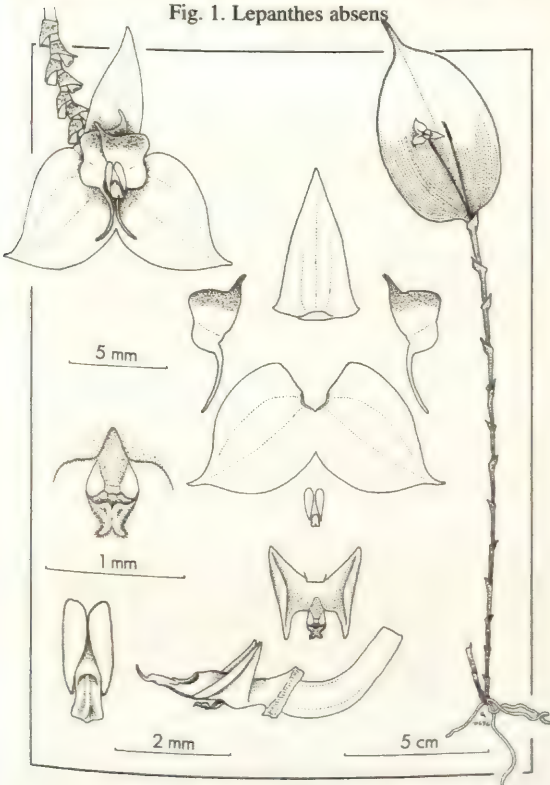


Fig. 3. *Lepanthes actias-luna*

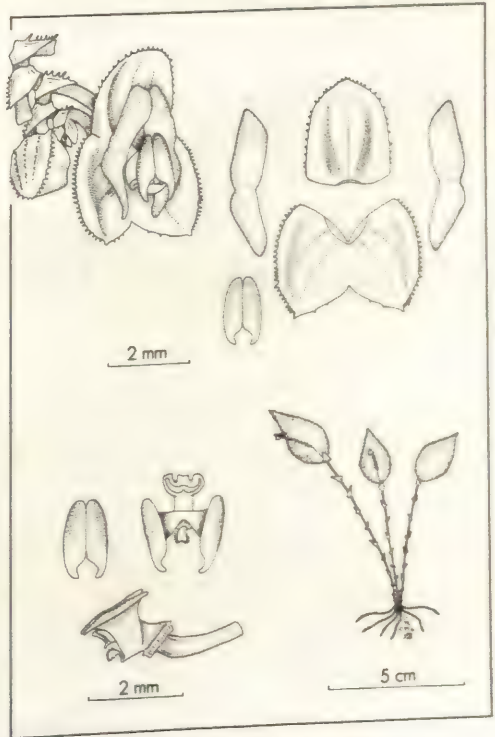


Fig. 4. *Lepanthes aculeata*

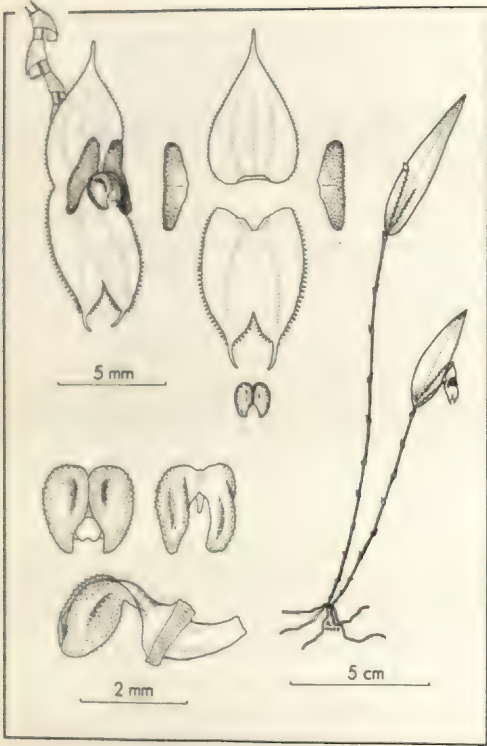


Fig. 5. *Lepanthes adelphe*

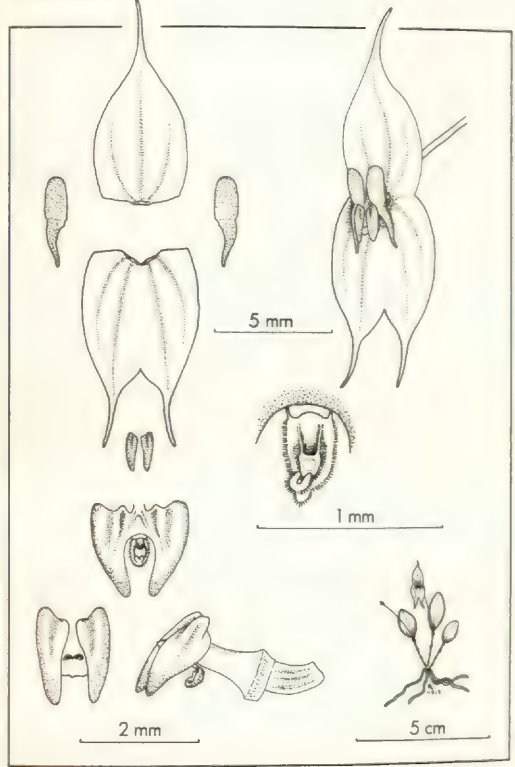


Fig. 6. *Lepanthes aeora*

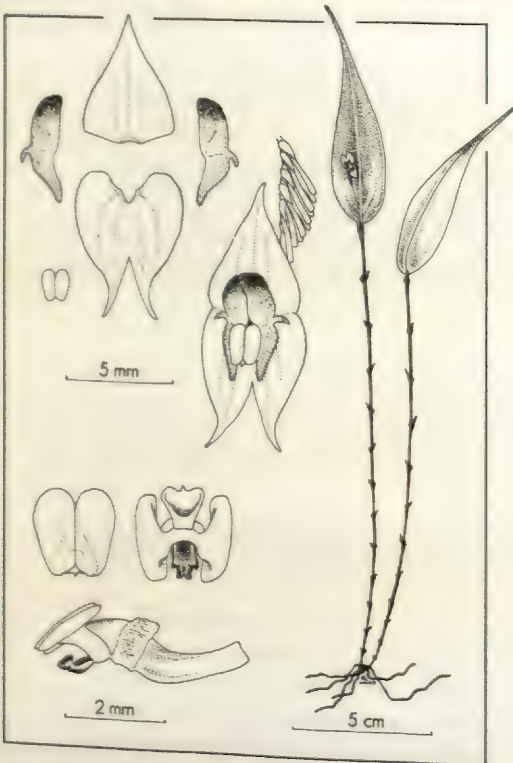


Fig. 7. *Lepanthes agglutinata*

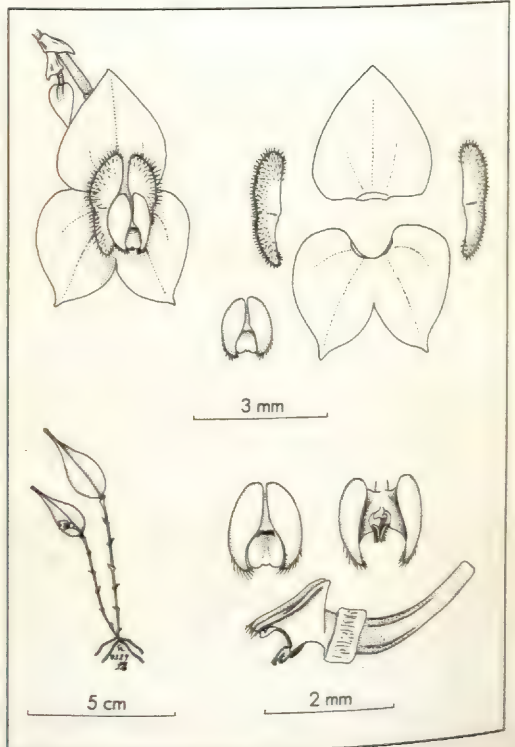


Fig. 8. *Lepanthes allector*

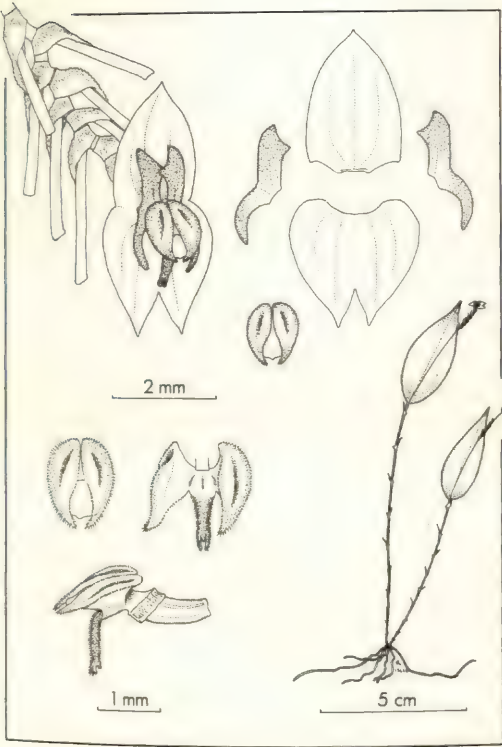


Fig. 9. *Lepanthes aloplex*

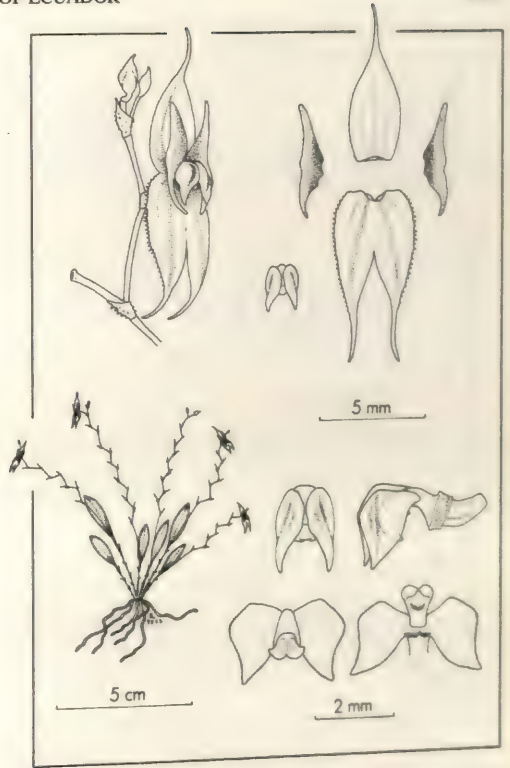


Fig. 10. *Lepanthes alticola*

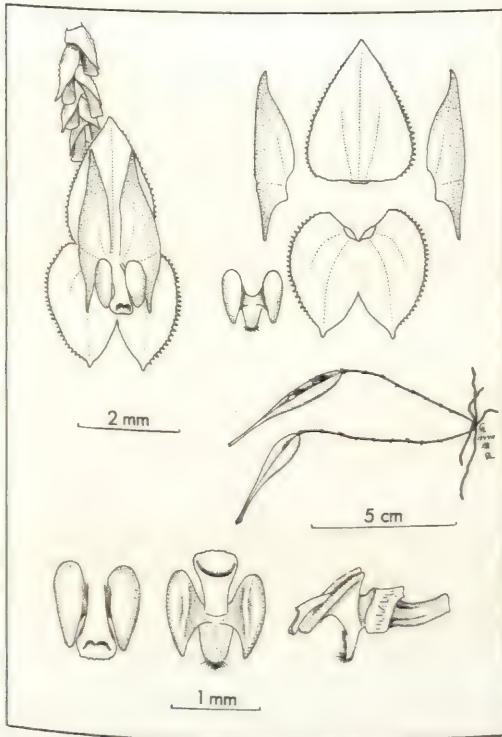


Fig. 11. *Lepanthes amphioxax*

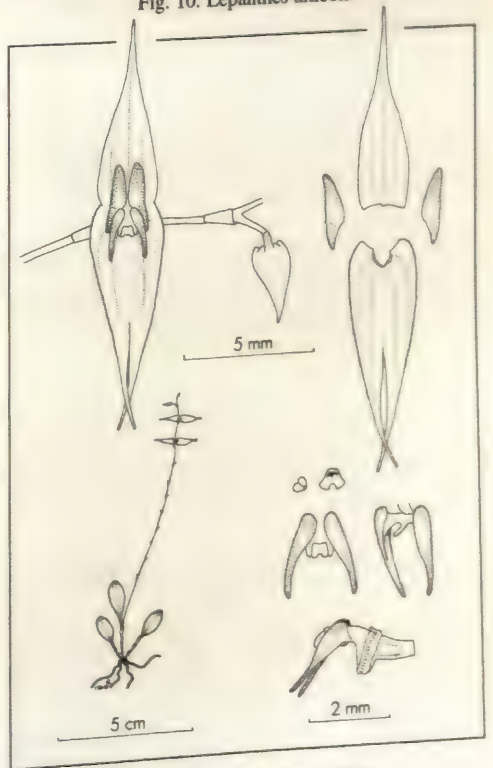


Fig. 12. *Lepanthes andreettae*

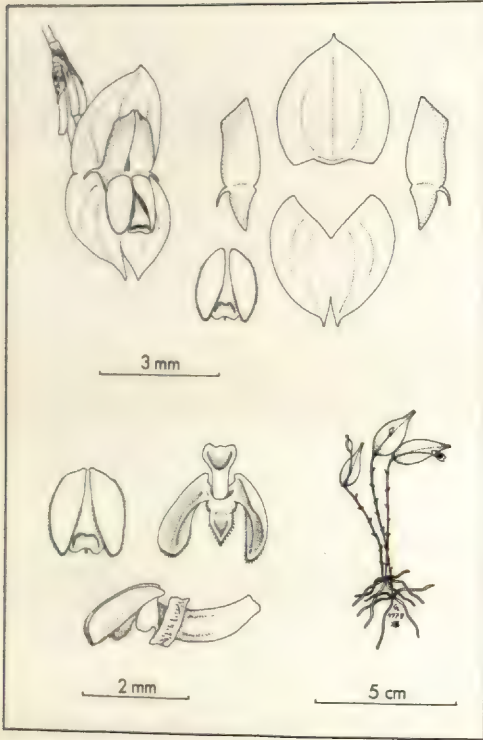


Fig. 13. *Lepanthes andrenoglossa* (*L. mucronata*)

