

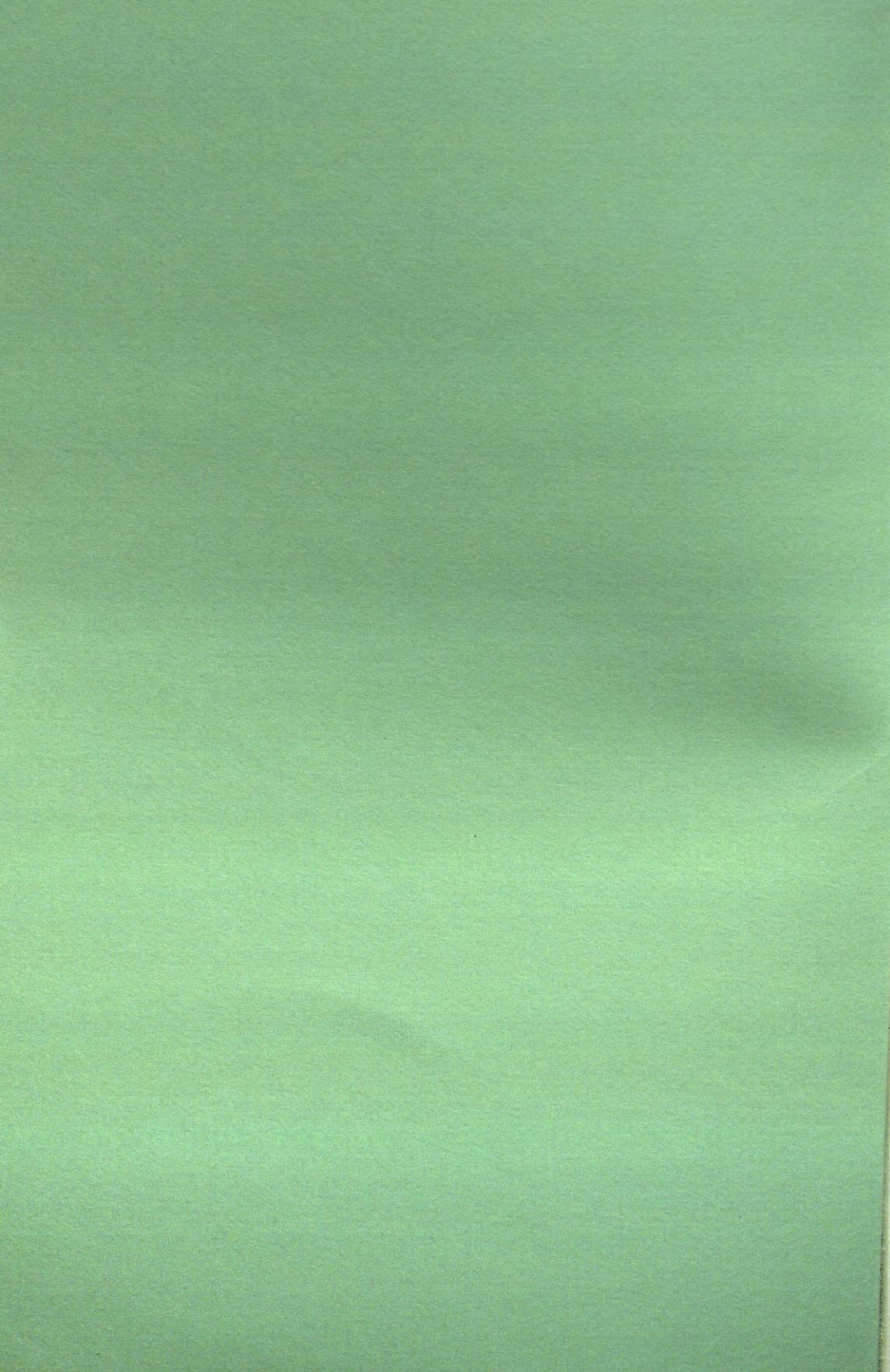
ICONES PLEUROTHALLIDINARUM
XXIV

A FIRST CENTURY OF
NEW SPECIES OF
STELIS
OF ECUADOR
Part One



Missouri Botanical Garden

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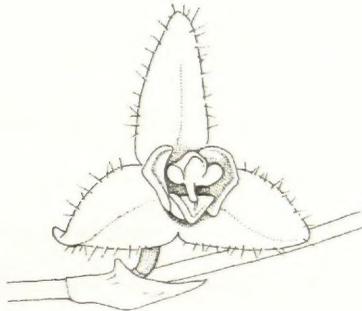
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A FIRST CENTURY OF
NEW SPECIES OF
STELIS
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Part One

Carlyle A. Luer

ADDENDA TO THE *LEPANTHES* OF ECUADOR

ADDENDA TO *BARBOSELLA*, *DRACULA*, *DRESSLERELLA*,
LEPANTHOPSIS, *PLATYSTELE*, *PLEUROTHALLIS*, *RESTREPIA*,
SCAPHOSEPALUM, *TEAGUEIA* AND *TRICHOSALPINX*



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A FIRST CENTURY OF NEW SPECIES OF STELIS OF ECUADOR

v

CONTENTS

New species and introduction to <i>Stelis</i>	1-6
New species of section <i>Dialissa</i>	7-8
Illustrations.....	27
New species of section <i>Nexipous</i>	8-9
Illustrations.....	27
New species of section <i>Humboldtia</i>	9-26
Illustrations.....	28-35
New species of section <i>Stelis</i>	36-64
Illustrations.....	65-78
New species of section <i>Labiateae</i>	79-83
Illustrations.....	84-85
Index to new species of <i>Stelis</i>	86
Addenda to the <i>Lepanthes</i> of Ecuador.....	87-93
Illustrations.....	94-96
Addenda to taxa previously treated.....	97-114
Illustrations.....	115-122

ACKNOWLEDGMENTS

Alexander C. Hirtz of Quito has been included as co-author of the majority of species, because, without his ability to gather these collections, this work would have been impossible. Recently, vast collections cultivated by José Portilla at Ecuagenera, in Gualaceo, have also produced numerous new species.

Also, in addition to his collections, I am grateful to Stig Dalström for his untold hours of meticulous inking of most of the illustrations, and for the generosity of the Pleurothallid Alliance that made it possible.

As usual, I owe gratitude to Mrs. Amy McPherson for her hours of proof-reading the manuscript.

Determinations of the status of about half of over 1,400 Ecuadorian collections at MO and SEL, organized by Lorena Endara A. of Quito, have been made. These determinations were made possible by examinations of type-collections graciously permitted by the herbaria of AMES, BR, G, K, and W, for which I am immensely grateful. With the remaining collections, a second century of new species of *Stelis* of Ecuador is in preparation.



Stelis hirtzii Luer, province of Pichincha, Ecuador, altitude 1450 meters
above sea level, 1 April 1984, photograph by Alexander C. Hirtz.

A FIRST CENTURY OF NEW SPECIES OF *STELIS* SW. OF ECUADOR

Schlechter published in 1921 a list of 78 species of *Stelis* that had been reported from Ecuador. About 43 of these names are presently accepted, the remainder being misidentified, erroneously attributed to Ecuador, or represented by synonymous names. Twenty-two names have been added since that date.

One hundred new species chosen at random from a number approaching 200 found in Ecuador are described herein. Instead of presenting them all in alphabetical order, they are presented alphabetically in five artificial "sections," groups of more or less allied species to aid in orientation and identification. Although the habit is the most readily recognized key character of the genus, it is impractical if used as the first couplet in a key. Species with similar flowers would be dispersed among the three basic habits: caespitose, repent, and prolific. Although also artificial, key characters of connation and position of the sepals offer the best solution.

KEY TO THE SECTIONS OF *STELIS*

- 1 Sepals variably connate, forming a tube or globose sepaline cup.....*Dialissa*
- 1' Sepals not connate into a tubular or globose flower.....2
- 2 Lateral sepals much more deeply connate to the dorsal sepal than to themselves....
.....*Nexipous*
- 2' Lateral sepals not deeply connate to the dorsal sepal.....3
- 3 Flower bilabiate, with the lateral sepals deeply connate into a concave synsepal;
lip usually type-A*Humboldtia*
- 3' Flower not bilabiate with a synsepal4
- 4 Sepals widely expanded.....*Stelis*
- 4' Lateral sepals directed forward, more or less simulating a concave synsepal; lip
usually type-B*Labiatae*

Section *Dialissa*

- Fig. 1. *Stelis hirtzii* Luer, sp. nov.
Fig. 2. *Stelis saccata* Luer & Hirtz, sp. nov.

Section *Nexipous*

- Fig. 3. *Stelis matula* Luer & Hirtz, sp. nov.
Fig. 4. *Stelis zelenkoi* Luer & Hirtz, sp. nov.

Section *Humboldtia*

- Fig. 5. *Stelis acutilabia* Luer & Hirtz, sp. nov.
Fig. 6. *Stelis ann-jesupiae* Luer, sp. nov.
Fig. 7. *Stelis anthracina* Luer & Hirtz, sp. nov.
Fig. 8. *Stelis applanata* Luer & Hirtz, sp. nov.
Fig. 9. *Stelis bivalvis* Luer & Hirtz, sp. nov.
Fig. 10. *Stelis bolivarensis* Luer & Hirtz, sp. nov.
Fig. 11. *Stelis brachiata* Luer, sp. nov.
Fig. 12. *Stelis coeliaca* Luer & Hirtz, sp. nov.
Fig. 13. *Stelis digitata* Luer & Hirtz, sp. nov.
Fig. 14. *Stelis dromedarina* Luer & Hirtz, sp. nov.
Fig. 15. *Stelis embreei* Luer & Hirtz, sp. nov.
Fig. 16. *Stelis fissurata* Luer & Hirtz, sp. nov.
Fig. 17. *Stelis flava* Luer & Hirtz, sp. nov.
Fig. 18. *Stelis flexilis* Luer & Hirtz, sp. nov.
Fig. 19. *Stelis florianii* Luer, sp. nov.
Fig. 20. *Stelis galeola* Luer & Hirtz, sp. nov.
Fig. 21. *Stelis luteria* Luer & Hirtz, sp. nov.

- Fig. 22. *Stelis nycterina* Luer & Hirtz, sp. nov.
Fig. 23. *Stelis parvipetala* Luer & Hirtz, sp. nov.
Fig. 24. *Stelis patens* Luer & Hirtz, sp. nov.
Fig. 25. *Stelis patinaria* Luer & Hirtz, sp. nov.
Fig. 26. *Stelis platypetala* Luer & Dalström, sp. nov.
Fig. 27. *Stelis preclara* Luer & Hirtz, sp. nov.
Fig. 28. *Stelis regina* Luer & Hirtz, sp. nov.
Fig. 29. *Stelis repanda* Luer & Hirtz, sp. nov.
Fig. 30. *Stelis rosamariae* Luer & Hirtz, sp. nov.
Fig. 31. *Stelis sanchezii* Luer & Hirtz, sp. nov.
Fig. 32. *Stelis santiagoi* Luer & Hirtz, sp. nov.
Fig. 33. *Stelis situlifera* Luer & Hirtz, sp. nov.
Fig. 34. *Stelis sumacoënsis* Luer & Hirtz, sp. nov.
Fig. 35. *Stelis velivolva* Luer & Hirtz, sp. nov.
Fig. 36. *Stelis vollesii* Luer, sp. nov.

Section *Stelis*

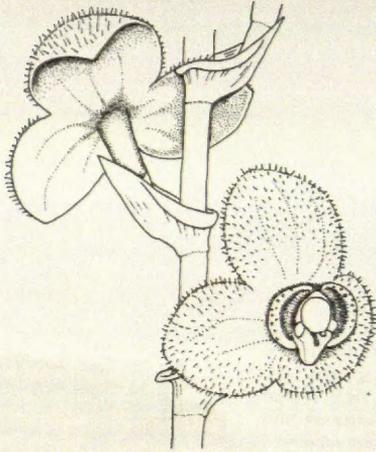
- Fig. 37. *Stelis adrianae* Luer, sp. nov.
Fig. 38. *Stelis amoena* Luer & Hirtz, sp. nov.
Fig. 39. *Stelis andreettae* Luer & Hirtz, sp. nov.
Fig. 40. *Stelis apiculifera* Luer & Hirtz, sp. nov.
Fig. 41. *Stelis barbellata* Luer & Hirtz, sp. nov.
Fig. 42. *Stelis benzingii* Luer & Hirtz, sp. nov.
Fig. 43. *Stelis bicarinata* Luer & Hirtz, sp. nov.
Fig. 44. *Stelis congesta* Luer & Hirtz, sp. nov.

- Fig. 45. *Stelis cutucuënsis* Luer & Hirtz, sp. nov.
 Fig. 46. *Stelis dalessandroi* Luer, sp. nov.
 Fig. 47. *Stelis dalstroemii* Luer, sp. nov.
 Fig. 48. *Stelis dirigens* Luer & Hirtz, sp. nov.
 Fig. 49. *Stelis distans* Luer & Hirtz, sp. nov.
 Fig. 50. *Stelis dodsonii* Luer, sp. nov.
 Fig. 51. *Stelis elongatissima* Luer & Hirtz, sp. nov.
 Fig. 52. *Stelis exasperata* Luer, sp. nov.
 Fig. 53. *Stelis excavata* Luer & Hirtz, sp. nov.
 Fig. 54. *Stelis exilis* Luer & Hirtz, sp. nov.
 Fig. 55. *Stelis falcifera* Luer & Hirtz, sp. nov.
 Fig. 56. *Stelis ferax* Luer & Hirtz, sp. nov.
 Fig. 57. *Stelis flexuosissima* Luer & Hirtz, sp. nov.
 Fig. 58. *Stelis floresii* Luer & Hirtz, sp. nov.
 Fig. 59. *Stelis formosa* Luer & Hirtz, sp. nov.
 Fig. 60. *Stelis gigantea* Luer & Hirtz, sp. nov.
 Fig. 61. *Stelis glaberrima* Luer & Hirtz, sp. nov.
 Fig. 62. *Stelis globulifera* Luer & Hirtz, sp. nov.
 Fig. 63. *Stelis hoeijeri* Luer & Dalström, sp. nov.
 Fig. 64. *Stelis jimburae* Luer & Hirtz, sp. nov.
 Fig. 65. *Stelis kuijii* Luer, sp. nov.
 Fig. 66. *Stelis limonensis* Luer & Hirtz, sp. nov.
 Fig. 67. *Stelis longihirta* Luer & Hirtz, sp. nov.
 Fig. 68. *Stelis longissima* Luer & Hirtz, sp. nov.
 Fig. 69. *Stelis macilenta* Luer & Hirtz, sp. nov.
 Fig. 70. *Stelis micacea* Luer & Hirtz, sp. nov.
 Fig. 71. *Stelis minutissima* Luer, sp. nov.
 Fig. 72. *Stelis nepotula* Luer & Hirtz, sp. nov.
 Fig. 73. *Stelis ortegae* Luer & Hirtz, sp. nov.

- Fig. 74. *Stelis pachyphyta* Luer & Hirtz, sp. nov.
 Fig. 75. *Stelis phil-jesupii* Luer, sp. nov.
 Fig. 76. *Stelis pilosa* Luer & Hirtz, sp. nov.
 Fig. 77. *Stelis polycarpica* Luer & Hirtz, sp. nov.
 Fig. 78. *Stelis porphyrea* Luer & Hirtz, sp. nov.
 Fig. 79. *Stelis procera* Luer, sp. nov.
 Fig. 80. *Stelis protracta* Luer & Hirtz, sp. nov.
 Fig. 81. *Stelis pubipetala* Luer & Hirtz, sp. nov.
 Fig. 82. *Stelis purpurella* Luer & Hirtz, sp. nov.
 Fig. 83. *Stelis sanctae-rosae* Luer & Hirtz, sp. nov.
 Fig. 84. *Stelis scalena* Luer & Hirtz, sp. nov.
 Fig. 85. *Stelis serrulifera* Luer & Hirtz, sp. nov.
 Fig. 86. *Stelis tridactyloides* Luer & Hirtz, sp. nov.
 Fig. 87. *Stelis undulata* Luer & Hirtz, sp. nov.
 Fig. 88. *Stelis uxoria* Luer & Hirtz, sp. nov.
 Fig. 89. *Stelis vesca* Luer & Hirtz, sp. nov.
 Fig. 90. *Stelis villifera* Luer, sp. nov.
 Fig. 91. *Stelis yanganensis* Luer & Hirtz, sp. nov.
 Fig. 92. *Stelis zarumae* Luer & Hirtz, sp. nov.

Section Labiatae

- Fig. 93. *Stelis acutula* Luer & Hirtz, sp. nov.
 Fig. 94. *Stelis coralloides* Luer & Hirtz, sp. nov.
 Fig. 95. *Stelis exigua* Luer & Hirtz, sp. nov.
 Fig. 96. *Stelis hispida* Luer & Dalström, sp. nov.
 Fig. 97. *Stelis juncea* Luer & Hirtz, sp. nov.
 Fig. 98. *Stelis poculifera* Luer & Hirtz, sp. nov.
 Fig. 99. *Stelis serpens* Luer & Hirtz, sp. nov.
 Fig. 100. *Stelis tempestuosa* Luer & Hirtz, sp. nov.



For descriptions of flowers of *Stelis*, definitions of a few morphological features are required. Recognition of these features of the petals and lip, that are not seen, or are not commonly seen, in other pleurothallid genera, simplifies descriptions and facilitates comprehension. Terms used in describing vegetative features (roots, rhizomes, ramicauls, sheaths, and leaves) do not differ from other pleurothallids, the genus of many species being indeterminate when sterile. Except for a rare single-flowered species, the flowers are produced in a raceme.

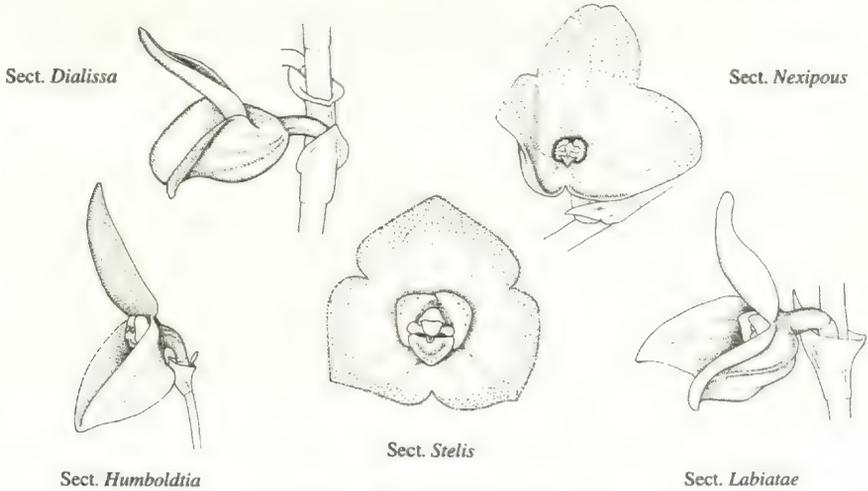


Fig. 1a. SECTIONS OF *STELIS*

The sepals are variously connate, none being truly caudate. Degrees of connation are used to define five sections: **Dialissa** with the sepals connate into a tube or a deep cup, **Nexipous** with nearly free lateral sepals deeply connate to the dorsal sepal, **Humboldtia** with the lateral sepals deeply connate, **Stelis** with the sepals expanded (encompassing a few subsections), and **Labiatae** with the lateral sepals connivent and not deeply connate.

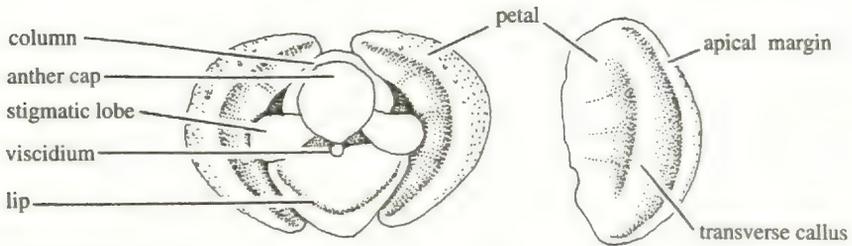


Fig. 2a. CENTRAL APPARATUS AND PETAL

The **central apparatus** is the compact unit composed of the column surrounded by the petals and lip. The usually transverse petals approach some of those of *Lepanthes*, and the three-dimensional lip approaches that of *Brachionidium*. The petals are usually concave with the apical or forward margin thickened and flattened with various modifications. Somewhere across the middle of the petal, there is often an additional transverse thickening, referred to as the **transverse callus**.

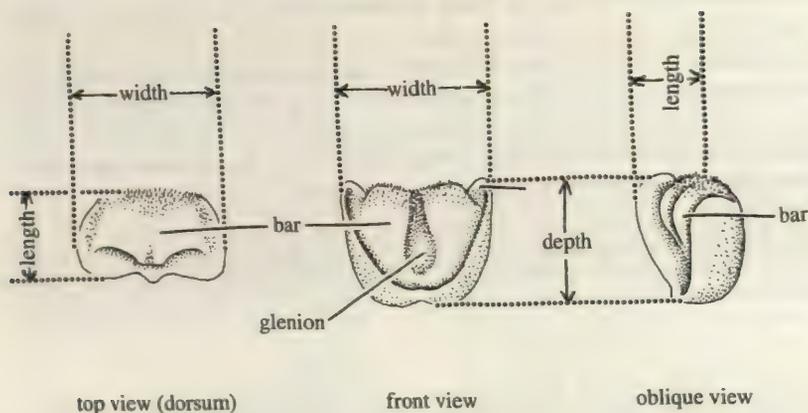


Fig. 3a. THE LABELLUM

Although it cannot compare to the complexities of the lip of *Lepanthes*, the lip of *Stelis*, a tiny, intricately sculpted, third dimensional organ, is also one of the most inaccurately described floral parts of all the Pleurothallidinae. Old descriptions and crude sketches of boiled flowers made with a hand lens, together with a lack of common terminology, are incomprehensible and unreliable. Most lips are under two millimeters in the greatest dimension. All floral parts illustrated herein were made from flowers pickled while fresh, and drawn to scale while submerged in water. Three dimensions are employed: length, width, and depth. Illustrations of the same lip often appear differently depending upon the degree of rotation, or the angle from which it is viewed.

The *dorsum*, the top of the lip appressed against the undersurface of the column, is the length. It extends from the hinged base to the vertical front. The *depth* is the distance from the dorsum to the tip of the apex. The *width* is obviously the distance from side to side. The side view is more or less triangular, with the *dorsum* on top; the *front*, the distance from the top to the tip; and the back, the hypotenuse. In some elongated, flattened lips the length becomes the distance from the base to the tip. The apical margin is commonly thickened, similar to the margins of the petals.

The body of the lip is usually thick with a transverse callus across the center, called here the **bar**. The margin of the **bar** usually stretches from the angle between the junction of the *dorsum* with the *front*, to the opposite angle. The center of the **bar** usually bears the upper reaches of the **glenion**, which is found on the *front*. The **glenion** is the round or ovoid, often concave structure commonly seen on the lip in several pleurothallid genera and infrageneric taxa (especially subsection *Macrophyl-lae-Fasciculatae*). It is positioned beneath the rostellum, no doubt playing a part in enticing a pollinator. In *Stelis*, it is sometimes absent, and sometimes so greatly modified to be unrecognizable.

The *front* (the front of the bar) is usually concave to some degree below the transverse margin of the **bar** between the apex and the base. The *dorsum*, behind the margin of the **bar** and beneath the column, often bears one or more calli, which are swellings along the veins of the lip. The **glenion** is sometimes seen as the forward termination of the middle vein. The truncate base of the *dorsum* is hinged, often snugly so, to the tip of the vestigial foot of the column.

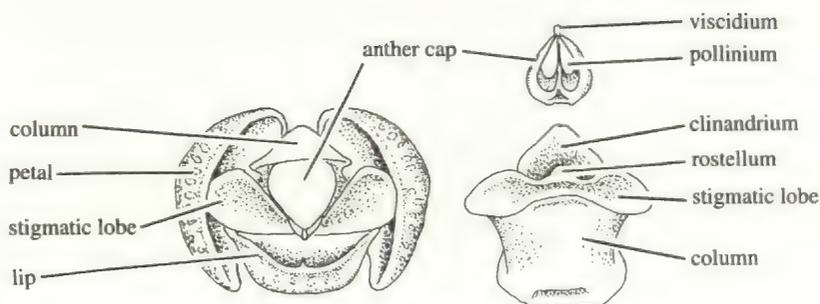


Fig. 4a. CENTRAL APPARATUS AND COLUMN

The column is short and stout, commonly broader than long. The anther is apical and deciduous. The pollinia, always two in number residing in the clinandrium, are shaped like tear-drops with their pointed tips either free or joined in a detachable viscidium at the tip of the rostellum. The stigma is greatly variable, from spherical to transversely oblong beneath the rostellum with the lobes united as one, to dumbbell-shaped with the stigmatic lobes protruding to either side of the anther. Sometimes the receptive surfaces are held out on elongated arms, with the connection very slender, even sometimes lost, beneath the rostellum.

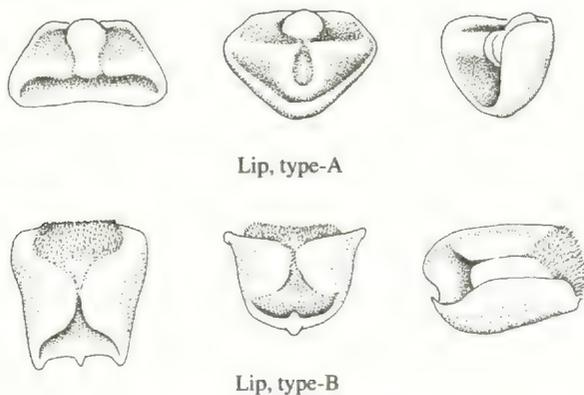


Fig. 5a. TYPES OF LABELLUM

Two kinds of lip can be defined, but often they are not easily visualized. Type-A is subquadrate or wider than long (excluding a sometimes long-acuminate tip of the apex) with a distinct bar usually with a glenion, and about as deep as it is long. The dorsum usually bears one, two, three or more calli, that are glabrous or pubescent in varying degrees. Type-B is subquadrate or longer than wide, usually more deeply concave anteriorly and not as deep as it is long. The dorsum is usually pubescent, often densely so, or brush-like at the base, and without individual calli. Type-B is usually seen in section *Labiatae*.

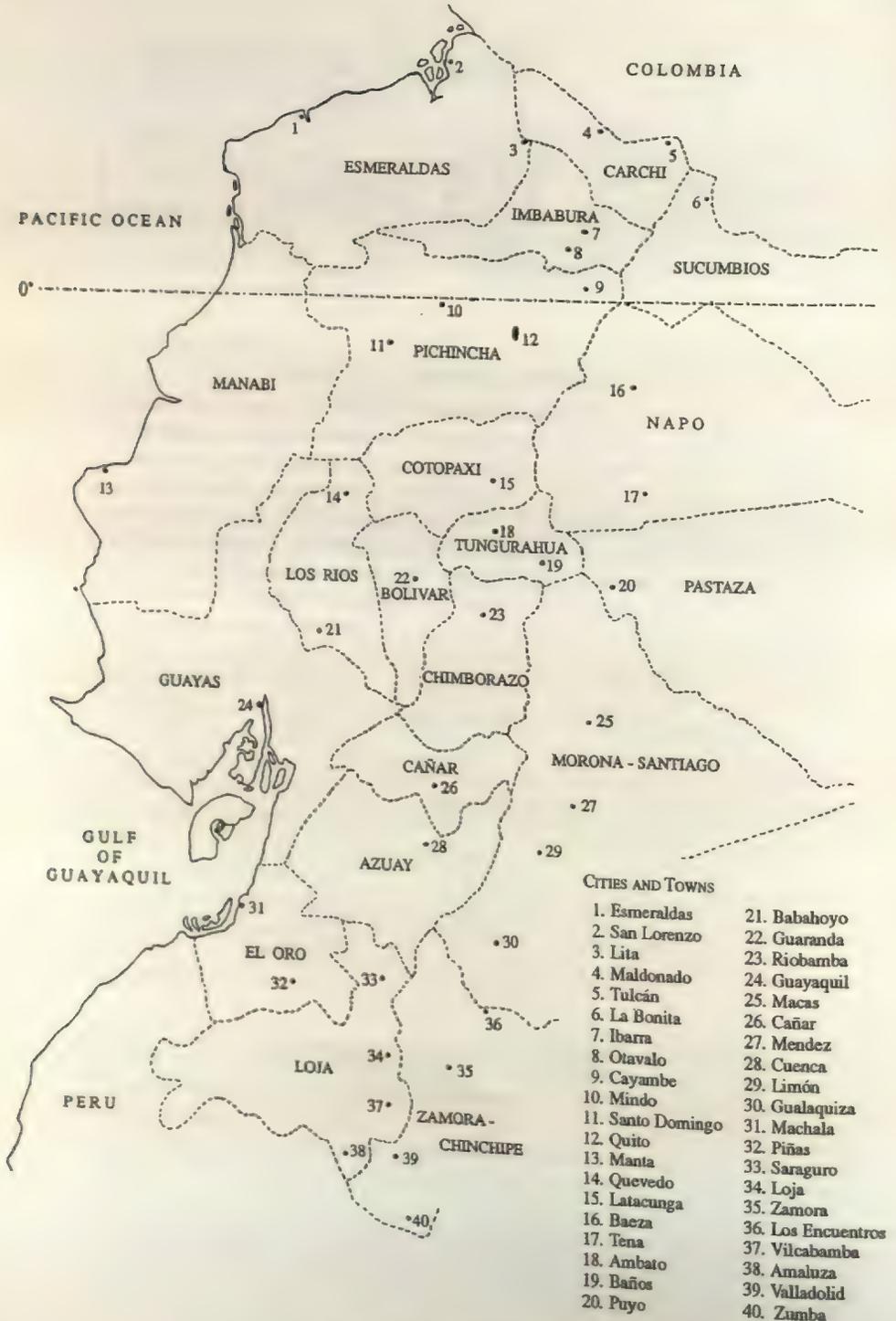


Fig. 6a. THE PROVINCES OF ECUADOR.

1. *Stelis hirtzii* Luer, sp. nov.

Ety.: Named for Alexander C. Hirtz, noted orchidologist of Quito, who collected this species.

Planta parva breviter repens, racemo laxissime paucifloro longipedicellato, sepalis obtusis papillosis ad medium in cupulam orbicularem connatis, petalis obovatis tenuibus, et labello orbiculato ad basim transverse callosio distinguitur.

Plant small, epiphytic, ascending-caespitose; roots slender. Ramicauls ascending, erect, slender, 1.5-2.5 cm long, proliferating, enclosed by 3-4 tubular, imbricating sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute to obtuse, long-petiolate, 2-3 cm long including a petiole 1 cm long, the blade 0.6-0.8 cm wide, gradually narrowed below into the petiole. **Inflorescence** an erect, distantly 4- to 5-flowered raceme with 2-5 flowers open simultaneously, 6-11 cm long including the peduncle 3-5 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, acuminate, 3 mm long; pedicels 3-4 mm long; ovary 2.5 mm long; **sepals** purple and glabrous externally, light green and diffusely papular within above the middle, connate to the middle, reflexed above the middle, the dorsal sepal ovate, obtuse, 3 mm long, 2.3 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm to form a broad, deep tube, the lateral sepals ovate, oblique, obtuse, 3 mm long, 2.6 mm wide, 3-veined; **petals** green, membranous, obovate, obtuse, shallowly concave, 1.3 mm long, 1.3 mm wide; **lip** purple, transversely elliptical, 1.3 mm long, 1.6 mm wide, flat with the broadly rounded sides slightly incurved, the apex broadly rounded, the base with an erect, transverse, broadly rounded, flat lamella, the base hinged beneath to the tip of a short column-foot; **column** terete, 1.3 mm long, 1.3 mm wide, with a short foot, the anther and the bilobed stigma apical.

Pichincha: forest between San Miguel de los Bancos and Mindo, alt. 1450 m, 1 Apr. 1984, C. Luer, S. Dalström, T. Höijer & A. Hirtz 9872 (Holotype: MO); between Chiriboga and Santo Domingo, alt. 1650 m, 31 Mar. 1984, C. Luer, S. Dalström, T. Höijer, J. Kuijt & A. Hirtz 9846 (MO); same area, alt. 1500 m, 28 May 1988, C. Luer & A. Hirtz 13715 (MO); farm road south of Tandapi, alt. 1600 m, 1 Mar. 1986, C. Luer, C. Dodson, A. Hirtz & A. Embree 12063 (MO); near Los Bancos, alt. 1650 m, 25 Feb. 2001, collected by S. Dalström & L. Jost, C. Luer 19529 (MO).

Imbabura: Los Cedros Reserve, alt. 1700 m, 21 Jan. 1993, S. Dalström, T. Höijer & H. Wannorp 1708 (MO); Los Cedros Reserve, alt. 1400-1800 m, 2 Mar. 1999, L. Endara 269 (QCA).

?**Azuay:** above Sayaus, alt. 3200 m, 14 Mar. 1958, D.S. Correll E347 (AMES, TEX).

This small species is apparently endemic in northwestern Ecuador. It is distinguished by the ascending, proliferating habit and a distantly few-flowered raceme. The obtuse sepals are connate below the middle into a broad, sepaline cup, and reflexed above the middle. The inner surfaces are covered with minute papillae. The petals are membranous, obovate and obtuse. The broadly elliptical lip is flat with slightly incurved lateral margins. At the base a flat, transverse, broadly rounded callus stands erect above the hinge to the short foot of the column.

2. *Stelis saccata* Luer & Hirtz, sp. nov.

Ety.: From the Latin *saccatus*, "saccate," referring to the bag-shaped, sepaline tube.

Species haec *S. lamellatae* Lindl. similis, sed majore, petalis grandibus flabellatis, et labello triangulari tricallosio differt.

Plant large, roadside terrestrial (epiphytic), caespitose and prolific; roots slender. Ramicauls erect, stout, 4-11 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 7-14 cm long including a petiole less than 1 cm long, the blade 2-3 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, secund, many-flowered raceme with many flowers open simultaneously, 25-38 cm long including the peduncle ca. 10 cm long, subtended by a spathe 1.5-2 cm long, at an annulus below the apex of the ramicaul; floral bracts oblique, acute, 4 mm long; pedicels 2 mm long; ovary 3 mm long; **sepals** dull yellow to yellow-green, glabrous externally, cellular-pubescent within, with margins above the middle recurved, the dorsal sepal ovate, obtuse, 10 mm long, 4 mm wide, 5-veined, connate to the lateral sepals for 2.5 mm to form a short, saccate tube, the lateral sepals connate into a concave broadly obovate, bifid lamina, with the apices obtuse, 7.5 mm long, 8 mm wide, 6-veined; **petals** yellow or yellow-green, transversely cuneate-flabellate, shallowly concave, 1.5 mm long, 2 mm wide, the apex rounded, thickened; **lip** yellow or yellow-green, triangular, 0.9 mm long, 1.3 mm wide, 1 mm deep, the apex acute to subacute, concave anteriorly, the dorsum with 3 rounded calli, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the foot obsolescent, the anther and the transversely bilobed stigma apical.

Carchi: terrestrial on road embankment near the pass between Tulcán and Maldonado, alt. 3000 m, 16 Mar. 1991, C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz 15074 (Holotype: MO); same area, alt. 3400 m, 16 Mar. 1991, C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz 15053 (MO).

More or less inflated below the middle, the sepaline tube of this species is similar to that of *S. lamellata*. Vegetatively, it is characterized by stout, relatively short ramicauls, often prolific, completely enclosed by two loose, tubular sheaths. A second raceme of numerous, simultaneous flowers far exceeds the elliptical leaves. The petals and lip are out of sight deep within the recess of the flower. The petals are flabellate, and the lip is triangular with the anterior surface concave.

3. *Stelis matula* Luer & Hirtz, sp. nov.

Ety.: From the Latin *matula*, "a chamber-pot," for an obvious reason.

Inter species sect. *Nexipoi*, sepalis in synsepalum subpyriforme inflatum connatis, sepalis lateralibus inter se liberis, petalis transverse oblongis et labello apiculato minutis distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 4-6.5 cm long, enclosed by 3 loose, spotted, tubular sheaths. **Leaf** erect, coriaceous, linear-oblong, obtuse, petiolate, 5-7.5 cm long including a petiole 0.7-1 cm long, the blade 0.7-1.1 cm wide, narrowly cuneate below into a petiole 0.5-1 cm long. **Inflorescence** an erect, subcongested, secund, many-flowered raceme with most flowers open simultaneously, 6-7 cm long including the peduncle ca. 1 cm long, subtended by a spathe 7 mm long, from an annulus shortly below the apex of the ramicaul; floral bracts tubular, acute, 3.5-4 mm long; pedicels 2.5-3 mm long; ovary 2 mm long; **sepals** purple, glabrous, the dorsal sepal connate to the lateral sepals for 3.5 mm and adherent the rest of the way to the tips, forming an inflated, pyriform synsepal, the lateral sepals free from each other, forming a gaping entrance in the under side of the flower, 6 mm long, 4 mm wide unexpanded, expanded the dorsal sepal subacute, 6 mm long, 3-veined, the expanded synsepal 7 mm wide, 9-veined, the apex of the lateral sepals oblique, connivent; **petals** purple, transversely oblong, convex on both halves, rounded on the ends, 0.5 mm long, 1 mm wide; **lip** purple, subdiscoid, 0.6 mm long, 0.6 mm wide, 0.3 mm deep, shallowly concave apically with a low bar, the apex broadly obtuse, shortly apiculate, the dorsum with a low suborbicular, minutely pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 1 mm wide across expanded stigmatic lobes, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: near Sinai north of Macas, flowered in cultivation at Ecuagenera, Gualaceo, 17 Apr. 2001, A. Hirtz 7593 (Holotype: MO), C. Luer illustr. 20043; above El Pangui, alt. 1900 m, May 1984, S. Dalström & T. Höjjer 872A (SEL).

This species of section *Nexipous* is unique in the genus with an inflated, pyriform sepaline tube, with the lateral sepals parted on the under surface of the flower. The saccate flower produced is reminiscent of a species of *Dresslerella*. The several, purple, globular, nutant flowers are produced nearly simultaneously in a loose raceme. The sepals and lip are very small, out of sight on the back wall of the sepaline cavity.

4. *Stelis zelenkoi* Luer & Hirtz, sp. nov.

Ety.: Named for Harry Zelenko, man of many talents, co-collector of this species.

Species haec *S. apertae* Garay affinis, sed petalis transverse oblongis in quoque dimidio convexis, et labello subquadrato ad apicem acuto convexo differt.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5-10 cm long, enclosed by a loose, tubular sheath from below the middle and 2-3 other sheaths at the base. **Leaf** erect, coriaceous, elliptical-oblong, subacute to obtuse, petiolate, 7-9.5 cm long, the blade 1.5 cm wide, contracted below into a petiole 7-8 mm long. **Inflorescence** an erect, subcongested, distichous, many-flowered raceme with several flowers open simultaneously, to 20 cm long including the peduncle 5-6 cm long, subtended by a spathe 8-10 mm long, from an annulus below the apex of the ramicaul; floral bracts within, glabrous externally, minutely pubescent within, the dorsal sepal connate for 4 mm to the lateral sepals to form a 3-lobed, flat to slightly concave, flabellate flower 7 mm long, 10 mm wide, the dorsal sepal elliptical, obtuse, 7 mm long, 5 mm wide, 3-veined, the lateral sepals obliquely ovate, obtuse, 5 mm long, 5 mm wide, 3-veined, connate to basally less than 1 mm; **petals** brown, transversely oblong, 0.6 mm long, 1.2 mm wide, broadly rounded at the ends, convex on either half; **lip** brown, subquadrate,

0.6 mm long, 1 mm wide, 0.4 mm deep, the apex triangular, acute, concave, the margin of the bar with a small glenion, the dorsum flat, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: near Guarumales, alt. 1400-1800 m, 18 Apr. 2001, A. Hirtz, X. Hirtz, H. Zelenko & R. Zloch 7573 (Holotype: MO), C. Luer 20044; above El Pangui, alt. 1400 m, May 1984, S. Dalström & T. Höjjer 871 (SEL).

Known only from southeastern Ecuador, this species is closely allied to *S. aperta*, but readily distinguished by the acute lip. *Stelis zelenkoi* is characterized by stout ramicauls about as long as narrowly oblong leaves that are surpassed by the multiflowered raceme. The shape of the connate sepals is similar to that of *S. aperta*, but a little larger. The petals are transversely oblong and convex on each half. The quadrate lip with an acute apex is more similar to the lip of *S. nexipous*.

5. *Stelis acutilabia* Luer & Hirtz, sp. nov.

Ety.: From the Latin *acutilabius*, "acute-lipped," referring to the apex of the labellum.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed habitu floribusque minoribus, inflorescentia elongata multiflora, sepalo dorsali 5-nervato et synsepalo latissimo, et labello apice acuto differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 6-10 cm long, the middle third enclosed by a tubular sheath, and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, elliptical-ovate, subacute to obtuse, petiolate, 6-7 cm long including a petiole 1 cm long, the blade 1.5-2.2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, several-flowered raceme in two ranks, with most flowers open simultaneously, 12 cm long including the peduncle 2-3 cm long, with a spathe 12-15 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 4-5 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers purple, bilabiate; **sepals** glabrous, the dorsal sepal erect, broadly ovate, obtuse, 6 mm long, 4 mm wide, 5-veined, connate basally to the synsepal for 2 mm, the lateral sepals connate into a transversely ovoid, concave synsepal, 3 mm long, 4 mm wide unexpanded, 6 mm wide expanded, 6-veined; **petals** transversely semilunate, 0.9 mm long, 1 mm wide, 3-veined, with a broad, thick, rounded apex, concave basally below the transverse callus; **lip** thickly triangular, 0.5 mm long, 0.8 mm wide, 0.75 mm deep, the front triangular, acute, deeply concave below the margin of the bar, the dorsum with a low, trilobed callous, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Pichincha: forest along the new road from Quito to Santo Domingo, alt. 1900 m, 1 Mar. 1986, C. Luer, C. Dodson, A. Hirtz & A. Embree 12051 (Holotype: MO).

This species of section *Humboldtia* is characterized by a small habit with a several-flowered raceme with the flowers arranged in two, opposite-facing rows. The sepals are broad, the synsepal short, more than twice broader than long when expanded. The round apices of the petals are broad and flat. The apex of the lip is concave, triangular, and acute.

6. *Stelis ann-jesupiae* Luer, sp. nov.

Ety.: Named for Ann Lauer Jesup of Bristol, CT, co-collector of this species.

Species haec *S. opercularis* Luer affinis, sed pedunculo unifloro foliis perparvis longioribus, petalis crassissimis et labello plus minusve cuneato semi-orbiculari plano differt.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-6 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical-obovate, subacute to obtuse, 10-20 mm long including a petiole 3-6 mm long, the blade 3-4 mm wide, cuneate below into the petiole. **Inflorescence** a single flower borne by a slender peduncle 20-30 mm long, with a bract near the middle, from an annulus below the apex of the ramicaul; floral bract infundibular, acute, 1.5 mm long; pedicel 1 mm long with a minute filament; ovary 1.5 mm long; flower bilabiate; **sepals** glabrous, the dorsal sepal purple, erect, broadly ovate, obtuse, 6.5 mm long, 6 mm wide, 5-veined, connate 1.5 mm to the synsepal, the lateral sepals light yellow, connate into a broadly ovoid, deeply concave synsepal, saccate at the base, 5 mm long, 6 mm wide unexpanded, 8-veined; **petals** purple, thick, broadly lunate, rounded at the apex, 1 mm long, 1.3 mm wide, 3-veined, thickened across the middle and at the cellular-papillose apex; **lip** purple, suborbicular, 0.6 mm long, 1 mm wide, 0.75 mm deep, shallowly concave anteriorly with the apex broadly rounded, the dorsum narrow, deflexed, with a rounded callus, hinged to the base of the column; **column** stout, 1 mm long and wide, the foot obsolescent, the anther and bilobed stigma apical.

Zamora-Chinchipe: Cordillera del Condor, east of Los Encuentros, alt. 1500 m, 21 Jan. 1989, *C. Luer, J. Luer, A. Jesup & P. Jesup 14027* (Holotype: MO).

This little species, apparently endemic in the Cordillera del Condor in southeastern Ecuador, is one of only a few in the genus known to be single-flowered. The flower is borne by a slender peduncle that is longer than the leaves. The pedicel produces a "filament," the aborted terminal bud of a pleurothallid inflorescence. Produced from near the end of the pedicel, the filament protrudes from the floral bract.

A member of section *Humboldtia*, this species is characterized by very small, elliptical leaves longer than the ramicauls, and a single flower with an erect dorsal sepal above a concave synsepal that is inflated near the base. As with the others, the central apparatus is on the posterior wall. The petals are thickly lunate. The much smaller lip is cuneate with the flat apex broadly rounded and the dorsum sloping backward and downward.

7. *Stelis anthracina* Luer & Hirtz, sp. nov.

Ety.: From the Latin *anthracinus*, "coal black," referring to the flower.

Planta mediocriis prolificans, racemo lente successivo folio oblongo longiore floribus fecundis, sepalo dorsali synsepaloque subsimilibus late ovatis obtusis, petalis proportione grandibus latissime semilunatis, et labello subtriangularibus obtuso dorso unicalloso distinguitur.

Plant medium to large, epiphytic, caespitose-scandent; roots fleshy. Ramicauls erect, stout, 6-12 cm long below to 3-5 cm long above, enclosed by a loose, tubular sheath and 1-2 shorter sheaths at the base. **Leaf** erect, coriaceous, elliptical-oblong, obtuse, 4-6.5 cm long including a petiole 1-1.2 cm long, the blade 1.5-2.2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subcongested, distichous, many-flowered raceme, with 1 flower open at a time, 9-11 cm long including the peduncle 2-3 cm long, from an annulus below the apex of the ramicaul with a spathe ca. 1 cm long; floral bracts oblique, inflated, acute, 4 mm long; pedicels 2 mm long; ovary 2 mm long; **sepals** purple-black, glabrous externally, cellular-glandular within, the dorsal sepal broadly ovate, 4 mm long, 3.3 mm wide, 3-veined, connate to the synsepal 1.5 mm, the lateral sepals connate to the apex into a shallowly conduplicate, ovate synsepal, rounded and shallowly bifid at the apex, 3.3 mm long, 4.2 mm wide expanded, 6-veined; **petals** dark purple, transversely semilunate, shallowly concave, the apex broadly rounded with a thickened margin, 1 mm long, 2 mm wide, faintly 3 veined, concave below a low, transverse callus; **lip** dark purple, thickly subtriangular, 1 mm long, 1 mm wide, 0.6 mm deep, shallowly concave anteriorly with non-thickened margins, the apex obtuse, the bar thick, slightly protruding, with a well-developed, round glenion extending from the margin, the dorsum with a rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Imbabura: Mariano Acosta, alt. 3300 m, 1 May, 2001, *A. Hirtz & X. Hirtz 7741* (Holotype: MO), *C. Luer* illustr. 20062.

This species, found at a high altitude in northern Ecuador, is distinguished by a prolific habit, oblong leaves and a somewhat longer, successively flowered raceme of purple-black flowers, but only one flower matures at a time. The succession of flowers is slow, as most form capsules. The lateral sepals are connate into a slightly conduplicate, broadly ovate synsepal. The proportionately large petals are widely semilunate. The lip is longer than deep with a well-developed glenion continuous from a rounded callus on the dorsum.

8. *Stelis applanata* Luer & Hirtz, sp. nov.

Ety.: From the Latin *applanatus*, "flattened," referring to the expanded, nearly flat flower that is unusual in sect. *Humboldtia*.

Species haec *S. globiflorae* Rchb.f. similis, sed habitu majore, inflorescentia congesta secunda floribus expansis, synsepalo subplano, petalis transverse ovato, et labello ad basim non deflexo differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-2 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 3-5 cm long including a petiole ca. 1 cm long, the blade 0.8-1 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested,

second, simultaneously several-flowered raceme, to 7 cm long including the peduncle 3 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, 2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** rose with green apices, glabrous, the dorsal sepal erect, ovate, obtuse, 7 mm long, 4.5 mm wide, 3-veined, connate 1.5 mm to the synsepal, the lateral sepals connate into an ovate, obtuse, shallowly concave synsepal, 5 mm long, 5.5 mm wide, 6-veined; **petals** purple, semilunate, with the apex broadly rounded, thickened, thickened across the center, concave above the base, 0.6 mm long, 1 mm wide, 3-veined; **lip** purple, thick, ovoid, 0.4 mm long, 0.6 mm wide, 0.5 mm deep, the anterior surface shallowly concave, the apex broadly rounded with the margin thickened, the bar with a shallow glenion, the dorsum with a low, trilobed, pubescent callus, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 0.75 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Cutucú, new road between Mendez and Morona, alt. 950 m, 17 Jan. 1989, C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 13987 (Holotype: MO).

This small species of section *Humboldtia* is apparently endemic in lowland, eastern Ecuador. It is distinguished by the small habit with the flowers of the raceme overlapping and facing one direction. The dorsal sepal is ovate and distinctly longer than the shallowly concave synsepal that is held below in the same plane. The petals are broadly semilunate. The lip is thickly ovate and shallowly concave. The dorsum does not slope downward as in the closely allied *S. memorialis*.

9. *Stelis bivalvis* Luer, sp. nov.

Ety.: From the Latin *bivalvis*, "bivalved," referring to the "clam-like," bivalved flowers.

Inter species sect. *Humboldtiae*, habitu parvo, racemo disticho congesto folio elliptico brevior, sepalo dorsali transverse reniformi convexo, synsepalo simili sed concavo, petalis carnis, et labello brevi semilunato distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 3-4 cm long, enclosed by a loose tubular sheath and another below. **Leaf** erect, coriaceous, elliptical, subacute to acute, 5-7 cm long including a petiole 1.5-2 cm long, the blade 1.2-1.5 cm wide, cuneate below into the petiole. **Inflorescence** a congested, distichous, simultaneously several-flowered raceme 5 cm long, including the peduncle ca. 2 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, inflated, obtuse, 4 mm long, 4 mm wide; pedicels 2 mm long; ovary 1.5 mm long; **sepals** glabrous, the dorsal sepal orange-brown, convex, transversely reniform, broadly rounded, 4.5 mm long, 6 mm wide, 7-veined, connate basally to the synsepal for 1 mm, the lateral sepals light yellow, connate into a transversely ovate, broadly rounded synsepal, 3.5 mm long, 6.5 mm wide expanded, 10-veined, concave centrally; **petals** purple on outer half, green on inner half, thickly fleshy, transversely semilunate, with the apex broadly rounded, cellular, concave above the base, 1 mm long, 1.8 mm wide, 3-veined; **lip** brown, semilunate, broadly rounded at the apex, very shallowly concave above the broad margin, 0.5 mm long, 1.4 mm wide, 0.8 mm deep, the bar with a small glenion, with a low, rounded callus on the dorsum, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 1.3 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinche: Cordillera del Condor, Paquisha, alt. ca. 1500 m, flowered in cultivation at Ecua-genera, Gualaceo, 7 Mar. 2001, C. Luer 19797 (Holotype: MO).

