

NEW LEPANTHES SPECIES FROM ECUADOR — 3

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WITH THIS article the series on new species of *Lepanthes* Sw. from Ecuador, begun in the *American Orchid Society Bulletin* (Luer and Hirtz, 1984, 1985), is resumed. The series on new species of *Lepanthes* from Colombia is being resumed in *Orquideología*, the publication of the Colombian Orchid Society.

For reasons now obvious the genus *Lepanthes* had been largely neglected in Ecuador since the naming of plants began. The earliest plant collectors sent very few specimens back to Europe since they were interested in other plants, or were being paid to collect the showy species that could be sold on the market. Besides, plants of *Lepanthes*, possessing no pseudobulbs, are very fragile and delicate, unlikely to survive when treated the same as hardier, bulkier orchids.

The earliest species of *Lepanthes* to be described from Ecuador was *L. monoptera* in 1834 by Lindley from a collection near Cuenca by Professor Jameson. This species is frequent in this area, becoming less frequent in central and northern Ecuador and Colombia. It is well illustrated in Lindley's original publication. The species identified in *Venezuelan Orchids Illustrated* as *L. monoptera* has been described as *L. ophiostele* (Luer, 1986a).

The next two species (*L. biloba* and *L. mucronata*) were described by Lindley in 1836 from collections by Hall near Lloa, a small community a short distance from Quito. Both these species are common and widespread in Ecuador at high altitudes. Jameson continued to send specimens of *Lepanthes* to Lindley, but Lindley described no more. Thirteen of Jameson's collections were described by Reichenbach in 1855 and 1856, including the well-known *L. gargantua*. All the above were attributed to "Peru" even though Ecuador had been an independent republic for about a generation. Many more collections by Jameson are still unidentified at Kew.

Two collections by Spruce were described: *L. calodictyon* by Hooker and *L. roseola* by Reichenbach. A few later collections by Madero and Fathers Sodiro and Mille were described by Schlechter. Together with a very few others and a few described from elsewhere that have been found in Ecuador, the total number of *Lepanthes* attributed to Ecuador by 1983 was about 30 (excluding synonyms and species removed to other genera). Prior to the present publication the number of

known species of *Lepanthes* from Ecuador stood at about 130. Another 70 have been, or are ready to be, submitted for publication soon. I am grateful to Alexander C. Hirtz of Quito, Ecuador, who is responsible for the vast majority of these new discoveries. It is with honor that I describe the following new species with both our names.

The main reason for the paucity of descriptions in the genus for Ecuador prior to 1983 is the fact that details of the minute flowers are distorted or destroyed in dried specimens. The early descriptions by Lindley and Reichenbach based on dried material were sketchy and woefully inadequate. Obviously, the describers had no idea that their meager descriptions would apply to so many similar species. The details of the lips are missing or, when an attempt was made to describe the lip, the descriptions are inaccurate or vague. Subsequent workers had no good basis upon which to base their decisions for new descriptions. I found it necessary to draw hundreds of fresh or pickled fresh flowers, and to create new terminology for the specialized features of the lip (Luer, 1983), in order to become acquainted with the microscopic morphology and to standardize descriptions. Only then was it possible to identify the "old" species from the localities where types were originally collected. New species could now be identified with a reasonable degree of accuracy.

Morphologically, the species of *Lepanthes* are characterized by ramicauls enclosed by a series of "lepanthiform" sheaths: ribbed sheaths usually with dilated, acuminate, margined ostia (mouths). The ribs and margins of the ostia are commonly ciliate or scabrous. Similar sheaths are characteristic in two other quite distinct genera: *Lepanthopsis* (Cogn.) Ames and *Trichosalpinx* Luer (Luer, 1986b).

The usual terminology for leaves and inflorescences is applicable to *Lepanthes*. The position of the flowers is debatable. In my opinion, it simply depends upon how the flower is viewed. In my descriptions, the middle sepal is always "dorsal," the usual or comfortable way of looking at an orchid flower. Therefore, the "posterior" lobes of the petals of Ames or Schlechter become "upper" lobes. Although the petals of most species of *Lepanthes* are distinctly different from those of most other orchid species, usual terminology still can be applied. Since the petals are usually transversely

bilobed, the "length" is short, and the "width" is long.

The lip is usually extremely specialized. Uncommonly, the lip is entire, or simply bilobed, but in the majority of species the margins of the lateral lobes of the lip are modified into "laminae" or "blades." This pair of blades is supported by more or less cuneate (wedge-shaped) "connectives," the medial parts of the lateral lobes between the blades and the "body," the central portion of the lip from which the connectives originate. The blades, usually thickened and flattened, are held to either side of the column, or above the column. The body is connate posteriorly to the undersurface of the column. The anterior marginal angle of the body between the connectives, the "sinus," is usually the site of the modified middle lobe of the lip, the "appendix." The sinus, however, may be merely an angle with the appendix on the external surface of the body. Occasionally, the appendix oscillates, even sometimes in and out of a specialized cavity on the inner or on the outer surface of the body.

The appendix undoubtedly plays a part in luring pollinators to the reproductive parts of the flower. Sometimes, however, the appendix is absent or reduced to a few, apparently insignificant hairs. Commonly, the appendix is intricately sculpted into amazing shapes. The following 10 new species have been selected to demonstrate some of the more bizarre forms.

The column is always without a foot. The anther may be dorsal or apical, and the stigma may be apical or ventral, round, transverse, or transversely bilobed, rarely with the receptive lobes extended outward on arms surrounding the column, reminiscent of some of the forms of the stigma seen in *Stelis* Sw. In a few species, the rostellum is modified into a structure similar to an appendix, and in at least one species with a modified rostellum the appendix is distant and vestigial.

Since the flowers are extremely fragile, wilting or breaking with the slightest provocation, the following illustrations were made from flowers picked in the field immediately upon discovery of the plant. The pickling solution is 55% 190-proof ethyl alcohol, 5% formalin, 5% glycerine, and 35% water. Color notes and corresponding herbarium specimens are made. Later, the flowers are dissected under water and drawn to scale with pencil on 5 mm graph paper, using a Unitron, binocular, zoom, dissecting microscope. The pencil sketches are arranged and traced later with ink on translucent drafting paper.