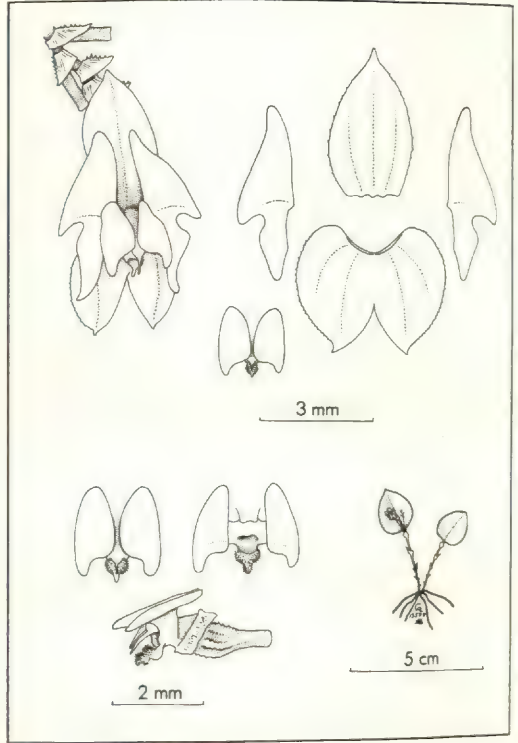


Fig. 14. *Lepanthes angulata*

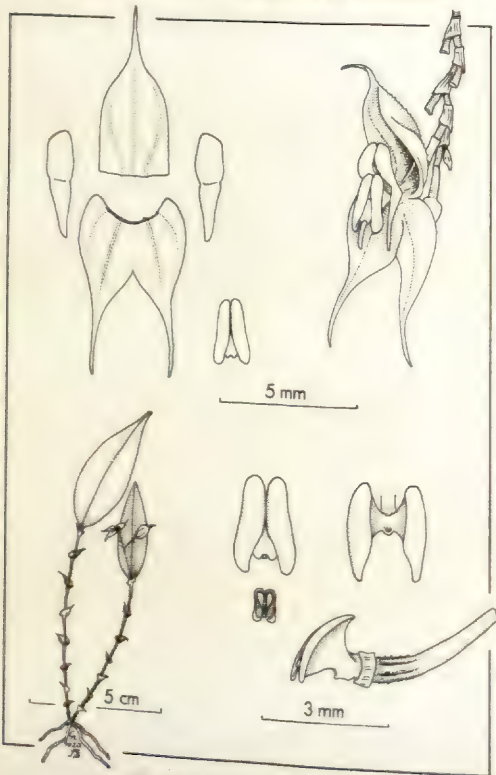


Fig. 15. *Lepanthes antiopa*

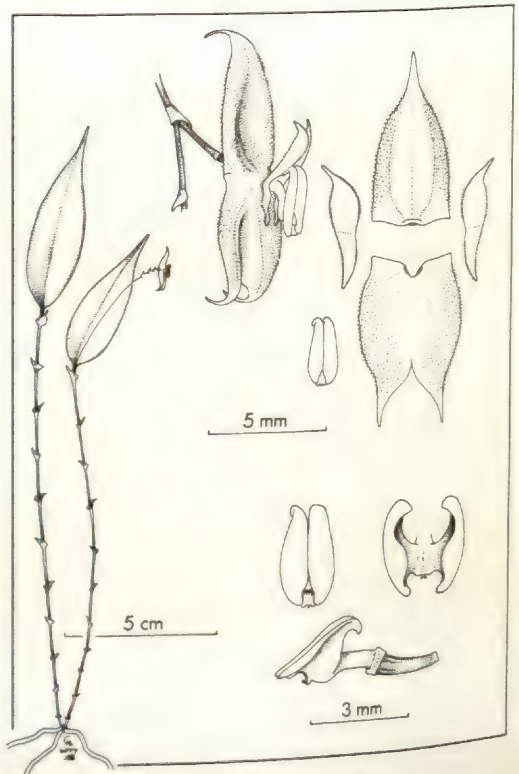


Fig. 16. *Lepanthes aries*

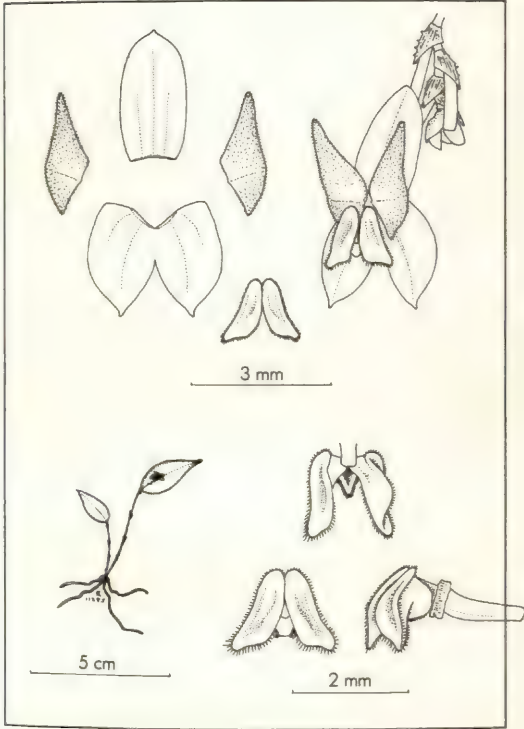


Fig. 17. *Lepanthes asoma*

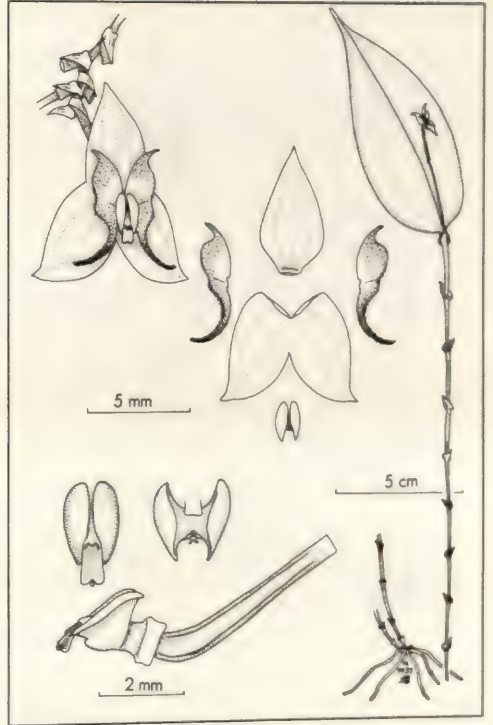


Fig. 18. *Lepanthes athena*

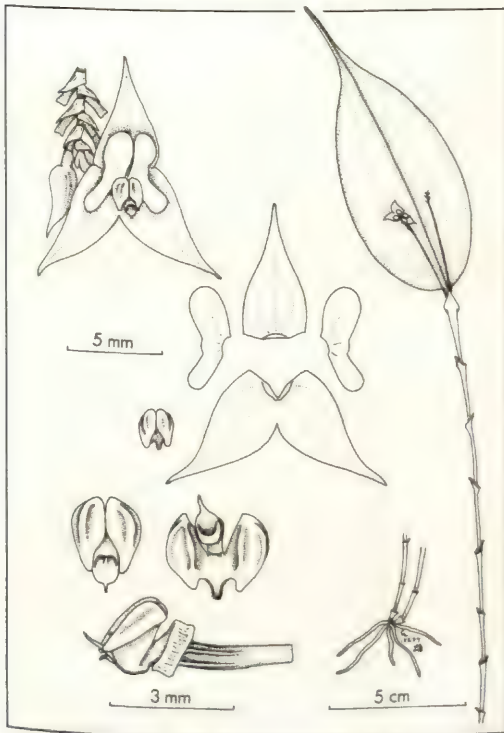


Fig. 19. *Lepanthes auriculata*

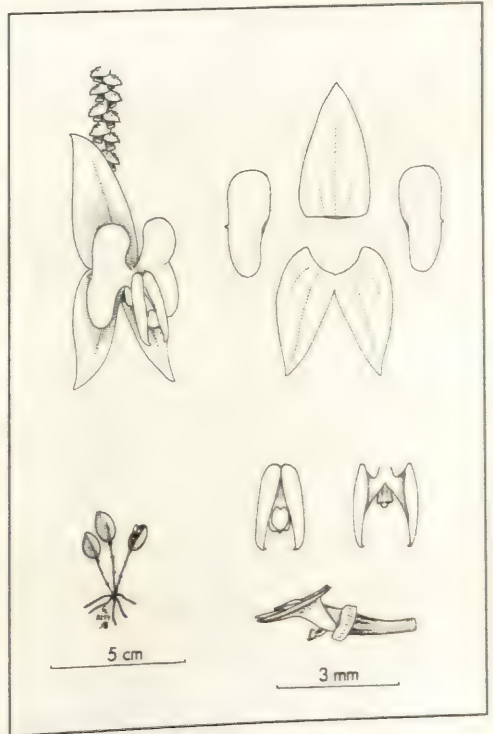


Fig. 20. *Lepanthes aurita*

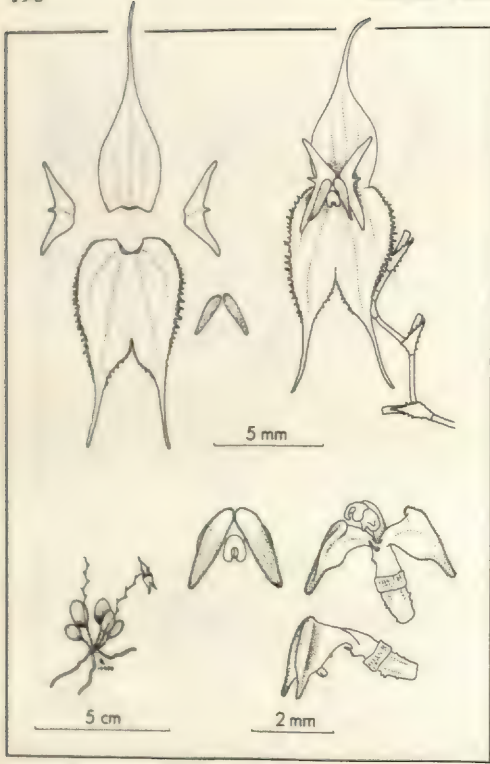


Fig. 21. *Lepanthes avicularia*

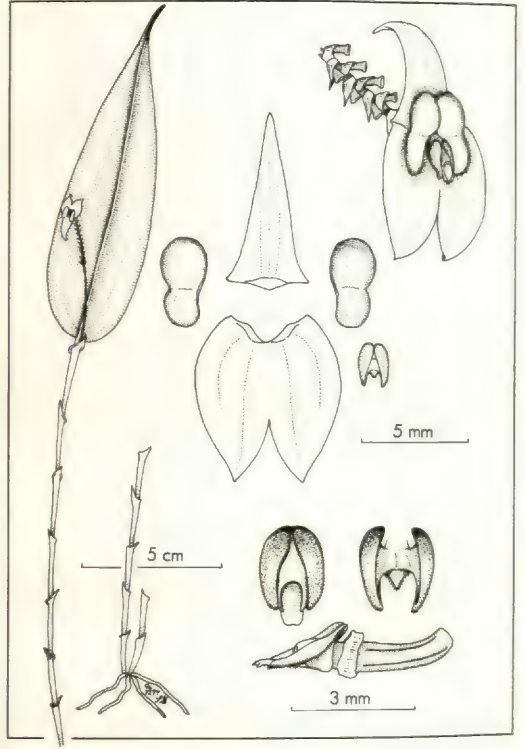


Fig. 22. *Lepanthes ballatrix*

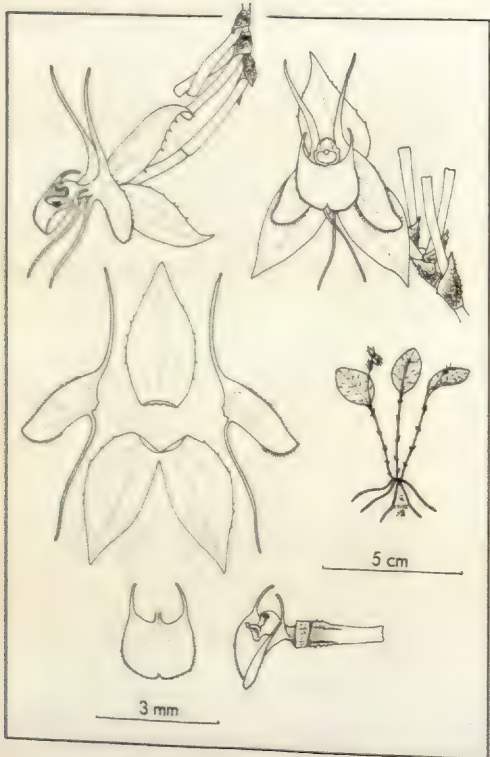


Fig. 23. *Lepanthes barbelifera*

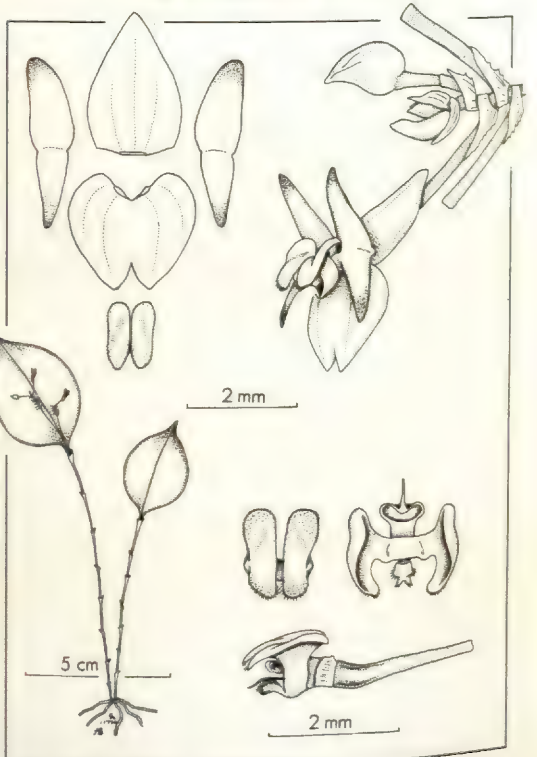


Fig. 24. *Lepanthes benzingii*

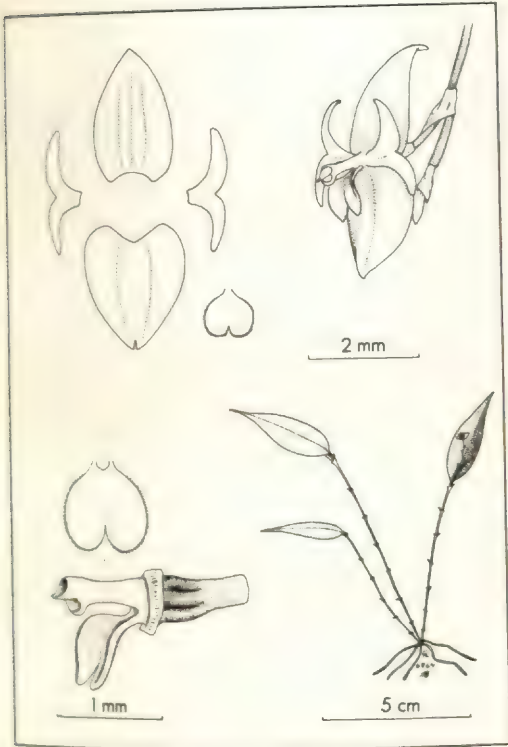


Fig. 25. *Lepanthes bifalcis*

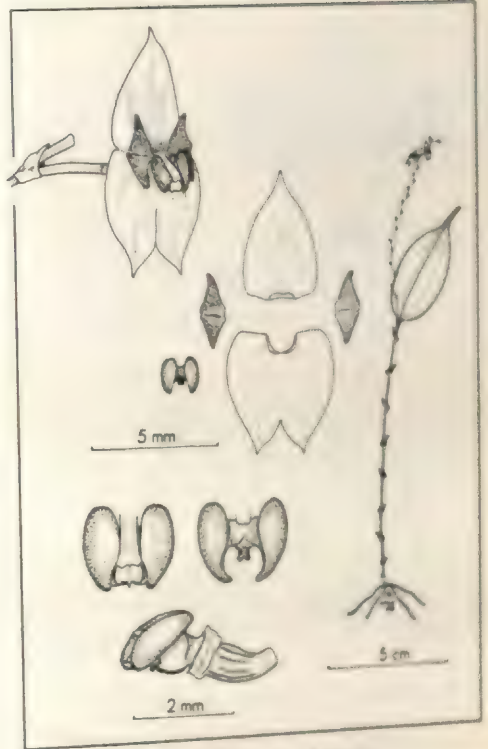


Fig. 26. *Lepanthes biloba*

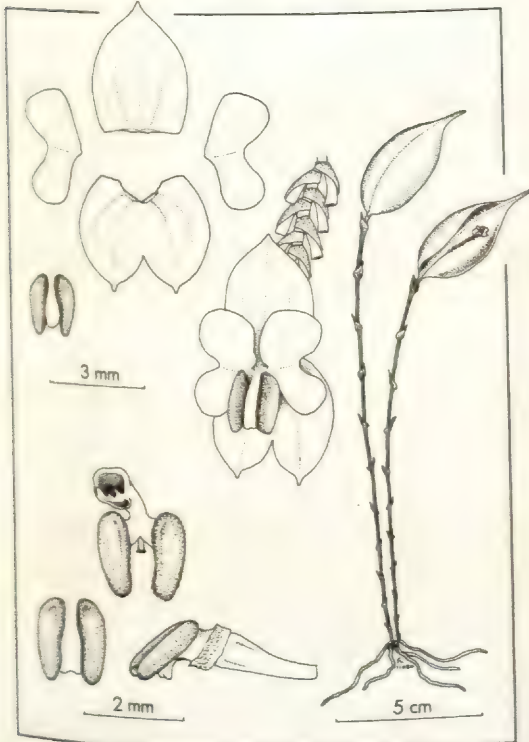


Fig. 27. *Lepanthes binaria*

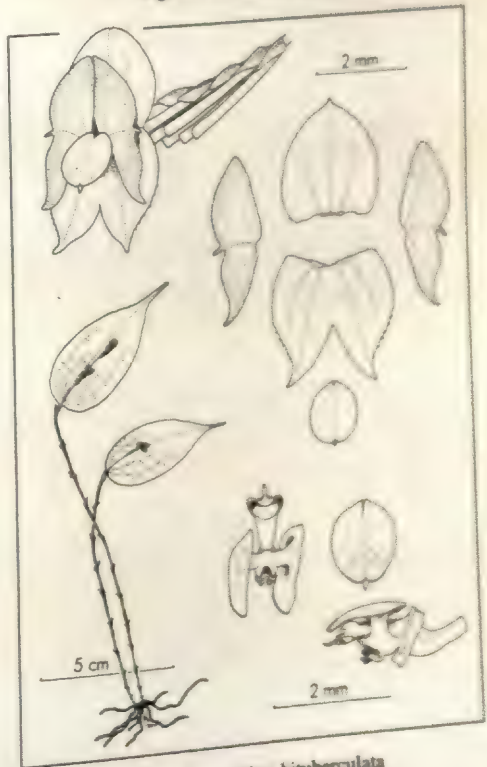


Fig. 28. *Lepanthes bituberculata*

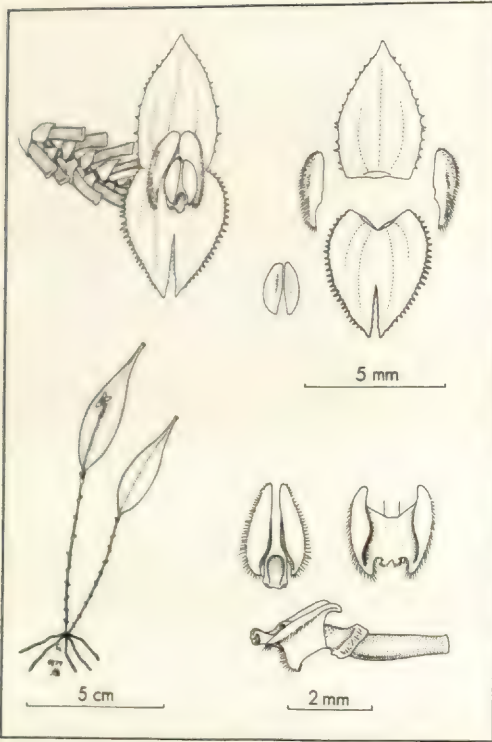


Fig. 29. *Lepanthes brachypogon*

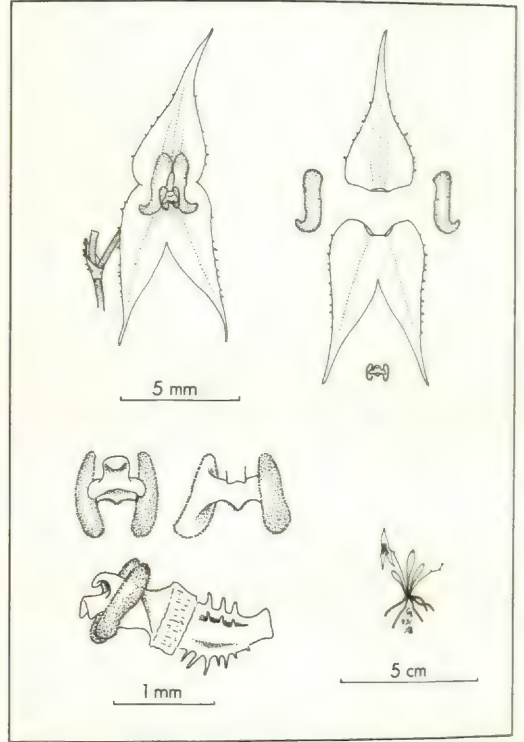


Fig. 30. *Lepanthes brenneri*

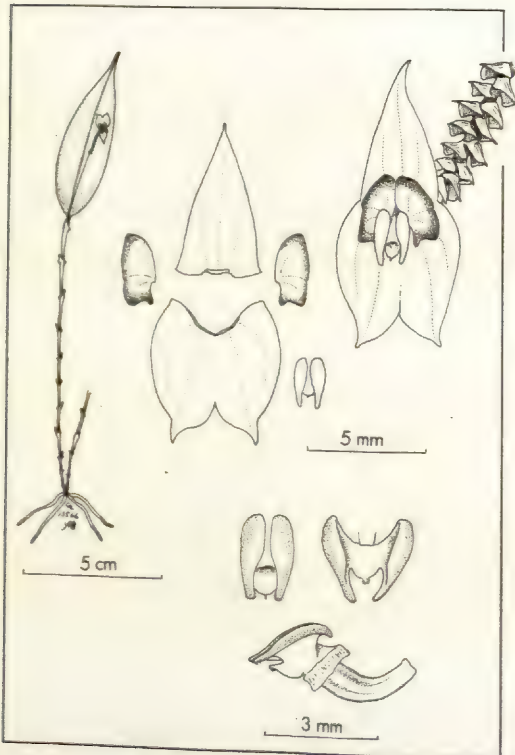


Fig. 31. *Lepanthes calliope*

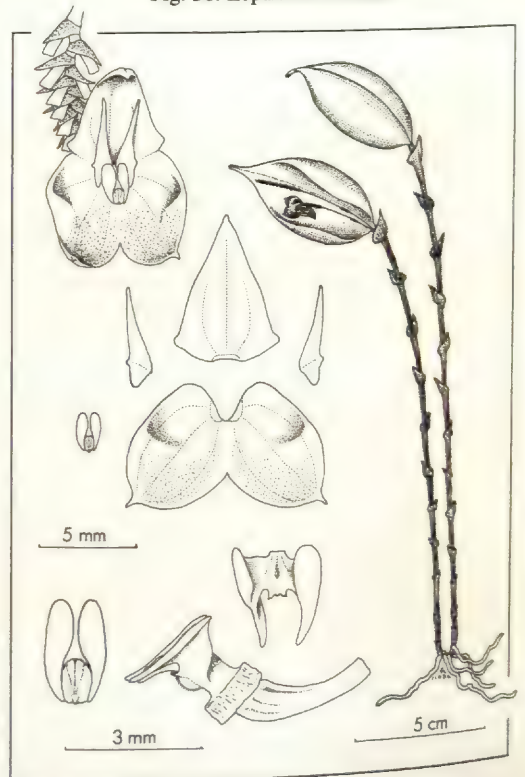


Fig. 32. *Lepanthes callisto*

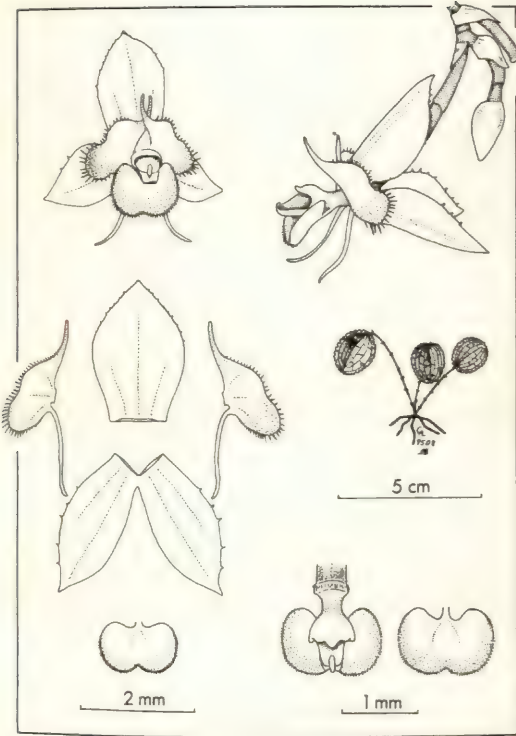


Fig. 33. *Lepanthes calodictyon*

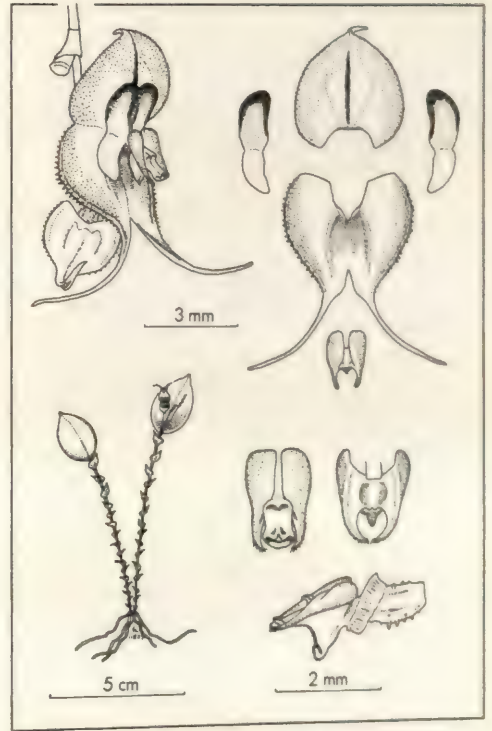


Fig. 34. *Lepanthes caloura*

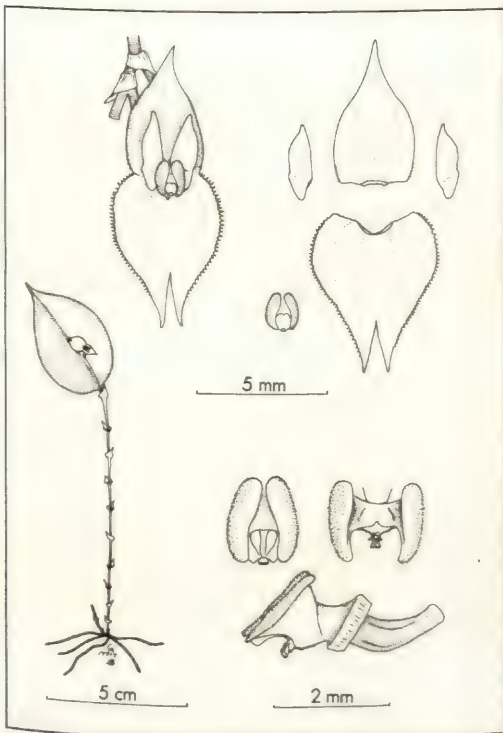


Fig. 35. *Lepanthes calypso*

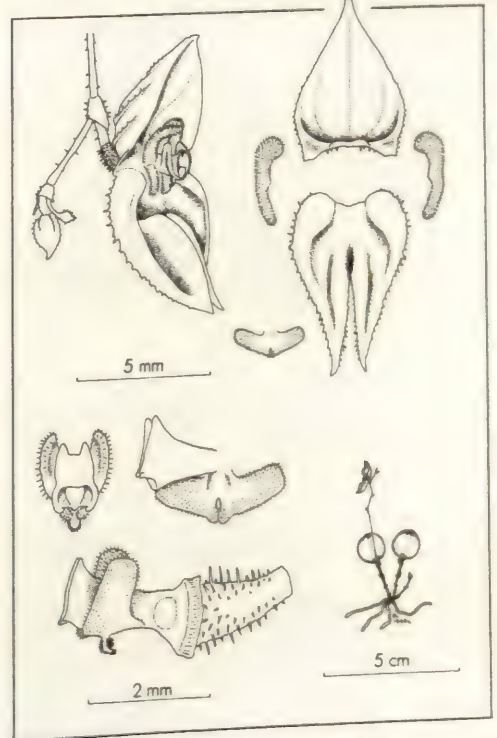


Fig. 36. *Lepanthes campodostele*

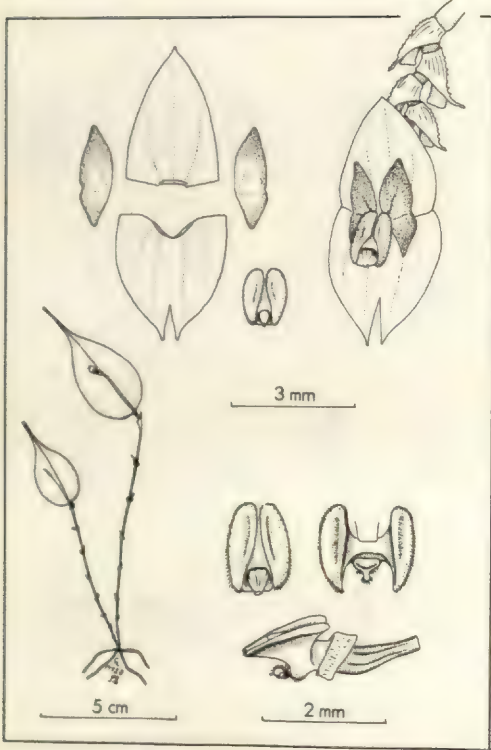


Fig. 37. *Lepanthes camptica*

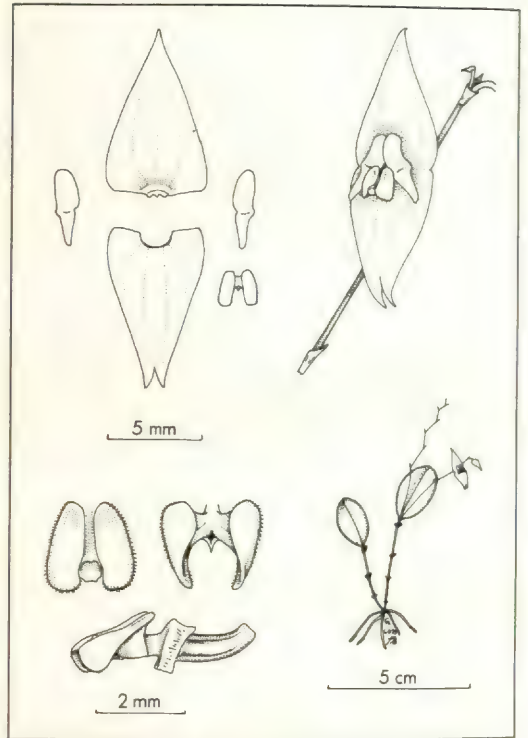


Fig. 38. *Lepanthes capitanea*

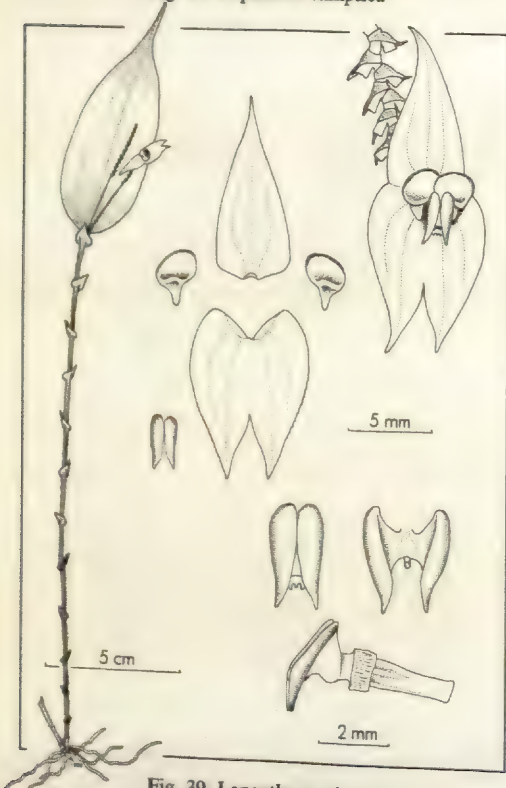


Fig. 39. *Lepanthes carinata*

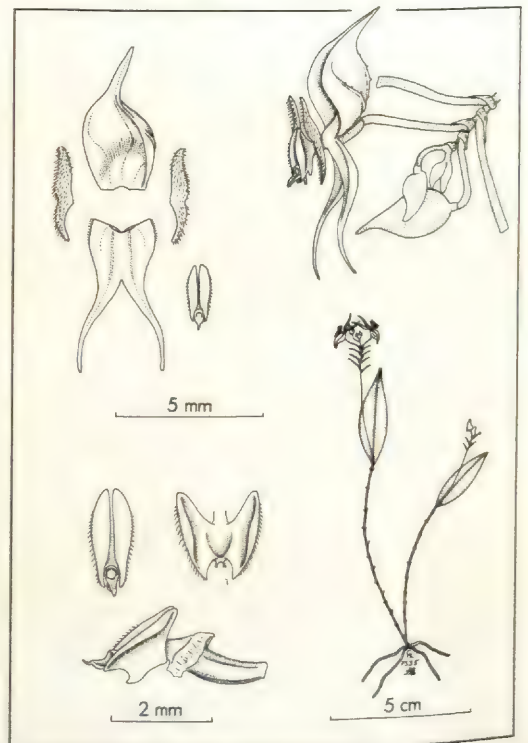
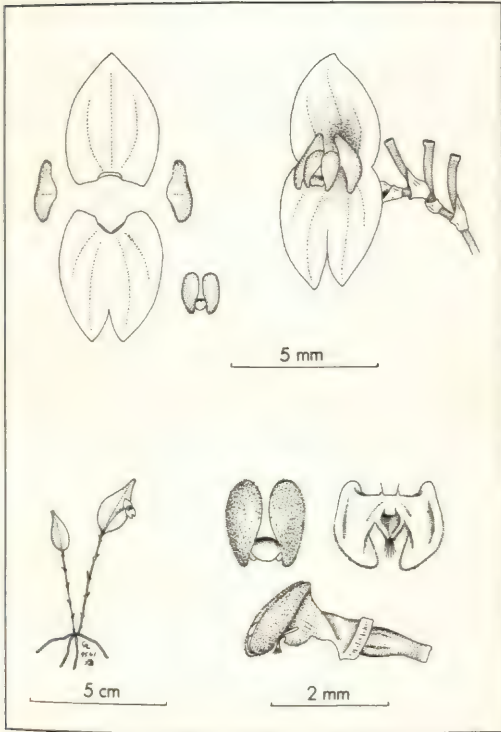
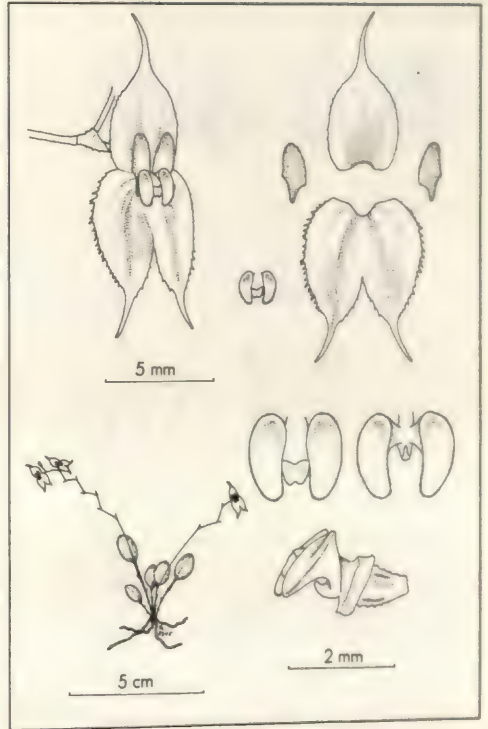
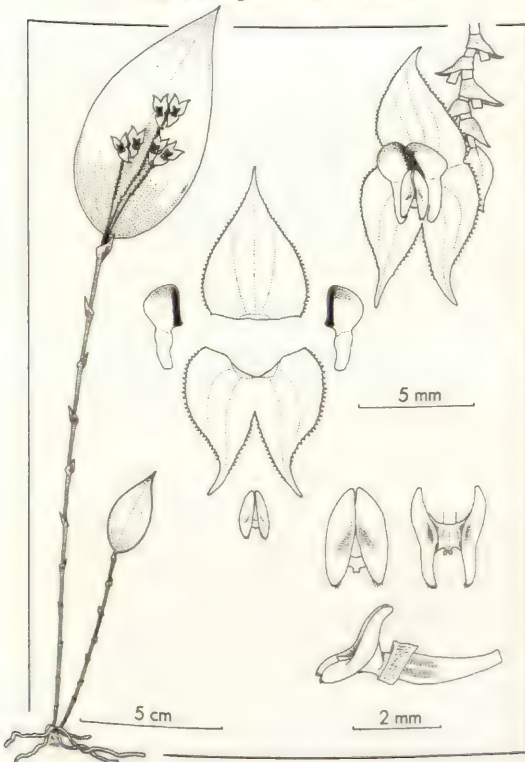
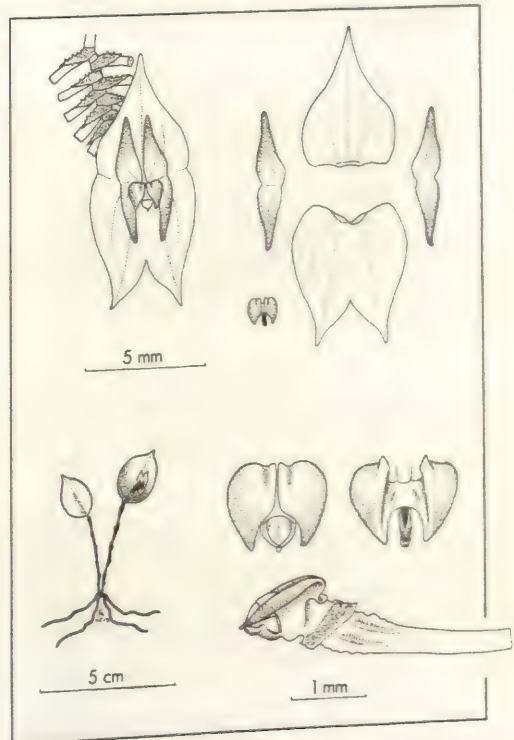


Fig. 40. *Lepanthes cassidea*

Fig. 41. *Lepanthes cauda-avis*Fig. 42. *Lepanthes caudata*Fig. 43. *Lepanthes caudatisepala*Fig. 44. *Lepanthes celox*

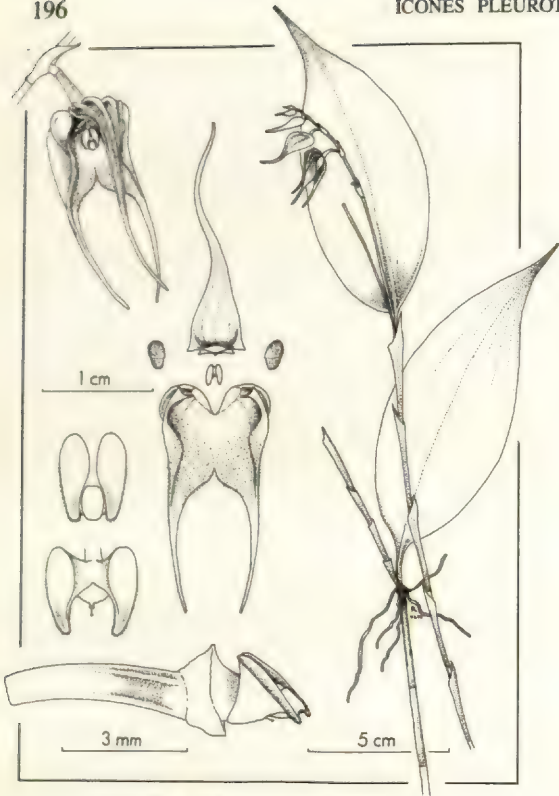


Fig. 45. *Lepanthes chimaera*

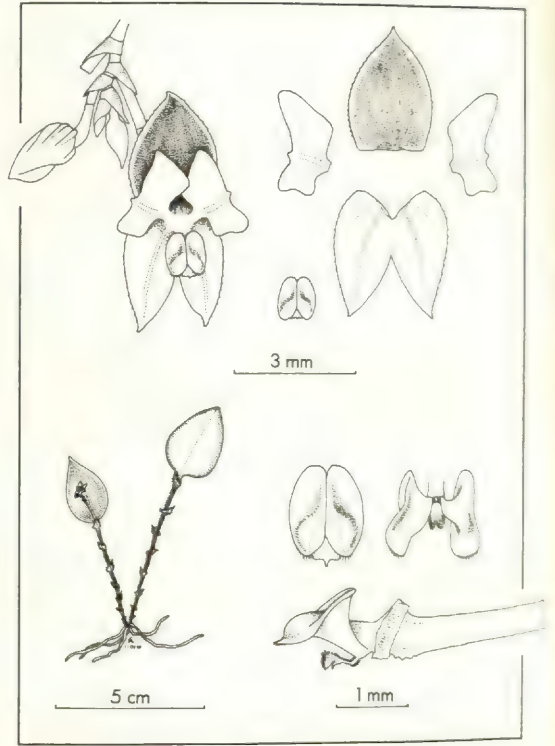


Fig. 46. *Lepanthes chorista*

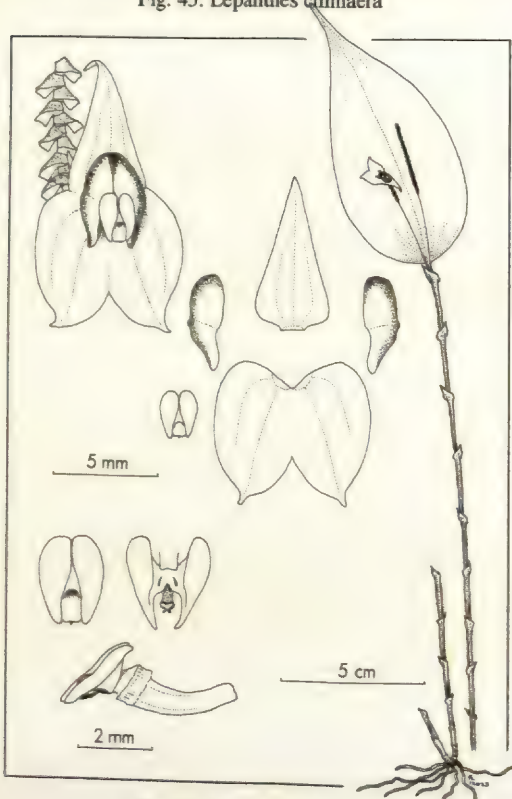


Fig. 47. *Lepanthes chrycina*

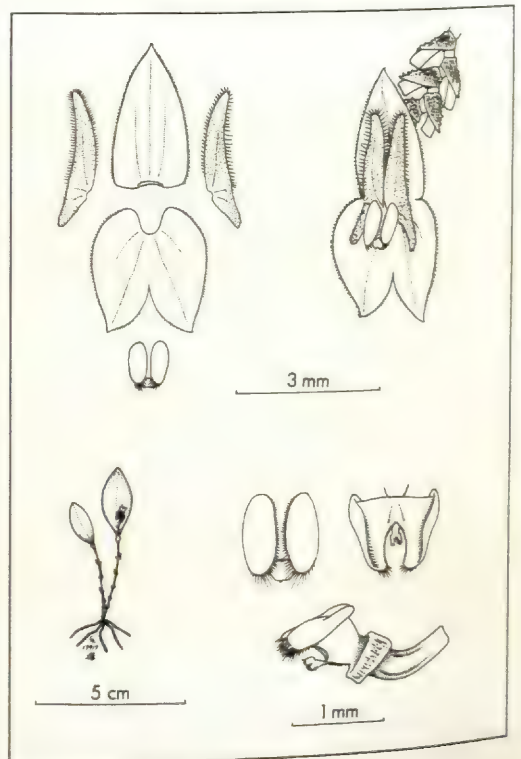


Fig. 48. *Lepanthes ciliicampa*

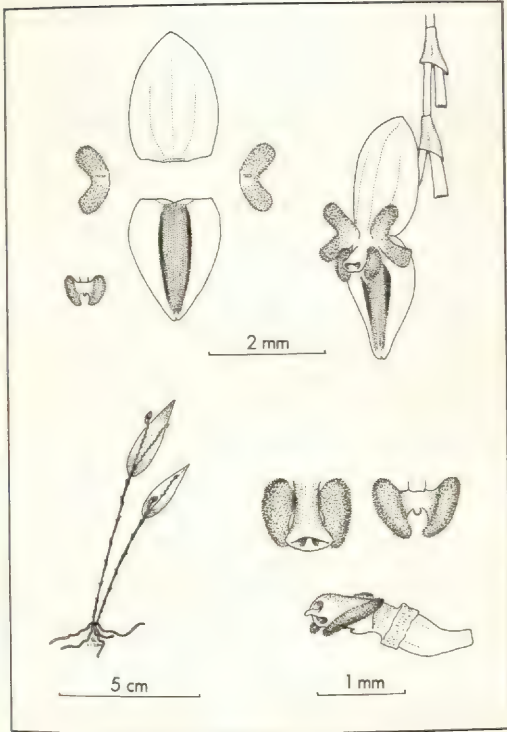


Fig. 49. *Lepanthes clandestina*

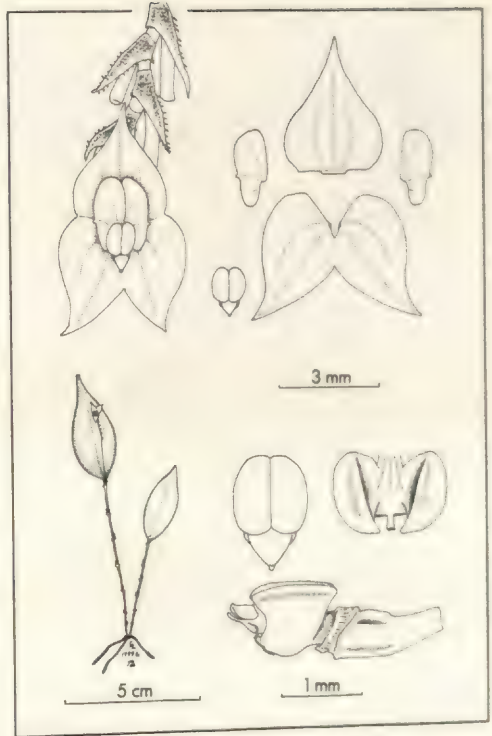


Fig. 50. *Lepanthes clarkii*

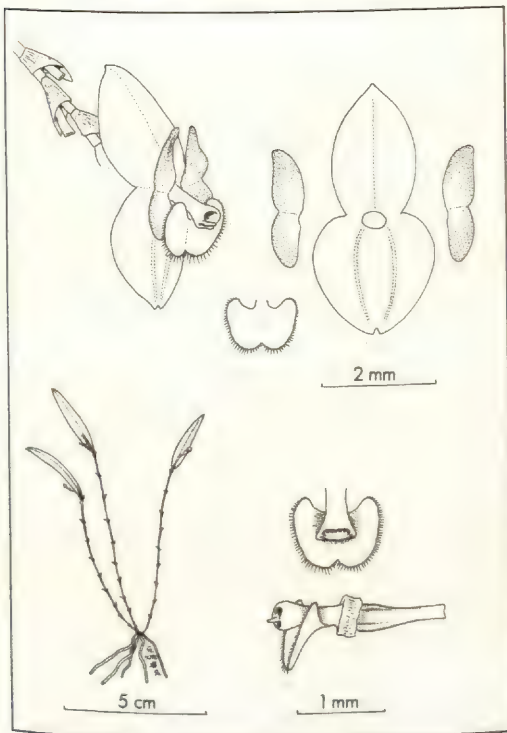


Fig. 51. *Lepanthes columbar*

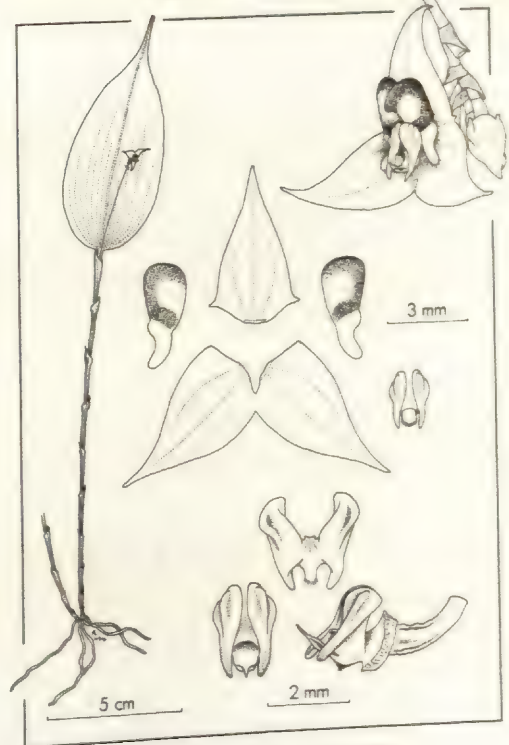


Fig. 52. *Lepanthes condorensis*

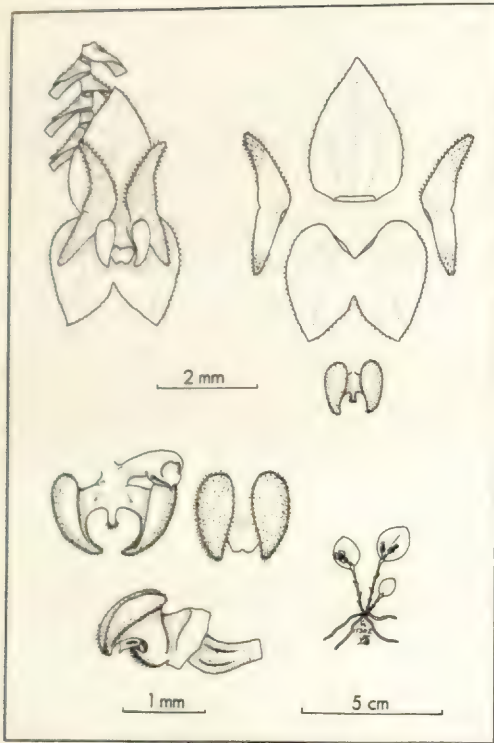


Fig. 53. *Lepanthes confusa*

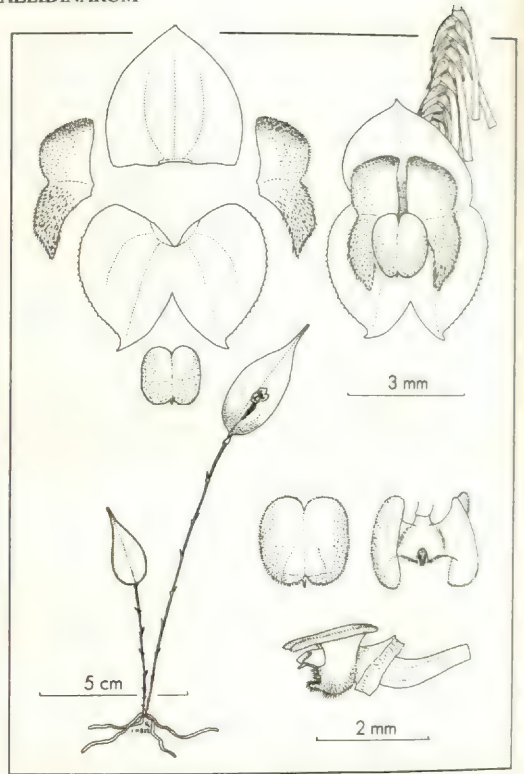


Fig. 54. *Lepanthes conjuncta*

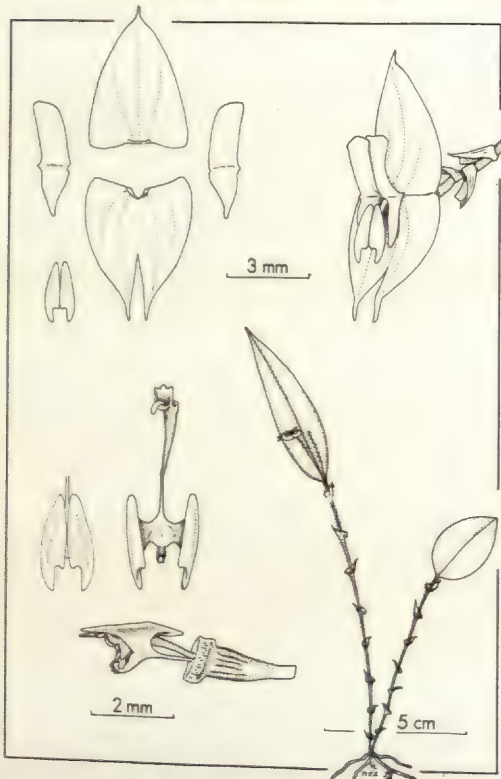


Fig. 55. *Lepanthes contingens*

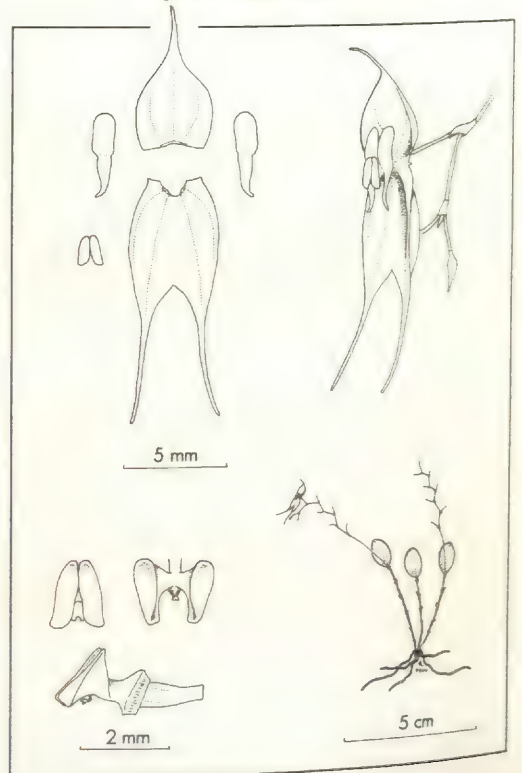


Fig. 56. *Lepanthes corkyae*

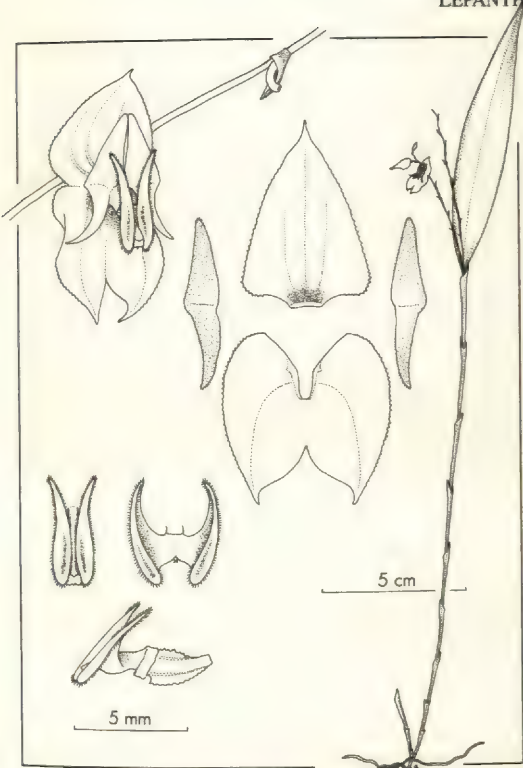


Fig. 57. *Lepanthes cornualis*

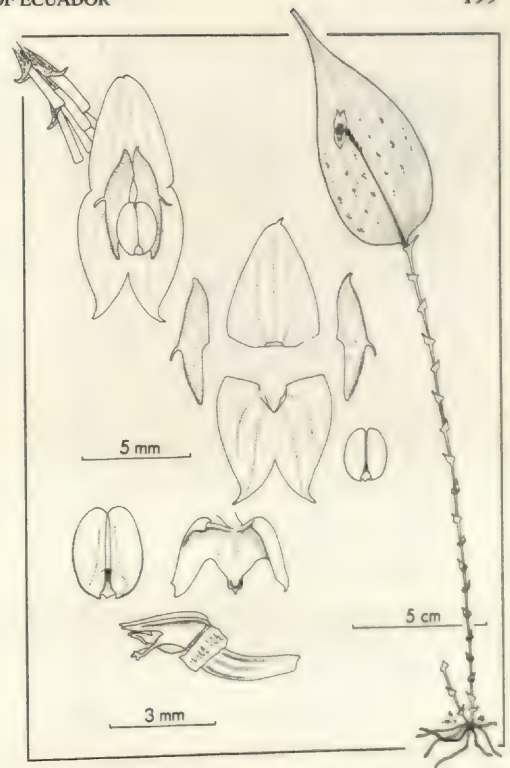


Fig. 58. *Lepanthes corrugata*

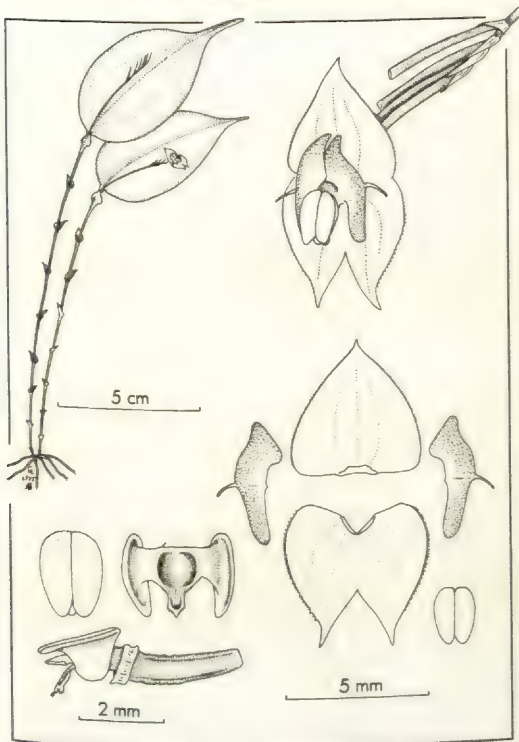


Fig. 59. *Lepanthes cotyledon*

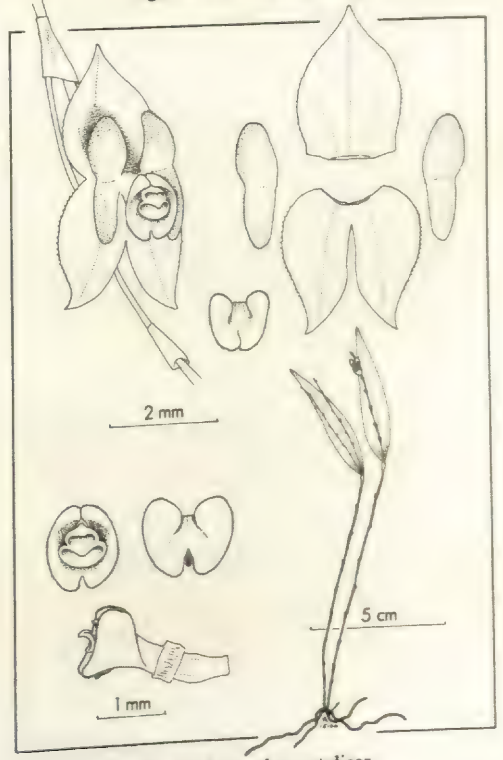


Fig. 60. *Lepanthes cotylisca*

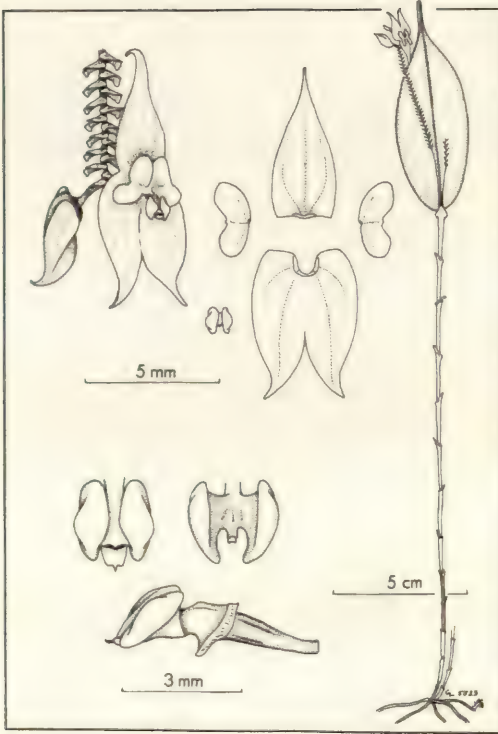


Fig. 61. *Lepanthes craticia*

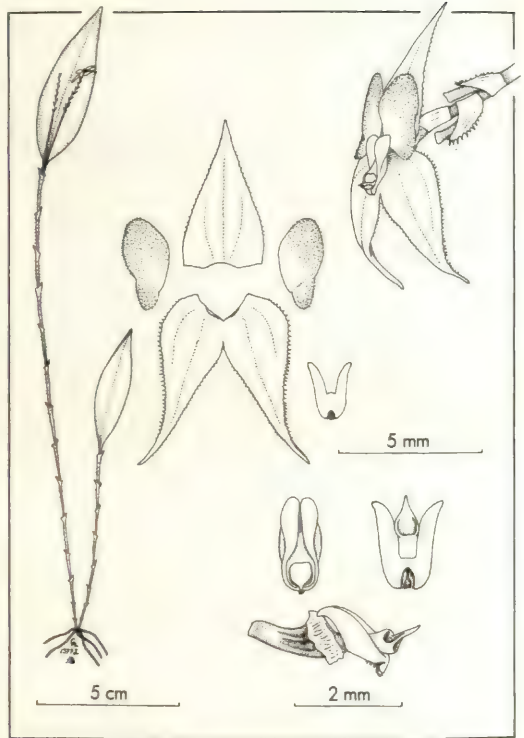


Fig. 62. *Lepanthes cremasta*

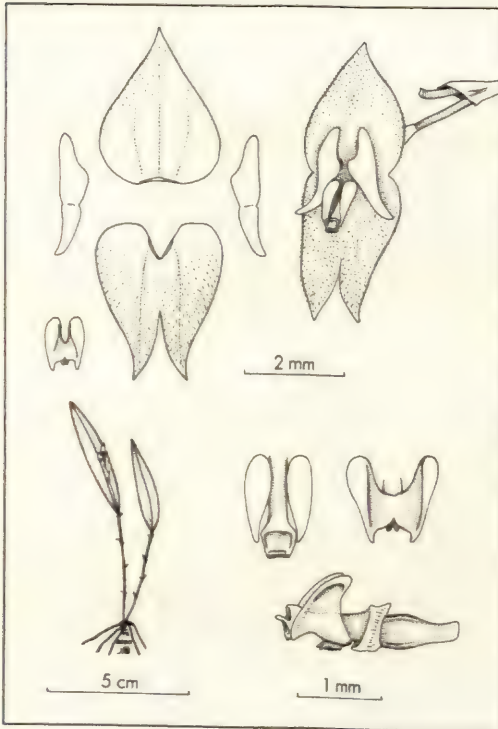


Fig. 63. *Lepanthes crista-pulli*

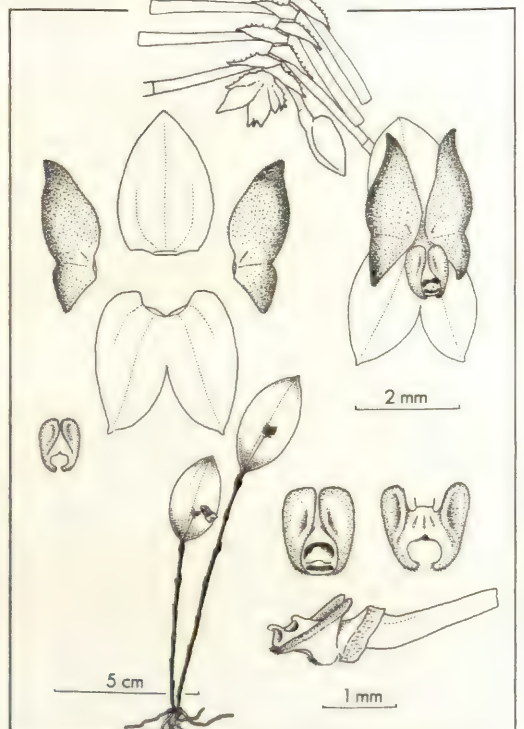
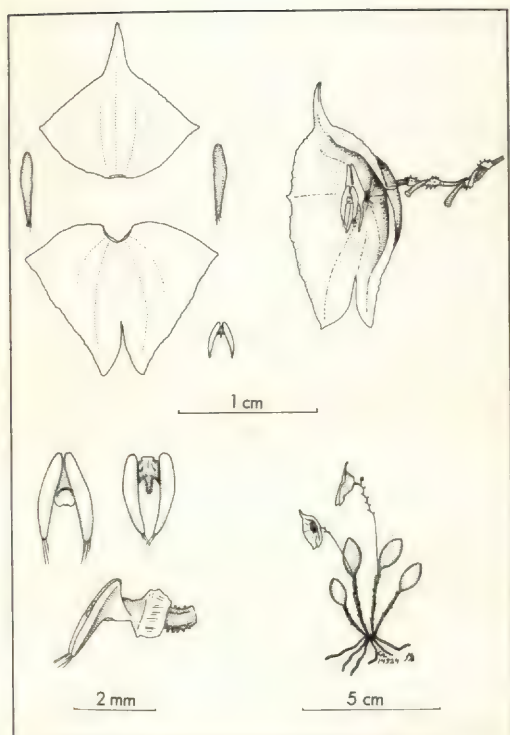
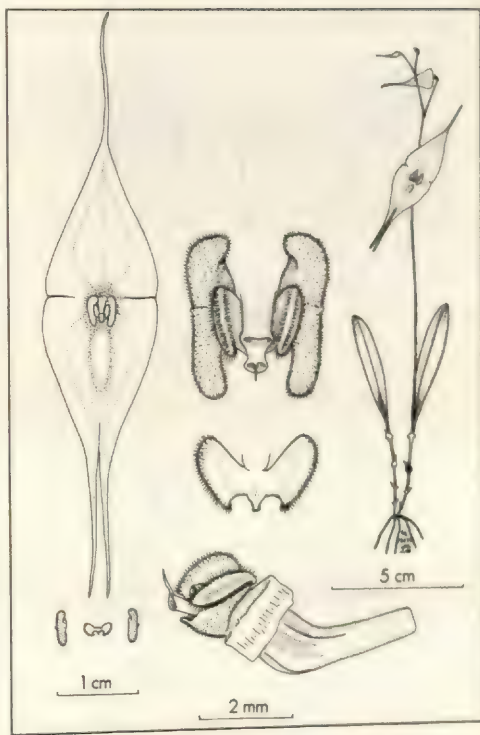
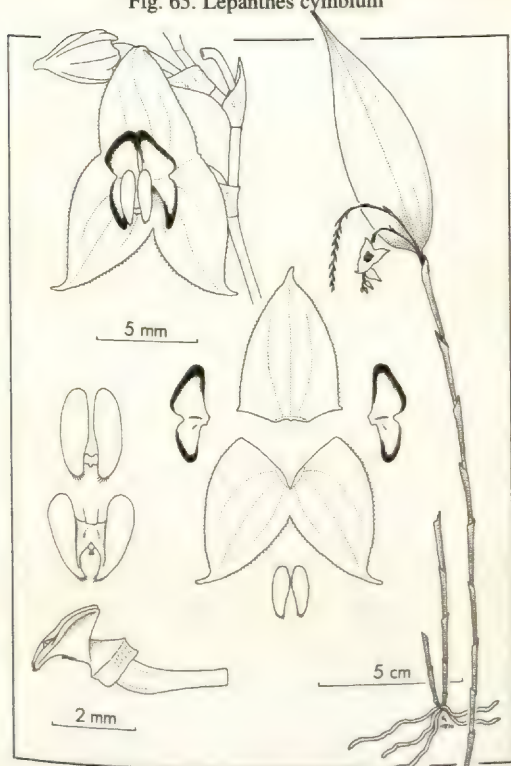
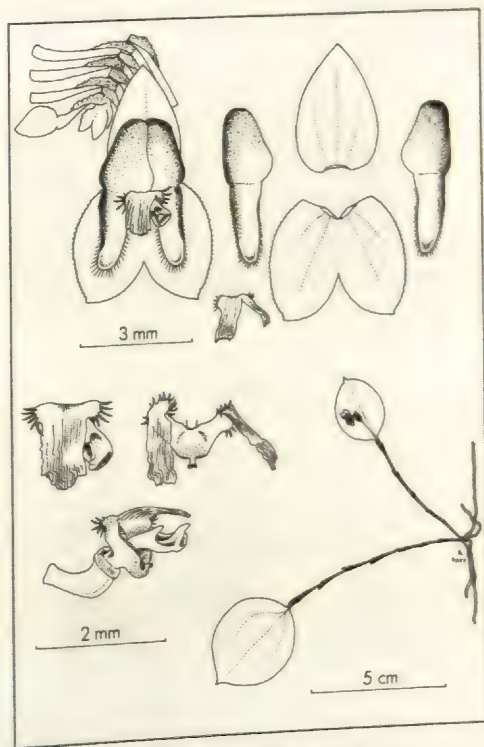


Fig. 64. *Lepanthes ctenophora*

Fig. 65. *Lepanthes cymbium*Fig. 66. *Lepanthes dalessandroi*Fig. 67. *Lepanthes decurva*Fig. 68. *Lepanthes deformis*