This small species of section *Humboldtia*, apparently endemic in the Cordillera del Condor, is distinguished by the small, caespitose habit with the inflorescence shorter than the leaves. The flowers are borne in two ranks in a short, congested raceme, with all the flowers facing outward. The flowers are not widely spreading, the convex, transversely kidney-shaped dorsal sepal held over the shallowly concave synsepal of a similar shape. The petals are thickly reniform. The semilunate lip is short, three times wider than long.

10. *Stelis bolivarensis* Luer & Hirtz, sp. nov.

Ety.: Named for the province of Bolívar in central Ecuador where the species was collected.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed habitu majore, folio grandi elliptico abrupte longipetiolato, sepalo dorsali 7-nervato, synsepalo profunde mentoso, et petalis crassioribus differt.

Plant large, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 11-13 cm long, mostly concealed by a tubular sheath from below the middle third and 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, large, long-petiolate, the blade 11-13 cm long, 5-5.5 cm wide, abruptly contracted below into a stout petiole 4-5 cm long. **Inflorescence** an erect, congested, distichous, many-flowered raceme with many flowers open simultaneously, 12-23 cm long including the peduncle 5-6 cm long, with a spathe 2 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, 5-6 mm long; pedicels 3 mm long; ovary 3 mm long; flowers purple; **sepals** glabrous, the dorsal sepal erect, ovate, subacute, 11 mm long, 7 mm wide, 7-veined, connate basally 1.5 mm to the synsepal, the lateral sepals connate into a deeply concave synsepal with a mentum below the lip, 6 mm long, 9 mm wide, 10-veined; **petals** transversely semilunate, 1.5 mm long, 2 mm wide, 3-veined, apex thick, broadly rounded, shallowly concave basally below the transverse callus; **lip** thick, transversely subtriangular, 1 mm long, 1.4 mm wide, 1 mm deep, concave anteriorly above the broadly rounded margin, the margin of the bar with 2 central swellings that flank a glenion, the dorsum mostly filled with a rounded callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the foot obsolescent, the anther and bilobed stigma apical.

Bolivar: forest west of Guaranda toward Balzapamba, alt. 2000 m, 26 Mar. 1984, C. Luer, S. Dalström, T. Höjjer, J. Kuijt & A. Hirtz 9733 (Holotype: MO).

This member of the *S. purpurea* alliance is distinguished by the large habit; large, elliptical, abruptly long-petiolate leaves; and a congested raceme of relatively large, purple flowers with conspicuous bracts produced in two ranks. The dorsal sepal is noticeably longer than the deeply concave synsepal, which in turn is deeply concave with a mentum. The petals are protuberant with thickly fleshy apices. The dorsum of the lip is filled with a single, large callus.

11. *Stelis brachiata* Luer, sp. nov.

Ety.: From the Latin *brachiatius*, "with arms," referring to the elongated stigmatic lobes.

Species haec *S. odobenellae* Luer affinis, sed floribus multiminoribus, labello ad basim alticalloso, et stigmaticis lobis brevioribus differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-10 mm long, enclosed by a tubular sheath, and another 1-2 at the base. **Leaf** erect, coriaceous, elliptical-obovate, subacute to acute, petiolate, 2-3.5 cm long including a petiole 0.5-1.5 cm long, the blade 4-5 mm wide, gradually narrowed below into the petiole. **Inflorescence** an erect, subdense, distichous, nearly simultaneously several-flowered raceme, 3-5 cm long including the peduncle 2-3 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, acute, 2 mm long; pedicels 1 mm long; ovary 0.75 mm long; flowers purple, bilabiate; **sepals** glabrous, the dorsal sepal suberect, broadly ovate, obtuse, 3 mm long, 3 mm wide, 3-veined, connate basally to the synsepal for 0.5 mm, the lateral sepals connate into an ovoid, concave synsepal, 2 mm long, 4 mm wide expanded, 6-veined; **petals** semiorbicular, concave at the base, thickened across the middle, with the apex broadly rounded, thickened, cellular-papillose, 0.6 mm long, 1 mm wide, 3-veined; **lip** thickly cuneate-triangular, obtusely rounded at the apex with the margin thickened, 0.5 mm long, 0.6 mm wide, 0.5 mm deep, the anterior surface shallowly concave with a low thickening centrally, the bar elevated, the dorsum shallowly concave with an erect, conical, pubescent callus above the base, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1.25 mm wide across the stigmatic lobes, the lobes elongated, antrorse, the anther and the stigma apical.

Zamora-Chinchipe: Cordillera del Condor, east of Los Encuentros, alt. 1800 m, 22 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14050 (Holotype: MO).

This species, related to *S. odobenella* with tusk-like stigmatic lobes, is characterized by a small, caespitose habit with a simultaneously several-flowered raceme of small, bilabiate flowers. The sepals are broadly ovate, the petals thickly semilunate, and the lip is wedge-shaped with a conical callus above the base. The stigmatic lobes are elongated into a pair of curved, antrorse arms, but not nearly as long as those of *S. odobenella*.

12. *Stelis coeliaca* Luer & Hirtz, sp. nov.

Ety.: From the Greek *koiliakos*, "cavity," referring to the synsepal.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed habitu minore, racemo folio elliptico petiolato subaequantibus, sepalo dorsal! 7-nervato, synsepalo profunde excavato, et labello unicalloso differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 6-7 cm long, mostly concealed by a tubular sheath from below the middle third and 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical-oblong, obtuse, petiolate, the blade 4-6 cm long, 1.8-2 cm wide, contracted below into a petiole 2 cm long. **Inflorescence** 1-2 erect, congested, distichous, several-flowered racemes with most flowers open simultaneously, 4-8.5 cm long including the peduncle ca. 1 cm long, with a spathe 6-7 mm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, 3-4 mm long; pedicels 0.75 mm long; ovary 2 mm long; flowers purple, non-resupinate; **sepals** minutely pubescent within, the dorsal sepal erect, broadly ovate with the margins involute above the lower quarter, obtuse to round at the apex, 8 mm long, 7 mm wide, 7-veined, connate basally 1.5 mm to the synsepal, the lateral sepals connate into a shallowly concave synsepal with a deep cavity below the lip, 5 mm long, 8 mm wide, 6?-veined; **petals** transversely semilunate, 1.5 mm long, 2 mm wide, 3-veined, shallowly concave below the thick, broadly rounded apex, concave basally below the transverse callus; **lip** thick, transversely subtriangular, 1 mm long, 1.3 mm wide, 0.9 mm deep, very shallowly concave anteriorly above the broadly rounded margin, the margin of the bar protuberant with a glenion, the dorsum mostly filled with a broad, rounded callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the foot obsolescent, the anther and bilobed stigma apical.

Azuay: east of Cuenca, forest above Cumbe, alt. 2800 m, 6 Mar. 2001, C. Luer, J. Luer, A. Hirtz, E. Sanchez & L. Suin 19761 (Holotype: MO).

This handsome member of the *S. purpurea* alliance from southern Ecuador is distinguished by the medium-sized habit with one or two several-flowered racemes more or less as long as elliptical-oblong, petiolate leaves. The sepals are purple, gaping and minutely pubescent, with the margins of the dorsal sepal revolute. The synsepal is shallowly concave with a deep excavation below a convexity beneath the lip. The petals are protuberant with round, thickly fleshy apices. The dorsum of the lip is filled with a single, large callus.

Stelis coeliaca is related to the much larger *S. bolivarensis*, but distinguished by more or less flat flowers with revolute sides of the dorsal sepal, and a deeper excavation of the synsepal.

13. *Stelis digitata* Luer & Hirtz, sp. nov.

Ety.: From the Latin *digitatus*, "with fingers," referring to the stigmatic lobes.

Planta mediocris scandens, ramicaulibus proliferantibus, racemo flexuoso plurifloro folio elliptico petilato bis vel ter longiore, sepalis lateralibus in sepalum concavum connatis, labello discoideo supra basim transverse bicalloso, stigmatibus longibrachiata distinguitur.

Plant medium in size, epiphytic, scandent; roots slender. Ramicauls erect, ascending, prolific, slender, 4-12 cm long below, 2-2.5 cm long above, with a tubular sheath near the middle and another at the base. **Leaf** spotted with purple, erect, coriaceous, elliptical, acute, petiolate, 3-6 cm long including the petiole 5-15 mm long, the blade 9-14 mm wide, cuneate below into the petiole. **Inflorescence** an erect, subax, distichous, flexible, flexuous, several-flowered raceme, with 3-6 flowers open simultaneously, 5-12 cm long including the peduncle 2-3 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, infundibular, 3.5-4 mm long; pedicels 1-2 mm long; ovary 1-2 mm long; **sepals** red-purple, glabrous externally, cellular within, the dorsal sepal broadly ovate, obtuse, broadly connate basally, 6 mm long, 5.5 mm wide, 5-veined, the lateral sepals connate into a concave synsepal, 5 mm long, 7.5 mm wide expanded, 8-veined, the apex obtuse, split for 1-2 mm; **petals** red-purple, transversely ovate-triangular, 1.25 mm long, 2.25 mm wide, 3-veined, the apex broadly obtuse, shallowly concave, with the margin slightly thickened; **lip** white, discoid, shallowly concave, 1 mm long, 2 mm wide, 2 mm deep, the apex rounded, minutely apiculate, the bar prominently bilobed with the bases of the lobes continuing down the back surface of the concavity, the dorsum with a low, trilobed, minutely pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 2.5 mm wide, with elongated stigmatic arms, the anther and the stigma apical, the foot obsolescent.

El Oro: forest along the old road west of Paccha, alt. 1850 m, 23 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andretta & W. Teague 13616 (Holotype: MO); forest above Zaruma, alt. 1800 m, 23 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12027 (MO).

This species, known only from southwestern Ecuador, is characterized by a scandent habit with proliferating ramicauls. The long-petiolate leaves are surpassed by loose, flexuous racemes of dark purple, bilabiate flowers. The petals are triangular while the considerably larger lip is discoid and concave anteriorly with prominent lobes at the base beneath elongated, protuberant, stigmatic arms.

14. *Stelis dromedarina* Luer & Hirtz, sp. nov.

Ety.: From the Latin *dromedarinus*, "like a dromedary camel," referring to the hump.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed habitu floribusque minoribus, inflorescentia pauciflora foliis brevioribus, sepalis dorsali 3-nervato et synsepalo latissimo differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-4 cm long, enclosed by a tubular sheath, and another at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 5-8 cm long including a petiole 1.5-2 cm long, the blade 1.2-1.6 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subdense, distichous, successively several-flowered raceme, 4-5 cm long including the peduncle less than 1 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 3-4 mm long; pedicels 2.5 mm long; ovary 2 mm long; flowers light yellow-green, bilabiate; **sepals** glabrous, the dorsal sepal suberect, broadly ovate, obtuse, 4 mm long, 4 mm wide, 3-veined, connate basally to the synsepal for 1 mm, the lateral sepals connate into a transversely ovoid, concave synsepal, 2.5 mm long, 6 mm wide expanded, 6-veined; **petals** thin, transversely oblong, shallowly concave, with the apex broadly obtuse, 2 mm long, 3 mm wide, 3-veined; **lip** thickly subovoid, 1.5 mm long, 2 mm wide, 1.5 mm deep, concave within the rounded apex, the bar with a high, rounded hump-like callus, the dorsum with a low callous continuation from the "hump," the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 2 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Carchi: between Tulcán and El Carmelo, alt. 3200 m, 6-7 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11123 (Holotype: MO).

This species of section *Humboldtia* is characterized by the small habit and a several-flowered raceme shorter than the leaf. The sepals are broad, the synsepal more than twice broader than long when expanded. The petals are thin without a marginal thickening. The apex of the lip is broadly rounded and concave, and a tall, proportionately large, hump-shaped callus fills the center.

15. *Stelis embreei* Luer & Hirtz, sp. nov.

Ety.: Named in honor of the late Al Embree, an old friend, co-collector of this species.

Species haec *S. nanae* Lindl. affinis, sed habitu floribusque majoribus, inflorescentia laxa fractiflexa successive uniflora folio late elliptico petiolato plus minusve aequilongo, et sepalis dorsali 5- ad 7-nervata differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-1.5 cm long, enclosed by a tubular sheath, and another at the base. **Leaf** erect, coriaceous, broadly elliptical, obtuse, 3-5 cm long including a petiole 1-1.5 cm long, the blade 1.3-1.6 cm wide, cuneate below into the petiole. **Inflorescence** a suberect, flexuous, lax, successively single-flowered raceme, 5-7 cm long including the peduncle 2.5-3 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 2 mm long; ovary 2.25 mm long; flowers bilabiate; **sepals** glabrous, cellular within, connate basally to the synsepal for 1-2 mm, the lateral sepals yellow, connate into a broadly ovoid, deeply concave synsepal with recurved margins, 6 mm long, 4.5 mm wide unexpanded, 9 mm wide expanded, multiveined; **petals** purple, semilunate, with the apex broadly rounded, cellular, thickened across the center, concave above the base, 1.2 mm long, 1.6 mm wide, 3-veined; **lip** purple, more or less discoid, thick, 0.75 mm long, 1.2 mm wide, 1 mm deep, the anterior surface slightly convex, the apex broadly rounded with the margin, ill-defined, cellular, the dorsum narrow with a single, pubescent, central callus, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 1.3 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipe: along Río Zamora west of Zamora, alt. 950 m, 20 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11949 (Holotype: MO); south of Zamora toward Zumba, alt. 1100 m, 3 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12604 (MO); near Chicaña north of Yanzatza, alt. ca. 1300 m, 6 Mar. 1990, S. Dalström & L. Årby 1460 (MO).

Napo: Cosanga, alt. 2000 m, Feb. 1984, A. Hirtz 1530 (MO).

Morona-Santiago: Río Urpano north of Macas, alt. 1100 m, 15 Jan. 1989, C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 13919 (MO); Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 17 Jan. 1989, C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 13975 (MO).

The sepals of this little species are basically similar to many others in section *Humboldtia*: a broad dorsal sepal standing erect over a concave synsepal. It is related to the larger *S. tessmannii* from Peru, and the smaller, densely flowered *S.*

nana of Ecuador. The raceme of *S. embreei* is lax and fractiflex, about as long as the leaf; the dorsal sepal is incompletely 7-veined; the petals are thickened and semilunate; and the lip is discoid, not convex, with the apex rounded, and with the base truncate with a pubescent callus.

16. *Stelis fissurata* Luer & Hirtz, sp. nov.

Ety.: From the Latin *fissuratus*, "fissured," referring to the lip.

Inter species sect. *Humboldtia* (Ruiz & Pav.) Pers., planta floribusque parvis, foliis angustis racemo disticho brevioribus, sepalis intus pubescentibus, petalorum marginibus incrassatis minute verrucosis, et labello subquadrato marginibus lateralibus obtuse angulatis ad medium profunde fissurato cum callo superne pubescenti.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-5 cm long, enclosed by a tubular sheath from below the middle and another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 2-7 cm long including an indistinct petiole ca. 1 cm long, the blade 4-6 mm wide, gradually narrowed below into the petiole. **Inflorescence** an erect, subdense, distichous, several-flowered raceme with most flowers in two ranks open simultaneously, 6-9 cm long including the peduncle ca. 1 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, 2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers bilabiate, perpendicular to the rachis; **sepals** rose to purple, glabrous externally, shortly pubescent within, the dorsal sepal erect, oblong, obtuse, convex, 3.6 mm long, 2 mm wide, 3-veined, connate less than 1 mm to the synsepal, the lateral sepals connate into an ovoid, deeply concave synsepal, 2.5 mm long, 4 mm wide expanded, 2 mm wide unexpanded, 8-veined; **petals** transversely ovate-flabellate, concave, 0.8 mm long, 1.2 mm wide, the margins thick, minutely verrucose, the base broadly truncate; **lip** thick, subquadrate, narrowly rounded at the apex, with the lateral margins obtusely angled, 0.9 mm long, 0.9 mm wide, 0.9 mm deep, the anterior surface deeply fissured, the dorsum with a round, pubescent callus, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long, the foot obsolescent, the anther and the bilobed stigma apical.

Carchi: above Maldonado toward Río La Plata, alt. 2200 m, 11 Jan. 1993, A. Hirtz 5869 (Holotype: MO), C. Luer illustr. 19477; plateau above Chical, alt. 1800 m, A. Hirtz 5857 (MO).

This species of section *Humboldtia* is apparently restricted to wet forests of northwesternmost Ecuador. It is distinguished by the small, caespitose habit; narrowly elliptical leaves; a several-flowered raceme of small flowers perpendicular to the rachis in opposite ranks; sepals pubescent within; and a subquadrate lip with obtuse, lateral margins, and a deep central fissure.

17. *Stelis flava* Luer & Hirtz, sp. nov.

Ety.: From the Latin *flavus*, "yellow," for the color of the flowers.

Inter species sect. *Humboldtiae*, planta grandis, racemo robusto grandifloro folio elliptico magno petiolato longiore, sepalis flavis multinervis, sepalo dorsali ovato subacuto, synsepalo obtuso, petalis crassissimis lunatis, et labello suboblongo ad dorsum tricalloso distinguitur.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 8-15 cm long, with a loose, tubular sheath from below the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, long-petiolate, 10-15 cm long including the petiole 2-2.5 cm long, the blade 2.7-3.3 cm wide, cuneate below into the petiole. **Inflorescence** an erect, loose, distichous, many-flowered raceme with many flowers open simultaneously, to 24 cm long including the peduncle ca. 7 cm long, with a spathe 1.5-2 cm long, at an annulus below the apex of the ramicaul; floral bracts tubular, oblique, 2-3 mm long; pedicels 1-1.5 mm long; ovary 3 mm long; **sepals** yellow, the dorsal sepal elliptical-ovate, subacute, 15 mm long, 7 mm wide, 5(7)-veined, connate to the synsepal for 2 mm, the lateral sepals connate into a concave, broadly ovate synsepal, 11.5 mm long, 11 mm wide, 10-veined; **petals** yellow, transversely semilunate, overlapping above the column, 1.2 mm long, 2.3 mm wide, 3-veined, with the margin fleshy thickened, broadly rounded, concave basally below a sharp, broad, transverse callus; **lip** yellow, thickly suboblong, the apex broadly rounded, subretuse, 1 mm long, 1.3 mm wide, 0.7 mm deep, the anterior surface shallowly concave, the bar with a slender glenion, the dorsum concave with 3 calli, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Carchi: between Maldonado and Chical, alt. 1300 m, May 1992, A. Hirtz 5784 (Holotype: MO), C. Luer illustr. 20063.

This large species, from a relatively low altitude in northwesternmost Ecuador is similar to the vegetatively larger *S. titanica* from much higher altitudes. The flowers are large and yellow with the elliptical dorsal sepal erect above the concave synsepal. Most remarkable are the large, thickly fleshy petals that overlap above the column and meet below under the labellum. The lip is transverse with a slender glenion, and concave dorsally with three calli.

18. *Stelis flexilis* Luer & Hirtz, sp. nov.

Ety.: From the Latin *flexilis*, "flexuous," referring to the rachis.

Inter species sect. *Humboldtiae* planta perparva, racemo laxo flexuoso successivo folio elliptico petiolato multilongiore, synsepalo profunde concavo, petalis transversis tenuis concavis et labello ovoideo apice rotundo distinguitur.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-6 mm long, enclosed by two close, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, petiolate, 12-20 mm long including the petiole 3-5 mm long, the blade 3-4 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, flexible, flexuous, many-flowered raceme with 2-3 flowers open simultaneously, to 10 cm long including the peduncle 3-4 cm long, from an annulus below the apex of the ramicaul, with an insignificant spathe; floral bracts oblique, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; flowers purple, bilabiate; **sepals** glabrous, the dorsal sepal erect, ovate, obtuse, slightly concave, 3.5 mm long, 3 mm wide, 3-veined, connate 1 mm basally to the synsepal, the lateral sepals connate into a broadly or transversely ovate, deeply concave synsepal with an obtuse mentum below the column-foot, 3 mm long, 4 mm wide expanded, 6-veined; **petals** relatively thin, transversely oblong, shallowly concave, the apex broadly rounded, 0.6 mm long, 1 mm wide, 3-veined; **lip** thick, subquadrate, 0.3 mm long, 0.6 mm wide, 0.5 mm deep, the apex rounded with the margin thickened, the bar slightly higher than the sides, with 3 obscure, longitudinal calli, with a minute glenion on the margin, the dorsum with a single, rounded callus, microscopically pubescent, the base truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipe: Cordillera del Condor, east of Paquisha, alt. 1200 m, 19 Feb. 1985, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11929 (Holotype: MO).

This tiny, caespitose species of section *Humboldtia* is known from the Cordillera del Condor. The habit is similar to that of many species of *Acostaea*, *Platystele*, or *Pleurothallis*. It is distinguished by a thin, flexuous, loosely flowered raceme that eventually far surpasses the leaves, but only two or three flowers mature simultaneously. The lateral sepals are connate to the apex into a deep, funnel-shaped synsepal with a broad mentum below the lip. The petals are relatively thin and shallowly concave. The thickly subquadrate lip is shallowly concave and rounded at the apex, with a rounded callus on the dorsum.

19. *Stelis florianii* Luer, sp. nov.

Ety.: Named in honor of Florian Werner who collected this species.

Species haec *S. dactylopterae* Rchb.f. affinis, sed petalorum cristis minoribus et labello alato-trilobum cum callo erecto bifido distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-9 mm long, enclosed by two tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, petiolate, 10-35 mm long including a petiole 3-10 mm long, the blade 5-9 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a lax, several-flowered raceme, more or less erect, 3-5 cm long including the slender peduncle 1-2 cm long, 2-3 flowers open simultaneously, from below the apex of the ramicaul; floral bracts infundibular, obtuse, 2 mm long, 2 mm wide; pedicels 1 mm long; ovary 1.5 mm long; flowers translucent white, bilabiate; **sepals** glabrous, the dorsal sepal erect, broadly ovate or orbicular, obtuse, connate 1.5 mm basally to the synsepal, 5.5-6 mm long, 5-6 mm wide, 5-veined, the lateral sepals connate into a deeply concave, ovoid synsepal, 5-6 mm long, 6-7 mm wide, 6-veined; **petals** crystalline-denticulate, 2 mm long including the fringe, 2 mm wide, 3-veined, shallowly concave below the transverse callus; transversely carinate externally; **lip** white, subdiscoid with oblong, basal lobes, 0.3 mm long, 2.6 mm wide across the lobes, 1 mm deep, shallowly concave anteriorly with the apex rounded, the

margin indistinctly thickened, the bar with an erect, bifid, conical callus, the dorsum with a small, rounded, pubescent callus, the base reflexed, truncate, hinged to the base of the column; **column** clavate with stigmatic arms, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the 2-armed stigma apical.

Zamora-Chinchi: San Francisco Biological Station between Loja and Zamora, alt. 2200 m, 27 Jan. 2000, *F. Werner 218* (Holotype: MO), *C. Luer* illustr. 20051.

Apparently rare, this species is known only from the original collection in southern Ecuador. It is closely allied to the relatively frequent *S. dactyloptera*, but differs in having smaller, white flowers borne successively in a suberect raceme. The crest of the petals is proportionately smaller than that of *S. dactyloptera*. Instead of orbicular, the lip is trilobed with the oblong, basal lobes overlying the basal half of the petals. Centrally, an erect, grooved callus reaches behind the rostellum positioned above.

20. *Stelis galeola* Luer & Hirtz, sp. nov.

Ety.: From the Latin *galeola*, "a bucket shaped like a helmet," referring to the concave synsepal.

Inter species sect. *Humboldtiae*, habitu parvo, foliis spathulatis minute verrucosis, racemo elongato successivo flexibilis flexuoso, synsepalo profunde concavo distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5-8 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, smooth beneath with the dorsum minutely verrucose, spatulate, unguiculate, obtuse to rounded, 15-20 mm long including a petiole 4-6 mm long, the blade 5-8.5 mm wide, cuneate below into the petiole. **Inflorescence** a lax, flexible, flexuous, successively flowered raceme 3-12 cm long, including the peduncle ca. 3 cm long, with 1 or 2 flowers open simultaneously, from an annulus below the apex of the ramicaul; floral bracts infundibular, obtuse, 1-1.5 mm long; pedicels 0.75 mm long; ovary 1 mm long; flowers non-resupinate in pendent position; **sepals** glabrous, the middle sepal purple, convex, ovate, obtuse, 6 mm long, 5.5 mm wide, 3-veined, connate basally to the synsepal for 1 mm, the lateral sepals connate into an ovoid, obtuse, deeply concave synsepal, dark purple on outer third, pale green on inner 2-thirds, 6 mm long, 6 mm wide unexpanded, 6-veined; **petals** transversely ovate, with the apex broadly rounded, thickened, crystalline-cellular, thickened across the center, concave above the base, 0.8 mm long, 1.4 mm wide, 3-veined; **lip** thickly triangular, 0.5 mm long, 0.9 mm wide, 0.6 mm deep, the bar taller than the sides, with a narrow glenion, the apical margin thick and rounded, shallowly concave above, the dorsum with a low, rounded, pubescent callus at the base, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed, stalked stigma apical.

Zamora-Chinchi: Cordillera del Condor, forest east of Mayaycu, alt. 1200 m, 20 May 1989, *C. Luer, A. Hirtz, W. Flores, A. Andreea & W. Teague 13496* (Holotype: MO).

This small species of section *Humboldtia*, apparently endemic in lowland, eastern Ecuador, is distinguished by the small, caespitose habit with spatulate leaves that are minutely verrucose on the dorsum. The raceme is flexuous and flexible, the flowers becoming pendent as the raceme lengthens. The synsepal is unusually deeply concave. The petals completely enclose the column and lip. The lip is characterized by a tall bar higher than the sides.

21. *Stelis luteria* Luer & Hirtz, sp. nov.

Ety.: From the Greek *louerion*, "a little bathtub," referring to the concave synsepal.

Species haec *S. purpureae* (Ruiz & Pav.) Willd., affinis, sed floribus majoribus intus pubescentibus, sepali dorsalis lateribus rotundis, synsepalo oblongo area centrale concava, petalis crassissimis et labelli apice rotundo distinguitur.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 11-16 cm long, enclosed by a tubular sheath on the middle third 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, subpetiolate, 10-13.5 cm long including a conduplicate petiole ca. 1 cm long, the blade 3-5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, successively many-flowered raceme with many flowers open simultaneously, 20-30 cm long including the peduncle 8-10 cm long, with a spathe 1.5 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, oblique, 4 mm long below to 2 mm long above; pedicels 3 mm long; ovary 3 mm long; flowers bilabiate, purple; **sepals** glabrous externally, shortly pubescent within, the dorsal sepal erect, oblong-

ovate, with the sides incurved, obtuse, 13 mm long, 5 mm wide, unexpanded, 7-veined, connate 2 mm to the synsepal, the lateral sepals connate into an oblong, bifid synsepal, 9 mm long, 7 mm wide, unexpanded, 8-veined, with a well-demarcated cavity in the center; **petals** purple, thickly reniform, cellular pubescent, with apex broadly rounded with ill-defined margin, 1.3 mm long, 2.25 mm wide, 3-veined; **lip** purple, subovoid, thick, 0.8 mm long, 1.25 mm wide, 1.1 mm deep, the bar shallowly concave anteriorly above the broadly rounded apex, with a superficial glenion, the dorsum with a low, broad callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: without specific locality, cultivated at Ecuagenera, 7 Mar. 2001, *C. Luer 19806* (Holotype: MO); new road between Mendez and Morona, alt. <1000 m, 19 Jan. 1989, *A. Hirtz, A. Andreea & S. Ortega 4131* (MO).

This distinctive species from southeastern Ecuador is characterized by a large habit with large, elliptical, subpetiolate leaves that are far surpassed by a many-flowered raceme. The purple, pubescent flowers are large and gaping with the margins of the erect dorsal sepal recurved. The center of the oblong synsepal is concave while the outer halves of both lateral sepals are convex; the petals are thick and reniform without transverse margins; and the lip is shallowly concave and rounded at the apex.

22. ***Stelis nycterina*** Luer & Hirtz, sp. nov.

Ety.: From the Greek *nykteris*, "a bat," referring to the ear-like petals.

Species haec *S. globiflorae* Rchb.f. affinis, sed petalis grandibus triangularibus subconduplicatis distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-10 mm long, enclosed by two tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, petiolate, 10-30 mm long including a petiole 5-10 mm long, the blade 6-8 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a lax or subdense, several-flowered raceme, more or less erect, 3-6 cm long including the slender peduncle 2-3 cm long, 2-3 flowers open simultaneously, from below the apex of the ramicaul; floral bracts infundibular, obtuse, 2 mm long, 2 mm wide; pedicels 1 mm long; ovary 1 mm long; flowers translucent purple, bilabiate, **sepals** glabrous, the dorsal sepal erect, broadly ovate or orbicular, obtuse, connate 1.5 mm basally to the synsepal, 7 mm long, 5.5 mm wide, 3-veined, the lateral sepals connate into a deeply concave, ovoid synsepal, 5 mm long, 7 mm wide, 6-veined; **petals** purple, 1 mm wide at the base, 3-veined, shallowly concave with the margins incurved and irregular, 2.5 mm long, 1.5 mm wide at the base, 1 mm deep, shallowly concave anteriorly with the apex rounded, the margin thickened, the bar with an erect, bifid margin, the dorsum with an erect, rounded, pubescent callus, the base reflexed, truncate, hinged to the base of the column; **column** clavate with short, stigmatic arms, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the 2-armed stigma apical.

Morona-Santiago: near Limón, cultivated at Ecuagenera, 7 Mar. 2001, *C. Luer 19853* (Holotype: MO).

This species is known only from the original collection in southeastern Ecuador. It is closely allied to *S. globiflora*, being somewhere between it and *S. dactyloptera* and *S. florianii*. All four species are characterized by modifications of the inner margin of the apex of the petals. It is dilated and rounded in *S. globiflora*, triangular and acute in *S. nycterina*, and fringed in *S. dactyloptera* and *S. florianii*.

As with the others, the lip of *S. nycterina* is shallowly discoid with a tall, notched bar and a round callus on the dorsum.

23. ***Stelis parvipetala*** Luer & Hirtz, sp. nov.

Ety.: From the Latin *parvipetalus*, "with small petals," referring to those floral parts.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed racemo folio acuto multilongiore, sepalo dorsali plus minusve reflecto, petalis parvis partiale post labellum, et labello crasso protuberanti bitumido differt.

Plant medium in size to large, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 10-17 cm long, enclosed by a close, tubular sheath along middle third, and 2-3 below at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 9-11 cm long including a petiole 2-2.5 cm

long, the blade 1.3-1.8 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subdense, distichous, simultaneously many-flowered raceme, 20-30 cm long including the peduncle 3-5 cm long, with a spathe ca. 1 cm long; floral bracts infundibular, oblique, acute, 4 mm long, 4 mm wide; pedicels 2 mm long; ovary 3 mm long; **sepals** light yellow suffused with purple, to dark purple, glabrous, the dorsal sepal more or less reflexed from the base, broadly ovate, obtuse, 9 mm long, 6 mm wide, 5-(7)-veined, connate basally to the synsepal for 1 mm, the lateral sepals connate into a transversely ovoid, concave synsepal, 7 mm long, 9 mm wide, 5 mm deep, ca. 12-veined; **petals** white to purple, transversely ovate, shallowly concave, with the apex broadly rounded, thickened, with an indistinct margin, 0.5 mm long, 1.25 mm wide, 3-veined; **lip** purple, protuberant, thickly subovoid, 1 mm long, 1.25 mm wide, 1 mm deep, shallowly concave anteriorly with the rounded apex thickened, the margin of the bar with a small glenion between a pair of swellings, the dorsum with a low, central, trilobed callus, the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, the anther and the bilobed stigma apical, the foot obsolescent.

Morona-Santiago: forest between Gualaceo and Limón, alt. 2150 m, 14 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, P. & A. Jesup & S. Ortega 13893* (Holotype: MO); same data, flowers of different color, *C. Luer et al. 13891* (MO).

This species of section *Humboldtia* is characterized by a slender, densely caespitose habit with ramicauls longer than long-petiolate, acute, elliptical leaves. The raceme far exceeds the leaf. The erect dorsal sepal sometimes reflexes above the base. The synsepal is deeply concave with a chin protruding posteriorly. Within, the floral parts are proportionately small, especially the petals that are partially behind a twice larger, protruding lip with a bitumid bar and a central glenion.

24. *Stelis patens* Luer & Hirtz, sp. nov.

Etymology: From the Latin *patens*, "open, gaping," referring to the flowers.

Inter species sect. *Humboldtiae* planta parva, racemo laxe plurifloro folio elliptico petiolato plus minusve duplolongiore, sepalo dorsali late ovato quinque-nervato synsepalo ovoideo, petalis semilunatis ad apicem incrassatis ad basim concavis et labello ovoideo apice rotundo distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-2.5 cm long, enclosed by two loose, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, petiolate, 2-4 cm long including the petiole 0.5-1 cm long, the blade 0.5-1 cm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, erect to suberect, several-flowered raceme with 3-4 flowers open simultaneously, 6-13 cm long including the peduncle 3-4 cm long, from an annulus below the apex of the ramicaul, with an insignificant spathe; floral bracts oblique, inflated, 2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers bilabiate; **sepals** translucent purple, glabrous, the dorsal sepal erect, ovate, obtuse, 5.5 mm long, 4.5 mm wide, 5-veined, connate 1.5 mm basally to the synsepal, the lateral sepals connate into a broadly ovate, concave synsepal, 5.5 mm long, 5 mm wide, 8-veined; **petals** green, semilunate, the rounded apical margin thick, well demarcated, shallowly concave basally below the transverse callus, 1 mm long, 1.5 mm wide, 3-veined; **lip** green, thick, triangular-subquadrate, 0.5 mm long, 1 mm wide, 0.75 mm deep, the apex rounded with the margin thickened, the bar very shallowly concave anteriorly, slightly higher than the sides, with a superficial glenion, the dorsum with a single, rounded callus, microscopically pubescent, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: west of Macas, new road to Guamote, junction of Río Colombo and Río Upano, alt. 1600 m, 1 Mar. 2001, *C. Luer, J. Luer & A. Hirtz 19592* (Holotype: MO); north of Gualaquiza toward San Juan Bosco, alt. 1250 m, 27 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10976* (MO); Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 17 Jan. 1989, *C. Luer, J. Luer, A. Hirtz et al. 13974* (MO).

Napo: Río Jatunyacu, above Shandia, alt. 650 m, 12 Aug. 1991, *A. Hirtz & S. Ortega 5375* (Holotype: MO), *C. Luer* illustr. 20059; west of near Tena, collected by *C. Luer et al.* 26 July 1975, cultivated at SEL, Jan. 1976, *C. Luer 371, 1043* (SEL); west of Tena, Río Jatunyacu, alt. 600 m, 21 Feb. 1982, *C. Luer & A. Hirtz 6909* (SEL);

Tungurahua: Río San Francisco between Baños and Puyo, alt. 1700 m, 16 Feb. 1963, *C.H. Dodson & L.B. Thien 2264* (SEL).

Zamora-Chinchipe: Cordillera del Condor, east of Paquisha, alt. 1200 m, 23 Jan. 1992, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16122* (MO).

This small species of section *Humboldtia* occurs frequently on the eastern declivity of the Andes of Ecuador at relatively low altitudes. The caespitose habit of elliptical leaves borne by short ramicauls is similar to that of many other species of

the genus as well as many species of *Pleurothallis*. It is characterized by a loose, several-flowered raceme of resupinate flowers about twice as long as the leaves. The dorsal sepal is ovate, obtuse and five-veined. The lateral sepals are connate to the apex into a concave synsepal. The petals are semilunate with a broad, thick margin; the lip is subtriangular, shallowly concave and rounded at the apex, with a relatively large, rounded callus on the dorsum.

25. *Stelis patinaria* Luer & Hirtz, sp. nov.

Ety.: From the Latin *patinarius*, "of a shallow pan," referring to the synsepal.

Species haec *S. purpureae* (Ruiz & Pav.) Willd., affinis, sed floribus plusminusve planis ringentibus, synsepalo transverso minime profundo, petalis proportione grandibus crescentiformis, et labello proportione parvo latissimoque ad dorsum tricalloso distinguitur.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 2-15 cm long, enclosed by a loose, tubular sheath on the middle third and 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 4-13 cm long including the petiole 1-2.5 cm long, the blade 1-3 cm wide, cuneate or contracted below into the petiole. **Inflorescence** an erect, subcongested, distichous, many-flowered raceme with many flowers open simultaneously, 15-18 cm long including the peduncle 3-5 cm long, with a spathe 0.5-1.5 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 6-9 mm long below to 3-4 mm long above; pedicels 2 mm long; ovary 2 mm long; flowers purple, non-resupinate, bilabiate; **sepals** glabrous, the dorsal sepal triangular-ovate, obtuse, 5-7 mm long, 5-6 mm wide, 5-veined (sometimes with accessory veins), connate 2 mm to the synsepal, the lateral sepals connate into a transversely ovate, shallowly concave synsepal, 4-6 mm long, 6-8 mm wide, 8-veined; **petals** semilunate, with the ends meeting above the column and below the lip, 1.5 mm long, 2-2.3 mm wide, 3-veined, concave below the thickened, broadly rounded apex, and concave basally below the transverse callus; **lip** transversely oblong-triangular, 0.75 mm long, 1.5-1.75 mm wide, 0.6 mm deep, the apex broadly rounded, the bar shallowly concave with a minute glenion, the dorsum with 3 rounded calli, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1.75 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: between Gualaceo and San Juan Bosco, alt. 1850 m, 28 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10991 (Holotype: MO).

Napo: El Chaco, alt. 1800 m, 5 Oct. 1984, A. Hirtz & A. Andreetta 1953 (MO), C. Luer illustr. 20047.

Zamora-Chinchi: Cajanuma range, south of Loja, alt. 2500 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10768 (MO); between Loja and Zamora, flowered in cultivation at Ecuagenera, Gualaceo, 7 Mar. 2001, C. Luer 19816 (MO).

This species is distinguished from the other members of the section *Humboldtia* by middle-sized, flat, gaping flowers with a transverse, shallowly concave synsepal that gives the flower an appearance similar to section *Stelis*. Vegetatively, the species are variable with broad, petiolate leaves of various sizes and shapes. The ramicauls bear a tubular sheath on or above the middle third. The floral bracts are elongate and narrowly acute. The dorsal sepal is five-veined, but inconstant accessory veins sometimes increase the number to nine. The ends of the thickly semilunate petals meet above the column and below the lip. The lip is transverse and broadly rounded with three calli on the dorsum.

26. *Stelis platypetala* Luer & Dalström, sp. nov.

Ety.: From the Latin *platypetalus*, "bearing wide petals," referring to the broad, flat petals.

Inter species sect. *Humboldtiae* planta mediocris caespitosa, racemo multifloro folio oblongo longiore, sepalo dorsali late ovato, synsepalo profunde concavo, petalis grandibus suborbicularibus planis, labello triangulari arguto distinguitur.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, stout, 2.5-4 cm long, enclosed by a tubular sheath and another 1-2 at the base. **Leaf** erect, coriaceous, elliptical-oblong, obtuse, petiolate, 5-9.5 cm long including a petiole 1-1.5 cm long, the blade 1.8-2.3 cm wide, cuneate below into the petiole. **Inflorescence** an erect, arching, congested, many-flowered raceme 12-20 cm long including the peduncle 3-5 cm long, with most flowers open simultaneously, from an annulus below

the apex of the ramicaul; floral bracts tubular, obtuse, 3 mm long; pedicels 2 mm long; ovary 2 mm long; **sepals** glabrous, the dorsal sepal purple, broadly ovate, obtuse, 8 mm long, 7.5 mm wide, 5-veined, connate 3 mm to the synsepal, the lateral sepals yellow, connate into a deeply concave synsepal, 6 mm long, 9.5 mm wide, 8-veined; **petals** purple, broadly ovate-suborbicular, with the surface flat, cellular, 1.6 mm long, 2 mm wide, 3-veined, narrowly concave at the base; **lip** purple, thickly triangular, 1 mm long, 1 mm wide, 1 mm deep, shallowly concave anteriorly with the apex acute with an acute apiculum, the margin of the bar level with the sides, with a minute, bilobed glenion, the dorsum with 3 rounded calli, the base truncate, hinged to an obsolescent column-foot; **column** stout, 1 mm long, 1.2 mm wide, with the anther and the bilobed stigma apical.

El Oro: north of Salvias, alt. 2000 m, 4 Feb. 1993, *S. Dalström & T. Höijer 1835* (Holotype: MO), *C. Luer* illustr. 20061. **Pichincha:** new road between Quito and Santo Domingo, alt. 2000 m, 2 Feb. 1978, *C. Luer, J. Luer & A. Hirtz 2434* (SEL).

This species of section *Humboldtia* is apparently endemic in southwestern Ecuador. It is characterized by the densely caespitose habit and a densely many-flowered raceme surpassing an oblong leaf. The dorsal sepal is broadly ovate and the synsepal is deeply concave. The petals are proportionately large, round and flat. The apex of the lip is sharply acute.

27. *Stelis preclara* Luer & Hirtz, sp. nov.

Ety.: From the Latin *preclarus*, "very pretty," referring to the flowering plant.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed folio grandi elliptico abrupte longipetiolato, sepalo dorsali suborbiculari 9-nervato, synsepalo profunde concavo, petalis crassis semilunatis et labello antice concavo differt.

Plant large, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 8-15 cm long, with a close, tubular sheath above the middle and 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, large, short-petiolate, the blade 8-10 cm long, 4-5 cm wide, abruptly contracted below into a stout petiole ca. 1.5 cm long. **Inflorescence** an erect, congested, distichous, many-flowered raceme with many flowers open simultaneously, 15-18 cm long including the peduncle ca. 10 cm long, with a spathe 2 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, 4 mm long; pedicels 3 mm long; ovary 2.5 mm long; flowers purple; **sepals** glabrous externally, minutely pubescent within, the dorsal sepal erect, broadly ovate, obtuse to rounded at the apex, 9 mm long, 8 mm wide, 9-veined, connate 2 mm basally to the synsepal, the lateral sepals connate into a deeply concave synsepal with a mentum below the lip, 7 mm long, 9 mm wide, 10-veined; **petals** transversely semilunate, 1.2 mm long, 2 mm wide, 3-veined, apex thick, broadly rounded, shallowly concave basally below the transverse callus; **lip** thick, subtriangular, 1 mm long, 1.5 mm wide, 1.25 mm deep, concave anteriorly above the subacute apex, the margin of the bar higher than the lateral margins of the lip, with a long, narrow glenion, the dorsum mostly filled with a tripartite callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.25 mm wide, the foot obsolescent, the anther and bilobed stigma apical.

Tungurahua: slopes of Volcán Tungurahua, alt. 2400 m, Dec. 1983, *A. Hirtz 1475* (Holotype: MO), *C. Luer* illustr. 20064.

This member of the *S. purpurea* alliance is distinguished by the large habit; large, elliptical, abruptly petiolate leaves; and a congested raceme of relatively large, purple flowers produced in two ranks. The dorsal sepal is broadly elliptical to suborbicular with nine veins; the synsepal is deeply concave with a mentum. The petals are semilunate; the lip is triangular, subacute and concave with a narrow glenion.

28. *Stelis regina* Luer & Hirtz, sp. nov.

Ety.: From the Latin *regina*, "the queen," referring to the size and elegance of the flowers.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed floribus multimajoribus, petalis grandis subreniformibus et labello proportione parvo differt.

Plant large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 13-20 cm long, enclosed by a loose, tubular sheath near the middle and 2-3 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, petiolate, with the apex acute to subacute, 10-14 cm long including the petiole 2-2.5 cm long, the blade 2.5-3.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, distichous, loose, several-flowered raceme with most flowers open simultaneously, 15-18 cm long including the peduncle

ca. 5 cm long, subtended by a slender spathe ca. 2 cm long, from an annulus below the apex of the ramicaul; floral bracts inflated, infundibular, oblique, acute, 5-6 mm long; pedicels 3-4 mm long; ovary 4 mm long; flowers nutant, bilabiate; **sepals** white, suffused with pink, glabrous, the dorsal sepal erect, ovate-triangular, subacute, 13 mm long, 10 mm wide, with 7 primary veins and ca. 4 accessory veins, connate to the synsepal for 3 mm, the lateral sepals connate into a broadly ovate, deeply concave synsepal, 11 mm long, 13 mm wide unexpanded, 10-(15-)veined; **petals** light yellow, transversely oblong, 2 mm long, 2.2 mm wide, concave at the base, the apex broadly rounded, subreniform, thickened; **lip** light yellow, thick, subquadrate, 1 mm long, 1.8 mm wide, 1.5 mm deep, the apex broadly rounded, with the margins only slightly thickened, shallowly concave anteriorly with a small, narrow, glenion, the dorsum with a low, rounded callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Carchi: plateau above Chical, alt. 1800 m, 11 Jan. 1993, A. Hirtz 5850 (Holotype: MO), C. Luer illustr. 19473.

This species was discovered in wet, relatively lowland of northwestern Ecuador. It is similar to the widely distributed and frequent *S. purpurea*, but the ramicauls are more slender, and the racemes of much larger flowers are shorter and more loosely flowered. The sepals are white, suffused with pink, the dorsal being 13 millimeters long, and the deeply concave synsepal being 11 millimeters long. The petals are large and broad, and the lip is proportionately small.

29. *Stelis repanda* Luer & Hirtz, sp. nov.

Ety.: From the Latin *repandus*, "repand," referring to the uneven, wavy margin of the floral bracts.

Planta grandis, racemo folio elliptico multilongiore, bracteis floralibus elongatis membranaceis repandis, sepalo dorsali ovato anguste obtuso, sepalis lateralibus semiconnatis synsepalum formantis, petalis semilunatis et labello subquadrato obtuso superne tricalloso distinguitur.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-12 cm long, enclosed by a tubular sheath through the middle and 2-3 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, petiolate, subacute to obtuse, 7-10 cm long including the petiole 1.5-2 cm long, the blade 1.5-2.2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, distichous, subdense, successively many-flowered raceme with 3-4 flowers open simultaneously, 15-20 cm long including the peduncle ca. 8 cm long, with long, undulate bracts, subtended by a slender spathe 1-1.2 cm long, from an annulus below the apex of the ramicaul; floral bracts membranous, oblique, acute, ca. 8 mm long, progressively shorter at the tip; pedicels 2 mm long; ovary 2 mm long; **sepals** dull purple, glabrous, the dorsal sepal erect, ovate, narrowly obtuse or subacute, 4 mm long, 3.5 mm wide, 3-veined, with the margins recurved, connate to the synsepal for 1 mm, the lateral sepals oblique, ovate, obtuse, 3 mm long, connate into a broadly ovate, shallowly concave synsepal, 3 mm wide, with the apices adjacent; **petals** green, transversely semilunate, 1 mm long, 2 mm wide, concave at the base, the apex broadly rounded with the margin thickened; **lip** green, thick, subquadrate, 0.8 mm long, 1.3 mm wide, 0.8 mm deep, thickened into low calli, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.3 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinipe: east of the pass east of Loja, alt. 2150 m, 26 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10957 (Holotype: MO); south of Yangana above Valladolid, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10933 (MO). Without locality, collected by Mario Portillo, cultivated at *Hosteria Uzhupud*, 25 May 1988, C. Luer 13669 (MO).

This species occurs in the mountains of southern Ecuador. It is characterized by a many-flowered, distichous raceme that far exceeds the leaf. The floral bracts are long and membranous, and clasp the rachis with undulating margins. The flowers are held obliquely non-resupinate. The dorsal sepal is ovate and the lateral sepals are connivent into a shallow, suborbicular synsepal. The petals are semilunate, and the lip has a round apex and a tricalloous dorsum.

30. *Stelis rosamariae* Luer & Hirtz, sp. nov.

Ety.: Named for Rosemary Zloch, presently of Quito, Ecuador, co-collector of this species.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed bracteis floralibus late inflatis conspicio, sepalo dorsali plus minusve 7-nervato, synsepalo mentoso, petalis crassis cum callo conico, et labello crasso calloso differt.

Plant medium or large in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-20 cm long, the middle third enclosed by a tubular sheath, and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to acute, petiolate, 6-13 cm long including a petiole 1.5-2 cm long, the blade 1-2.5 cm wide, cuneate below into the petiole. **Inflorescence** 1 or 2 erect, subcongested, distichous, many-flowered racemes, most flowers open simultaneously, 10-20 cm long including the peduncle 1-5 cm long, with a spathe 6-10 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, widely inflated, 5-7 mm long, 4-5 mm wide; pedicels 2 mm long; ovary 4-5 mm long; **sepals** light brown, glabrous externally, cellular-glandular within, the dorsal sepal broadly ovate, obtuse, 10 mm long, 8 mm wide, incompletely 7- to 9-veined, connate basally to the synsepal for 2 mm, the lateral sepals connate except for the distal 2-3 mm into an ovoid, concave synsepal, 9 mm long, 10 mm wide unexpanded, 10-veined, with a broad mentum; **petals** light green, thick, transversely semi-lunate, 1.5 mm long, 2 mm wide, 3-veined, the broad, rounded apex with a low, conical swelling on the middle of the margin, concave basally below a transverse callus; **lip** thickly triangular, 1 mm long, 1.4 mm wide, 1 mm deep, the anterior surface obtusely triangular, shallowly concave above a broad, marginal thickening, the bar with low rounded calli on either side of a shallow genion, the dorsum with a low, rounded callous, the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 1.5 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Tungurahua: between Lieto and Triunfo, alt. 2800-3000 m, 25 Aug. 2001, A. Hirtz, X. Hirtz, C. & P. Dodson, H. Zelenko & R. Zloch 7766 (Holotype: MO), C. Luer illustr. 20046; same area, Leito, alt. 3000 m, 12 Oct. 1984, A. Hirtz 1991 (MO); southeast of Patate, alt. 3070 m, 2 June 1971, B. MacBryde 407 (MO, SEL); Cordillera de los Llanganates, Leito, alt. 3100 m, 11 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11148 (MO).

Morona-Santiago: forest east of Sigsig, alt. 2750 m, 15 May 1988, C. Luer, A. Hirtz et al. 13329 (MO); between Gualaceo and Limón, alt. 2650 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11837 (MO); same area, alt. 2150 m, 14 Jan. 1989, C. Luer et al. 13889 (MO).

Azuay: 25 Km south of Cuenca, alt. ca. 3000 m, 12 Feb. 1978, C. Luer, J. Luer & M. Portilla 2650 (SEL).

Loja: road north of Loja, alt. 2900 m, 1 May 1973, L. Holm-Nielsen et al. 4648 (AAU, SEL); road to TV tower east of Yangana, alt. 2650 m, 4 Mar. 1982, C. Luer et al. 7136 (SEL); above Yangana, alt. 2600 m, 27 Jan. 1986, S. Dalström & T. Höjjer 1108 (MO).