***Lepanthes actias-luna* Luer & Hirtz, sp. nov.**

Planta grandis, folio oblongo-ovato acuminato inflorescentia racemosa congesta longiore, sepalis ovatis, petalis transverse bilobis, lobo superiore ob-

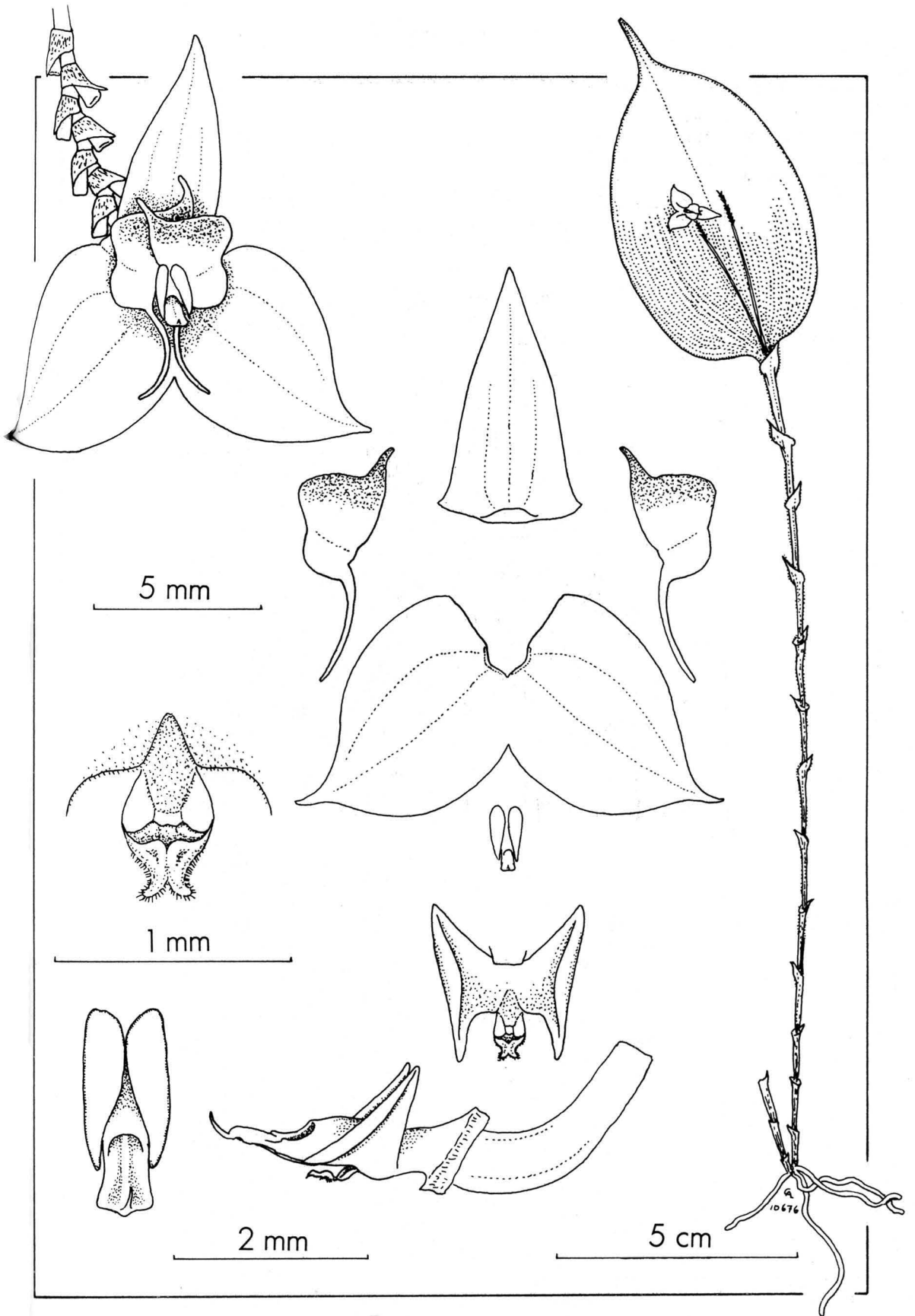
longo brevicaudato, lobo inferiore longicaudato, labelli bilaminato, laminis anguste ovatis acutis, connectivis late cuneatis, appendice intricatissima.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 7-28 cm tall, enclosed by 9-16 coarsely ciliate, lepanthiform sheaths. Leaf erect, thinly coriaceous, rugose beneath, oblong-ovate, 5-12 cm long, 2-4.5 cm wide, the acute to obtuse apex abruptly acuminate, the rounded base abruptly contracted into a twisted petiole 2-4 mm long. Inflorescence a congested, distichous, successively many-flowered raceme up to 20 mm long, borne behind the leaf by a filiform peduncle 20-35 mm long; floral bracts 1.5 mm long; pedicels 0.75 mm long; ovary 2.5-5 mm long; sepals light yellow, glabrous, the dorsal sepal ovate-triangular, acute, 6.25-7.5 mm long, 3.25-4 mm wide, connate to the lateral sepals for 1.5 mm, the lateral sepals ovate, oblique, acute, acuminate, diverging, 5.5-7.5 mm long, 3.5-5 mm wide, connate 1.5 mm; petals yellow with red-purple upper margins, minutely pubescent, transversely bilobed, the blade of the petal 2 mm long, 3 mm wide, the upper lobe oblong, obliquely and obtusely truncate, the inner, upper angle produced into a short tail ca. 1 mm long, the lower lobe similar but much shorter with the inner, lower angle produced into a slender, recurved tail ca. 3 mm long; lip rose, bilaminate, the blades narrowly ovate, acute, glabrous, 1.8 mm long, the connectives broadly cuneate with a broad body connate to the base of the column, the sinus broad with an intricate appendix 0.5 mm long, broadly hinged with a minutely pubescent membrane, the terminal segment concave, bilobed, pubescent, with a pair of extremely thin, cobweb-like reins connecting it to the base; column stout, 2.5 mm long, the anther dorsal, the stigma ventral.

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

TYPE: *ECUADOR*: Prov. of El Oro: epiphytic in cloud forest below Piñas, alt. 1000 m, 20 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10676 (Holotype: MO); Prov. of Carchi: epiphytic in cloud forest above Maldonado, alt. 2300 m, 3 Apr. 1984, C. Luer, S. Dalström & T. Höijer 9933 (MO).

This large, handsome species has been found in two widely separated localities. Vegetatively, it is similar to many others, but the long tails of the petals make it easily recognized. Most unusual, however, is the peculiarly hinged appendix that swings by a pair of cobweb-like threads from the basal, membranous portion. The terminal segment of the appendix is composed of a pair of back-to-back, obliquely crescent-shaped, pubescent lobes.



Lepanthes actias-luna Luer & Hirtz

Lepanthes aeora Luer & Hirtz, sp. nov.

Planta parvula caespitosa, inflorescentia racemosa pauciflora grandiflora folio elliptico paulo longiore, sepalis ovatis glabris caudatis, petalis transverse bilobis, lobo superiore oblongo obtuso, lobo inferiore anguste triangulari, labello bilaminato, laminis ovatis convexis microscopice pubescentibus, corpore supra medium columnae connato, appendice intricatissima suspensa ciliolata.