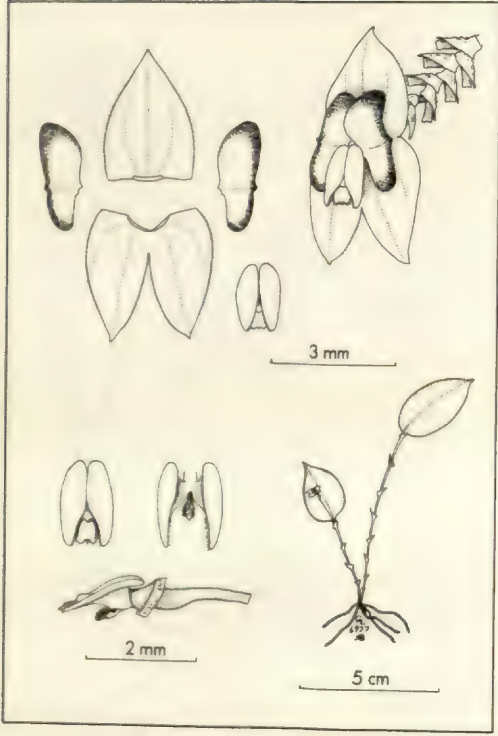


Fig. 69. *Lepadthes deileastes*

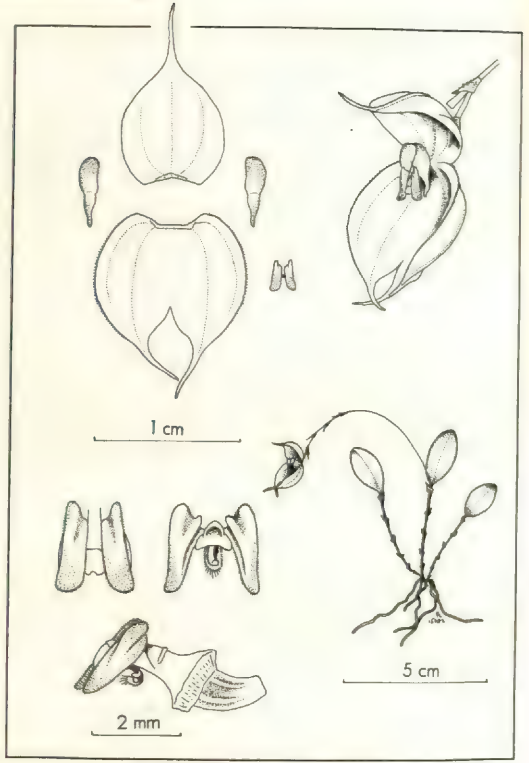


Fig. 70. *Lepadthes delhierroi*

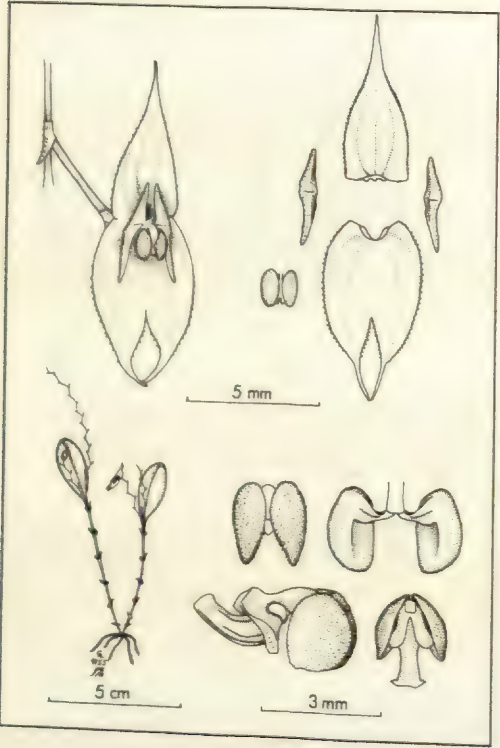


Fig. 71. *Lepadthes deliqua*

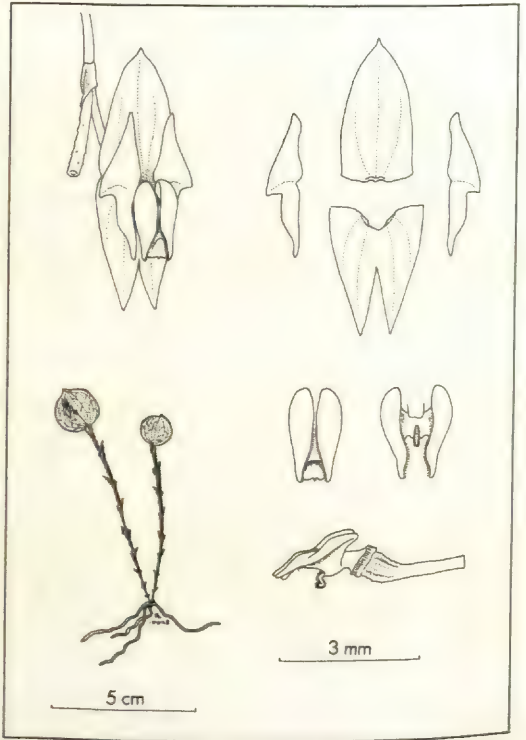


Fig. 72. *Lepadthes dictydion*

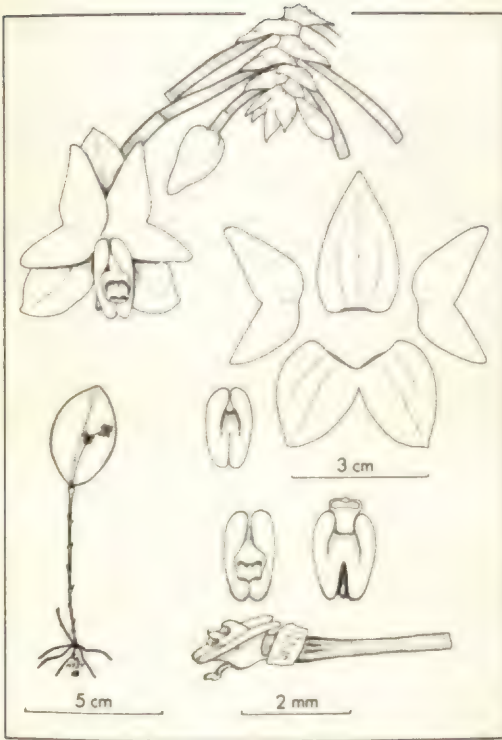


Fig. 73. *Lepanthes didyma*

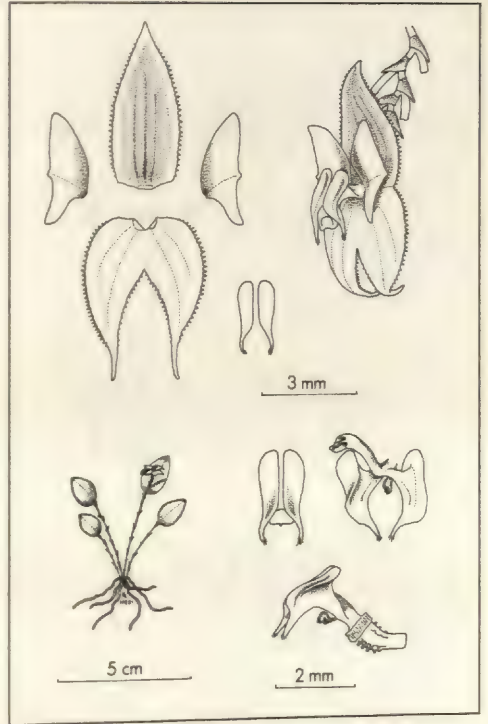


Fig. 74. *Lepanthes disjuncta*

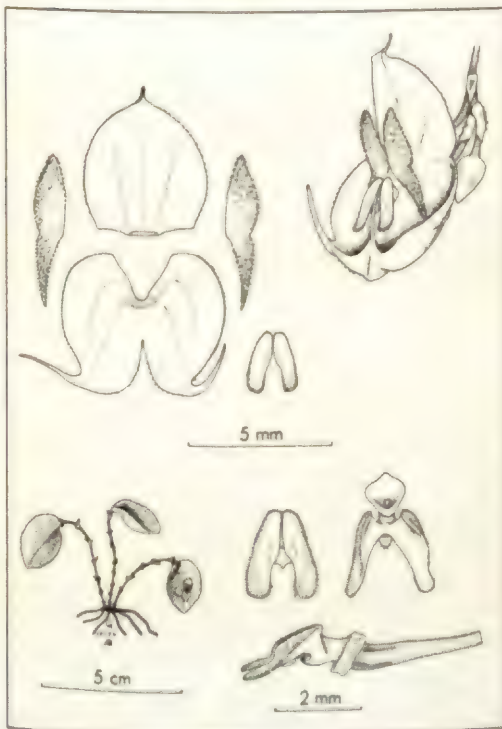


Fig. 75. *Lepanthes dodsonii*

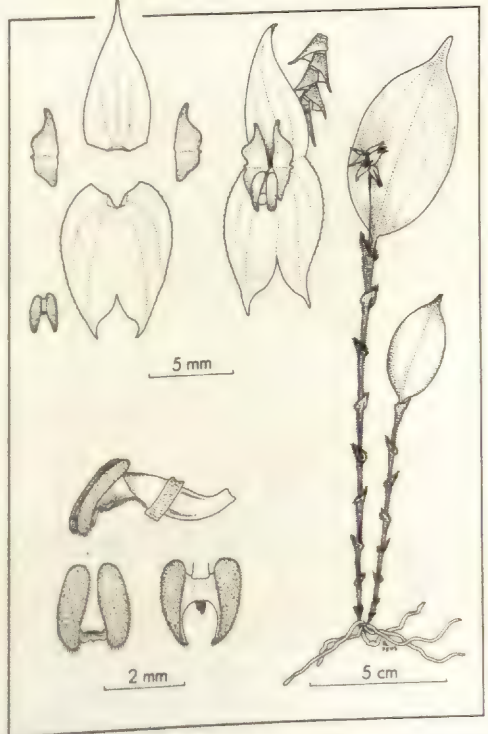


Fig. 76. *Lepanthes dunstervilleorum*

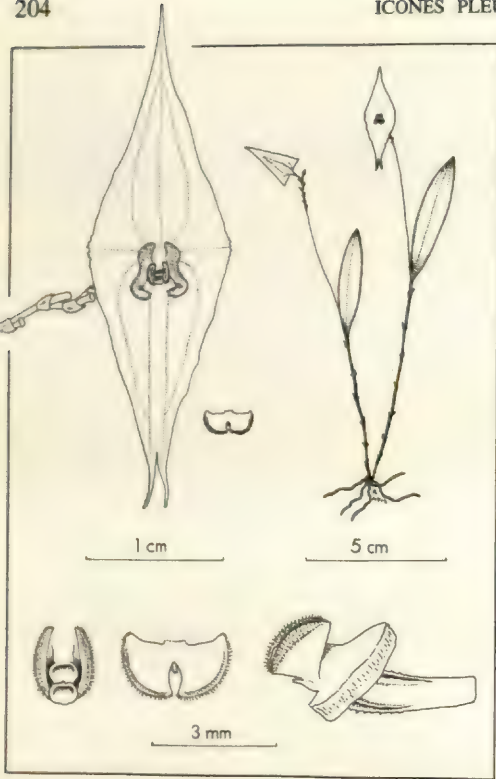


Fig. 77. *Lepanthes echo*

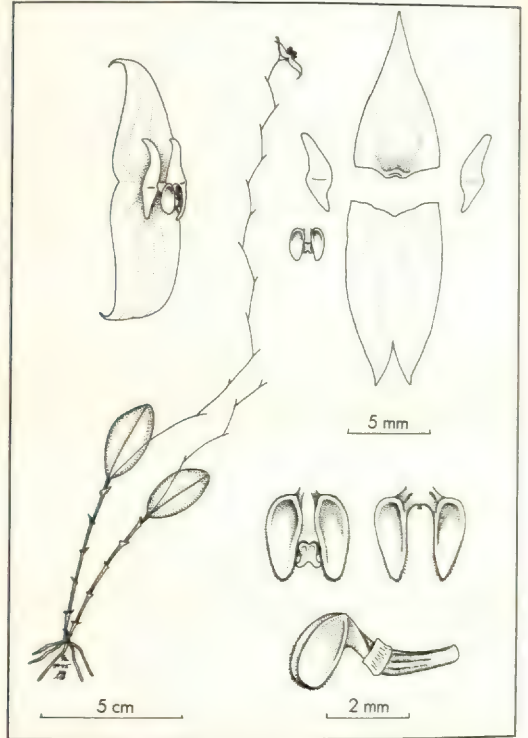


Fig. 78. *Lepanthes effusa*

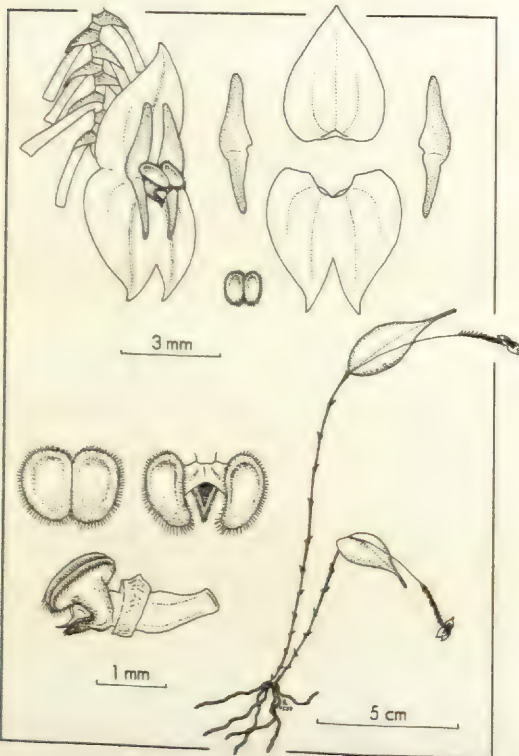


Fig. 79. *Lepanthes ejecta*

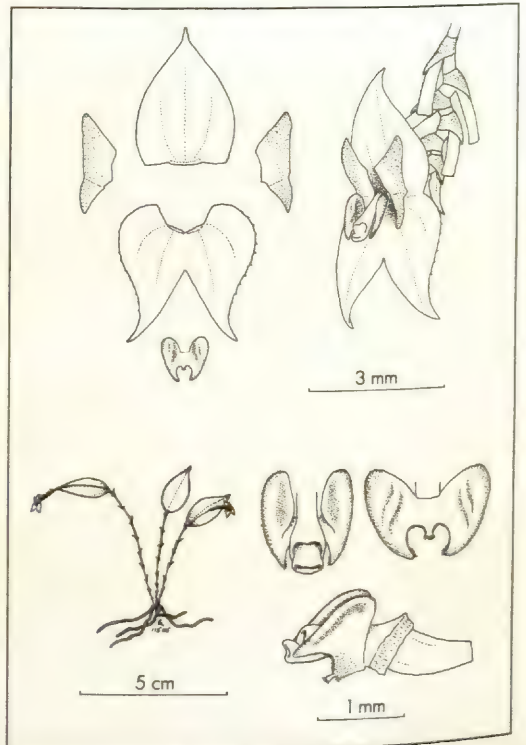


Fig. 80. *Lepanthes elaminata*

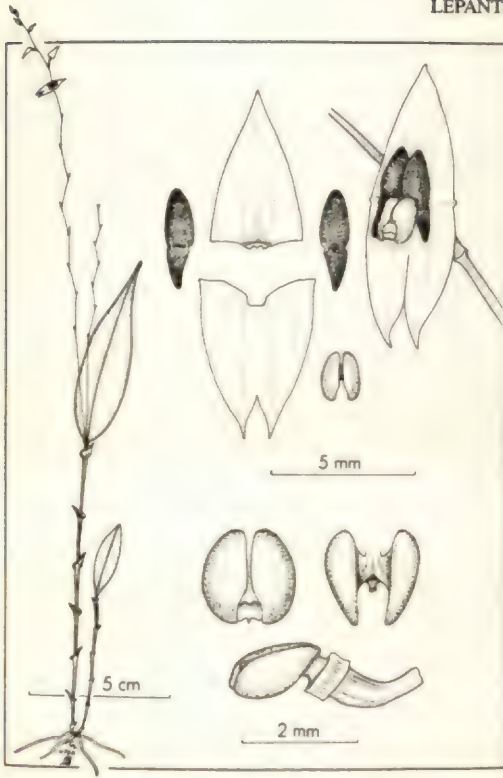


Fig. 81. *Lepanthes electilis*

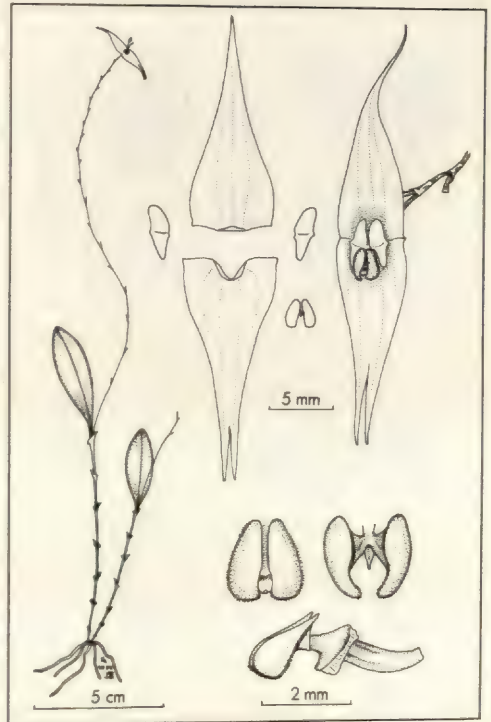


Fig. 82. *Lepanthes elegantula*

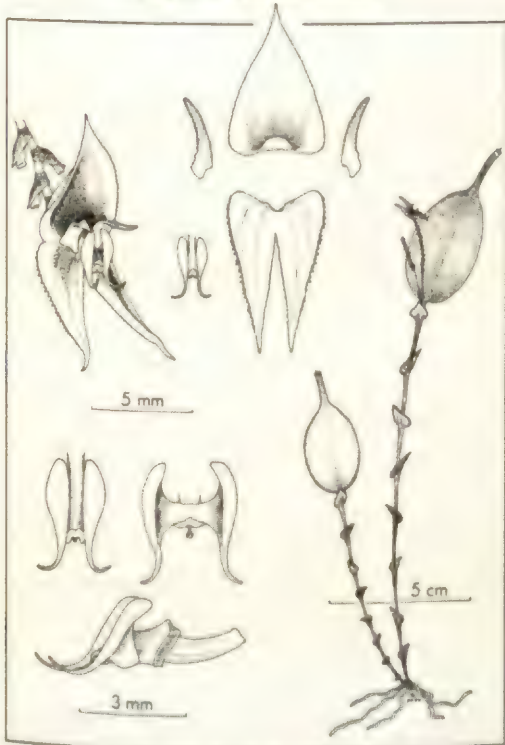


Fig. 83. *Lepanthes elephantina*



Fig. 84. *Lepanthes elongata*

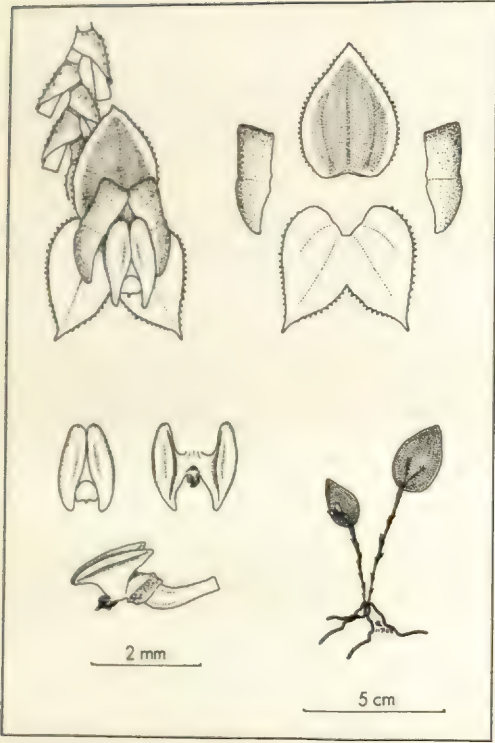


Fig. 85. *Lepanthes embreei*

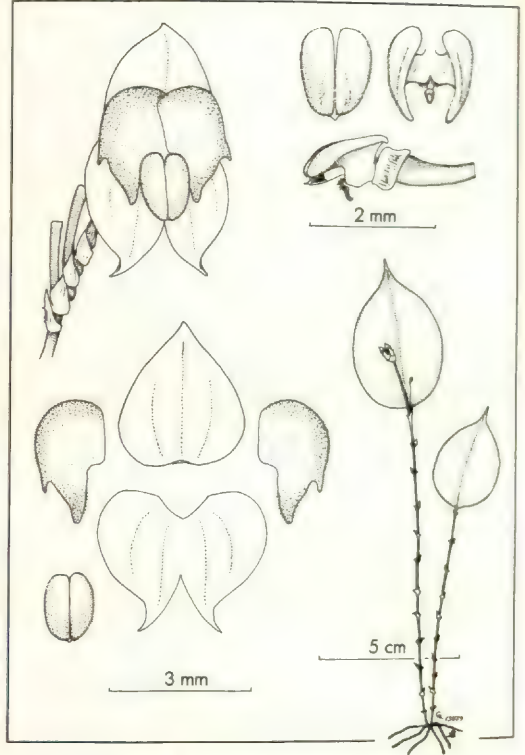


Fig. 86. *Lepanthes eriocampa*

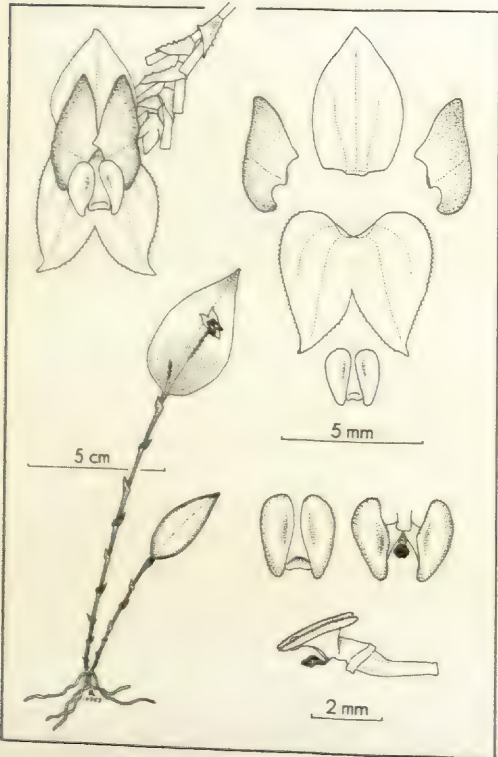


Fig. 87. *Lepanthes eruca*

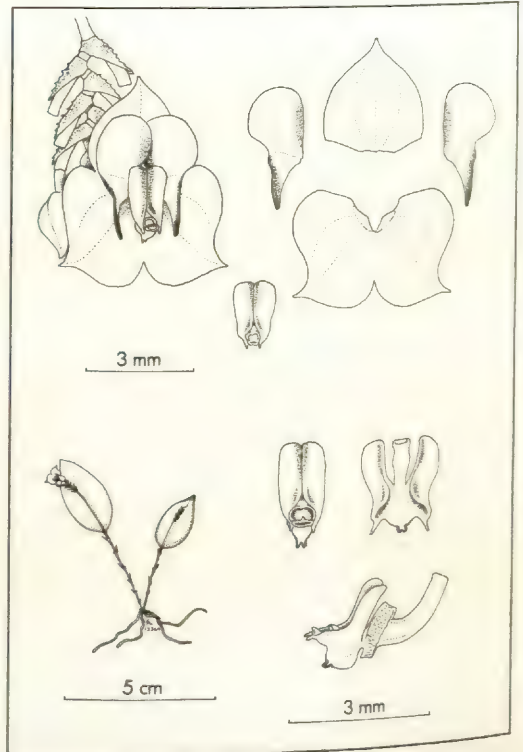


Fig. 88. *Lepanthes esmeralda*

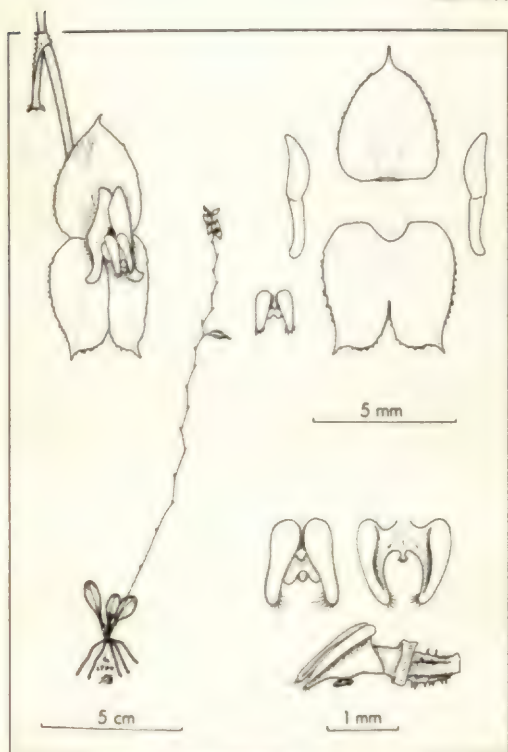


Fig. 89. *Lepanthes eumeces*

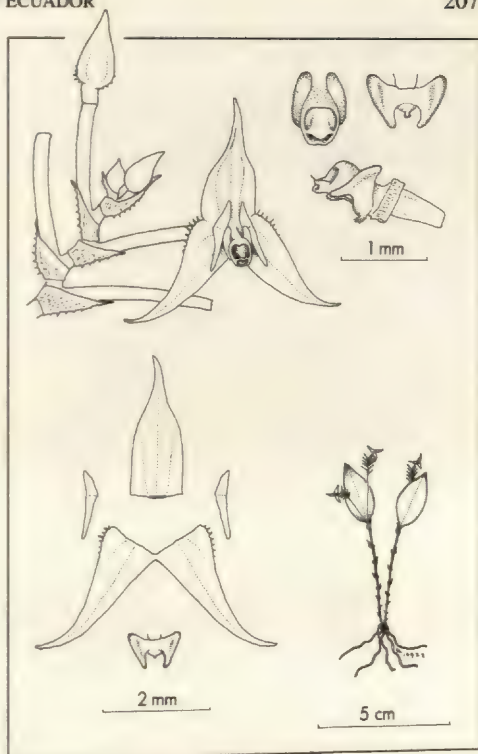


Fig. 90. *Lepanthes evansiae*

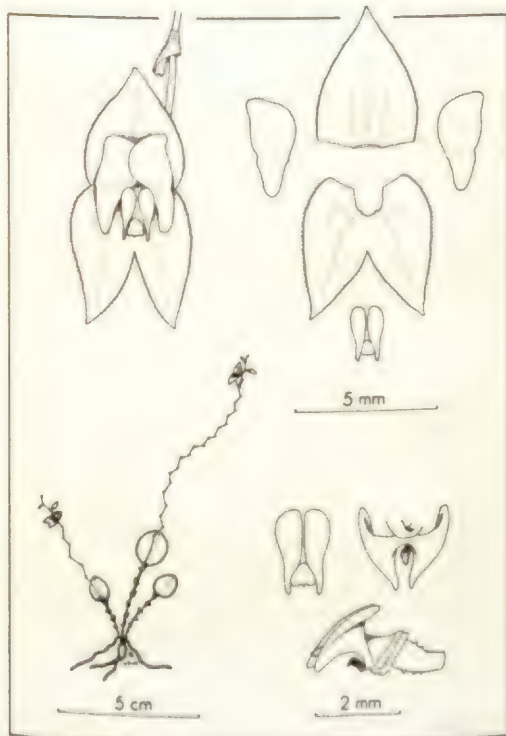


Fig. 91. *Lepanthes exogena*

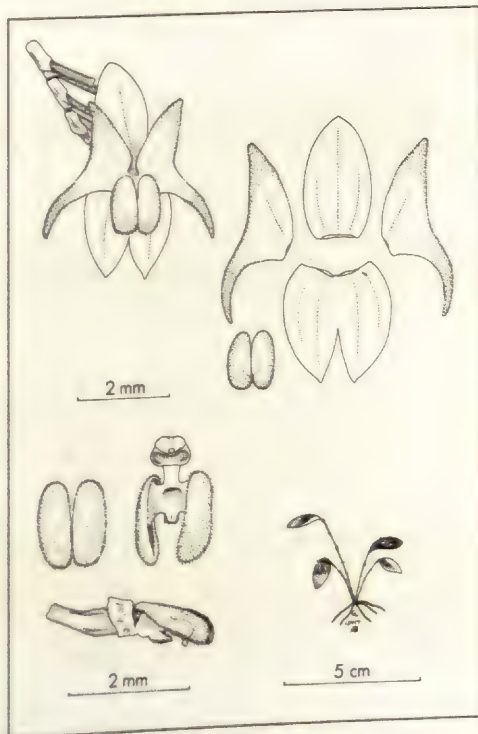


Fig. 92. *Lepanthes expansa*

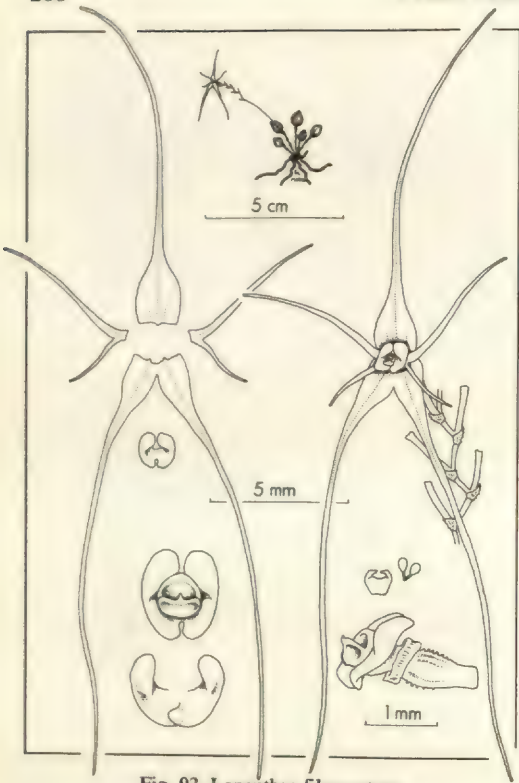


Fig. 93. *Lepanthes filamentosa*

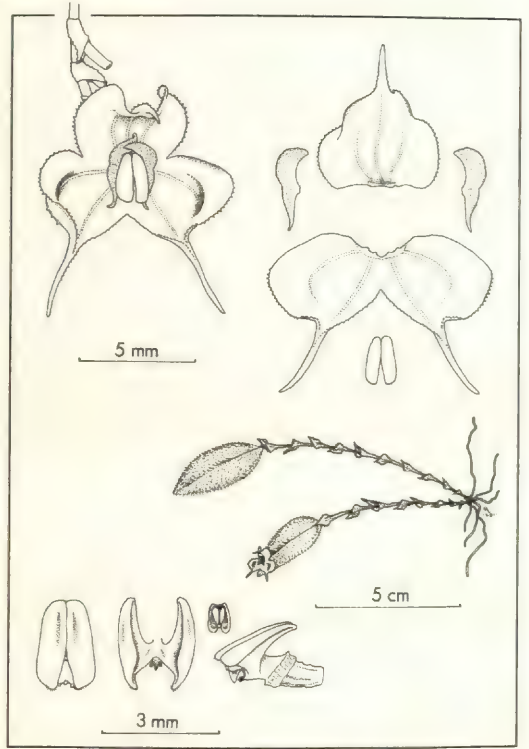


Fig. 94. *Lepanthes fiskei*

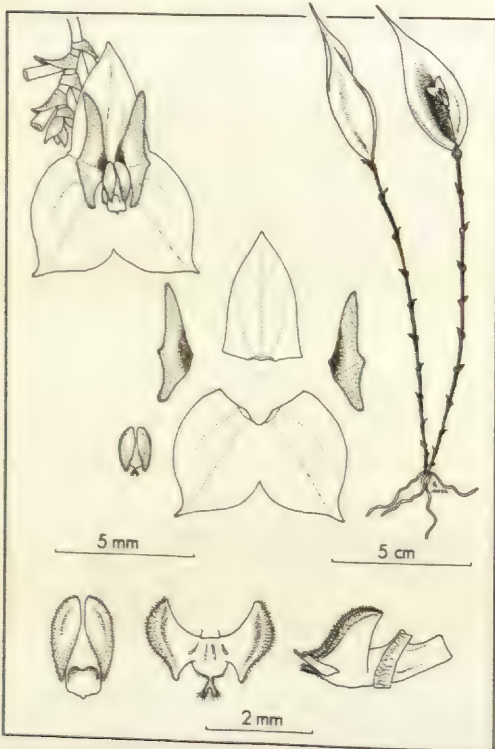


Fig. 95. *Lepanthes fissa*

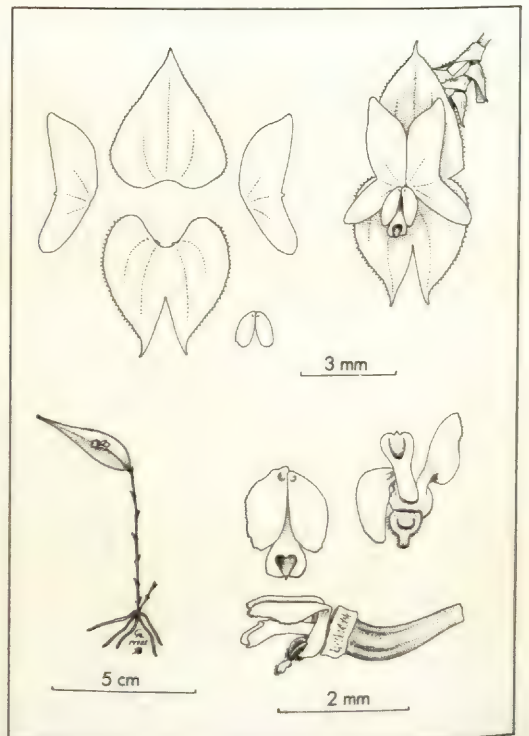


Fig. 96. *Lepanthes flaccida*

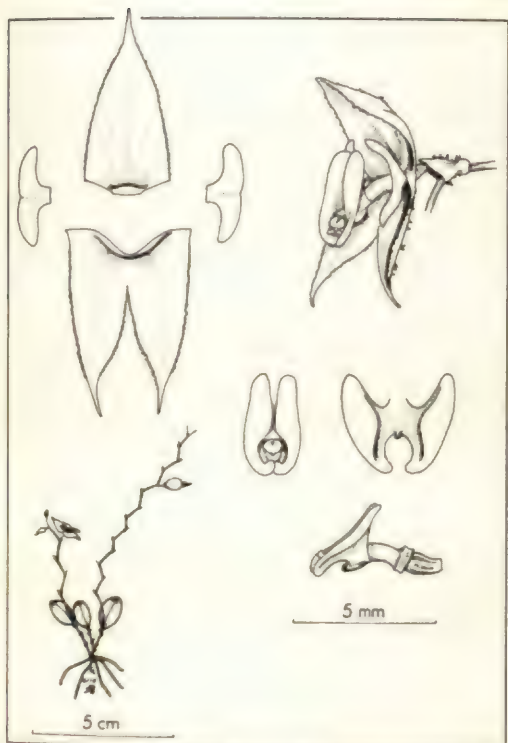


Fig. 97. *Lepanthes flexuosa*

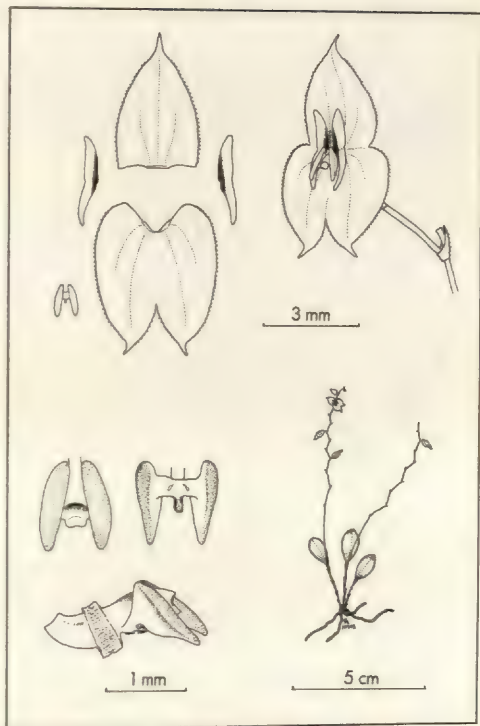


Fig. 98. *Lepanthes floresii*

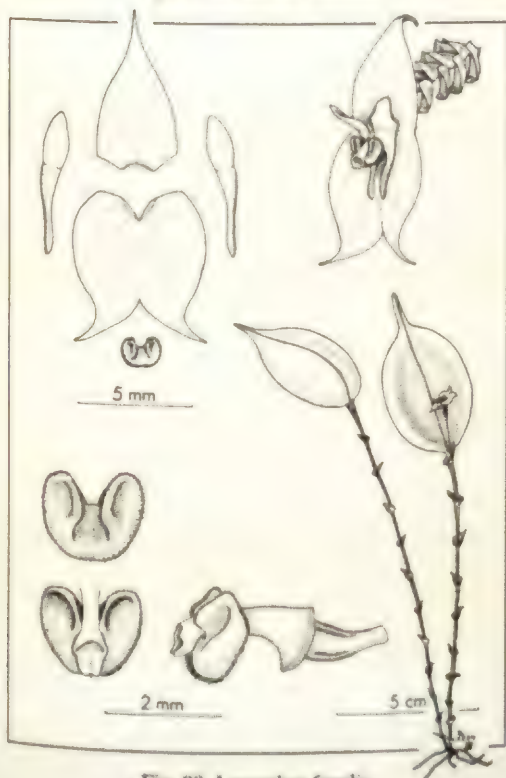


Fig. 99. *Lepanthes focalis*

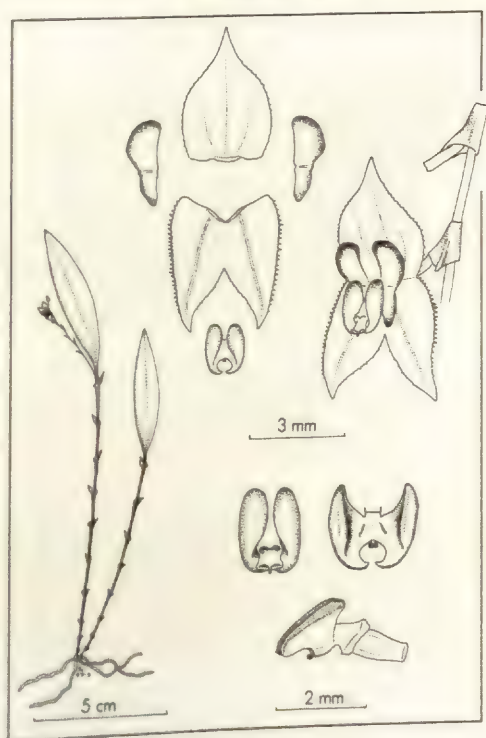
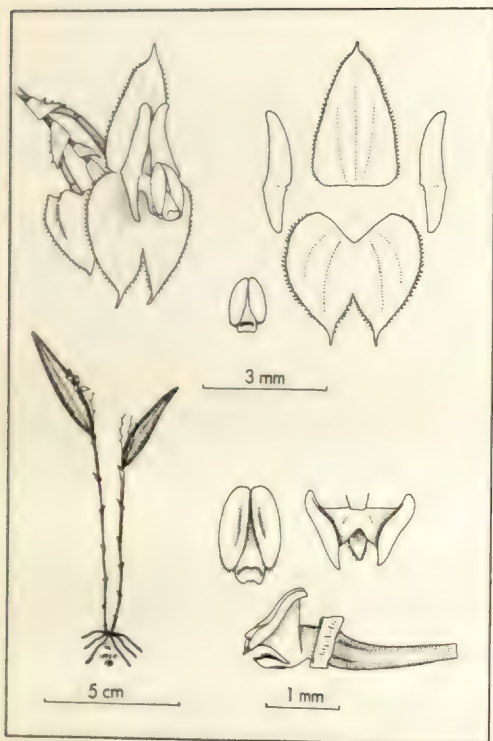
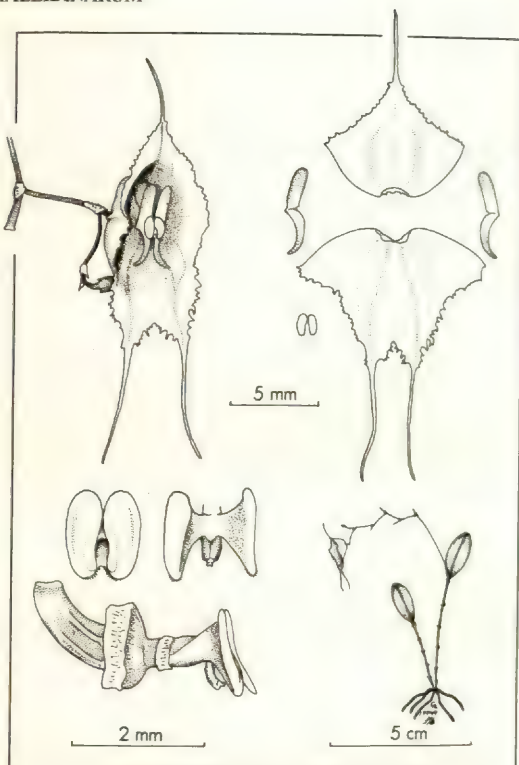
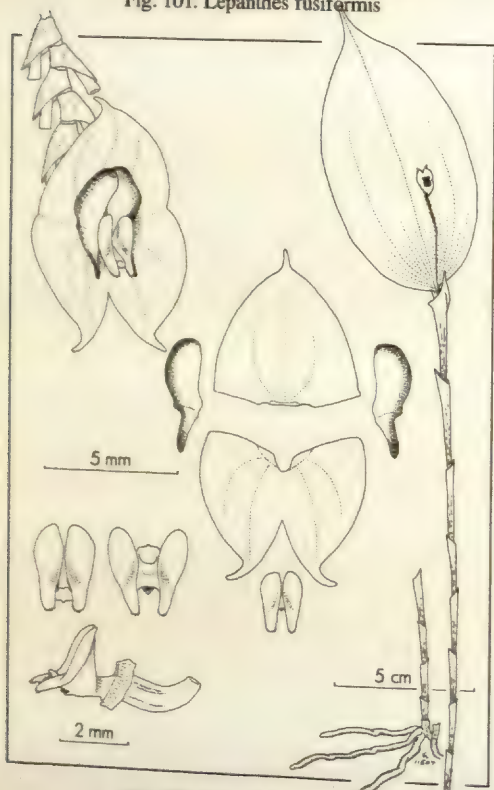
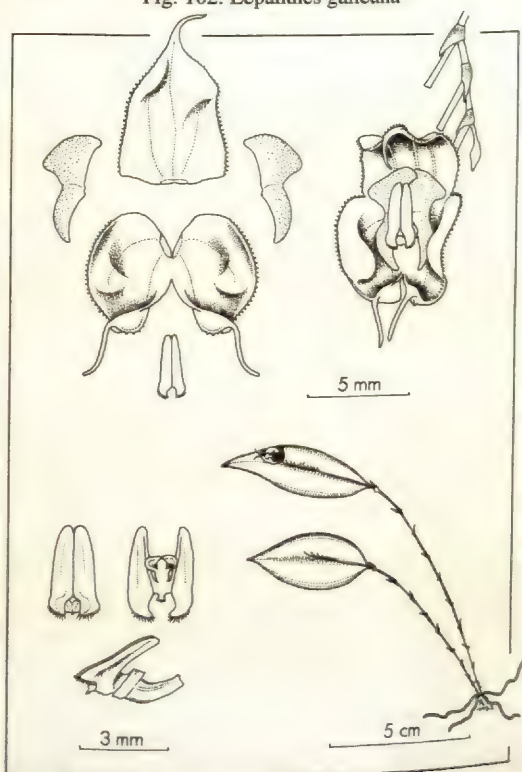


Fig. 100. *Lepanthes frigida*

Fig. 101. *Lepanthes fusiformis*Fig. 102. *Lepanthes gaileana*Fig. 103. *Lepanthes gargantua*Fig. 104. *Lepanthes gargoylea*