Zamora-Chinchi: between Loja and Zamora, alt. 2800 m, 10 Mar. 1958, C.H. Dodson 215 (SEL); paramo above Valladolid, alt. 2300 m, 20 Jan. 1982, D. D'Alessandro 128 (SEL); east of the pass east of Loja, alt. 2600 m, 21 Jan. 1992, C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16066 (MO).

This species, widely distributed in southeastern Ecuador, has probably been included in the ubiquitous *S. purpurea*. Vegetatively, it is variable in size, but the leaves are acute and petiolate. The racemes vary greatly in length, but the bracts are more or less inflated. The flower is readily identified by the gibbous protrusion of the synsepal, and the conical swelling on the inner margin of the petals. The latter is sometimes nearly absent. The lip is also broad with a thick, obtuse apex. The bar is bicallous with a rounded dorsal callus.

31. *Stelis sanchezii* Luer & Hirtz, sp. nov.

Ety.: Named for Dr. Eduardo Sánchez of Cuenca, Ecuador, co-collector of this species.

Planta parva caespitosa, racemo flexuoso fractiflexo laxo successive multifloro folio elliptico multilongiore, sepalis latissime ovatis obtusis lateralibus ad medium connatis, petalis semilunatis truncatis et labello triangulari concavo distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, less than 1 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute, petiolate, 2.5-4 cm long including a petiole 0.7-1 cm long, the blade 0.7-0.9 cm wide, narrowly cuneate below into the petiole. **Inflorescence** a flexible, flexuous, lax, successively many-flowered raceme up to 18 cm long or longer including the peduncle 3-4 cm long, eventually becoming pendent, with 1-3 flowers open simultaneously, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2.5 mm long; pedicels 1 mm long; ovary 1.5 mm long; flowers suffused with purple; **sepals** incompletely expanded, glabrous, the dorsal sepal broadly ovate, obtuse, 5 mm long, 4 mm wide, 3-veined, connate 1 mm to the lateral sepals, the lateral sepals oblique, connate 1 mm into a shallowly concave, bifid synsepal, 3.5 mm long, each sepal 2.75 mm wide, obtuse; **petals** transversely obconate, the apex truncate with the margin thickened, 1 mm long, 1.75 mm wide, 1-veined, slightly thickened across the middle, shallowly concave below; **lip** thickly triangular, narrowly rounded at the apex, 0.75 mm long, 1 mm wide, 1 mm deep, concave anteriorly within the thick, apical margin, the bar prominent, the dorsum with a rounded, central callus, the base cuneate, hinged to the obsolescent column-foot; **column** stout, 1 mm long, 1 mm wide, with the anther and the bilobed stigma apical.

Morona-Santiago: between Cuenca and Plan de Milagro (Limón), alt. 2200 m, 7 Jan. 1995, A. Hirtz, X. Hirtz & E. Sanchez 6120 (Holotype: MO), C. Luer illustr. 20049; without collection data, cultivated at Ecuagenera, Gualaquero, 5 Mar. 2001, C. Luer 19723 (MO).

This species, known from southern Ecuador, is characterized by the small, caespitose habit; elliptical leaves borne by short ramicauls; and an elongating, arching to pendent, flexuous, distantly and successively flowered raceme. The sepals are broad and obtuse, the laterals semiconnate; the petals are truncate; and the lip is thickly triangular, concave anteriorly below a prominent transverse bar, and with a large, rounded callus on the dorsum.

32. *Stelis santiagoi* Luer & Hirtz, sp. nov.

Ety.: Named for Santiago Arévalo of Macas, Ecuador, who collected and cultivated this species.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed bracteis floralibus brevibus non-inflatis, synsepalo mentoso intus breviter pubescentibus, petalis semilunatis marginibus indistinctis, labello brevi bitumido antice subplano distinguitur.

Plant large, epiphytic, caespitose; roots slender. Ramicauls ascending-erect, stout, 12-15 cm long, enclosed by a loose, tubular sheath from below the middle, and another 2-3 sheaths about the base. **Leaf** erect, coriaceous, elliptical, acute, 12-15 cm long, 3-3.5 cm wide, cuneate below into a petiole less than 1 cm long. **Inflorescence** an erect, congested, distichous, simultaneously many-flowered raceme, 20-30 cm long including the peduncle 10-12 cm long, with a slender spathe 2 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, short, 3 mm long, 2 mm wide; pedicels 2 mm long; ovary curved, 3 mm long; flowers dark purple, **sepals** glabrous externally, the dorsal sepal cellular-glandular, narrowly ovoid with recurved sides, narrowly obtuse, 10 mm long, 5 mm wide, 7-veined, connate to the synsepal for 2 mm, the lateral sepals shortly pubescent within, connate into a broadly ovate, concave synsepal, 8 mm long, 7 mm wide unexpanded, 6-veined, with a shallow mentum; **petals** transversely semilunate, 1.1 mm long, 1.6 mm wide, 3-veined, the apex broadly rounded with the margin indistinct, minutely pubescent, shallowly concave basally; **lip** subquadrate-subtriangular, 0.5 mm long, 1.1 mm wide, 1 mm deep, the apex broadly rounded, the bar bitumid with a small glenion, the dorsum descending with a low, more or less three-lobed callus, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 1.2 mm wide, the foot obsolescent, the anther and the stigma apical, the stigma bilobed.

Morona-Santiago: Cordillera del Cutucú, east of Macas, alt. 800 m, collected by Santiago Arévalo in Macas, 20 Feb. 2001, C. Luer 19510 (Holotype: MO).

This striking species is large with long racemes of numerous dark purple flowers. The plant is densely caespitose with stout ramicauls bearing an equally long, acute, elliptical leaf far exceeded by a raceme of numerous flowers. Basically, the flowers are similar to those of *S. purpurea*. The synsepal is shallowly gibbous beneath the lip. The rounded margins of the petals are indistinct. The lip is short with the anterior surface plain, with only a barely perceptible pair of low calli within the broadly rounded margin.

33. *Stelis situlifera* Luer & Hirtz, sp. nov.

Ety.: From the Latin *situlifer*, "bearing a water bucket," referring to the deeply concave synsepal.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed racemo plurifloro folio elliptico plus minusve aequilongo, pedunculo gracili, bracteis floralibus acutis, sepalo dorsali obtuso plus minusve 7-nervato, synsepalo transverse profunde concavo, petalis crassis, et labello crasso callosio differt.

Plant medium or large in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 10-15 cm long, the upper half enclosed by a loose, tubular sheath, and the lower half by 2 shorter, loose sheaths. **Leaf** erect, coriaceous, elliptical, subacute to acute, petiolate, 13-16 cm long including a petiole 2-3 cm long, the blade 2.5-3.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, loose, distichous, several-flowered raceme, 1 flower open simultaneously, 12 cm long including the peduncle 4 cm long, with a spathe 12-15 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 7 mm long; pedicels 4-5 mm long; ovary 2.5 mm long; **sepals** green, suffused with purple, glabrous, the dorsal sepal broadly ovate, subacute to obtuse, 8 mm long, 7 mm wide, incompletely 7-veined, connate basally to the synsepal for 3 mm, the lateral sepals completely connate into a transverse, deeply concave, ovoid synsepal, 4.5 mm long, 8 mm wide unexpanded, 6 mm deep, 8-veined; **petals**

rose, thick, transversely semilunate, 1 mm long, 2 mm wide, 3-veined, the apex broadly rounded with the margin thickened, concave basally below a transverse callus; **lip** thickly quadrate-triangular, 0.8 mm long, 1.5 mm wide, 0.8 mm deep, the apex broadly rounded, the bar with an obscure glenion higher than the sides, the anterior surface barely, if at all, concave, the dorsum with a broad, low callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the foot obsolete, the anther and the bilobed stigma apical.

Loja: along the new road north of Loja, alt. 2600 m, 2 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12579 (Holotype: MO).

This relative of the frequent *S. purpurea* is known from the province of Loja in southern Ecuador. It is distinguished by a large, petiolate leaf as long as the ramicaul. The several-flowered raceme is more or less as long as the leaf. In the only collection known, the flowers appear to have been borne successively on a slender peduncle and rachis. The dorsal sepal stands erect and the synsepal is short, transverse and deep. The petals are not unusual. The lip is shallow without an obvious glenion.

34. *Stelis sumacoënsis* Luer & Hirtz, sp. nov.

Ety.: Named for Volcán Sumaco, near where the species was collected.

Species haec *S. dactylopterae* Rchb.f. affinis, sed sepalo dorsali trinervo, petalis integris uninervis, et labello cum callo transverso plano distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 6-10 mm long, enclosed by two, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, petiolate, 15-25 mm long including a petiole 8-10 mm long, the blade 5-7 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a lax, successively several-flowered raceme, more or less arching, to 10 cm long including the slender peduncle ca. 2 cm long, 2-3 flowers open simultaneously, from below the apex of the ramicaul; floral bracts infundibular, subacute, 2 mm long; pedicels 0.75 mm long; ovary 1.5 mm long; flowers translucent purple; **sepals** glabrous, the dorsal sepal erect, broadly ovate, obtuse, connate 1.5 mm basally to the synsepal, 5 mm long, 4 mm wide, 3-veined, the lateral sepals connate into a deeply concave, ovoid synsepal, 4.5 mm long, 5 mm wide, 6-veined; **petals** purple, cellular, transversely ovate or semilunate, concave below the thickened, rounded apex, 1 mm long, 1.4 mm wide, 1-veined, concave basally below the transverse callus; **lip** purple, subovoid, 0.4 mm long, 0.8 mm wide, 0.6 mm deep, shallowly concave anteriorly with the apex rounded, the margin indistinctly thickened, the bar with an oblong, elevated, channeled glenion, the dorsum with a rounded, pubescent callus, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the foot obsolete, the anther and the bilobed stigma apical.

Napo: Sumaco Volcano, Río Hollin, alt. 1200 m, 13 Aug. 1991, A. Hirtz & S. Ortega 5396 (Holotype: MO), C. Luer illustr. 20066.

This little species of section *Humboldtia* is characterized by a caespitose clump of narrowly obovate leaves that is practically indistinguishable from many others in the genus, as well as from many species in other genera, such as *Platystele* or *Pleurothallis*.

A loose, flexible, successively flowered raceme surpasses the leaves. With the weight of the flowers the raceme bends, eventually becoming pendent with non-resupinate flowers. The synsepal is deeply concave; the petals are thickly semilunate, concave below the apical margin, and concave below the transverse callus. The apex of the lip is round, and the glenion is elevated, narrowly oblong, and minutely channeled.

35. *Stelis velivolva* Luer & Hirtz, sp. nov.

Ety.: From the Latin *velivola*, "a sail boat," referring to the boat-like synsepal with a sail.

Species haec *S. purpureae* (Ruiz & Pav.) Willd. affinis, sed habitu minore, et synsepalo late profunde deque mentoso differt.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5-7 cm long, enclosed mostly by a loose, tubular sheath from the lower quarter, and another 1-2 sheaths at the

base. **Leaf** erect, coriaceous, elliptical, subacute to acute, petiolate, 5-6 cm long including a petiole 1-1.5 cm long, the blade 0.9-1.2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, distichous, subdensely many-flowered raceme, with many flowers open simultaneously, 7-9 cm long including the peduncle 2-3 cm long, with a spathe 6-7 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, inflated, 4 mm long; pedicels 2 mm long; ovary curved, 2.5 mm long; flowers nutant, bilabiate, dark red-purple; **sepals** glabrous externally, microscopically pubescent within, the dorsal sepal erect, ovate, obtuse, 8.5 mm long, 5.5 mm wide, incompletely 5- to 7-veined, connate basally to the synsepal for 1 mm, the lateral sepals connate into a broadly ovoid, deeply concave synsepal, abruptly concave below the central apparatus into a broad mentum, 6.5 mm long, 7.5 mm wide unexpanded, 8- to 10-veined; **petals** suborbicular, broadly semilunate, 1.25 mm long, 1.5 mm wide, 3-veined, the apex broadly rounded with the margin thick and flat, concave basally below the transverse callus; **lip** thickly subovoid, concave anteriorly above the thickly rounded apex, 0.75 mm long, 1.25 mm wide, 1 mm deep, the bar with low rounded calli on either side of a glenion, the dorsum with a low, rounded callous, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1.25 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchi: east of the pass east of Loja, alt. 2750 m, 20 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11974 (Holotype: MO).

Related to *S. purpurea* and its many allies, this species of southern Ecuador is distinguished from most of them by the small habit with a long, loose, tubular sheath covering the ramicaul. The raceme slightly exceeds the small, elliptical leaves. The floral parts are deep purple with the dorsal sepal and synsepal broadly ovate. The synsepal is deeply concave centrally into a broadly conical mentum. The petals are nearly orbicular with a slight protrusion of the inner margin of the flattened margin. The lip is ovoid and concave anteriorly above a thickened apex.

36. *Stelis vollesii* Luer & Dodson, sp. nov.

Ety.: Named for Hans Volles of Túquerres, Colombia, co-collector of this species.

Species haec *S. globiflorae* Rchb.f. affinis, sed floribus multiminoribus, petalis grandibus triangularibus acutissimis et labello longiore distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-4 cm long, enclosed by a tubular sheath and another at the base. **Leaf** erect, coriaceous, elliptical, petiolate, acute to subacute, 1.5-5 cm long including the petiole ca. 1 cm long, the blade 0.5-1 cm wide, cuneate below into the petiole. **Inflorescence** an erect to arching, loose, distichous, flexuous, successively many-flowered raceme with 2-3 flowers open simultaneously, 3-13 cm long including the peduncle 1-3 cm long, subtended by a spathe ca. 3 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1-1.5 mm long; ovary 1-1.5 mm long; flowers bilabiate, red-purple; **sepals** glabrous externally, microscopically pubescent within, the dorsal sepal erect, broadly elliptical, obtuse, 3 mm long, 2.6 mm wide, 3-veined, connate to the synsepal for 0.5 mm, the lateral sepals connate into a transversely ovate, shallowly concave synsepal, 2 mm long, 3 mm wide, 6-veined; **petals** triangular, acute, 1-1.2 mm long, 1-1.5 mm wide at the base, 3-veined, shallowly concave within thickened margins, transversely concave basally; **lip** thickly subtriangular, 0.6 mm long, 0.8 mm wide, 0.5 mm deep, the apex broadly rounded with thickened margin, shallowly concave before the bar, the bar higher than the sides and protuberant, with a small, slender glenion, the dorsum with a rounded callus, the base truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Esmeraldas: northwest of Cristal, northwest of Lita, alt. 1450 m, 13 Mar. 1991, C.H. Dodson, H. Volles & T. Neudecker 18609 (Holotype: MO).

Carchi: forested plateau above Chical, alt. 1800 m, 11 Jan. 1993, A. Hirtz 5853 (MO), C. Luer illustr. 20068.

This small species of sect. *Humboldtia* is apparently endemic in northwestern-most Ecuador. Closely allied to *S. globiflora*, it is distinguished from the latter by much smaller flowers, and large, sharply triangular petals. A loose, flexuous, successively flowered raceme eventually far surpasses the leaves. The dorsal sepal is broadly ovate while the shallowly concave synsepal is transversely ovate. The proportionately large petals are triangular and acute with thickened margins. The lip is ovoid with a broadly rounded apex, a thick, elevated bar and a single callus on the dorsum.

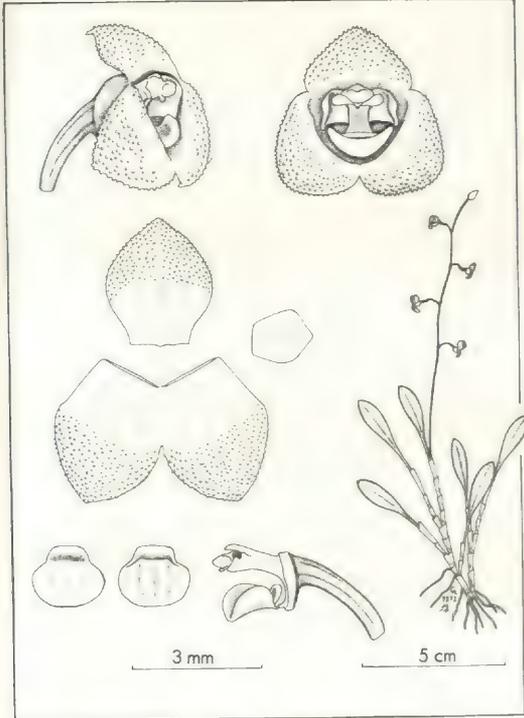


Fig. 1. *Stelis hirtzii*

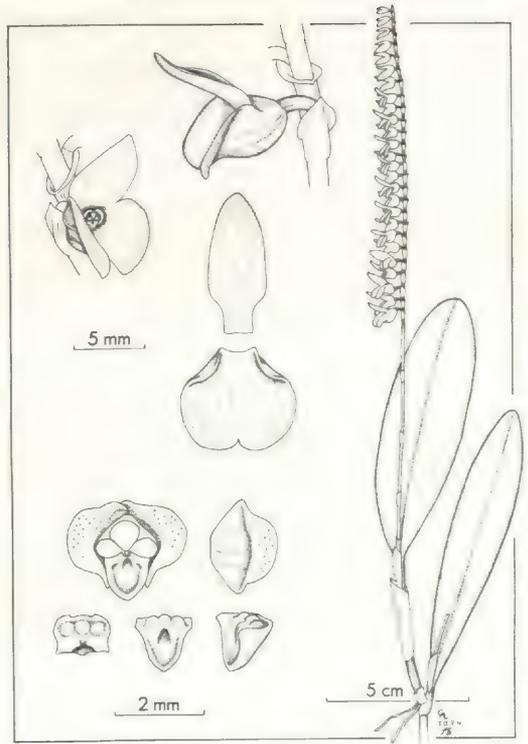


Fig. 2. *Stelis saccata*

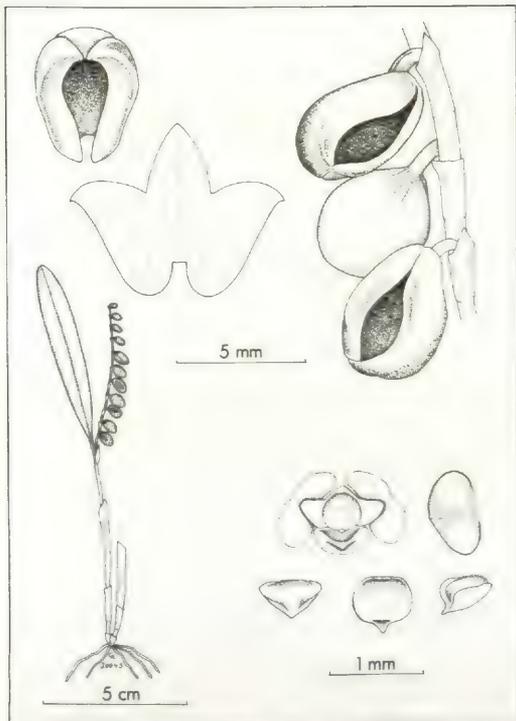


Fig. 3. *Stelis matula*

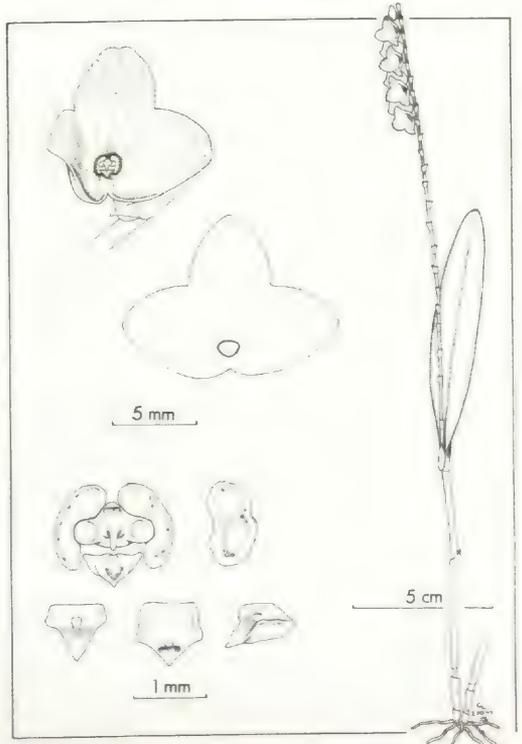
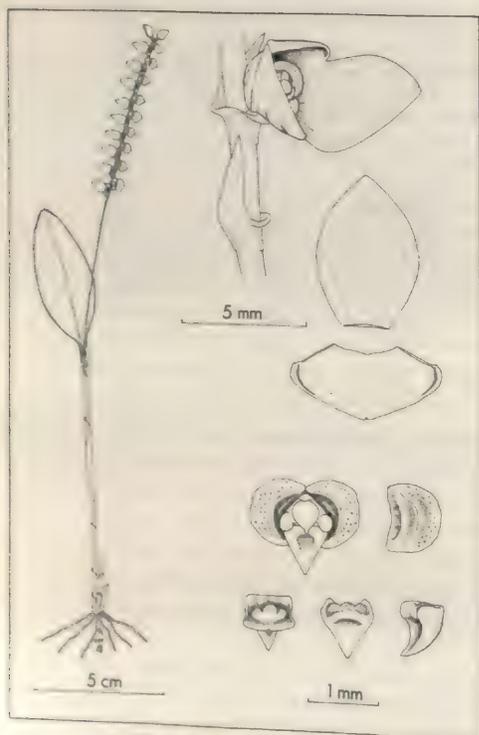
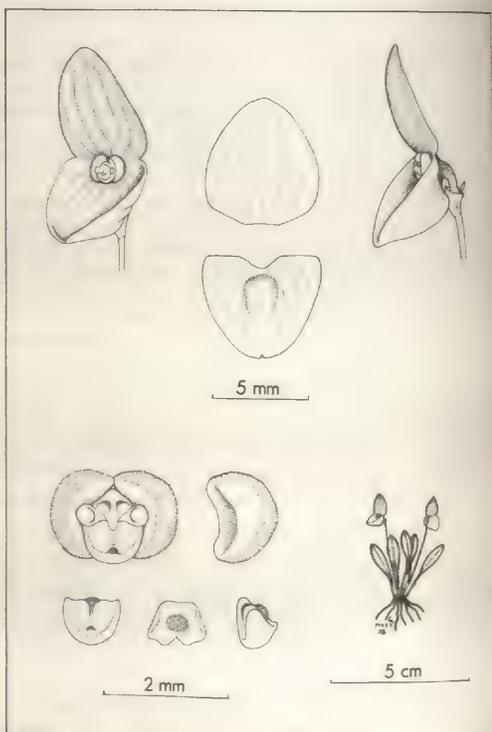
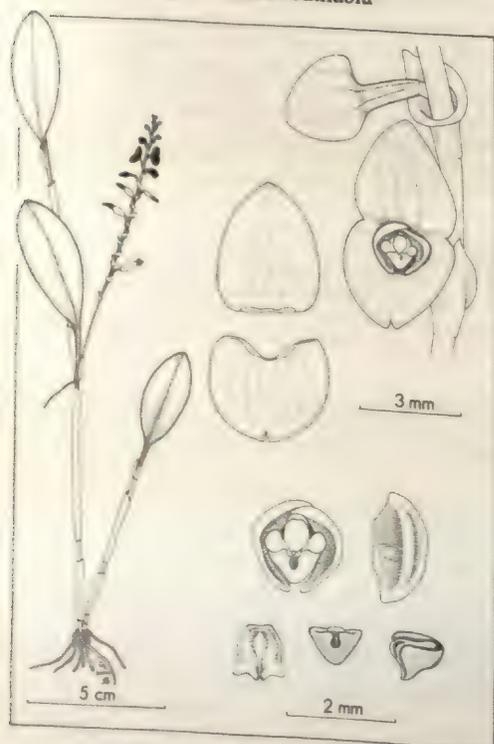
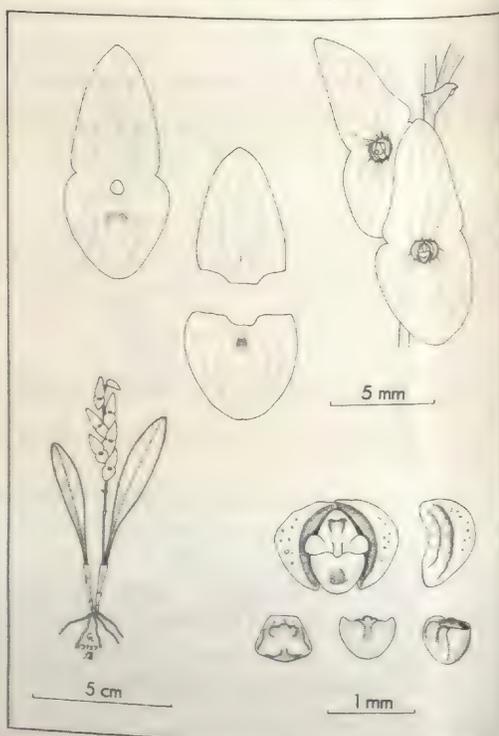


Fig. 4. *Stelis zelenkoi*

Fig. 5. *Stelis acutilabia*Fig. 6. *Stelis ann-jesupiae*Fig. 7. *Stelis anthracina*Fig. 8. *Stelis applanata*

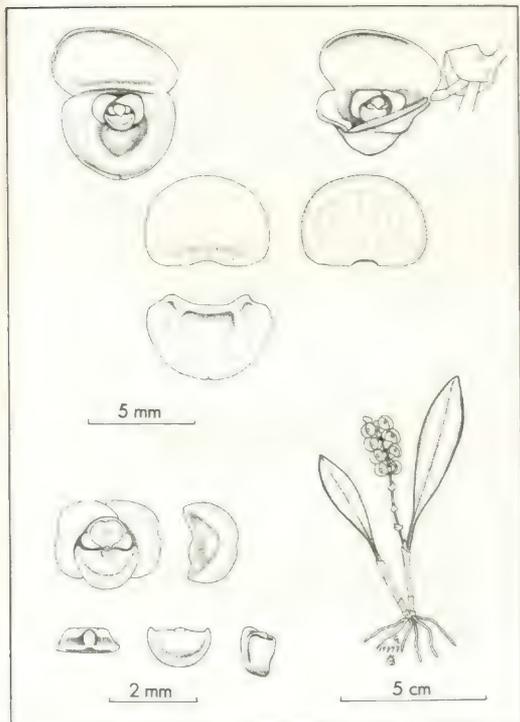


Fig. 9. *Stelis bivalvis*

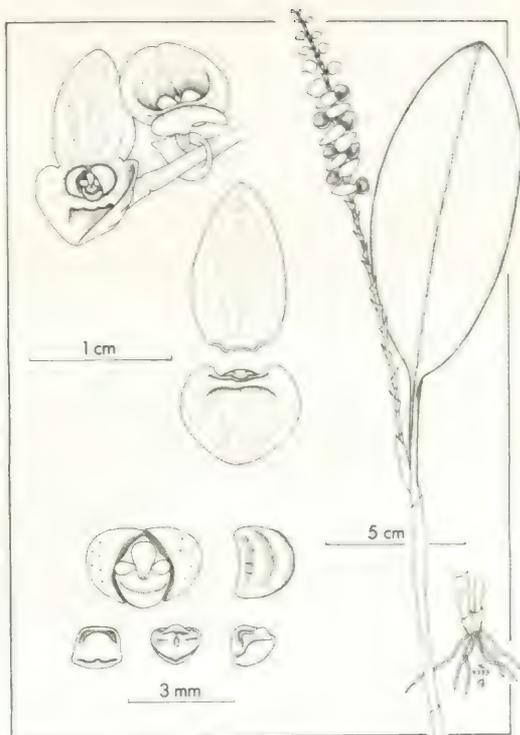


Fig. 10. *Stelis bolivarensis*

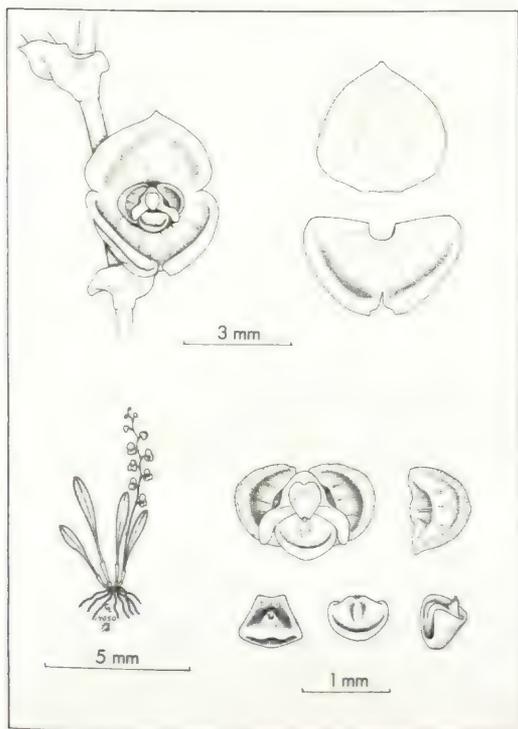


Fig. 11. *Stelis brachiata*

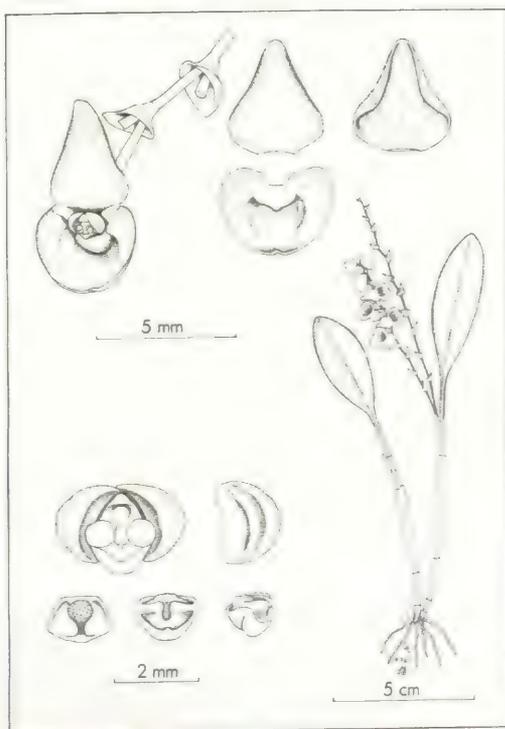
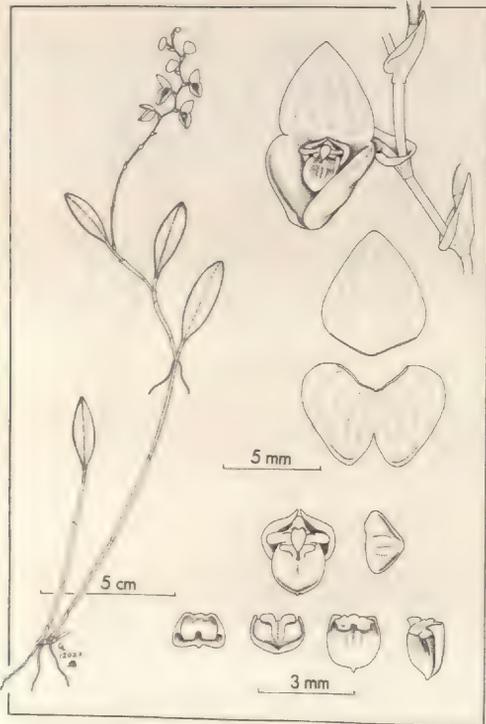
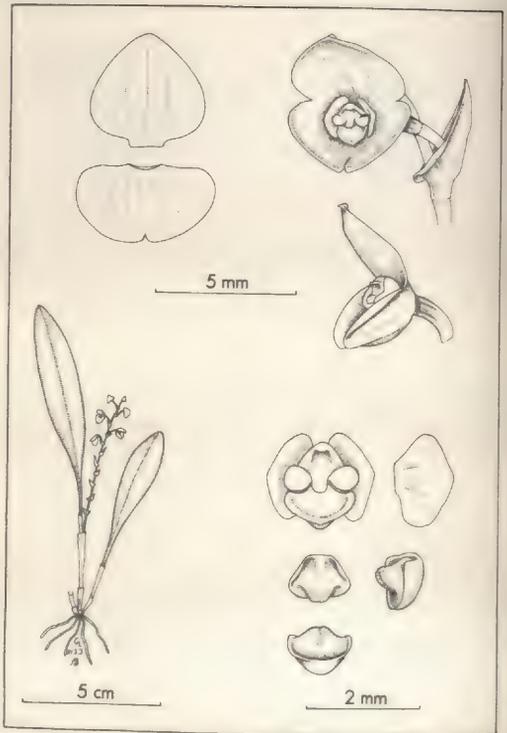
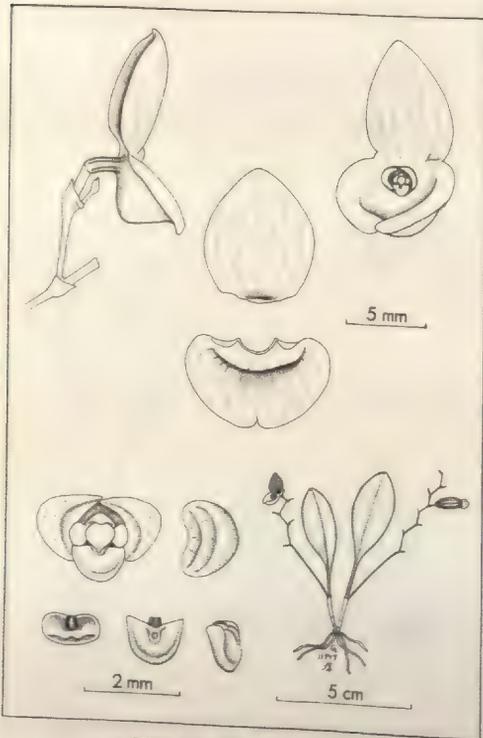
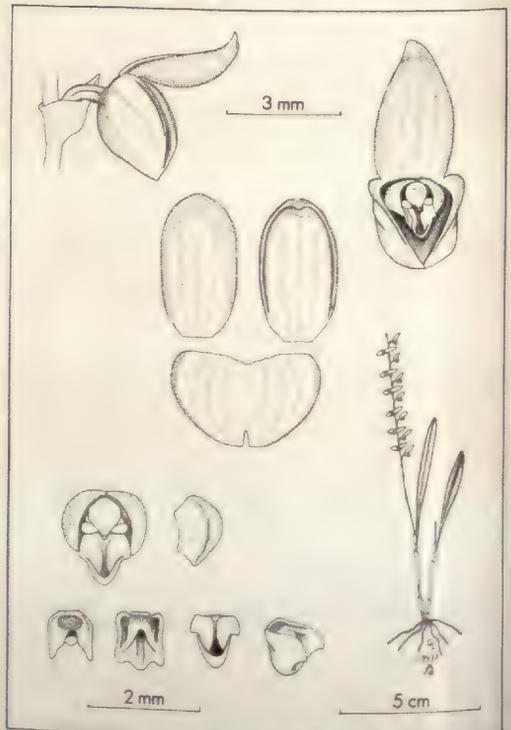


Fig. 12. *Stelis coeliaca*

Fig. 13. *Stelis digitata*Fig. 14. *Stelis dromedarina*Fig. 15. *Stelis embreei*Fig. 16. *Stelis fissurata*

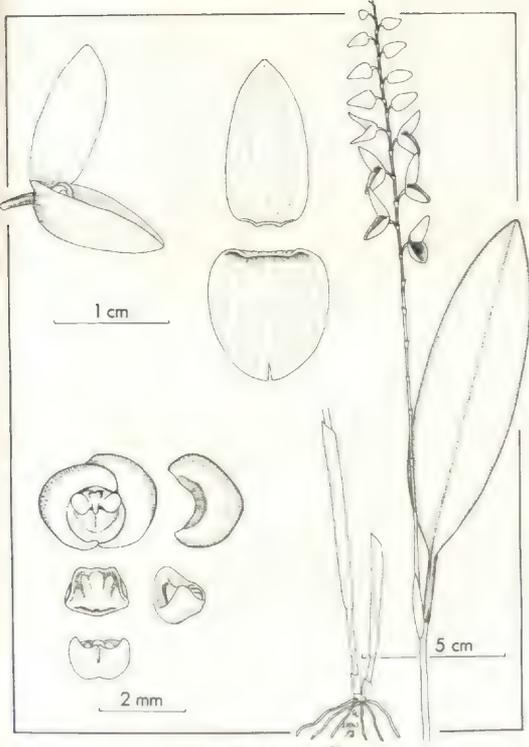


Fig. 17. *Stelis flava*

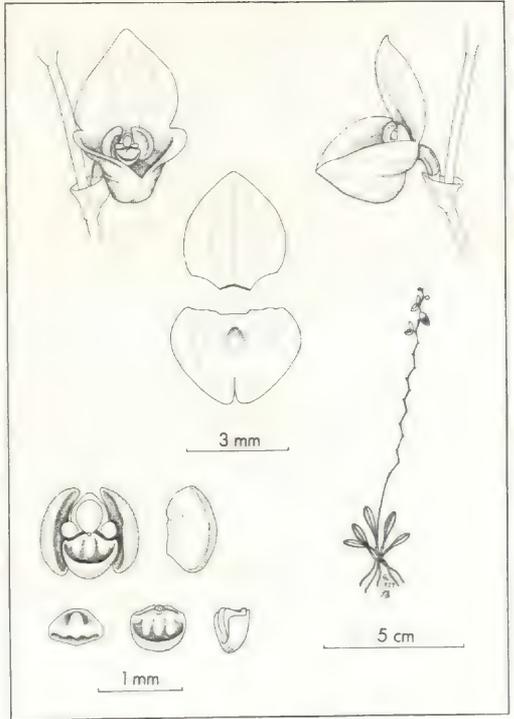


Fig. 18. *Stelis flexilis*

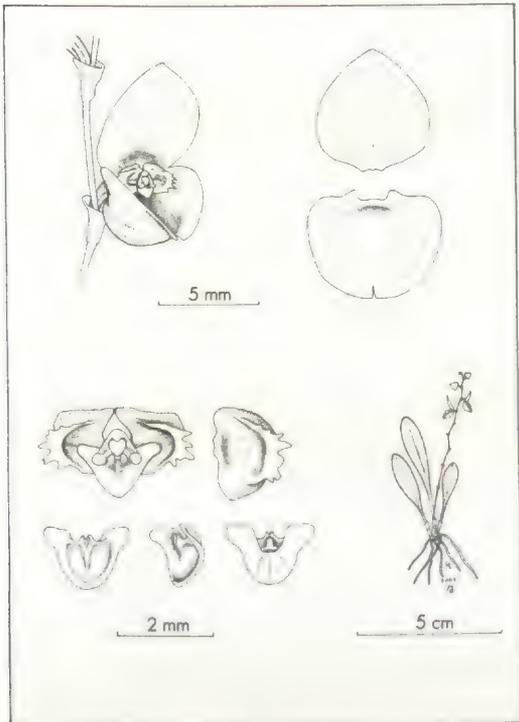


Fig. 19. *Stelis florinii*

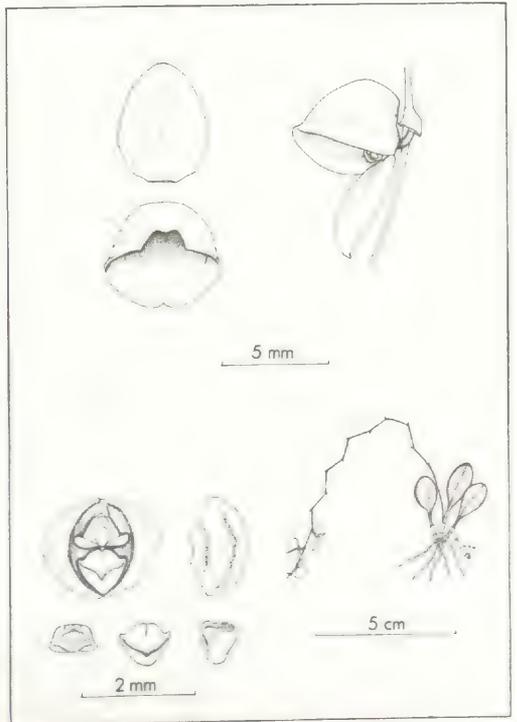
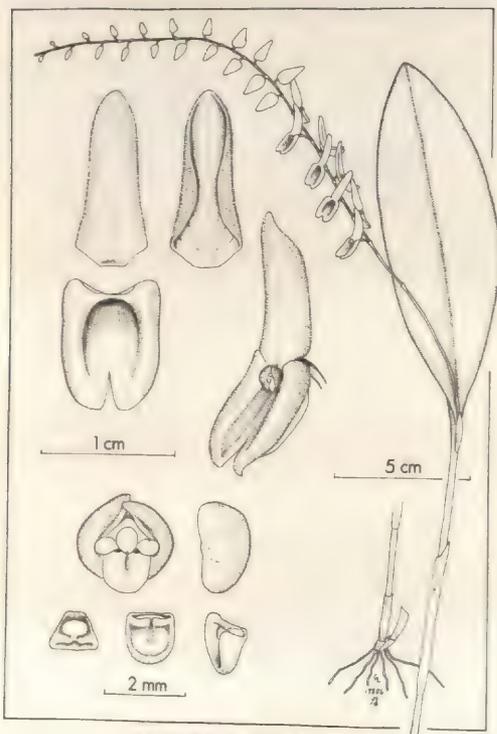
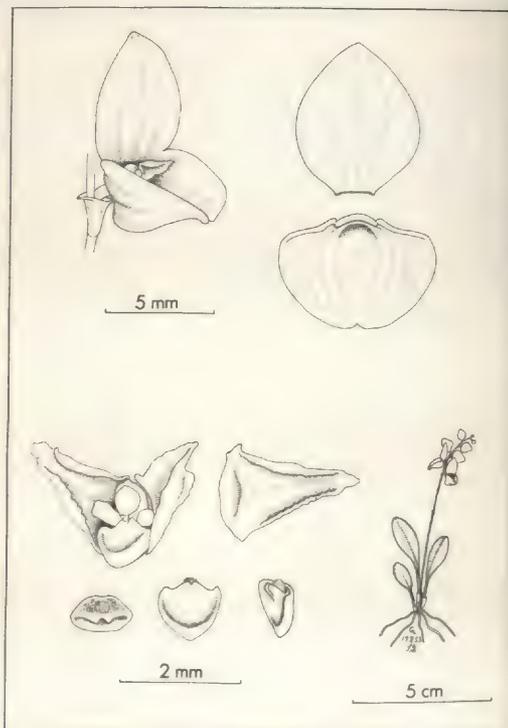
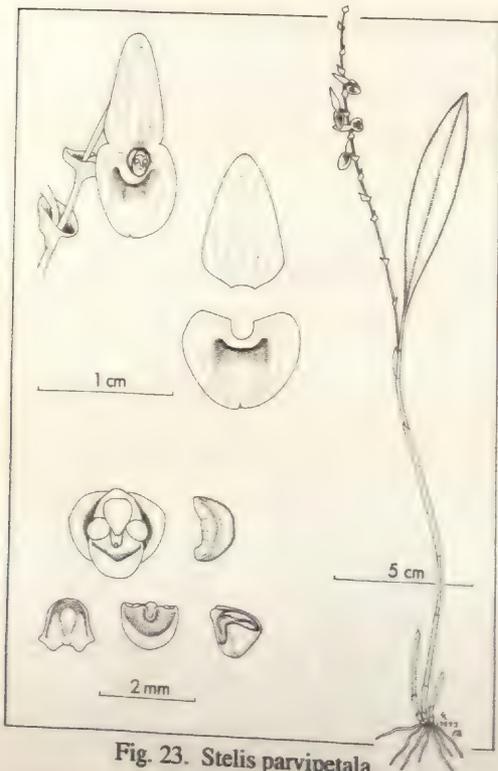
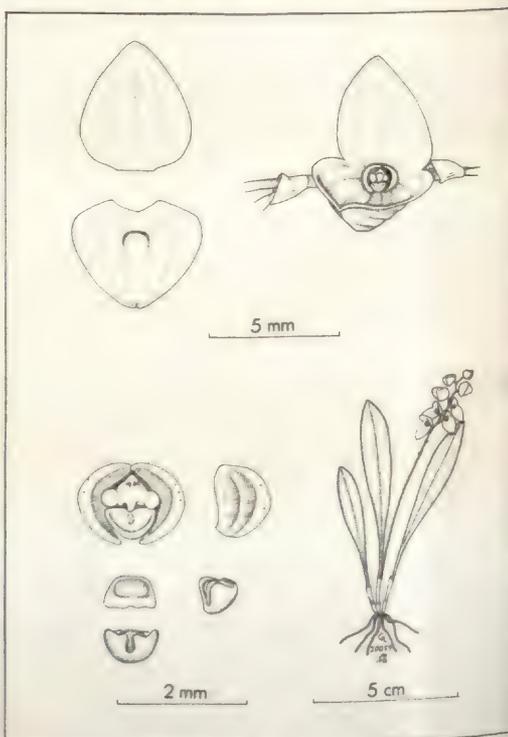


Fig. 20. *Stelis galeola*

Fig. 21. *Stelis luteria*Fig. 22. *Stelis nycterina*Fig. 23. *Stelis parvipetala*Fig. 24. *Stelis patens*

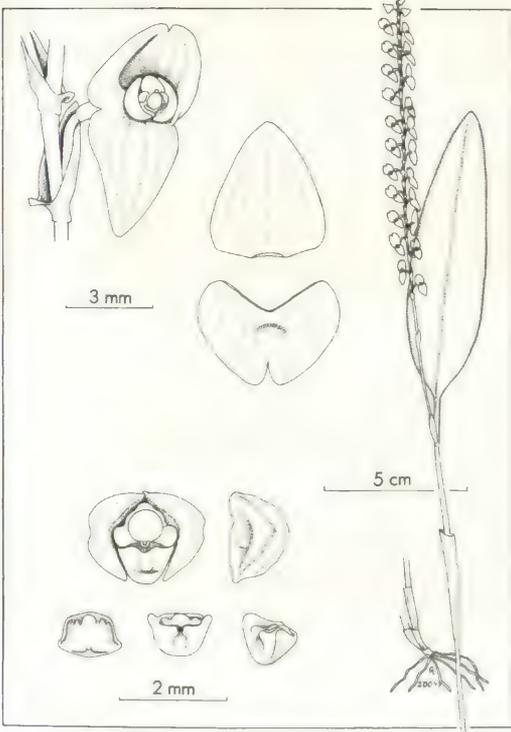


Fig. 25. *Stelis patinaria*

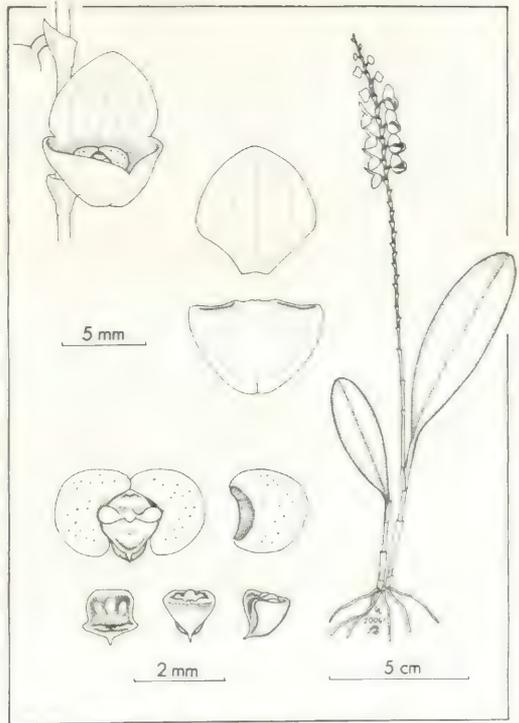


Fig. 26. *Stelis platypetala*

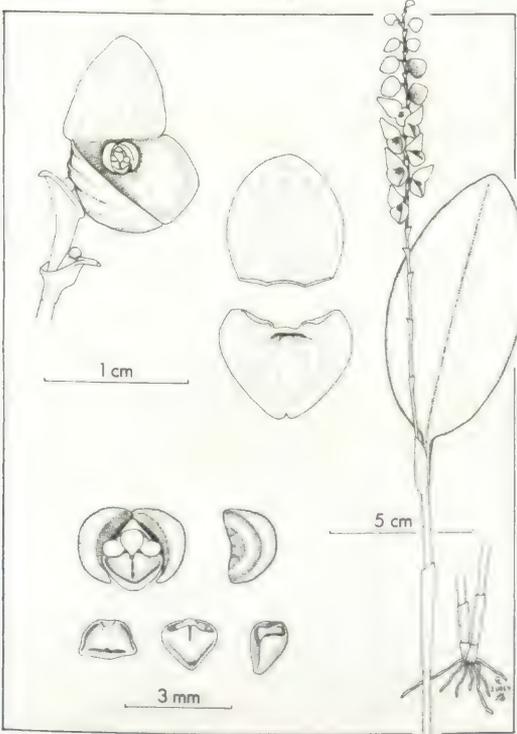


Fig. 27. *Stelis preclara*

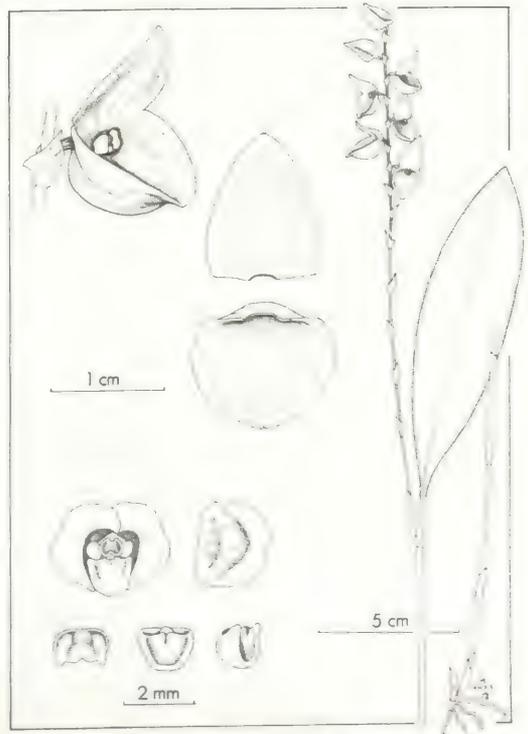
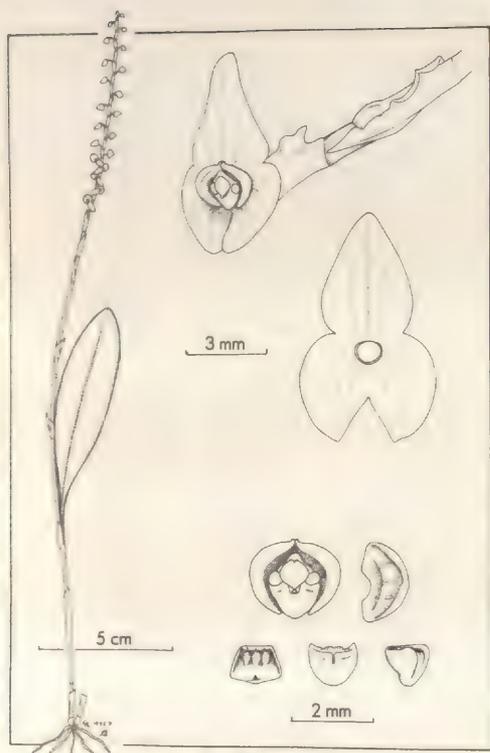
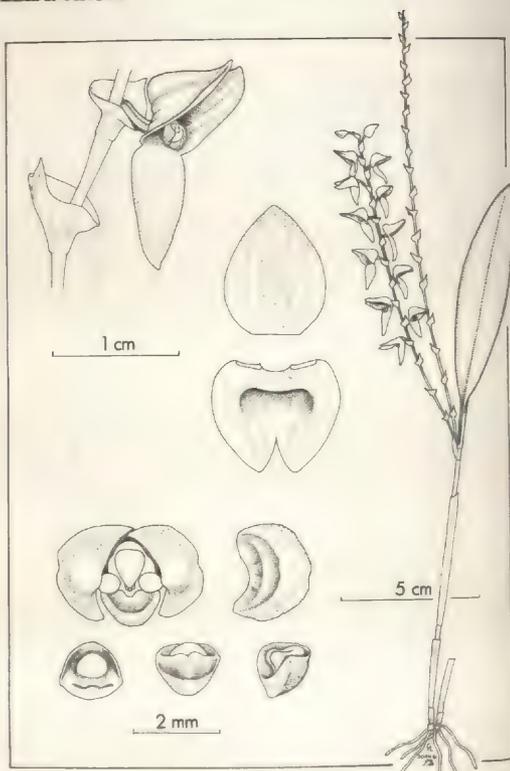
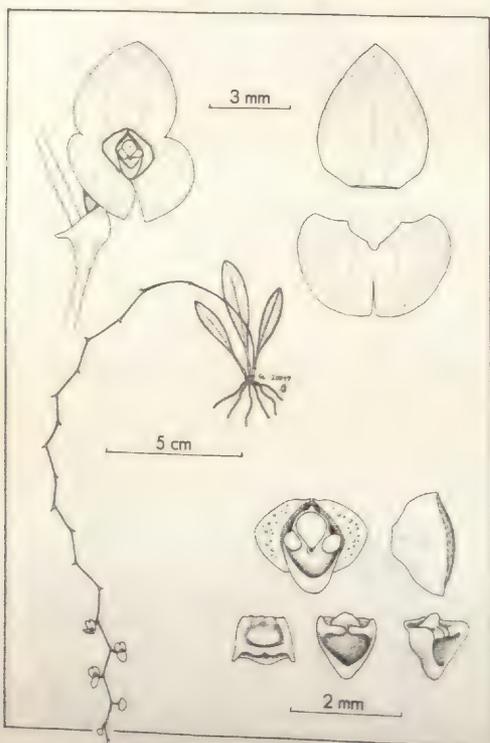
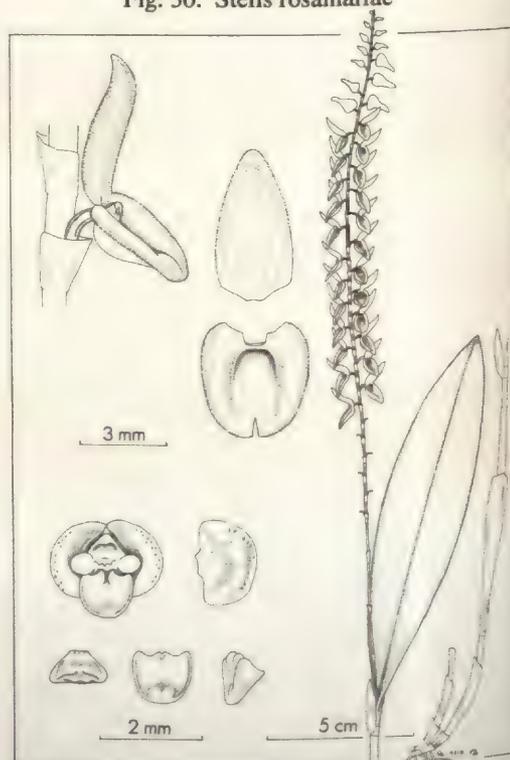