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.

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

TYPE: ECUADOR: Prov. of 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 the oversized flower is similar to that to *L. caudata* Luer & Escobar as well as other very small species with large flowers. The sepals, however, are smooth instead of denticulate. Otherwise, the flower does not seem particularly

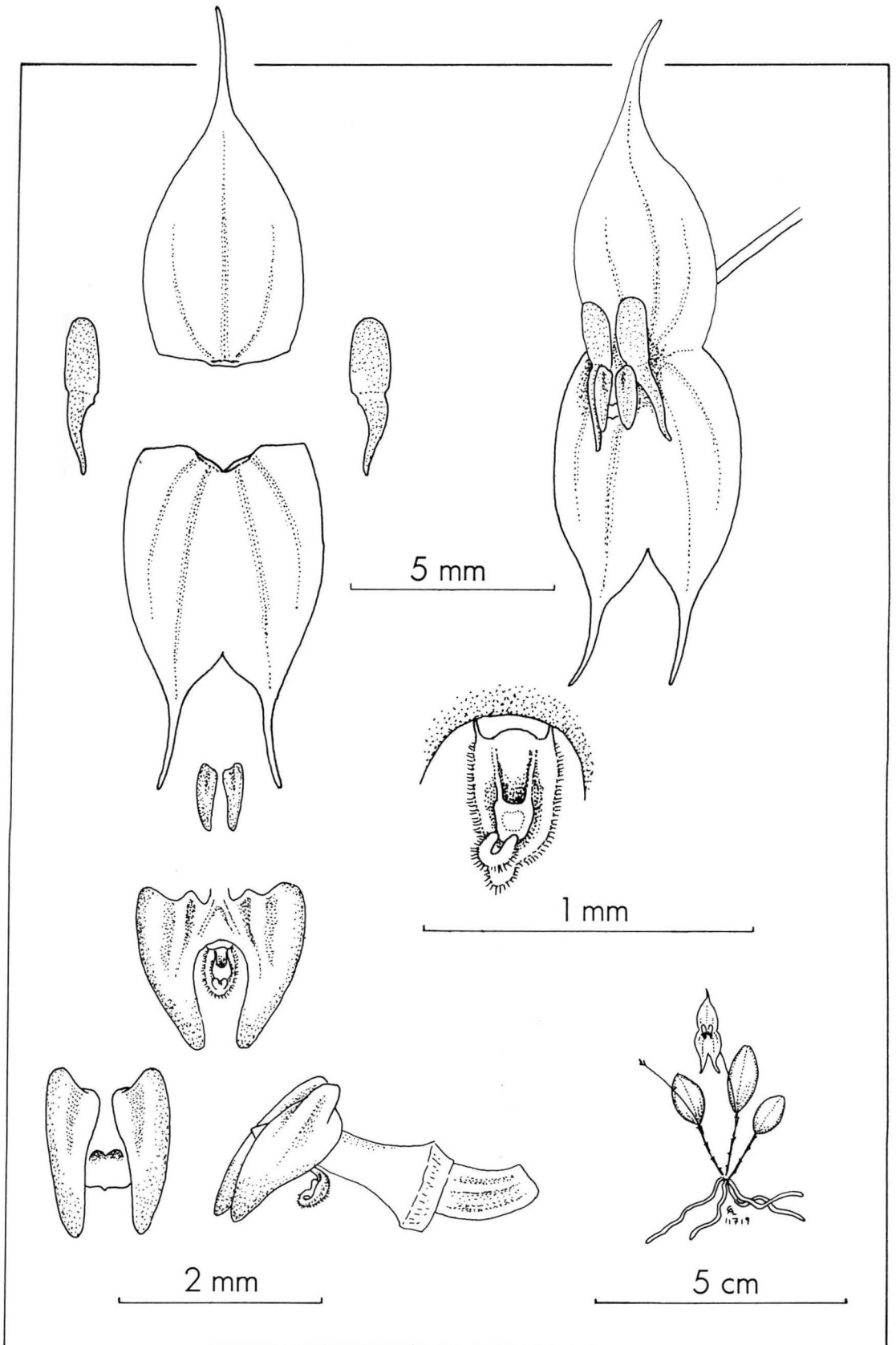
distinctive unless the minute appendix is examined with a binocular microscope. The appendix is developed into a peculiar ovoid structure about 0.5 mm long suspended by a pair of the finest spider web-like threads from the rounded sinus. It swings loosely immediately beneath the stigma because the lip is connate to the shaft of the column above the middle just below the ventral 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 avicularia Luer & Hirtz, sp. nov.

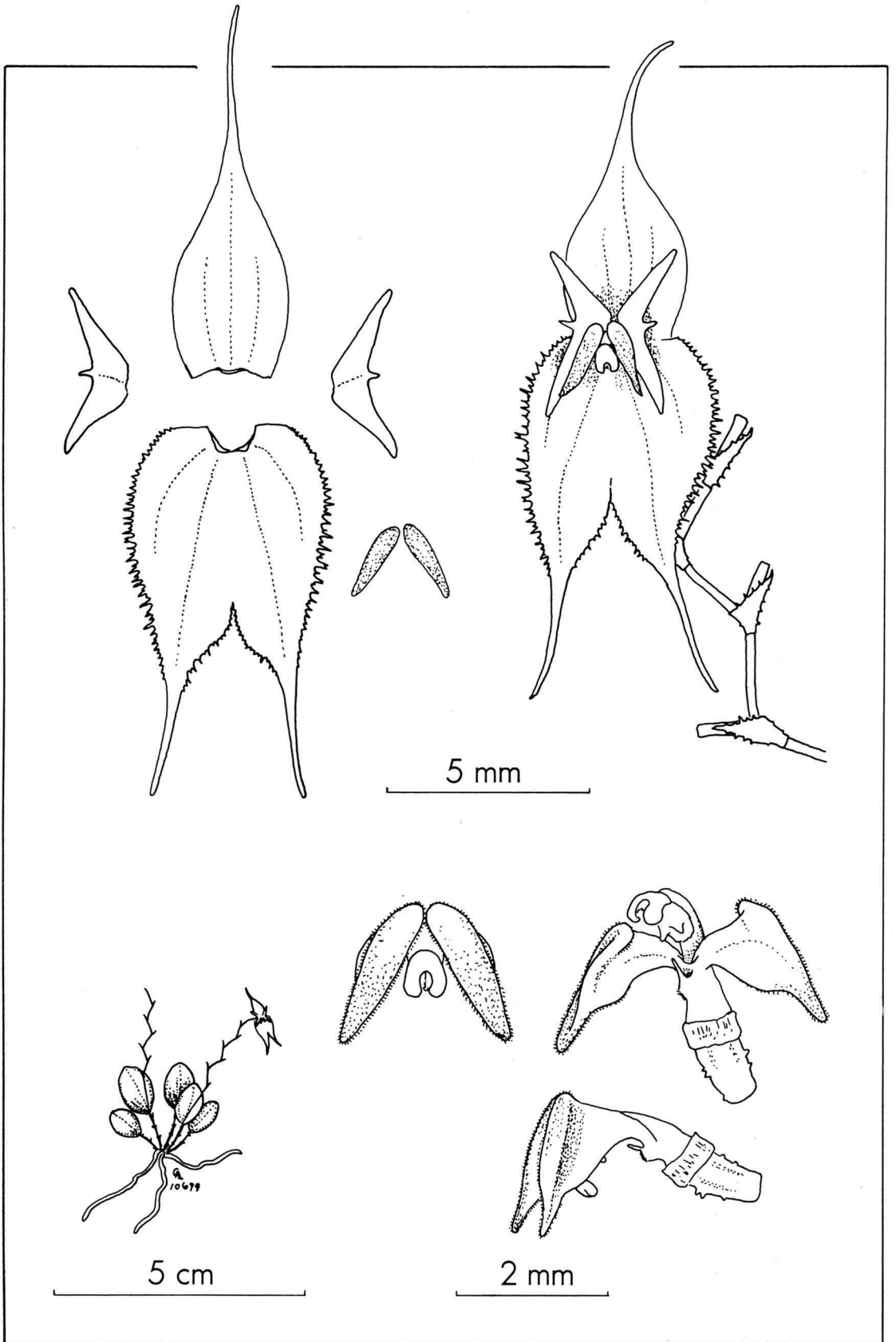
Planta perparva caespitosa, racemis grandifloris laxae fractiflexis foliis late ellipticis longioribus, sepalis ovatis longicaudatis lateralibus fimbriatis, petalis bilobis cum apiculo mediano, lobis aequalibus anguste triangularibus obliquis, labello bilaminato, laminis anguste ovatis, connectivis cuneatis sine corpore, appendice filiformi.