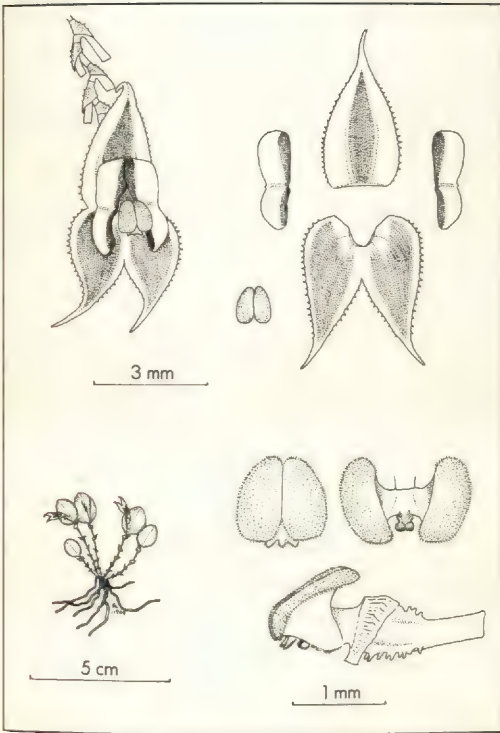


Fig. 105. *Lepanthes gemmula*

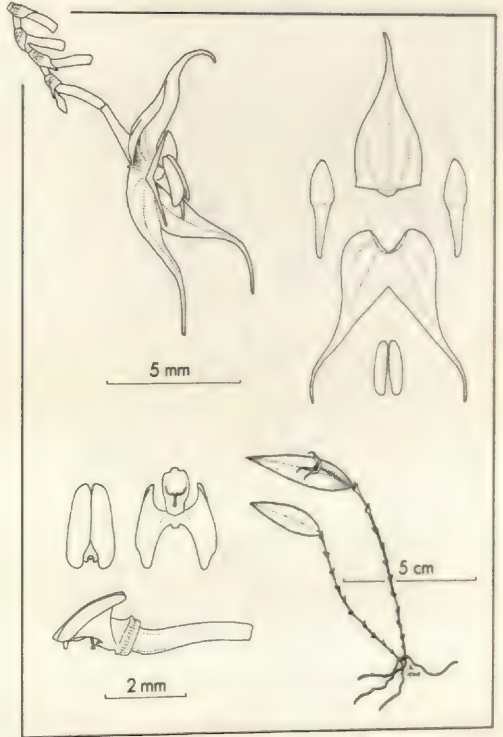


Fig. 106. *Lepanthes glabella*

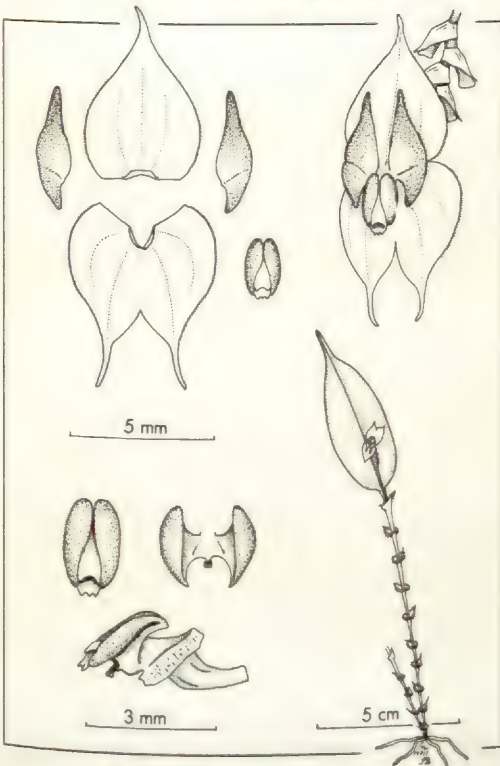


Fig. 107. *Lepanthes glomerulosa*

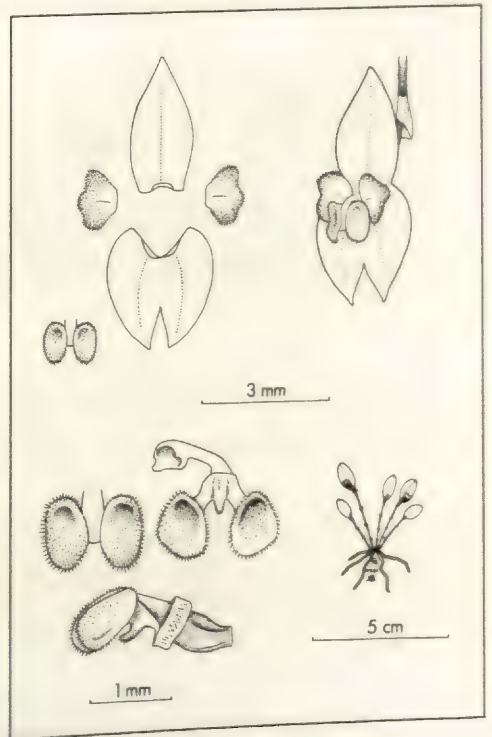


Fig. 108. *Lepanthes gnoma*

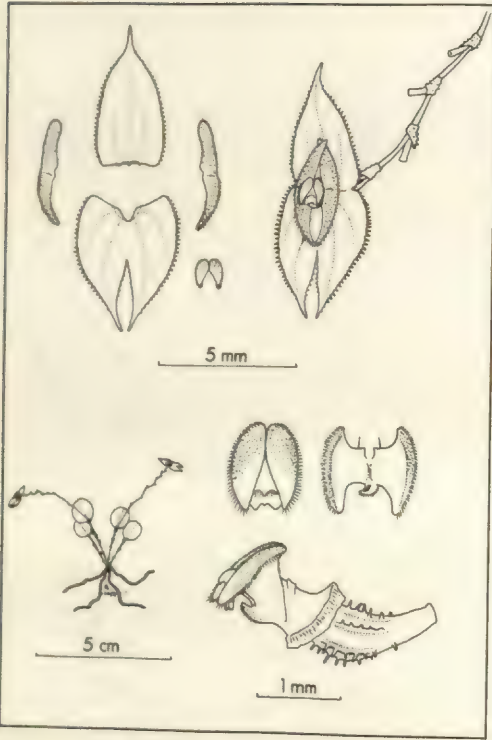


Fig. 109. *Lepanthes golbasta*

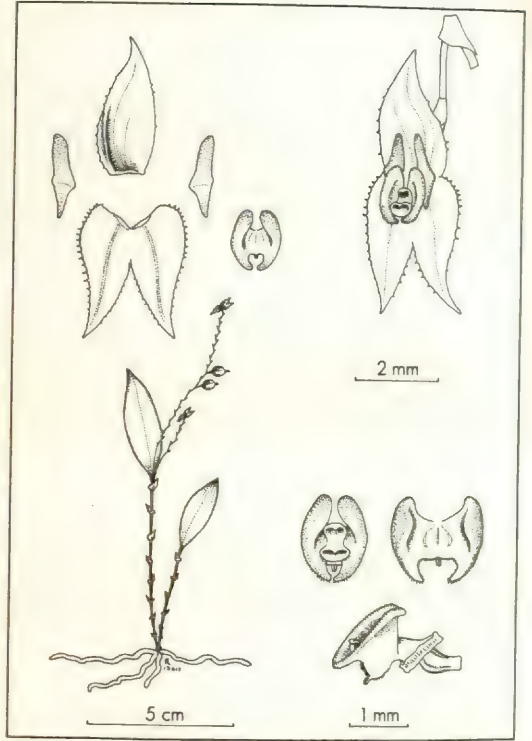


Fig. 110. *Lepanthes grossiradix*

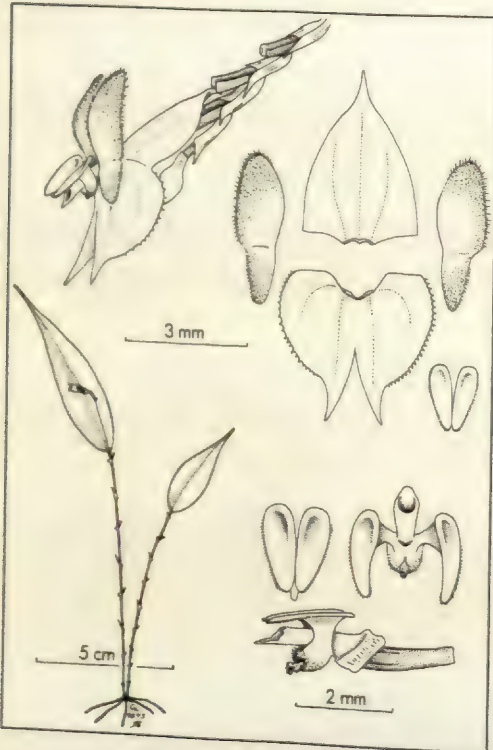


Fig. 111. *Lepanthes grypha*

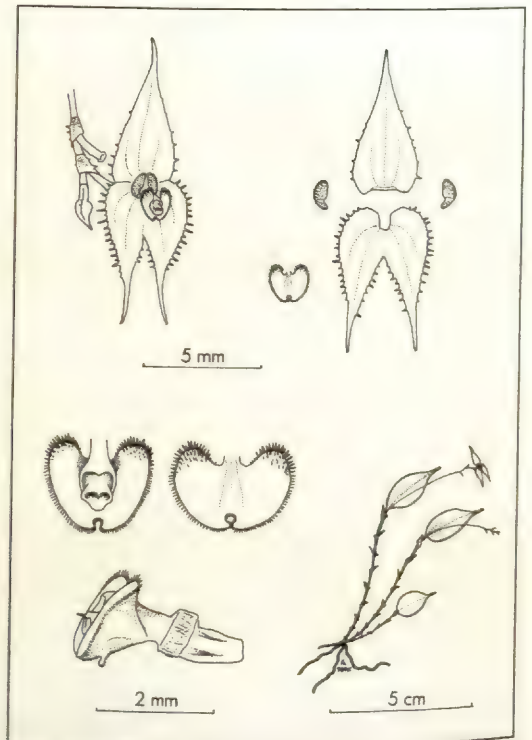


Fig. 112. *Lepanthes helcium*

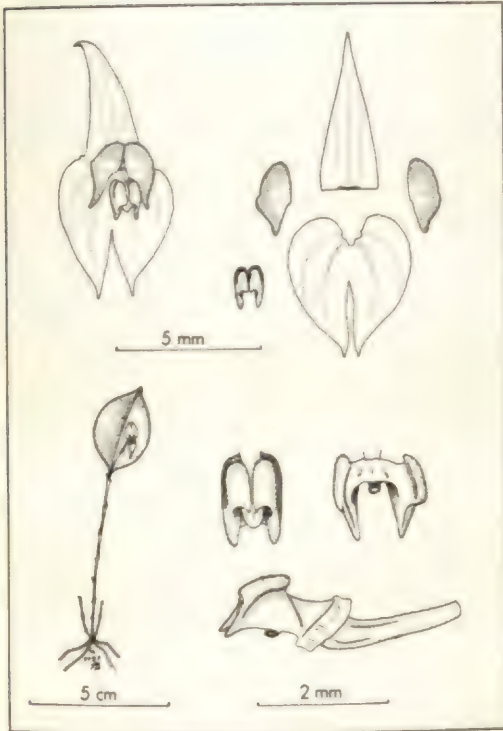


Fig. 113. *Lepanthes helicocephala*

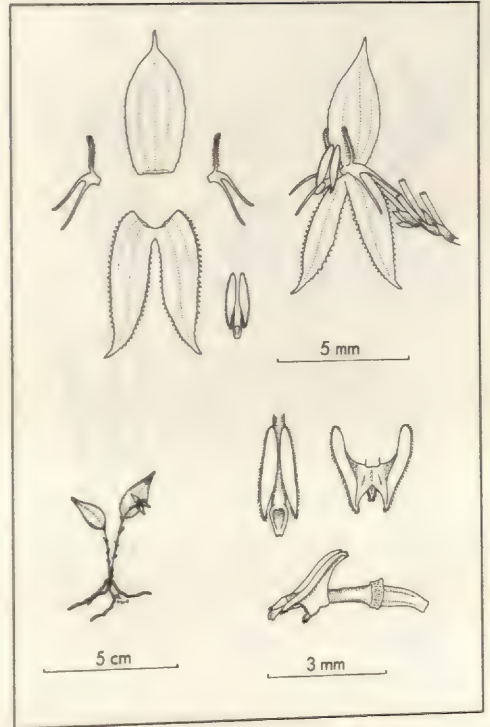


Fig. 114. *Lepanthes hexapus*

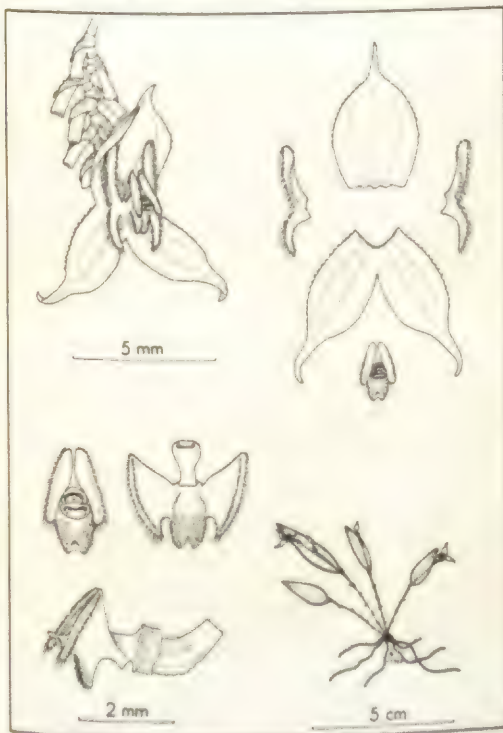


Fig. 115. *Lepanthes hirsutula*

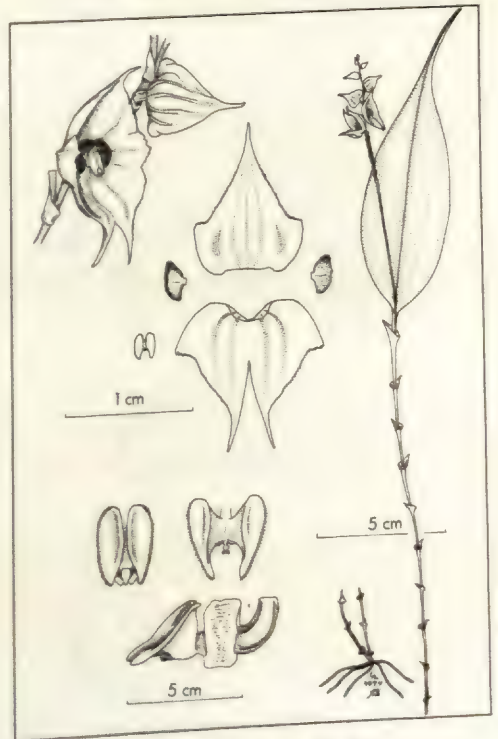


Fig. 116. *Lepanthes hirtzii*

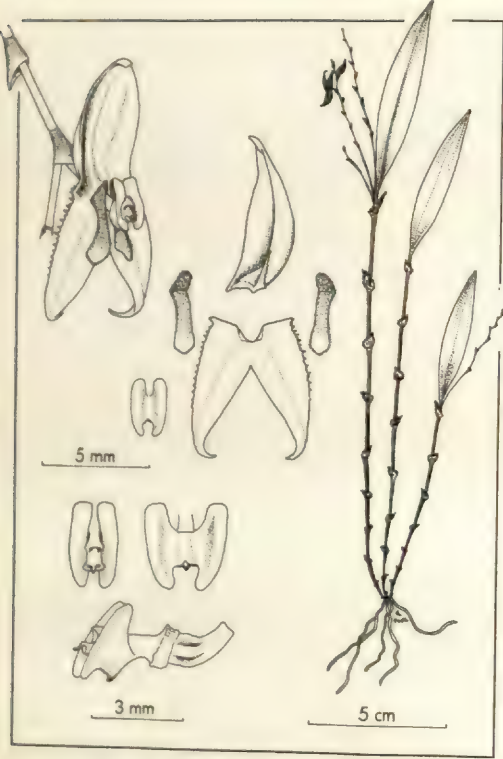


Fig. 117. *Lepanthes hoeijeri*

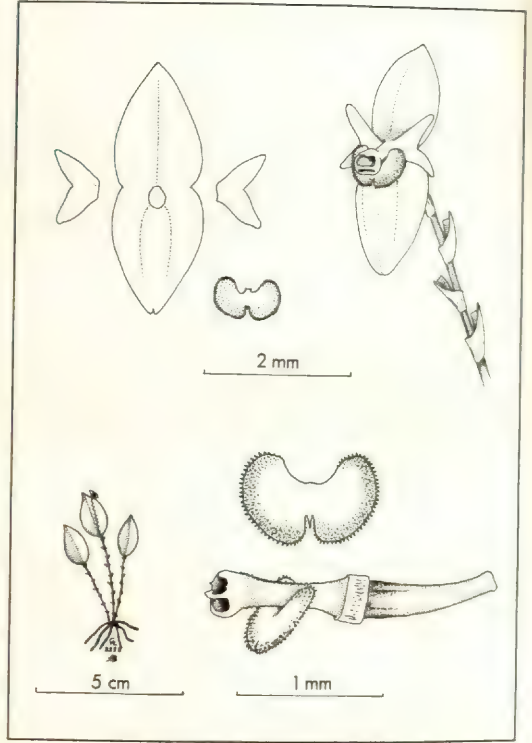


Fig. 118. *Lepanthes homotaxis*

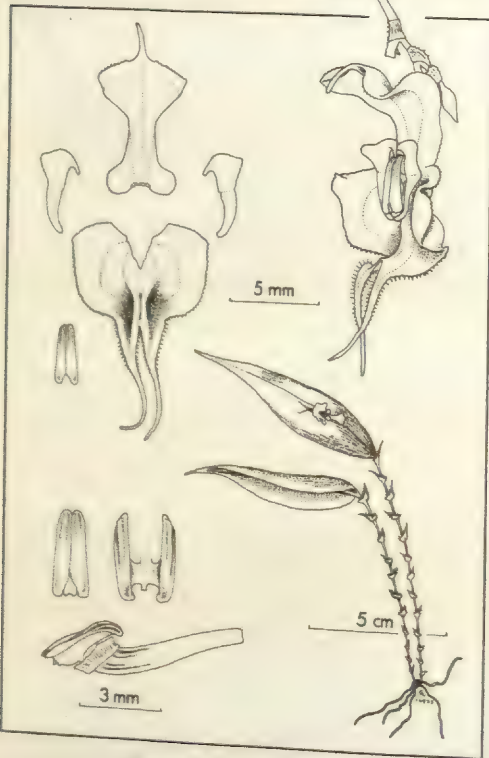


Fig. 119. *Lepanthes horribilis*

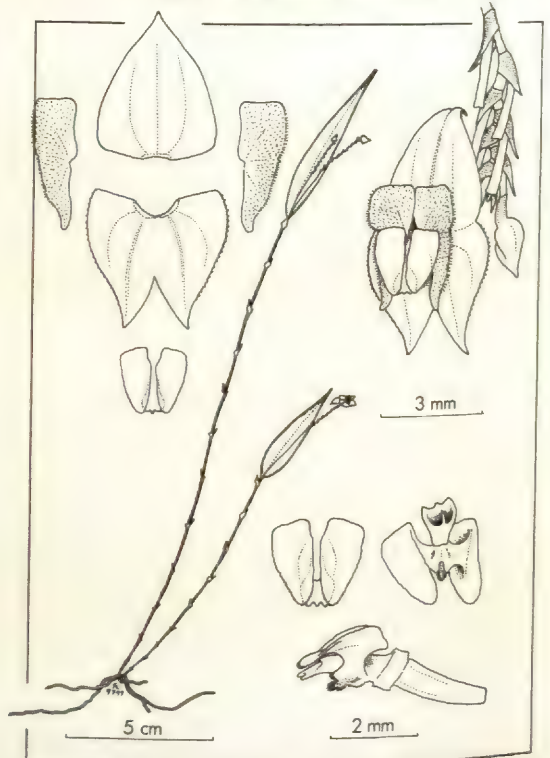


Fig. 120. *Lepanthes hymenoptera*

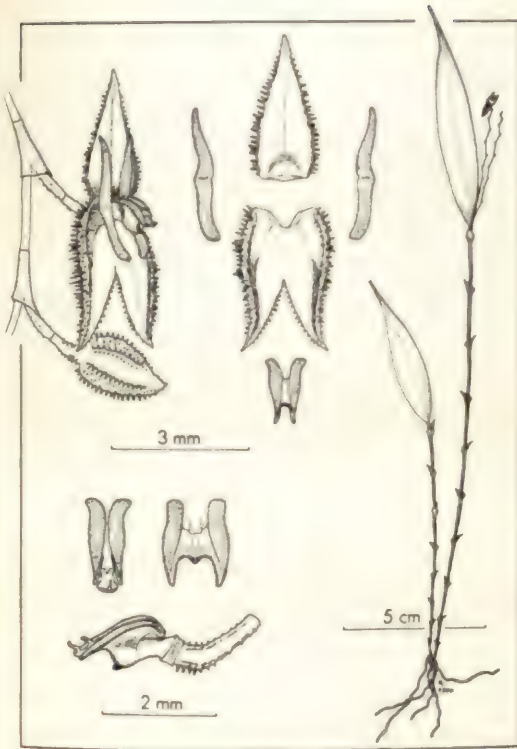


Fig. 121. *Lepanthes hystrix*

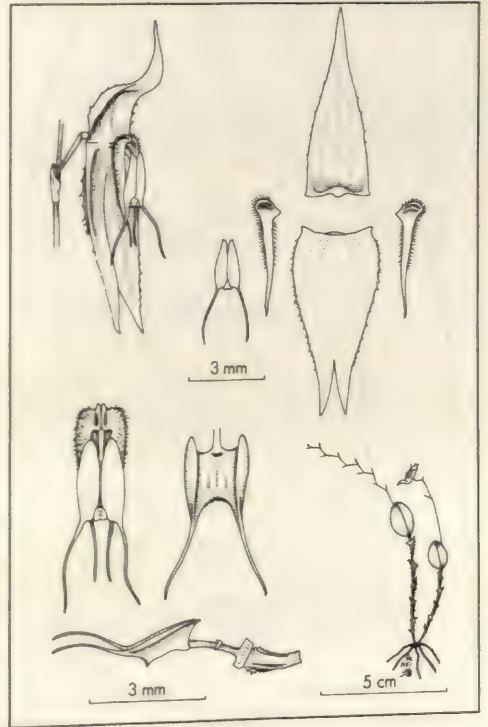


Fig. 122. *Lepanthes ictalurus*

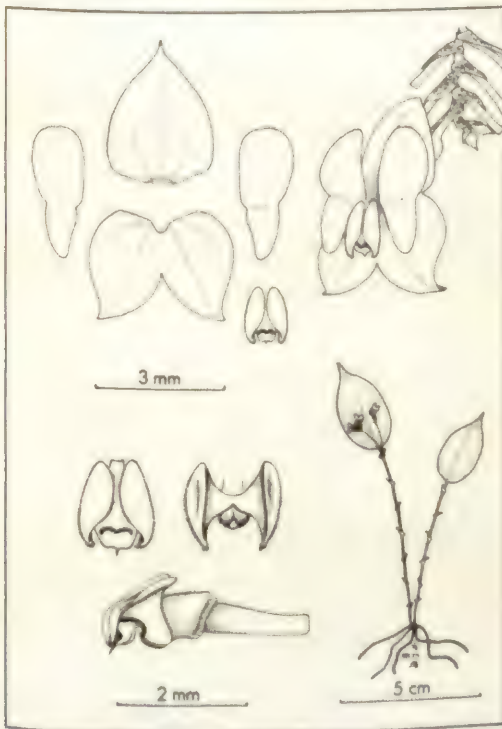


Fig. 123. *Lepanthes ilensis*

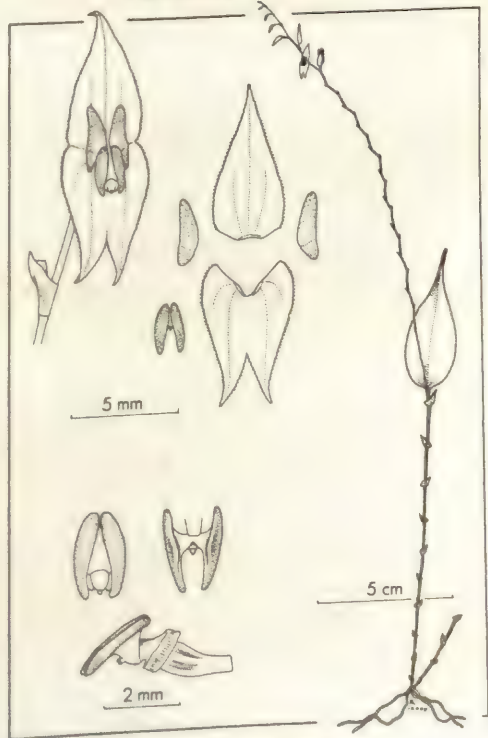
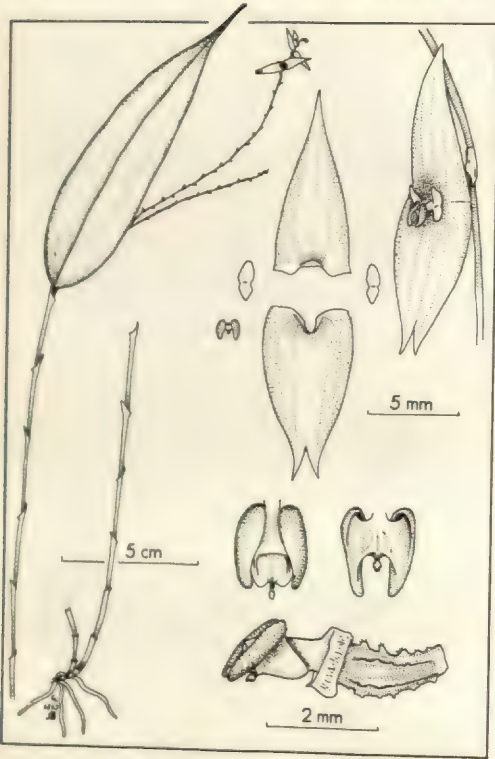
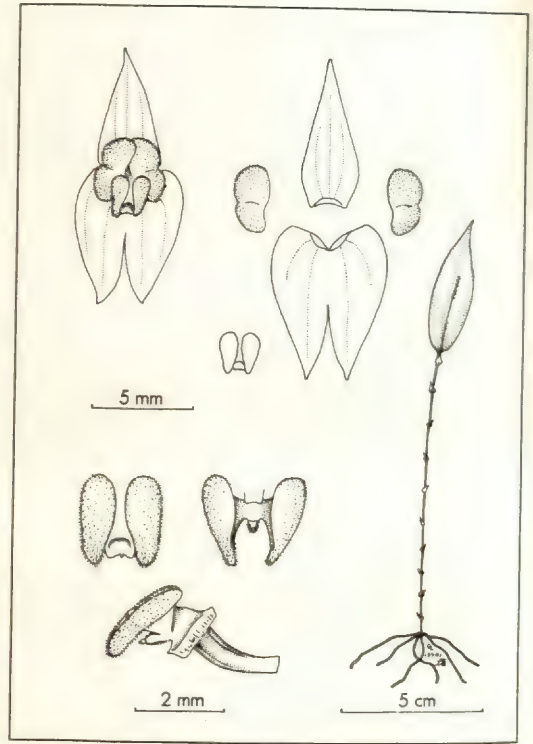
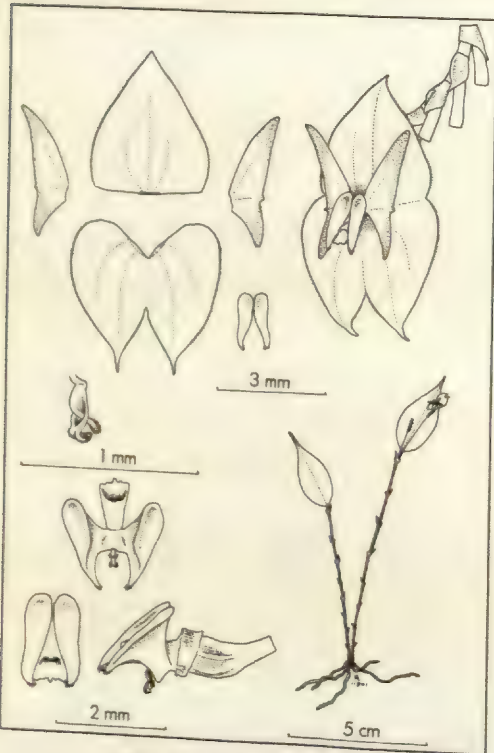
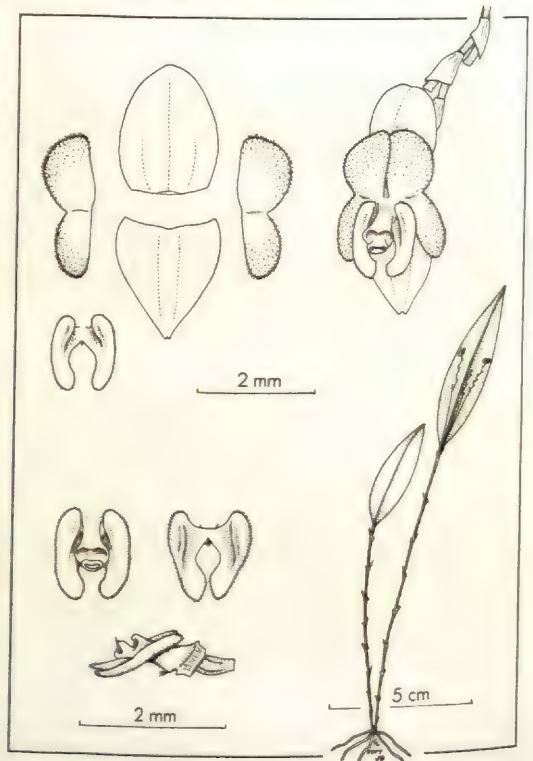


Fig. 124. *Lepanthes ilinizae*

Fig. 125. *Lepanthes illex*Fig. 126. *Lepanthes imitator*Fig. 127. *Lepanthes implexa*Fig. 128. *Lepanthes inamoena*

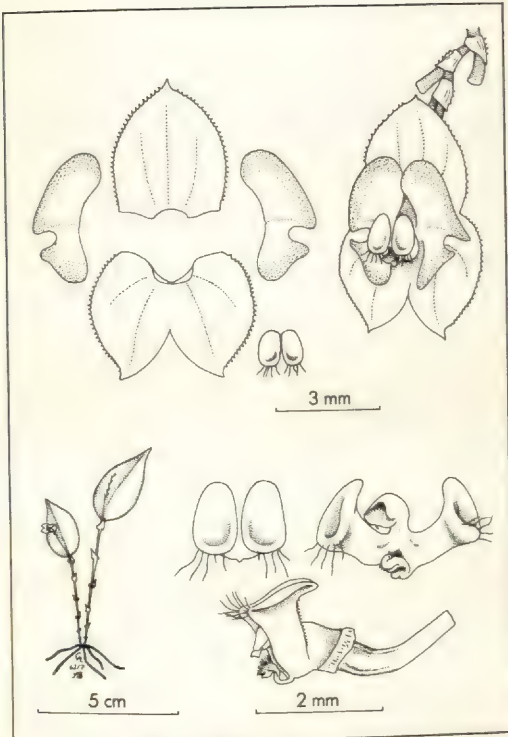


Fig. 129. *Lepanthes intonsa*

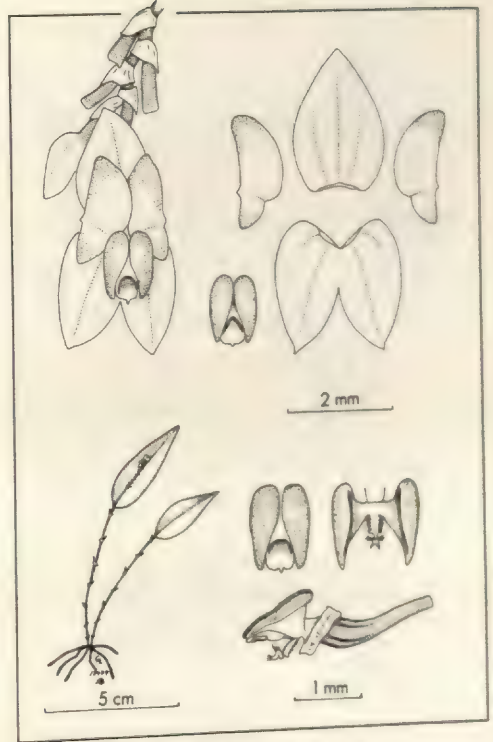


Fig. 130. *Lepanthes intricata*

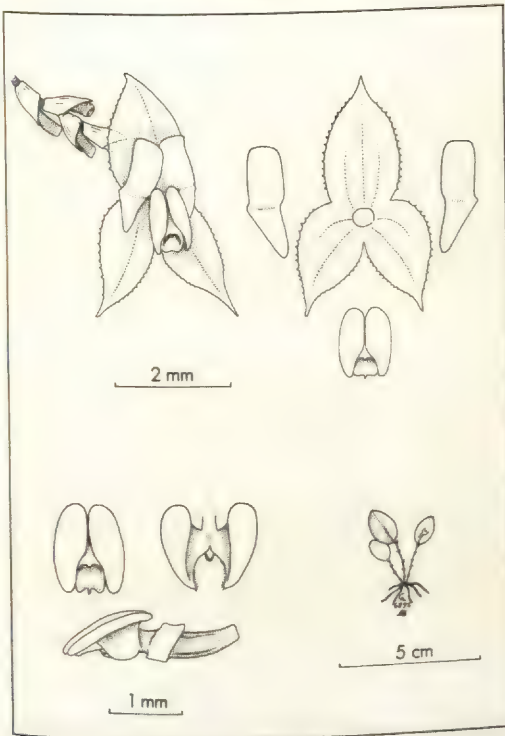


Fig. 131. *Lepanthes iricolor*

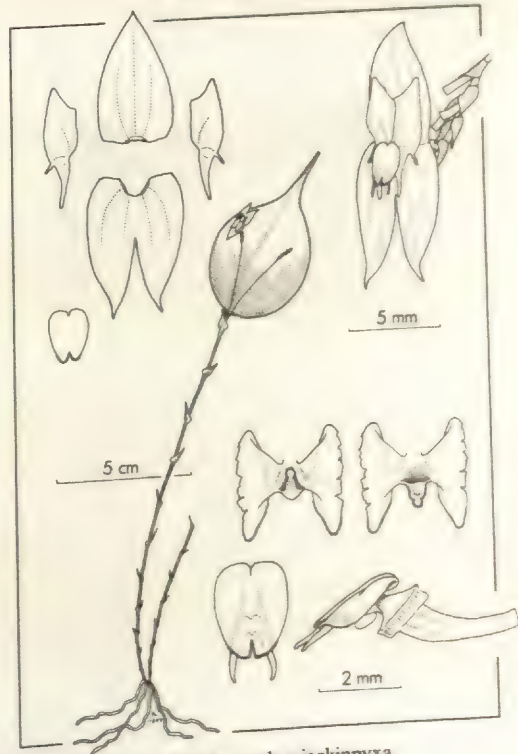


Fig. 132. *Lepanthes jackinpyxa*

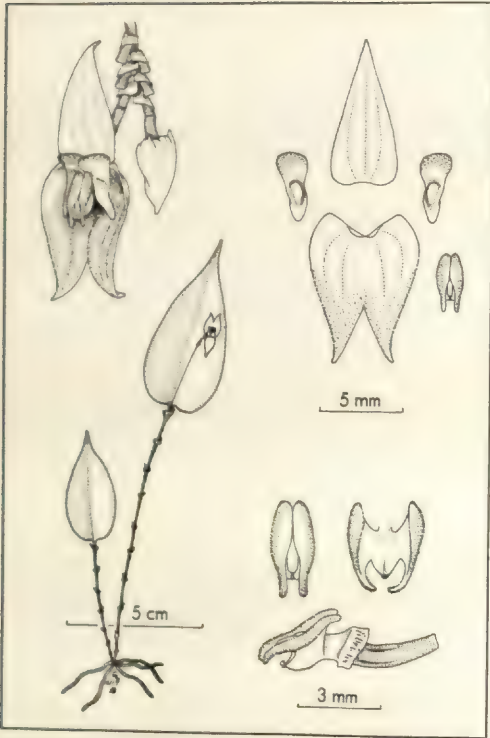


Fig. 133. *Lepanthes jamboeensis*

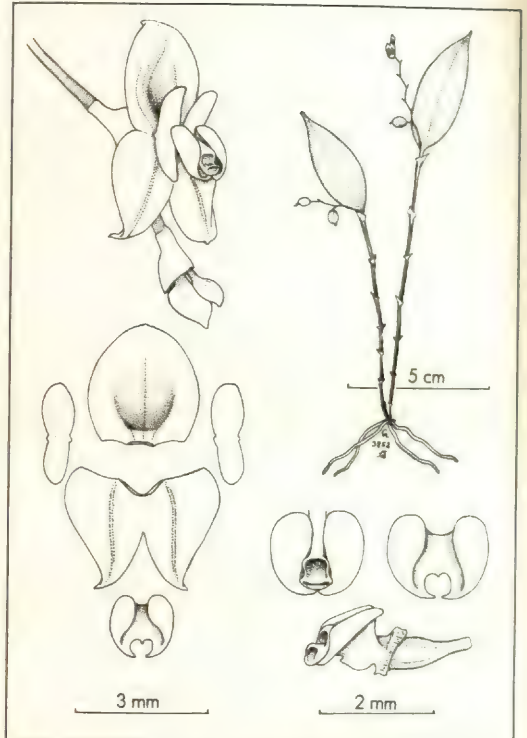


Fig. 134. *Lepanthes jamesonii*

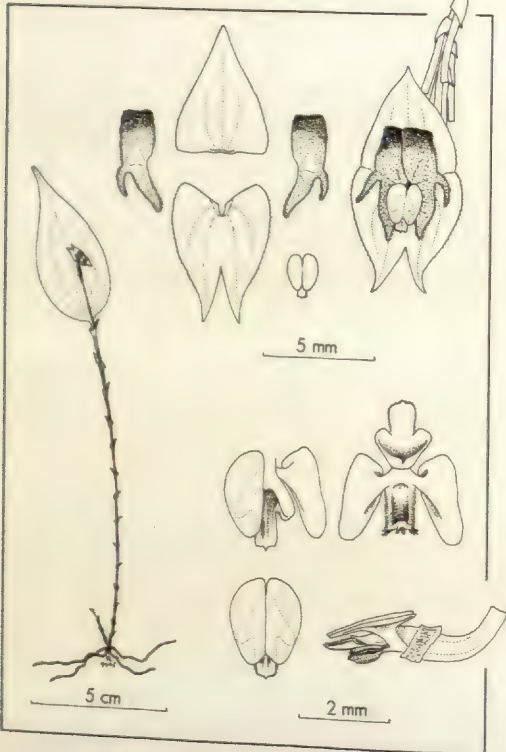


Fig. 135. *Lepanthes janitor*

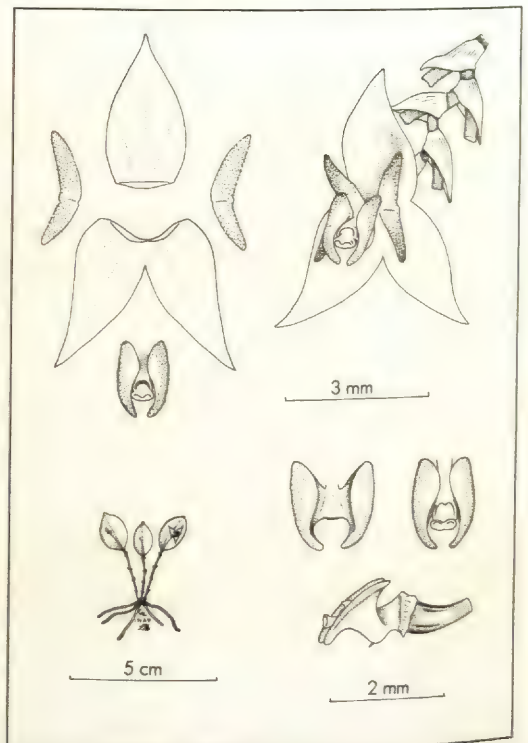
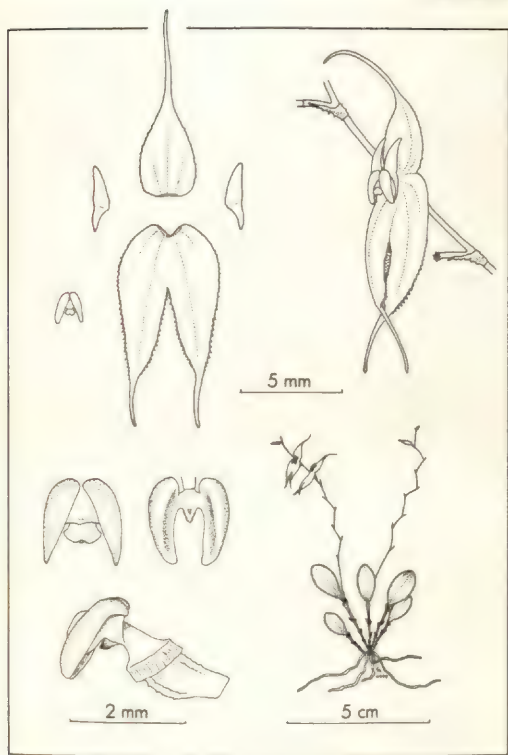
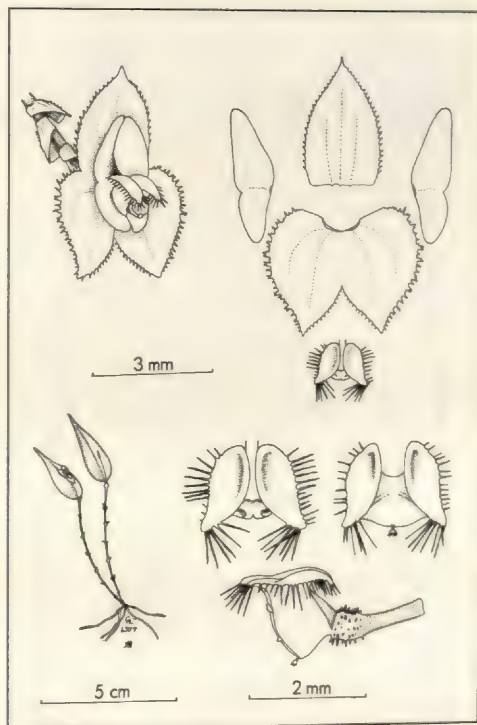
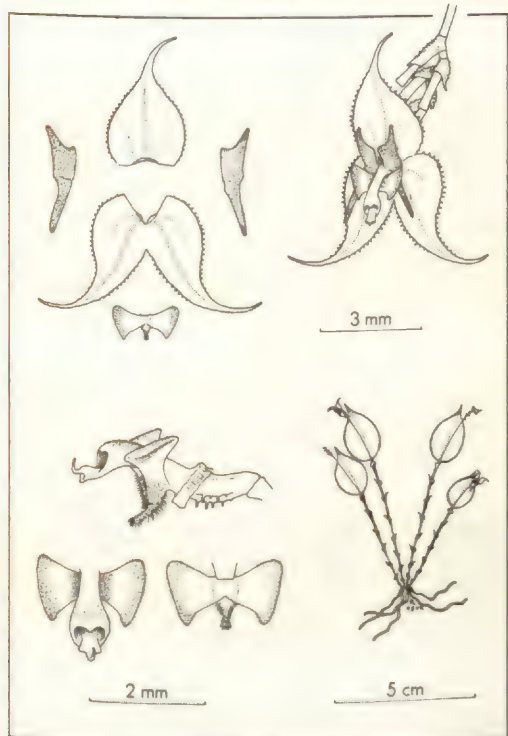
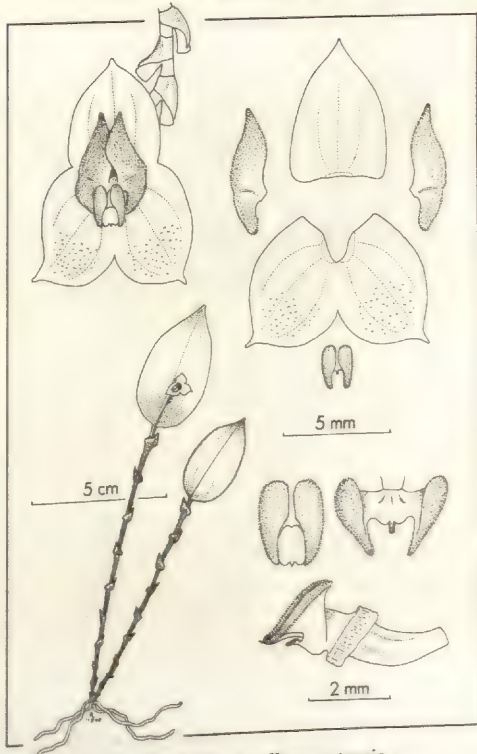


Fig. 136. *Lepanthes jayandella*

Fig. 137. *Lepanthes jimburae*Fig. 138. *Lepanthes jubata*Fig. 139. *Lepanthes kuijii*Fig. 140. *Lepanthes llanganatensis*