Fig. 28. *Stelis regina*

Fig. 29. *Stelis repanda*Fig. 30. *Stelis rosamariae*Fig. 31. *Stelis sanchezii*Fig. 32. *Stelis santiagoi*

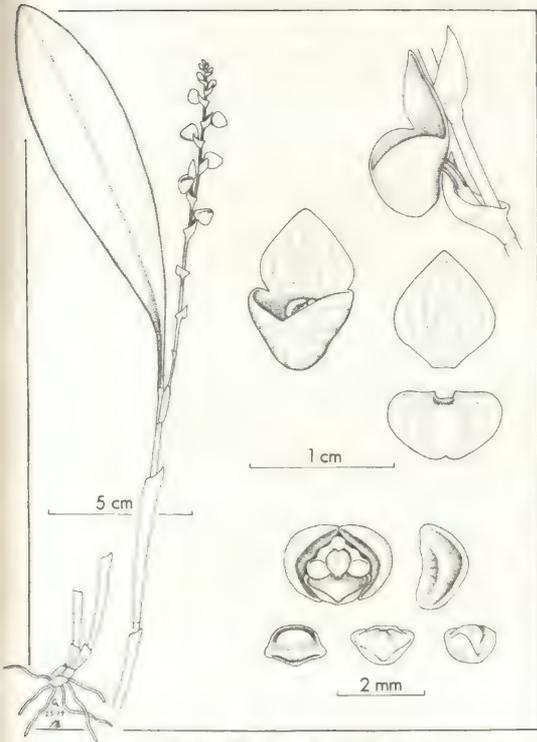


Fig. 33. *Stelis situlifera*

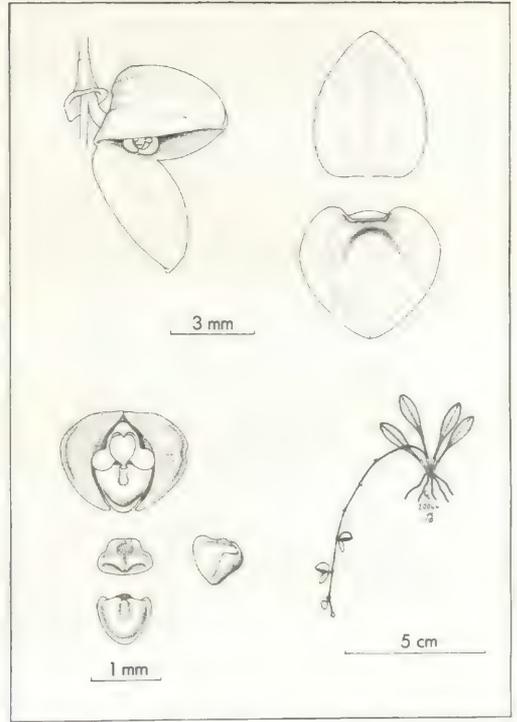


Fig. 34. *Stelis sumacoensis*

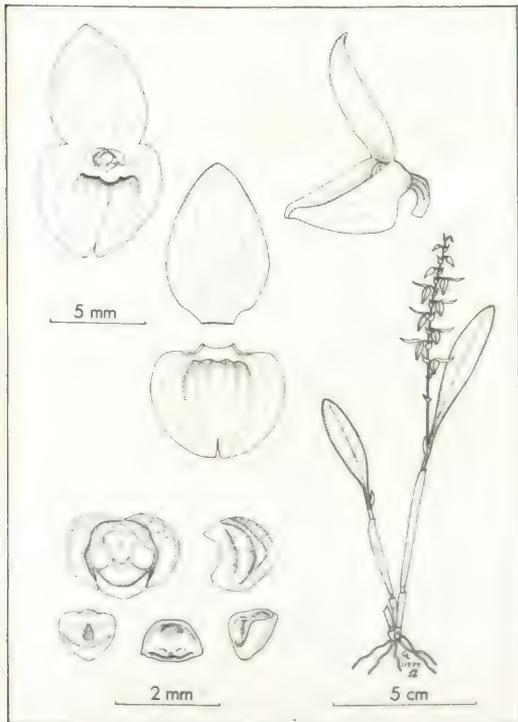


Fig. 35. *Stelis velivolva*

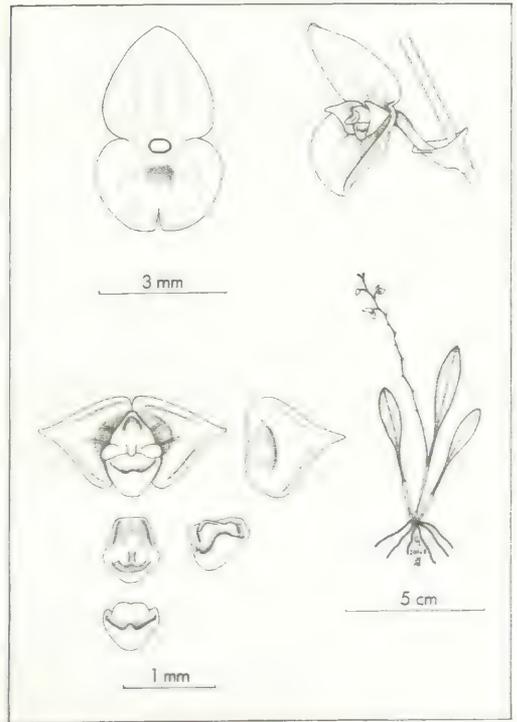


Fig. 36. *Stelis vollesii*

37. *Stelis adrianae* Luer, sp. nov.

Ety.: Named for Adriana, wife of A.P. Sijm, who collected and cultivates this species.

Planta mediocris ascendens-caespitosa panporphyrea, racemo densifloro disticho multifloro folio elliptico excedenti, sepalis obtusis dense longipubescentibus, petalis crassis, et labello subovoideo apiculato distinguitur.

Plant medium in size, epiphytic, ascending-caespitose, rhizome thick; roots slender. Ramicauls ascending-erect, stout, fascicled, 3-4 cm long, enclosed by 2 loose, tubular sheaths. **Leaf** purple, erect, thickly coriaceous, elliptical, subacute to obtuse, 5-8.5 cm long including a petiole ca. 1 cm long, the blade 1.8-2.7 cm wide, cuneate below into a conduplicate petiole within which the peduncle rests. **Inflorescence** to 15 cm long, the raceme 5 cm long, congested in two ranks, distichous, simultaneously many-flowered, with the flowers touching, borne by a slender peduncle 9 cm long, from the base of the leaf; floral bracts tubular, 2.5 mm long; pedicels 1 mm long; ovary 1.75 mm long; flowers dark purple; **sepals** fleshy, glabrous externally, densely long-pubescent within, with margins more or less recurved, the dorsal sepal ovate, obtuse, 5 mm long, 3.75 mm wide, 3-veined, connate less than 1 mm basally, the lateral sepals oblong, oblique, semiconnate, deflexed beneath the cup containing the central apparatus, 4.5 mm long, 5.5 mm wide together; **petals** thick, transversely oblong-ovoid, 1 mm long, 1.2 mm wide, 3-veined, shallowly concave below the rounded, thick, indistinctly demarcated margin; **lip** oblong-subquadrate, 0.75 mm long, 0.75 mm wide, 0.6 mm deep, the anterior surface shallowly concave, the apex broadly rounded, apiculate, transversely thickened across the middle with a longitudinal glenion, the dorsum flat, densely short-pubescent toward the base, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 0.8 mm wide, the foot obsolescent, the anther and bilobed stigma apical.

Pichincha: near Los Bancos, alt. 1650 m, 25 Feb. 2001, collected by S. Dalström & L. Jost, *C. Luer* 19535 (Holotype: MO); near Mindo, 1994, collected and cultivated in Venhuizen, the Netherlands, by A.P. Sijm 201231 (MO).

This handsome species is most notable for the deep purple pigmentation throughout the plant. The habit is ascending with a fascicle of ramicauls trailing a thick rhizome entwined in a mass of fine roots. The petioles of the ovate leaves are conduplicate and support the base of the inflorescence. The peduncle is considerably longer than the congested, two-ranked raceme. The bases of the densely long-pubescent sepals form a cup that contains the column, petals and lip. The dorsal sepal is larger than the semiconnate lateral sepals.

38. *Stelis amoena* Luer & Hirtz, sp. nov.

Ety.: From the Latin *amoena*, "pretty," referring to the plant.

Species haec *S. hallii* Lindl. affinis, sed ramicaulibus in vaginis laxis obtectis foliis ellipticis leviter brevioribus, racemo disticho successive multifloris, sepalis ovatis obtusis similibus grosse ciliatis, petalis transversis apice incrassatis et labello rotundato distinguitur.

Plant medium in size to large, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 3-11 cm long, enclosed by 2 loose, tubular sheaths, and another at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute, 6-11 cm long, 1-1.8 cm wide, narrowly cuneate below into the subsessile base. **Inflorescence** an erect, subcongested, distichous, simultaneously many-flowered raceme, 10-25 cm long including the peduncle 6-10 cm long, from an annulus below the apex of the ramicaul; floral bracts acute, oblique, 3.5 mm long; pedicels 2 mm long; ovary 1.5 mm long; **sepals** purple, expanded, microscopically short-pubescent above the middle, coarsely ciliate-denticulate, broadly ovate, obtuse, subequal, connate basally, the dorsal sepal 3.5 mm long, 3.5 mm wide, 3-veined, the lateral sepals 3 mm long, 3 mm wide, 3-veined; **petals** transversely elliptical, 1.5 mm long, 2 mm wide, concave below the broadly rounded and thickened apical margin; **lip** purple, subquadrate, 1 mm long, 2 mm wide, 1.6 mm deep, the apex broadly rounded with a thin margin, shallowly concave anteriorly with a faint, superficial glenion, the dorsum pubescent, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 2 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Pichincha: Cerro Azul, west flank of Volcán Iliniza, alt. 2800 m, 23 Jan. 1987, *C. Luer, J. Luer & A. Hirtz* 12457 (Holotype: MO); between Calacafi and Nanegalito, alt. 2000 m, 9 Mar. 2001, *C. Luer & A. Hirtz* 19871 (MO).

This pretty species, apparently endemic on the western slope of Pichincha, is characterized by ramicauls concealed by loose sheaths, elliptical leaves, and a distichous raceme of purple flowers facing the same direction. The sepals are similar, ovate and ciliate-denticulate. The petals are transverse and concave, and the lip is rounded.

39. *Stelis andreettae* Luer & Hirtz, sp. nov.

Ety.: Named for Father Angel Andreetta of Paute, Ecuador, co-collector of the species and well known for his contribution to the study of the orchid flora of Ecuador.

Species haec *S. lindenii* Lindl., affinis, sed racemo quam folio brevior, sepalis membranaceis trinervis, et labello leviter concavo differt.

Plant large, epiphytic, densely caespitose to shortly repent, the rhizome ca. 7 mm thick; roots slender. Ramicauls erect, relatively slender, 6-14 cm long, with a loose, tubular sheath above the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, elliptical-ovate, subacute to obtuse, petiolate, 9-13 cm long including the petiole 1.5-2 cm long, the blade 3-4 cm wide, cuneate below into the petiole. **Inflorescence** an erect, distichous, subcongested, many-flowered raceme with most flowers open simultaneously, 5-7 cm long including the peduncle ca. 1 cm long, with a spathe 1 cm long at an annulus below the apex of the ramicaul; floral bracts oblique, acute, 3-4 mm long; pedicels 1-1.5 mm long; ovary 1.5 mm long; **sepals** similar, glabrous, yellow, broadly ovate, broadly obtuse, connate to nearly to the middle, the dorsal sepal 3.2 mm long, 3.5 mm wide, 3-veined, the lateral sepals 2.7 mm long, 3.3 mm wide, 3-veined; **petals** brown, transversely oblong-ovate, shallowly concave below a transverse thickening, 1 mm long, 1.3 mm wide, 3-veined, with the margin broadly rounded and thickened; **lip** brown, obliquely subquadrate, 0.75 mm long, 1.3 mm wide, 1 mm deep, the anterior surface shallowly concave with the apex broadly rounded and thickened, the bar with a small glenion, the dorsum with a low, rounded callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.2 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipe: new road east of the pass between Loja and Zamora, alt. 2250 m, 22 May 1988, C. Luer, J. Luer, A. Hirtz et al. 13605 (Holotype: MO).

This large species is uncommon, known from only one collection in southeastern Ecuador. Vegetatively, it is superficially similar to the frequent *S. lindenii*. Both are vegetatively large with elliptical-ovate, petiolate leaves. The ramicaul of *S. andreettae* is slender with a sheath above the middle, and the raceme is shorter than the leaf. The sepals are expanded, membranous, broadly ovate, obtuse, and three-veined, instead of fleshy, sensitive, and five-veined. The broadly obtuse petals are not remarkably different from those of *S. lindenii*. The lip is much less deeply concave.

40. *Stelis apiculifera* Luer & Hirtz, sp. nov.

Ety.: From the Latin *apiculifer*, "bearing an apiculum," referring to the labelum.

Species haec *S. guianensis* Rolfe affinis, sed sepalis porportione latoribus et petalis uninervis differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-10 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 10-25 mm long, 4-6 mm wide, gradually narrowed below into a petiole 3-5 mm long. **Inflorescence** an erect, distichous, subcongested, simultaneously few-flowered raceme 3-5.5 cm long including the peduncle 2-2.5 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, 1.5 mm long; pedicels 1 mm long; ovary 0.6 mm long; **sepals** green above the middle, dark purple below the middle, glabrous externally, cellular papillose within, broadly ovate, obtuse, 3-veined, connate basally, the dorsal sepal 1.75 mm long, 2 mm wide, the lateral sepals 1.25 mm long, 1.75 mm wide; **petals** purple, transversely oblong, broadly rounded-truncate at the apex with a thickened margin, shallowly concave, 0.5 mm long, 0.8 mm wide, 1-veined; **lip** thick, subquadrate, 0.5 mm long, 0.6 mm wide, 0.3 mm deep, shallowly concave anteriorly with the apex rounded, with a minute, sharp apiculum in the center, the anterior surface convex or rounded with a long, very narrow glenion, the dorsum rounded, cellular-pubescent above the base, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.6 mm long, 0.6 mm wide, with the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Cutucú, new road between Mendez and Morona, alt. 950 m, 17 Jan. 1989, C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 13953 (Holotype: MO).

This little species is closely related to *S. guianensis*, differing only in a more congested raceme with broadly ovate, cellular-papillose sepals. The petals are single-veined. As in *S. guianensis*, the minute lip is thickly discoid with a tiny, sharp apiculum in the center of the round apical margin.

41. *Stelis barbellata* Luer & Hirtz, sp. nov.

Ety.: From the Latin *barbellatus*, "with barbels," referring to the tails of the petals.

Species haec *S. antennatae* Garay affinis, sed habitu multimajori, caespitosa et proliferanti, sepalis obtusis duplomagioribus et labello acuto cum callo lato dense pubescenti supra basim differt.

Plant large, epiphytic, ascending-caespitose and prolific; roots slender. Ramicauls erect, slender, prolific, 10-22 cm long below, 4-8 cm long above, enclosed by a long, tubular sheath above the middle and another sheath at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 5-11 cm long including the petiole 0.5-1 cm long, the blade 2-3.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subdense, distichous to secund, many-flowered raceme with several flowers open simultaneously, 12-20 cm long including the peduncle 3-7 cm long, with a spathe 1-1.5 mm long, from an annulus below the apex of the ramicaul; floral bracts tubular, oblique, acute, 3-4 mm long; pedicels 1.5 mm long; ovary 3.5 mm long; flowers either yellow or purple; **sepals** glabrous, ovate, obtuse, convex, with the margins recurved, the dorsal sepal erect, 5 mm long, 4 mm wide, 3-veined, connate 1 mm basally to the lateral sepals, the lateral sepals 5 mm long, 4 mm wide, 3-veined, connate 2 mm; **petals** transversely obovate, 2 mm wide, 3 mm long, including the obtuse apex acuminate into a filiform process, 1 mm long; **lip** thin, subquadrate, acute, 0.75 mm long, 1.5 mm wide, 2 mm deep, concave above the basal third, the basal third occupied with a thick, densely pubescent callus, the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 2.75 mm wide, the foot obsolescent, the anther apical, with the stigmatic lobes incurved.

Zamora-Chinchipe: south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11994 (Holotype: MO).

Although the petals and lip of this species suggest a relationship with the Bolivian *S. antennata*, the habit differs dramatically. This large species is characterized by ramicauls both caespitose and prolific, and by elliptical, petiolate leaves surpassed by a subdense raceme of either yellow or purple flowers. From the center of the flowers protrudes a pair of barbel-like processes from the acuminate tips of the petals. The lip is oblong, concave, and acute. The basal third is filled with a transverse, densely pubescent callus.

42. *Stelis benzingii* Luer & Hirtz, sp. nov.

Ety.: Named for David Benzing, professor of Botany, Oberlin College, co-collector of this species.

Species haec *S. argentatae* Lindl. similis, sed floribus majoribus non-resupinatis, racemo laxifloro, ovariis conspicuis, labelli margine rotundo triapiculato distinguitur.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-18 cm long, with a loose, tubular sheath on the middle third and 2-3 sheaths on the lower third. **Leaf** erect, coriaceous, ovate, acute, obscurely petiolate, 6-15 cm long, 2-4 cm wide, cuneate below into an indistinct petiole ca. 1.5 cm long. **Inflorescence** an erect, loose, distichous or secund, many-flowered raceme with most flowers open simultaneously, 15-24 cm long including the peduncle ca. 5 cm long, with a spathe 6-15 mm long, from an annulus below the apex of the ramicaul; floral bracts tubular, oblique, 2 mm long; pedicels 2 mm long; ovary elongate, 5 mm long; flowers yellow, non-resupinate; **sepals** shortly pubescent, long-pubescent toward the apices, ovate, obtuse, with the sides recurved, connate basally 1 mm, the dorsal sepal 4 mm long, 4 mm wide expanded, 5-veined, the lateral sepals 3.5 mm long, 4 mm wide, 4-veined; **petals** transversely oblong, 0.75 mm long, 1.5 mm wide, 3-veined, apex broadly subtruncate-rounded, flat, shallowly concave below; **lip** thick, transversely subquadrate, 0.3 mm long, 1 mm wide, 0.5 mm deep, shallowly concave anteriorly above the broadly rounded margin, with 3 minute, sharp points in the center, the dorsum rounded with a longitudinal glenion, the base truncate, hinged to the base of the column; **column** stout, 1 mm long and wide, the foot obsolescent, the anther and stigma apical.

Esmeraldas: wet forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. Dodson, A. Hirtz & D. Benzing 12405 (Holotype: MO).

This species from lowland, coastal Ecuador is similar to the widely distributed *S. argentata* and its numerous allies, but differing with larger, non-resupinate flowers with elongated ovaries, and loosely arranged in a long raceme. The margin of the lip is sharply tridentate, similar to that of *S. vulcanica* Schltr., but the flowers of the latter are smaller and glabrous.

43. ***Stelis bicarinata* Luer & Hirtz, sp. nov.**

Ety.: From the Latin *bicarinatus*, "bicarinate," referring to the callus of the lip.

Planta grandis, ramicaule gracili folio petiolato multilongiore, racemis distichis folio brevioribus, sepalis ovatis villosis, et labello alto-bicarinato apiculato distinguitur.

Plant large, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 15-20 cm long, with a short, tubular sheath near the middle and 2-3 others at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 10-13 cm long including the petiole 2-2.5 cm long, the blade 2.5-3 cm wide, cuneate below into the petiole. **Inflorescence** 1-3 erect, subdense, distichous, several-flowered racemes with most flowers open simultaneously, 6-10 cm long including the peduncle 2-3 cm long, subtended by a slender spathe 10-13 mm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, 2 mm long; pedicels 1.5 mm long; ovary 0.75 mm long; **sepals** expanded, light yellow, finely villous within, glabrous externally, connate basally, ovate, obtuse, the dorsal sepal 2.5 mm long, 2 mm wide, 3-veined, the lateral sepals 2 mm long, 2 mm wide, 3-veined; **petals** light yellow, transversely cuneate-obovate, shallowly concave, 0.5 mm long, 1.1 mm wide, the apex broadly rounded with the margin more or less irregular and thickened; **lip** light yellow, thick, subquadrate, 0.9 mm long, 0.6 mm wide, 0.6 mm deep, concave inside the apical margin, the apex round with short, acuminate apiculum, the bar bifid into a pair of vertical carinae, the dorsum with a flat, ciliated callous at the base, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchi: south of the pass south of Yangana, above Valladolid, alt. 1900 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10839 (Holotype: MO).

This species, apparently endemic in southeastern Ecuador, is characterized by long, slender ramicauls that bear much shorter petiolate leaves. One to three slender, erect racemes of tiny flowers do not pass the leaf in length. The sepals are ovate and long-villous within. The petals are transverse with a thickened margin. The subquadrate lip is round at the apex with a small, incurved apiculum, and a bicarinate, vertical callus occupies the center.

44. ***Stelis congesta* Luer & Hirtz, sp. nov.**

Ety.: From the Latin *congestus*, "congested," referring to the densely flowered raceme.

Planta mediocris caespitosa, racemis 1-3 densissime multifloris foliis ellipticis subaequalibus, sepalis late ovatis obtusis, petalis lunatis et labello subquadrato apice rotundo plano nonconcavo distinguitur.

Plant medium in size, epiphytic, densely caespitose; roots filiform. Ramicauls erect, slender, 5-9 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 5-7 cm long including a petiole 1-1.5 cm long, the blade 1-1.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, congested, crowded, successively many-flowered raceme, with several to many flowers open simultaneously, 4-6 cm long including the peduncle 1-2 cm long, from an annulus below the apex of the ramicaul with a spathe 10-14 mm long; floral bracts infundibular, oblique, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** expanded, purple, glabrous externally, cellular pubescent within, broadly ovate, obtuse, connate basally, the dorsal sepal 2.5 mm long, 2.5 mm wide, 3-veined, the lateral sepals oblique, 2 mm long, 2.3 mm wide, 3-veined; **petals** purple, thick, transversely ovate, shallowly concave, the apex broadly rounded with a thickened margin, 0.75 mm long, 1.25 mm wide, 3-veined; **lip** purple, thickly triangular-subquadrate, 0.5 mm long, 1 mm wide, 0.4 mm deep, flat to barely convex anteriorly, with the margins thickened, the apex broadly rounded, the bar thick, with a shallow glenion, the dorsum with a rounded, cellular pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Condor, east of Chuchumbletza, alt. 1750 m, 21 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13547* (Holotype: MO); new road west of Macas toward Guamote, alt. 1900 m, 6 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12709* (MO).

This species, known from the Oriente of Ecuador, is distinguished by a caespitose habit with narrowly elliptical leaves borne by slightly longer ramicauls, and one to three inflorescences shorter than the leaves. The raceme is slowly successively flowered, becoming more congested above with the flowers overlapping. The sepals are expanded and obtuse; the petals are transversely ovate; and the lip is nearly flat or barely convex anteriorly with a small, superficial glenion.

45. *Stelis cutucuënsis* Luer & Hirtz, sp. nov.

Ety.: Named for the Cordillera del Cutucú where the species was collected.

Planta parva dense caespitosa, racemis paucis laxe paucifloris folio anguste obovato superanti, bracteis floralibus parvis, sepalis late ovatis similibus minutissime papillois, petalis transversis semilunatis trinervis, et labello vadoso subplano apice rotundo distinguitur.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 5-7 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 15-20 mm long including the petiole ca. 5 mm long, the blade 3-5 mm wide, gradually narrowed below into the petiole. **Inflorescence** 3-4 erect, subflexuous, distantly and simultaneously few-flowered racemes 3-4 cm long including the peduncle ca. 2 cm long, from an annulus below the apex of the ramicaul; floral bracts acute, 1.5 mm long; pedicels 1 mm long; ovary 0.75 mm long; **sepals** white, glabrous externally, microscopic cellular pubescent within toward the apex, broadly ovate, obtuse, 3-veined, connate basally, the dorsal sepal 2 mm long, 2 mm wide, the lateral sepals oblique, 1.5 mm long, 2 mm wide; **petals** purple, semilunate, broadly rounded and thickened on the margin at the apex, concave, 0.5 mm long, 0.75 mm wide, 3-veined; **lip** purple, subdiscoid, 0.25 mm long, 0.6 mm wide, 0.5 mm deep, nearly flat to shallowly concave anteriorly with the apex rounded, the anterior surface featureless, the dorsum shallow, with a rounded, central callus, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.5 mm long, 0.6 mm wide, with the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 17 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 13952* (Holotype: MO); along Río Upano, north of Macas, alt. 1100 m, 15 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 13920* (MO).

This species from lowland, eastern Ecuador is characterized by the small, dense-ly caespitose habit, and each ramicaul with 3-4 distantly few-flowered racemes that surpass the narrowly obovate leaf. The floral bracts are not inflated; the sepals are broadly ovate, with the laterals oblique; and the petals are semilunate and concave. The lip is discoid with the anterior surface very shallowly concave and featureless, while the narrow dorsum has a central, rounded callus.

46. *Stelis dalessandroi* Luer, sp. nov.

Ety.: Named in honor of Dennis D'Alessandro who collected this species.

Species haec *S. breviracemae* C.Schweinf. similis, sed habitu majore, folio latiore et labello horizontali longiore.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, slender to stout, 10-11 cm long, with a close, tubular sheath near the middle, and 2 others at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 14-15 cm long including a petiole 1.5-2 cm long, the blade 2-2.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, many-flowered raceme with many flowers open simultaneously, 8-9 cm long including the peduncle ca. 1 cm long, from an annulus below the apex of the ramicaul with a spathe ca. 1 cm long; floral bracts oblique, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** glabrous, ovate, obtuse, connate basally, the dorsal sepal 3 mm long, 2 mm wide, 3-veined, the lateral sepals 2.25 mm long, 2 mm wide, 3-veined; **petals** transversely ovate, 0.75 mm long, 1.3 mm wide, 3-veined, concave below the broadly obtuse, thickened, flattened, apical margin; **lip** thick, subquadrangular, 0.8 mm long, 0.8 mm wide, 0.5 mm deep,

shallowly concave anteriorly with the apex rounded, the bar with a glenion anteriorly, with a low, quadrangular callus on the dorsum, the base broadly truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipec: Quebrada Honda, south of pass south of Yangana, alt. ca. 1800 m, collected by D. D'Alessandro 77-0083, flowered in cultivation at SEL, July 1981, *C. Luer* 6449 (Holotype: SEL).

This species is similar to Peruvian *S. breviracema* with an acute, elliptical, petiolate leaf and a densely flowered raceme about half as long. The sepals are obtuse, the petals are transversely ovate, and the lip is thickly subquadrate. Vegetatively, this species differs from *S. breviracema* with wider leaves. If it were not for the differences in the lip, they could represent the same species. The lip of *S. dalessandroi* is deeper from the base to the bar. This distance is illustrated as short in *S. breviracema*. The width of lip of both species appears to be the same. The length of the lip of *S. dalessandroi* is short, creating a flat, horizontal lip beneath the column. The depth of the lip of *S. breviracema* is long, creating a flat, vertical lip.

47. *Stelis dalstroemii* Luer, sp. nov.

Ety.: Named for Stig Dalström, presently of Sarasota, Florida, co-collector of this species.

Planta grandis caespitosa, racemo disticho bifario multifloro folio elliptico plus minusve duplolongiore, sepalis late ovatis obtusis lateralibus minoribus, petalis crassis semilunatis et labello triangulari acuto distinguitur.

Plant large, epiphytic, caespitose; roots numerous, slender. Ramicauls erect, stout, 10-17 cm long, enclosed by a tubular sheath on the middle third and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute to subacute, petiolate, 7-13 cm long including the petiole 1.5 cm long, the blade 1.5-2.3 cm wide, cuneate below into the petiole. **Inflorescence** a strict, erect, distichous, congested, simultaneously many-flowered raceme, with the flowers more or less overlapping in two opposite ranks, 8-17 cm long including the stout peduncle 3-7 cm long, subtended by a spathe 10-12 mm long, from an annulus below the apex of the ramicaul; floral bracts tubular, obtuse, 4-5 mm long; pedicels 1-1.5 mm long; ovary 1.5 mm long; **sepals** deep purple, expanded, glabrous externally, cellular within, transversely ovate, broadly obtuse, connate basally, the dorsal sepal 6 mm long, 6.25 mm wide, 5-veined, the lateral sepals oblique, 3.5 mm long, 5 mm wide; **petals** thickly semilunate, concave basally and below the broadly obtuse apex, 1.5 mm long, 1.5 mm wide; **lip** thick, subtriangular, 1 mm long, 1.2 mm wide, 1 mm deep, concave anteriorly, the apex acute, the bar thick with a glenion, the dorsum with a rounded callous, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the anther and bilobed stigma apical, the foot obsolescent.

Carchi: forest between Tulcán and Maldonado, alt. 2050 m, 2-4 Apr. 1984, *C. Luer, S. Dalström & T. Höijer* 9917 (Holotype: MO); same area, alt. 1950 m, 2-4 Apr. 1984, *C. Luer, S. Dalström & T. Höijer* 9911 (MO); same area, alt. 1600 m, *C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz* 15090 (MO); east of Maldonado, alt. 1700 m, 17 Mar. 1991, *C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz* 15130 (MO).
Esmeraldas: wet forest west of Lita, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer, A. Hirtz et al.* 12404 (MO).

This species, apparently confined to northernmost Ecuador, is related to *S. purpurea*. It is vegetatively similar; the flowers are purple-black and arranged in two rows, back to back, more or less overlapping in a congested raceme. The sepals are very broad with the dorsal sepal distinctly larger than the oblique lateral sepals. The petals are thickly semilunate, and the lip is triangular and acute.

48. *Stelis dirigens* Luer & Hirtz, sp. nov.

Ety.: From the Latin *dirigens*, "making straight," referring to the habit.

Planta mediocris grandisve repens scandens erecta, racemo elongato successivifloro longipedicellato, sepalis quinquenervis obtusis pubescentibus et labelli margine tridentato distinguitur.

Plant medium to large, scandent, the rhizome erect, stout, 2-3 cm long between ramicauls; roots slender at the base. Ramicauls erect, ascending, slender, 4-6 cm long, enclosed by 3-4 tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 4-6 cm long including the petiole 1.5 cm long, the blade 1-1.3 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subax, distichous, slightly flexuous, many-flowered raceme, with 2-3 flowers open simultaneously, 18-30 cm long including the

peduncle 8-10 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 2-3.5 mm long; ovary 3 mm long; **sepals** purple, glabrous externally, pubescent within, broadly ovate, obtuse, 5-veined, connate basally, the dorsal sepal 4.5 mm long, 4.5 mm wide, 5-veined, the lateral sepals oblique, 3.5 mm long, 4 mm wide, 5-veined; **petals** green, transversely ovate, 0.9 mm long, 1.4 mm wide, 3-veined, the apex broadly obtuse with the margin thick and flat, shallowly concave below; **lip** green, subquadrate, 0.5 mm long, 0.8 mm wide, 0.5 mm deep, shallowly concave anteriorly with the apex rounded, abruptly notched with a minute, sharp apiculum in the center of the margin, the bar broadly rounded with a long glenion, the dorsum with a low patch of short pubescence, the base truncate, hinged to the base of the column; **column** slender, 0.5 mm long, 0.8 mm wide, the foot obsolescent, the anther apical.

Pichincha: road between Nanegalito and Mindo, alt. 2000 m, 9 Sept. 2001, *C. Luer & A. Hirtz* 19896 (Holotype: MO).

This species stands tall with ramicauls ascending beside a stout, erect rhizome. The raceme is elongate, subflexuous, loosely and successively flowering to far exceed the leaf. The sepals are pubescent, five-veined and broadly ovate with recurved margins. The round margin of the lip is abruptly notched with a central apiculum as seen in the variation of *S. argentata* described as *S. vulcanica*.

49. *Stelis distans* Luer & Hirtz, sp. nov.

Ety.: From the Latin *distans*, "distant," referring to the remotely flowered raceme.

Planta parva caespitosa, racemo laxo paucifloro secundo folio anguste elliptico plus minusve duplongiore, sepalis latissime ovis trinervis lateralibus minoribus obtusis ad medium connatis, petalis semilunatis incrassatis et labello triangulari distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-1.5 cm long, enclosed by a tubular sheath and another 1 or 2 at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute to acute, petiolate, 2-3 cm long including a petiole 1-1.5 cm long, the blade 0.4-0.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, lax, secund, several-flowered raceme 6-8 cm long including the peduncle 3 cm long, with most flowers open simultaneously, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1.25 mm long; ovary 1 mm long; flowers red-purple; **sepals** incompletely expanded, glabrous, the dorsal sepal broadly ovate, obtuse, 3 mm long, 3.5 mm wide, 3-veined, connate 1 mm to the lateral sepals, the lateral sepals oblique, connate 1 mm into a shallowly concave, bifid synsepal, 2.5 mm long, each sepal 2.25 mm wide, obtuse; **petals** transversely ovate, broadly rounded at the apex with the margin thickened, 0.75 mm long, 1.25 mm wide, thickened through the middle, concave below; **lip** thickly pyramidal, 0.5 mm long, 0.8 mm wide, 0.5 mm deep, shallowly concave anteriorly within the rounded apical margin, the disc with a low, rounded, central callous, the base cuneate, hinged to the obsolescent column-foot; **column** stout, 0.75 mm long, 1 mm wide, with the anther and the bilobed stigma apical.

Zamora Chinchipe: along Río Zamora, between Loja and Zamora, alt. 1500 m, 20 Feb. 1986, *C. Luer, J. Luer, A. Hirtz & W. Flores & A. Embree* 11955 (Holotype: MO).

This species, known from southern Ecuador, is characterized by the small, caespitose habit; narrow elliptical leaves somewhat longer than the ramicauls; and an erect, loosely several-flowered, secund raceme. The dorsal sepal is broadly ovate; the lateral sepals are smaller and semiconnate into a shallowly concave, bifid synsepal. The petals are transversely ovate, thickened on the rounded margin and thickened across the middle. The lip is ovoid, shallowly concave with a rounded callus on the dorsum.

50. *Stelis dodsonii* Luer, sp. nov.

Ety.: Named for Calaway Homer Dodson, co-collector of this species.

In habitu species haec *S. lindenii* Linden persimilis, sed sepalis dense pubescentibus, petalorum marginibus subverrucosis et labello oblongo apiculato differt.

Plant large, epiphytic, ascending-caespitose; roots slender. Ramicauls erect, relatively slender, 14-25 cm long, with by close, tubular sheath above the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 9-15 cm long including the petiole 1.5 cm long, the blade 3-4.5 cm wide, cuneate below into the petiole. **Inflorescence** 1-2 erect, strict, distichous, many-

flowered racemes with several flowers open simultaneously, congested above, loosely flowered below, 15-20 cm long including the peduncle 4-5 cm long, with a spathe 1-1.5 cm long, at an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2-2.5 mm long; pedicels 1 mm long; ovary 1.75 mm long; **sepals** similar, fleshy, brown, glabrous externally, with a dense, short, white pubescence within, broadly ovate, broadly obtuse, connate below the middle, the dorsal sepal 3 mm long, 2.5 mm wide, 3-veined, the lateral sepals 2 mm long, 2.25 mm wide, 3-veined; **petals** light brown, transversely ovate, broadly obtuse, 0.8 mm long, 1.25 mm wide, 3-veined, with the margin thickened and subverrucose, concave below the middle; **lip** light brown, oblong-obovate, subquadrate, 1 mm long, 0.9 mm wide, 0.5 mm deep, concave anteriorly with the margin incurved and sharply apiculate, the bar lobed on either side of a deep glenion, the dorsum rounded, densely and minutely pubescent at the base, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.25 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Pichincha: west of Calacalí and La Liberia, alt. 2100 m, 4 Apr. 1985, C. Luer, J. Luer, A. Hirtz, C. Dodson & P. Dodson 11057 (Holotype: MO); same area, alt. 2200 m, 7 Apr. 1984, C. Luer, S. Dalström, T. Höijer & A. Hirtz 9996 (MO).

This large species is known from the western slopes of Pichincha near Quito. Vegetatively, it is characterized by a broadly elliptical leaf, thrice shorter than the ramicaul. Although the flowers are about the same size and shape as those of *S. lindenii*, the sepals are densely short-pubescent within; the margins of the petals are subverrucose; and the lip is oblong, longer than broad, concave above the middle with the apex incurved and sharply apiculate.

51. *Stelis elongatissima* Luer & Hirtz, sp. nov.

Ety.: From the Latin *elongatissimus*, "very much elongated," referring to the inflorescence.

Planta mediocris, racemo elongatissimo distantifloro foliis anguste linearibus multolongiore, sepalis ovatis obtusis, petalis transversis uninervis et labello subquadrate.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-4 cm long, mostly enclosed by a tubular sheath and another sheath at the base. **Leaf** erect, coriaceous, narrowly linear-elliptical, acute, obscurely petiolate, 8-14 cm long including the petiole 1-2 cm long, the blade 0.5-1 cm wide, gradually narrowed below into the petiole. **Inflorescence** an elongated, flexible, very distantly many-flowered raceme with few flowers open simultaneously, up to 43 cm long including the peduncle 18-20 cm long, with a spathe 8 mm long, at an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2-2.5 mm long; pedicels 2.5-3 mm long; ovary 2 mm long; **sepals** expanded, purple, similar, fleshy, glabrous externally, microscopically cellular-glandular within, broadly ovate, broadly obtuse, connate basally, the dorsal sepal 2.25 mm long, 2 mm wide, 3-veined, the lateral sepals 2 mm long, 2 mm wide, 3-veined; **petals** purple, transversely oblong, broadly rounded at the apex, shallowly concave below a slightly thickened margin, 0.75 mm long, 1 mm wide, 1-veined; **lip** purple, thickly subquadrate, 0.75 mm long, 1 mm wide, 0.75 mm deep, shallowly concave anteriorly with the margin broadly rounded, the bar rounded with a shallow glenion, the dorsum densely and minutely pubescent above the base, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Cutucú, along the new road between Mendez and Morona, alt. 950 m, 18 Jan. 1989, C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 14000 (Holotype: MO).

The inflorescence of this species found in the Cordillera del Cutucú is exceedingly long with distantly spaced flowers. The leaves are narrowly linear, twice to thrice longer than the ramicauls. The sepals are broadly ovate and similar, the petals are single-veined, and the lip is semi-orbicular with a glenion, and pubescent at the base.

52. *Stelis exasperata* Luer, sp. nov.

Ety.: From the Latin *exasperatus*, "with short, rigid points," referring to the petals.

Species haec *S. hallii* Lindl. affinis, sed ramicaulibus racemisque foliis ellipticis longioribus, racemis subfractiflexis successive multifloris, sepalis late ovatis subaequalibus microscopice ciliatis pubescentibusque, petalis incrassatis minute exasperatis differt.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 3-11 cm long, enclosed by 2 tubular sheaths, and another 1-2 at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4.5-6.5 cm long including a petiole 1-2 cm long, the blade 0.8-1.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** 1-3 erect, congested, distichous, many-flowered racemes, 5-11 cm long including the peduncle 1.5-4 cm long, several flowers open simultaneously, with a slender spathe ca. 8 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5-2 mm long; pedicels 1.5-0.5 mm long; ovary 1 mm long; **sepals** thin, light green or light rose, suffused with purple medially, expanded, microscopically short-pubescent and ciliate, broadly ovate, obtuse, subequal, connate below the middle, the dorsal sepal 2.25-3.6 mm long, 3.6 mm wide, 3-veined, the lateral sepals oblique, 2 mm long, 2.3-3 mm wide, 3-veined; **petals** green or rose, transversely semi-lunate, 0.5 mm long, 1.3 mm wide, broadly thickened above the concave base, the apex broadly rounded, minutely exasperate; **lip** green or rose, thickly subquadrate, 0.5 mm long, 0.75 mm wide, 0.5 mm deep, the apex broadly rounded with a thick margin, shallowly concave anteriorly with a small glenion, the dorsum with a central, round, pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Carchi: forest between Tulcán and Maldonado, alt. 2050 m, 2-4 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9921 (Holotype: MO); same collection data, C. Luer, S. Dalström & T. Höjjer 9940 (MO); same area, alt. 1950 m, 2-4 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9915 (MO).

Vegetatively, this species from northernmost Ecuador is distinguished by slender ramicauls that are longer than the narrowly elliptical leaves. One to three congested racemes with small, widely spread flowers basically similar to many species surpass the leaves. The sepals are broadly ovate and microscopically ciliate and pubescent. The petals are broadly thickened and covered by minute, sharp points along the rounded apex. In some specimens the points are reduced to cells. The lip is semi-orbicular with a small glenion, and a single, rounded callus on the dorsum.

53. *Stelis excavata* Luer & Hirtz, sp. nov.

Ety: From the Latin *excavatus*, "with a cavity," referring to the concave labellum.

Planta grandis breviter repens, racemo multifloro foliis anguste ellipticis longiore, sepalis similibus ovatis intus pubescentibus, petalis ad apicem incrassatis et labello crasso excavato distinguitur.

Plant large, epiphytic, shortly ascending-repent, the rhizome stout, ca. 5 mm between ramicauls; roots slender along the rhizome. Ramicauls erect, slender, 6-11 cm long, enclosed by a tubular sheath along the middle third, and 2-3 tubular sheaths below. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 10-13 cm long, including a petiole 1-1.5 cm long, the blade 1.8-2.4 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, subsecund, distichous, many-flowered raceme with many flowers open simultaneously, 15-17 cm long including the peduncle ca. 1 cm long, with a spathe 10-12 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 5 mm long below to 2 mm long above; pedicels 1.5-2 mm long; ovary 1 mm long; **sepals** yellow, glabrous externally, pubescent within, ovate, obtuse, connate basally, the dorsal sepal 3 mm long, 3 mm wide, 3-veined, the lateral sepals 2.5 mm long, 2.8 mm wide, 3-veined; **petals** purple, transversely ovate, with the apex broadly obtuse with a thick, flat margin, concave below the margin and below a transverse bar, 0.6 mm long, 0.9 mm wide; **lip** purple, thick, subspheroid, 0.8 mm long, 0.8 mm wide, 0.6 mm deep, deeply concave anteriorly with the margins curved from obtuse, marginal angles above, rounded at the apex, the dorsum slightly convex with a glenion on the dorsum continuous with an elliptical cavity on the anterior surface, truncate basally, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the anther and the bilobed stigma apical.

Morona-Santiago: around Campamento Guarumales, alt. 1650 m, 24 Mar. 1991, C. Luer, J. Luer, A. Andreetta & L. Morocho 15247 (Holotype: MO).

This large, small-flowered species is apparently restricted to southeastern Ecuador. It is characterized by a strict, crowded, many-flowered raceme longer than the narrowly elliptical leaf. The sepals are equally ovate and pubescent within. The lip is thick, subspherical, concave anteriorly with protruding margins, obtusely angled above, continuous with the rounded apex, the bar deeply concave anteriorly.

54. *Stelis exilis* Luer & Hirtz, sp. nov.

Ety.: From the Latin *exilis*, "slender, thin," referring to the habit.

Planta mediocris dense caespitosa, racemo laxo fractiflexo successive multifloro foliis anguste ellipticis multilongiore, sepalis latissime ovatis obtusis, petalis transversis apice incrassato late obtuso, et labello crasso subquadrato obtuso superne tricalloso distinguitur.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 1.5-2 cm long, enclosed by a tubular sheath and another sheath at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, indistinctly petiolate, 3-5.5 cm long including the petiole 1.5-2 cm long, the blade 4-5 mm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect to bending, lax, distichous, flexuous, successively many-flowered raceme, 2-3 flowers open simultaneously, 15-30 cm long including the peduncle 10-11 cm long; floral bracts oblique, acute, 2 mm long; pedicels 1 mm long, enclosed within the bract; ovary 1 mm long; **sepals** purple, spreading, glabrous externally, long-pubescent within, transversely ovate, obtuse, the dorsal sepal 1.8 mm long, 2.1 mm wide, 3-veined, connate basally to the lateral sepals, the lateral sepals 1.5 mm long, 2 mm wide, 3-veined; **petals** purple, transversely ovate, concave, broadly obtuse with the margin thickened, microscopically subverrucose, 0.8 mm long, 1 mm wide, 3-veined, shallowly concave below the apex; **lip** purple, subovoid, obtuse, 0.6 mm long, 0.8 mm wide, 0.4 mm deep, the anterior surface shallowly concave with a small glenion, the dorsum with 3 low, rounded calli, the base truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipe: Cordillera del Condor, east of Paquisha, alt. 1450 m, 19 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11937 (Holotype: MO).

This species is apparently endemic in southeasternmost Ecuador. It is characterized by a densely caespitose habit with narrowly elliptic, petiolate leaves that are far surpassed by an elongating, flexuous, successively flowering raceme. The sepals and petals of the tiny flowers are wider than long. The lip is shallowly concave anteriorly with a small glenion, and with three small calli on the dorsum.

55. *Stelis falcifera* Luer & Hirtz, sp. nov.

Ety.: From the Latin *falcifer*, "sickle-bearing," referring to the spathes.

Planta mediocris prolificans, racemo densissime multifloro folio elliptico petiolato multilongiore, spathis proportione grandis acutis, sepalis ellipticis obtusis lateralibus liberis, petalis transversis apice incrassato late obtuso, et labello crasso subquadrato obtuso distinguitur.

Plant medium in size, epiphytic, climbing; roots slender. Ramicauls erect, stout, prolific, 5-7 cm long, enclosed by a tubular sheath and another sheath at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 5-6 cm long, the petiole 1.5 cm long, the blade 1-1.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, many-flowered raceme, many flowers open simultaneously, 15-20 cm long including the peduncle 2-3 cm long, from an acute, slender spathe 1.5-2 cm long; floral bracts tubular, 2.5 mm long; pedicels 1 mm long, enclosed within the bract; ovary 1 mm long; **sepals** spreading, white, glabrous, ovate, obtuse, the dorsal sepal 3 mm long, 2.5 mm wide, 3-veined, shortly connate basally to the lateral sepals, the lateral sepals nearly free, 2.5 mm long, 2 mm wide, 3-veined; **petals** dark purple, transversely elliptical, concave, broadly obtuse with the margin thickened, 0.85 mm long, 1.1 mm wide, 3-veined, shallowly concave below the apex; **lip** dark purple, subquadrate, obtuse, 0.75 mm long, 0.85 mm wide, 0.5 mm deep, the anterior surface shallowly concave with a glenion, the dorsum with a low, rounded callus, the base truncate, hinged to the base of the column; **column** stout, 0.6 mm long, the foot obsolescent, the anther and the bilobed stigma apical.

Pichincha: west of Calacalf, alt. 2550 m, 4 Apr. 1985, C. Luer, J. Luer & A. Hirtz 11052 (Holotype: MO).

This species is apparently endemic in west-central Ecuador. It is characterized by a prolific habit that creates a series of ramicauls up to a meter long. From the base of each elliptical, petiolate leaf the next ramicaul is produced, along with a long, narrow, curved spathe, and the inflorescence. The cylindrical raceme, much longer than the leaf, is tightly packed with numerous, small, overlapping flowers. The sepals are white, the dorsal sepal being slightly larger than the lateral sepals, while the central figures are dark purple. The lip is subquadrate with a glenion and a callus on the dorsum.