Plant very small, epiphytic, caespitose; roots proportionately thick. Ramicauls erect, 3-7 mm long, enclosed by 2-4 minutely ciliate, lepanthiform sheaths. Leaf erect, thickly coriaceous, elliptical to suborbicular, 6-9 mm long, 4-6.5 mm wide, the apex obtuse to rounded, the cuneate or rounded base contracted 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 bracts 1.5 mm long, muriculate; pedicel 1.5 mm long; ovary 1 mm long, lightly muriculate; 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 at the middle, the lobes equal, narrowly triangular, acute, oblique; 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 lower portion of the column; column 2 mm long, the anther dorsal, the stigma ventral.

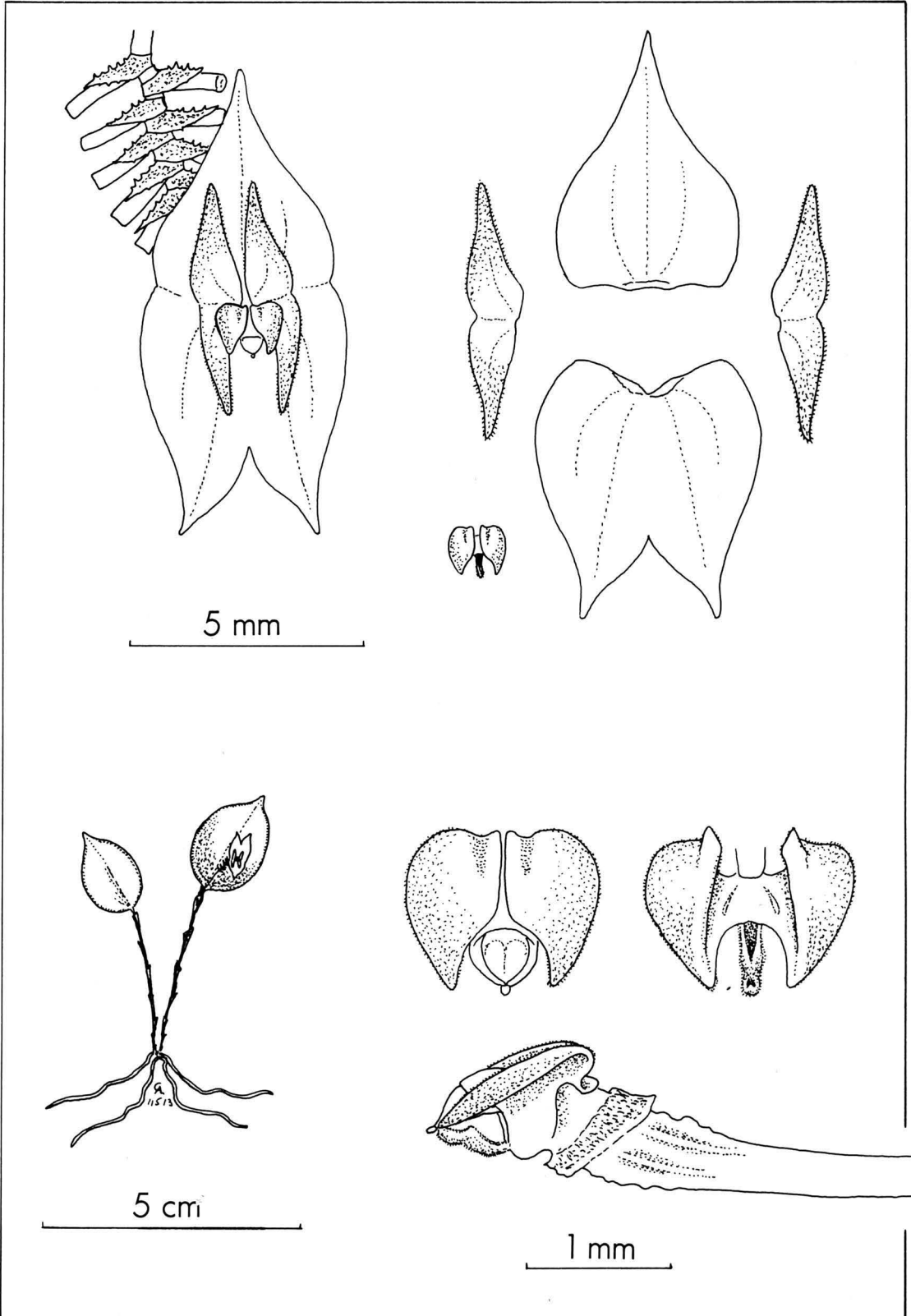
ETYMOLOGY: From the Latin *avicularius*, "of small birds," referring to the winglike petals and lobes of the lip.