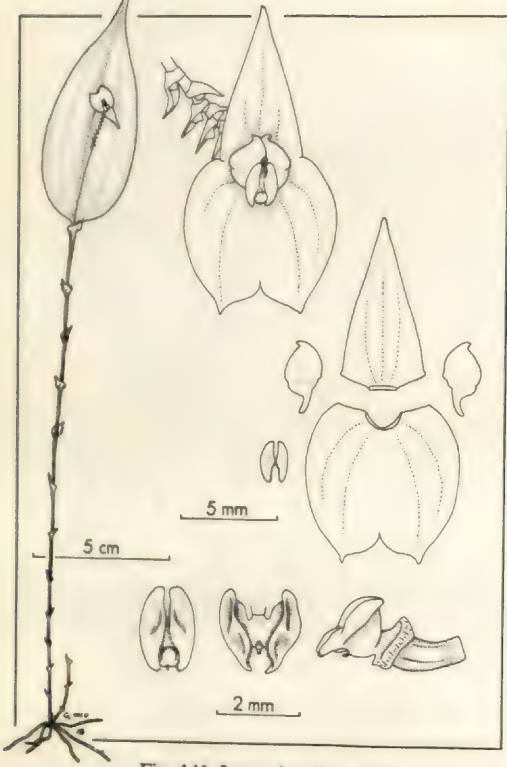


Fig. 141. *Lepanthes illoensis*

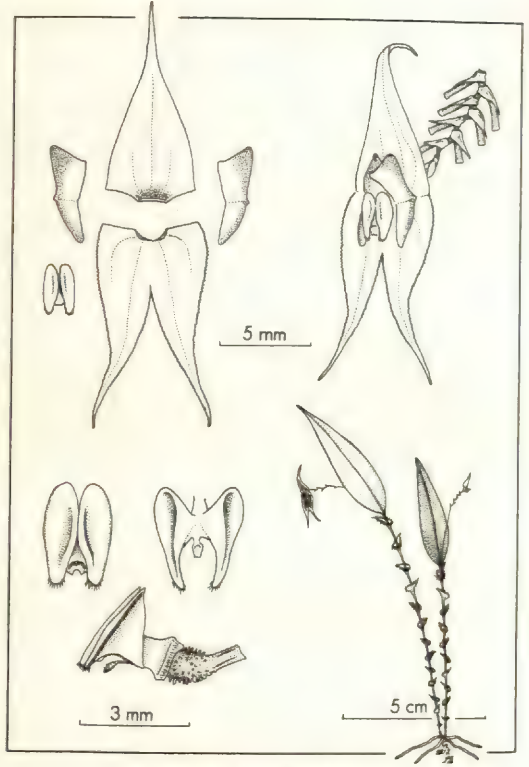


Fig. 142. *Lepanthes lophius*

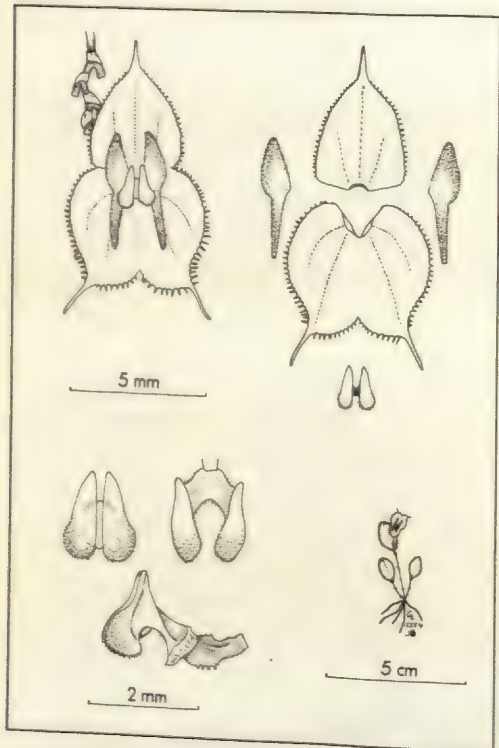


Fig. 143. *Lepanthes lycocephala*

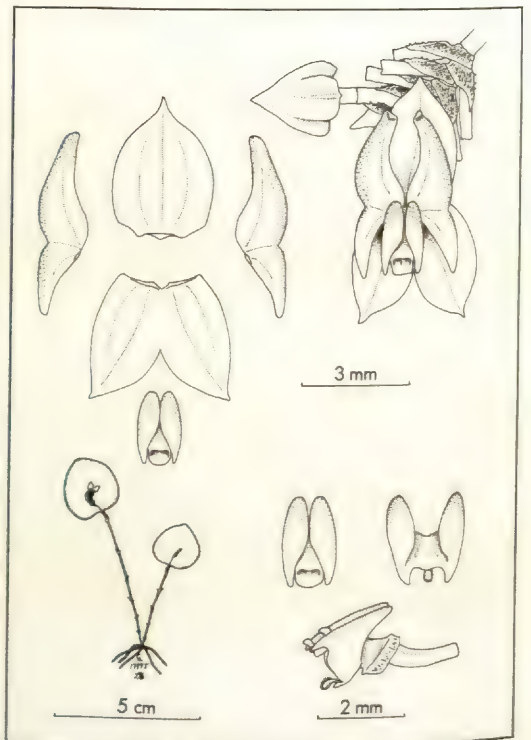


Fig. 144. *Lepanthes maccombiana*

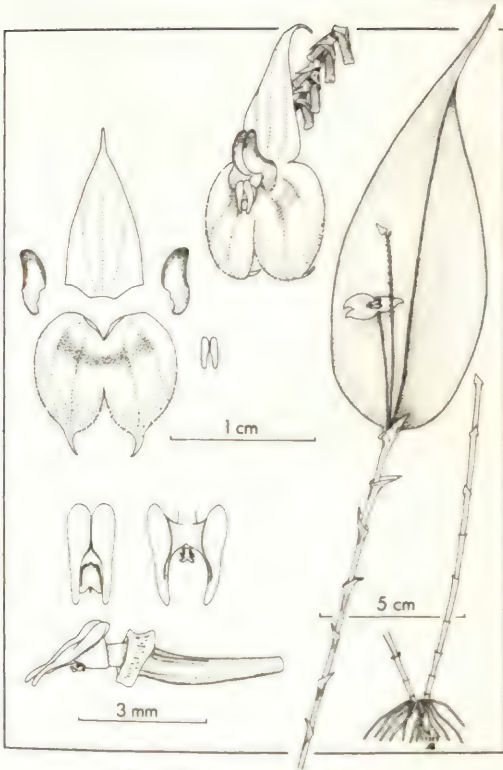


Fig. 145. *Lepanthes magnifica*

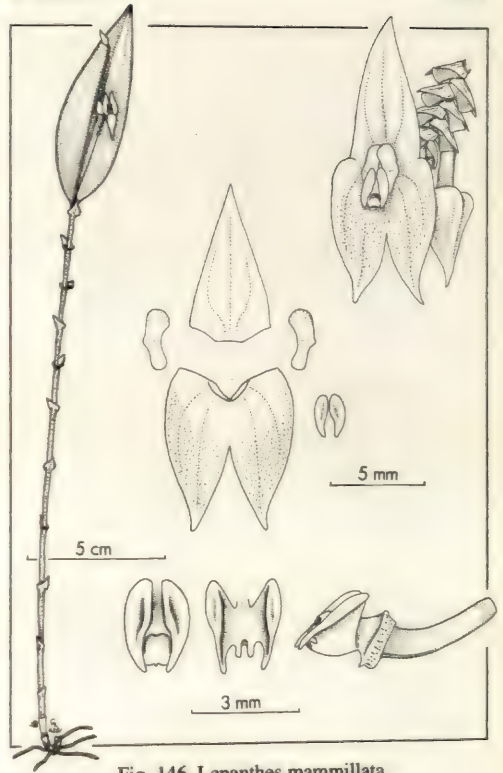


Fig. 146. *Lepanthes mammillata*

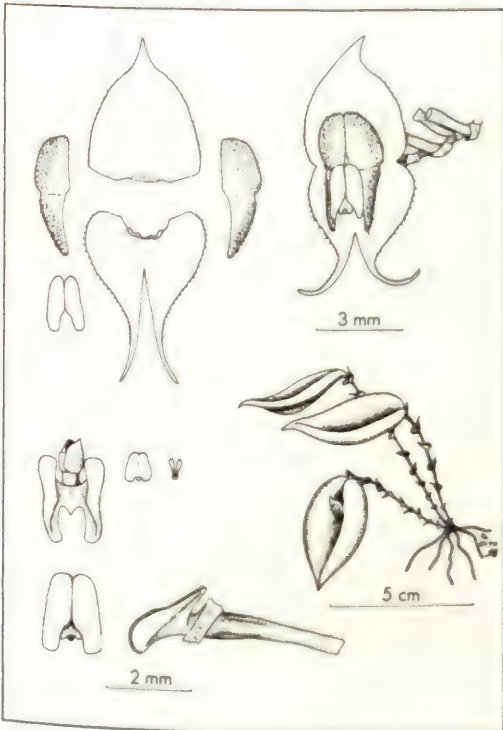


Fig. 147. *Lepanthes manabina*

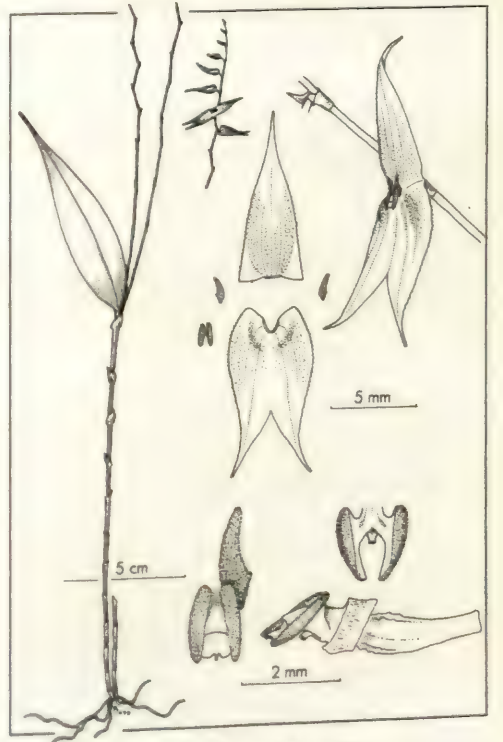


Fig. 148. *Lepanthes mastix*

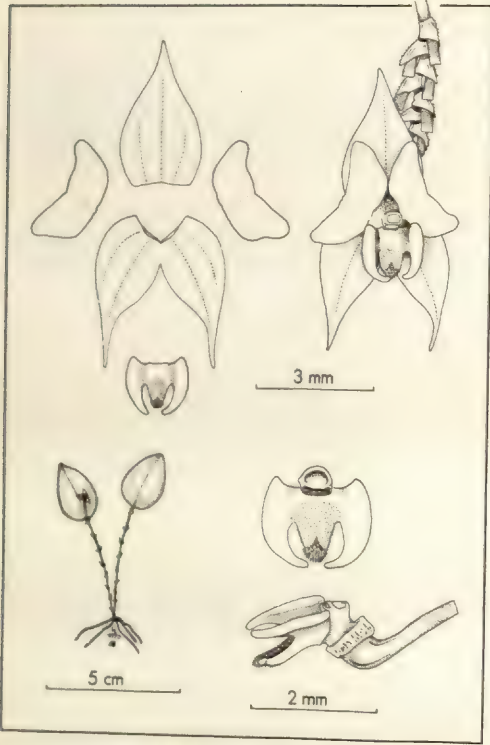


Fig. 149. *Lepanthes maxillaris*

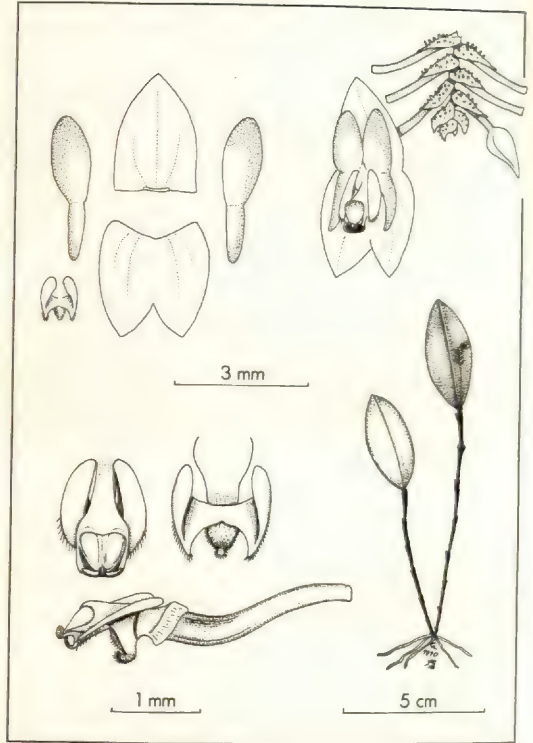


Fig. 150. *Lepanthes megalosteles*

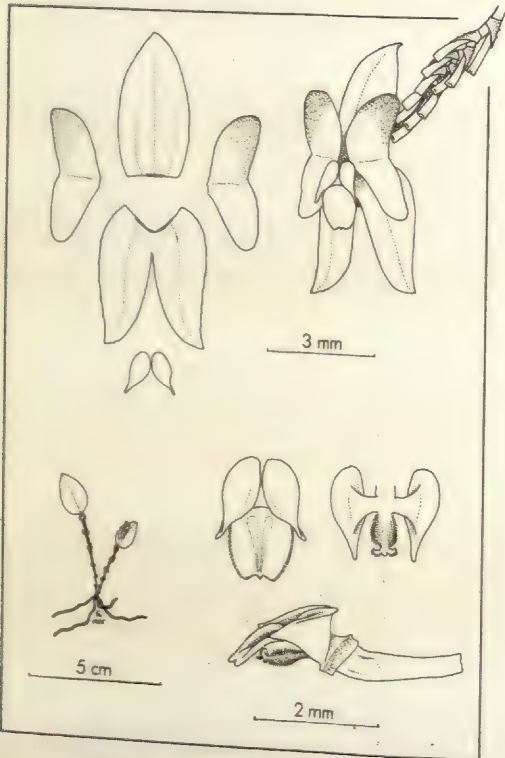


Fig. 151. *Lepanthes meganthera*

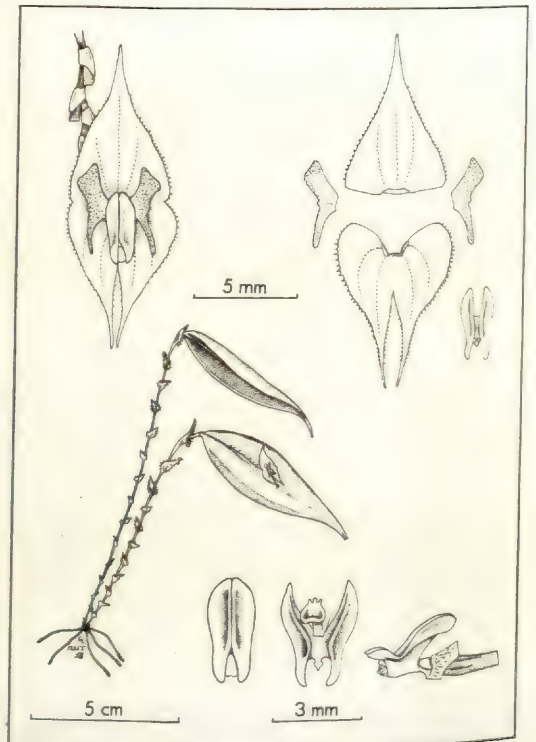


Fig. 152. *Lepanthes melpomene*

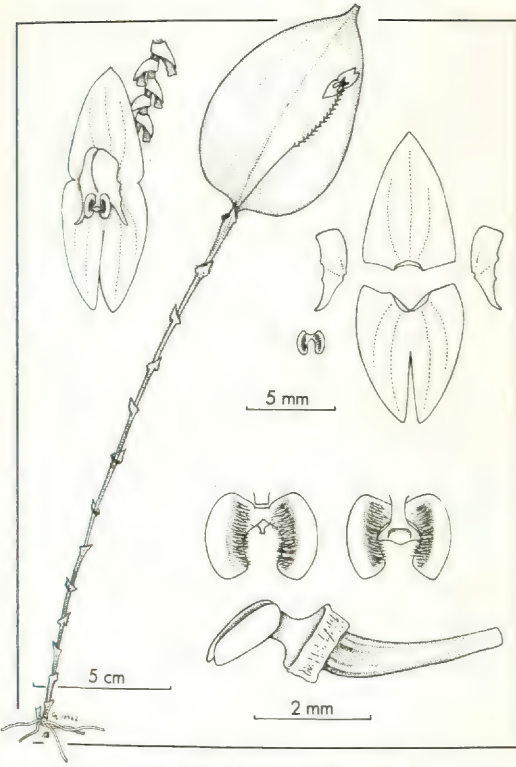


Fig. 153. *Lepanthes menatoi*

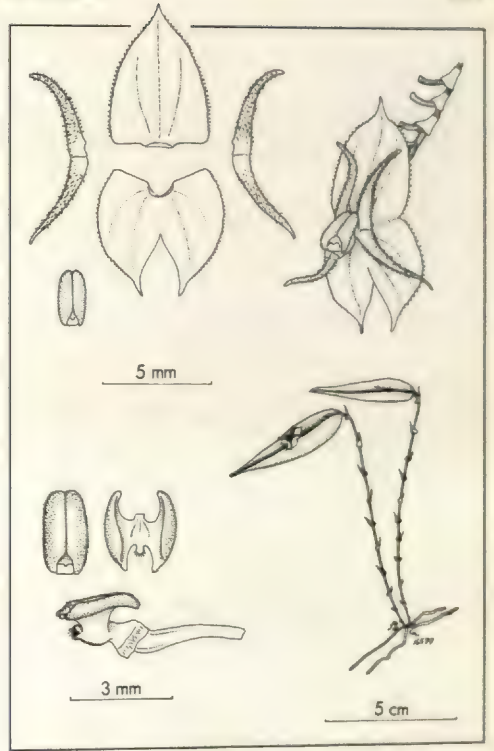


Fig. 154. *Lepanthes meniscophora*

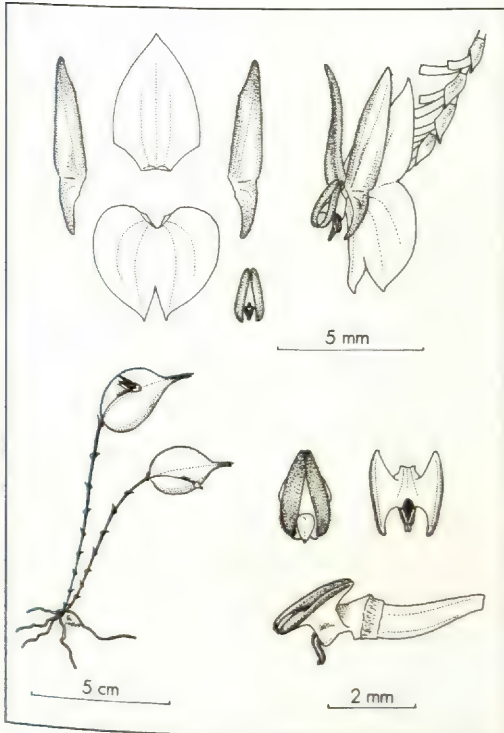


Fig. 155. *Lepanthes mephistopheles*

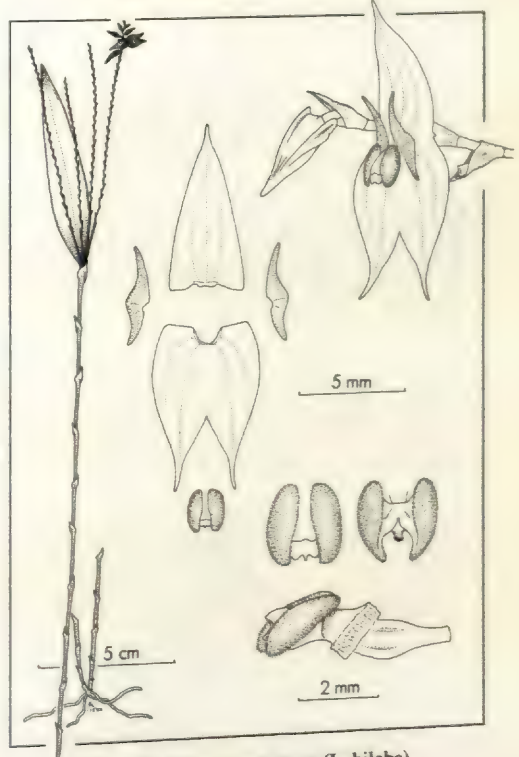
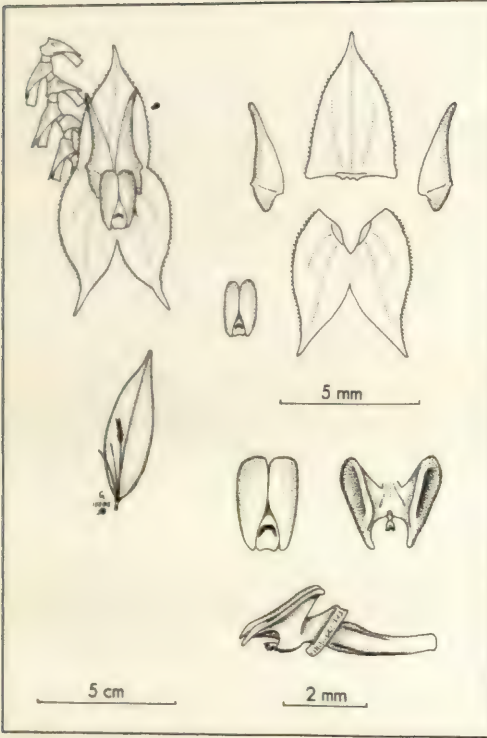
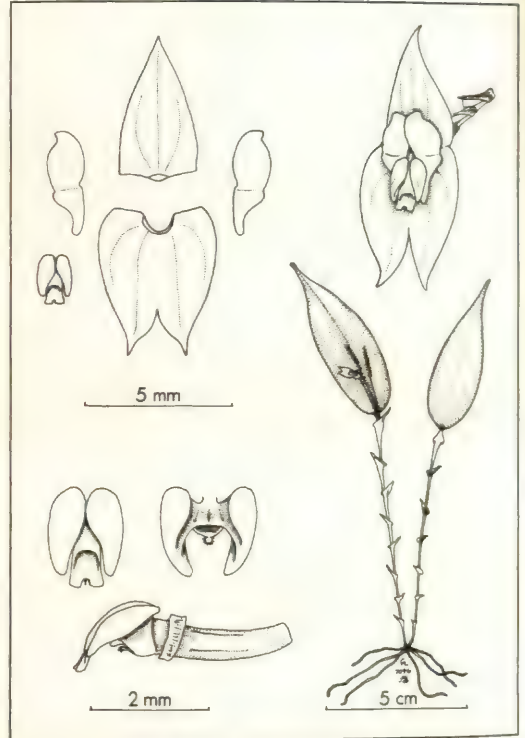
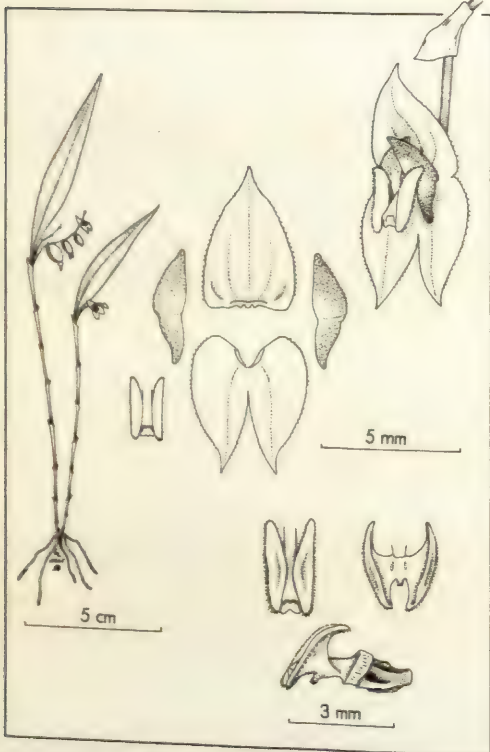
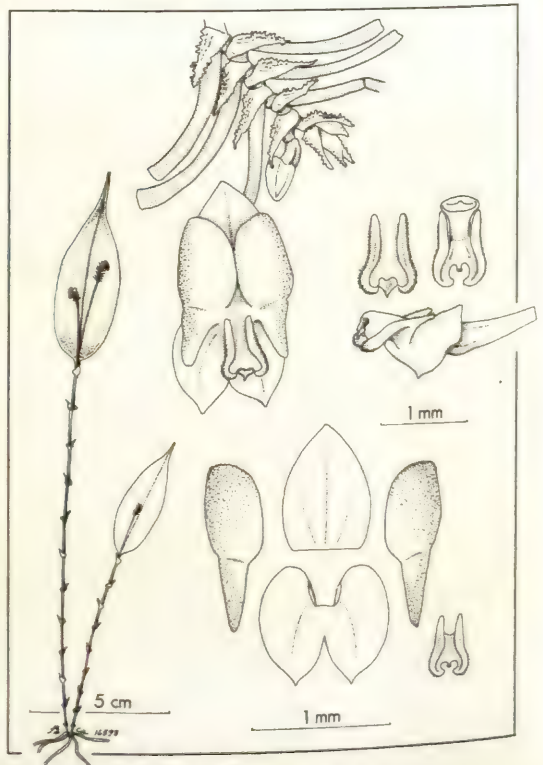
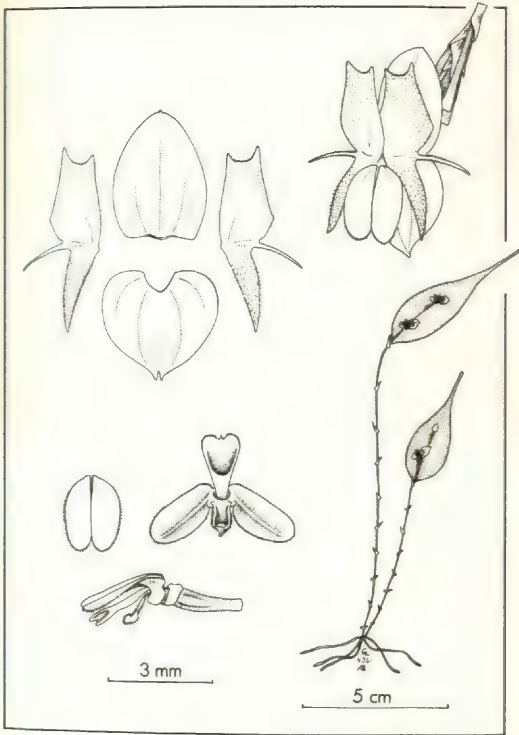
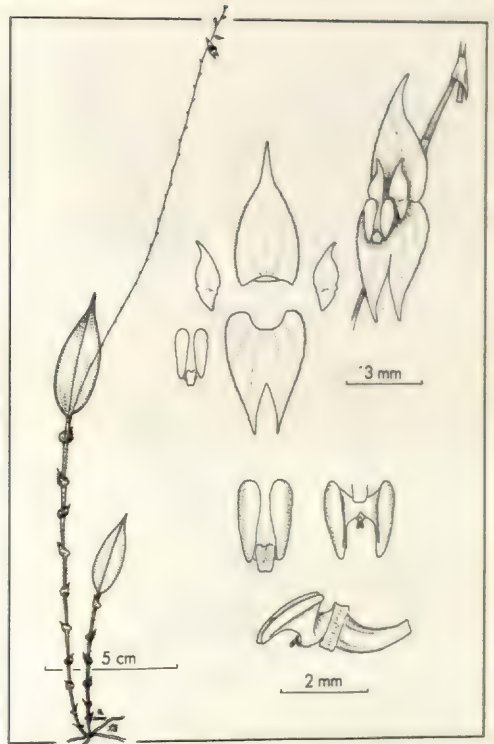
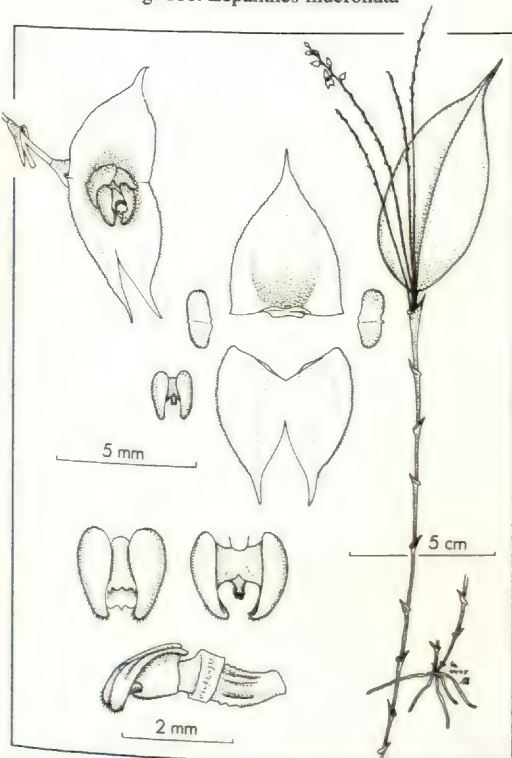
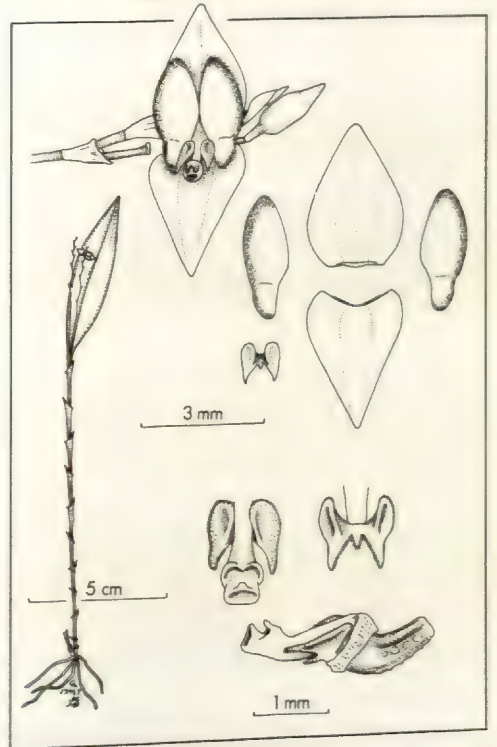


Fig. 156. *Lepanthes metaxy* (*L. biloba*)

Fig. 157. *Lepanthes mirador*Fig. 158. *Lepanthes monitor*Fig. 159. *Lepanthes monopectera*Fig. 160. *Lepanthes morelyi*

Fig. 161. *Lepanthes mucronata*Fig. 162. *Lepanthes muscula*Fig. 163. *Lepanthes nanegalensis*Fig. 164. *Lepanthes narcissus*