56. *Stelis ferax* Luer & Hirtz, sp. nov.

From the Latin *ferax*, "fruitful," referring to the copious production of capsules.

Planta mediocris, racemo erecto disticho multifloro foliis ellipticis longi-petiolatis longiore, floribus parvis plerumque capsulas formantibus, sepalis ovatis obtusis pubescentibus, petalis transverse oblongis, et labello minutissimo subquadrato convexo apiculato distinguitur.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-7 cm long, enclosed by a tubular sheath from below the middle and another 2 sheaths at the base. **Leaf** erect, thinly coriaceous, elliptical, acute, petiolate, 5-10 cm long including the petiole 1-2 cm long, the blade 1.5-2.5 cm wide, cuneate below into the slender petiole. **Inflorescence** an erect, congested, distichous, successively many-flowered raceme 7-15 cm long, including the peduncle 4-7 cm long, with few flowers open simultaneously, almost all forming capsules 5-6 mm long including the peduncle 5-9 cm long, subtended by a thin spathe ca. 5 mm long, at an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** yellow-white, glabrous externally, pubescent within, ovate, obtuse, connate basally, the dorsal sepal 2.4 mm long, 2.4 mm wide, 3-veined, larger than the lateral sepals, the lateral sepals oblique, 1.1 mm long, 1.8 mm wide, 3-veined; **petals** yellow-white, transversely oblong, shallowly concave, 0.5 mm long, 1 mm wide, 3-veined, with the apex broadly subtruncate and thickened; **lip** yellow-white, thickly subquadrate, 0.5 mm long, 0.6 mm wide, 0.6 mm deep, the anterior surface convex with the apex broadly rounded, minutely apiculate, the bar thick, rounded with a narrow, longitudinal glenion, the dorsum microscopically pubescent, the base truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Carchi: near the pass between Tulcán and Maldonado, alt. 2400 m, 16 Mar. 1991, C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz 15084 (Holotype: MO).

This species is apparently endemic in northernmost Ecuador. It is distinguished by an acute, elliptical, long-petiolate leaf about as long as the slender ramicaul. A slender raceme of numerous, tiny, successive flowers surpasses the leaf. The flowers are probably self-fertilized, because practically every flower develops a capsule. The sepals are pubescent and broadly ovate, the laterals being smaller and oblique. The petals are transversely oblong. The minute lip is similar to those species related to *S. argentata* with a marginal apiculum.

57. *Stelis flexuosissima* Luer & Hirtz, sp. nov.

Ety.: From the Latin *flexuosissimus*, "very flexuous," referring to the zigzag raceme.

Species haec *S. concinnae* Lindl. affinis, sed habitu multijore, bracteis floralibus majore conspiciosis differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 6-8 cm long, enclosed by a tubular sheath above the middle and 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical, acute, 7-8.5 cm long including a petiole ca. 1 cm long, the blade 1.2-1.7 cm wide, cuneate below into the petiole. **Inflorescence** an erect or suberect, flexible, flexuous, subcongested, successively many-flowered raceme with 1-4 flowers simultaneously, 12-23 cm long including the peduncle 6-7 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 5 mm long; pedicels 2-2.5 mm long; ovary 1.75 mm long; **sepals** purple, pale on the margins, similar, ovate with revolute margins, obtuse, pubescent, long-pubescent toward the apices, connate basally, 3 mm long, 2 mm wide expanded, 3-veined; **petals** purple, transversely elliptical-oblong, thin, shallowly concave, 1 mm long, 1.5 mm wide, 3-veined, the apex broadly rounded, narrowly thickened on the margin; **lip** purple, oblong-cuneate, 1 mm long, 1 mm wide, 0.5 mm deep, the apex broadly rounded, thickened centrally, shallowly sulcate, extending forward anteriorly as a narrow glenion, minutely pubescent at the base, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.2 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchi: south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12012 (Holotype: MO).

This species is little more than a gigantic *S. concinna*. Except for the larger size, the flowers are similar with the sepals widely diverging with revolute sides. The flexible, flexuous racemes are also similar, but the floral bracts at each angle are conspicuous in *S. flexuosissima*. Vegetatively, there is no similarity. The ramicauls and leaves are many times larger.

58. *Stelis floresii* Luer & Hirtz, sp. nov.

Ety.: Named for Washington Flores of Quito, Ecuador, co-collector of this species.

Species haec *S. hallii* Lindl. similis, sed foliis latioribus manifeste petiolatis, racemo brevioris, sepalis intus intense pubescentibus minus profunde connatis differt.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 3-10 cm long, enclosed by 2 loose, tubular sheaths, and another at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, petiolate, 6-8 cm long including the petiole 1.5-2.5 cm long, the blade 1-1.7 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subcongested, distichous, simultaneously many-flowered raceme, 8-13 cm long including the peduncle 3-4 cm long, from an annulus below the apex of the ramicaul; floral bracts acute, oblique, 3 mm long; pedicels 1.5 mm long; ovary 1.25 mm long; **sepals** purple to light rose externally, diffusely minutely pubescent and grayish internally, expanded, broadly ovate, obtuse, subequal, connate basally, the dorsal sepal 4 mm long, 3.25 mm wide, 3-veined, the lateral sepals oblique, 3.5 mm long, 3 mm wide, 3-veined; **petals** yellow-green, semilunate, 0.75 mm long, 1.1 mm wide, shallowly concave below the broadly rounded and thickened apical margin, thick transversely, concave at the base; **lip** green or purple, subquadrate, 0.75 mm long, 1 mm wide, 0.75 mm deep, the apex broadly rounded, shallowly concave anteriorly with a faint, superficial glenion, the dorsum with a low, rounded, pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Tungurahua: Cordillera de los Llanganates, Leito, alt. 2870 m, 11 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11139 (Holotype: MO).

Morona-Santiago: Cordillera del Condor, east of Guismé, alt. 1500 m, 18 Feb. 1986, C. Luer, J. Luer, A. Hirtz et al. 11904, 11913 (MO); east of the pass between Gualaceo and Limón, alt. 2650-2750 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11829, 11838 (MO).

Loja: above Yangana north of the pass, alt. 2400 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10871 (MO).

Zamora-Chinchi: east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10721 (MO).

This species is very similar to *S. hallii*, and it possibly partly accounts for the reportedly wide distribution of the latter. Vegetatively, *S. floresii* is distinguished by wider leaves that are more distinctly petiolate. Both species produce a raceme of flowers of similar qualities and quantity. The sepals of *S. floresii* are densely pubescent, and the petals and lip are proportionately larger in comparison to the sepals than those of *S. hallii*.

59. *Stelis formosa* Luer & Hirtz, sp. nov.

From the Latin *formosus*, "beautiful," referring to the pleasing characters of the plant.

Planta grandis, racemo erecto disticho multifloro foliis ellipticis petiolatis multilongiore, bracteis floralibus conspicuis, floribus mediocribus sepalis ovatis obtusis breviter pubescentibus, petalis transverse oblongis, et labello subquadrato antice concavo et excavato distinguitur.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 4-10 cm long, with a loose, tubular sheath above the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, petiolate, 5-8 cm long including the petiole 1-1.5 cm long, the blade 2-2.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, strict, congested, distichous, many-flowered raceme with several flowers open simultaneously, 15-23 cm long including the peduncle 5-9 cm long, with a spathe 1-1.5 cm long, at an annulus below the apex of the ramicaul; floral bracts conspicuous, oblique, acute, 5-6 mm long; pedicels 2 mm long; ovary 2 mm long; **sepals** rosy tan, tan, or yellow, similar, fleshy, glabrous externally, densely short-pubescent within, ovate, obtuse, connate basally into a short cup, the dorsal sepal 4 mm long, 3.5 mm wide, 3-veined, the lateral sepals 4 mm long, 3 mm wide, 3-veined; **petals** yellow-green, transversely oblong, shallowly concave, 2 mm long, 2.25 mm wide, 3-veined, with the apex broadly subtruncate and thickened; **lip** yellow-green, thickly subquadrate, 1.25 mm long, 2 mm wide, 1.5 mm deep, the anterior surface concave with the apex broadly rounded, the transverse bar with a large, deeply concave glenion, the dorsum shortly pubescent, the base truncate, hinged to the base of the column; **column** stout, 2 mm long, 2 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Loja: army road to TV tower east of Yangana, alt. 3100 m, 22 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10790* (Holotype: MO); same collection data, *C. Luer et al. 10785, 10788* (MO).

This species is apparently endemic in southeastern Ecuador. It is distinguished by a stout ramicaul with a loose sheath near the middle, and a large, obtuse, elliptical leaf with a distinct petiole. The floral bracts of the raceme are conspicuous, creating a saw-like appearance. The sepals are densely pubescent, ovate and form a basal cup. The lip is concave anteriorly and the surface of the bar has a deep, circular glenion, while the dorsum is flat and shortly pubescent.

60. *Stelis gigantea* Luer & Hirtz, sp. nov.

From the Latin *giganteus*, "gigantic," referring to the size of the habit and flowers.

Planta grandissima, racemo erecto disticho multifloro folio immenso late elliptico multilongiore, floribus grandissimis, sepalis ovatis obtusis expansis glabris, petalis crassis flabelliformibus, et labello cuneato concavo distinguitur.

Plant very large, epiphytic to terrestrial, caespitose; roots slender. Ramicauls erect, stout, 35 cm or more long, with a tubular sheath near the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, broadly elliptical-ovate, obtuse, sessile, 25 cm long, 20 cm wide, the base rounded. **Inflorescence** an erect, strict, congested, distichous, many-flowered raceme with most flowers open simultaneously, 75 cm long including the peduncle ca. 15 cm long, with a spathe ca. 5 cm long, at the base of the leaf; floral bracts oblique, obtuse, 3 mm long; pedicels 1.5 mm long; ovary 3 mm long; flowers dark purple; **sepals** fleshy, glabrous, ovate, obtuse, connate basally, the dorsal sepal of lower flowers 14 mm long, 7.5 mm wide, of upper flowers 9 mm long, 6 mm wide, 7- to 9-veined, the lateral sepals of lower flowers 13 mm long, 7 mm wide, of upper flowers 7 mm long 5.5 mm wide, 5- to 6-veined; **petals** flabellate, shallowly concave, broadly rounded and thick at the apex, 1.75 mm long, 2.5 mm wide, 3-veined; **lip** subcuneate, 1 mm long, 1.5 mm wide, 1 mm deep, the anterior surface concave with the apex broadly rounded, concave below the transverse bar with a shallow glenion, the dorsum with a low, subtrilobed callus, the base truncate, hinged to the base of the column; **column** stout, 2 mm long, 2 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Napo: Cosanga, alt. ca. 1000 m, 11 Aug. 1991, *A. Hirtz & S. Ortega 5351* (Holotype: MO), *C. Luer* illustr. 19927; south of Baeza toward Tena, alt. 1500 m, 11 Aug. 1978, *C. Luer, J. Luer, A. Hirtz & A. Andreetta 3242* (SEL); south of Baeza, alt. 1900 m, 20 Feb. 1982, *C. Luer & A. Hirtz 6861* (SEL).

This species is the largest known in the genus, with broadly elliptical leaves rivaling those of the largest in *Pleurothallis*. In addition to the immense size of the leaf, it is distinguished by numerous, dark purple flowers on an inflorescence three-quarters of a meter long. The lowermost flowers are the largest, measuring 27 millimeters from the tip of the dorsal sepal to the tips of the lateral sepals. The sepals are ovate, glabrous and spreading; the petals are thickly fan-shaped; and the lip is small, cuneate, and concave anteriorly.

61. *Stelis glaberrima* Luer & Hirtz, sp. nov.

Ety.: From the Latin *glaberrimus*, "very glabrous," referring to the sepals.

Planta parva, foliis ellipticis ramicaulibus longioribus, racemo sublate plurifloro folio plus minusve duplolongiore, sepalis ovatis obtusis glaberrimis, et labello subquadrato distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-1.5 cm long, enclosed by a loose, tubular sheath and 1-2 others at the base. **Leaf** erect, coriaceous, elliptical, subacute, 2.5-4.5 cm long including a petiole ca. 1 cm long, the blade 0.9-1.2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subla, distichous, several-flowered raceme with about 3 flowers open simultaneously, 5-7 cm long including the peduncle ca. 2.5 cm long, subtended by a slender spathe ca. 5 mm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, acute, 3 mm long; pedicels 1 mm long; ovary 1.75 mm long; **sepals** light brown, totally glabrous, broadly ovate, obtuse, the dorsal sepal 5 mm long, 4.5 mm wide, 5-veined, connate basally to the lateral sepals, the lateral sepals oblique, 3.5 mm long, 2.5 mm wide, 4-veined; **petals** yellow, transversely obovate-oblong, 1 mm long, 2 mm wide, 3-veined, with the margin broadly rounded, thickened and flat; **lip** yellow, thick, subquadrate, 1 mm long, 1.5 mm wide, 1 mm deep, shallowly concave anteriorly above the subtruncate apex, with a glenion between a pair of rounded prominences on the protruding bar, the base minutely pubescent, decurved along the shaft of the column, hinged to the base of the column; **column** 1 mm long, 1.5 mm wide, the base of the column broad, the anther and the bilobed stigma apical.

Napo: forest along the road from Baeza to Cosanga, alt. 1800 m, 14 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11273 (Holotype: MO).

This species, found at moderate altitudes on the eastern slope of Ecuador, is characterized by a small habit; elliptical leaves considerably longer than the ramicauls; a several-flowered raceme exceeding the leaf; comparatively large flowers with totally glabrous, broadly ovate, five-veined sepals; standard, transverse petals; and a shallow, subquadrate lip.

62. *Stelis globulifera* Luer & Hirtz, sp. nov.

Ety.: From the Latin *globulifer*, "bearing a little, round ball," referring to the labellar callus.

Planta parva caespitosa, racemo pluri-successivifloro folio late elliptico leviter excedenti, sepalis obtusis, petalis crassis, et labello transverse subovoideo cum callo centrali sphaeroideo distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 7-10 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, thickly coriaceous, broadly elliptical, subacute to obtuse, 2.5-3 cm long including a petiole 5-10 mm long, the blade 1 cm wide, cuneate below into a petiole. **Inflorescence** an erect to suberect, subcongested, slightly flexuous, successively several-flowered raceme, 3-4 cm long including the peduncle 2-2.5 cm long, with 1-2 flowers open simultaneously, from the base of the leaf; floral bracts oblique, acute, 2.5 mm long; pedicels 2 mm long; ovary 1.75 mm long; flowers expanded, purple; **sepals** microscopically pubescent within, transversely ovate, connate basally, the dorsal sepal 3 mm long, 4 mm wide, 5-veined, the lateral sepals oblique, 2.5 mm long, 3.5 mm wide, 4-veined; **petals** thick, transversely oblong, 0.75 mm long, 1.25 mm wide, 3-veined, thickly rounded above the concave base; **lip** thick, transversely oblong, 0.5 mm long, 1 mm wide, 0.5 mm deep, the anterior surface shallowly concave, the apex thick, broadly rounded, the dorsum with a proportionately large, spheroid callus that protrudes anteriorly instead of a glenion, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Esmeraldas: wet forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. Dodson, A. Hirtz & D. Benzing 12413 (Holotype: MO).

This little species is best distinguished by a distinct, spherical callus on the dorsum of the lip that protrudes anteriorly where a glenion would be expected to occur. The callus is a modification of the midvein of the lip, which is frequently seen as a callus, often between a smaller callus on either side, products of the lateral veins. The plant is small and caespitose with broadly elliptical leaves surpassed slightly by a successively several-flowered raceme. The flowers are "standard." The sepals are expanded and transversely obtuse. The petals are transverse and thickly rounded above the base.

63. *Stelis hoejjeri* Luer & Dalström, sp. nov.

Ety.: Named for Thomas Höjjer of Stockholm, Sweden, co-collector of this species.

Planta grandis prolificans, racemo disticho multifloro folio anguste elliptico multilongiore, floribus imbricantibus, sepalis ovatis similibus, petalis crassis semilunatis et labello triangulari acuto distinguitur.

Plant large, epiphytic, proliferating; rooting at the base. Ramicauls stout, erect, to 25 mm long below, branching to slender above, 4-10 cm long, with a tubular sheath on the middle third and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 7-11 cm long including the petiole 2 cm long, the blade 1-1.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, simultaneously many-flowered raceme, with the flowers overlapping, to 25 cm long including the peduncle 10 cm long, subtended by a spathe ca. 1 cm long, from an annulus below the apex of the ramicaul; floral bracts thin, tubular, repand, 5-6 mm long; pedicels 3-4 mm long; ovary 2 mm long; **sepals** green, suffused with purple basally, expanded, glabrous, ovate, obtuse, connate basally, similar, 5 mm long, 4.25 mm wide, 5-veined; **petals** purple, thickly semilunate, concave basally and below the broadly obtuse apex, 0.6 mm long, 0.9 mm wide; **lip** thick, triangular, 0.75 mm long, 0.8 mm wide, 0.75 mm deep, concave anteriorly, the apex subacute, the bar thick with a glenion, the dorsum with a rounded callous, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 0.75 mm wide, the anther and bilobed stigma apical, the foot obsolescent.

Carchi: forest between Tulcán and Maldonado, alt. 1950 m, 2-4 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9912 (Holotype: MO).

This species, apparently endemic in northernmost Ecuador, is characterized by the prolific, branching ramicauls with narrowly elliptical leaves. The flowers are overlapping in a congested raceme that far surpasses the leaf. The sepals are ovate and similar; the laterals reflex from their common union which is convex beneath the central apparatus. The petals are thickly semilunate with a sharp transverse callus. The lip is triangular with a glenion on the bar, and a callus on the dorsum.

64. *Stelis jimburae* Luer & Hirtz, sp. nov.

Ety.: Named for the remote community of Jimbura, near where the species was collected.

Planta grandis racemis folio elliptico petiolato plus minusve aequilongis, sepalis obtusis lateralibus supra medium connatis, et petalis crassissimis distinguitur.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, relatively stout, 9-20 cm long, with a loose, tubular sheath on the middle third and another 2 sheaths at the base. **Leaf** erect, coriaceous, elliptical-ovate, acute, petiolate, 8-14 cm long including the petiole 1.5-2 cm long, the blade 2-3 cm wide, cuneate below into the petiole. **Inflorescence** 2-4 erect, strict, distichous, subcongested, many-flowered racemes with most flowers open simultaneously, with flowers obliquely non-resupinate, 6-12 cm long including the peduncle ca. 3 cm long, with a spathe 1.2 cm long, at an annulus below the apex of the ramicaul; floral bracts oblique, dilated, acute, 5 mm long; pedicels 2 mm long; ovary 2 mm long; **sepals** brown externally, greenish brown and cellular within, the dorsal sepal ovate, obtuse, 7.5 mm long, 6.5 mm wide, 5- to 7-veined, connate to the laterals for 2 mm, the lateral sepals connate to above the middle, or adherent to the apex and splitting 1-2 mm, forming a suborbicular lamina, 5 mm long, 9 mm wide, 8-veined; **petals** brown, transversely ovate, concave at the base, with a markedly thickened transverse callus, the apex broadly rounded, 1.3 mm long, 2 mm wide, 3-veined; **lip** brown, obliquely subquadrate, 1 mm long, 1.8 mm wide, 0.8 mm deep, the anterior surface concave with the apex broadly rounded with the margin thin, the bar with a small glenion, the dorsum with a low, minutely furrowed callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipe: south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree* 11995 (Holotype: MO); same area, alt. 2800 m, 26 Jan. 1986, *S. Dalström & T. Höjjer* 1096 (MO).

This large species is known only from southeasternmost Ecuador. A few racemes of relatively large flowers are about as long as the elliptical, petiolate leaf. The synsepals are deeply connate into a broad, non-concave, bifid synsepal. The petals are broad and thick. The lip is concave above the rounded apex.

65. *Stelis kuijti* Luer & Hirtz, sp. nov.

Ety.: Named for Job Kuijt of Victoria, British Columbia, co-collector of this species.

Species haec *S. atrovioleaceae* Rchb.f. affinis, sed sepalis plurinervis, petalis grandis columnam labellumque cingentibus, et labello tricalloso minus concavo differt.

Plant large, epiphytic to terrestrial, densely caespitose; roots slender. Ramicauls erect, stout, 8-14 cm long, enclosed by a loose, tubular sheath from below the middle, and 2-3 at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 9-13 cm long including a petiole 1.5-2 cm long, the blade 3-4 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subcongested, distichous, simultaneously many-flowered raceme, 13-16 cm long including the peduncle 2-3 cm long, with a spathe 1.5 mm long; floral bracts infundibular, oblique, acute, 5-6 mm long; pedicels 3 mm long; ovary 3 mm long, 6 mm wide, 7-veined, connate basally to the laterals for 3 mm, the lateral sepals broadly ovate, oblique, obtuse, connate to each other for 3 mm, 5 mm long, 4.5 mm wide, 4-veined; **petals** purple, proportionately large, overlapping above the column and beneath the lip, transversely semilunate, the apical margin broadly rounded, flattened and thickened, 1.5 mm long, 2 mm wide, 3-veined, concave basally below the transverse callus; **lip** purple, thickly subquadrate, 1.3 mm long, 1.3 mm wide, 0.6 mm deep, concave anteriorly with the apex rounded, the bar with the glenion depressed, the dorsum concave with 3 low, minutely pubescent calli, the base truncate, hinged to the base of the column; **column** stout, 1.5 mm long, the anther and the bilobed stigma apical, the foot obsolescent.

Bolivar: terrestrial on the road embankment, old road west of Guaranda toward Pueblo Viejo, alt. 3100 m, 26 Mar. 1984, *C. Luer, S. Dalström, T. Höjjer, J. Kuijt & A. Hirtz* 9740 (Holotype: MO); old road between Guaranda and Caluma, alt. 3100 m, 10 Mar. 1982, *C. Luer & S. Dalström* 7237 (SEL).

This handsome species of high altitudes of south-central Ecuador is characterized by stout ramicauls clothed in a loose sheath and a large, elliptical, long-petiolate leaf. The raceme with large, purple bracts and flowers barely surpasses the leaf. The lateral sepals are connate to near the middle into a broad, bifid synsepal suggesting section *Humboldtia*. The proportionately large petals with a sharp, transverse callus overlap above and below the column and lip. The lip is concave above the round apex, with the dorsum tricallous.

66. *Stelis limonensis* Luer & Hirtz, sp. nov.

Ety.: Named for the town of Limón, above which this species was found.

Species haec floribus *S. atrae* Lindl. similis, sed habitu dense caespitose, foliis anguste ellipticis acutis petiolatis, racemo multilongiore, et sepalis pubescentibus differt.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 5-11 cm long, enclosed by a tubular sheath on the middle third and 2 others below. **Leaf** erect, coriaceous, narrowly elliptical, acute, 6-7 cm long including a petiole 1.5 cm long, the blade 1-1.2 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, loosely many-flowered raceme with several flowers open simultaneously, to 23 cm long including the peduncle 5-8 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, acute, 3-4 mm long; pedicels 2.5-3 mm long; ovary 1.5 mm long; **sepals** expanded, densely short-pubescent within, gray-green, broadly ovate, obtuse, connate less than 1 mm below the middle; the dorsal sepal 3.5 mm long, 3.5 mm wide, 3-veined, the lateral sepals 3 mm long, 3 mm wide, 3-veined; **petals** yellow, transversely ovate, concave below the transverse thickening, the apex broadly obtuse with a thickened margin, 1 mm long, 1.25 mm wide; **lip** yellow, thick, transversely ovoid, 0.5 mm long, 1 mm wide, 0.5 mm deep, the apex broadly rounded, shallowly concave anteriorly with a small, indistinct glenion, the dorsum with a low, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the foot obsolescent, the anther and the stigma apical, the stigma bilobed.

Morona-Santiago: Ave Maria Pass between Gualaceo and Limón, alt. 2900 m, 16 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11816 (Holotype: MO).

Except for the color and pubescence, the floral parts of this species are similar to those of *S. atra*. Instead of deep blue-purple, the sepals are gray green. The flowers are borne on a long, loose raceme, several times as long as the narrowly acute leaves. The sepals are broadly ovate; the petals have a sharp transverse callus; and the lip is ovoid, shallowly concave anteriorly with a rounded callus on the dorsum.

67. *Stelis longihirta* Luer & Hirtz, sp. nov.

Ety.: From the Latin *longihirtus*, "long-hairy," referring to the sepals.

Planta parva caespitosa, racemo paucifloro folio angustissime obovatis plus minusve duplo longiore, petalis ovatis obtusis longissime pubescentibus, petalis tenuis uninervis et labello subtriangulari obtuso.

Plant very small, epiphytic, caespitose; roots numerous, very slender. Ramicauls erect, slender, 0.5-1 cm long, enclosed by a tubular sheath from below the middle and another 1-2 other sheaths at the base. **Leaf** erect, coriaceous, very narrowly linear-obovate, subacute, 2-3 cm long with an indistinct petiole, 0.5-1 cm long, the blade 3-3.5 mm wide, gradually narrowed into the petiole. **Inflorescence** an erect, lax, successively several-flowered raceme to 5 cm long including the peduncle 3-3.5 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; flowers red-purple; **sepals** long-villous, the dorsal sepal erect, 1.75 mm long, 1.25 mm wide, incompletely 3-veined, convex, the lateral sepals ovate, obtuse, barely connate, 1.5 mm long, 1.25 mm wide, incompletely 3-veined, more or less held forward, opposite when expanded; **petals** transversely oblong-obovate, transversely obtuse with thin margins, 0.75 mm long, 0.8 mm wide, 1-veined, shallowly concave; **lip** subtriangular-ovoid, subacute at the apex, 0.5 mm long, 0.5 mm wide, 0.5 mm deep, shallowly concave anteriorly with a glenion, with the bar convex on either side, the dorsum with a low, minutely pubescent callus toward the base, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 0.75 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: cloud forest north of the pass north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11878 (Holotype: MO).

This little, caespitose species is characterized by a loose, few-flowered raceme borne about twice as high as the narrow leaves. The purple sepals are narrowly

ovate with a long, villous pubescence along the margins. The lateral sepals spread in opposite directions. The broad, transverse petals are thin and single-veined with a narrowly thickened margin. The lip is oblong-triangular, shallowly subacute and concave anteriorly, and pubescent on the dorsum.

68. *Stelis longissima* Luer & Hirtz, sp. nov.

Ety.: From the Latin *longissimus*, "the superlative of *longus*," referring to the proportionately very long raceme.

Planta parva caespitosa, racemo laxo flexuoso foliis anguste ellipticis ter longiore, sepalis late ovatis obtusis, petalis crassis triangularibus et labello triangulari-subquadrato obtuso nonconcavo distinguitur.

Plant small, epiphytic, caespitose; roots filiform. Ramicauls erect, slender, 1-2.5 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 3.5-5 cm long including an indistinct petiole ca. 1 cm long, the blade 0.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, lax, distichous, flexuous, successively many-flowered raceme, with a few flowers open simultaneously, 20-45 cm long including the peduncle 6-7 cm long, from an annulus below the apex of the ramicaul with a spathe ca. 3 mm long; floral bracts infundibular, oblique, acute, 2 mm long; pedicels 2 mm long; ovary 2 mm long; **sepals** expanded, dull yellow above the middle, dull purple-brown below the middle, glabrous externally, minutely pubescent within, broadly ovate with edges revolute, obtuse, connate basally, the dorsal sepal 2.6 mm long, 3 mm wide, 3-veined, the lateral sepals oblique, 2 mm long, 2.6 mm wide, 3-veined; **petals** purple-brown, thick, transversely triangular-ovate, concave at the base, thickened across the middle, the apex broadly obtuse with a thickened, subverrucose margin, 0.75 mm long, 1 mm wide, 3-veined; **lip** purple-brown, thickly triangular-subquadrate, 0.6 mm long, 1 mm wide, 0.6 mm deep, barely concave anteriorly if at all, the apex triangular, obtuse, the bar thick, with a narrow, shallow glenion, the dorsum with an indistinct, low callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Condor, east of Chuchumbletza, alt. 1750 m, 21 May 1988, C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13554 (Holotype: MO); near Paute dam, alt. 1550 m, 25 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14068 (MO); Cordillera del Cutucú, east of Mendez, alt. 1000 m, 5 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12654 (MO); same area, alt. 950 m, 17 Jan. 1989, C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 13960 (MO).

This species, known from the Cordillera del Condor, is distinguished by a small, caespitose habit with narrowly elliptical leaves borne by shorter ramicauls, and a proportionately long inflorescence. The successively flowered raceme, becoming thrice or more longer than the leaves, is loose, distichous, and flexuous. The sepals are expanded and obtuse; the petals are thickly triangular with a transverse callus; and the lip is nearly flat or barely concave anteriorly with a narrow glenion.

69. *Stelis macilentata* Luer & Hirtz, sp. nov.

Ety.: From the Latin *macilentus*, "thin, graceful," referring to qualities of the plant.

Planta mediocris dense caespitosa, racemo elongato stricto congesto foliis anguste ellipticis multilongiore, sepalis late ovatis obtusis, petalis cucullatis extus incrassatis uninervis, et labello subquadrato obtuso minute apiculato cum callo dorsale et margine bimammillata distinguitur.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, very slender, 3-5 cm long, with a tubular sheath below the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 4-7.5 cm long including the petiole 1.5-2 cm long, the blade 0.5-0.6 cm wide, narrowed below into the petiole. **Inflorescence** an erect, strict, secund, congested, simultaneously many-flowered raceme with most flowers open simultaneously, 12-15 cm long including the peduncle 4-5 cm long, with a spathe ca. 3 mm long, at an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1 mm long; ovary 1 mm long; flowers light yellow; **sepals** similar, glabrous, broadly ovate, broadly obtuse, connate basally, the dorsal sepal 2.5 mm long, 2 mm wide, 3-veined, the lateral sepals 2.25 mm long, 1.75 mm wide, 3-veined; **petals** cucullate, cuneate, transversely obovate, concave, 0.8 mm long, 1 mm wide, 1-veined, with the apex thick externally; **lip** subquadrate, 0.4 mm long, 0.8 mm wide, 0.6 mm deep, the anterior surface concave with the apex broadly rounded with a short, obtuse apiculum, the bar with a marginal pair of low, rounded calli, the dorsum flat, minutely pubescent, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Pichincha: new road between Quito and Santo Domingo, alt. 2600 m, 31 Mar. 1984, C. Luer, S. Dalström, T. Höjjer, J. Kuijt & A. Hirtz 9809 (Holotype: MO).

Napo: hill south of Lumbaquí, alt. 850 m, 10 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11761, 11762 (MO).

This species occurs on both sides of the Andes of central Ecuador. Related to the numerous variations of *S. pusilla*, it is distinguished by the much larger habit with very slender ramicauls, and slightly longer, narrow leaves that are surpassed by slender, secund, strict racemes of numerous, minute flowers. The sepals are ovate, obtuse, and usually not widely expanded. The petals are cuneate, cucullate and single-veined. The lip is concave anteriorly with a small, obtuse apiculum, and a pair of prominent, rounded calli on the bar.

70. *Stelis micacea* Luer & Hirtz, sp. nov.

Ety.: From the Latin *mica*, "a tiny bit," referring to the very small habit.

Planta minuta caespitosa, racemo congesto subfractiflexo folio elliptico plus minusve duplongiore, sepalis glabris late ovatis, petalis incrassatis semilunatis, labello crasso subovoideo superne cum callo orbiculari distinguitur.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-4 mm long, enclosed by a tubular sheath and another at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 5-12 mm long including a petiole 1-2 mm long, the blade 3-4.5 mm wide, cuneate below into the petiole. **Inflorescence** an erect, distichous, subflexuous, congested, several-flowered raceme with 2-3 flowers open simultaneously, 20-30 mm long including the peduncle ca. 1 cm long, from an annulus below the apex of the ramicaul; floral bracts proportionately large, oblique, acute, dilated, 1.5 mm long; pedicels 0.5 mm long; ovary 0.75 mm long; **sepals** purple or yellow, glabrous, expanded, similar, broadly ovate, obtuse, connate basally, the dorsal sepal 1.5-2 mm long, 1.75-2 mm wide, 3-veined, the lateral sepals oblique, 1.25-2 mm long, 1.5-2 mm wide; **petals** purple, transversely semilunate, concave below the thickened margin, concave at the base, 0.4 mm long, 0.6 mm wide; **lip** purple, thick, subovoid, 0.4 mm long, 0.6 mm wide, 0.3 mm deep, concave anteriorly above the broadly rounded apex, the bar with a glenion, continuous with a central, rounded callus on the dorsum, the base broadly truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 0.6 mm wide with the apical stigmatic lobes, the foot obsolescent.

Pastaza: north of Puyo, alt. 1000 m, 12 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11209 (Holotype: MO).

Napo: new road to Coca from Archidona, alt. 1200 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11226 (MO).

Morona-Santiago: Cordillera del Cutucú, along the new road between Mendez and Morona, alt. 950 m, 18 Jan. 1989, C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 13995 (MO).

Loja: south of Yangana, alt. 2250 m, 11 May 1981, C. Luer, J. Luer & A. Hirtz 6149 (SEL).

This tiny species occurs on the eastern declivities of the Andes of Ecuador. It is characterized by the minute, caespitose plant with elliptical leaves longer than the ramicauls, and a minute, closely subflexuous raceme about twice as long as the leaves. The sepals are broadly ovate and the lip is concave and obtuse anteriorly with a rounded callus on the dorsum continuous with the glenion as seen in *S. globulifera*.

71. *Stelis minutissima* Luer, sp. nov.

Ety.: From the Latin superlative *minutissimus*, "smallest," referring to the flowers.

Planta perparva caespitosa, racemo paucifloro foliis ellipticis longiore, sepalis ciliatis ovatis obtusis, petalis tenuibus suborbicularibus et labello suboblongo-obovato longiore quam latiore distinguitur.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-5 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 12-18 mm long including a petiole 3-4 mm long, the blade 5-6 mm wide, cuneate below into the petiole. **Inflorescence** a 3- to 4-flowered, congested, raceme less than 5 mm long, borne by a capillary peduncle 18-22 mm long, with 1 flower open, a capsule below, and a bud above, from an annulus below the apex of the ramicaul; floral bracts tubular, 1.5 mm long; pedicels 0.5 mm long; ovary 1 mm long; flowers minute, dull white, suffused with rose within; **sepals** fleshy, glabrous externally, sparsely ciliate within the

margins, ovate, subacute to obtuse, similar, 0.8 mm long, 0.8 mm wide, 1-veined, but with faint, incomplete lateral veins, connate basally; **petals** thin, suborbicular, shallowly concave, broadly rounded at the apex, 0.5 mm long, 0.5 mm wide; **lip** thickly subobovate, 0.5 mm long, 0.3 mm wide, 0.3 mm deep, shallowly concave anteriorly within the margin, with a short, obtuse apiculum, the disc callous, minutely pubescent at the base, the base truncate, hinged to the obsolescent column-foot; **column** stout, 0.5 mm long, 0.3 mm wide, with the anther and bilobed stigma apical.

Azuay: scrub vegetation south of Cuenca toward Saraguro, alt. 3000 m, 17 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuijter* 9537 (Holotype: MO).

This species, found in southern Ecuador, is perhaps the smallest-flowered species known, with sepals eight-tenths of a millimeter long and wide. The flowers are borne slowly in a three- to four-flowered raceme. It is similar vegetatively to *S. exigua*, but the latter is characterized by a longer, more congested raceme. The sepals are thickly ciliate within the margins; the petals are thin and single-veined; and the minute lip is concave anteriorly and callous on the dorsum.

72. *Stelis nepotula* Luer & Hirtz, sp. nov.

Ety.: From the Latin *nepotula*, "a little relative," referring to the relationship with *S. morganii*.

Species haec *S. morganii* Dodson & Garay affinis, sed habitu repenti multiminore, et sepalis glabris differt.

Plant small, epiphytic, repent, the rhizome stout, branching, 5-15 mm long; roots slender. Ramicauls ascending-erect, slender, 5-10 mm long, enclosed by a loose, tubular sheath and another at the base. **Leaf** erect, thickly coriaceous, elliptical, acute, 15-25 mm long including a petiole 2-3 mm long, the blade 5-6.5 mm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, several-flowered raceme, with a few flowers open simultaneously, 15-20 mm long including the peduncle 3-5 mm long, borne behind the leaf, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 0.75 mm long; ovary 0.75 mm long; flowers yellow; **sepals** glabrous, expanded, connate basally, broadly ovate, obtuse, the dorsal sepal 1.5 mm long, 1.75 mm wide, 3-veined, the lateral sepals 1 mm long, 1.5 mm wide; **petals** transversely ovate, cellular-pubescent, shallowly concave, 0.5 mm long, 0.6 mm wide, 1-veined, the apex broadly rounded, thickened at the tip and along the margin; **lip** ovoid-subquadrate, thick, 0.3 mm long, 0.6 mm wide, 0.3 mm deep, the anterior surface shallowly concave with the apex broadly rounded, transversely thickened across the center, with a small glenion, the dorsum shallowly concave without a callus, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Napo: forest along the new road to Coca, north of Archidona, alt. 1200 m, 13 Apr. May 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores* 11217 (Holotype: MO).

Morona-Santiago: forest along Río Upano, north of Macas, alt. 1100 m, *C. Luer, J. Luer, A. & P. Jesup, A. Hirtz & S. Ortega* 13924 (MO).

This small species, known only from lowland, eastern Ecuador, is related to the much larger *S. morganii*, which is widely distributed on the western declivities. Vegetatively, *S. nepotula* is distinguished by a thick, creeping rhizome that gives rise to short, ascending ramicauls with their small, thickly coriaceous leaves. A congested raceme of tiny flowers is borne behind the leaf. The sepals are glabrous; the petals are minutely pubescent; and the lip is more or less triangular without a callus on the dorsum.

73. *Stelis ortegae* Luer & Hirtz, sp. nov.

Ety.: Named for Santiago Ortega of Quito, Ecuador, co-collector of this species.

Species parva caespitosa, foliis ellipticis brevipetiolatis, sepalis late ovatis, petalis crassis lunatis et labello obtuso unicalloso distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 0.5-1 cm long, enclosed by a two tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute to obtuse, 2.5-4 cm long including a petiole ca. 0.5 cm long, the blade 0.8-1.3 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, subcongested, slightly flexuous, distichous, several-flowered raceme with 1-few flowers open simultaneously, 3-4 cm long including the peduncle 2 cm long, from an annulus below the

apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1.5 mm long; ovary 2 mm long; **sepals** expanded, flat, red-purple, glabrous externally, glandular-cellular within, broadly ovate, obtuse, connate below the middle, the dorsal sepal 4 mm long, 4.5 mm wide, 5-veined, the lateral sepals oblique, 3 mm long, 4 mm wide, 5-veined; **petals** fleshy, red-purple, transversely obovate, shallowly concave below the broadly rounded, thick, ill-defined margin, 1 mm long, 1.25 mm wide, 3-veined; **lip** red-purple, thick, transversely oblong-ovoid, 0.6 mm long, 0.9 mm wide, 0.8 mm deep, the apex thickened, broadly rounded, shallowly concave anteriorly without a visible glenion, the dorsum with a rounded, pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the anther and the stigma apical, with the stigma bilobed, the foot obsolescent.

Morona-Santiago: Cordillera del Cutucú, new road between Mendez and Morona, alt. 950 m, 17 Jan. 1989, C. Luer, J. Luer, A. Hirtz, S. Ortega, A. & P. Jesup 13958 (Holotype: MO); east of Guismé, alt. 1650 m, 20 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14018 (MO).

This species occurs in the lowlands of the Cordillera del Cutucú. It is distinguished by short ramicauls with proportionately large, broad, leaves and a few-flowered raceme of proportionately large, flat flowers. The sepals are broadly obtuse, the petals are thick, and the lip is obtuse with a callus on the dorsum.

74. *Stelis pachyphyta* Luer & Hirtz, sp. nov.

Ety.: From the Greek *pachyphyta*, "a thick plant," referring to the habit.

Planta grandis caespitosa, racemo secundo multifloro congestissimo folio crassissimo sessile conduplicato longiore, floribus planis imbricatis, sepalis obtusis, et petalis labelloque oblongo simplicis.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 6 mm thick above, 3-9 cm long, enclosed by a large, loose tubular sheath above the middle and 2-3 other sheaths at the base. **Leaf** erect, thickly coriaceous, broadly ovate, obtuse, 8-16 cm long, the blade 4-7 cm wide, conduplicate in lower half, rounded at the sessile base. **Inflorescence** a thick, rigidly erect, very congested, many-flowered raceme, secund with flowers overlapping, many flowers open simultaneously, 18-24 cm long including the peduncle 10-15 cm long, from the base of the leaf, with a spathe ca. 1 cm long; floral bracts broad, tubular, 3 mm long; pedicels 3 mm long; ovary 3 mm long; flowers dark purple; **sepals** fleshy, glabrous externally, diffusely cellular-glandular within, ovate, obtuse, the dorsal sepal 5 mm long, 4.5 mm wide, 5-veined, connate 1 mm basally, the lateral sepals 5 mm long, 3.5 mm wide, connate 1.5 mm; **petals** transversely triangular-semilunate, 1.3 mm long, 1.8 mm wide, 3-veined, shallowly concave below the rounded, thickened margin; **lip** oblong-subquadrate, 0.8 mm long, 1.3 mm wide, 1.3 mm deep, the bar shallowly concave anteriorly, with a small glenion, the dorsum narrow, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.75 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchipe: south of Yangana above Valladolid, alt. 1900 m, 23 Mar. 1985, C. Luer, J. Luer & A. Hirtz 10848 (Holotype: MO); same area, alt. 2000 m, 18 Mar. 1984, C. Luer, S. Dalström & T. Höjjer 9616 (MO); Quebrada Honda, alt. 1500 m, 17 Jan. 1982, D. D'Alessandro 114 (SEL); new road between Loja and Zamora, alt. 2250 m, C. Luer, A. Hirtz et al. 13608 (MO).

Napo: near Baeza, alt. 1800 m, May 1982, A. Hirtz 307 (SEL).

This large species is apparently endemic in southernmost Ecuador. It is distinguished by short, thick ramicauls and large, thickly coriaceous leaves that are conduplicate at the sessile base. From within the fold, the thick, stout, strict peduncle rises to bear a very congested raceme of overlapping, dark purple flowers. The flowers present in two rows, both facing the same direction. The floral parts are obtuse and not remarkably distinctive.

75. *Stelis phil-jesupii* Luer, sp. nov.

Ety.: Named for H. Phillips Jesup of Bristol, CT, co-collector of this species.

Planta parva caespitosa, racemo laxo paucifloro, sepalo dorsali orbiculari, sepalis lateralibus brevibus latioribus quam longis, petalis carnosus obtusis, et labello subquadrato apice plano rotundo.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-9 mm long, enclosed by a loose tubular sheath and another at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 29-30 mm long including a petiole 5-10 mm long, the blade 7-10 mm wide, cuneate below into the petiole. **Inflorescence** an erect, successive, distantly few-flowered raceme to 28 mm long including the peduncle 20 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1-1.5 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers purple-black; **sepals** glabrous external-

ly, microscopically pubescent within, the dorsal sepal suborbicular, round at the apex, 2.5 mm long, 2.5 mm wide, 5-veined, connate basally, the lateral sepals transversely ovate, oblique, obtuse, 1 mm long, 2 mm wide, 4-veined; **petals** thickly triangular, smooth, 0.75 mm long, 1.2 mm wide, thickened above the concave base to the broadly obtuse apex; **lip** thick, subquadrate, 0.5 mm long, 1 mm wide, 0.5 mm deep, flat anteriorly with a small glenion, with the apex rounded, the dorsum with a rounded, microscopically pubescent callus, the base truncate, hinged to an obsolete column-foot; **column** stout, 0.8 mm long, 0.8 mm wide, with the anther and the bilobed stigma apical.

Zamora-Chinchipec: Cordillera del Condor, east of Los Encuentros, alt. 1500 m, 21 Jan. 1989, C. Luer, J. Luer, A. Jesup & P. Jesup 14041 (Holotype: MO); Cordillera del Condor, alt. ca. 1500 m, cultivated at Ecuagenera, Gualaceo, 7 Mar. 2001, C. Luer 19839 (MO).

This species is known from the Cordillera del Condor in southeastern Ecuador. It is characterized by a small habit, with a loose, successively flowered raceme that eventually surpasses the elliptical leaves. The sepals are convex with revolute margins. The dorsal sepal is orbicular and more deeply connate to the half-as-large laterals than they are to themselves. The petals are semilunate, and the lip shortly oblong with a callus on the dorsum.

76. **Stelis pilosa** Luer & Hirtz, sp. nov.

Ety.: From the Latin *pilosus*, "with long hairs," referring to the densely pubescent sepals.

Planta parva caespitosa, racemo sublaxo paucifloro folio elliptico superanti, bracteis floralibus inflatis, sepalis ovatis similibus dense pubescentibus, petalis transversis oblongis concavis, et labello subquadrato apice rotundo distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 8-12 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, elliptical-obovate, subacute to obtuse, petiolate, 25-45 mm long including a petiole 8-10 mm long, the blade 10-15 mm wide, cuneate below into the petiole. **Inflorescence** a suberect, distichous, sublax, successively several-flowered raceme 5-7 cm long including the peduncle ca. 1 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, obtuse, inflated, 2-3 mm long; pedicels 1 mm long; ovary 1 mm long; flowers purple; **sepals** glabrous externally, diffusely and densely pubescent within, ovate, obtuse, 3-veined, connate basally, the dorsal sepal 4 mm long, 4 mm wide, the lateral sepals 3.5 mm long, 3.5 mm wide; **petals** transversely oblong, broadly rounded at the apex, concave, 1 mm long, 1.6 mm wide; **lip** short but thick, subquadrate, 0.5 mm long, 1 mm wide, 1 mm deep, shallowly concave anteriorly with the apex rounded, the anterior surface with a long, narrow glenion, the dorsum minutely and densely short-pubescent, the base truncate, hinged to an obsolete column-foot; **column** stout, 1 mm long, 0.8 mm wide, with the anther and the bilobed stigma apical.

Pastaza: forest north of Mera, alt. 1350 m, 12 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11202 (Holotype: MO).

This species is apparently endemic in east-central Ecuador. It is characterized by the small, caespitose habit and a several-flowered raceme surpassing the elliptical leaf. The floral bracts are inflated; the sepals are ovate, obtuse, more or less equal, and covered within by a dense pubescence; and the petals are thin and concave. The lip is thickly discoid with a minutely pubescent, shallow dorsum.

77. **Stelis polycarpica** Luer & Hirtz, sp. nov.

Ety.: From the Greek *polycarpicus*, "fruiting many times," referring to the prolific production of fruit.

Planta grandis, racemo multifloro congesto foliis acutis ellipticis longipetiolatis longiore, floribus plerumque capsulas formantibus, sepalis glabrous ovatis obtusis lateralibus semiconnatis, petalis ad apicem transverse incrassatis et labello perparvo ovoideo distinguitur.

Plant medium to large, epiphytic, caespitose; roots fine. Ramicauls erect, slender, 9-20 cm long, enclosed by a tubular sheath above the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, long petiolate, acute, the blade 10-15 cm long, 2.5-3.5 cm wide, cuneate below into the slender petiole 1.5-2 cm long. **Inflorescence** a strict, erect, congested, secund, many-flowered raceme with most flowers bearing capsules simultaneously, 12-18 cm long including the peduncle 2-3 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, tubular, obtuse, 3 mm long; pedicels 1.5 mm long; ovary 2.5-3 mm long, capsules to 10 mm long; **sepals** light yellow-green, suffused with rose,

glabrous, ovate, obtuse, the dorsal sepal 8 mm long, 7.5 mm wide, 5- to 7-veined, the lateral sepals connate 4 mm, 7 mm long, 3.25 mm wide, 4- to 6-veined; **petals** yellow, transversely obovate, concave, with the apex thick and broadly obtuse, 0.75 mm long, 1.5 mm wide, 3-veined; **lip** thick, ovoid, shallowly concave anteriorly with the apex round, 0.5 mm long, 0.9 mm wide, 0.8 mm deep, the bar thick with an indistinct glenion, the dorsum with a low, rounded callus, truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the anther and the bilobed stigma apical.

Carchi: forest east of Maldonado, alt. 1550 m, 17 Mar. 1991, *C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz 15125* (Holotype: MO).

This species, known from northwesternmost Ecuador, is characterized by an elliptical, acute, long-petiolate leaf far surpassed by a strict, secund, crowded raceme that produces many capsules simultaneously. The sepals are ovate with the laterals semiconnate. The central apparatus is proportionately small. The petals are thick and concave. The lip is ovoid and concave anteriorly with a round apex.

78. *Stelis porphyrea* Luer & Hirtz, sp. nov.

Ety.: From the Greek *porphyreus*, "purple," referring to the plant and flowers.

Planta parva purpurea caespitosa, racemo laxo paucifloro folio elliptico superanti, bracteis floralibus parvis, sepalis ovatis obtusis similibus sparsim pubescentibus, petalis crassis transverse ovatis, et labello subquadrato apice rotundo apiculato distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1-2.5 cm long, enclosed by 2-3 tubular sheaths. **Leaf** purple, erect, coriaceous, elliptical, subacute to obtuse, 2.5-4 cm long, 0.7-1.2 cm wide, cuneate below into a petiole ca. 1 cm long. **Inflorescence** an erect, distichous, subax, simultaneously few-flowered raceme to 6 cm long including the peduncle ca. 3 cm long, from an annulus below the apex of the ramicaul; floral bracts acute, 1.5 mm long; pedicels 1.25 mm long; ovary 1.5 mm long; flowers purple; **sepals** subequal, expanded, glabrous externally, sparsely short-pubescent within, the sepals ovate, obtuse, 3-veined, connate basally, the dorsal sepal 2.5 mm long, 3 mm wide, the lateral sepals 2.25 mm long, 2.5 mm wide; **petals** transversely ovate, thick from above the base, broadly rounded at the apex, convex, 0.9 mm long, 1.25 mm wide; **lip** thick, subquadrate, 0.6 mm long, 0.8 mm wide, 0.6 mm deep, shallowly concave anteriorly with the apex rounded, with a sharp apiculum in the center, the anterior surface of the bar with a long, narrow glenion, the dorsum with a pubescent callus at the base, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.8 mm long, 0.6 mm wide, with the anther and the bilobed stigma apical.

Pichincha: forest between San Miguel de los Bancos and Mindo, alt. 2300 m, 1 Apr. 1984, *C. Luer, S. Dalström, T. Höjjer & A. Hirtz 9879* (Holotype: MO).

This small species of northwestern Ecuador is closely related to the much larger *S. argentata*. It is characterized by the caespitose habit with all parts of the plant and inflorescence purple. The raceme is simultaneously several flowered, and exceeds the leaf in length. The sepals are shortly pubescent, broadly ovate, obtuse, and more or less equal; the petals are thick and convex; and the lip is thickly subquadrate with a sharp apiculum in the center of the round apical margin.