Lepanthes aeora Luer & Hirtz



Lepanthes avicularia Luer & Hirtz



Lepanthes celox Luer & Hirtz

TYPE: *ECUADOR*: Prov. of Zamora-Chinchipec: epiphytic in dwarf cloud forest between Loja and Zamora, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10699 (Holotype: 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 in 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 central margin of the petals. Most unusual are the cuneate 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 above the base.

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

Planta parva caespitosa, inflorescentia racemosa congestissima disticha folio late elliptico breviter acuminato brevior, sepalis anguste ovatis acutis breviter acuminatis, petalis transverse bilobatis, lobis anguste triangularibus subaequalibus, labello bilaminato, laminis ovatis, connectivis latis brevibus, appendice longiscaphoidea.

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 bilaminated, 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.

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

TYPE: *ECUADOR*: Prov. of Imbabura: epiphytic in forest near Estacion Cachaco, alt. 800 m, Dec. 1983, A. Hirtz 1461 (Holotype: MO), C. Luer illustr. 11513.

This small species, recently discovered by Hirtz in the western 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 implexa* Luer & Hirtz, sp. nov.**

Planta mediocris caespitosa, inflorescentia racemosa congesta secunda folio ovato acuminato brevior, sepalis late ovatis obtusis, petalis transverse bilobis lobis triangularibus, lobo superiore majore, labello bilaminato, laminis oblongis, connectivis cuneatis, appendice intricata implexa.

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 bilaminated, 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 terminates 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.

ETYMOLOGY: From the Latin *implexus*, "entwined, interwoven," referring to intricacies of the appendix.

TYPE: *ECUADOR*: Prov. of Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaico and Limón, alt. 2150 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11841 (Holotype: MO).

Although vegetatively somewhat smaller, this species is similar to *L. urotepala* Reichb.f. *Lepanthes implexa* differs in having minutely denticulate sepals; the upper lobes of the petals are neither as narrow nor as long; and the appendix is differently sculpted from that of *L. urotepala*. Reichenbach, of course, never saw the appendix of the dried specimen of *L. urotepala* which was collected by Jameson on the western slopes of Pichincha. Plants answering exactly the description and sketches of *L. urotepala* have been found in the same area as the type collection as well as a little farther north in the province of Imbabura. Only in this manner could the details of the appendix of the true *L. urotepala* be learned. The appendix of *L. urotepala* is transected into two ciliate parts: the upper resembling a bird's head with a beak, the lower spoon-shaped.

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

Planta mediocris caespitosa, inflorescentia racemosa congesta folio suborbiculato longi-acuminato brevior, sepalis ovatis acutis, petalis transverse bilobis cum lobo mediano setiformi, lobo superiore oblongo oblique truncato, lobo inferiore minore anguste triangulari, labello bilaminato, laminis oblongis tenuissimis connatis, connectivis cuneatis, corpore saccato, appendice oblonga segmentata pubescenti oscillanti, columna longissima bidentata.

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 mid-lobe 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 dilation 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.

ETYMOLOGY: Named for the similarity of the appendix to a jack-in-the-box.

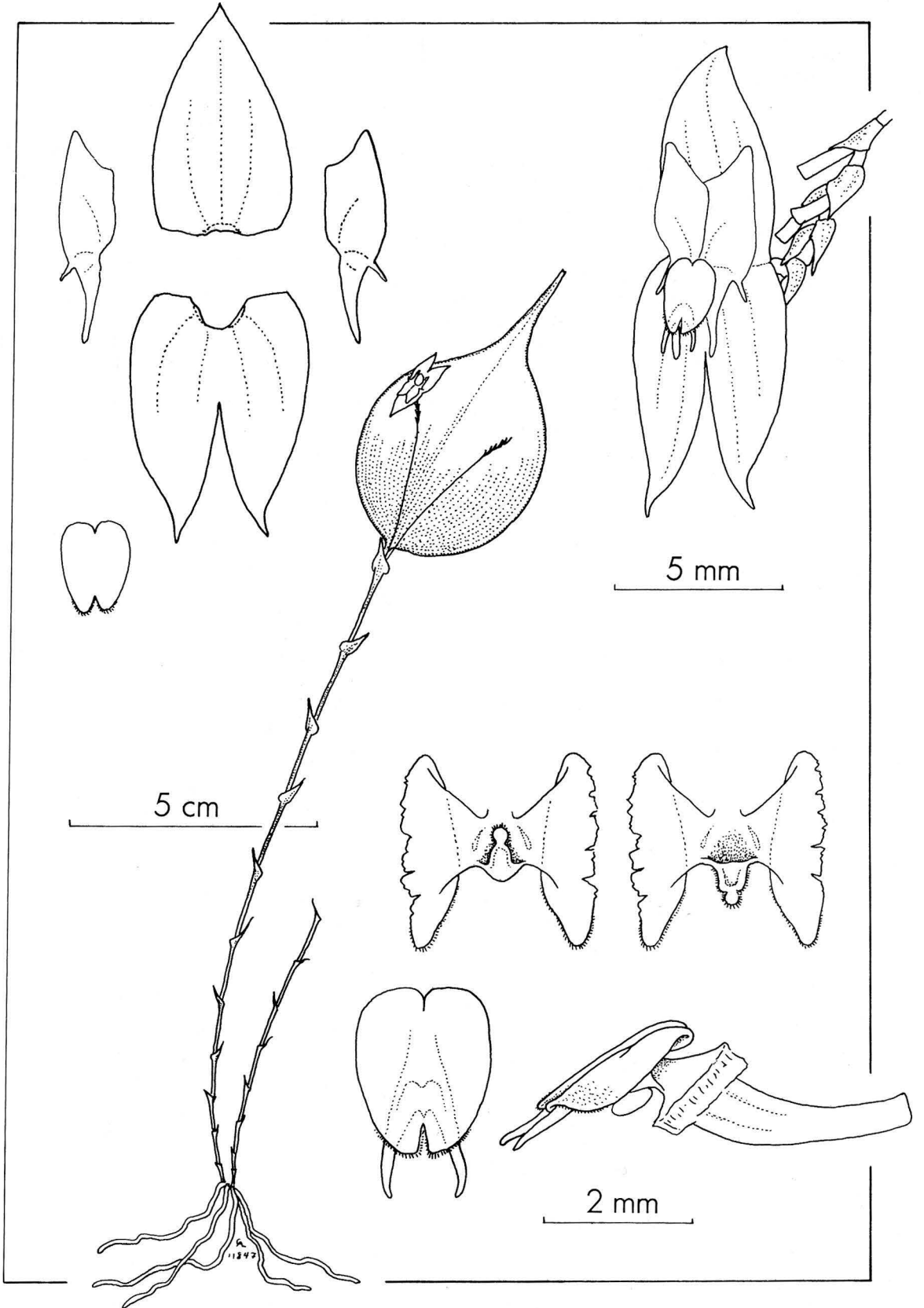
TYPE: *ECUADOR*: Prov. of Morona-Santiago: epiphytic in cloud forest east of the pass between Gualaico and Limón, alt. 2100 m, 16 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11847 (Holotype: MO).