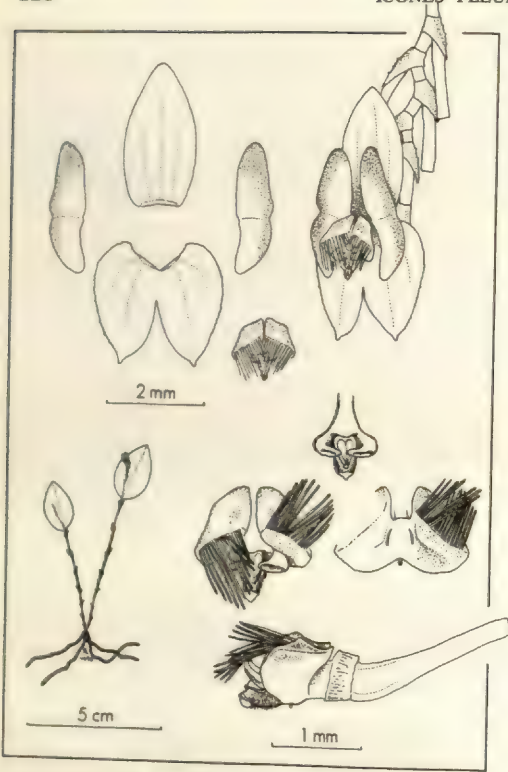


Fig. 165. *Lepanthes necopina*

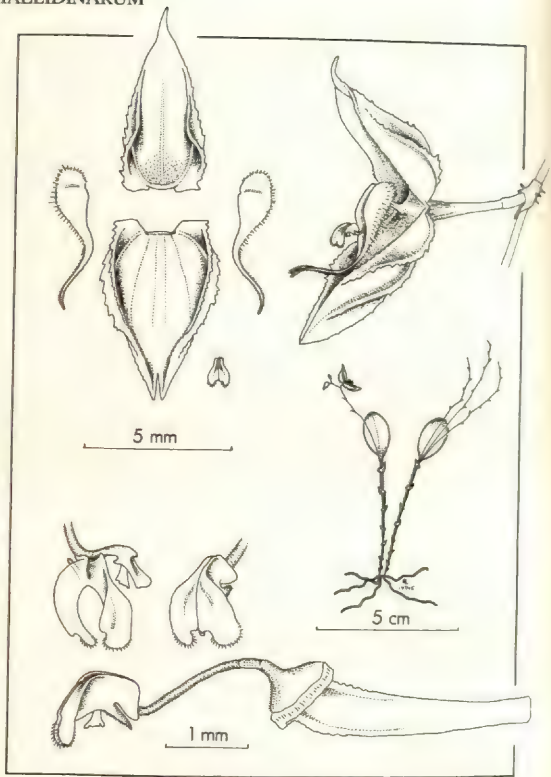


Fig. 166. *Lepanthes nematostele*

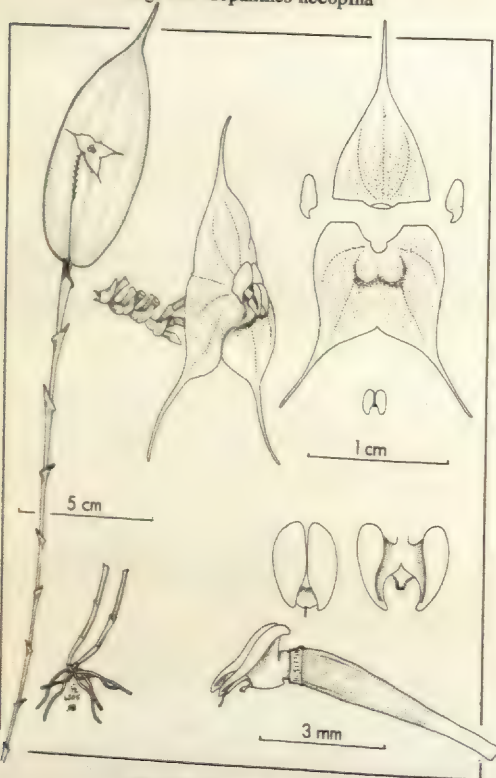


Fig. 167. *Lepanthes nivea*

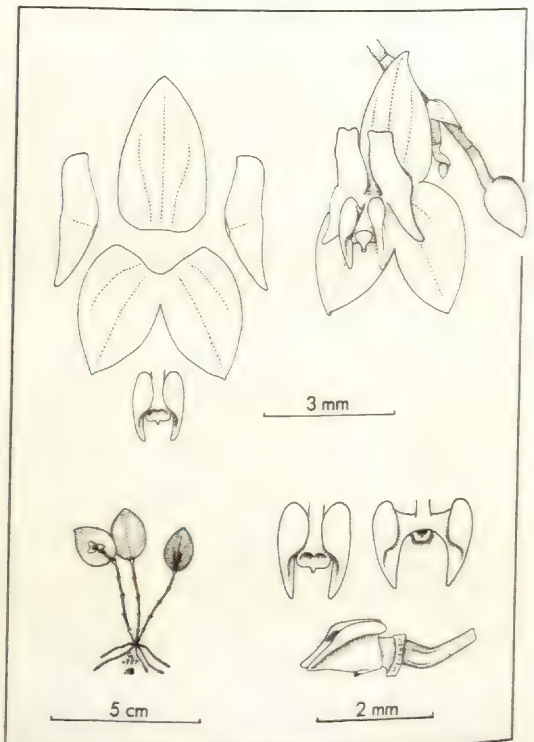


Fig. 168. *Lepanthes nontecta*

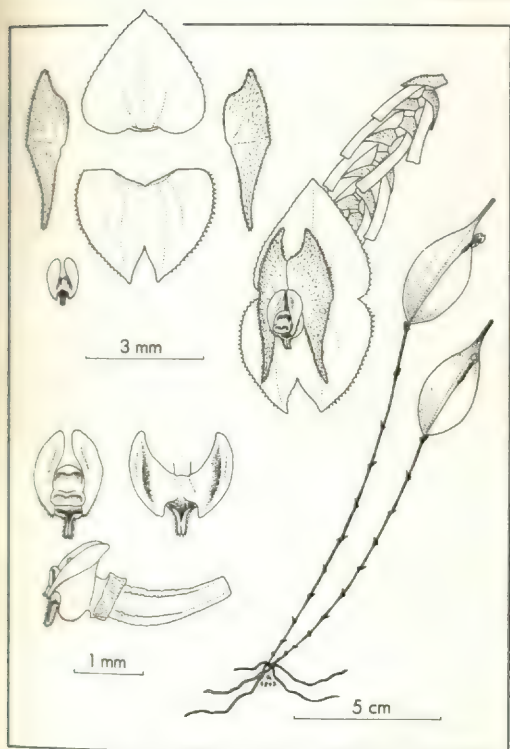


Fig. 169. *Lepanthes odobenella*

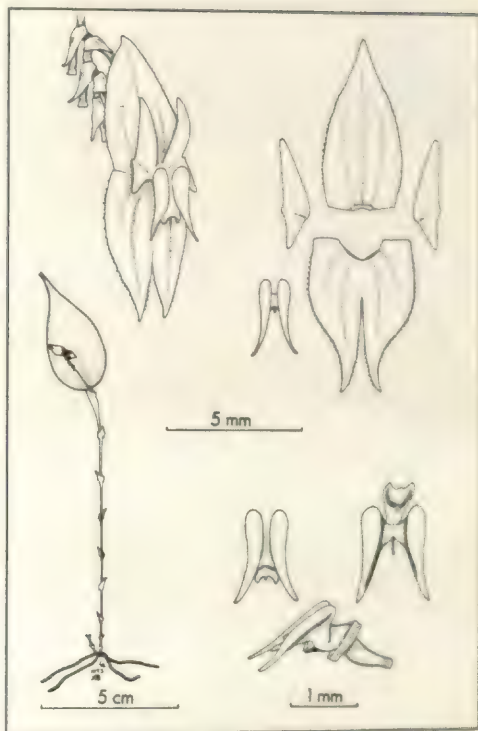


Fig. 170. *Lepanthes odontocera*

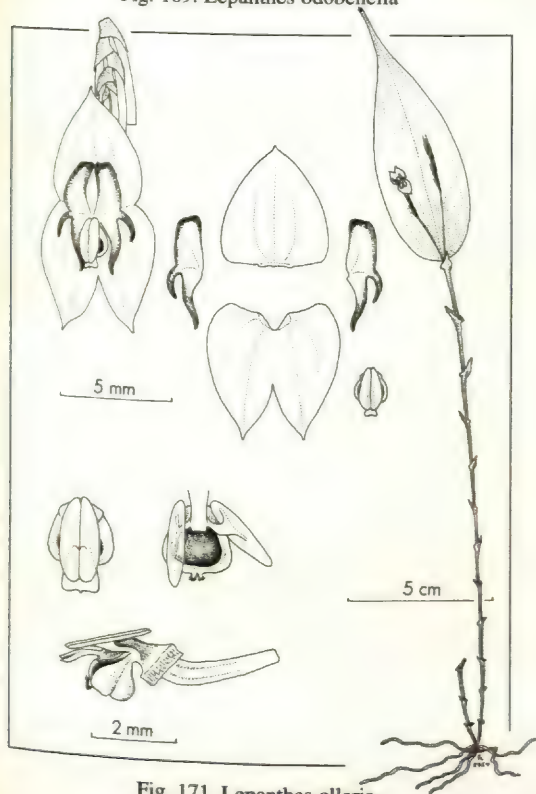


Fig. 171. *Lepanthes ollaris*

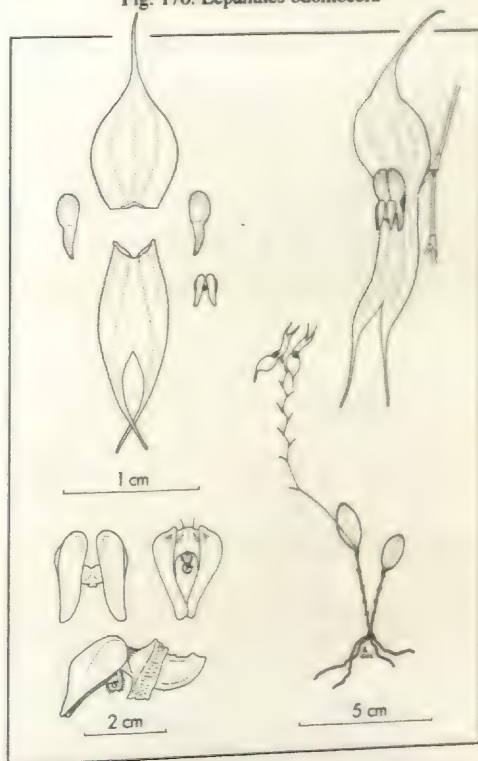


Fig. 172. *Lepanthes ophioglossa*

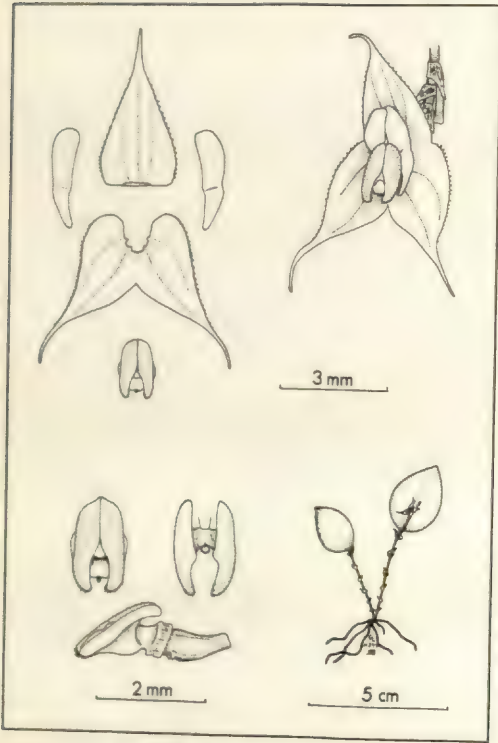


Fig. 173. *Lepanthes orchestrus*

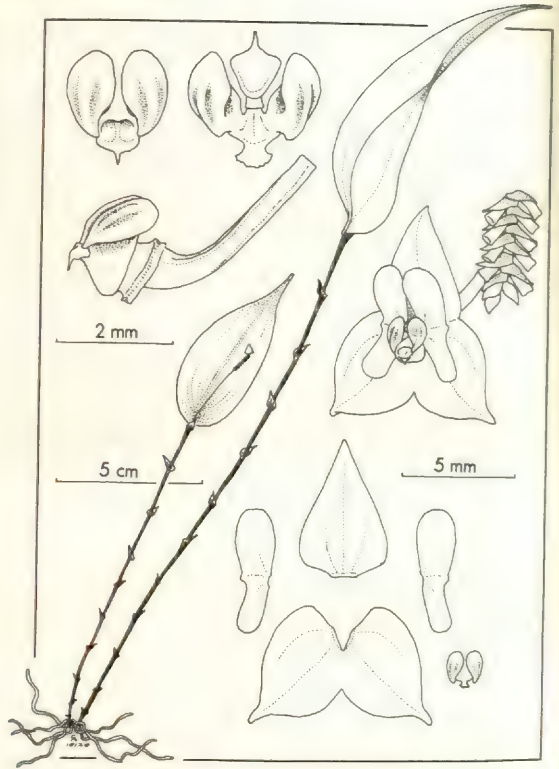


Fig. 174. *Lepanthes orion*

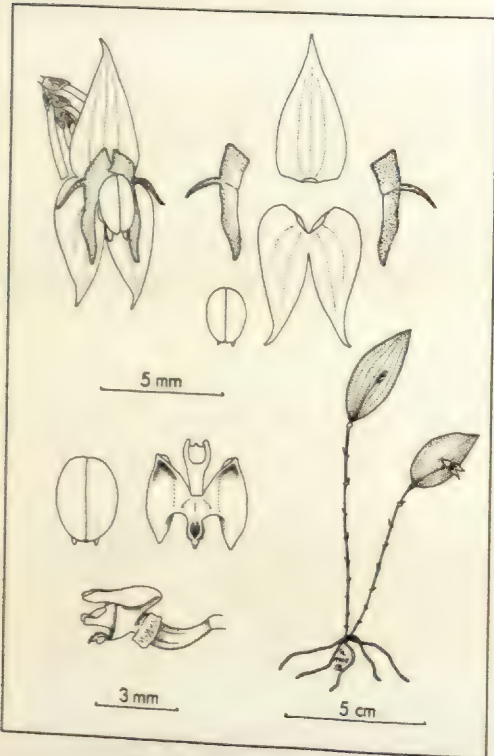


Fig. 175. *Lepanthes ortegae*

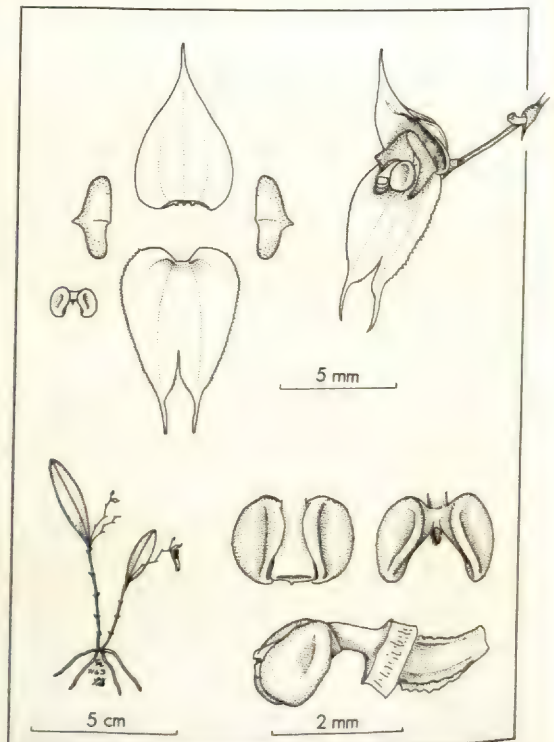


Fig. 176. *Lepanthes otara*

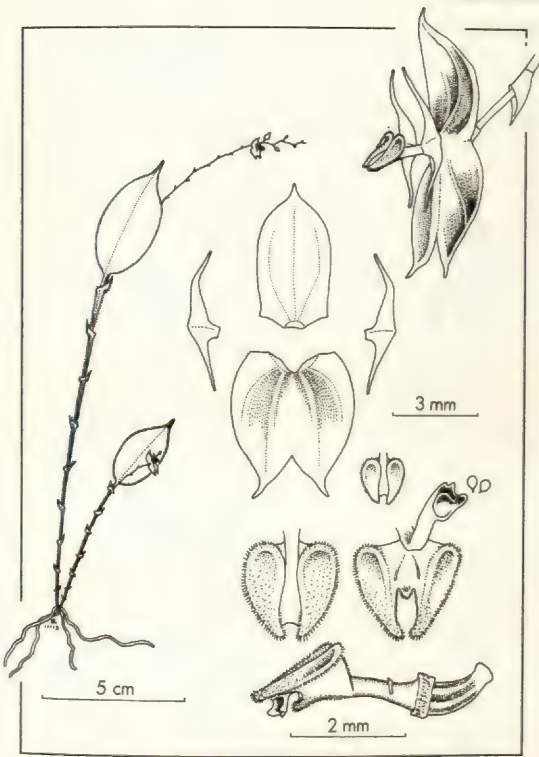


Fig. 177. *Lepanthes oxypetala*

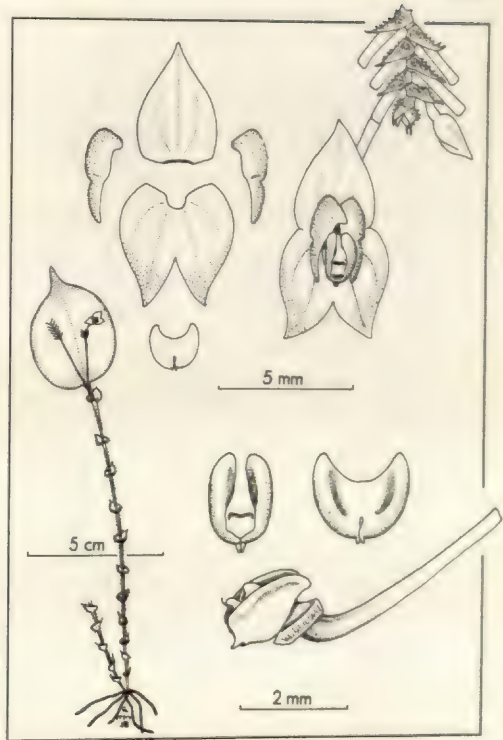


Fig. 178. *Lepanthes pan*

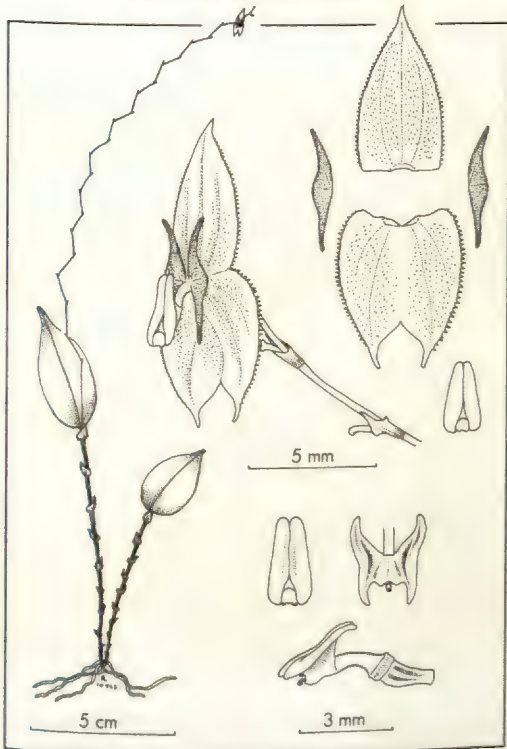


Fig. 179. *Lepanthes papallactae*

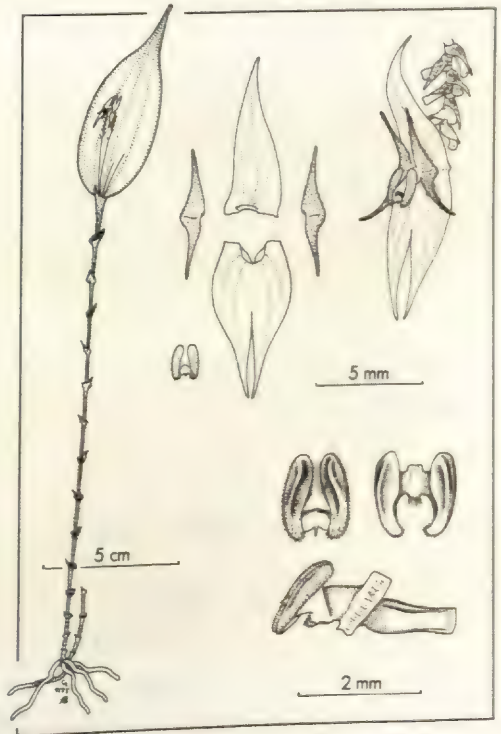


Fig. 180. *Lepanthes papyrophylla*

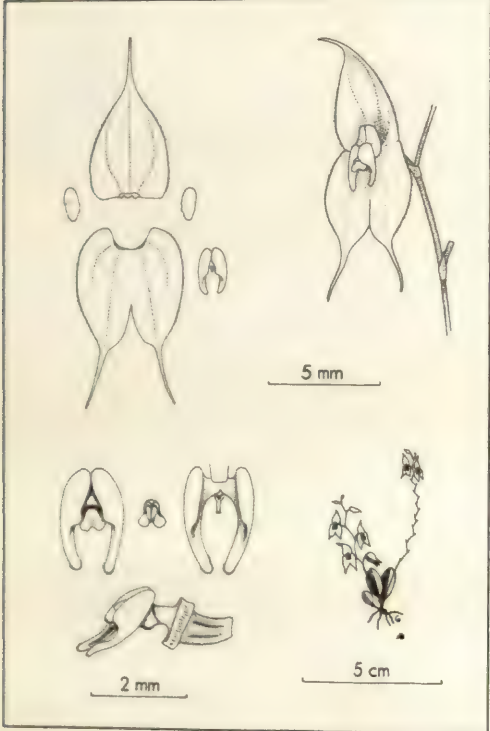


Fig. 181. *Lepanthes paradoxa*

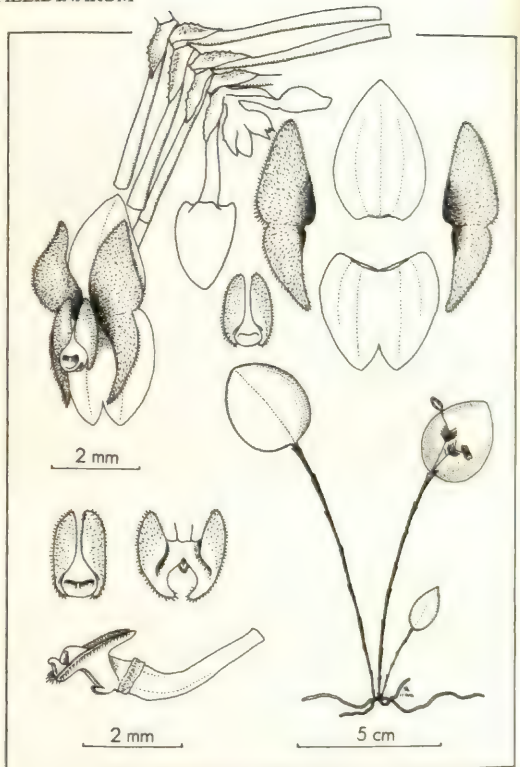


Fig. 182. *Lepanthes pecunialis*

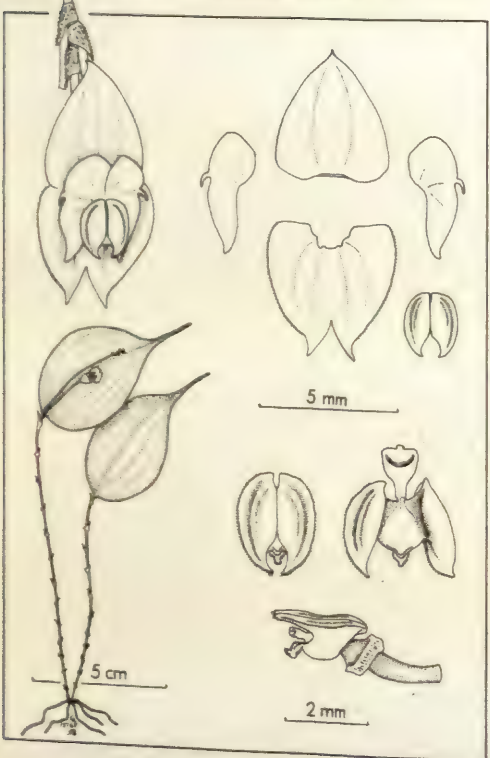


Fig. 183. *Lepanthes pelyx*

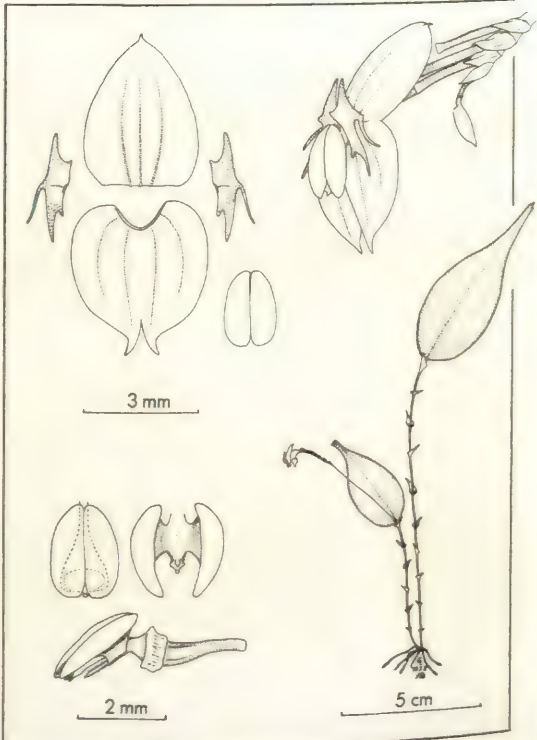


Fig. 184. *Lepanthes pentoxys*

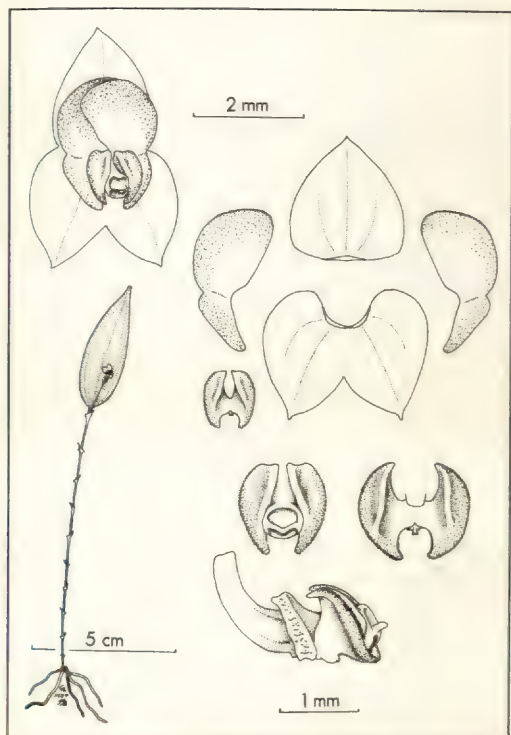


Fig. 185. *Lepanthes perdita*

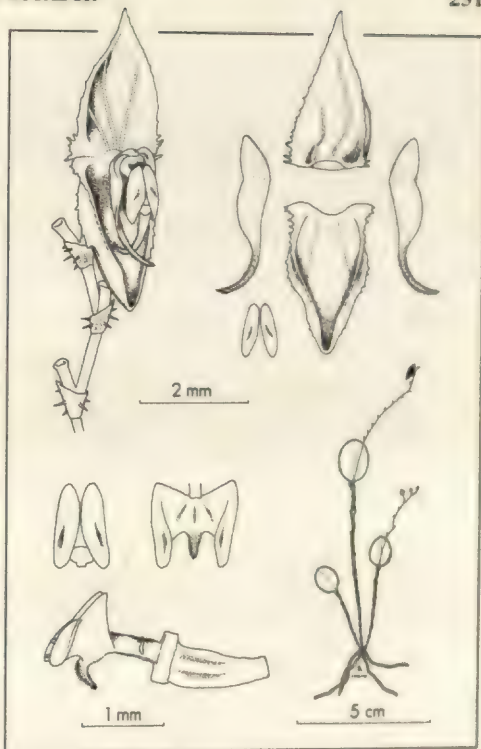


Fig. 186. *Lepanthes phrixothrix*

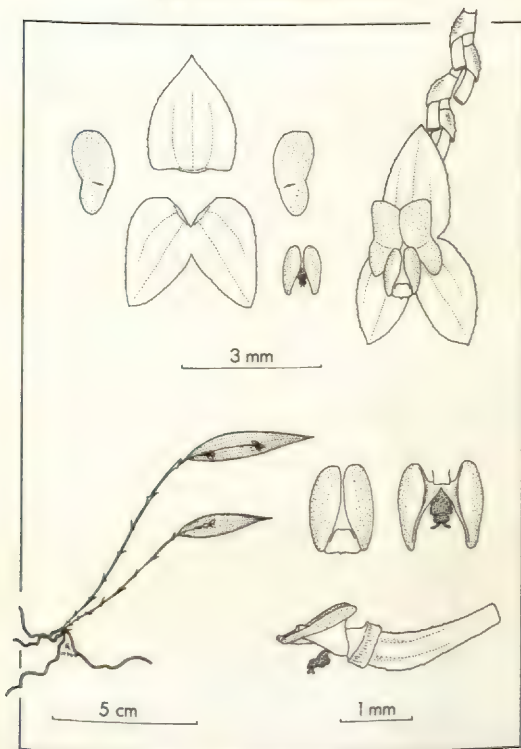


Fig. 187. *Lepanthes plectilis*

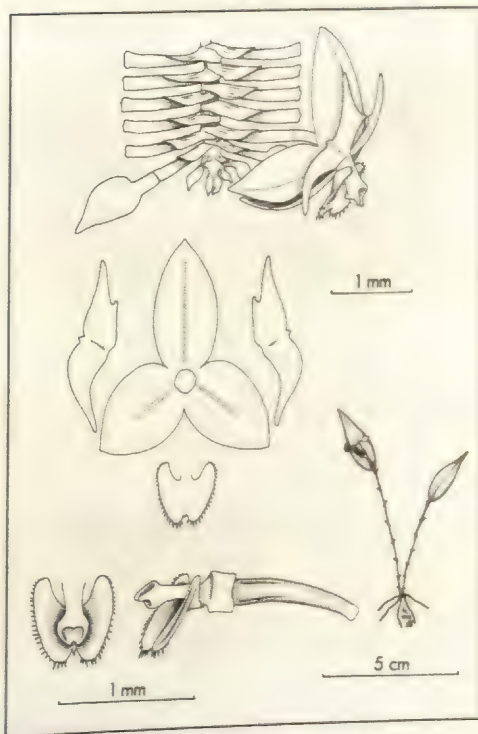


Fig. 188. *Lepanthes pleurorachis*

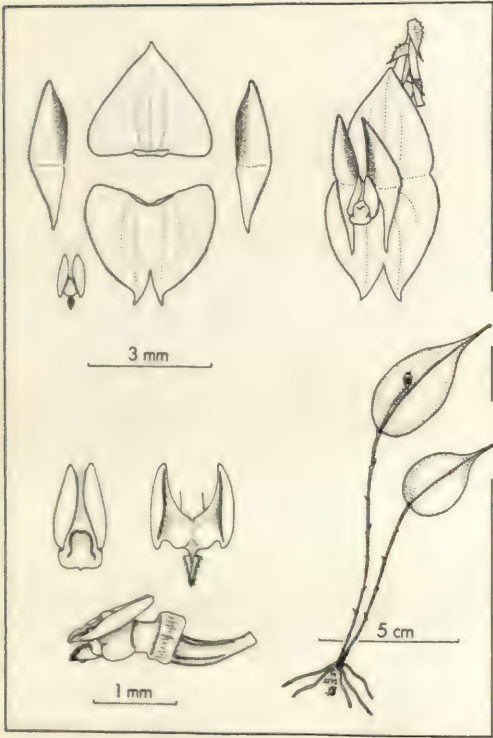


Fig. 189. *Lepanthes plumifera*

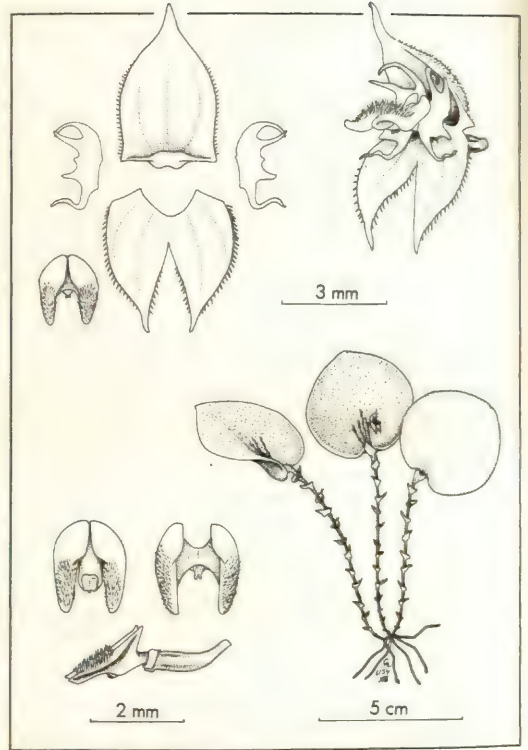


Fig. 190. *Lepanthes polytricha*

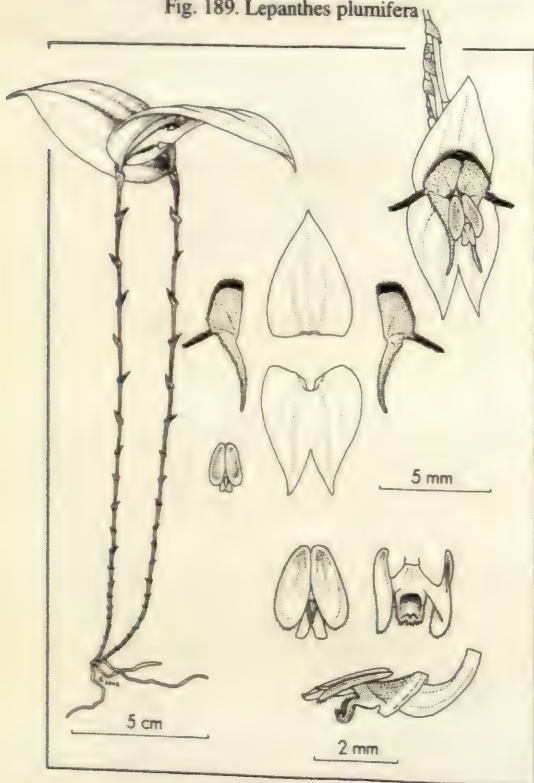


Fig. 191. *Lepanthes posadae*

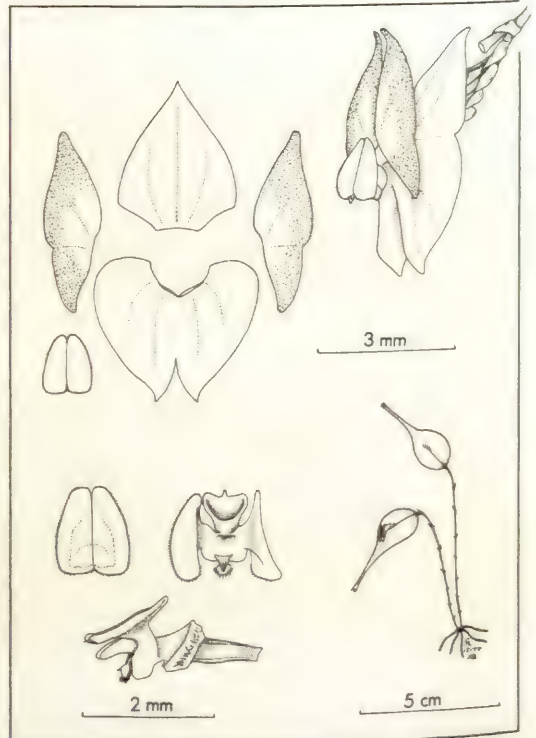


Fig. 192. *Lepanthes proboscidis*

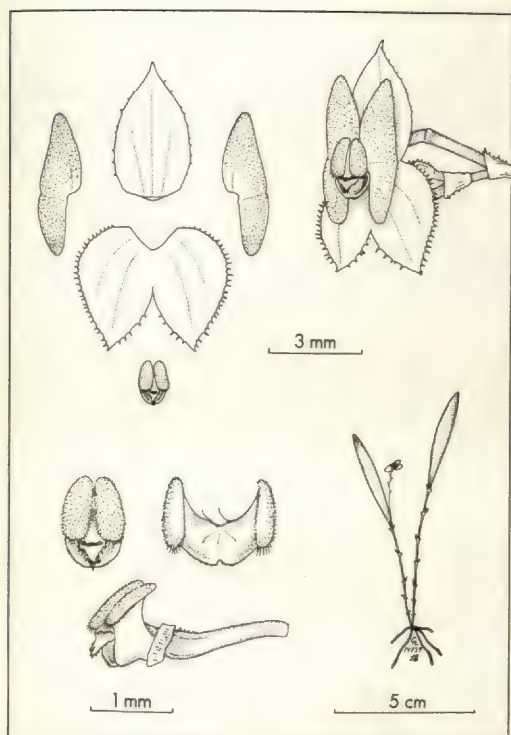
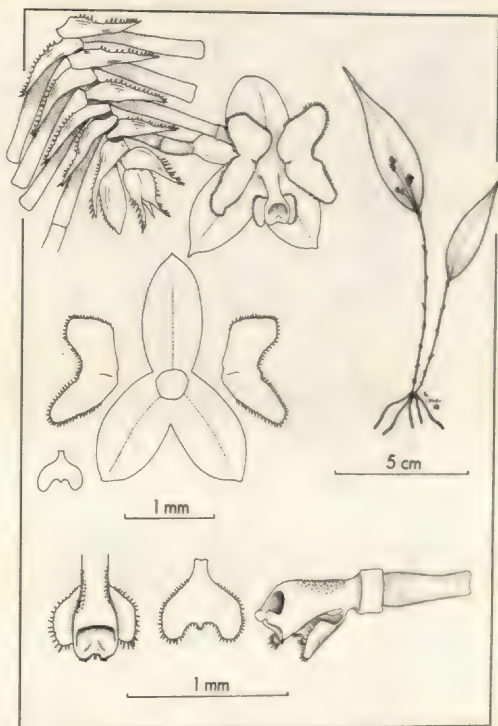
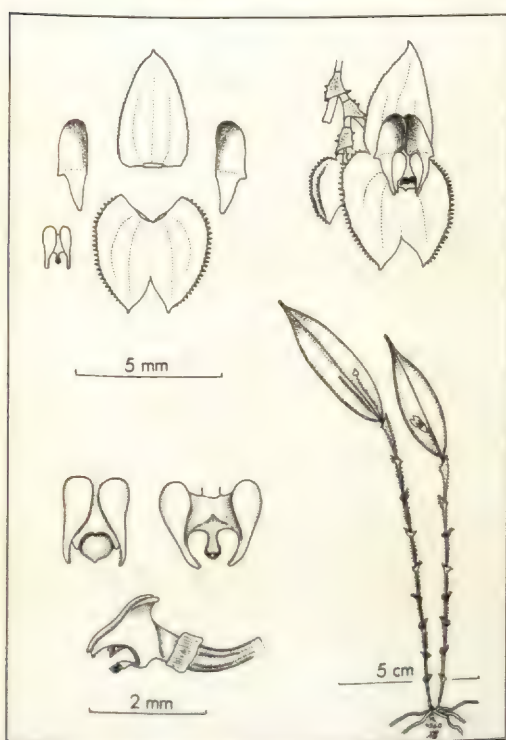
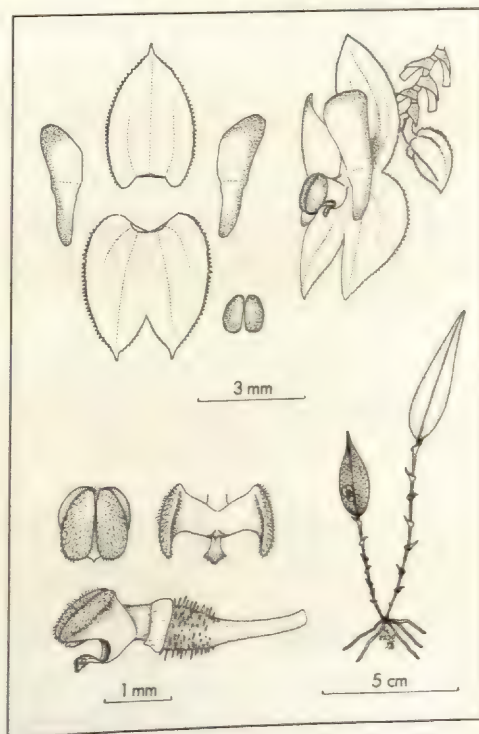
Fig. 193. *Lepanthes protuberans*Fig. 194. *Lepanthes psomion*Fig. 195. *Lepanthes pteropogon*Fig. 196. *Lepanthes pubes*



Fig. 197. *Lepanthes pubescens*

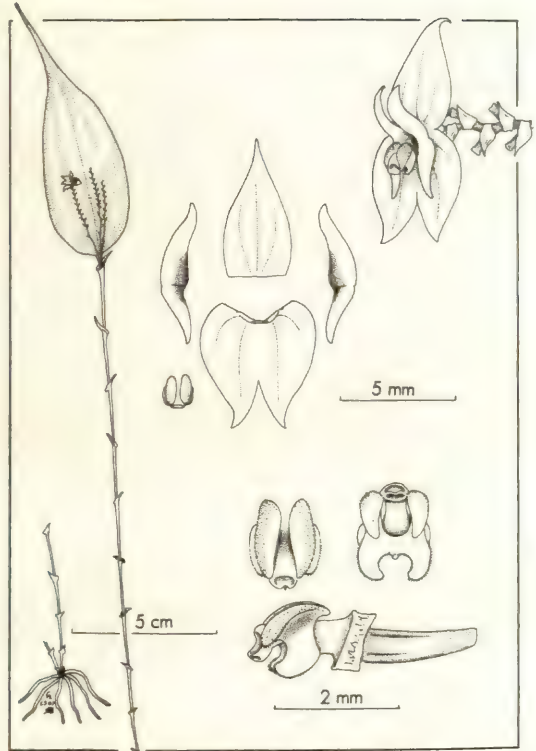


Fig. 198. *Lepanthes quaternaria*

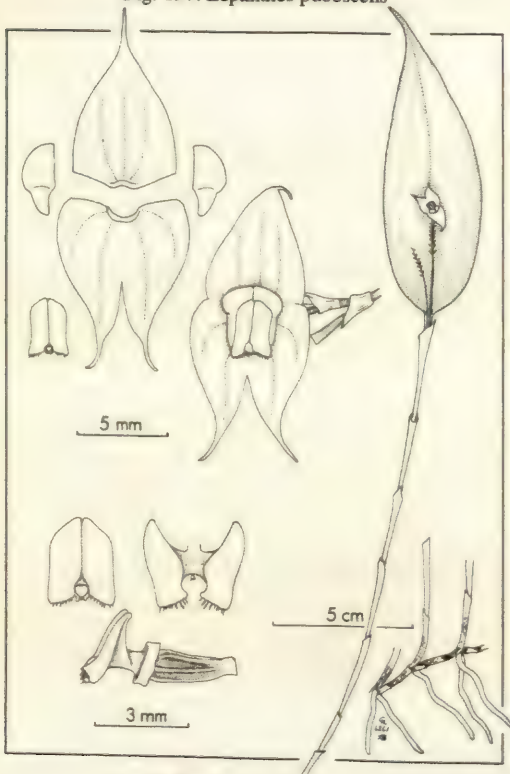


Fig. 199. *Lepanthes repens*

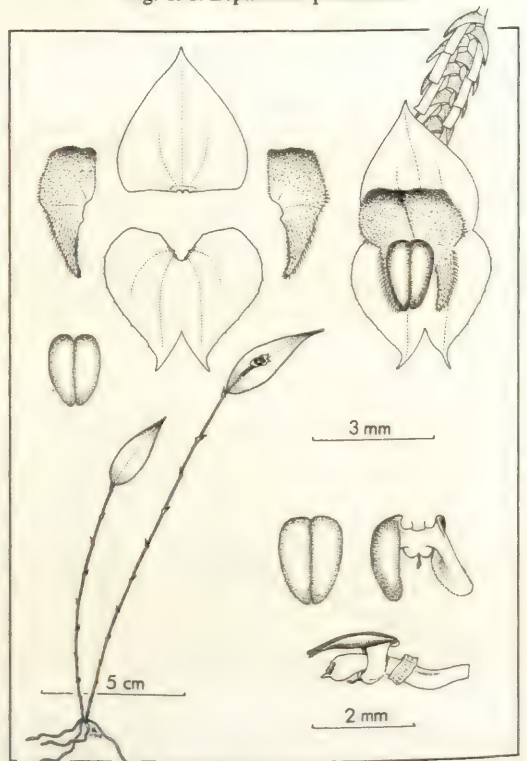


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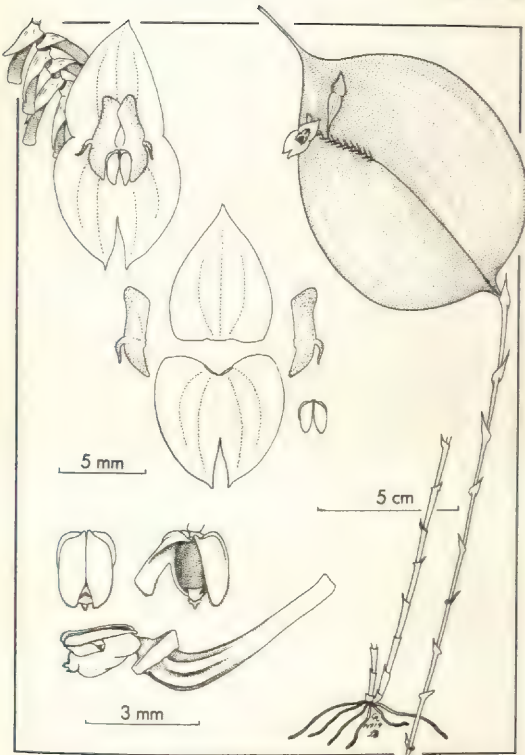


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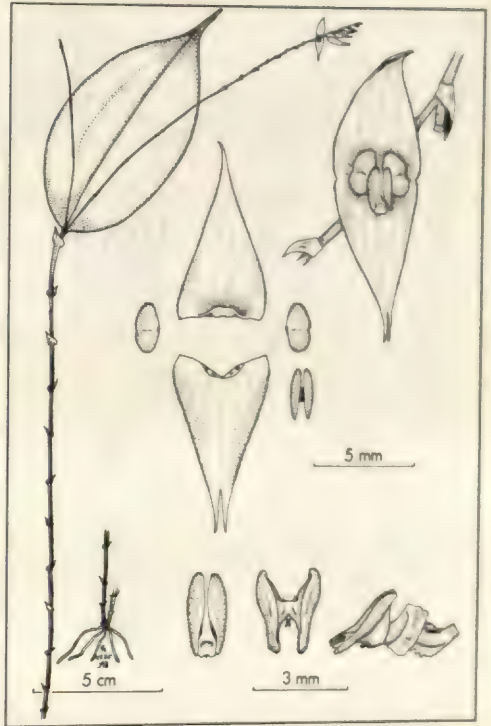


Fig. 202. *Lepanthes rhombipetala* (*L. nanegalensis*)

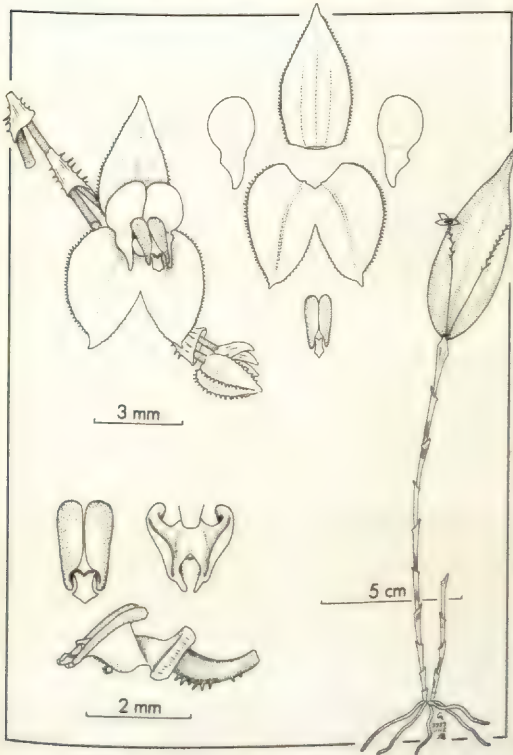


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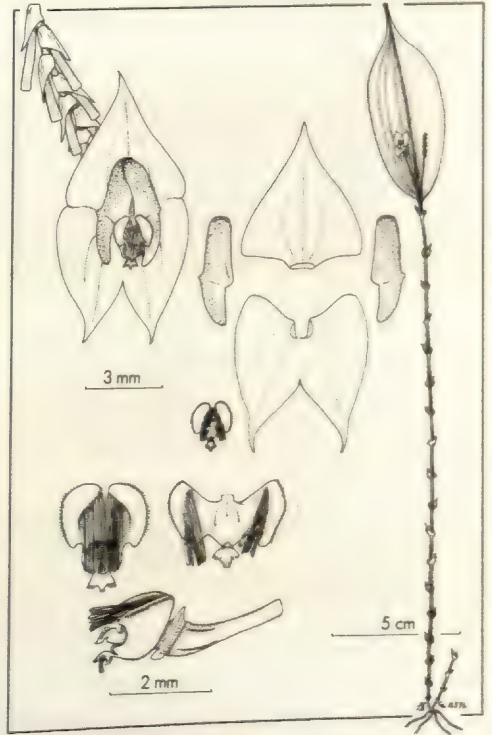


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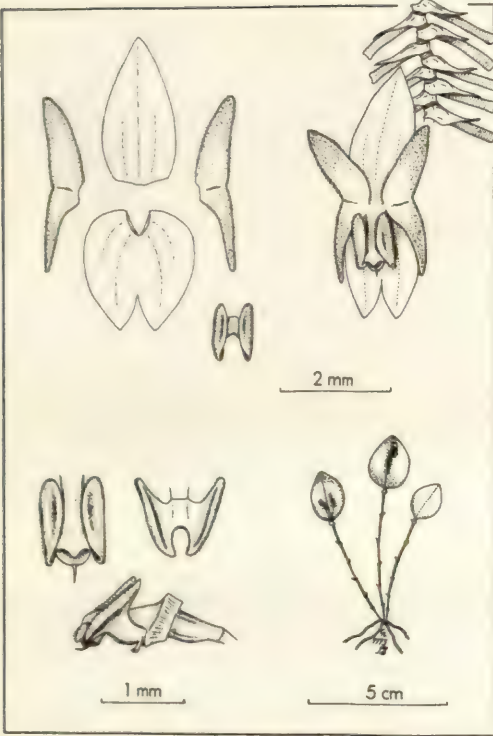


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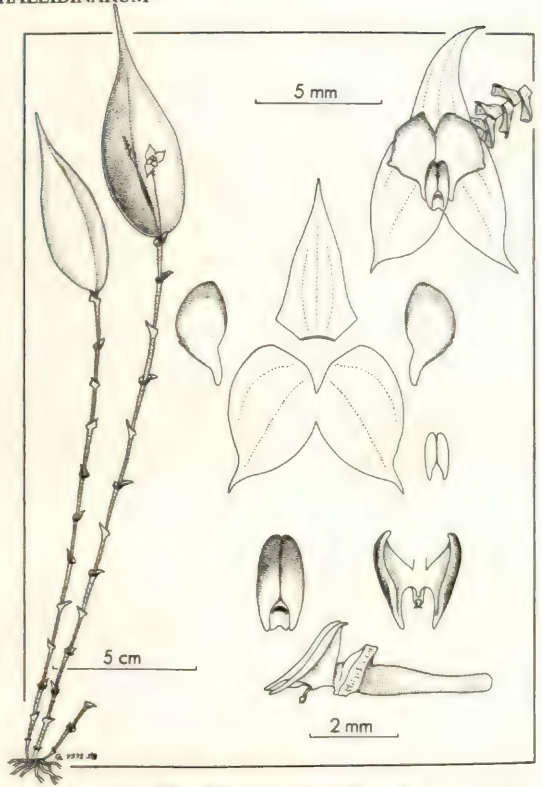


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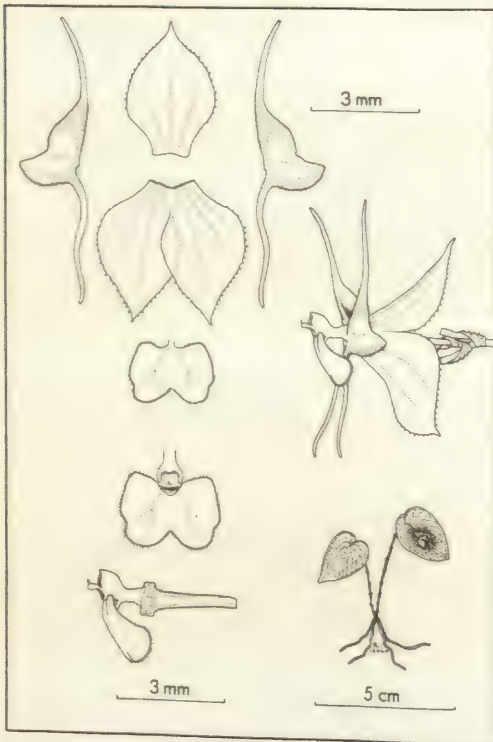


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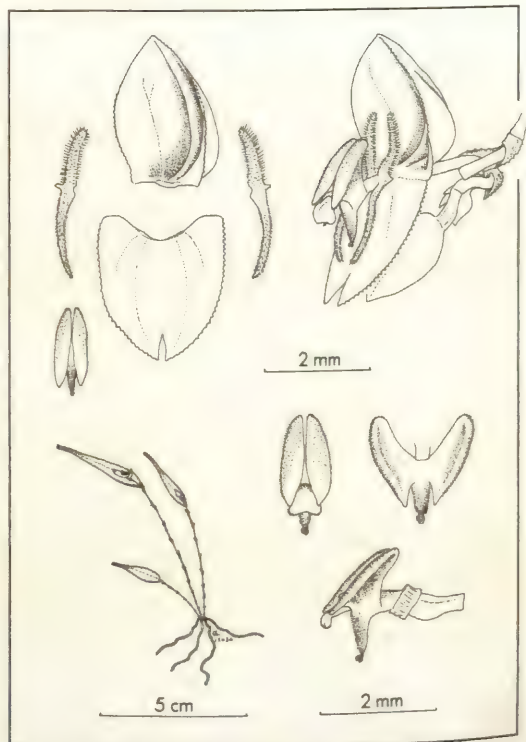
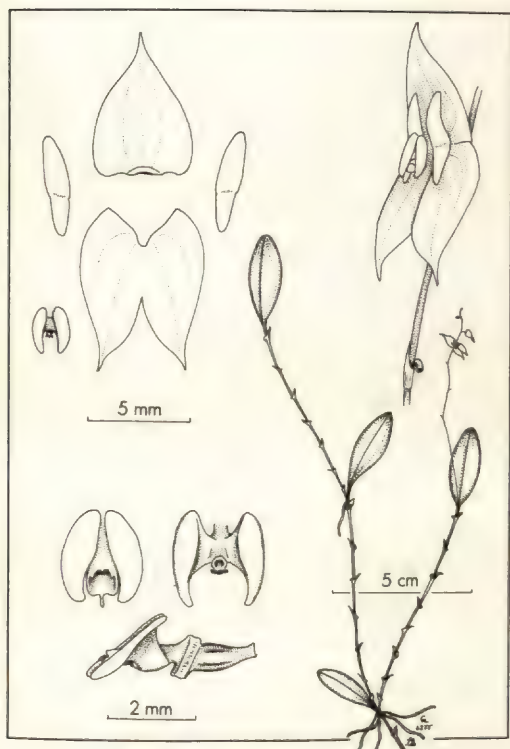
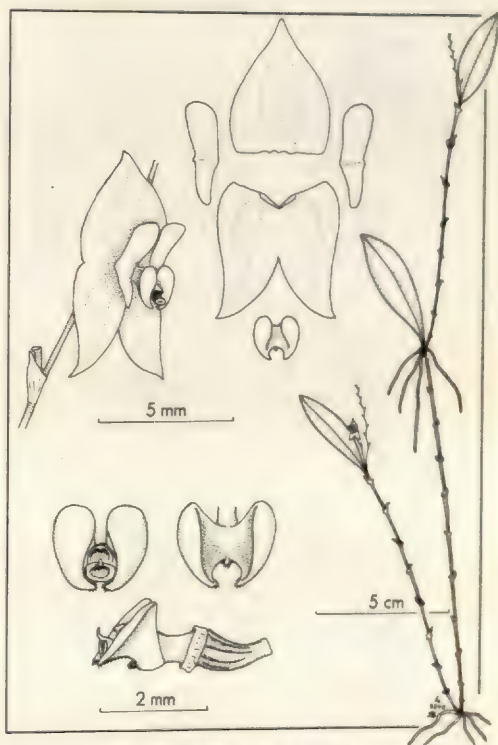
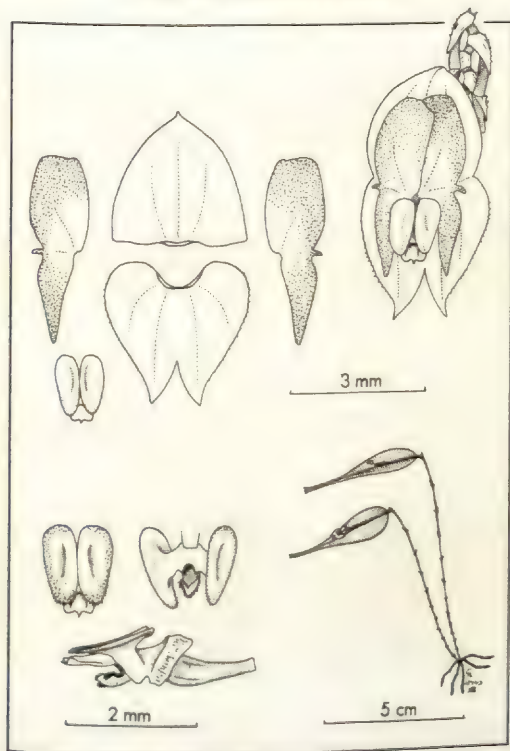
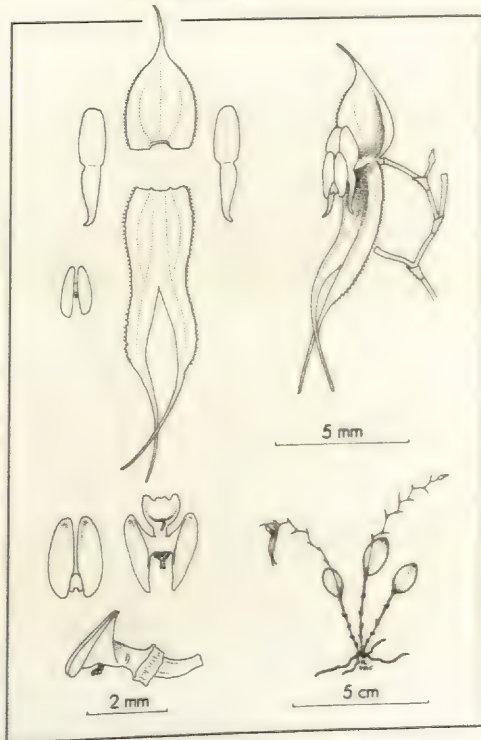


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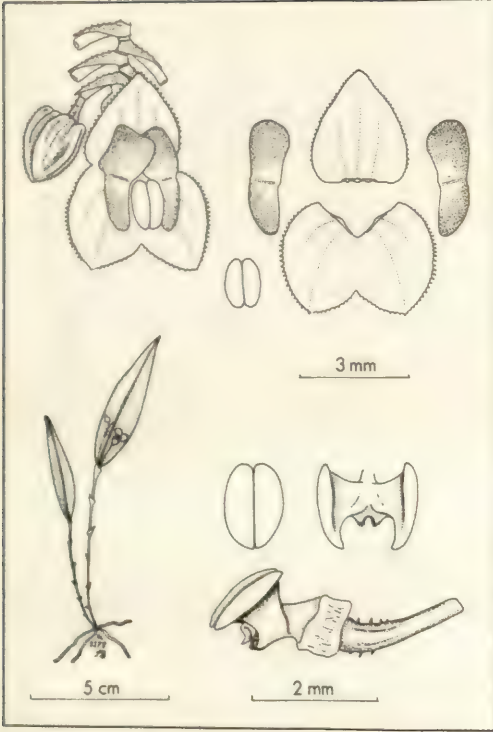


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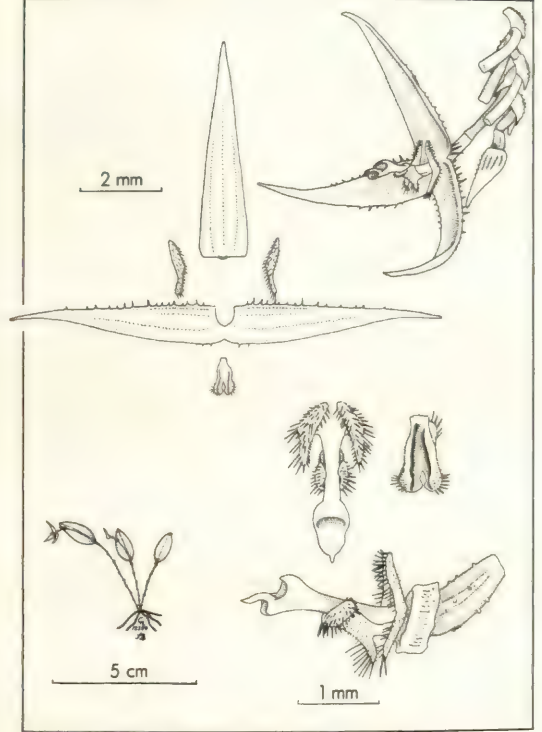


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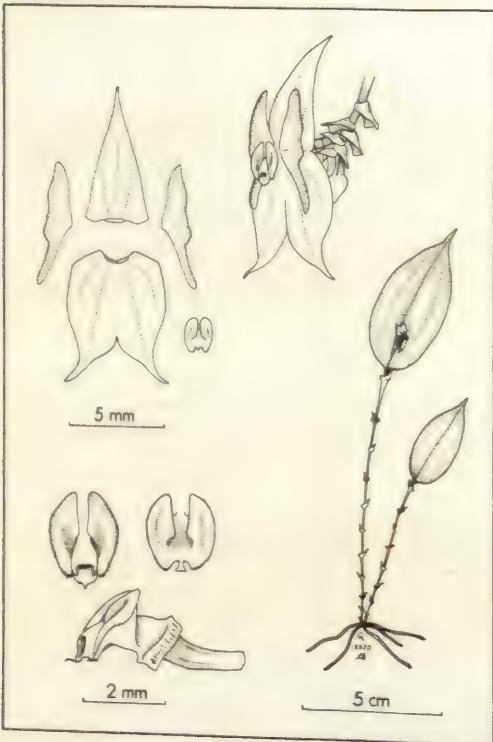


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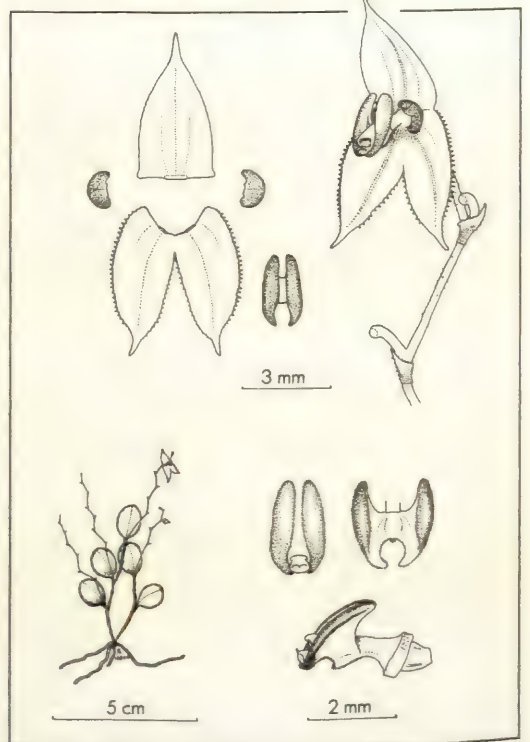


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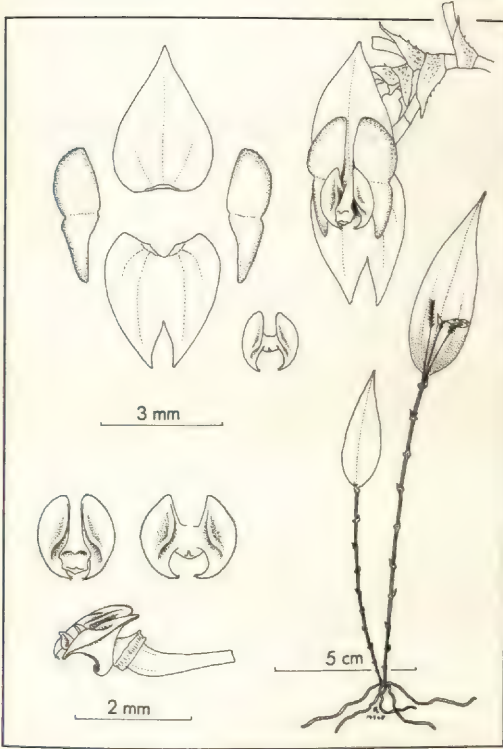


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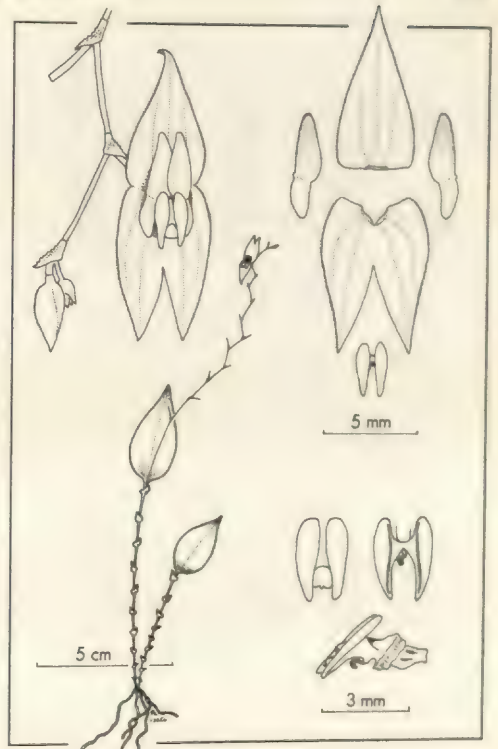