79. *Stelis procera* Luer, sp. nov.

Ety.: From the Latin *procerus*, "elongated," referring to the peduncle and raceme.

Planta mediocris caespitosa, racemo brevi laxo cum pedunculo elongato folio anguste elliptico multilongiore, petalis suborbicularibus concavis, et labello discoideo subplano distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-4 cm long, enclosed by a loose, tubular sheath, and 2 others below. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, 6-7 cm long including a petiole 1-1.5 cm long, the blade 1.2-1.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, slender, lax, several-flowered raceme with several flowers open simultaneously, 5-12 cm long, total length to 26 cm long including a peduncle 14 cm long, with several, distant bracts, from an annulus below the apex of the ramicaul; floral bracts tubular, acute, 2-3 mm long; pedicels 1-1.5 mm long; ovary 2 mm long; **sepals** similar, cream-colored, glabrous but with shortly ciliated margins, broadly ovate, obtuse, connate basally, 2.5 mm long, 2.5 mm wide, 3-veined; **petals** yellow with purple margin, transversely oblong-suborbicular, 1 mm long, 1.5 mm wide, 3-veined, concave below the broadly rounded, slightly thickened, apical margin; **lip** yellow with purple margins,

discoid, shallowly subquadrate-oblong, 0.75 mm long, 1.4 mm wide, 1.4 mm deep, the apex broadly rounded with a slightly thickened margin, shallowly concave anteriorly with a narrow glenion, the dorsum with a low callus, pubescent, the base broadly truncate, hinged to the base of the column; **column** stout, 1.5 mm long, 1.4 mm wide, the foot obsolescent, the anther and the stigma apical and bilobed with the lobes confluent beneath the rostellar flap.

Loja: near Yangana, collected by D. D'Alessandro 80-0107, flowered in cultivation at SEL, 1981, *C. Luer 6448* (Holotype: SEL).

This species, apparently endemic in southern Ecuador, is allied to *S. major*, but differs with narrower leaves; a proportionately short, loose, several-flowered raceme borne by a thrice longer peduncle; and flowers half the size. The sepals are ovate, obtuse, and minutely ciliate; the petals are suborbicular and concave; and the lip is discoid, or flat vertically, that is, much deeper than long.

80. *Stelis protracta* Luer & Hirtz, sp. nov.

Ety.: From the Latin *protractus*, "stretched out," referring to the elongated rachis.

Planta parva mediocrisve ascendens brevis repens, racemo stricto protracto folio anguste elliptico multilongiore, floribus illis S. argentatae similibus, sed labello minute apiculato, minutissime aculeato pubescenti con glenio minuto centrali distinguitur.

Plant medium in size, epiphytic, ascending-caespitose, the rhizome stout, erect; roots fine, numerous. Ramicauls erect, stout, 4-7 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 7-9 cm long including a petiole ca. 2 cm long, the blade 1-1.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, strict, distichous, successively many-flowered raceme with several to many flowers open simultaneously, distantly flowered below, subcongested toward the tip, 15-22 cm long including the peduncle 5-7 cm long, with a few bracts, from an annulus below the apex of the ramicaul; floral bracts tubular, 1-1.5 mm long; pedicels 0.75 mm long; ovary 1.25 mm long; **sepals** expanded, purple, ciliate, shortly pubescent within, connate basally, broadly ovate, obtuse, the dorsal sepal 1.75 mm long, 1.75 mm wide, 3-veined, the lateral sepals 1.4 mm long, 1.2 mm wide, 3-veined; **petals** dark purple, transversely obovate, shallowly concave, 0.6 mm long, 0.8 mm wide, the apex broadly rounded with the margin thickened; **lip** dark purple, thick, densely covered by cellular points, transversely subquadrate, 0.4 mm long, 0.6 mm wide, 0.5 mm deep, concave inside the apical margin, the margin thin, minutely apiculate, the bar convex with a very small, round glenion below the middle, the base broadly truncate, shortly pubescent, hinged to the base of the column; **column** stout, 0.5 mm long, 1 mm wide, the foot obsolescent, the anther and the stigma apical, the stigma bilobed.

El Oro: along new road from Santa Rosa to Loja, alt. 830 m, 20 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10684* (Holotype: MO).

This tiny-flowered species is closely related to the common *S. argentata*. The long, slender raceme is strict and distantly flowered except toward the tip. Superficially similar, the flowers are smaller than the smallest known of *S. argentata*. The lip is most distinctive, being covered by microscopic, spiculate prickles. The bar is similar, but instead of a long, narrow glenion, the glenion is minute and round below the middle of the anterior surface.

81. *Stelis pubipetala* Luer & Hirtz, sp. nov.

Ety.: From the Latin *pubipetalus*, "with pubescent petals," referring to the petals.

Species haec S. lanceae Lindl. similis, sed floribus majoribus, petalis triangularibus minute pubescentibus, et labello subtriangulari tricalloso differt.

Plant large, epiphytic, scandent, long-repent, the rhizomes stout, 1-2.5 cm long between ramicauls; roots coarse. Ramicauls ascending to erect, slender, 10-12 cm long, enclosed by a tubular sheath near the middle and 2-3 sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 10-12 cm long including a petiole 1.5-2 cm long, the blade 2.5-3 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, many-flowered raceme in two ranks with many flowers open simultaneously, 8-13 cm long including the peduncle 1.5-2 cm long, from an annulus below the apex of the ramicaul, with a spathe 9-10 mm long; floral bracts oblique, acute, 4 mm long, enclosing pedicel and ovary; pedicels 1.5 mm long; ovary 1.5 mm long; **sepals** expanded, yellow-green, glabrous externally, minutely pubescent within, broadly ovate, obtuse, connate to near the middle; the dorsal sepal 4.5 mm long, 4.5 mm wide, 3-veined, the lateral sepals 3 mm long, 4 mm wide, 3-veined; **petals** purple, broadly

triangular, subacute, with a thick, flattened margin, densely short-pubescent, shallowly concave below the middle, 1.5 mm long, 1.5 mm wide; **lip** purple, thick, triangular, obtuse, 0.8 mm long, 1.3 mm wide, 1.3 mm deep, shallowly concave anteriorly with a narrow glenion, the dorsum with 3 rounded calli, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the anther and the stigma apical, with the stigma bilobed, the foot obsolescent.

Morona-Santiago: between Gualaquiza and San Juan Bosco, alt. 1250 m, 27 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10980 (Holotype: MO).

With the large, repent habit, long ramicauls, and a petiolate leaf, this species is inseparable vegetatively from *S. lancea*. However, the flowers are larger; the petals are triangular with a thick, shortly pubescent margin; and the lip is subtriangular and shallowly concave, with three distinct calli on the dorsum.

82. *Stelis purpurella* Luer & Hirtz, sp. nov.

Ety.: From the Latin *purpurellus*, "a little purple one," referring to the habit.

Species haec *S. musciferae* Lindl. similis, sed bracteis floralibus minoribus et sepalis trinervis pubescentibusque distinguitur.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 1-2 cm long, enclosed by a close, tubular sheath and 2-3 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 3-6 cm long including an indistinct petiole 1-2 cm long, the blade 0.5-0.6 cm wide, gradually narrowed below into the petiole. **Inflorescence** an erect, congested, distichous, many-flowered raceme with several flowers open simultaneously, 10-12 cm long including the peduncle 3-4 cm long, with a spathe 3 mm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2-3 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** expanded, purple, shortly pubescent, transversely ovate, obtuse, deeply connate, the dorsal sepal 3 mm long, 4 mm wide, 3-veined, the lateral sepals 2 mm long, 3.5 mm wide, 3-veined; **petals** purple, transversely semilunate, with the apex broadly rounded with a broad, flat margin, shallowly concave above the base, 0.75 mm long, 1.5 mm wide; **lip** purple, thickly triangular, 0.75 mm long, 1 mm wide, 0.5 mm deep, concave anteriorly, with the apex obtuse with a thick margin, the dorsum with a rounded, microscopically pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the anther and the bilobed stigma apical, the foot obsolescent.

Napo: Guacamayo range between Baeza and Tena, alt. 1950 m, 13 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11253 (Holotype: MO).

This species is characterized by the small habit with short ramicauls bearing considerably longer, very narrow leaves that are surpassed by a congested raceme of small, purple flowers. The flowers, as well as the plant, are similar to those of *S. muscifer*, but the floral bracts are distinctly smaller. The transversely ovate sepals are deeply connate, minutely pubescent within, and three-veined.

83. *Stelis sanctae-rosae* Luer & Hirtz, sp. nov.

Ety.: Named for the community of Sancta Rosa in southwestern Ecuador, near where the species was collected.

Planta parva dense caespitosa, racemo elongato brevipedicellato secundo folio elliptico multilongiore, sepalis ovatis trinervis grosse pubescentibus, petalis transverse oblongis concavis, et labello crasso subquadrato distinguitur.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 1-2 cm long, enclosed by 2 tubular sheaths and another at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute to acute, 2-3.5 cm long including an indistinct petiole 0.5-1 cm long, the blade 0.7-1 cm wide, narrowed below into the petiole. **Inflorescence** a congested, secund, subax, many-flowered raceme 7-9 cm long including the peduncle 3-4 cm long, with most flowers open simultaneously, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 1.5 mm long; ovary 0.75 mm long; flowers purple; **sepals** expanded, connate basally, glabrous externally, coarsely pubescent within, broadly ovate, obtuse, 3-veined, the dorsal sepal 1.75 mm long, 2 mm wide, the lateral sepals 1.6 mm long, 1.6 mm wide; **petals** purple, transversely oblong, subtruncate, concave, with the edge slightly thickened, 0.6 mm long, 1.1 mm wide, 3-veined; **lip** purple, subquadrate, 0.5 mm long, 1 mm wide, 0.75 mm deep, shallowly concave within the broadly rounded apical margin, the bar broad with a glenion, the base pubescent, truncate, hinged to the obsolescent column-foot; **column** stout, 0.75 mm long, 1 mm wide, with the anther and the bilobed stigma apical.

El Oro: forest remnants along the new road from Santa Rosa to Loja, alt. 850 m, 20 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10682 (Holotype: MO).

This species is known from relatively lowland in southwestern Ecuador. It is characterized by the small, caespitose habit; elliptical leaves longer than the ramicauls; and a slender, congested, secund raceme of very small flowers. The sepals are broadly ovate and coarsely pubescent; the petals are transverse, thin and concave; and the lip is shallowly subquadrate.

84. *Stelis scalena* Luer & Hirtz, sp. nov.

Ety.: From the Latin *scalenus*, "unequal," referring to the sepals.

Planta mediocris racemo multifloro folio elliptico duplolongiore, sepalis lateralibus minute papillois suborbicularibus sepalo dorsali ovato majoribus, petalis tenuibus truncatis uninervis, et labello oblongo concavo cum callo pyramidalis infra medium distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-4.5 cm long, enclosed by a tubular sheath from below the middle and 2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to acute, 6-8 cm long including the petiole 1-1.5 cm long, the blade 0.8-1.4 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, secund, many-flowered raceme with most flowers open simultaneously, 12-20 cm long including the peduncle 4-5 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, 1.5 mm long; pedicels 2 mm long; ovary 1.5 mm long; **sepals** expanded, light yellow, glabrous externally, minutely papillose within above the middle, connate basally, the dorsal sepal ovate, obtuse, concave, curved forward, 1.9 mm long, 1.8 mm wide, 3-veined, the lateral sepals suborbicular, 2 mm long, 2 mm wide, 3-veined; **petals** thin, light yellow, transversely cuneate, truncate, 0.6 mm long, 0.75 mm wide, 1-veined; **lip** light yellow, oblong, 0.5 mm long, 0.6 mm wide, 0.8 mm deep, concave above the middle, rounded at the apex, the margin thin, with a large subpyramidal callus below the middle, pubescent on the back surface, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Pichincha: road to Malatos, between Chiriboga and Santo Domingo, alt. 1300 m, Jan. 1989, A. Hirtz 3963 (Holotype: MO), C. Luer illustr. 19493.

This species, known only from the western slope of Pichincha, is superficially similar to many medium-sized species with a long, secund, congested raceme of simultaneous, small flowers that surpasses an elliptical leaf about as long as the ramicaul. The sepals are minutely papillose within above the middle. The dorsal sepal curves forward while the considerably larger, rounded lateral sepals spread beneath. The petals are thin, truncate and one-veined. The lip is oblong and concave above the middle with a large, pyramidal callus below the middle.

85. *Stelis serrulifera* Luer & Hirtz, sp. nov.

Ety.: From the Latin *serrulifer*, "bearing small serrations," referring to the margin of the labellum.

Species haec S. argentatae Lindl. similis, sed sepalis quinque nervis ad apicem longivillosis marginibus recurvis, labelli margine irregulariter serrato-eroso distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-6 cm long, enclosed by a tubular sheath from below the middle and 2-3 others at the base. **Leaf** erect, coriaceous, elliptical, subacute to acute, 5-8 cm long including an indistinct petiole ca. 1 cm long, the blade 0.5 cm wide, cuneate below into the petiole. **Inflorescence** 1-3 erect, subdense, distichous, several-flowered racemes with most flowers open simultaneously, 10-12 cm long including the peduncle 3-5 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, 2.5-3 mm long; pedicels 1.5 mm long; ovary 2 mm long; flowers yellow-white or greenish white; **sepals** expanded, ovate, obtuse, minutely pubescent-ciliate along revolute margins, long-villous at the apices, connate basally, 5-veined, the dorsal sepal 4.5 mm long, 4.5 mm wide, the lateral sepals 4 mm long, 4.25 mm wide; **petals** transversely oblong, shallowly concave below central thickening, 0.6 mm long, 1.2 mm wide, the apex broadly rounded with the margin thickened, faintly subverrucose; **lip** thick, transversely subquadrate, 0.75 mm long, 1 mm wide, 0.5 mm deep, concave inside the apical margin, the margin thin, minutely, sharply, and irregularly serrulate-erose, the disc and dorsum with a pubescent callus, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Esmeraldas: wet forest west of Lita, alt. 750 m, 18 Jan. 1987, C. Luer, J. Luer, C. Dodson, A. Hirtz & D. Benzing 12318 (Holotype: MO); same collection data, C. Luer et al. 12357, 12397 (MO).

This species of lowland northwestern Ecuador is related to the widely distributed *S. argentata*. *Stelis serrulifera* is characterized by a small habit with elliptical leaves more or less as long as the ramicauls; several-flowered racemes with flowers borne in two ranks that exceed the leaf. The sepals are more or less round with revolute, pubescent margins that cannot be straightened. Toward the apices, the hairs become long. The petals are semilunate with thick, flat margins. The lip is small with a rounded apex with a thin edge that is irregularly serrulate with at least three longer, pointed processes with several smaller processes between and to either side. The margin is reminiscent of the triapiculate margin seen in *S. vulacnica*.

86. *Stelis tridactylon* Luer & Hirtz, sp. nov.

Ety.: Named for the similarity to *Stelis tridactylon* Luer.

Species haec *S. tridactylon* Luer similis, sed habitu minore, foliis petiolatis, floribus minoribus, sepalis grosse minute pubescentibus, omnibus magnitudine similibus differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-4 cm long, with a loose, tubular sheath from below the middle, and 2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 4-6 cm long including a petiole less than 1 cm long, the blade 1-1.5 cm wide, cuneate below into the base. **Inflorescence** an erect, distichous, densely and nearly simultaneously many-flowered raceme, 12-22 cm long including the peduncle 3-7 cm long, subtended by a spathe 5-10 mm long, with an annulus at the base of the leaf; floral bracts broad, short, 1.5 mm long; pedicels 1 mm long; ovary 2 mm long; **sepals** yellow-green, similar, coarsely minutely pubescent, connate basally, narrowly ovate-triangular, obtuse, with revolute sides, the dorsal sepal 2.5 mm long, 1.5 mm wide, the lateral sepals diverging, 2 mm long, 1.3 mm wide; **petals** yellow-green, transversely flabellate, with the apex broadly rounded, thickened along the margin, shallowly concave, 0.75 mm long, 1 mm wide, 3-veined; **lip** yellow-green, hemispherical with the apex broadly rounded, 0.6 mm long, 0.8 mm wide, 0.6 mm deep, shallowly concave anteriorly with a small glenion, convex dorsally, the base truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: Cordillera del Cutucú, along the new road east of Mendez, alt. 700 m, 5 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12640 (Holotype: MO); same collection data, C. Luer, J. Luer & A. Hirtz 12639 (MO).

This species from the eastern lowlands is closely related to *S. tridactylon*, also from the eastern lowlands. It differs from *S. tridactylon* in a smaller habit with petiolate, instead of sessile leaves, and smaller flowers. The small flowers, produced in a densely flowered raceme, are all the same size, while the lowermost flowers of *S. tridactylon* are much larger, the sepals reaching one centimeter in length. The sepals are glabrous while those of *S. tridactyloides* are coarsely short-pubescent.

87. *Stelis undulata* Luer & Hirtz, sp. nov.

Ety.: From the Greek *undulatus*, "undulate, wavy," referring to the inflated floral bracts.

Planta mediocris caespitosa, racemo congesto folio elliptico longiore, bracteis floralibus magnis inflatis undulatis, sepalis ciliatis late ovatis, petalis semilunatis marginibus long-papillois, labello crasso suborbiculato densissime pubescenti distinguitur.

Plant medium in size, epiphytic, densely caespitose; roots numerous, slender. Ramicauls erect, slender, 3-4 cm long, enclosed by a loose, tubular sheath and another at the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 5-7 cm long including a petiole 1.5-2 cm long, the blade 1.5-2 cm wide, elliptical, subacute to obtuse, 5-7 cm long including a petiole 1.5-2 cm long, the blade 1.5-2 cm wide, cuneate below into the petiole. **Inflorescence** an erect, secund, congested, many-flowered raceme with most flowers open simultaneously, 8-9 cm long including the peduncle ca. 4 cm long, from an annulus below the apex of the ramicaul, with an inconspicuous spathe; floral bracts large, oblique, obtuse, dilated, undulate, 7-10 mm long; pedicels 1-1.5 mm long; ovary 2.5 mm long; **sepals** expanded, similar, purple, ciliate within the margin, broadly ovate, obtuse, connate basally, 3 mm long, 3 mm wide, with 4 closed veins; **petals** purple, transversely oblong-semilunate, concave below the middle, thickened above the middle with the margin broadly rounded, minutely densely papillose, 1 mm long, 1.25 mm

wide, 3-veined; **lip** purple, thick, subdiscoid, 0.6 mm long, 1 mm wide, 1 mm deep, densely microscopically pubescent, densely pubescent surrounding a central depression between and below a pair of marginal swellings of the transverse callus, the apex broadly rounded, the dorsum with a low, obscure, longitudinal callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 1 mm wide with the apical stigmatic lobes, the foot obsolescent.

Carchi: between Maldonado and Chical, alt. 1300 m, May 1992, A. Hirtz 5772 (Holotype: MO), C. Luer illustr. 19474.

This species, apparently endemic in relatively lowland forest of northwestern-most Ecuador, is characterized by elliptical, petiolate leaves that are surpassed by a congested, second raceme of small, purple flowers subtended by large, dilated, undulating floral bracts that protrude from one side of the raceme. The sepals are obtuse and ciliate within the margins. The broadly rounded margins of the petals are minutely and densely long-papillose. The rounded lip is densely short-pubescent with longer hairs surrounding a central depression.

88. *Stelis uxoria* Luer & Hirtz, sp. nov.

Ety.: From the Latin *uxorius*, "the wife's," referring to Jane Luer who collected the first specimen.

Planta grandissima robusta rhizomate crassissimo repenti, racemo elongato folio elliptico subpetiolarum multilongiore, bracteis floralibus obliquis conspicuis, sepalis subaequalibus late ovatis obtusis, petalis labelloque transversis ad apicem rotundis distinguitur.

Plant large, epiphytic, repent, the rhizomes stout, 5-10 mm thick, 2-5 cm long between ramicauls; roots coarse. Ramicauls stout, erect, 15-25 cm long, with a loose, tubular sheath near the middle, and 2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, obtuse, 15-24 cm long including a petiole 1.5-2 cm long, the blade 5-6.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, distichous, progressively many-flowered raceme, with several flowers open simultaneously, 35-55 cm long including the peduncle 5-20 cm long, with a spathe 1-1.5 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 10 mm long below to 5 mm long above, pedicels 3-4 mm long; ovary 2.5-3 mm long; **sepals** glabrous and red-purple externally, dull grayish white or silvery white and cellular-glandular within, broadly ovate, obtuse, connate 2-3 mm to near the middle into a flat flower, the dorsal sepal 5-10 mm long, 5.5-9 mm wide, 5-veined, the lateral sepals 5-8.5 mm long, 6-9 mm wide, 5-veined; **petals** yellow, thick, transversely ovate, broadly obtuse, shallowly concave below the thickened margin, 1 mm long, 1.5 mm wide, 3- to 5-veined; **lip** yellow, thick, transversely subquadrate, with the apex broadly rounded, 1 mm long, 1.5 mm wide, 1 mm deep, shallowly concave anteriorly with a small glenion, the dorsum with a low, rounded callus, flanked by 2 smaller calli, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1.5 mm wide, the anther and the bilobed stigma apical, the foot obsolescent.

Carchi: terrestrial on road-shoulder, between Tulcán and El Carmelo, alt. 3200 m, 6 Apr. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 11073 (Holotype: MO); above El Carmelo, alt. 3200 m, 17 May 1981, C. Luer, J. Luer & A. Hirtz 6267 (SEL); west of pass between Tulcán and Maldonado, alt. 2450 m, 16 Mar. 1991, C. Luer, A. Hirtz et al. 15081 (MO); same area, alt. 1600 m, 16 Mar. 1991, C. Luer, A. Hirtz et al. 15093 (MO); scrub forest north of El Playón, alt. 3100 m, 20 Mar. 1991, C. Luer, J. Luer & A. Hirtz 15194, 15195, 15200 (MO).

This large species, locally abundant at high altitudes in northern Ecuador, is characterized by a thick, repent rhizome with tall, stout ramicauls with large, elliptical leaves. Several to many flowers are produced simultaneously as anthesis ascends in a lengthening raceme. The flowers, variable in color, are large with dimensions of some specimens double those of others. The sepals are broadly ovate, obtuse and five-, seven-, or rarely nine-veined. The petals are transverse with a thick, rounded margin, and the lip is subquadrate with a broadly rounded apex, and concave anteriorly.

89. *Stelis vesca* Luer & Hirtz, sp. nov.

Ety.: From the Latin *vescus*, "little, weak," referring to the habit.

Species haec *S. guianensis* Rolfe similis, sed sepalis glabris, labello leviter concavo margine obtuso integro dorso calloso differt.

Plant very small, epiphytic, caespitose; roots filiform. Ramicauls erect, slender, 2-6 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 8-15 mm long including a petiole 3-4 mm long, the blade 4-6 mm wide, cuneate below into the petiole. **Inflorescence** an erect, lax, simultaneously several-flowered raceme, 4.5-6 cm long including the peduncle 2.5-3 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, oblique, 1 mm long; pedicels 1-1.5 mm long; ovary 0.75 mm long; flowers purple; **sepals** expanded, glabrous, the dorsal sepal suborbicular or broadly ovate, obtuse, connate basally, 2 mm long, 2.25 mm wide, 3-veined, the lateral sepals oblique, 1.5 mm long, 1.8 mm wide, 3-veined; **petals** transversely oblong, shallowly concave below the broadly rounded apex with a thickened margin, 0.5 mm long, 0.7 mm wide, faintly 3-veined; **lip** thickly triangular, 0.5 mm long, 0.6 mm wide, 0.6 mm deep, the apex obtuse, shallowly concave anteriorly with a shallow depression, the dorsum with a central, round, cellular callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.6 mm long, 0.6 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: along Río Yunganza below Limón, 17 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11854 (Holotype: MO).

This little species of lowland, western Ecuador is superficially similar to *S. guianensis*. It is distinguished by a small, caespitose habit with elliptical leaves surpassed by a loose raceme of small, purple flowers. The sepals are glabrous and suborbicular; the petals are three-veined; and the lip is shallowly concave anteriorly with the margin entire.

90. *Stelis villifera* Luer, sp. nov.

Ety.: From the Latin *villifer*, "bearing villous hair," referring to the pubescence of the sepals.

Planta mediocris caespitosa, racemo secundo multifloro folio elliptico superanti, sepalis ovatis obtusis villosis, petalis transversis concavis et labello subquadrato apice rotundo concavo dorso ad basim minute pubescenti distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 6-15 cm long, enclosed by a tubular sheath on the middle third and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, elliptical-ovate, subacute to obtuse, petiolate, 6-8 cm long including a slender petiole 2-2.5 cm long, the blade 1-1.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, secund, congested, simultaneously many-flowered raceme, 7-13 cm long including the peduncle 1.5-4 cm long, subtended by a slender spathe ca. 8 mm long, from an annulus below the apex of the ramicaul; floral bracts expanded, glabrous externally, densely villous within, similar, broadly ovate, obtuse, connate basally, the dorsal sepal 2 mm long, 1.75 mm wide, 3-veined, the lateral sepals oblique, 1.5 mm long, 1.5 mm wide; **petals** bright green, transversely elliptical, concave below the broadly obtuse apex, 0.6 mm long, 0.8 mm wide; **lip** bright green, thick, subquadrate, 1 mm long, 1 mm wide, 0.75 mm deep, concave anteriorly with a broad glenion, the apex broadly rounded, the base thick with a broadly callous, minutely pubescent base, the base broadly truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the anther and bilobed stigma apical, the foot obsolescent.

Carchi: forest between Tulcán and Maldonado, alt. 2050 m, 2-4 Apr. 1984, C. Luer, S. Dalström & T. Höjjer 9922 (Holotype: MO).

This species is apparently endemic in northernmost Ecuador. It is characterized by the caespitose habit with slender ramicauls that are distinctly longer than the elliptical-ovate, petiolate leaves, which are surpassed by a raceme about twice as long. The raceme is slender and congested with minute flowers that are long-villous within. The petals are transversely oblong and thin. The lip is oblong and obtuse, longer than wide, with a pubescent callus at the base.

91. *Stelis yanganensis* Luer & Hirtz, sp. nov.

Ety.: Named for the community of Yangana in southern Ecuador near where this species was found.

Species haec *S. affinis* C. Schweinf. similis, sed sepalis latioribus, petalis longioribus triangularibus obtusis transverse carinosis, et labello triangulari ad dorsum unicalloso differt.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-4.5 cm long, enclosed by 2 tubular sheaths, and another at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, petiolate, 2-4.5 cm long including the petiole 0.5-1.5 cm long, the blade 0.5-0.8 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subcongested, subflexuous, successively many-flowered raceme, 3-10 cm long including the peduncle 1.5-2.5 cm long, several flowers open simultaneously, from an annulus below the apex of the ramicaul; floral bracts acute, oblique, 1-2 mm long; pedicels 1.25 mm long; ovary 1 mm long; **sepals** dull white to dull purplish, cellular pubescent within, expanded, broadly ovate, obtuse, subequal, connate basally, the dorsal sepal 2.5 mm long, 2 mm wide, 3-veined, the lateral sepals oblique, 2 mm long, 1.6 mm wide, 3-veined; **petals** purple, triangular, 0.8 mm long, 0.8 mm wide, shallowly concave below the broadly obtuse and thickened apical margin, transversely callous medially, concave at the base; **lip** purple, triangular, 0.5 mm long, 0.85 mm wide, 0.66 mm deep, the apex obtuse, shallowly concave anteriorly with a shallow glenion, the dorsum with a small, rounded callus, the base broadly truncate, hinged to the base of the column; **column** stout, 0.75 mm long, 0.8 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Zamora-Chinchi: south of Yangana above Valladolid, alt. 2450 m, 23 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10932 (Holotype: MO).

This little species is similar to many other small species, but it is distinguished by the elliptical leaves about as long as the ramicauls. The many-flowered, crowded raceme exceeds the leaf with ramicaul about twice in length. The sepals are broadly ovate and obtuse, about two millimeters long; the petals are triangular, as long as wide, with the apex thick and narrowly obtuse; and the lip is subtriangular with a shallow glenion and a small, round callus on the dorsum.

92. *Stelis zarumae* Luer & Hirtz, sp. nov.

Ety.: Named for the community of Zaruma, near where the species was collected.

Species haec *S. hallii* Lindl. similis, sed foliis latioribus manifeste petiolatis, racemo brevior, sepalis intus intense pubescentibus minus profunde connatis et labelli callo cruciformi differt.

Plant small to medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 4-7.5 cm long, enclosed by a tubular sheath on the middle third and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, petiolate, 5-7.5 cm long including the petiole 1-1.5 cm long, the blade 1-1.5 cm wide, cuneate below into the petiole. **Inflorescence** an erect, subcongested, distichous, simultaneously several-flowered raceme, 6-8 cm long including the peduncle ca. 2 cm long, from an annulus below the apex of the ramicaul; floral bracts acute, oblique, 2 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** red-purple with a dense, white pubescence, broadly ovate to suborbicular, convex, obtuse, subequal, connate basally, the dorsal sepal 2.5 mm long, 2.5 mm wide, 3-veined, the lateral sepals 2.3 mm long, 2.3 mm wide, 3-veined; **petals** purple, transversely ovate, 1 mm long, 1.5 mm wide, shallowly concave below the broadly rounded and thickened apical half, thick transversely, concave at the base; **lip** purple, subquadrate, 1 mm long, 1 mm wide, 0.3 mm deep, the apex concave, triangular obtuse, the bar prominent with the margin rounded and a glenion with prominent, rounded margins, the dorsum with a distinct, cruciform callus, the base truncate, hinged to the base of the column; **column** stout, 1 mm long, 1 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

El Oro: forest above Zaruma, alt. 1800 m, 23 Feb. 1986, C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12028 (Holotype: MO).

Although not distinctive vegetatively with small-flowered racemes more or less equal the elliptical leaves, this species is characterized by suborbicular, convex, red-purple sepals covered by a long, dense, white pubescence. The thick petals are proportionately large. The glenion of the lip is prominent with elevated margins. A distinct, cruciform callus is present on the dorsum of the lip.

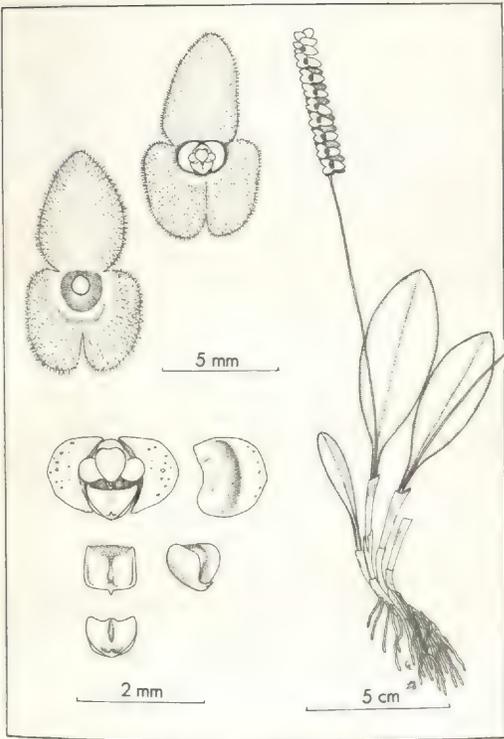


Fig. 37. *Stelis adrianae*

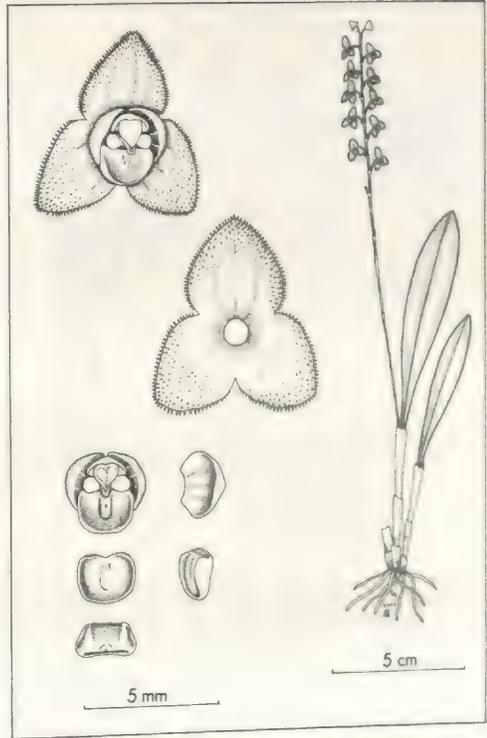


Fig. 38. *Stelis amoena*

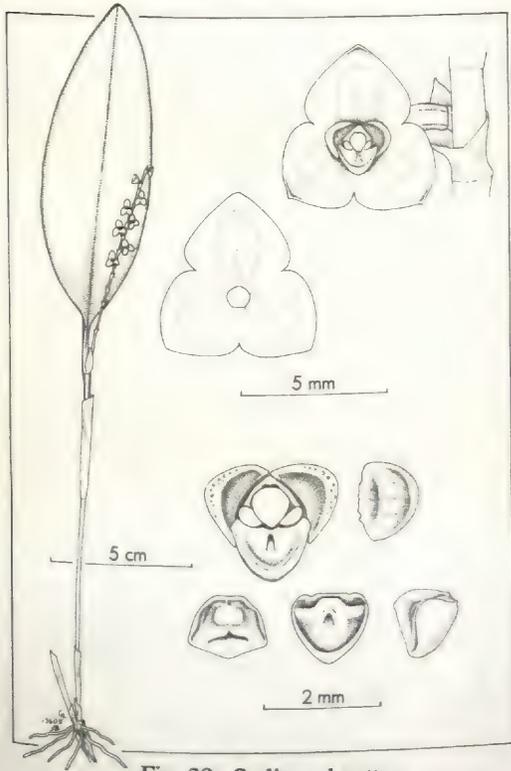


Fig. 39. *Stelis andreetae*

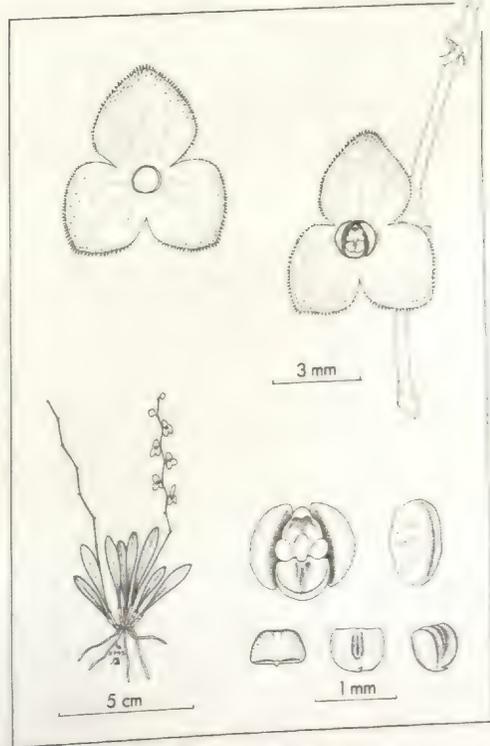
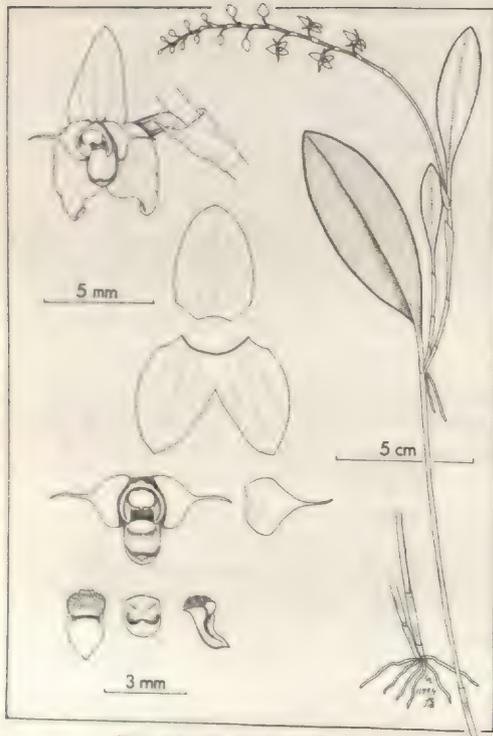
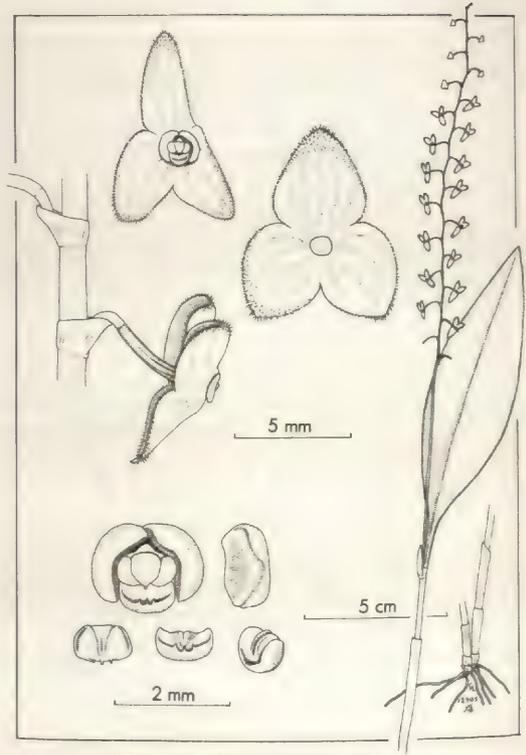
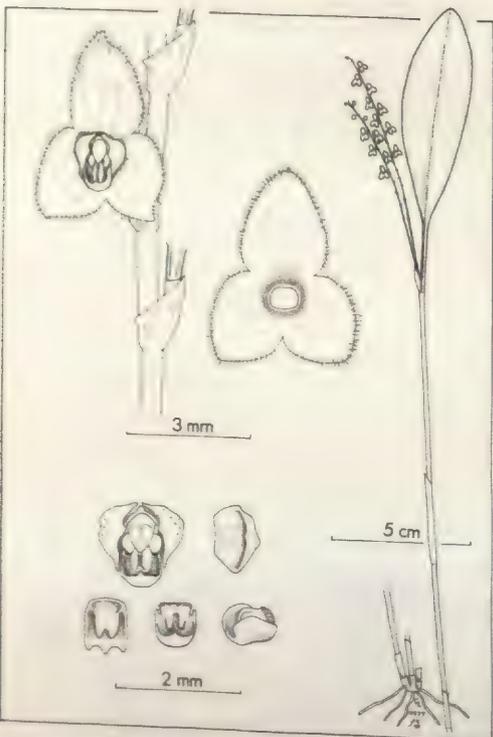
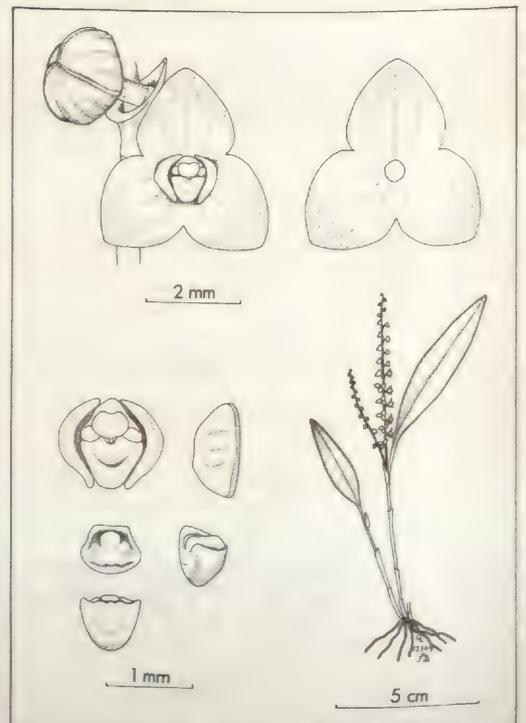


Fig. 40. *Stelis apiculifera*

Fig. 41. *Stelis barbellata*Fig. 42. *Stelis benzingii*Fig. 43. *Stelis bicarinata*Fig. 44. *Stelis congesta*