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* Lindley 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.

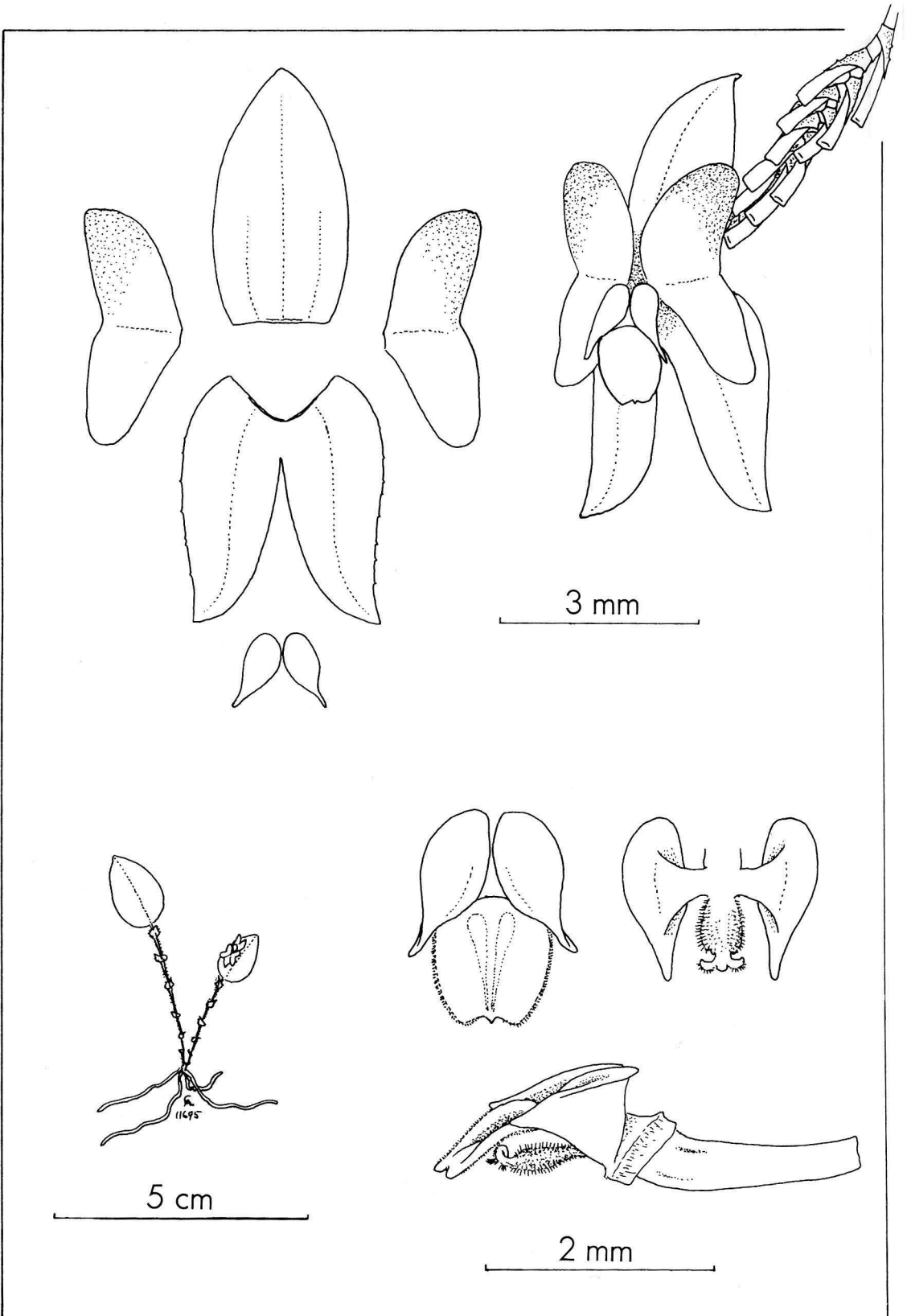
***Lepanthes meganthera* Luer & Hirtz, sp. nov.**

Planta parva caespitosa, inflorescentia racemosa congesta folio ovato brevior, sepalis ovatis subacutis, petalis transverse oblongis obtusis, labello bilaminato, laminis glabris ovatis acuminatis, appendice grandi pubescenti oblonga apice triglandulosa, columna clavata, anthera grandissima.