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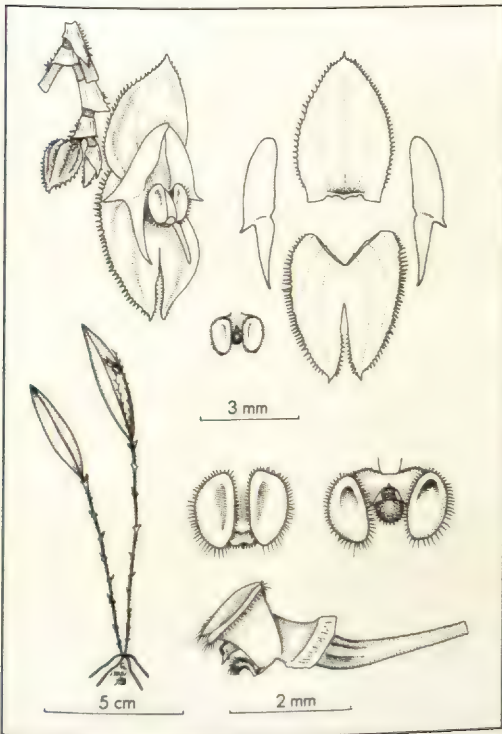


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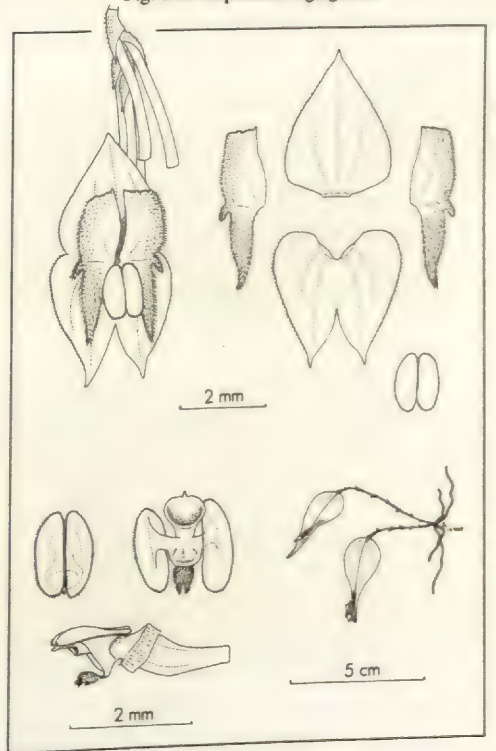
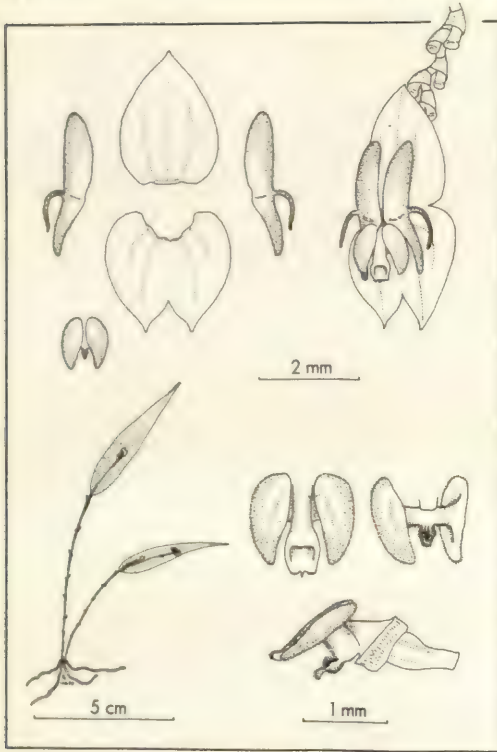
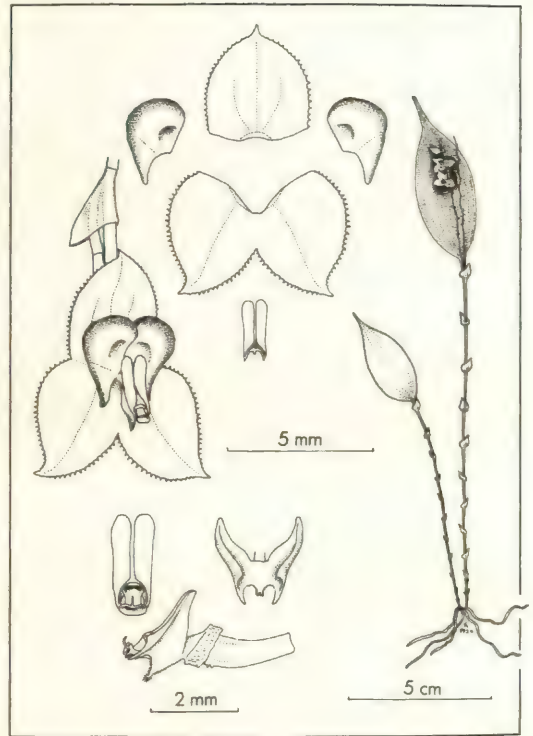
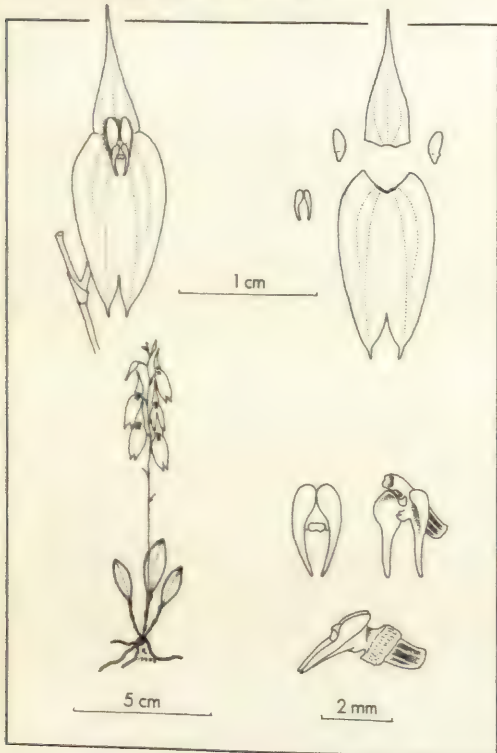
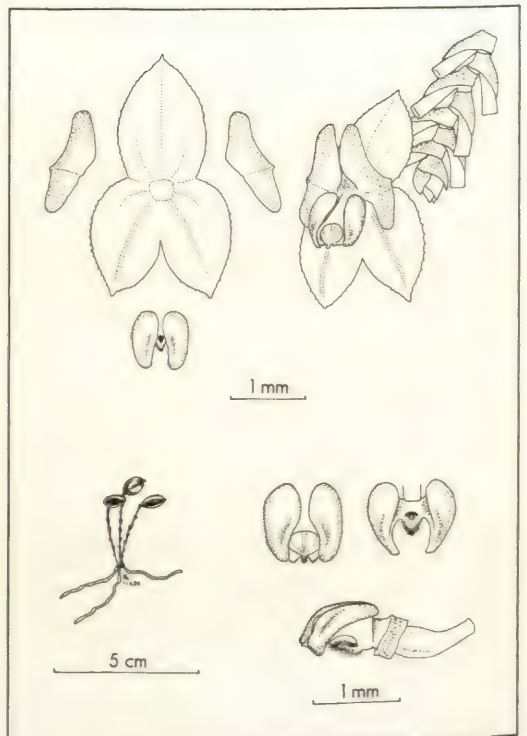


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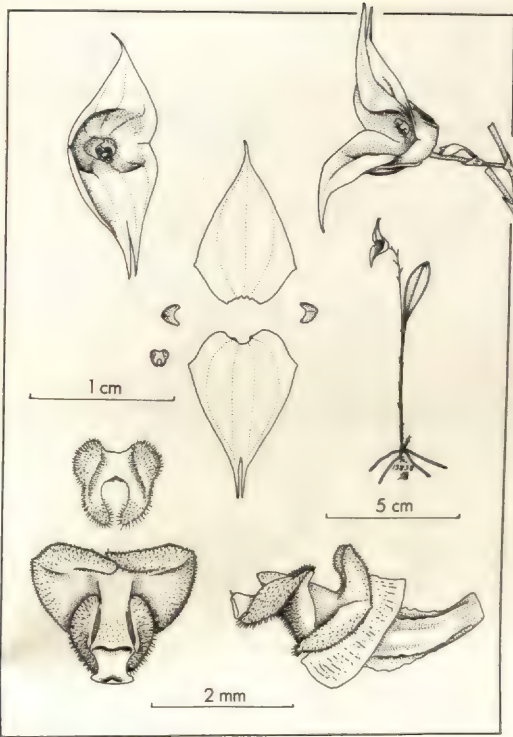


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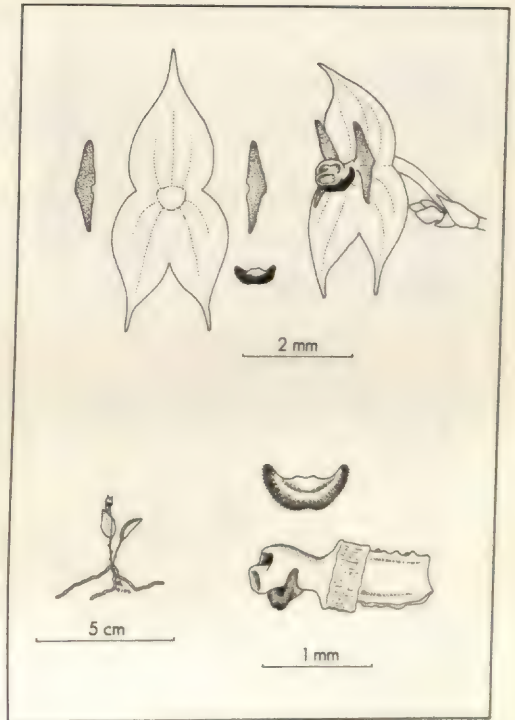


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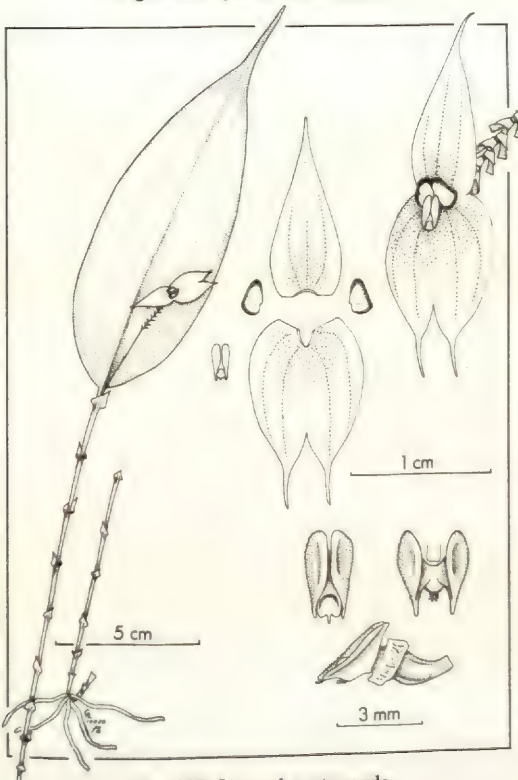


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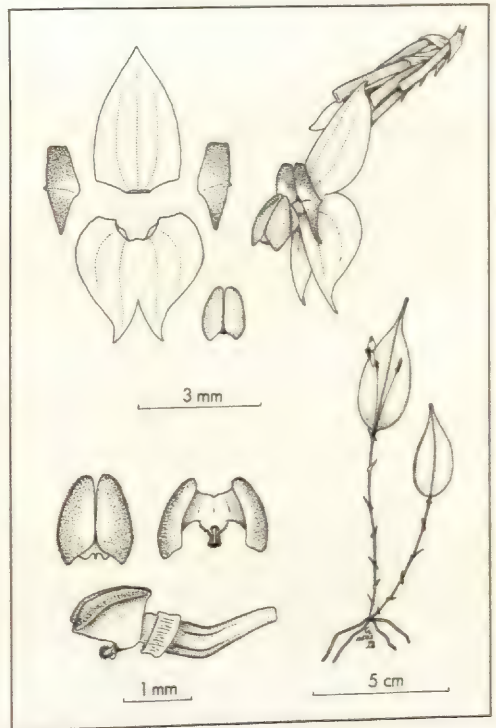


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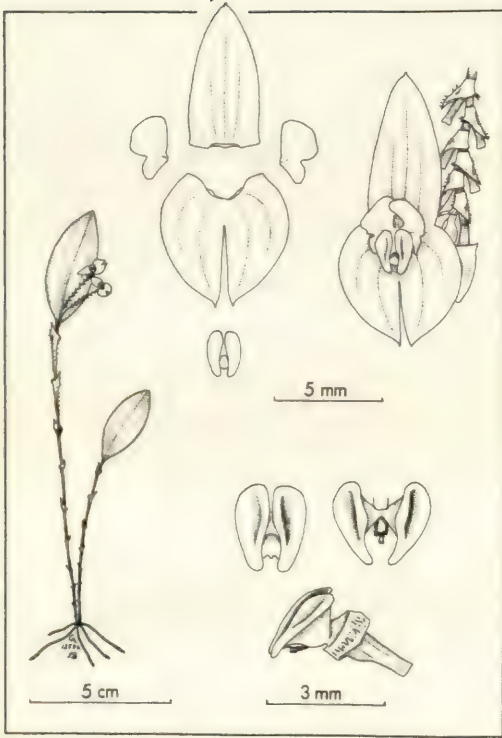


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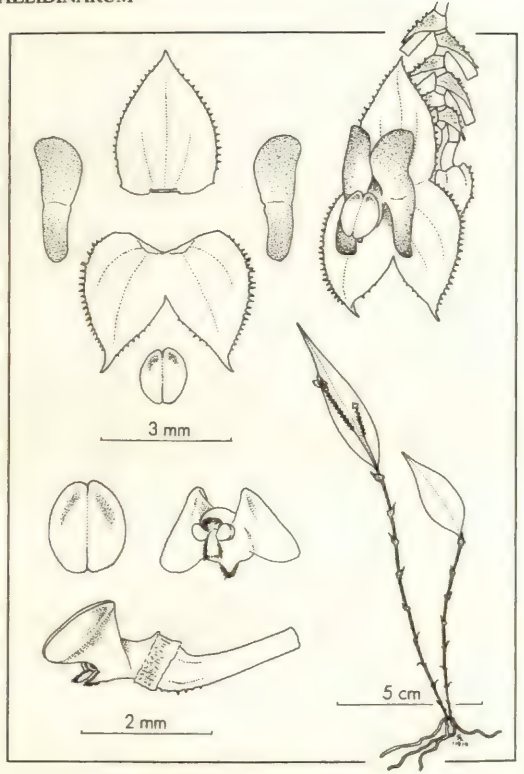


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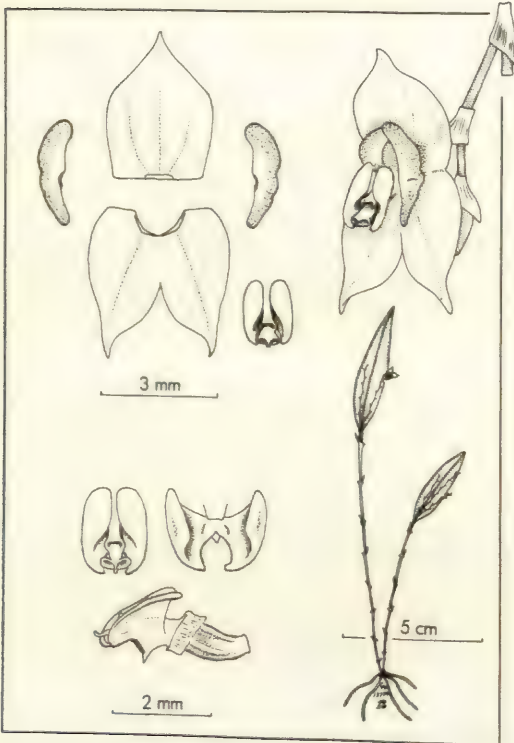


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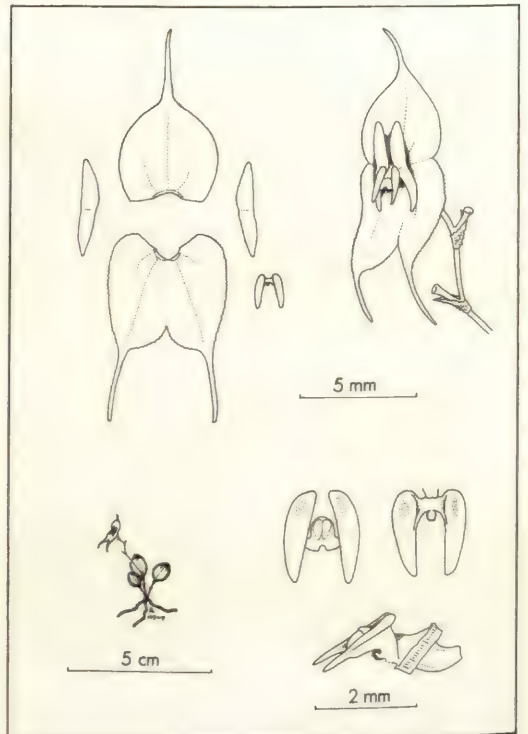


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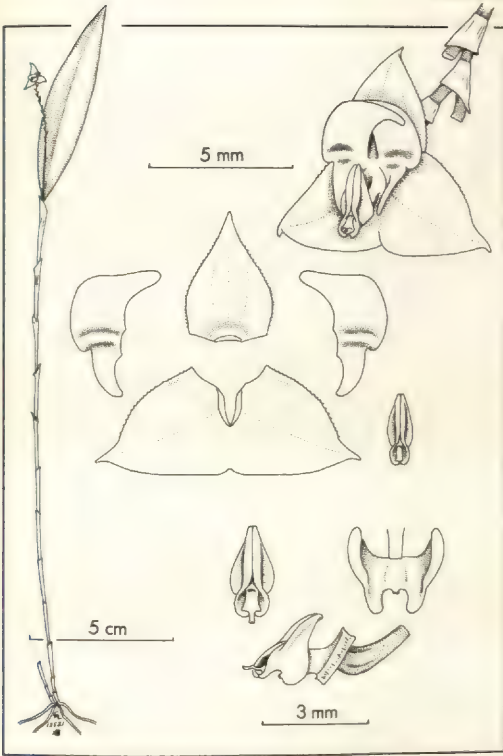


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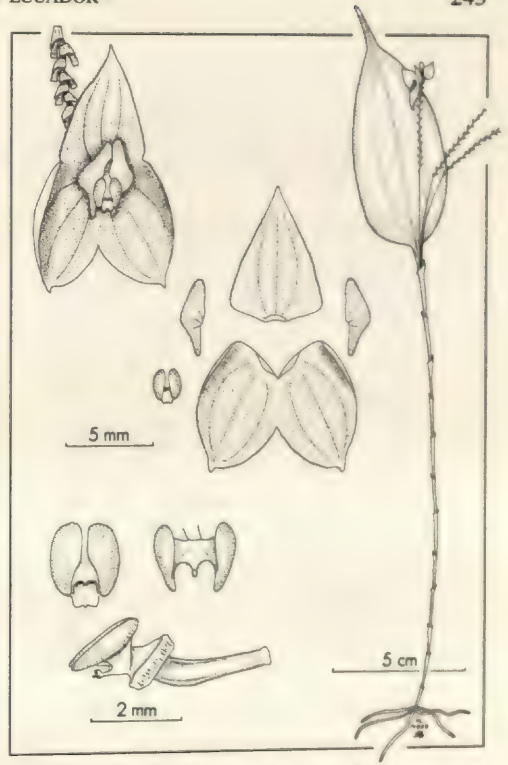


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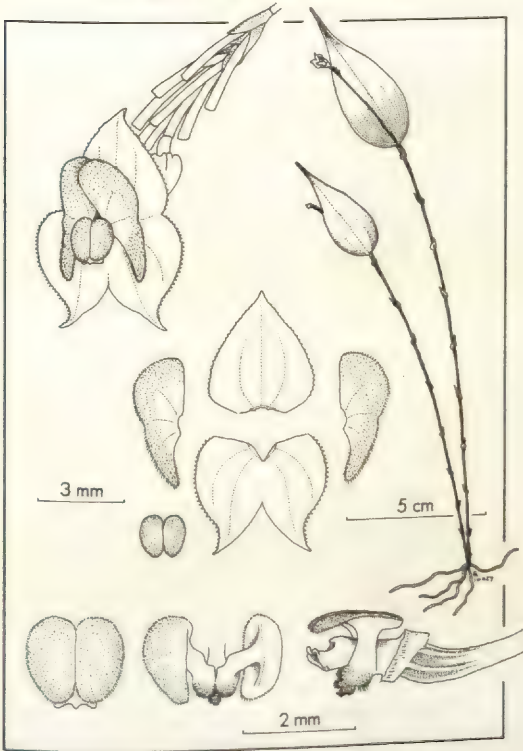


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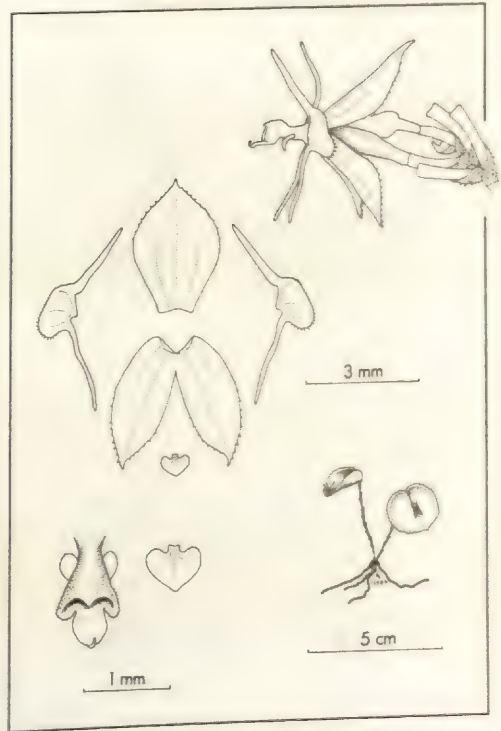


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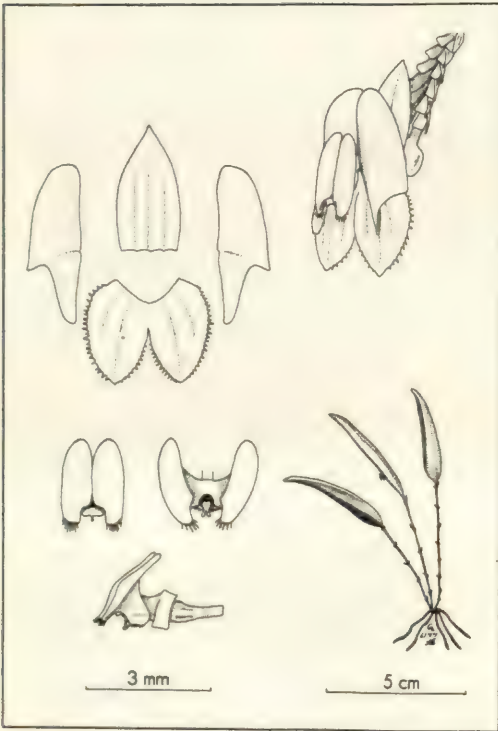


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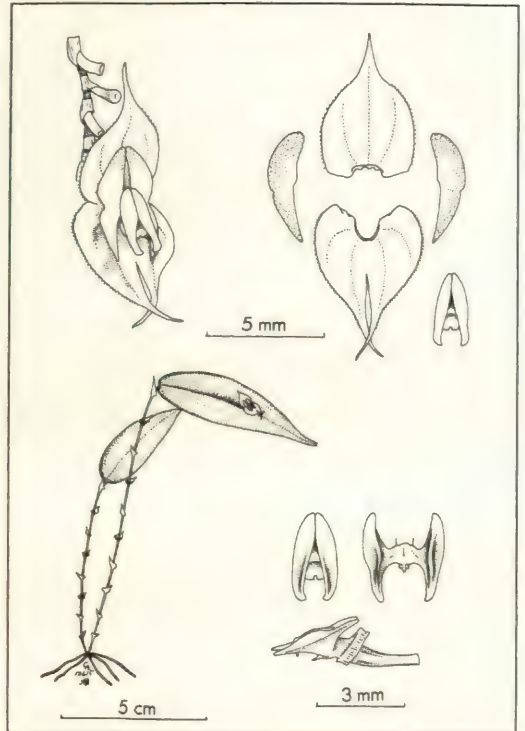


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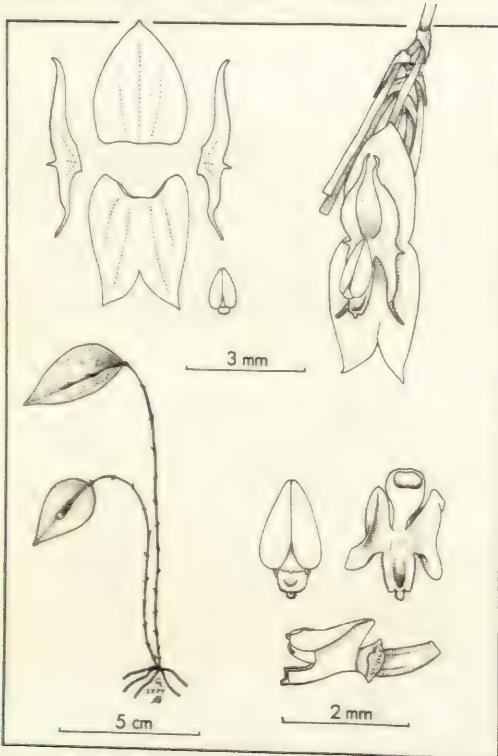


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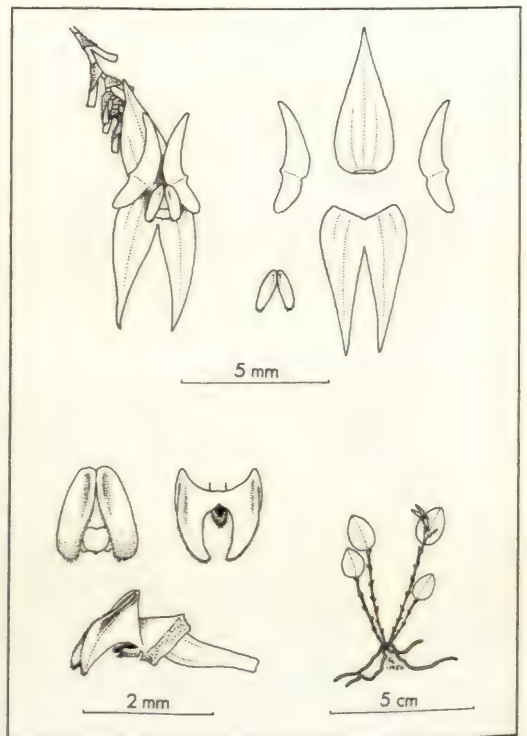


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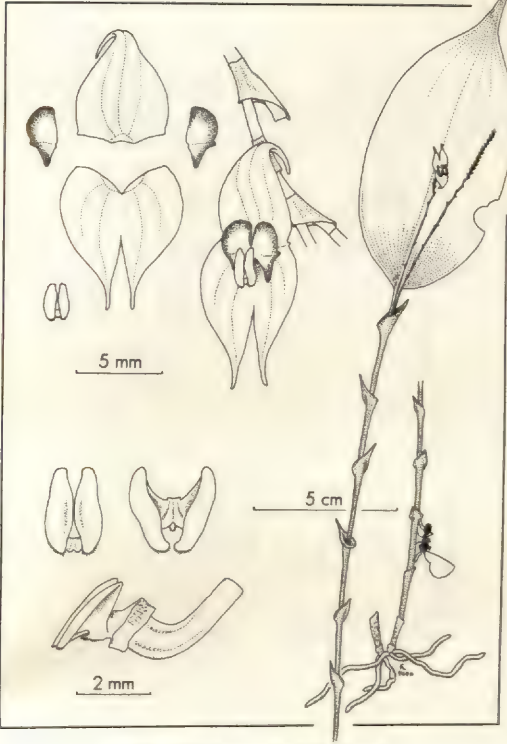


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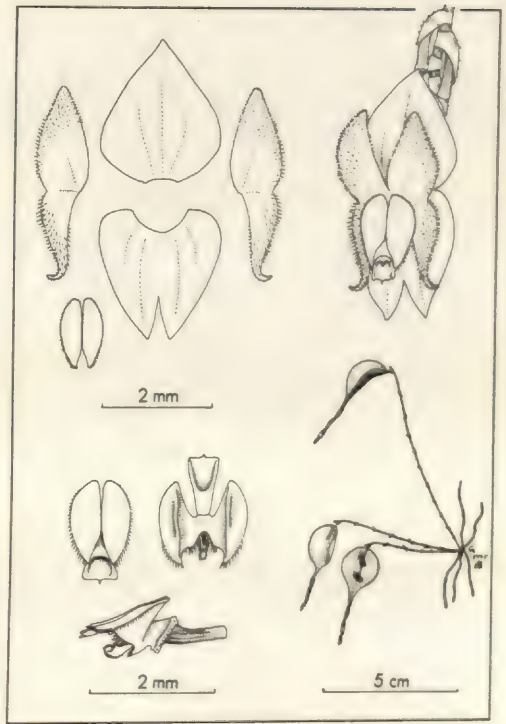


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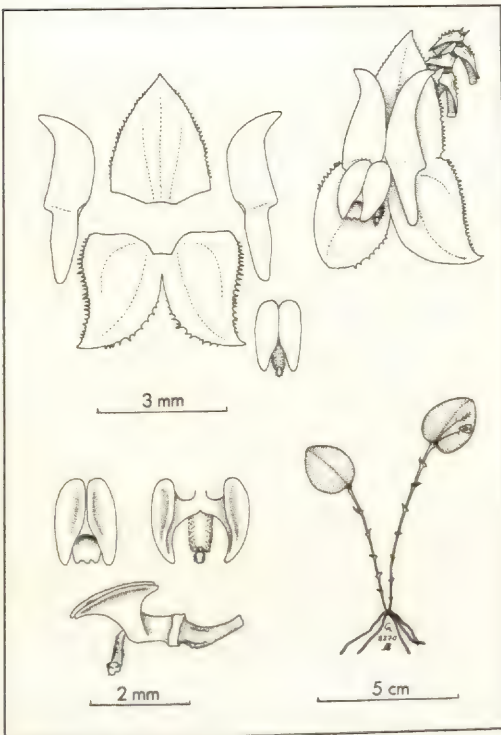


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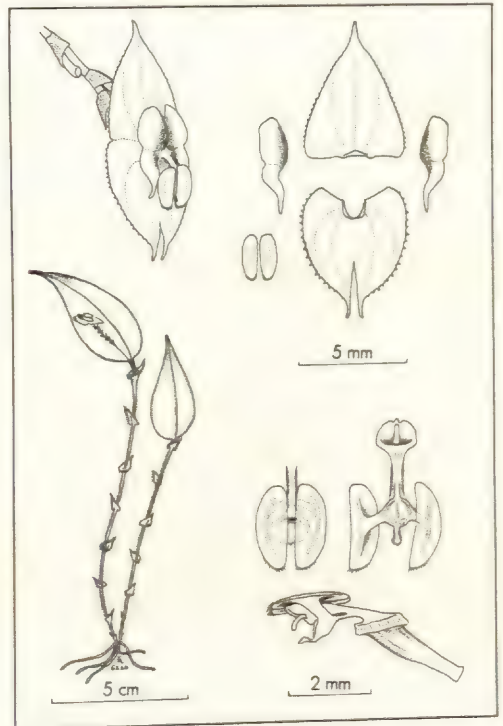


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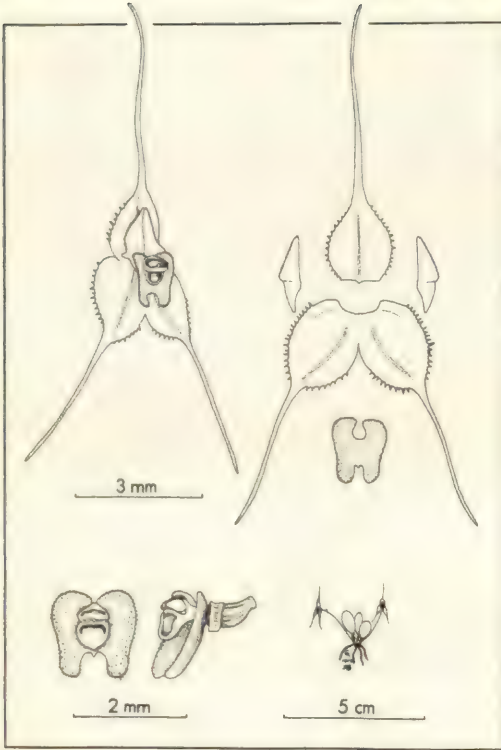


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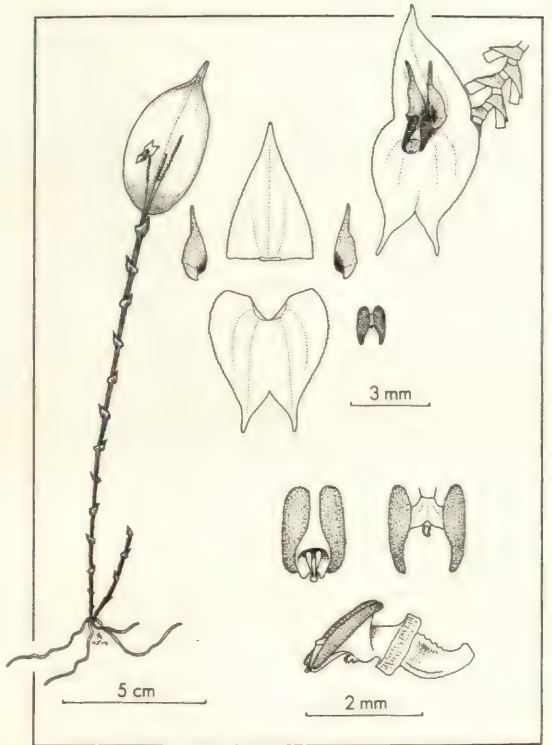


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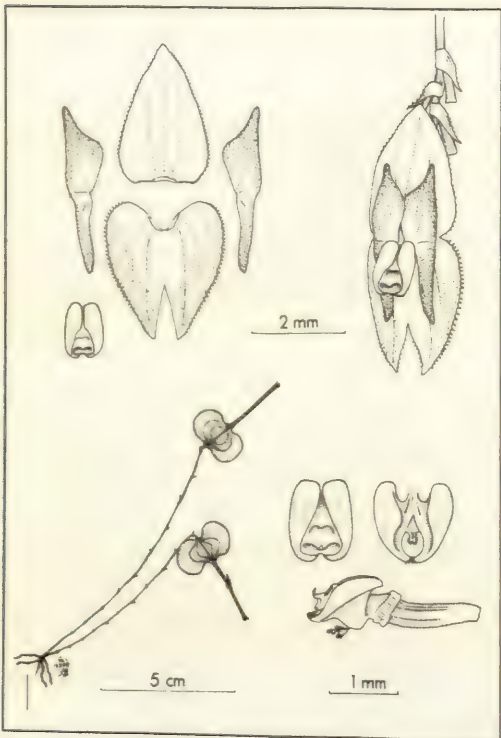


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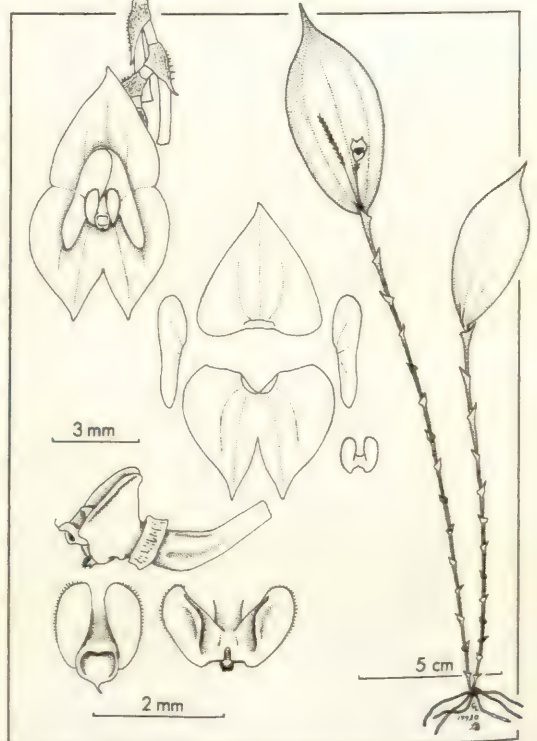


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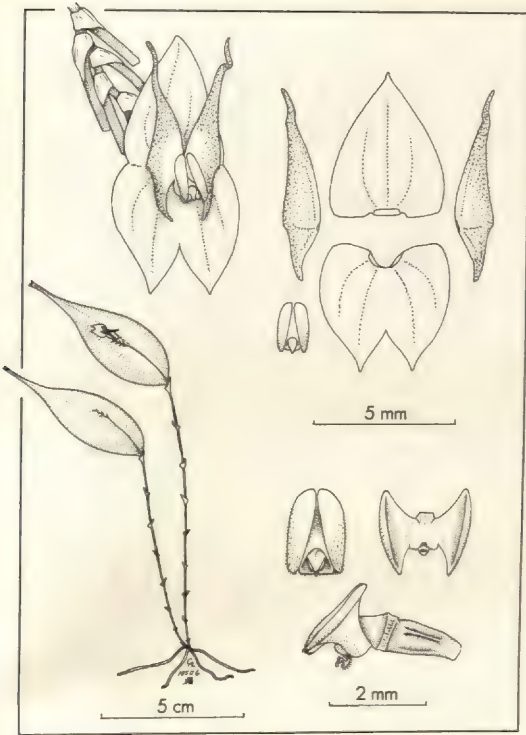


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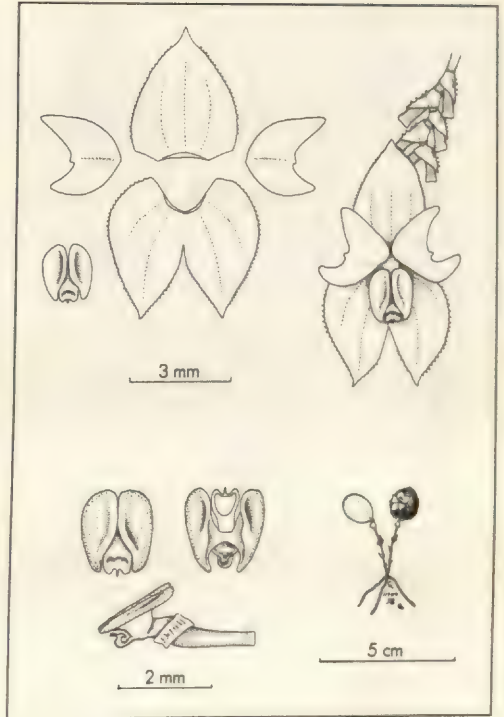


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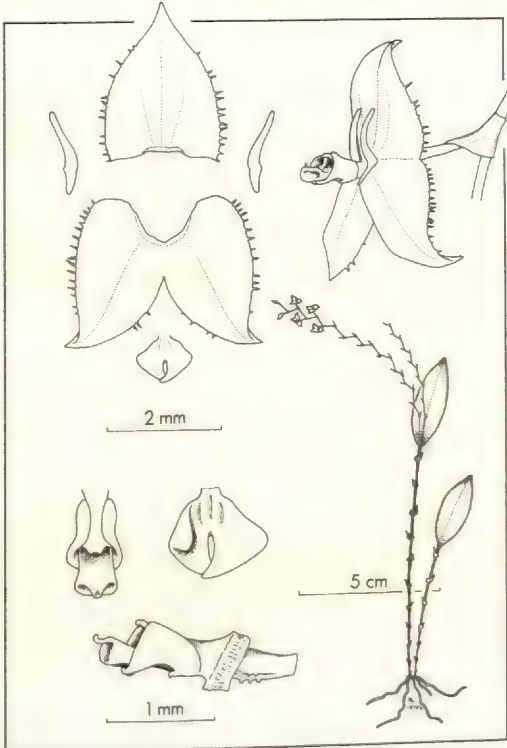


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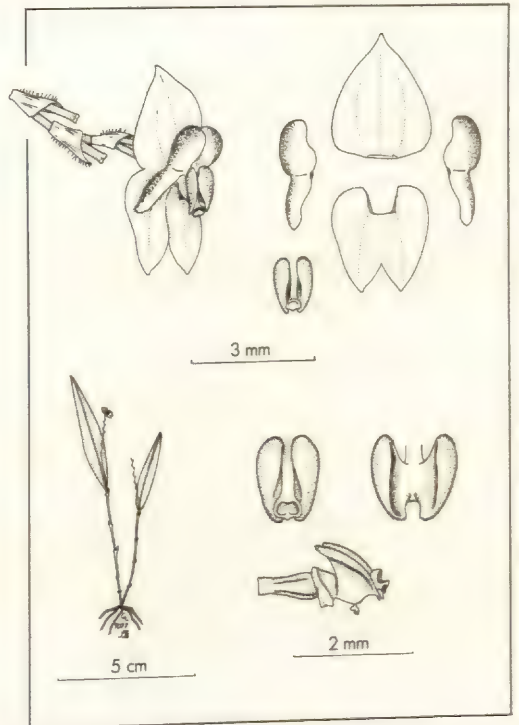


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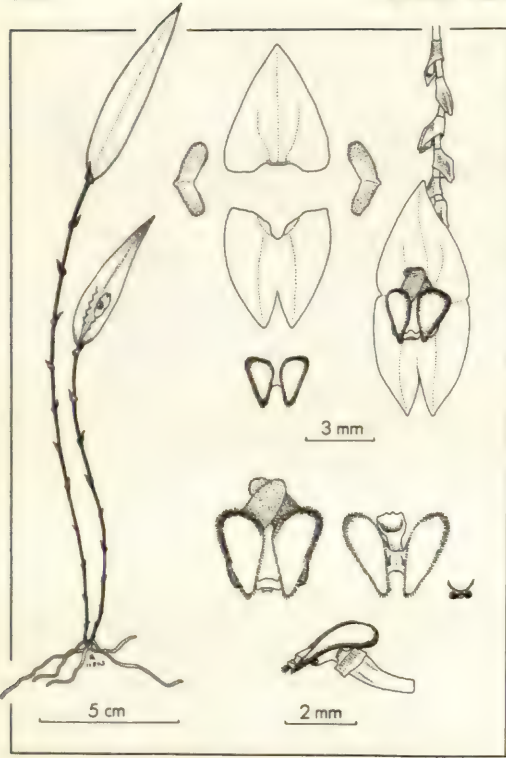


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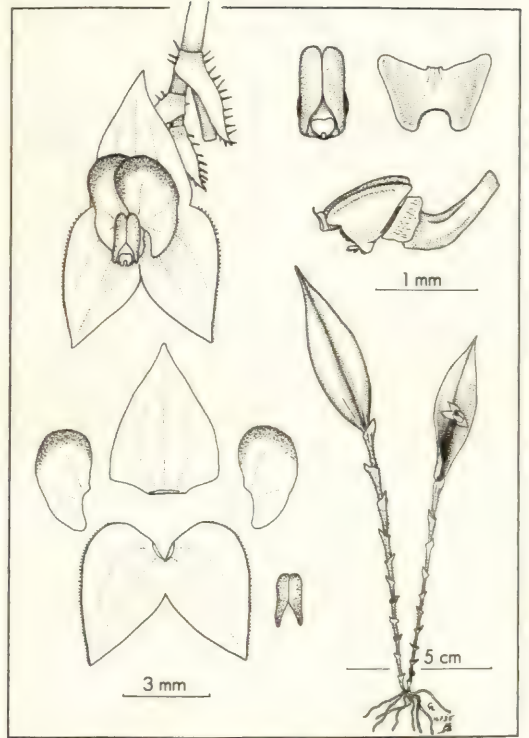


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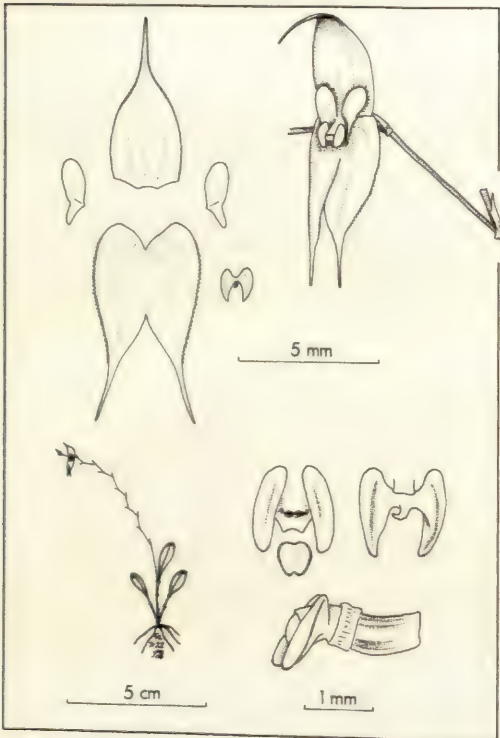


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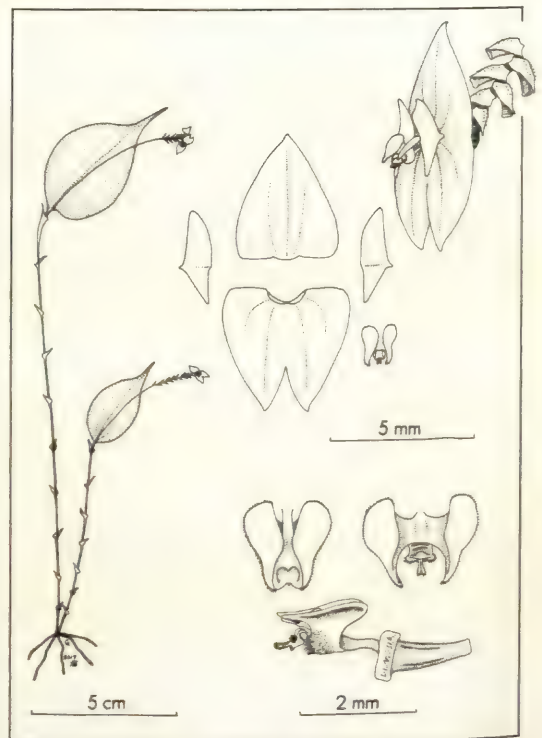