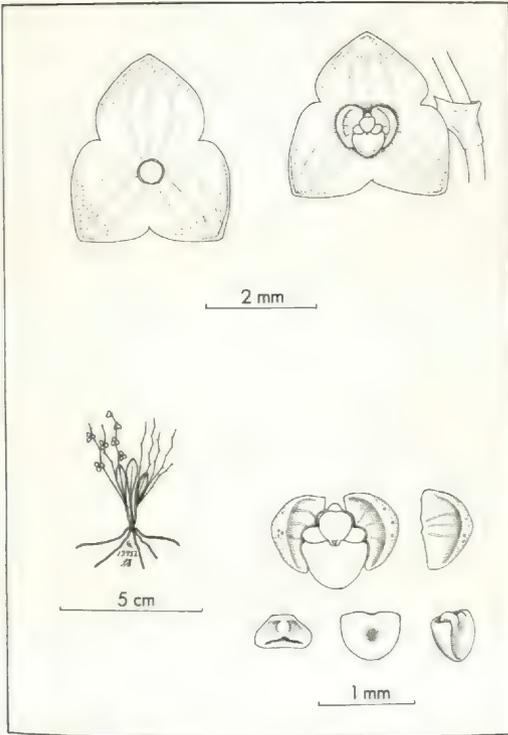


Fig. 45. *Stelis cutucuënsis*

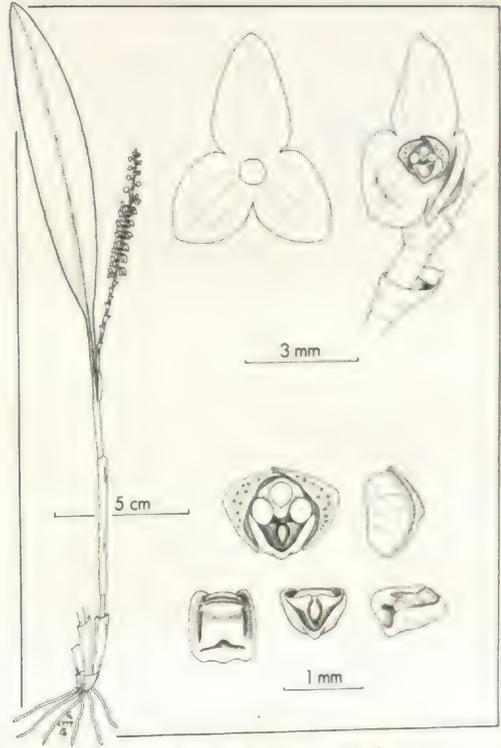


Fig. 46. *Stelis dalessandroi*

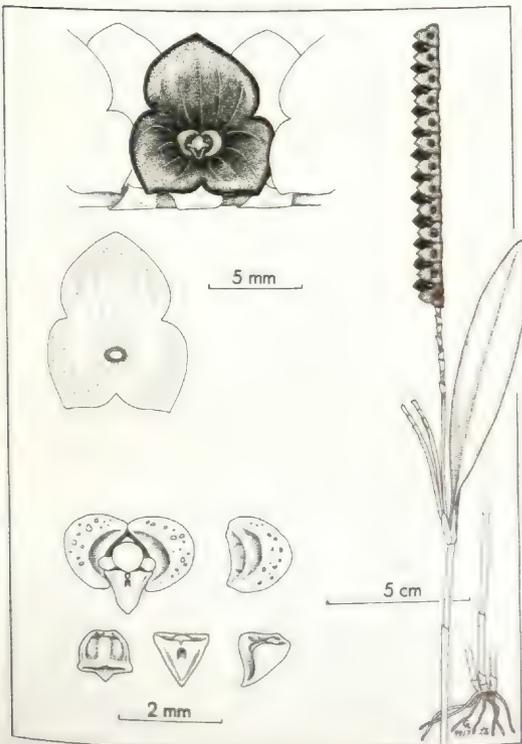


Fig. 47. *Stelis dalstroemii*

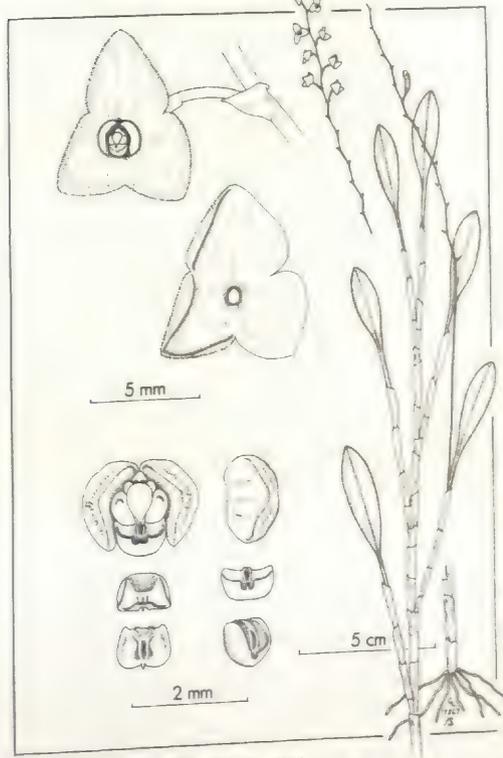


Fig. 48. *Stelis dirigens*

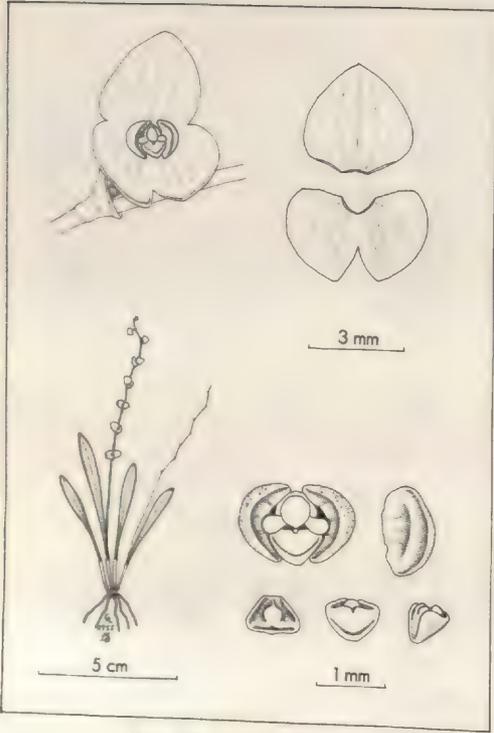


Fig. 49. *Stelis distans*

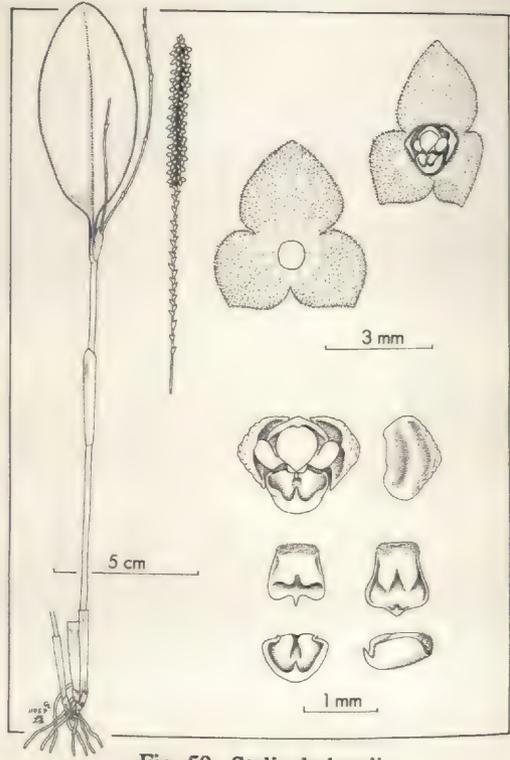


Fig. 50. *Stelis dodsonii*

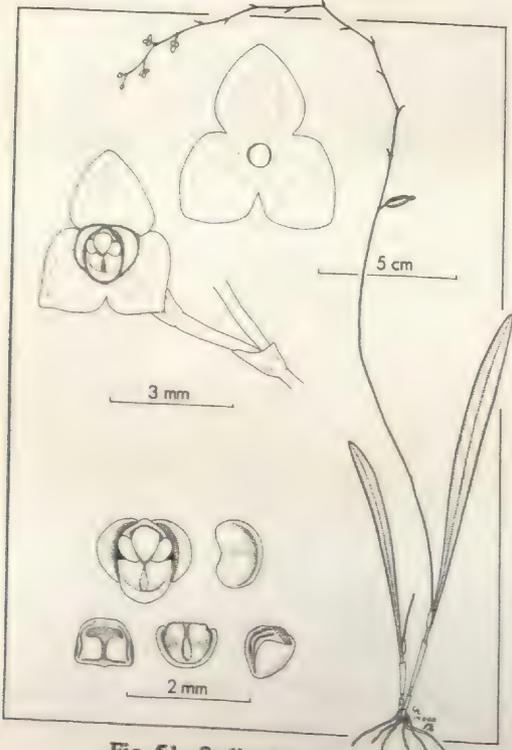


Fig. 51. *Stelis elongatissima*

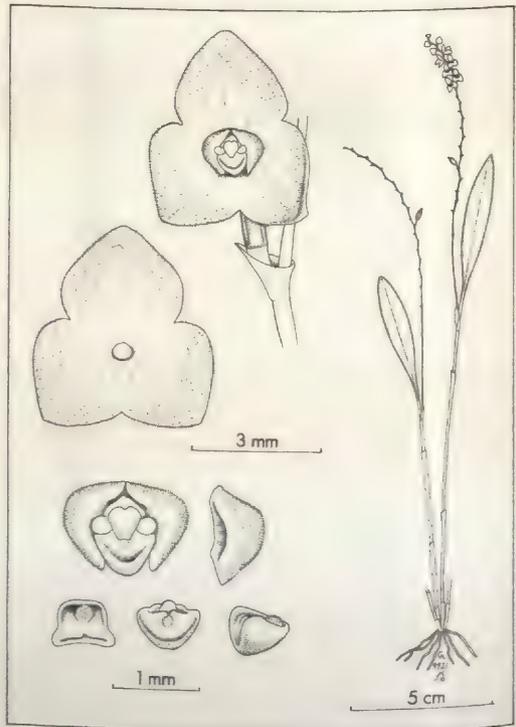


Fig. 52. *Stelis exasperata*

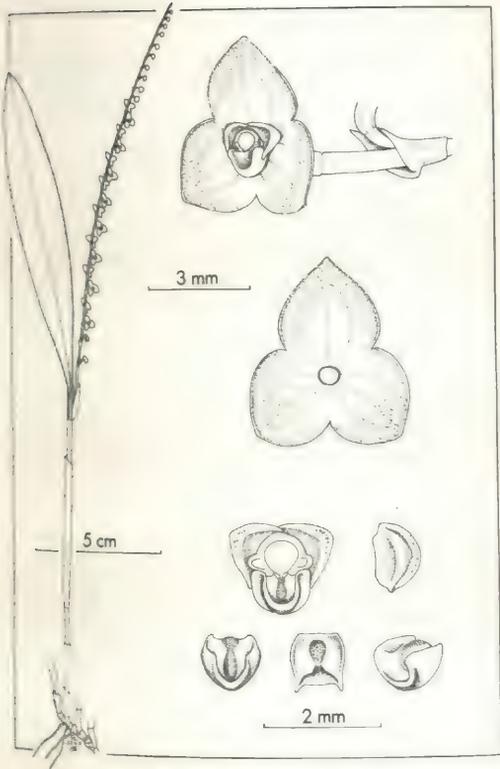


Fig. 53. *Stelis excavata*

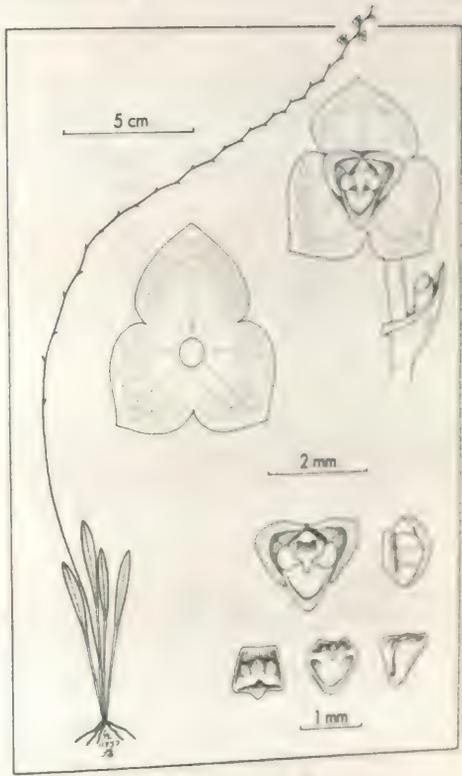


Fig. 54. *Stelis exilis*

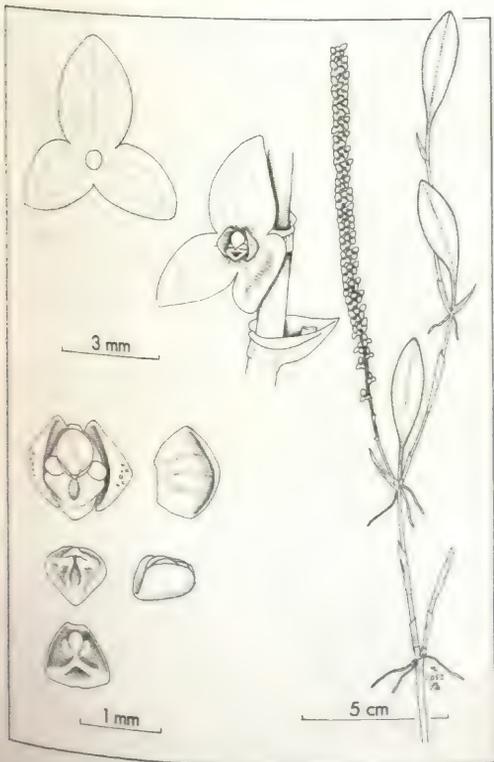


Fig. 55. *Stelis falcifera*

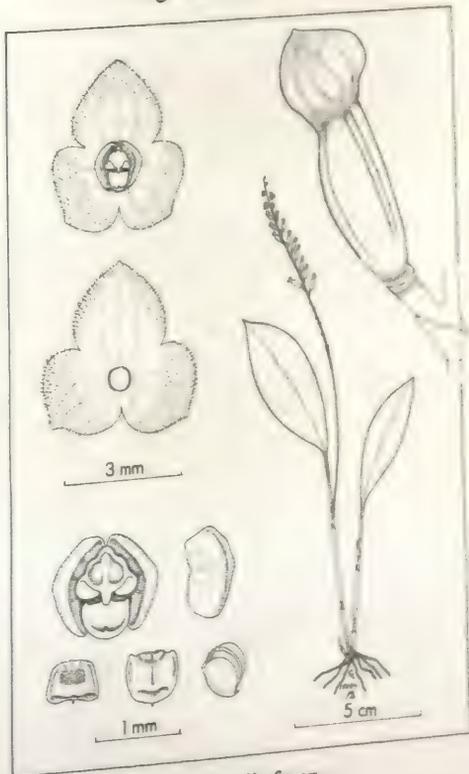
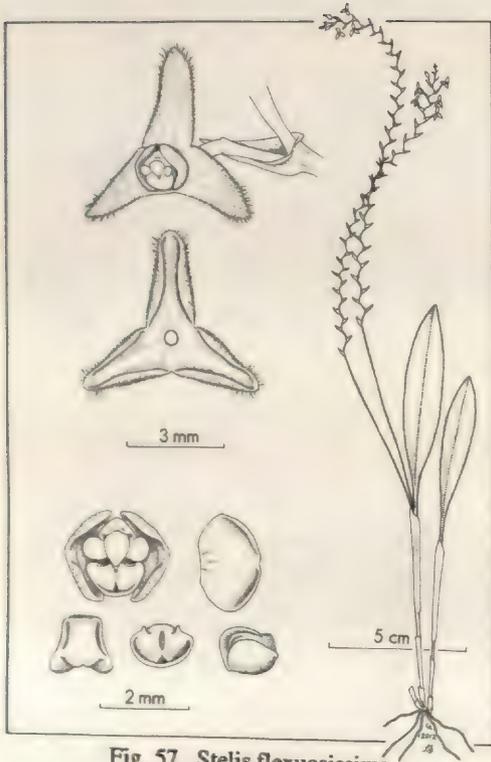
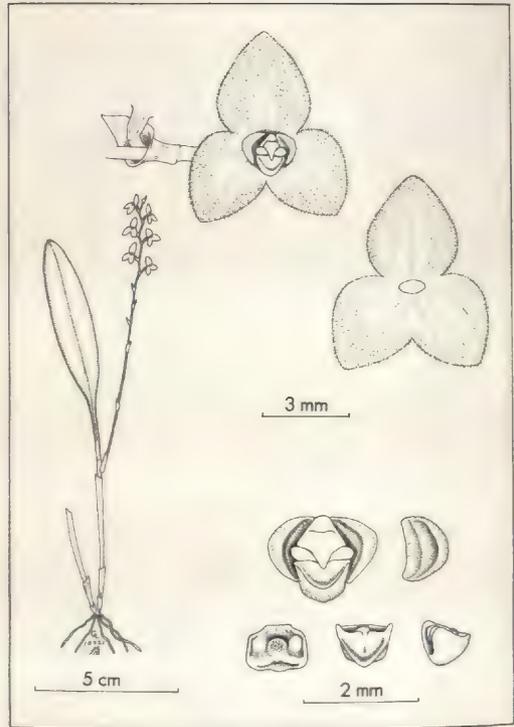
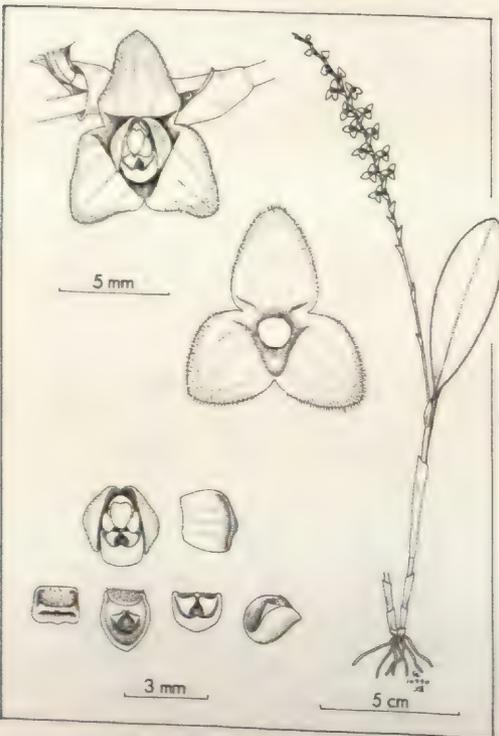
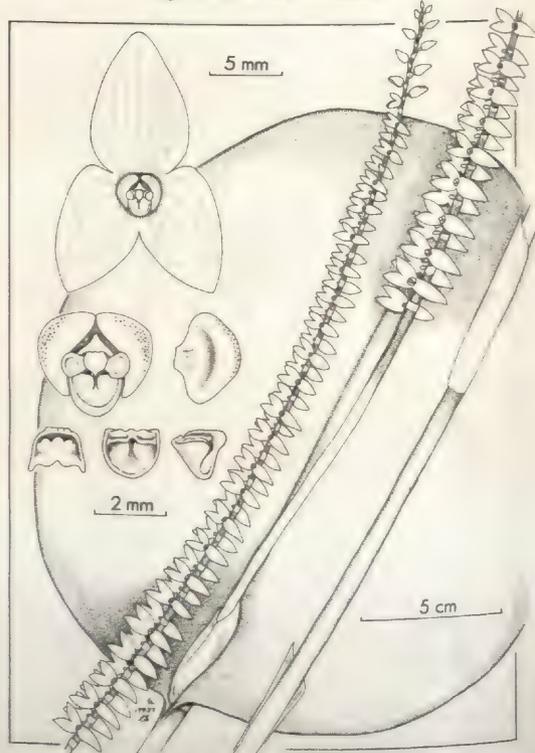


Fig. 56. *Stelis ferax*

Fig. 57. *Stelis flexuosissima*Fig. 58. *Stelis floresii*Fig. 59. *Stelis formosa*Fig. 60. *Stelis gigantea*

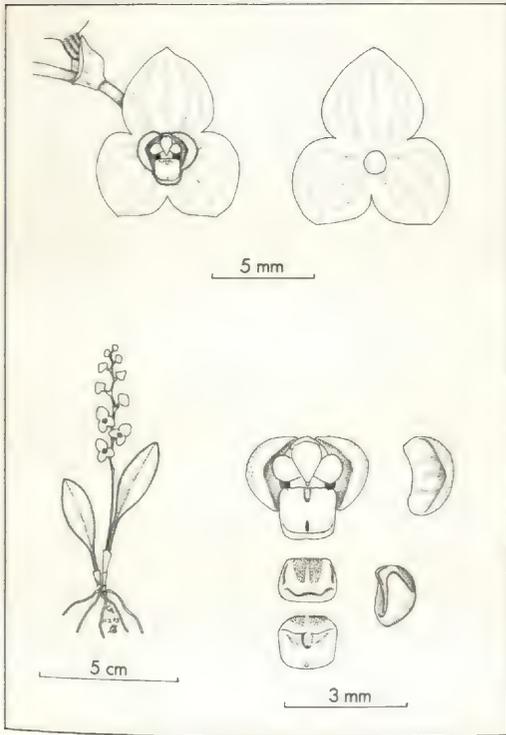


Fig. 61. *Stelis glaberrima*

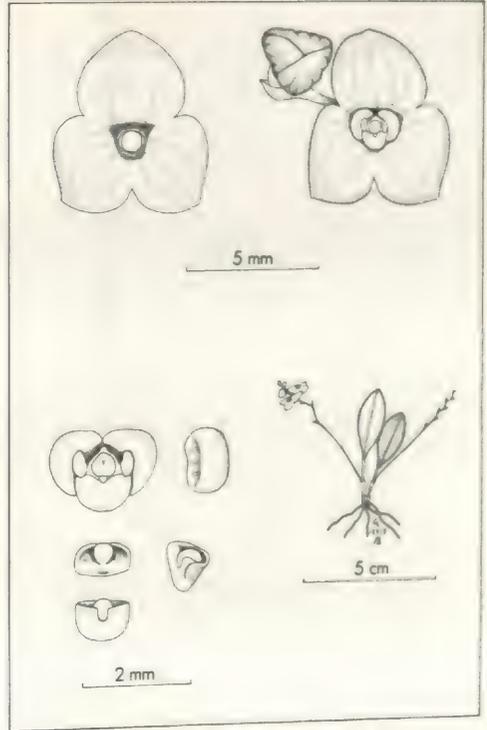


Fig. 62. *Stelis globulifera*

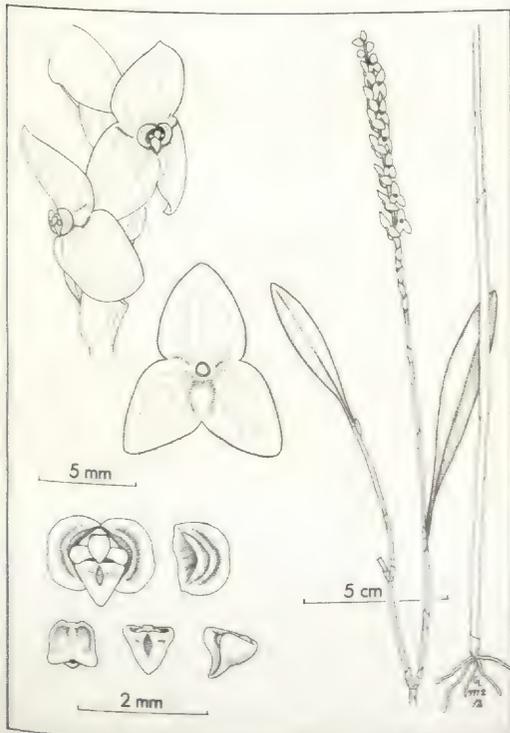


Fig. 63. *Stelis hoeijeri*

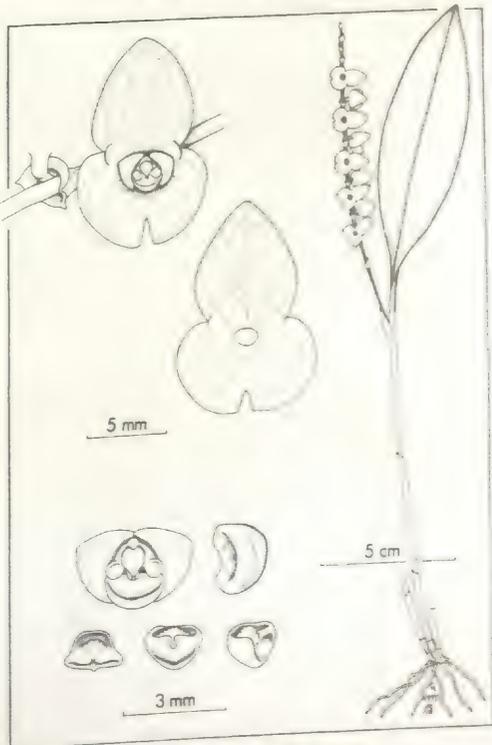
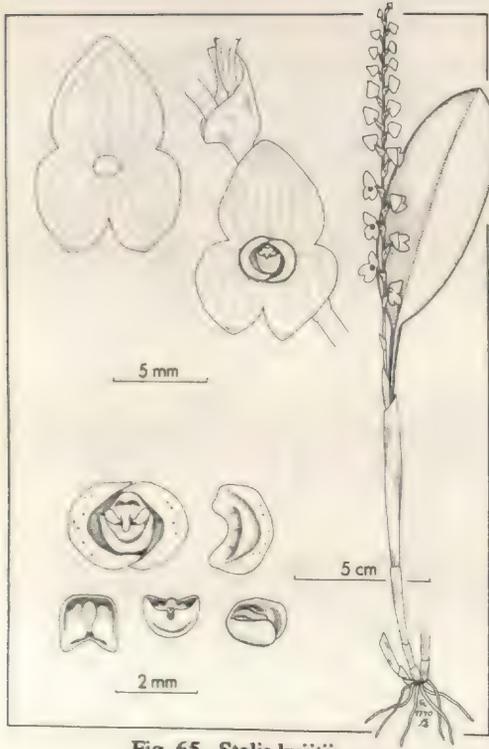
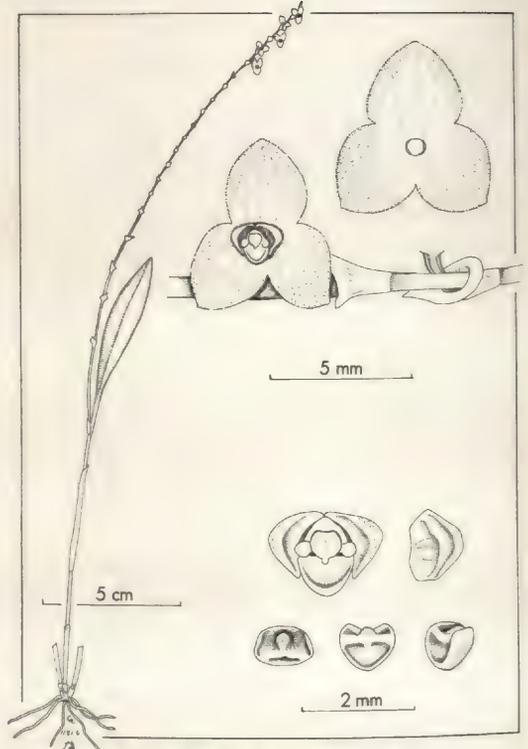
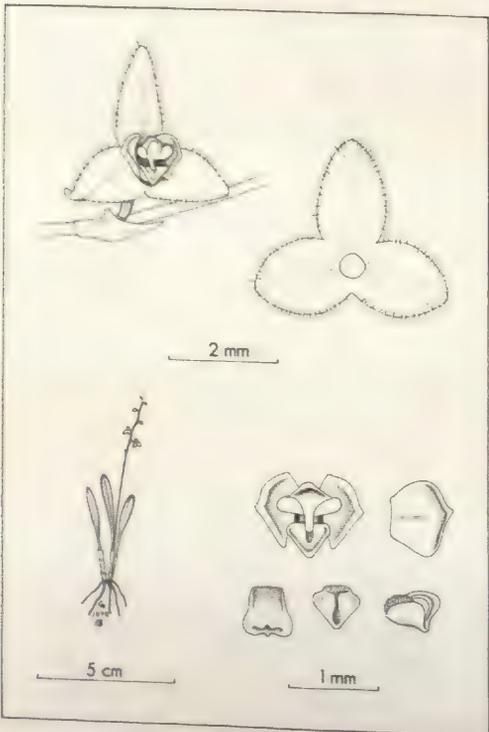
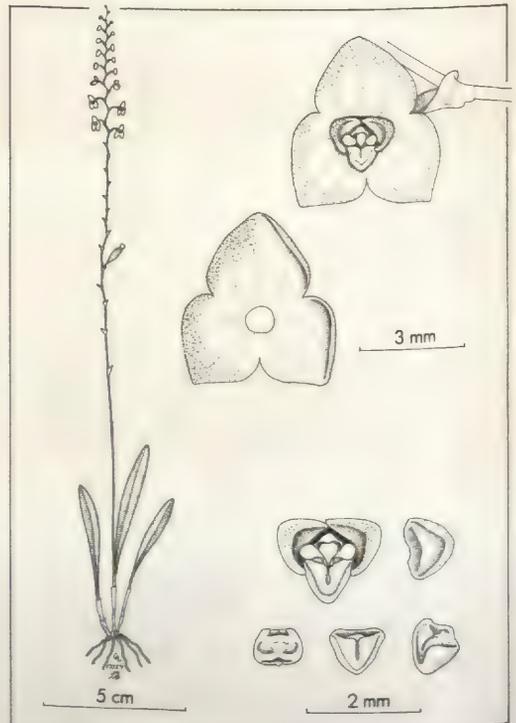


Fig. 64. *Stelis jimburae*

Fig. 65. *Stelis kuijii*Fig. 66. *Stelis limonensis*Fig. 67. *Stelis longihirta*Fig. 68. *Stelis longissima*

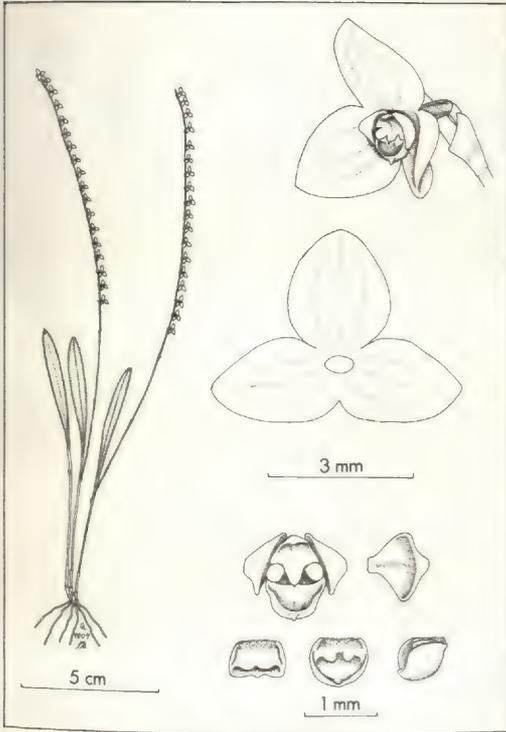


Fig. 69. *Stelis macilenta*

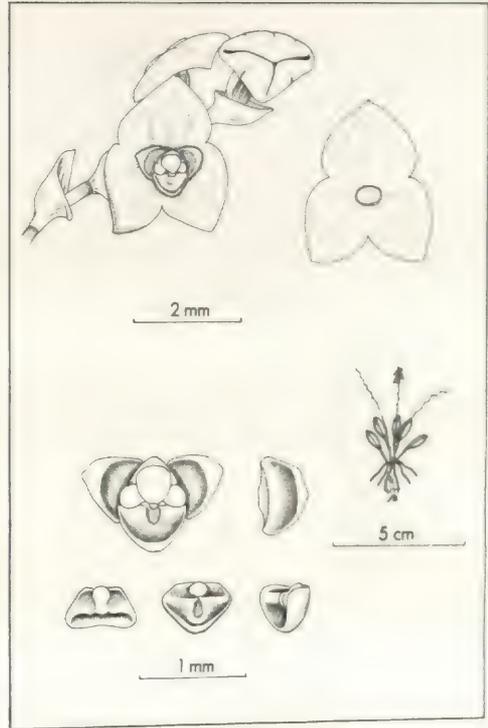


Fig. 70. *Stelis micacea*

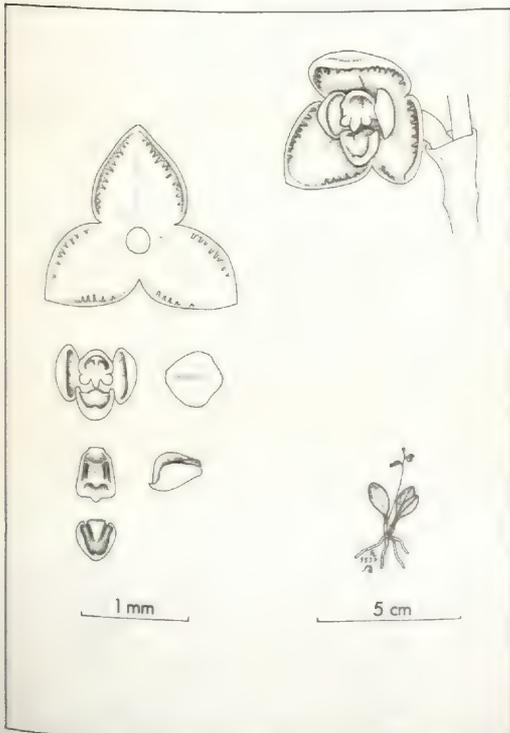


Fig. 71. *Stelis minutissima*

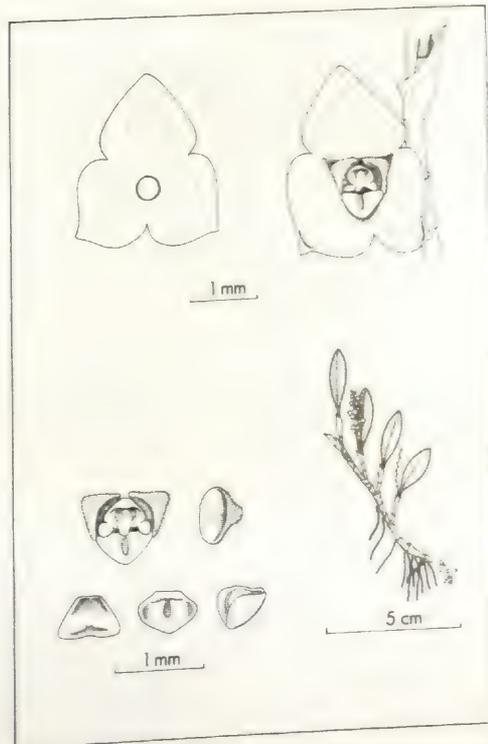
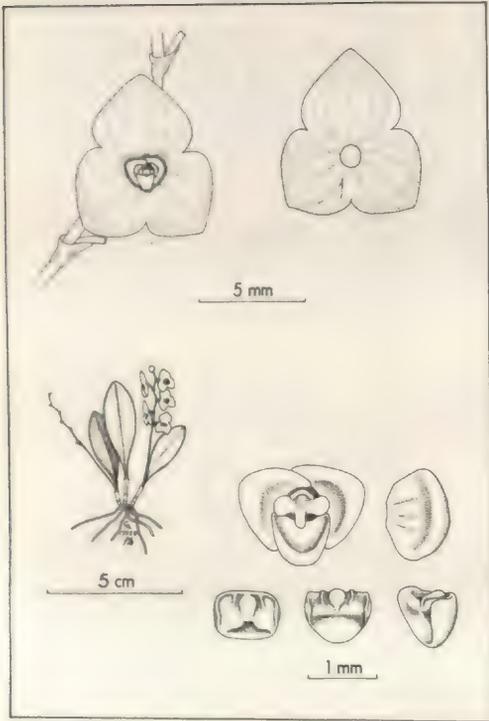
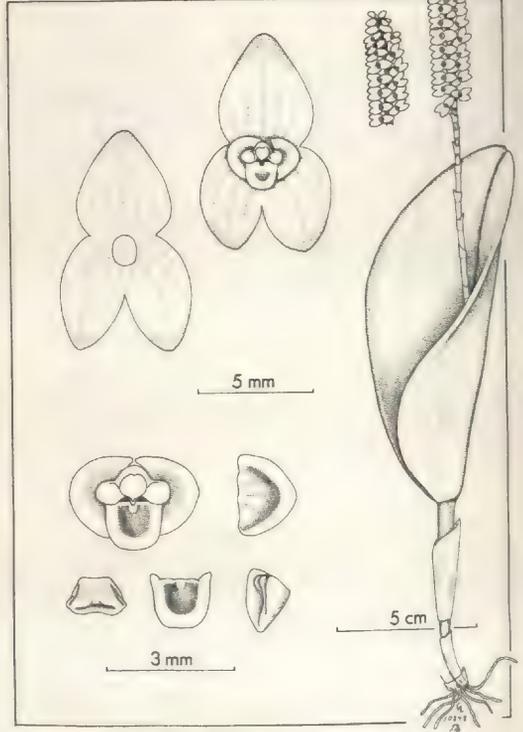
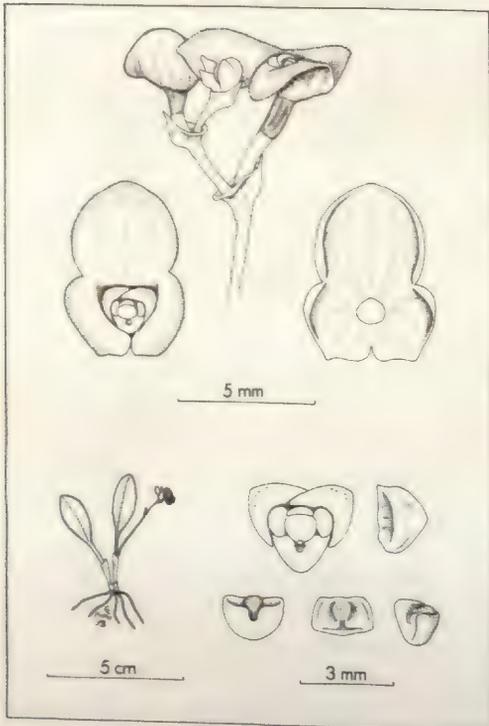
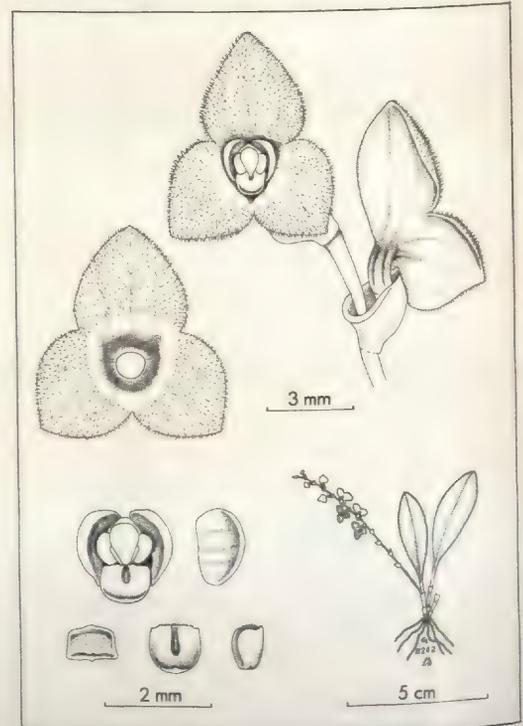


Fig. 72. *Stelis nepotula*

Fig. 73. *Stelis ortegae*Fig. 74. *Stelis pachyphyta*Fig. 75. *Stelis phil-jesupii*Fig. 76. *Stelis pilosa*

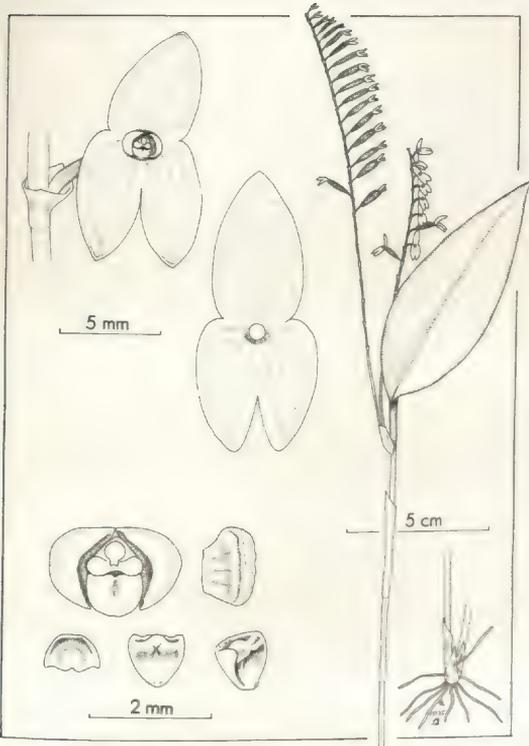


Fig. 77. *Stelis polycarpica*

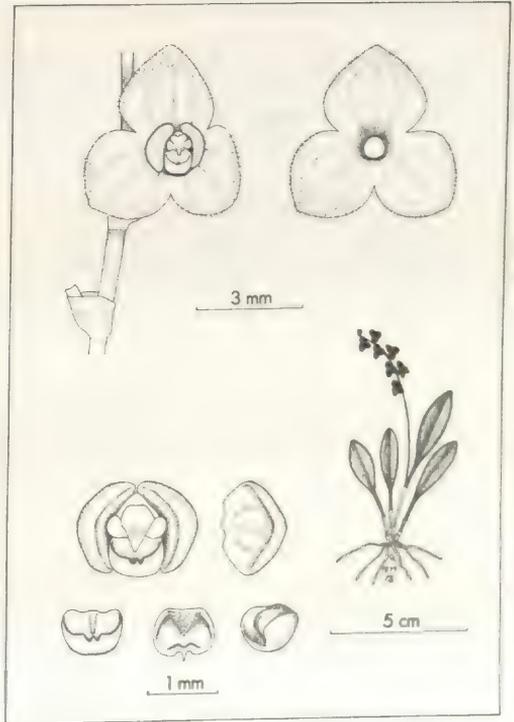


Fig. 78. *Stelis porphyrea*

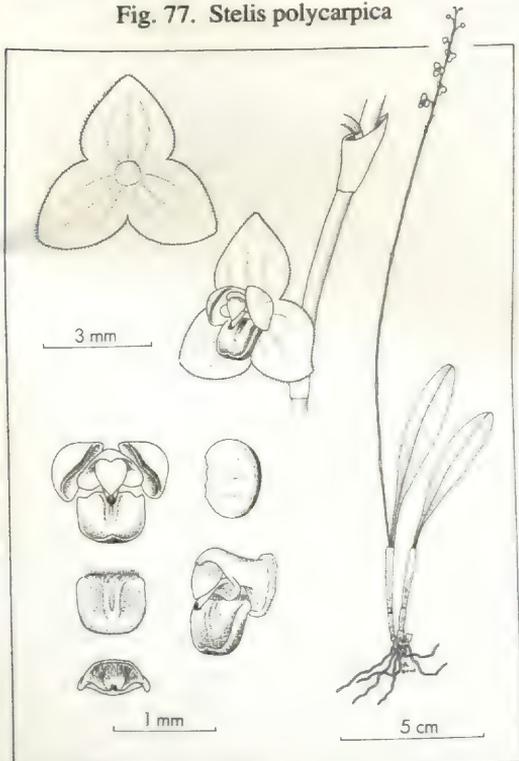


Fig. 79. *Stelis procera*

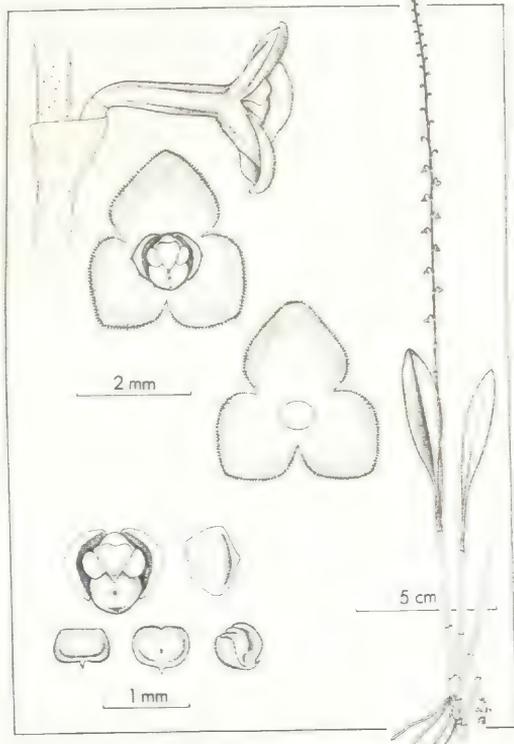
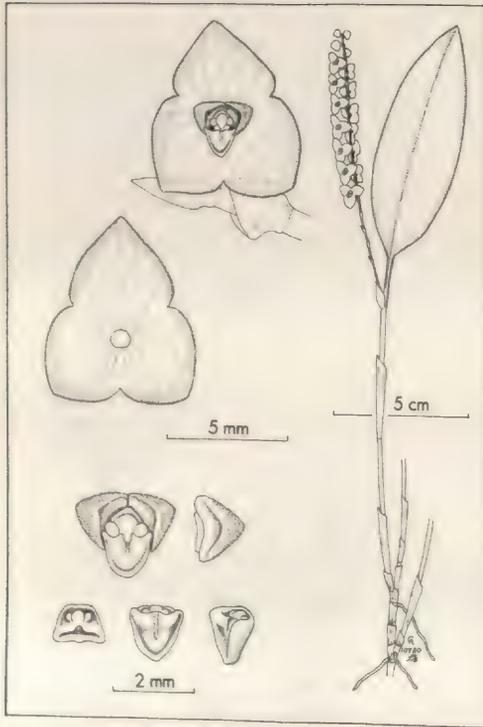
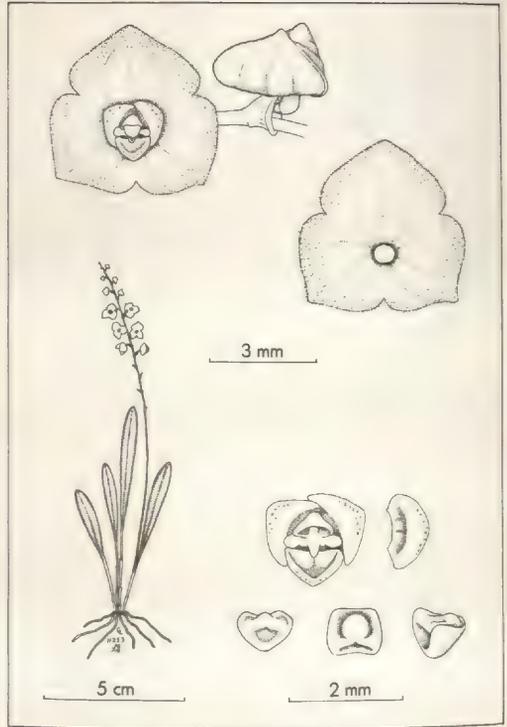
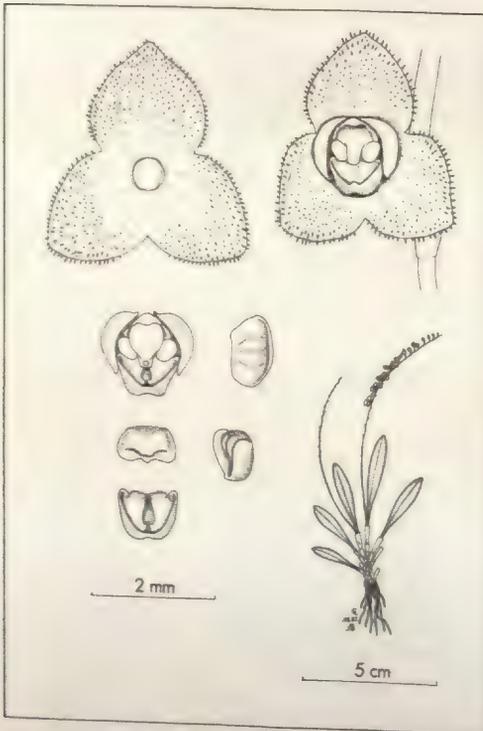
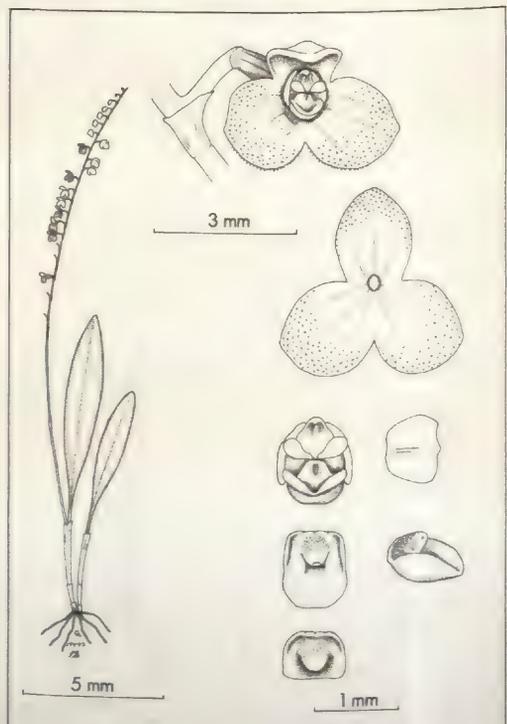


Fig. 80. *Stelis protracta*

Fig. 81. *Stelis pubipetala*Fig. 82. *Stelis purpurella*Fig. 83. *Stelis sanctae-rosae*Fig. 84. *Stelis scalena*

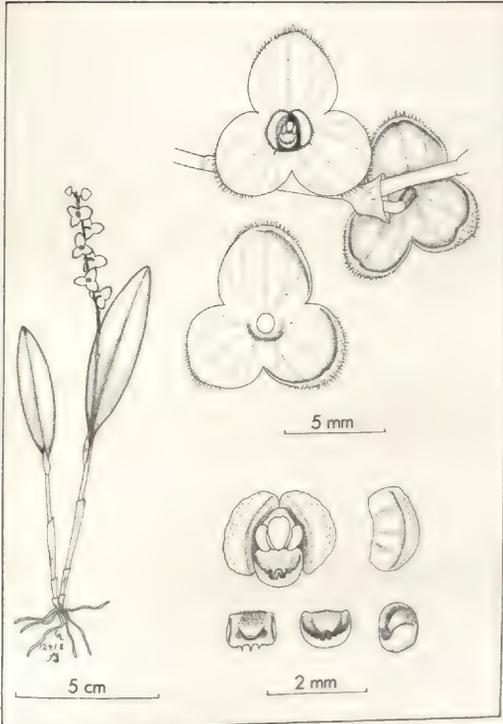


Fig. 85. *Stelis serrulifera*

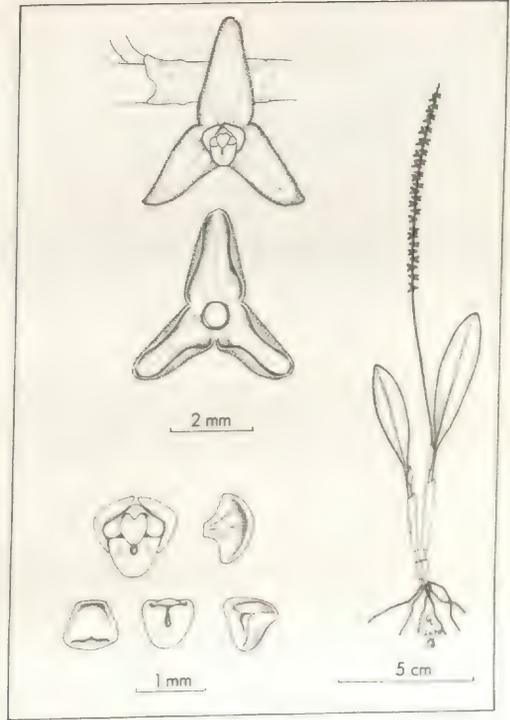


Fig. 86. *Stelis tridactyloides*

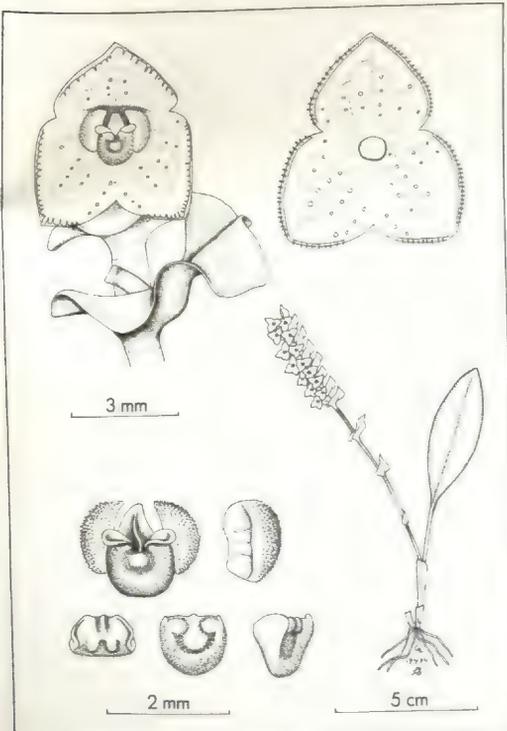


Fig. 87. *Stelis undulata*

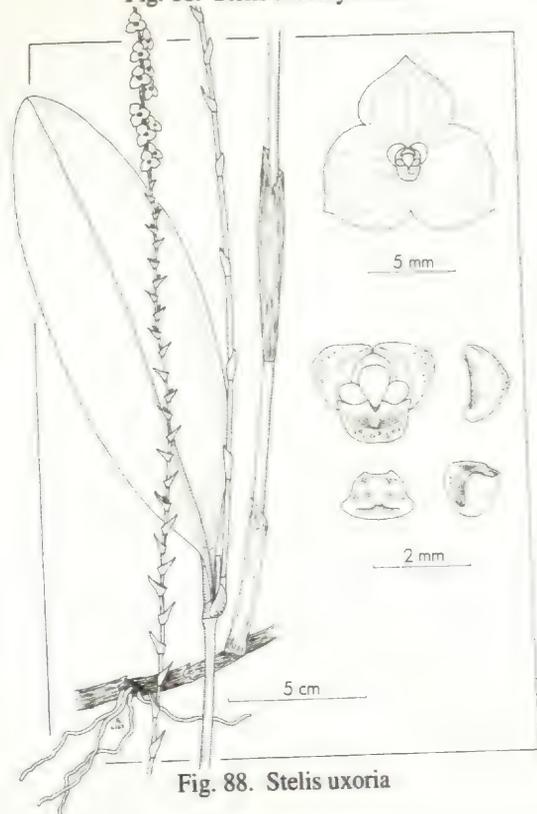
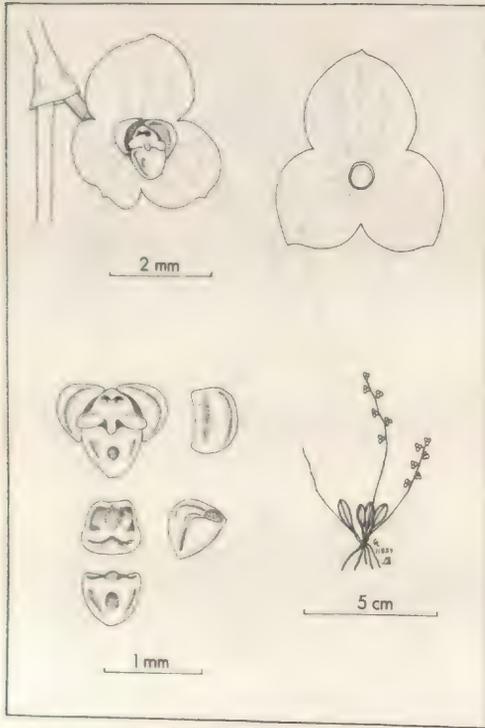
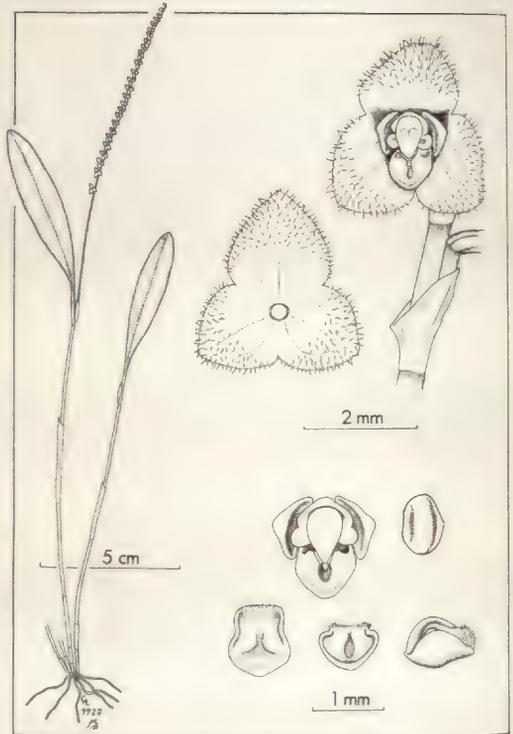
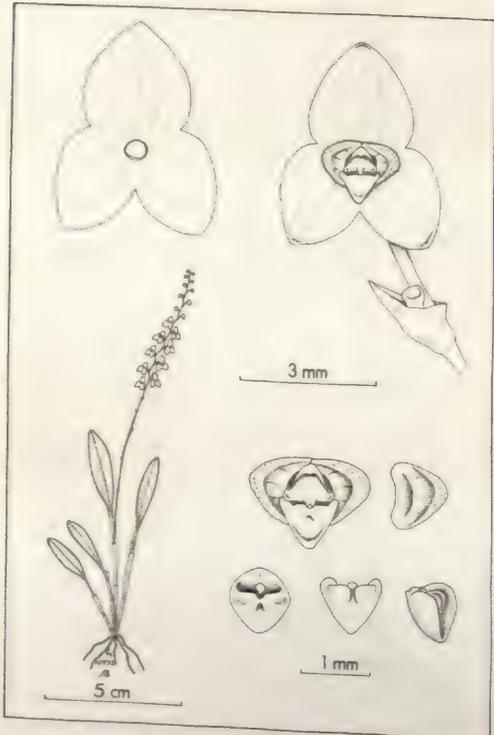
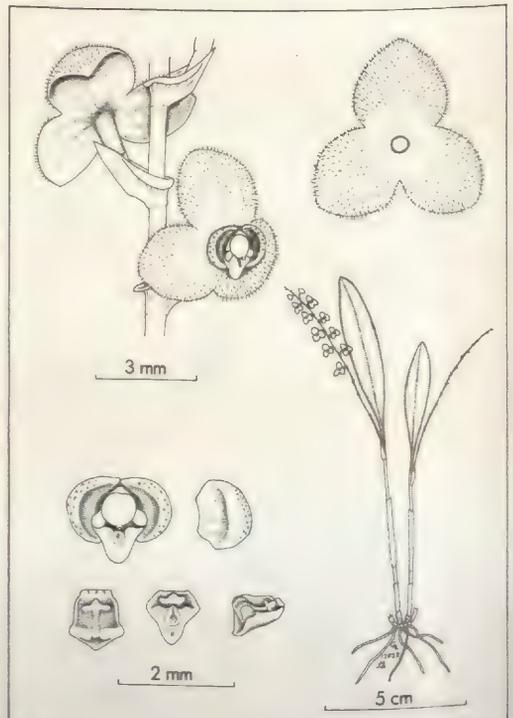


Fig. 88. *Stelis uxoria*

Fig. 89. *Stelis vesca*Fig. 90. *Stelis villifera*Fig. 91. *Stelis yanganensis*Fig. 92. *Stelis zarumae*

93. *Stelis acutula* Luer & Hirtz, sp. nov.

Ety.: From the Latin *acutulus*, "small and pointed," referring to the labellum.

Species haec *S. spathulatae* Poepp. & Endl. similis, sed foliis anguste ellipticis, bracteis floralibus minoribus floribus majoribus nonobtectis differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls fasciculate, erect, slender, 1.5-2.5 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute, 3-3.5 cm long including an indistinct petiole ca 0.5 cm long, the blade 0.4-0.8 cm wide, narrowly cuneate below into the subpetiolate base. **Inflorescence** an erect, congested, secund, many-flowered raceme, with many flowers open simultaneously, 5-5.5 cm long including the peduncle 2-2.5 cm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, oblique, acute, 2 mm long, enclosing the pedicels and part of the ovaries; pedicels 0.75 mm long; ovary 0.5 mm long; **sepals** similar, yellow, glabrous, connate basally, ovate, subacute, the dorsal sepal 2.5 mm long, 1.5 mm wide, 3-veined, the lateral sepals oblique, turned forward, 2.5 mm long, 1.25 mm wide; **petals** yellow, obovate-oblong, shallowly concave, 0.75 mm long, 0.6 mm wide, 1-veined, the apex broadly obtuse, thickened; **lip** yellow, subquadrate, 0.6 mm long, 0.5 mm wide, 0.3 mm deep excluding the apiculum 0.3 mm long, the dorsum filled with a callus, bilobed anteriorly, shortly pubescent at the base, the apex shallowly concave with the tip deflexed, narrowly triangular, acute, the base broadly truncate, hinged to the base of the column; **column** stout, 0.5 mm long, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: between Gualaceo and San Juan Bosco, alt. 2500 m, 28 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10999 (Holotype: MO).

Pichincha: west flank of Iliniza, Cerro Azul, alt. 2800 m, 23 Jan. 1987, C. Luer, J. Luer & A. Hirtz 12471 (MO). **Loja**: new road north of Loja, alt. 2600 m, 2 Feb. 1987, C. Luer, J. Luer & A. Hirtz 12575 (MO).