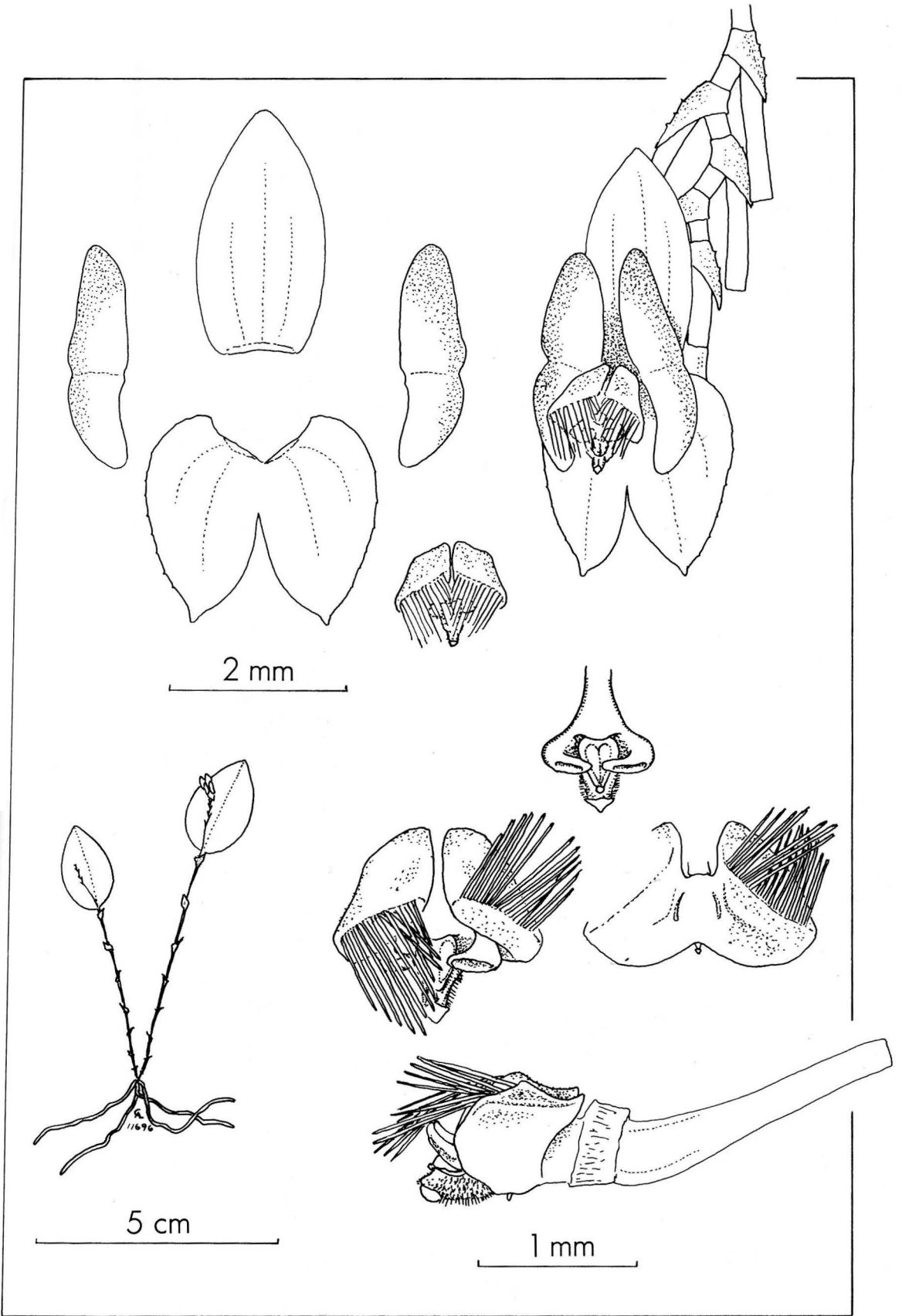
Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-3 cm long, enclosed by 7-8 coarsely ciliate, lepanthiform sheaths. Leaf erect, coriaceous, with purple veins, ovate, subacute, 10-15 mm long, 7-9 mm wide, the rounded base contracted into a petiole 1 mm long. Inflorescence a very congested, successively several-flowered raceme up to 3 mm long, borne behind the leaf by a filiform 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 subdenticulate; petals orange, suffused with darker orange on the margins, microscopically pubescent, transversely bilobed, 1 mm long, 3.5 mm wide, the lobes oblong, oblique ob-



Lepanthes jackinpyxa Luer & Hirtz



Lepanthes meganthera Luer & Hirtz



Lepanthes necopina Luer & Hirtz

tuse, 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.

ETYMOLOGY: From the Greek *meganthera*, "with a large anther," referring to the proportionately very large anther.

TYPE: *ECUADOR*: Prov. of 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 necopina* Luer & Hirtz, sp. nov.**

Planta parva caespitosa, inflorescentia racemosa congesta folio ovato brevior, sepalis ovatis acutis, petalis transverse oblongis obtusis, labello bilaminato, laminis crassis trapeziformibus longiciliatis, corpore latissimo, appendice minutissima glandulosa, columna clavata, rostello crasso oblongo pubescenti, stigmatate bilobato, lobis antheram amplectentibus.

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 bilaminate, 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.

ETYMOLOGY: From the Latin *necopinus*, "unexpected," in allusion to the peculiar column beneath the ciliated margins of the blades of the lip.

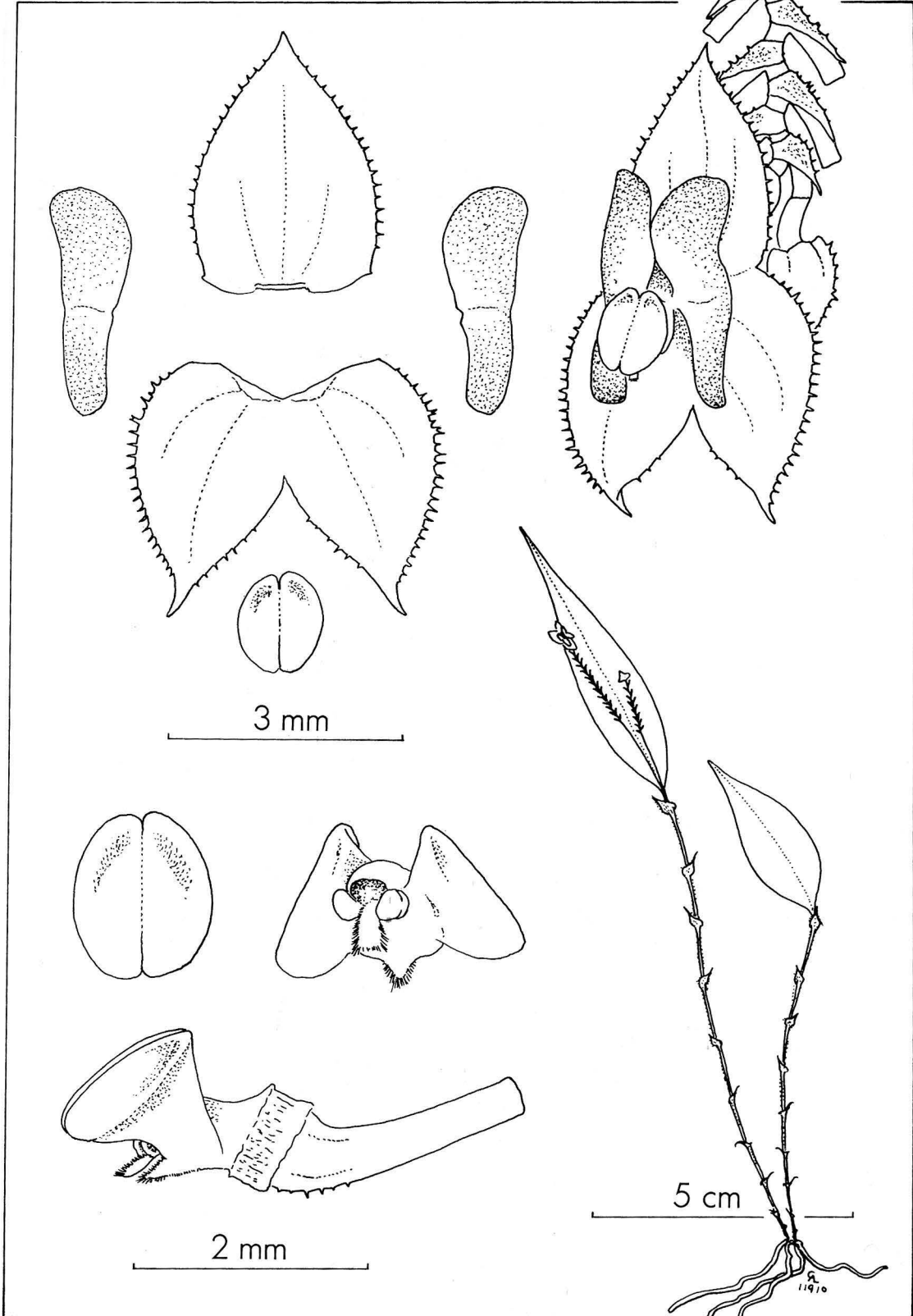
TYPE: *ECUADOR*: Prov. of Zamora-Chinchipe: epiphytic in cloud forest south of Yangana, alt. 2200 m, May 1985, A. Hirtz 2631 (Holotype: MO), C. Luer illustr. 11696.