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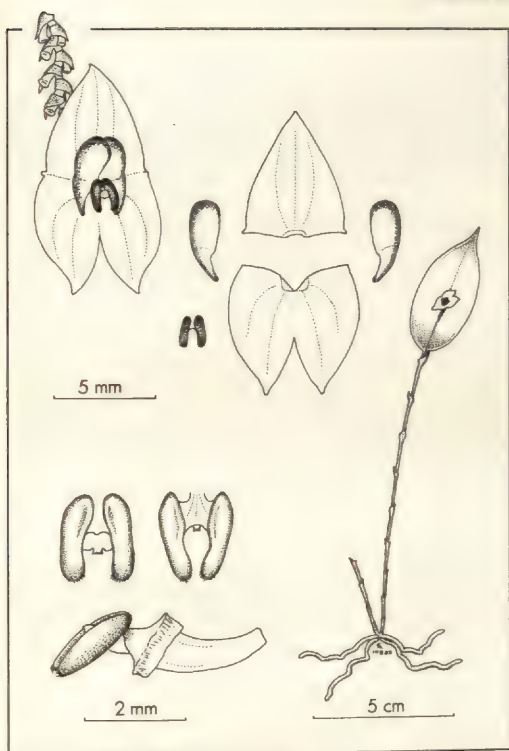


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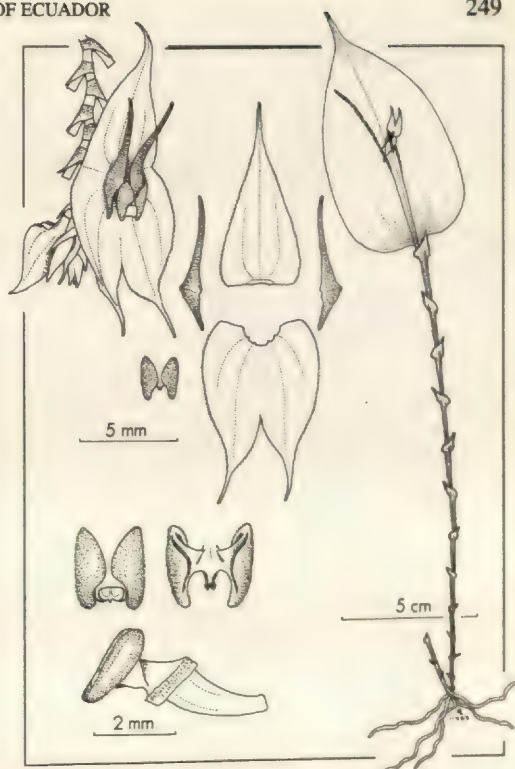


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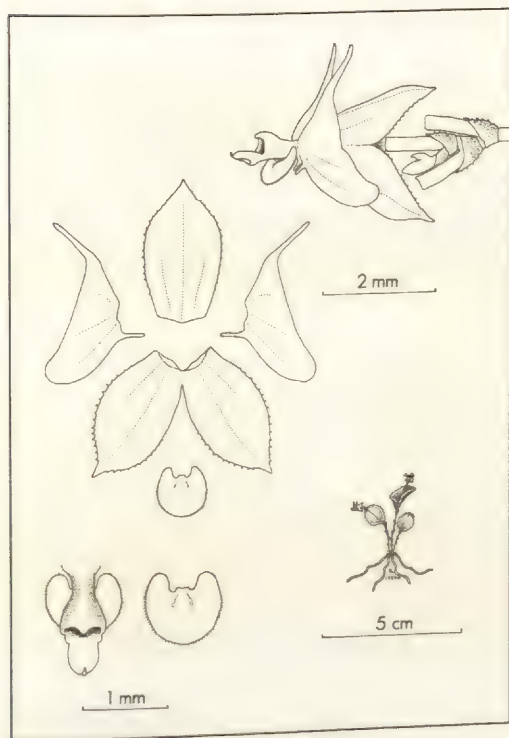


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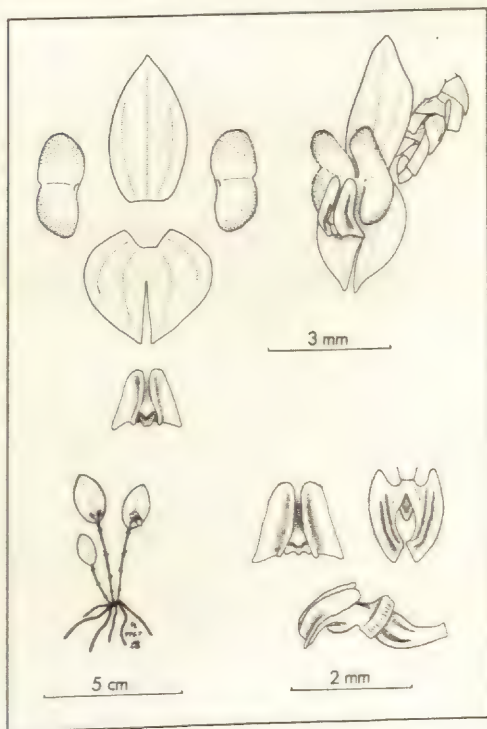


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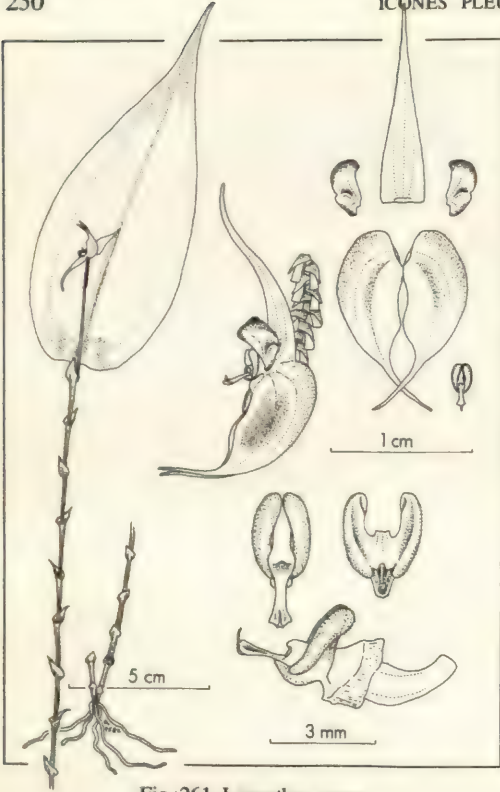


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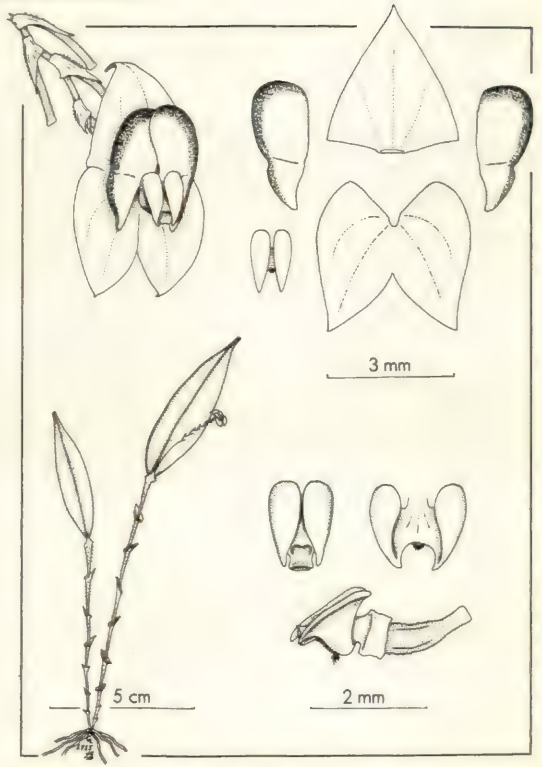


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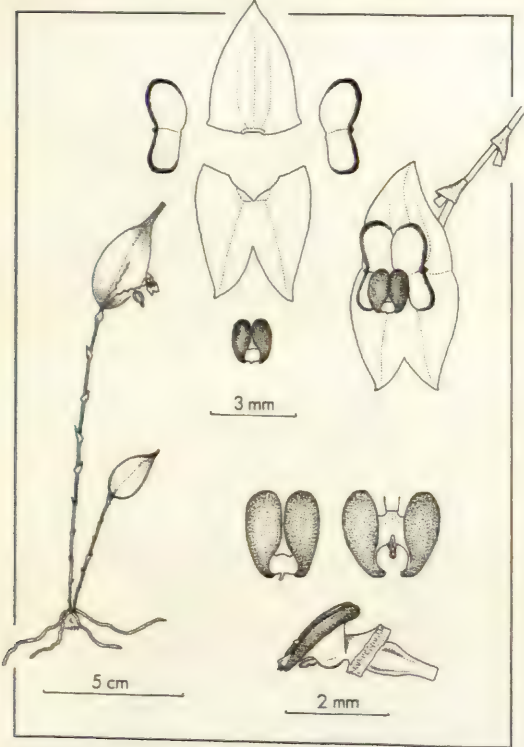


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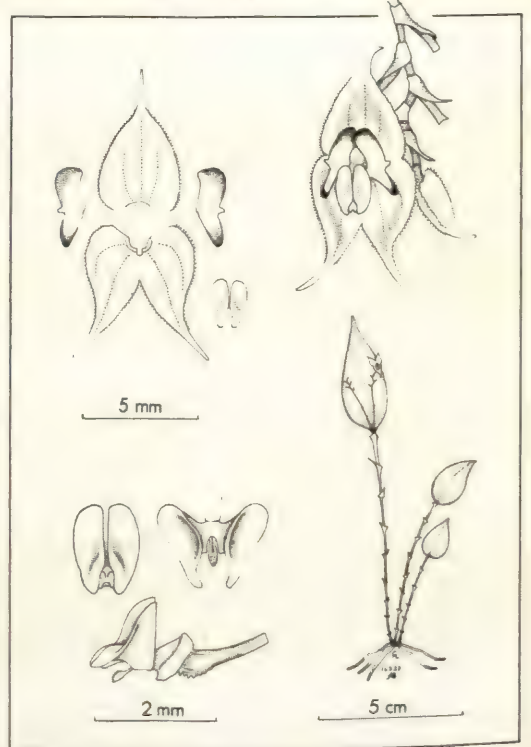


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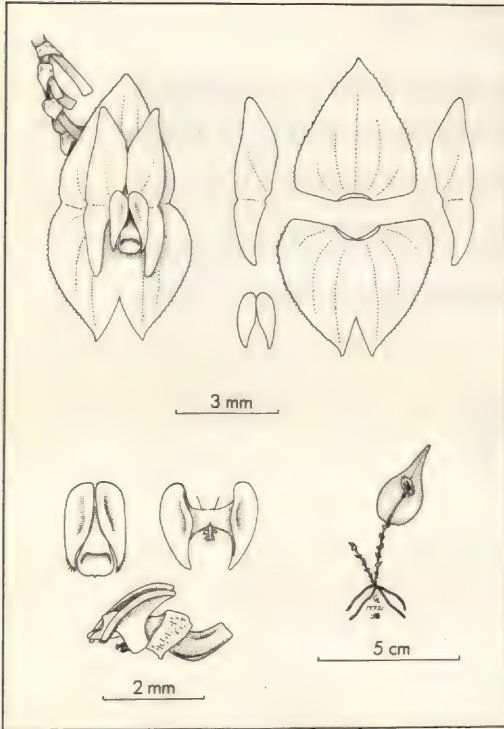


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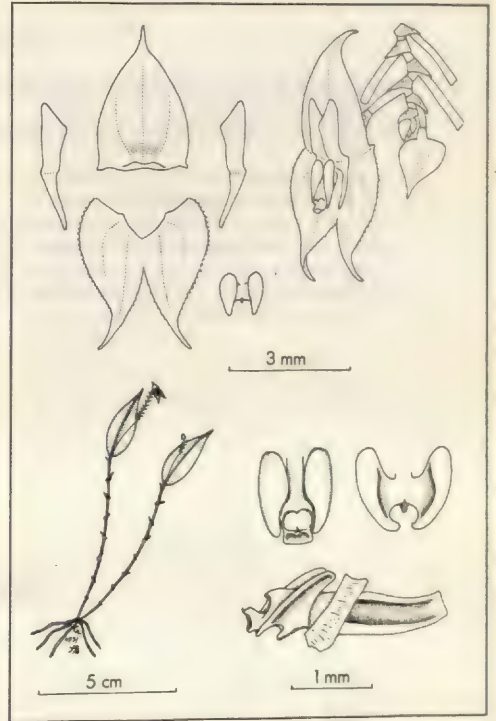
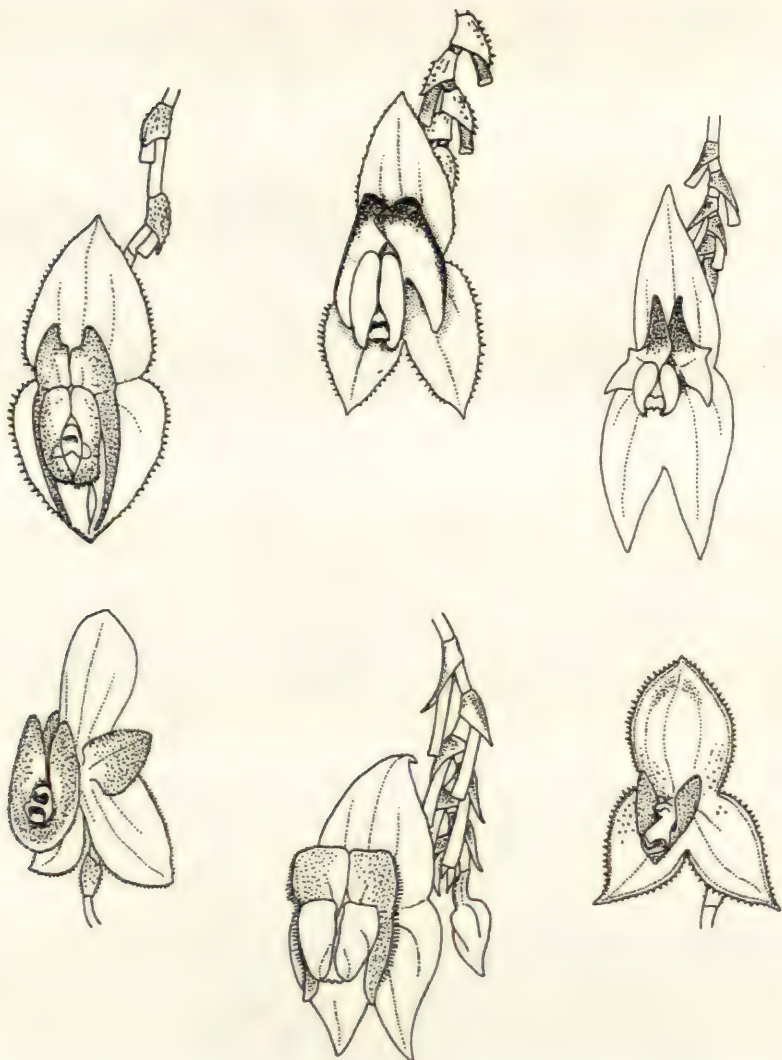


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ADDENDA TO BRACHIONIDIUM, LEPANTHES subgen.
BRACHYCLADIUM, PLATYSTELE, PLEUROTHALLIS subgen.
AENIGMA and subgen. ANCIPIITIA

ABSTRACT

The following species of *Brachionidium* Lindl., *Lepanthes* Sw. subgen. *Brachycladium* Luer, *Platystele* Schltr., *Pleurothallis* R.Br. subgen. *Aenigma* Luer, and subgen. *Ancipitia* Luer are described as new.

New species:

Brachionidium ingramii Luer & Dalström, sp. nov.

Lepanthes macrotica Luer & Dalström, sp. nov.

Platystele ingramii Luer & Dalström, sp. nov.

Pleurothallis londonoi Luer, sp. nov.

Pleurothallis panica Luer & Dalström, sp. nov.

The following five species have been discovered since the most recent additions to their respective genera in *Icones Pleurothallidarum*. The plates are numbered as continuations of their respective sequences in the *Icones Pleurothallidarum*.

***Brachionidium ingramii* Luer & Dalström, sp. nov.**

Ety.: Named in honor of Stephen Ingram, co-collector of this species.

Species haec *B. lehmannii* Luer similis, sed pedunculo brevissimo, labello denticulato papilloso callo basali subnullo differt.

Plant small, epiphytic, ascending to erect, up to 2 cm tall, the rhizomes occasionally branching, 1-2 mm long between ramicauls, enclosed by 2 imbricating sheaths; roots comparatively thick, from nodes near the base. Ramicauls suberect, 1-3 mm long, enclosed by 2 tubular sheaths. Leaf erect to suberect, coriaceous, elliptical, acute to subacute, apiculate, 6-13 mm long including the petiole ca. 1 mm long, 3.5-6 mm wide, 5-veined, cuneate below into the petiole. **Inflorescence** a solitary, dark purple, resupinate flower borne by an erect, slender peduncle 7 mm long, with a bract near the middle; floral bract short, acute, 1.5 mm long, enclosing the pedicel and ovary; pedicel 0.5 mm long, with a filament 2 mm long; ovary 0.5 mm long; sepals membranous, minutely ciliate, the middle sepal ovate, concave, 6-7 mm long, 4 mm wide, the apex acuminate into a slender tail 13 mm long, 3-veined, the lateral sepals connate into a suborbicular, concave synsepal, 7 mm long, 6 mm wide expanded, 4-veined, the apex subacute, contracted into a slender tail 10 mm long, with the tip entire; petals ovate, oblique, minutely ciliate, 5 mm long, 3.75 mm wide, 3-veined, the apex subacute, contracted into a slender tail 9 mm long; lip transverse, 3.75 mm wide, 3-veined, the apex subacute, with rounded lateral angles, the apex broadly rounded, denticulate, apiculate, the disc shallowly concave tuberculate between the margin and an oblique row of tubercles parallel to the margin, the base with a low, flat callus, hinged to the column-foot; column stout, 1.5 mm long, 1 mm broad; pollinia unknown.

ECUADOR: Prov. of Imbabura: Los Cedros Reserve, wet forest, on small, mossy branch, alt. 1100 m, 10 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2113 (Holotype: MO), C. Luer illustr. 17911.

This very small species is closely related to *Brachionidium lehmannii*, differing most conspicuously in the very short peduncles as compared to the proportionately long peduncles of the latter. Although both purple and yellow flowers occur commonly in a species, it might be noted that the flowers of *B. ingramii* were described as magenta, and those of *B. lehmannii* were described as lemon yellow. Otherwise, the sepals and petals of the two species are very similar in size and shape. The lip of *B. ingramii* is not only denticulate, but the disc is also traversed on both sides by an oblique row of denticles with additional tubercles scattered between the row and the margin.

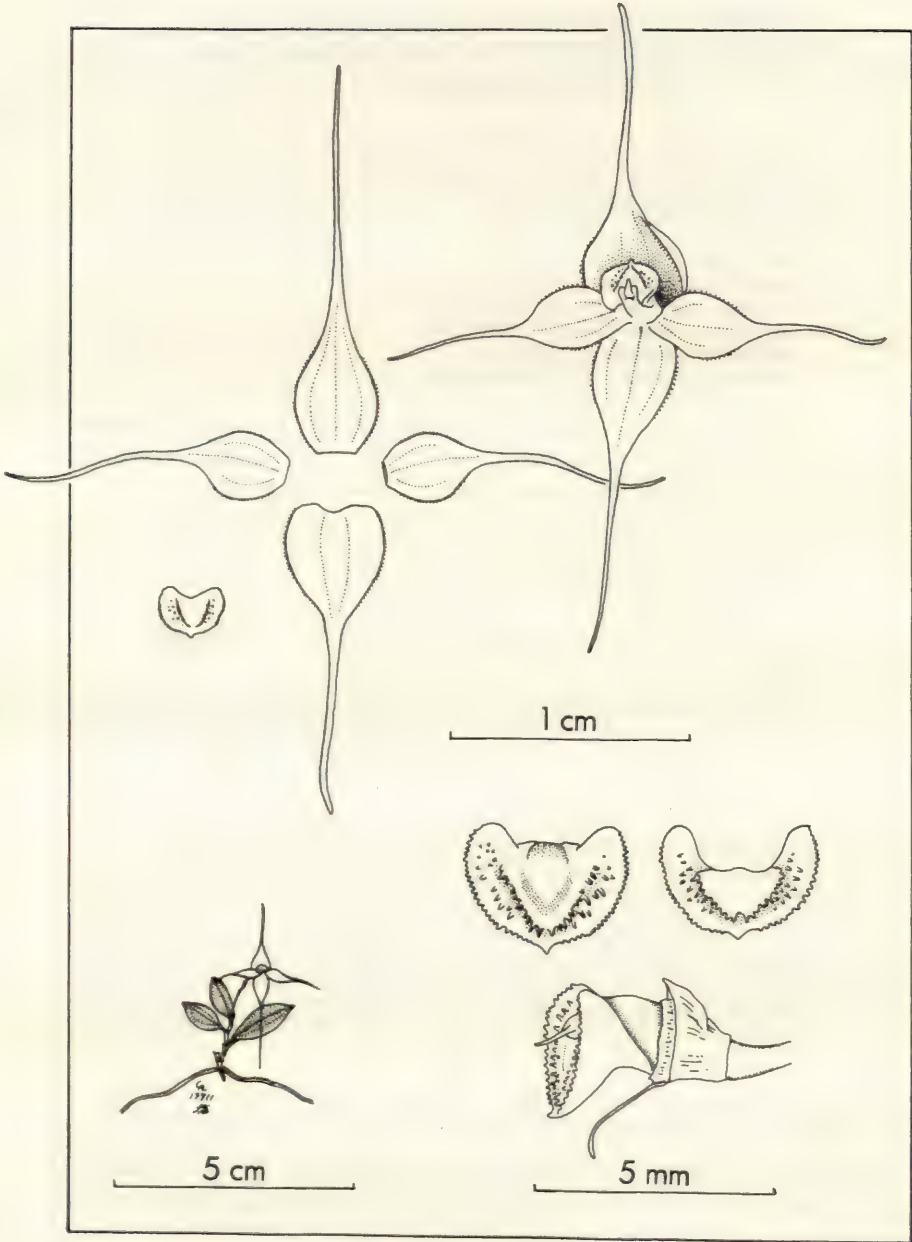


Plate 64. *Brachionidium ingramii* Luer & Dalström

Lepanthes macrotica Luer & Dalström, sp. nov.

Ety.: From the Greek *makrotikos*, "with big ears," referring to the lobes of the lip.

Species haec *L. micropetalae* L.O. Williams affinis, sed foliis glabris integris, flore majore, petalis oblongis majoribus et labello basi magnilobato, lobis suborbicularibus distinguitur.

Plant small, epiphytic, pendent, long-repent, the rhizome 4-5 mm long between ramicauls, occasionally branching, each segment enclosed by 2 sparsely long-pubescent sheaths with long-spiculate, dilated ostia; roots slender, along the rhizome. Ramicauls abbreviated, up to 1 mm long, enclosed by a long-spiculate, infundibuliform sheath. **Leaf** descending, coriaceous, glabrous, entire, elliptical-ovate, obtuse, 5-6 mm long, 4-4.5 mm wide, 3-veined, the base contracted into a petiole less than 1 mm long. **Inflorescence** a single flower, borne by an ascending peduncle 1 mm long; floral bract 2.5 mm long, spiculate; pedicel 4 mm long; ovary 0.5 mm long, echinate; **sepals** light brown, with purple along the veins, glabrous, the dorsal sepal broadly ovate to suborbicular, obtuse, 4 mm long, 4 mm wide, 3-veined, connate to the lateral sepals for 0.75 mm, the lateral sepals ovate, oblique, obtuse, 4 mm long, 4 mm wide, connate 2 mm, 3-veined; **petals** oblong, pubescent, 0.8 mm long, 0.3 mm wide; **lip** purple-brown, minutely ciliate below the middle, prominently 3-lobed, with the basal lobes suborbicular, 2 mm long, 2 mm wide, the apical lobe ovate, obtuse, 1.5 mm long, 1.5 mm wide, with the basal lobes flanking the column, the base connate to the base of the column; **column** 1.5 mm long, the anther dorsal, the stigma apical.

ECUADOR: Prov. of Sucumbíos: forest between La Bonita and Rosa Florida, alt. 1600-2000 m, 14 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2132 (Holotype: MO), C. Luer illustr. 17918.

Similar vegetatively to other members of the subgenus *Brachycladium*, *L. macrotica* is distinguished by small, smooth, ovate leaves with the rhizome and ramicauls clothed in spiculate sheaths. The flower is larger than the leaf beside which it is borne by a very short peduncle. The sepals are ovate, obtuse and glabrous; the minute, oblong petals are four times larger than the microscopic petals of *L. micropetala*; and the lip is prominently three-lobed with the basal lobes large, rounded and erect behind the column.

Platystele ingramii Luer & Dalström, sp. nov.

Ety.: Named in honor of Stephen Ingram, co-collector of this species.

Species haec *P. minimiflorae* (Schltr.) Garay similis, sed flore majore, sepalis lateralibus circa apicem in synsepalum concavum connatis, petalis acuminatis et labello majore acuto differt,

Plant very small, epiphytic, repent, the rhizomes 1.5-2 mm long between ramicauls; roots solitary at nodes, comparatively thick and fleshy. Ramicauls erect, stout, 1-1.5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical-obovate, obtuse, 6-7 mm long, 2.5-3 mm wide, cuneate below into the subpetiolate base. **Inflorescence** a congested, successively few-flowered raceme, ca. 1 mm long, borne by a slender, erect peduncle 7-8 mm long, emerging laterally from the ramicaul; floral bracts thin, oblique, acute, 0.5 mm long; pedicels 0.5 mm long; ovary 0.5 mm long; **sepals** translucent tan, glabrous, the dorsal sepal broadly triangular-ovate, concave, with the apex narrowly acute, 3 mm long, 1 mm wide, 1-veined, the lateral sepals connate to near the acutely bifid apex into ovoid, concave synsepal, 2.5 mm long, 2 mm wide expanded; **petals** pale tan, membranous, ovate, oblique, acute, acuminate, 2 mm long, 0.6 mm wide; **lip** purple, thick, ovate, acute, 1.6 mm long, 0.8 mm wide, the base thickened with a transverse callus, slightly depressed centrally, hinged to the rudimentary column-foot; **column** inflated, cucullate, 0.5 mm long, 0.5 mm wide, the foot rudimentary.

ECUADOR: Prov. of Sucumbíos: trees along road to La Bonita, alt. 2100 m, 13 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2113 (Holotype: MO), C. Luer illustr. 17912.

Vegetatively this tiny species is indistinguishable from the Central American *Platystele minimiflora*. The flowers of *P. ingramii* are more than twice larger with acute floral parts. Most distinguishing is the concave synsepal formed by the lateral sepals connate to near their apices, so far unique in the genus. The lateral sepals of only a few species are connate to near the middle. The fleshy lip is ovate and acute.

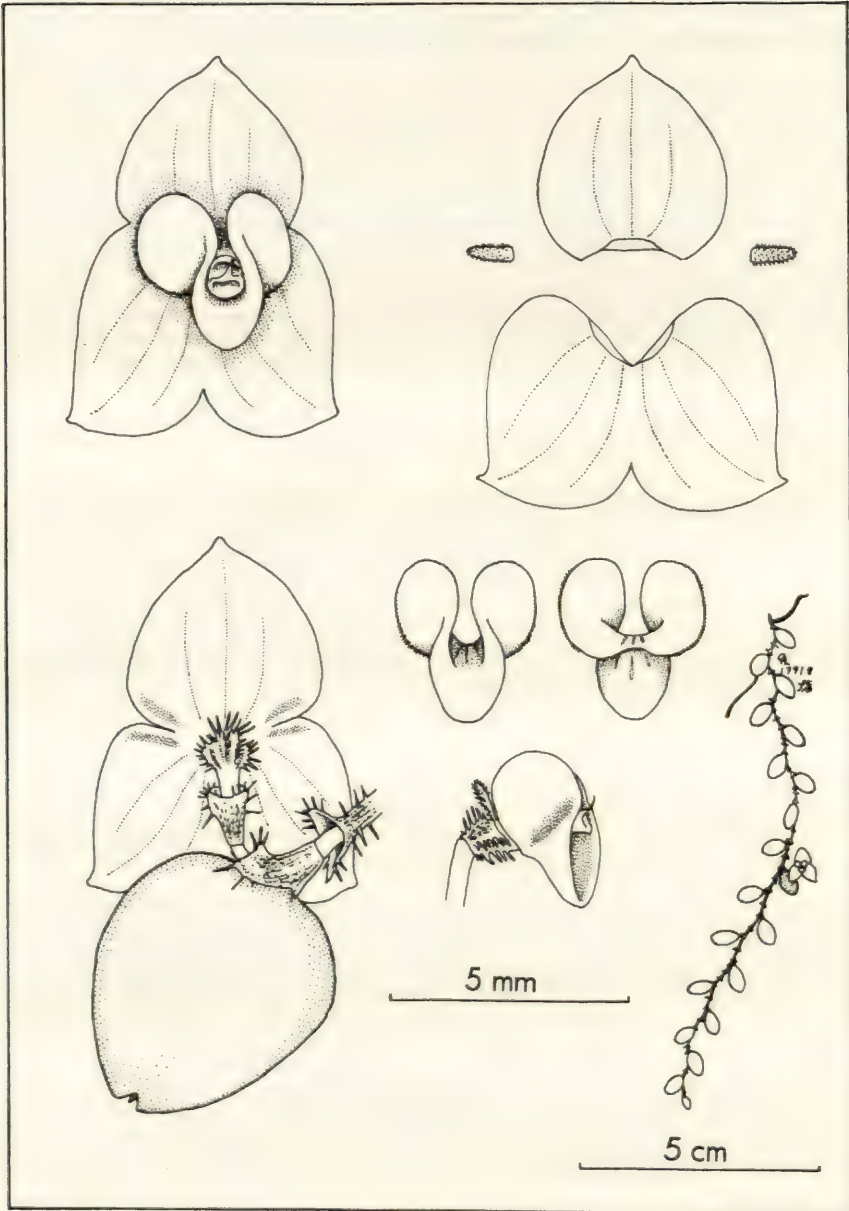


Plate 26. *Lepanthes macrotica* Luer & Dalström

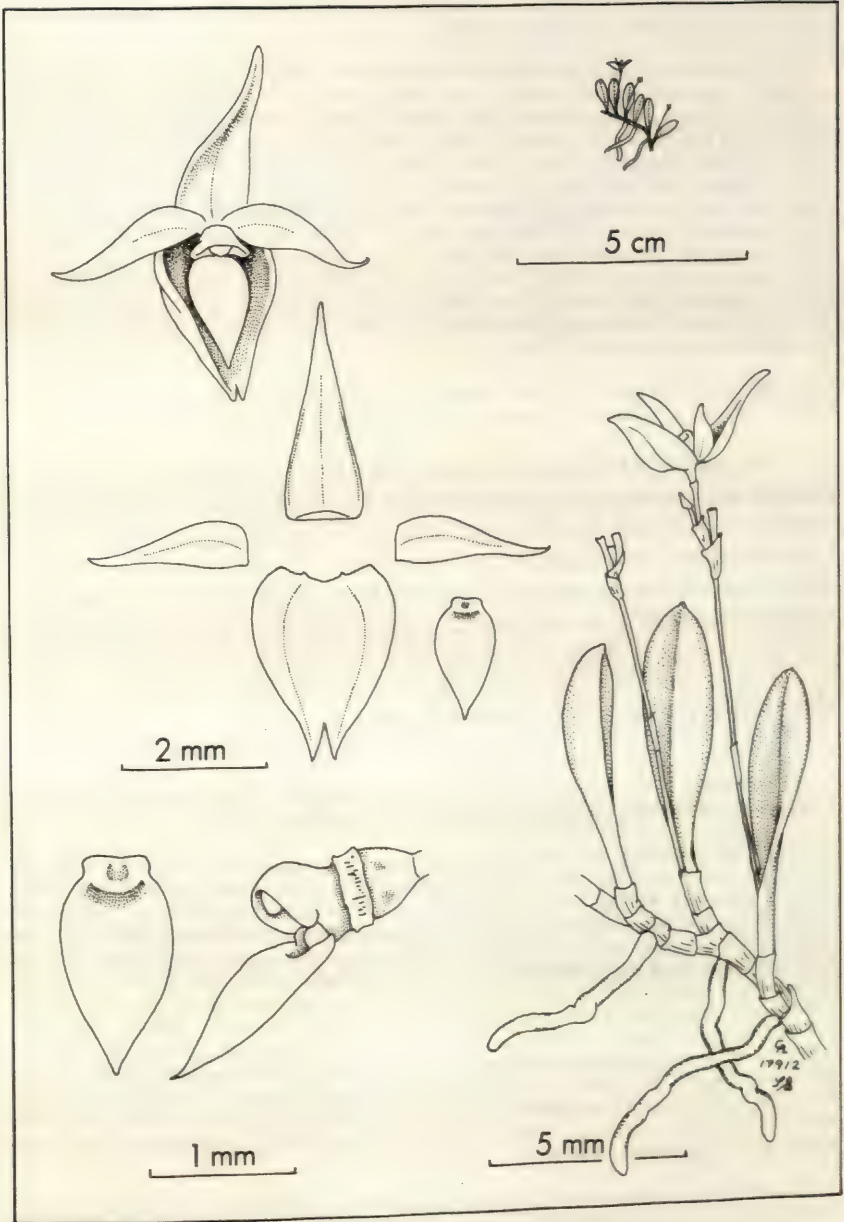


Plate 91. *Platystele ingramii* Luer & Dalström

Pleurothallis londonoi Luer, sp. nov.

Ety.: Named in honor of R. Londoño, co-collector of this species.

Inter species subgeneris *Ancipitiae* habitu grande, sepalis mediocribus carnosis, petalis crassis acutis, labello ovato crasso apice argute compresso.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls stout, erect, compressed above the middle, 10-20 cm long, 3-4 mm deep at the leaf, with a tubular sheath below the middle and 2-3 sheaths at the base. **Leaf** rigid, thickly coriaceous, suberect to spreading, narrowly ovate, acute, 6-10 cm long, 2-3 cm wide, the base sessile, rounded to subcordate. **Inflorescence** a fascicle of single, successive flowers borne from a reclining spathe 5-6 mm long, at the base of the leaf; peduncle slender, suberect, 5 mm long; floral bract tubular, 6 mm long; pedicel 10 mm long; ovary 5 mm long; **sepals** yellow with purple spots, fleshy, glabrous, concave, the dorsal sepal narrowly ovate-triangular, acute, 8 mm long, 3 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 7.5 mm long, 4 mm wide; **petals** thick, narrowly ovate, acute, microscopically erose, 7 mm long, 2.3 mm wide; **lip** thick, ovate, acute, 4.5 mm long, 1.4 mm wide, shallowly channeled centrally, the apex laterally compressed with the margin sharp, oblique, the base subtruncate, concave on the end, hinged below to the base of the thick column; **column** thick, semiterete, 3 mm long, the anther and stigma subapical, the base of the column thickened.

COLOMBIA: Dept. of Antioquia: Urao, Páramo de Frontino, El Río en Bosque, alt. 3150 m, 7 Jan. 1984, R. Londoño, B. García & G. Galeanas 83 (Holotype: HUA); C. Luer illustr. 17993.

This species is known only from the original collection made in 1984 by R. Londoño and companions in a high páramo in the Western Cordillera of Colombia. Vegetatively it is large for the subgenus *Ancipitia*, but the fleshy, purple-spotted, bilabiate flowers are average in size. The concave dorsal sepal and synsepal are similar; the thick, ovate petals are nearly as large; and the lip is thick and ovate, laterally compressed at the apex with an oblique margin like the prow of a ship.

Pleurothallis panica Luer & Dalström, sp. nov.

Ety.: From the Greek *Panicos*, "like Pan, the chief of the satyrs," in allusion to the spiculate lateral sepals, and papillose lip and ovary.

Species haec *P. hystricosae* Luer affinis, sed sepalis lateralibus spiculatis, petalis brevioribus non-acuminatis, et labello dense papilloso cum callo mediano plano differt.

Plant very small, epiphytic, densely caespitose, roots comparatively thick and fleshy. Ramicauls slender, erect, 1-1.5 mm long, enclosed by 2 thin, loose, ribbed sheaths. **Leaf** erect, thickly coriaceous, elliptical, obtuse, 5-6 mm long, 2.5-3 mm wide, the base cuneate into a subpetiolate base. **Inflorescence** a single flower produced successively 2- to 3-flowered raceme, borne by slender peduncle 5-6 mm long, borne laterally from the ramicaul; floral bract oblique, acute, 1 mm long; pedicel 1.5 mm long; ovary long-spiculate, 1.5 mm long; **sepals** carinate-spiculate externally, yellow, the dorsal sepal triangular-ovate, acute, 4 mm long, 2 mm wide, 3-veined, the lateral sepals pubescent-spiculate, oblong-ovate, oblique, recurving, obtuse, 4.5 mm long, 1.5 mm wide, connate 1.5 mm, each 2-veined; **petals** translucent, oblong-ovate, subacute, 1.75 mm long, 0.75 mm wide; **lip** transversely 3-lobed, 1 mm long, 2.75 mm wide, the margins crenulate-denticulate, the surfaces papillose-verruculose, the apical lobe triangular, 0.3 mm long, the lateral lobes uncinately, curved forward, papillose, acute, 1 mm long, the disc with a broad, flat, shallow callus in the center from the base, the base reflexed, hinged to the base of the column; **column** stout, semiterete, 1.5 mm long, dilated above the middle, the anther and rostellum and stigma subapical, the foot obsolescent.

ECUADOR: Dept. of Sucumbios: epiphytic in forest between La Bonita and Rosa Florida, alt. 1600-2000 m, 14 Mar. 1996, S. Dalström, S. Ingram & K. Ferrell-Ingram 2113 (Holotype: MO), C. Luer illustr. 17913.

This species of subgenus *Aenigma* consists of a tiny clump of elliptical leaves barely surpassed by a peduncle bearing a proportionately large flower. The dorsal sepal and much smaller petals are acute; the oblong, lateral sepals are spiculate-pubescent; and the transversely trilobed lip is similar to that of *P. hystricosae* except that it is papillose with a flat instead of a raised, circular, central callus.

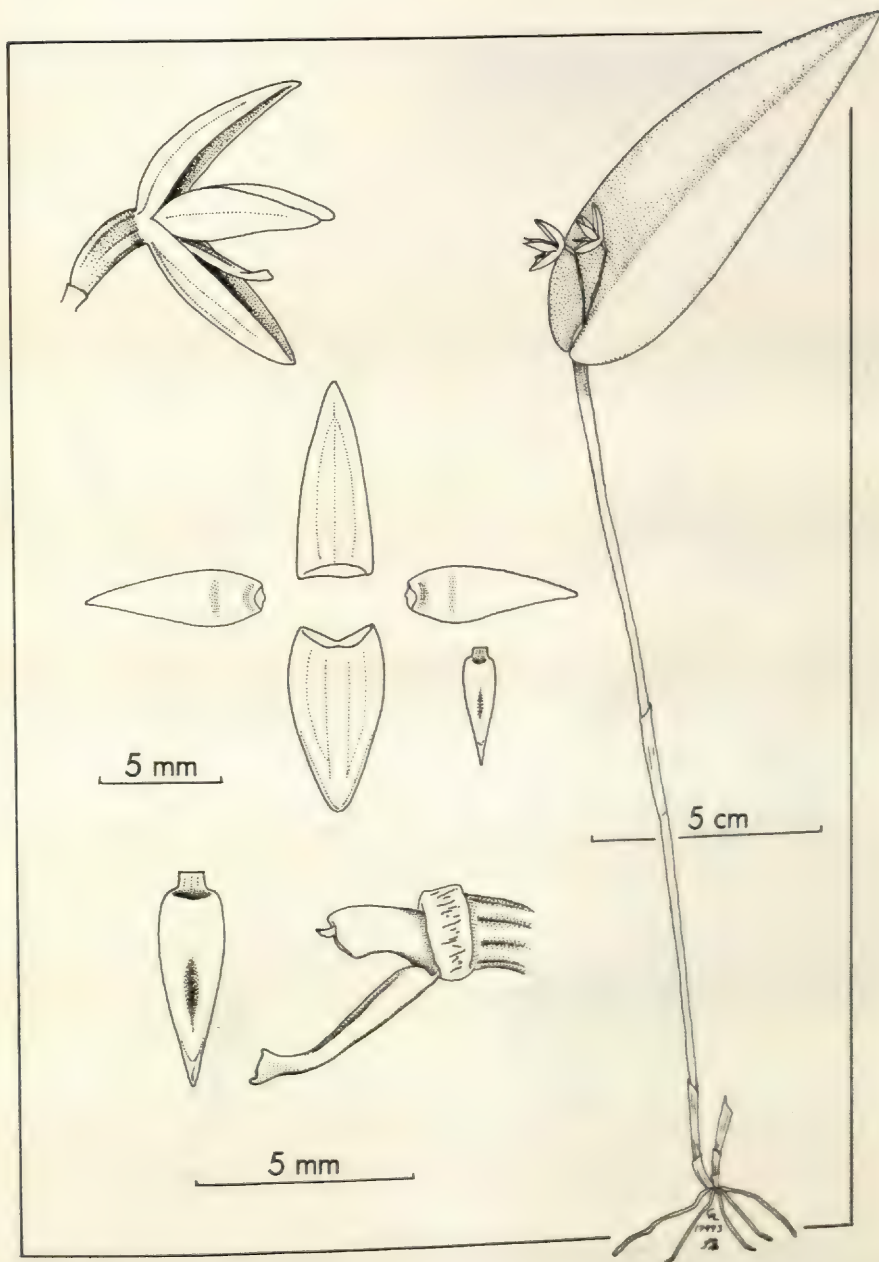


Plate 24. *Pleurothallis londonii* Luer

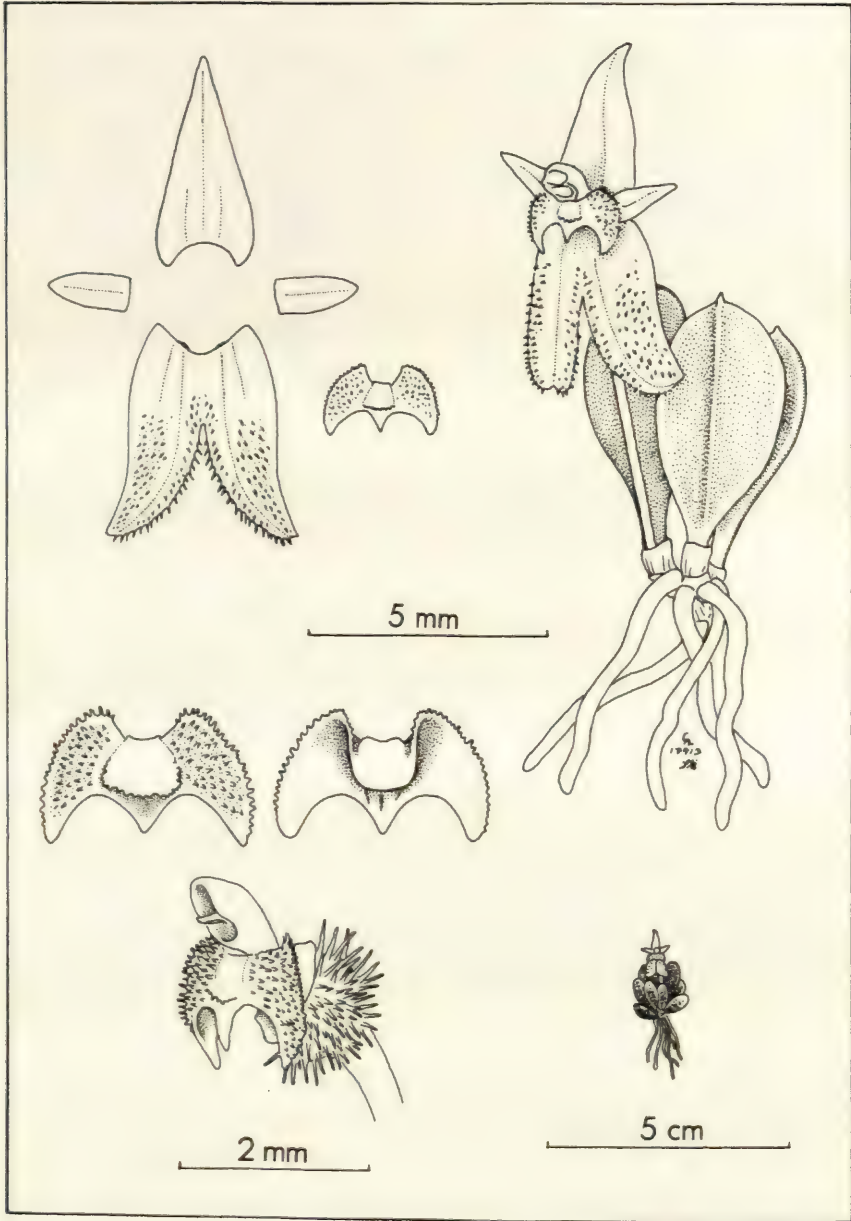


Plate 9. *Pleurothallis panica* Luer & Dalström

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