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 pollination activity.

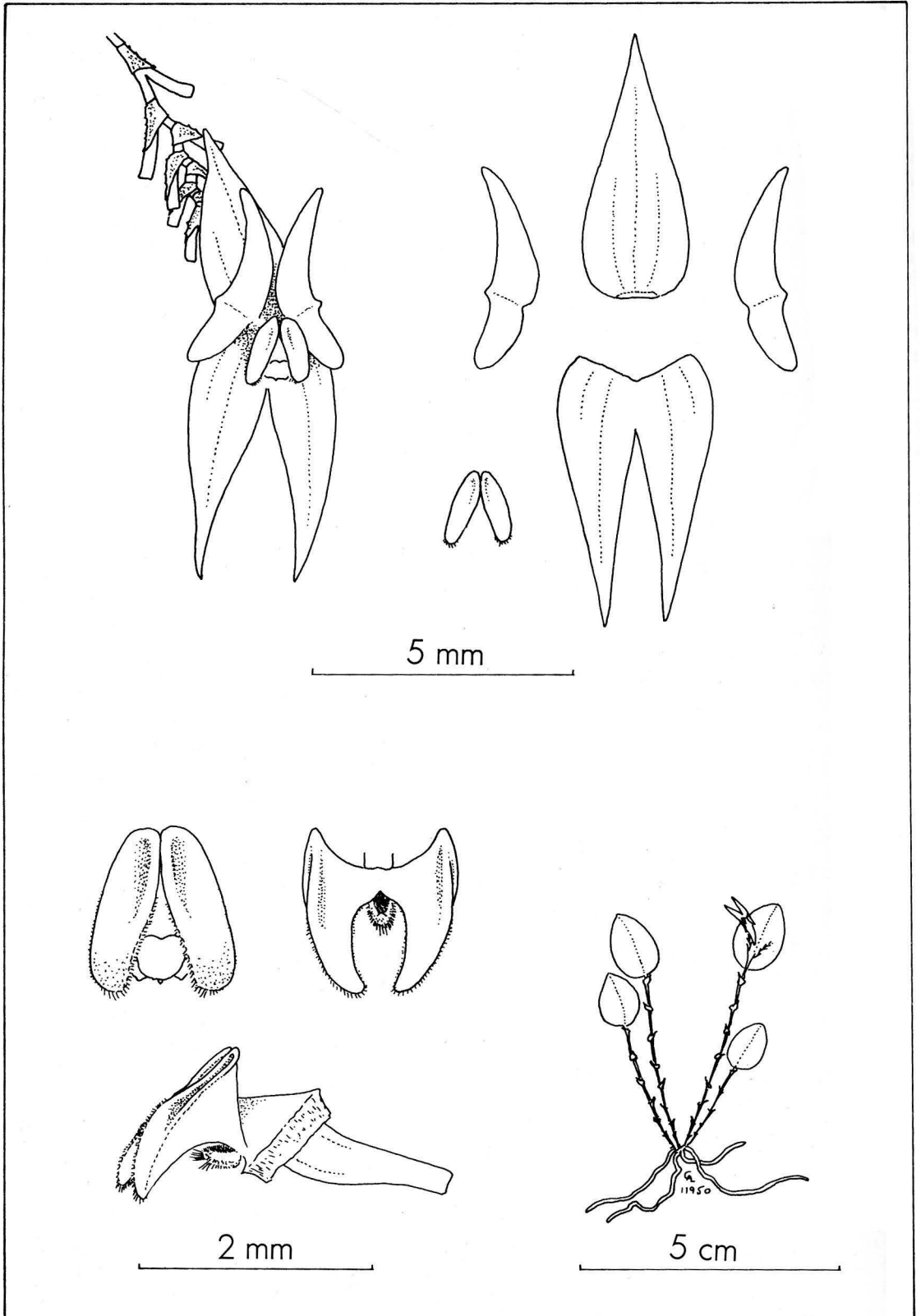
***Lepanthes surrogata* Luer & Hirtz, sp. nov.**

Planta mediocris caespitosa, inflorescentia racemosa congesta disticha folio anguste ovato brevior, sepalis denticulatis ovatis subacutis, petalis transverse oblongis, lobis subaequalibus, labello bilaminato, laminis lunatis glabris, connectivis late cuneatis, appendice triangulari ciliata, rostello oblongo truncato ciliato, stigmatate transverse bilobato.

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 upper lobe oblong with the apex broadly rounded, the lower lobe similar but shorter; lip bilaminate, the laminae glabrous, shiny red, lunate,



Lepanthes surrogata Luer & Hirtz



Lepanthes thylax Luer & Hirtz

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.

ETYMOLOGY: From the Latin *surrogatus*, "chosen in place of another," referring to the rostellar flap.

TYPE: *ECUADOR*: Prov. of Morona-Santiago: epiphytic in cloud forest, Cordillera del Condor east of Guisame, 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 other species, this species 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 it, 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 *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 the newly described *L. necopina* Luer & Hirtz.

Lepanthes thylax Luer & Hirtz, sp. nov.

Planta perparva caespitosa, inflorescentia racemosa congesta pauciflora folio ovato obtuso brevior, sepalis anguste ovatis acuminatis glabris, petalis transverse bilobis, lobis anguste obtusis superiore subfalcato, labello bilaminato, laminis oblongis, connectivis cuneatis, appendice extus saccata pubescenti.

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 pedun-

cle 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 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, bilaminar, 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.

ETYMOLOGY: From the Greek *thylax*, "a sac, or a pouch," referring to the appearance of the appendix.

TYPE: *ECUADOR*: Prov. of Zamora-Chinchipec: epiphytic in trees along Río Zamora west of Zamora, alt. 900 m, 20 Feb. 1986, C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11950 (Holotype: MO); Prov. of 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).

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 membranous, pubescent, oblong sac 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. Whatever the sac might offer to entice a pollinator to come beneath the stigma is unknown.

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