This little species is related to the common and variable *S. pusilla*. The habits are similar, but it is distinguished from the latter by a slender, congested raceme of superficially similar, small flowers. The sepals are ovate, shallowly connate, and directed forward. The petals are thin, obovate, and single-veined. The lip is subquadrate, shallowly cleft anteriorly on the thick, bilobed bar, and with an acute, deflexed apiculum.

94. *Stelis coralloides* Luer & Hirtz, sp. nov.

Ety.: From the Latin *coralloides*, "like coral," referring to the branching, crystal-like deposits in the floral parts and leaves.

Species haec *S. spathulatae* Poepp. & Endl. affinis, sed racemo laxo bracteis non-imbricatis flores non-amplacentibus et labello ovato integro differt.

Plant small, epiphytic, densely caespitose; roots filiform. Ramicauls erect, slender, 2-3.5 cm long, enclosed by a close, tubular sheath and 1-2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 3-5.5 cm long, 3-5 mm wide, gradually narrowed below into a petiole 1-1.5 cm long. **Inflorescence** an erect, loose, successively several-flowered raceme, with most flowers open simultaneously, to 10 cm long including the peduncle 3-4 cm long, from an annulus below the apex of the ramicaul with a small spathe 3 mm long; floral bracts infundibular, oblique, acute, 2 mm long; pedicels 1.5 mm long; ovary 1 mm long; flowers light green, **sepals** glabrous, ovate, obtuse, connate basally, the dorsal sepal 2 mm long, 1.3 mm wide, 3-veined, the lateral sepals oblique, 1.5 mm long, 1.25 mm wide, 3-veined, converging forward; **petals** thin, obovate, shallowly concave, the apex broadly rounded with a slightly thickened margin, 0.75 mm long, 0.6 mm wide, 1-veined, but with a vestigial pair at the base; **lip** ovate, narrowly obtuse, 1 mm long or deep, 0.6 mm wide, slightly convex, with a minutely pubescent callus filling the base, the base truncate, hinged to the base of the column; **column** stout, 0.5 mm long, 0.5 mm wide, the foot obsolescent, the anther and the bilobed stigma apical.

Morona-Santiago: near Limón, flowered in cultivation at Ecuagenera, Gualaceo, 17 Apr. 2001, A. Hirtz 7710 (Holotype: MO), C. Luer illustr. 20069.

This small species, found in east-central Ecuador at moderate altitudes, is distinguished by a caespitose habit with narrowly elliptical leaves borne by slender, slightly shorter ramicauls, and a delicate, loose, successively flowered raceme. The tiny, light green flowers appear similar to those of the widely distributed *S. spathu*

lata with converging lateral sepals. The petals are similarly cucullate, single-veined and concave, but the lip is entire, narrowly ovate, slightly concave, and featureless save for a brush-like callus at the base. The anther cap is proportionately large, nearly as large as one of the petals.

Within the substance of the floral parts and leaves are branching clumps of a coral-like substance, similar to the scattered, crystalline deposits found in so many species of pleurothallids.

95. *Stelis exigua* Luer & Hirtz, sp. nov.

Ety.: From the Latin *exiguus*, "small," referring to the habit and the flowers.

Planta perparva caespitosa, racemo disticho dense multifloro foliis ellipticis plus minusve duplolo-niore, sepalis ovatis obtusis uninervis lateralibus minoribus, petalis tenuibus suborbicularibus et labello suboblongo-obovato longiore quam latiore distinguitur.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-6 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, petiolate, 10-18 mm long including a petiole ca. 2 mm long, the blade 3-5 mm wide, cuneate below into the petiole. **Inflorescence** an erect, flexuous, congested, distichous, successively many-flowered raceme to 4 cm long including the peduncle ca. 1 cm long, with 2-3 flowers open simultaneously, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 1.5 mm long; pedicels 0.5 mm long; ovary 0.5 mm long; flowers minute, purple; **sepals** fleshy, glabrous, ovate, subacute to obtuse, 1-veined, the dorsal sepal 1.3 mm long, 0.8 mm wide, connate basally to the lateral sepals, the lateral sepals oblique, connate basally, facing inward, 1 mm long, 0.7 mm wide; **petals** thin, suborbicular, shallowly concave, broadly rounded at the apex, 0.5 mm long, 0.5 mm wide; **lip** thickly subobovate, 0.7 mm long, 0.4 mm wide, 0.25 mm deep, shallowly concave anteriorly within the broadly obtuse, apical margin, the disc callous, minutely pubescent at the base, the base truncate, hinged to the obsolescent column-foot; **column** stout, 0.5 mm long, 0.6 mm wide, with the anther apical, the stigma transverse beneath the rostellum.

Loja: along road to TV tower east of Yangana, alt. 2600 m, 22 Mar. 1985, C. Luer, J. Luer, A. Hirtz & W. Flores 10803 (Holotype: MO).

This tiny species, apparently endemic in southern Ecuador, is characterized by the caespitose habit; elliptical leaves somewhat longer than the ramicauls; and an erect, congested, distichous raceme of minute, successive flowers. The sepals are ovate with a single vein. The dorsal sepal is larger than the laterals that are held forward. The petals are suborbicular, thin, and single-veined. The lip is obovoid and shallowly concave at the obtuse apex.

96. *Stelis hispida* Luer & Hirtz, sp. nov.

Ety.: From the Latin *hispidus*, "with short, rigid hairs," referring to the sepals.

Planta mediocris scandens longirepens, racemo multifloro foliis ellipticis longiore, sepalis ovatis intus hispidis lateralibus liberis convergentibus, petalis semilunatis tenuibus, et labello orbiculato ad basim transverse calloso distinguitur.

Plant medium in size, epiphytic, scandent, the rhizome stout, erect, 2-5 cm long between ramicauls; roots slender. Ramicauls erect, slender, 2-6 cm long, proliferating, enclosed by 2-3 tubular, imbricating sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute, petiolate, 3-5 cm long including a petiole less than 1 cm long, the blade 1-1.3 cm wide, cuneate below into the petiole. **Inflorescence** an erect, distichous, subax, many-flowered raceme with several flowers open simultaneously, 12-14 cm long including the peduncle 5-8 cm long, from an annulus below the apex of the ramicaul; floral bracts tubular, obtuse, 2-2.5 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** brown, glabrous externally, hispidous on outer halves, the dorsal sepal ovate, obtuse, 3.3 mm long, 2.3 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals ovate, oblique, obtuse, 2.75 mm long, 2 mm wide, 3-veined, free from each other but directed forward; **petals** green, membranous, semilunate, broadly rounded with a thin thickening, shallowly concave, 0.6 mm long, 1.5 mm wide, 3-veined; **lip** green, subquadrate, 0.75 mm long, 0.9 mm wide, 0.9 mm deep, deeply concave above the thin, broadly rounded apex, the bar notched above a cleft glenion, the base with a rounded, pubescent callus, truncate, hinged to the tip of a short column-foot; **column** terete, 1 mm long, 1 mm wide, with a short foot, the anther and the bilobed stigma apical.

Pichincha: forest along the old road between San Juan and Chiriboga, alt. 1800-2200 m, 7 Mar. 1982, A. Hirtz & X. Hirtz 220 (Holotype: SEL), C. Luer illustr. 20058.

This species is apparently rare and endemic in north-central Ecuador where it is known from a single collection. It is distinguished by the scandent, ascending to erect rhizome that bears ramicauls shorter than the intervals between them. The elliptical leaves are surpassed by the subaxillary raceme of small flowers. The sepals are ovate, hispid within, with the laterals free and held forward resembling a synsepal. The petals are membranous and transverse with a broadly rounded apex. The lip is deeply concave anteriorly with the apex thin and rounded, and the bar is deeply notched.

97. ***Stelis juncea* Luer & Hirtz, sp. nov.**

Ety.: From the Latin *junceus*, "slender like bulrushes," referring to the long, slender habit.

Species haec *S. pusillae* H.B.K. affinis, sed habitu majore, ramicaulibus quam foliis multolongioribus, et petalis trinervis differt.

Plant medium in size, epiphytic to terrestrial, densely caespitose; roots slender. Ramicauls erect, very slender, 9-16 cm long, with a tubular sheath below the middle and another 2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 5.5-8 cm long including the petiole 1.5-2 cm long, the blade 0.8-1 cm wide, narrowed below into the petiole. **Inflorescence** an erect, secund, congested, simultaneously many-flowered raceme with most flowers open simultaneously, 7-18 cm long including the peduncle ca. 1.5 cm long, with a spathe ca. 8 mm long, at an annulus below the apex of the ramicaul; floral bracts tubular, acute, 2 mm long; pedicels 1 mm long; ovary 1 mm long; flowers light yellow; **sepals** glabrous, broadly ovate, broadly obtuse, connate basally into a short tube, the dorsal sepal 2 mm long, 1.5 mm wide, 3-veined, the lateral sepals held forward, 2 mm long, 1.5 mm wide, 3-veined; **petals** obcuneate, truncate, shallowly concave, 0.5 mm long, 0.75 mm wide, 3-veined, with the margin of the apex narrowly thickened; **lip** subquadrate, 0.75 mm long, 0.6 mm wide, 0.3 mm deep, concave anteriorly with the apex broadly rounded and minutely apiculate, the bar cleft into 2 convex halves, the base thickly pubescent, truncate, hinged to a minute foot at the base of the column; **column** stout, 1 mm long, 1 mm wide, the anther and stigma apical, with the stigmatic lobes elongate.

Carchi: terrestrial on the road embankment west of pass between Tulcán and Maldonado, alt. 2400 m, 16 Mar. 1991, C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz 15086 (Holotype: MO).

This species has been found in northwesternmost Ecuador. It is characterized by proportionately long, slender ramicauls, and narrow, elliptical leaves that are surpassed by slender, congested, secund racemes of numerous, minute flowers. The sepals are ovate and obtuse with the laterals more or less pointing forward. The petals are cuneate and truncate. The lip is concave anteriorly with a minute apiculum, and with the bar cleft. The lobes of the stigma are elongate, protruding beyond the margins of the lip to either side.

98. ***Stelis poculifera* Luer & Hirtz, sp. nov.**

Ety.: From the Latin *poculifer*, "cup-bearing," referring to the labellum.

Planta parva dense caespitosa, racemo congestissimo multifloro folio anguste elliptico longiore, sepalis ovatis glabris similibus lateralibus non expansis, petalis cuneiformibus uninervis, et labello profunde excavato transverse callosio apice obtuso distinguitur.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 2.5-5 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, petiolate, 2.5-5 cm long including a petiole 1-2 cm long, the blade 5 mm wide, attenuate below into the petiole. **Inflorescence** an erect, strict, very congested, simultaneously many-flowered raceme 8-10 cm long including the peduncle 3-4 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 2.5 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** yellow, glabrous, ovate, subacute, 3-veined, connate basally, the dorsal sepal 3 mm long, 2 mm wide, the lateral sepals held forward, opposite when expanded, oblique, 2.75 mm long, 1.75 mm wide; **petals** brown, broadly cuneate, truncate, 1-veined, shallowly concave, 0.6 mm long, 0.75 mm wide; **lip** brown, oblong-ovoid, 0.8 mm long, 0.6 mm wide, 0.3 mm deep, deeply concave anteriorly with the apex obtuse, the anterior surface excavate beneath the shelf-like bar, the dorsum with a broad patch of minute pubescence at the base, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.5 mm long, 0.5 mm wide, with the anther and the bilobed stigma apical.

Pichincha: wet forest, west flank of Volcán Iliniza, Cerro Azul, alt. 2800 m, 23 Jan. 1987, *C. Luer, J. Luer & A. Hirtz 12453* (Holotype: MO).

This species is apparently endemic in east-central Ecuador. It is characterized by the small, densely caespitose habit and a densely many-flowered raceme surpassing the narrowly elliptical leaf. The sepals are ovate with the laterals held forward; the petals are thin, cuneiform and single-veined; and the lip is longer than broad with the anterior half deeply excavate.

99. *Stelis serpens* Luer & Hirtz, sp. nov.

Ety.: From the Latin *serpens*, "crawling," referring to the elongated rhizome.

Planta mediocris repens, racemo congesto multifloro secundo folio elliptico longiore, petalis transversis incrassatis et labello trilobo distinguitur.

Plant medium, epiphytic, repent, 15 cm long or longer, rhizomes stout, 1.5-2 cm long between ramicauls; roots slender. Ramicauls ascending-erect, slender, 3-5 cm long, enclosed by 2 tubular sheaths and another at the base. **Leaf** erect, coriaceous, elliptical, subacute to acute, petiolate, 6-7.5 cm long including a petiole ca. 1.5 cm long, the blade 0.9-1.2 mm wide, cuneate below into the petiole. **Inflorescence** an erect, congested, second, simultaneously many-flowered raceme 4-7 cm long including the peduncle 1-1.5 cm long, from an annulus below the apex of the ramicaul; floral bracts oblique, acute, 3 mm long; pedicels 1-1.5 mm long; ovary 1 mm long; flowers light yellow, nodding; **sepals** glabrous externally, microscopically pubescent within, the dorsal sepal oblong, obtuse, convex, 3.25 mm long, 1.6 mm wide, 3-veined, connate basally to the lateral sepals, the lateral sepals ovate, obtuse, concave, 2.8 mm long, 1.3 mm wide, 3-veined, connate 1 mm, connivent into a synsepal; **petals** transversely ovate, broadly obtuse, shallowly concave, 0.6 mm long, 0.8 mm wide, thickened and more or less irregularly bosselated externally at the apex; **lip** 3-lobed, 0.8 mm long, 0.5 mm wide across the lateral lobes, the apical lobe ovate, concave, obtuse, the lateral lobes below the middle, obtuse, antrorse, overlapping the base of the midlobe, the base truncate, hinged to an obsolescent column-foot; **column** stout, 0.5 mm long, 0.5 mm wide, with the anther and the bilobed stigma apical.

Loja: army road to TV tower east of Yangana, alt. 2750 m, 22 Nov. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10794* (Holotype: MO).

Zamora-Chinchipe: Cajanuma Range, south of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10736, 10757* (MO).

This species, apparently endemic in southeastern Ecuador, is characterized by the repent habit; elliptical leaves about as long as the ramicauls; and a congested, second raceme slightly longer than the leaf. The flowers are very small with connivent lateral sepals; transverse sepals with the apex irregularly thickened externally; and a three-lobed lip. A pair of obtuse lateral lobes overhang the base of the concave middle lobe. The lateral lobes appear to be a modification of a bar.

100. *Stelis tempestuosa* Luer & Hirtz, sp. nov.

Ety.: From the Latin *tempestuosus*, "stormy," referring to the cold, wet, windy pass where the species grows.

Planta mediocris, foliis anguste oblongis ramicaulibus gracilibus plus minusve aequilongioribus, racemo dense multifloro folio plus minusve aequilongo, sepalis late ellipticis glabris, petalis subquadratis apice transverse incrassatis, labello cuneato anguste obtuso longiore quam latiore distinguitur.

Plant small to medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 2-7 cm long, enclosed by a tubular sheath near the middle and 2-3 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 4-8 cm long including an indistinct petiole 1-2 cm long, the blade 1-1.4 cm wide, gradually narrowed below into the petiole. **Inflorescence** an erect, congested, distichous, flexuous, many-flowered raceme with several flowers open simultaneously, 3-12 cm long including the peduncle 1-2 cm long, subtended by a slender spathe 5-7 mm long, from an annulus below the apex of the ramicaul; floral bracts infundibular, 1.5-2 mm long; pedicels 0.75-1.5 mm long; ovary 1 mm long; **sepals** yellow, glabrous, broadly ovate, obtuse, the dorsal sepal erect, 1.75-2 mm long, 1.6-1.9 mm wide, 3-veined, connate basally to the lateral sepals, the lateral sepals held forward, connate below the middle, 1.8 mm long, 1.5 mm wide, 3-veined; **petals** yellow, thin, subquadrate, shallowly concave below the subtruncate, transversely thickened margin, 0.6 mm long, 0.6 mm wide, 1-veined; **lip** yellow, thick, cuneate-ligulate, narrowly obtuse, 0.9 mm long, 0.6 mm wide, 0.2 mm thick, shallowly concave within the apex, filled with a low callus with a rounded glenion centrally, the base with a flat,

cellular-glandular callus, hinged to the base of the column; **column** stout, 0.8 mm long, 0.8 mm wide, the foot obsolescent, the anther apical, proportionately large, the foot obsolescent.

Zamora-Chinchi: cloud forest east of the pass east of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10711* (Holotype: MO); same area, alt. 2700 m, 21 Sept. 1980, *C. Luer, J. Luer & A. Hirtz 5522* (SEL); south of the pass south of Jimbura, alt. 3050 m, 21 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 12014* (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 11815* (MO); same area, alt. 3180 m, 16 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11806* (MO).

This species, apparently endemic in the mountains of southeastern Ecuador, is characterized by slender ramicauls about as long as narrowly oblong leaves that are more or less equaled in length by a congested raceme of very small, yellow flowers. The sepals are glabrous and elliptical with the laterals held forward. The petals are broadly subtruncate. The lip is cuneate, longer than wide, with the apex narrowly rounded and the base with a broad, cellular-pubescent callus.

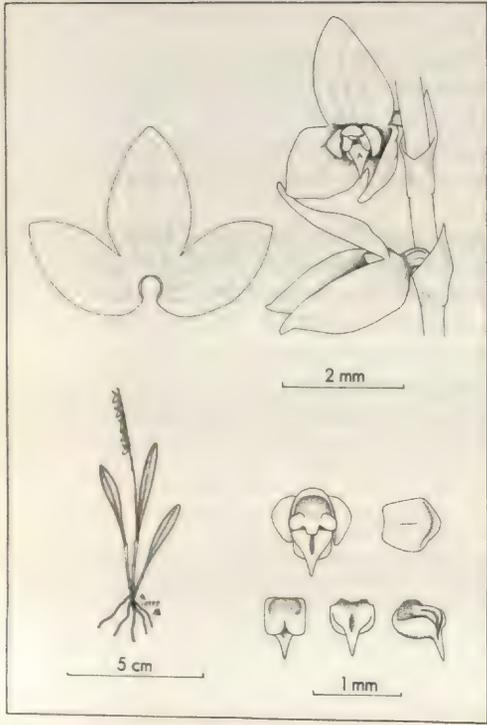


Fig. 93. *Stelis acutula*

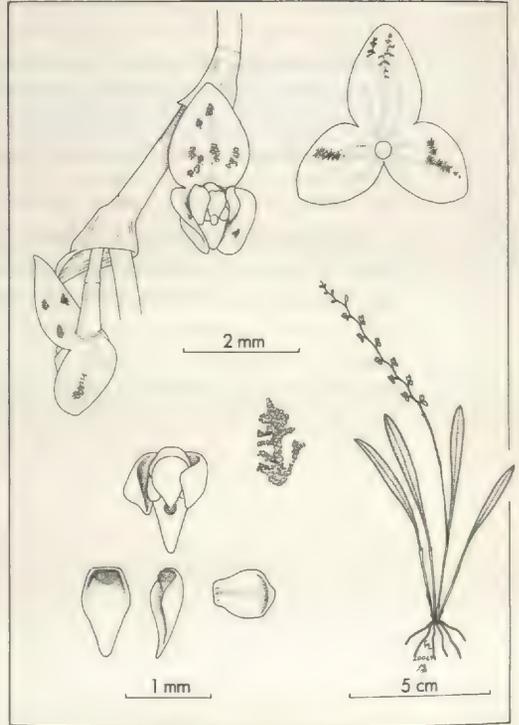


Fig. 94. *Stelis coralloides*

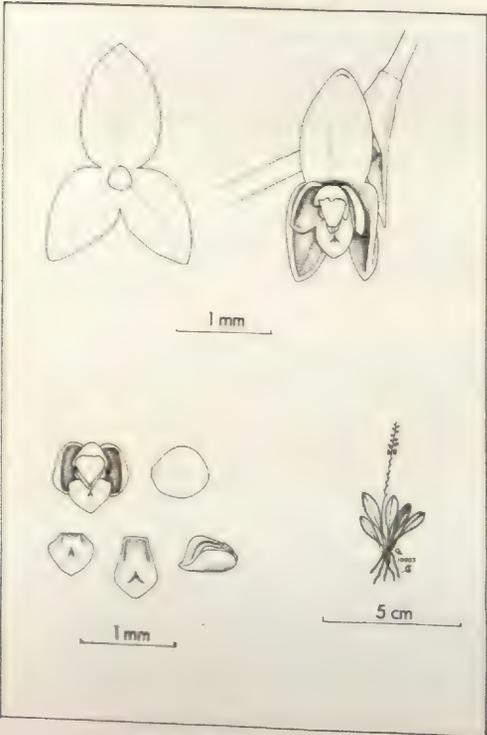


Fig. 95. *Stelis exigua*

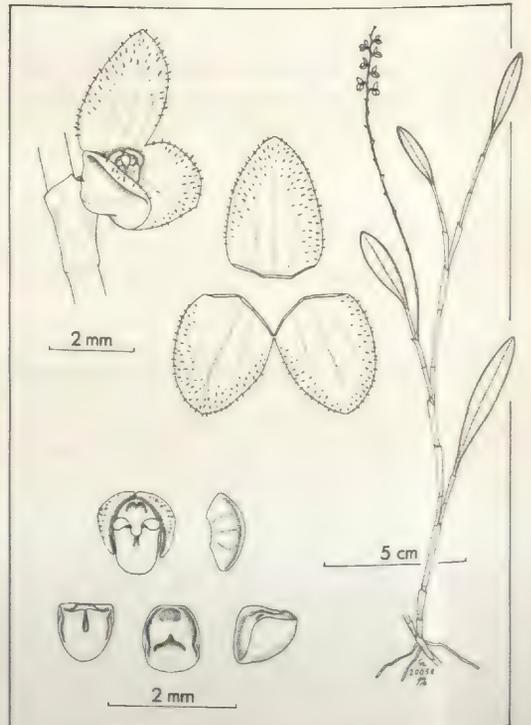


Fig. 96. *Stelis hispida*

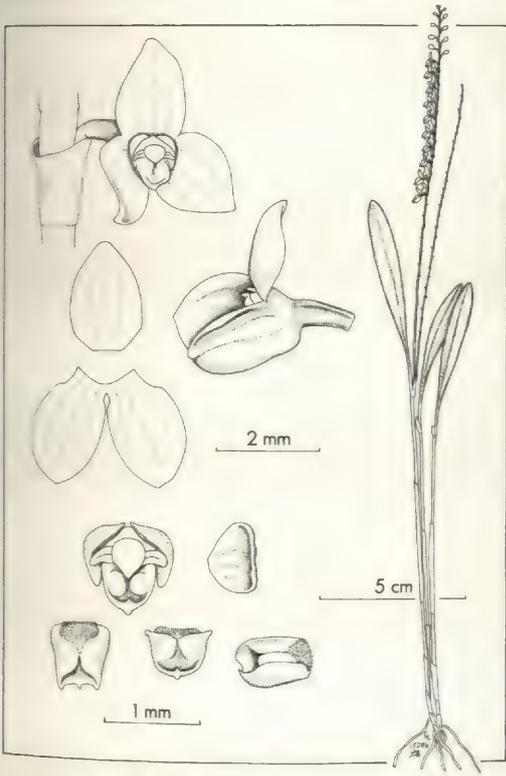


Fig. 97. *Stelis juncea*

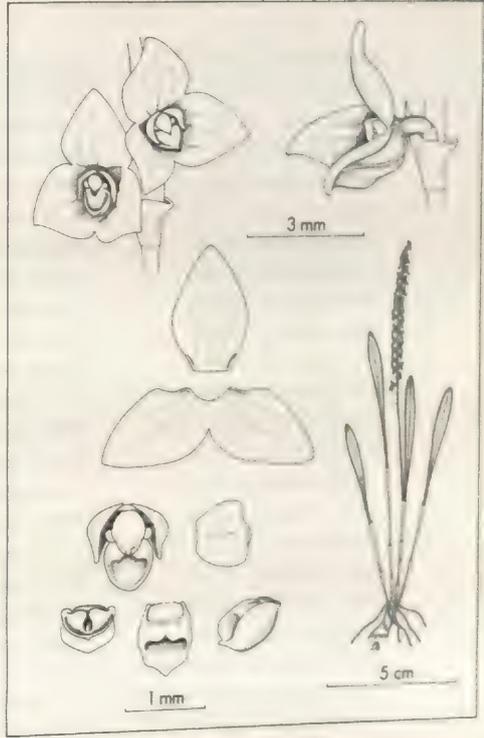


Fig. 98. *Stelis poculifera*

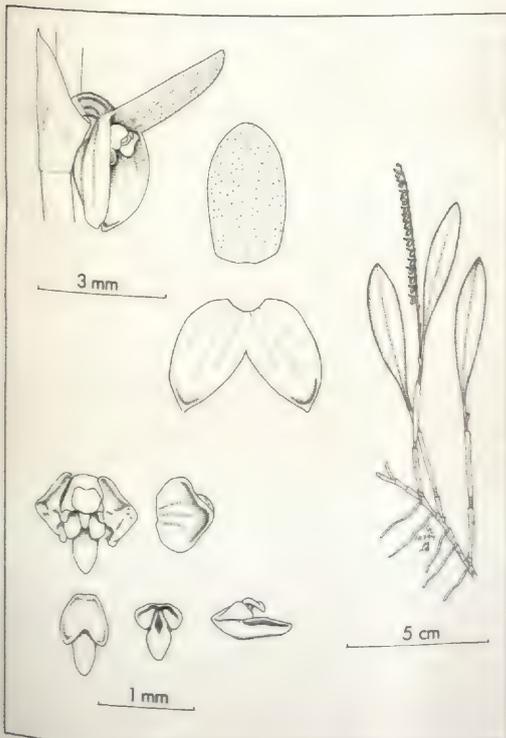


Fig. 99. *Stelis serpens*

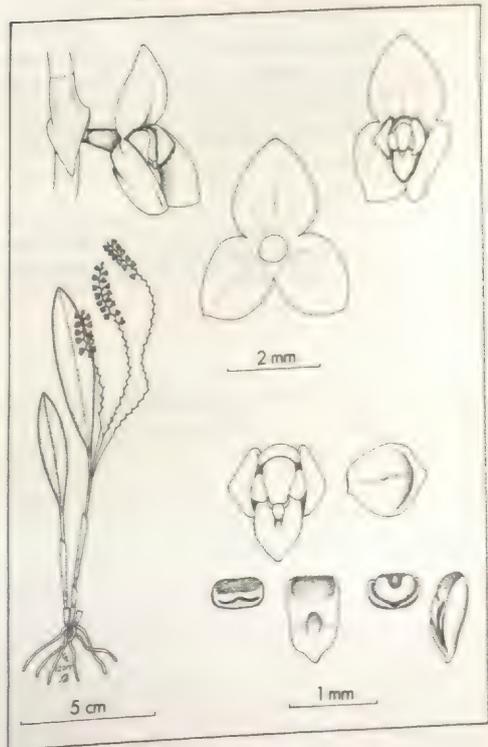


Fig. 100. *Stelis tempestuosa*

INDEX TO SCIENTIFIC NAMES

- Stelis acutilabia* 9, 28
Stelis acutula 79, 84
Stelis adrianae 36, 65
Stelis amoena 36, 65
Stelis andreettae 37, 65
Stelis ann-jesupiae 9, 28
Stelis anthracina 10, 28
Stelis apiculifera 37, 65
Stelis applanata 10, 28
Stelis barbellata 38, 66
Stelis benzingii 38, 66
Stelis bicarinata 39, 66
Stelis bivalvis 11, 29
Stelis bolivarensis 11, 29
Stelis brachiata 12, 29
Stelis coeliaca 12, 29
Stelis congesta 39, 66
Stelis coralloides 79, 84
Stelis cutucuënsis 40, 67
Stelis dalessandroi 40, 67
Stelis dalstroemii 41, 67
Stelis digitata 13, 30
Stelis dirigens 41, 67
Stelis distans 42, 68
Stelis dodsonii 42, 68
Stelis dromedarina 14, 30
Stelis elongatissima 43, 68
Stelis embreei 14, 30
Stelis exasperata 43, 68
Stelis excavata 44, 69
Stelis exigua 80, 84
Stelis exilis 45, 69
Stelis falcifera 45, 69
Stelis ferax 46, 69
Stelis fissurata 15, 30
Stelis flava 15, 31
Stelis flexilis 16, 31
Stelis flexuosissima 46, 70
Stelis floresii 47, 70
Stelis florianii 16, 31
Stelis formosa 47, 70
Stelis galeola 17, 31
Stelis gigantea 48, 70
Stelis glaberrima 48, 71
Stelis globulifera 49, 71
Stelis hirtzii 7, 27
Stelis hispida 80, 84
Stelis hoeijeri 49, 71
Stelis jimburae 50, 71
Stelis juncea 81, 85
Stelis kuijtii 50, 72
Stelis limonensis 51, 72
Stelis longihirta 51, 72
Stelis longissima 52, 72
Stelis luteria 17, 32
Stelis macilenta 52, 73
Stelis matula 8, 27
Stelis micacea 53, 73
Stelis minutissima 53, 73
Stelis nepotula 54, 73
Stelis nycterina 18, 32
Stelis ortegae 54, 74
Stelis pachyphyta 55, 74
Stelis parvipetala 18, 32
Stelis patens 19, 32
Stelis patinaria 20, 33
Stelis phil-jesupii 55, 74
Stelis pilifera 56, 74
Stelis platypetala 20, 33
Stelis poculifera 81, 85
Stelis polycarpica 56, 75
Stelis porphyrea 57, 75
Stelis preclara 21, 33
Stelis procera 57, 75
Stelis protracta 58, 75
Stelis pubipetala 58, 76
Stelis purpurella 59, 76
Stelis regina 21, 33
Stelis repanda 22, 34
Stelis rosamariae 22, 34
Stelis saccata 7, 27
Stelis sanchezii 23, 34
Stelis sanctae-rosae 59, 76
Stelis santiagoi 24, 34
Stelis scalena 60, 76
Stelis serpens 82, 85
Stelis serrulifera 60, 77
Stelis situlifera 24, 35
Stelis sumacoënsis 25, 35
Stelis tempestuosa 82, 85
Stelis tridactyloides 61, 77
Stelis undulata 61, 77
Stelis uxoria 62, 77
Stelis velivolva 25, 35
Stelis vesca 63, 78
Stelis villifera 63, 78
Stelis vollesii 26, 35
Stelis yanganensis 64, 78
Stelis zarumae 64, 78
Stelis zelenkoi 8, 27

ADDENDA TO *LEPANTHES* OF ECUADOR

ABSTRACT

The following 12 species raise the number of species of the genus *Lepanthes* known in Ecuador to 332. The figures are numbered in continuation from *Icones Pleurothallidarum*-20.

New species:

Lepanthes bibarbullata Luer
Lepanthes chilopsis Luer & Hirtz
Lepanthes cordilabia Luer
Lepanthes exigua Luer & Jost
Lepanthes geminipetala Luer & Portilla
Lepanthes inaequisejala Luer & Portilla
Lepanthes laxa Luer & Portilla
Lepanthes lynniana Luer
Lepanthes octocornuta Luer
Lepanthes persimilis Luer & Sijm
Lepanthes tridactyla Luer
Lepanthes werneri Luer

Lepanthes bibarbullata Luer, sp. nov.

Fig. 310.

Ety.: From the Latin *bibarbullatus*, "with two barbels," referring to the tails of the petals.

Planta parva, racemo congestissimo arcuato quam folio suborbiculato reticulato plus minusve aequilongo, sepalis obtusis breviter acuminatis, petalis transverse oblongis cum cauda longissima filiformi et labelli tenui suborbiculari distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 18-20 mm long, enclosed by 3-4 microscopically scabrous, lepanthiform sheaths. **Leaf** erect, coriaceous, suborbicular, reticulated, rounded at the apex, 12 mm long, 11 mm wide, the base broadly cuneate to rounded, contracted into a petiole 1 mm long. **Inflorescence** a very congested, secund, arcuate, successively several- to many-flowered raceme up to at least 5 mm long, borne above the leaf by a slender peduncle 5 mm long; floral bracts 0.5 mm long; pedicels 1-1.5 mm long; ovary 0.5 mm long; **sepals** yellow, glabrous, sparsely denticulate, broadly ovate, obtuse, shortly acuminate, the dorsal sepal 2 mm long, 1.75 mm wide, 3-veined, connate to the lateral sepals for 0.25 mm, the lateral sepals oblique, connate 0.5 mm, 2 mm long, 1.4 mm wide, 2-veined; **petals** red, transversely oblong, obscurely bilobed, glabrous, 0.3 mm long, 0.75 mm wide, the upper lobe broadly triangular, oblique, subacute, the lower lobe orbicular with a descending, filamentous process 2 mm long from the base; **lip** red, thin, suborbicular, undulate, 1 mm long, 1 mm wide, the abruptly contracted into a slender claw, attached to the undersurface of the column, **column** terete, 0.75 mm long, the anther and stigma apical.

ECUADOR: Without locality, cultivated by J & L Orchids 799-593, Easton, CT, November 2000, C. Luer 19440 (Holotype: MO).

This species is related to *L. calodictyon*. It is characterized by the small habit with suborbicular, reticulated, more or less spreading, non-crenate leaves, and a congested raceme arching above the surface. The sepals are sparsely denticulate, broad, obtuse and shortly acuminate. The petals are transversely oblong with a long, filamentous process descending from the base of the lower lobe and passing behind the lip. The lip is thin and suborbicular, and attached to the column by a slender claw.

Lepanthes chilopsis Luer & Hirtz, sp. nov.

Fig. 311.

Ety.: From the Greek *cheilopsis*, "like a lip," in reference to the labellum.

Planta mediocris pendens foliis longipubescentibus, sepalo dorsali concavo, synsepalo plano ovato acuto, petalis ad basim lobulatis, labello glabro ovato-cordato protuberanti lobis basalibus columnam amplectentibus distinguitur.

Plant average in size for the subgenus, epiphytic, pendent, up to 30 cm long or longer, the rhizomes slender, 2.5-3 mm long between ramicauls, with 1 intervening, long-ciliate, lepanthiform sheath, roots slender, from nodes near the base. Ramicauls 0.5 mm long, concealed by a long-ciliate, lepanthiform sheath. **Leaf** pendent in the natural position, thickly coriaceous, long-ciliate, elliptical, subacute, 9-10 mm long, 3.5-5 mm wide, 2 mm thick, the base contracted into a petiole ca. 1 mm long. **Inflorescence** a single flower, borne by a peduncle ca. 1.5 mm long from near the apex of a ramicaul; floral bract long-spiculate, 1-1.5 mm long; pedicel 1.5 mm long; ovary minutely spiculate, 0.5 mm long; **sepals** membranous, glabrous, the dorsal sepal translucent with purple, center stripe, suborbicular, obtuse, concave, 5 mm long, 4 mm wide, 5-veined with faint accessories, barely connate to the lateral sepals, the lateral sepals translucent yellow, faintly suffused with purple laterally, connate 1.5 mm into an ovate, acute, shortly bifid synsepal, 4.5 mm long, 3.8 mm wide, 4-veined; **petals** yellow, diverging, minutely pubescent, oblong, obtuse, 1.5 mm long, 0.25 mm wide, with the margins involute, the base with a lobule at both angles; **lip** yellow-orange, glabrous, ovate, obtuse, protuberant, with the base cordate, clasping the column, 2.25 mm long, 1.75 mm wide expanded, the base connate to a minute protrusion from the base of the column; column 1.5 mm long, with the anther dorsal and the stigma apical.

ECUADOR: **Morona-Santiago**: new road from Macas to Guamote, at the junction between Río Colimbo and Río Upano, alt. 1600 m, 1 Mar. 2001, C. Luer, J. Luer & A. Hirtz 19588 (Holotype: MO).

This species is similar to *L. pilosella* and its relatives, but the leaves are thick and elliptical, and covered by a fine, long pubescence. The sheaths are also finely long-pubescent. The inflorescence is a single, erect flower produced successively. The dorsal sepal is concave and, the synsepal is ovate and acute. The petals are small, oblong and bilobed at the base. The lip is ovate and protrudes forward beneath the column.

Lepanthes cordilabia Luer, sp. nov.

Fig. 312.

Ety.: From the Latin *cordilabius*, "heart-shaped lip," referring to the cordate labellum.

Species haec *L. ciliaris* Luer & Hirtz affinis, sed floribus majoribus, sepalo dorsali ovato longipubescentibus, sepalis lateralibus microscopice pubescentibus, petalis breviter pubescentibus et labello glabro cordato columnam amplectenti differt.

Plant small, epiphytic, pendent, up to 10 cm long or longer, the rhizome slender, 2-4 mm long between ramicauls, enclosed by 2 infundibular, long-ciliate sheaths; roots slender at the base. Ramicauls 0.5 mm long, enclosed by 1 ciliate sheath. Leaves pendent, distichous, thickly coriaceous, glabrous, broadly ovate, obtuse, the blade 3-5 mm long, 4.5 mm wide, the base abruptly contracted into a petiole less than 0.5 mm long. **Inflorescence** a successively 2- to 3-flowered raceme, up to 3 mm long, borne by a peduncle 3 mm long; floral bracts long-ciliate, 1 mm long; pedicels 1.5 mm long; ovary long-ciliate-spiculate, 1.5 mm long; **sepals** yellow with wine red stripes and markings, widely spread and recurving, the dorsal long-ciliate within, ovate, obtuse, 3.2 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals diverging, elliptical-oblong, subacute, apiculate, 3 mm long, 1.5 mm wide, 2-veined, connate 0.5 mm; **petals** transversely bilobed or lunate, shortly pubescent, 0.4 mm long, 0.8 mm wide, the lobes equal, triangular with the tips rounded; **lip** wine red, glabrous, cordate with the sides embracing the column, 1.5 mm long, 1.5 mm wide expanded, the apex broadly rounded, the basal angles rounded, the body connate to the column above the base by a slender claw; **column** terete, 1 mm long, the anther dorsal, the stigma apical.

ECUADOR: **Zamora-Chinchipe**: San Francisco station between Loja and Zamora, alt. 2200 m, 9 June 2000, F. Werner 334 (Holotype: MO), C. Luer illustr. 19428.

This species, known only from this original collection, is closely allied to *L. ciliaris*. It is distinguished from the latter by twice larger flowers with spreading, recurved, purple-striped sepals, instead of white. The dorsal sepal is long-pubescent, ovate, and narrowed toward the base. The lateral sepals are only microscopically pubescent, and the transverse petals are shortly pubescent. The lip is glabrous and cordate with the sides embracing the column.

Lepanthes exigua Luer & Jost, sp. nov.

Fig. 313.

Ety.: From the Latin *exiguus*, "very small," in referring to the habit.

Inter species subgen. *Brachycladii* habitu exigua, foliis minute ciliatis, sepalis microscopice ciliatis pubescentibusque lateralibus apiculatis, petalis nanis obliquis uninervis, labello cordato acuto differt.

Plant very small, epiphytic, pendent-repent, the rhizomes slender, 1.5-2 mm long between ramicauls, enclosed by 2 long-ciliate, imbricating, lepanthiform sheaths; roots slender, from nodes near the base of the branches. Ramicauls 0.5 mm long, concealed by 1 long-ciliate, lepanthiform sheath. **Leaf** pendent in the natural position, coriaceous, lentiform, minutely short-ciliate, broadly elliptical, obtuse, 3-4 mm long, 2.75-3 mm wide, 3-veined, the base contracted into a petiole less than 0.5 mm long. **Inflorescence** a single flower, borne by an ascending peduncle 1 mm long from near the apex of a ramicaul; floral bract long-ciliate, 1 mm long; pedicel 1.2 mm long; ovary costate-dentate, 1 mm long; **sepals** yellow with the veins purple, membranous, microscopically ciliate-pubescent, the dorsal sepal broadly obovate, erect, obtuse, 3 mm long, 2 mm wide, 3-veined, connate 0.5 mm to the lateral sepals, the lateral sepals oblong, connate 1.5 mm into a bifid lamina, 3 mm long, 3 mm wide, 4-veined, the apices oblique, obtuse, apiculate; **petals** yellow, suffused with purple, pubescent, obliquely bilobed, 0.8 mm long, 1.3 mm wide, the lobes opposite, obtuse, the upper lobe 1-veined; **lip** purple, minutely pubescent, cordate-trilobed, 2 mm long, 2.6 mm wide expanded, with the apical lobe triangular, acute, with the lateral or basal lobes erect, obliquely triangular, rounded, embracing the column, the base connate to the base of the column; column 1.5 mm long, the anther and the stigma apical.

ECUADOR: **Morona-Santiago**: cloud forest epiphyte, road between Mendez and Paute, alt. 1890, 14 May 2000, *L. Jost 2042* (Holotype: MO), *C. Luer* illustr. 19424.

This tiny species occurs in southeastern Ecuador at a medium altitude near 1900 meters above sea level. The minutely ciliate leaves are three millimeters or less long, and the single-flowered peduncle is barely one millimeter long, both the rhizome and peduncle with long-ciliate sheaths. The sepals are obtuse, the laterals apiculate; the petals are oblique and single-veined; and the lobes of the cordate lip enclose the lip.

Lepanthes geminipetala Luer & Portilla, sp. nov.

Fig. 314.

Ety.: From the Latin *geminipetalus*, "with twinned petals," in reference to the petals.

Planta mediocris pendens foliis longipubescentibus, sepalo dorsali concavo, synsepalo plano subquadrato apicibus obtusis breviter acuminatis, petalis geminatis pubescentibus, labello glabro bilobo, lobis columnam amplectentibus distinguatur.

Plant average in size for the subgenus, epiphytic, pendent, with branches up to 10 cm long or longer, the rhizomes slender, 5-7 mm long between ramicauls, enclosed by 2 long-ciliate, lepanthiform sheaths; roots slender, from nodes near the base of the branches. Ramicauls 1.5 mm long, concealed by a sheath; long-ciliate, lepanthiform sheath. **Leaf** pendent in the natural position, thickly coriaceous, long-ciliate, long-elliptical, obtuse, 9-11 mm long, 4-5 mm wide, 2 mm thick, the base contracted into a petiole ca. 2 mm long. **Inflorescence** a single flower, borne by an ascending peduncle ca. 2 mm long from near the apex of a ramicaul; floral bract long-spiculate, 2-3 mm long; pedicel 3 mm long; ovary minutely cellular-glandular, 1 mm long; **sepals** light rosy brown, membranous, the dorsal sepal suborbicular, obtuse, slightly acuminate at the tip, concave, 4 mm long, 3.5 mm wide, 5-veined, barely connate to the lateral sepals, the lateral sepals connate 2 mm into a subquadrate, broadly bifid synsepal, 3.5 mm long, 3.75 mm wide, 4-(6-)veined; **petals** erect, light brown, pubescent, deeply cleft into two oblong, obtuse lobes, the outer lobes 2 mm long, 0.5 mm wide, the inner lobes 1.5 mm long, 0.3 mm wide; **lip** glabrous, shiny dark purple-brown, bilobed, "U-shaped," with the lobes obtuse, erect, subfalcate, clasping the column, with an oblique, linear callus on the outer surface, the apex obtuse, ca. 1.5 mm long, 3 mm wide expanded, the base connate to the base of the column; column 1.75 mm long, with the anther and the stigma apical.

ECUADOR: **Azuay**: Soldado, Molleturo, southwest of Cuenca, cultivated at Ecuagenera, Gualaceo, 4 Mar. 2001, *C. Luer 19656* (Holotype: MO).

Superficially, this species is similar to *L. pilosella* and its relatives, but the leaves are thick and elliptical, and covered by a fine, long pubescence. The sheaths are also finely long-pubescent. The inflorescence is a single, erect flower produced successively. The dorsal sepal is concave and, the synsepal is subquadrate and widely bifid. Each petal, divided into two parts, stands erect behind the lip and column. The lip is broadly bilobed with the lobes surrounding the column.

Lepanthes inaequisepala Luer & Portilla, sp. nov.

Fig. 315.

Ety.: From the Latin *inaequisepalus*, "with unequal sepals," referring to the markedly different size and shape of the dorsal sepal and synsepal.

Species haec *L. elegantulae* Schltr. affinis, sed pedunculo fractiflexo, sepalo dorsali grandi ovato acuminato concavo, synsepalo multininore supra basim anguste lineari, petalis sigmoideis, labelli laminis carnosus triangularibus corpore ovoidei solidi differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-8 cm long, enclosed by 6-7 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical, acute, 4-5 cm long, 1-1.2 cm wide, the base cuneate into a petiole ca. 5 mm long. **Inflorescence** a, suberect, flexuous, loose, successively several-flowered raceme up to 10 cm long including the filiform peduncle 5-7 cm long; floral bracts 2.5 mm long; pedicels 4-5 mm long; ovary carinate, 3 mm long; **sepals** color?, carinate, glabrous, the dorsal sepal concave, ovate, acute, acuminate into a tail ca. 8 mm long, the entire length 20 mm long, 8.5 mm wide, 3-veined, connate to the lateral sepals for 3 mm, the lateral sepals connate 17 mm into a synsepal, 20 mm long, 7 mm wide at the base, then narrowed and linear above the base, the acute tips free 2 mm; **petals** pubescent, transversely sigmoid, 1 mm long, 4 mm wide, the lobes obtusely uncinata, the lower lobe smaller; **lip** bilaminata, the blades fleshy, pubescent, triangular with rounded ends, 1.5 mm long, the connectives short, oblique, the body proportionately large, ovoid, solid, connate to the column at the base, no appendix discernible; column terete, 1.75 mm long, the anther and the stigma apical.

ECUADOR: **Morona-Santiago**: Sinai near Macas, alt. 1800 m, flowered in cultivation at Ecuagenera, Gualaico, Oct. 2000, *J. Portilla 2114* (MO), C. Luer illustr. 19445.

This species is related to *L. elegantula*. The relatively large flowers are borne in a long, flexuous, distantly flowered raceme that far surpasses the acute leaf. The dorsal sepal is large and concave with a long-acuminate tip. The synsepal is narrowly linear beyond the base terminating into a pair of acute tips. The petals are sigmoid in shape. The blades are thickly triangular and flank the column from a proportionately large, solid, ovoid body without a discernible appendix. solid

Lepanthes laxa Luer & Portilla, sp. nov.

Fig. 316.

Ety.: From the Latin *laxus*, "loose," referring to the distantly flowered raceme.

Species haec *L. elegantulae* Schltr. affinis, sed pedunculo fractiflexo, synsepalo infra medium ovato concavo partibus supra medium oblongis contiguus, petalorum lobis oblongis, lobo superiore oblique truncato, labelli laminis etiam oblongis differt.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-5 cm long, enclosed by 6-7 close, ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, elliptical-obovate, obtuse to rounded at the apex, 2-2.5 cm long, 1-1.2 cm wide, the base cuneate into a petiole ca. 2 mm long. **Inflorescence** an arching, suberect, flexuous, loose, successively several-flowered raceme 3-4 cm long including the filiform peduncle 7 cm long; floral bracts 2 mm long; pedicels 3-6 mm long; ovary carinate, 2.25 mm long; **sepals** color?, carinate, glabrous, the dorsal sepal ovate, obtuse before contracted above the middle into an acute, narrowly triangular apex, 13 mm long, 7.5 mm wide, concave basally, connate to the lateral sepals for 3 mm to form a shallow, bowl-shaped, sepaline cup, the lateral sepals ovate in lower half, narrowed above the middle, concave basally, 12-13 mm long, 7-8 mm wide together expanded, the distal halves contiguous, acute; **petals** pubescent, transversely linear-oblong, 0.8-1 mm long, 4 mm wide, the lobes oblong with the upper lobe obliquely truncate, the lower lobe longer, narrowly obtuse; **lip** bilaminata, the blades oblong with rounded ends, slightly convex, minutely pubescent, ciliate at the apex, 1.6-1.8 mm long, the connectives short, oblique, cuneate, the body connate to the column at the base, the appendix narrowly oblong, ciliate, in contact with the stigma; column 1.5 mm long, the anther dorsal, the stigma ventral.

ECUADOR: **Zamora-Chinchi**: Cordillera del Condor, flowered in cultivation at Ecuagenera, Gualaico, Oct. 2000, *J. Portilla 2164* (Holotype: MO), C. Luer illustr. 19444.

PERU: **Huánuco**: collected by P. Cloes, flowered in cultivation at Hasselt, Belgium, 13 Aug. 2000, *P. Cloes & M. Cloes s.n.* (MO), C. Luer illustr. 19421.

This species, similar to *L. elegantula*, is characterized by relatively large flowers that are borne in a long, flexuous, distantly flowered raceme. The sepals are concave below the middle to form a shallow cup. The apex of the dorsal sepal is acuminate into an acute tip, while the lateral sepals are somewhat similar to those of *L. nycteris* and relatives. The lobes of the petals and lip are oblong.

Lepanthes lynniana Luer, sp. nov.

Fig. 317.

Ety.: Named for Lynn O'Shaughnessy of Howell, MI, who cultivates this species, and submitted it for identification.

Species haec *L. ciliaris* Luer & Hirtz affinis, sed sepalis reflexis duplomagioribus proportione angustioribus, lateralibus semiconnatis, petalis minutis reniformibus, et labello crasso hippocrepiformi differt.

Plant small to medium in size for the subgenus *Brachycladium*, epiphytic, pendent, the rhizome 3 mm long between ramicauls, enclosed by 1 loose, long-ciliate sheath, roots slender along the rhizome. Ramicauls 1 mm long, enclosed by 1 infundibular, long-ciliate sheath. **Leaf** pendent, distichous, thickly coriaceous, glabrous, ovate, obtuse, 4-5 mm long, 4-5.5 mm wide, the base rounded, contracted into a petiole ca. 0.25 mm long. **Inflorescence** a single or a distant, successively 2-flowered raceme, borne by a slender, ascending peduncle 4-6 mm long; floral bracts 1 mm long; pedicels 2-2.5 mm long; ovary 1 mm long, spiculate; **sepals** purple, reflexed, the dorsal sepal ovate, obtuse, pubescent within, 3.5 mm long, 3.2 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals elliptical-ovate, oblique, subacute, apiculate, 3.5 mm long, connate 1.5 mm, 3.5 mm wide together, 2-veined; **petals** reniform, pubescent, 0.5 mm long, 1 mm wide, the lobes equal, obtuse; **lip** pubescent, long-ciliate, bilobed-hippocrepiform, 1.5 mm long, 1.5 mm wide, the apex broadly rounded, the basal lobes obtuse embracing the column, the body broad, connate to the base of the column; **column** terete, 1.5 mm long, the anther and stigma apical.

ECUADOR: Without collection data, obtained from José Portilla, cultivated in Howell, MI, flowered Jan. 2001 by Lynn O'Shaughnessy OO689 (Holotype: MO), C. Luer illustr. 19462.

This species is distinguished by the small habit with ovate, glabrous leaves, and short, ascending, successively two-flowered racemes. Except for being twice larger, the flowers are very similar to those of *L. ciliaris*. The sepals of *L. ciliaris* are broader, with the dorsal broader than long, and the lateral sepals are free and diverging. The sepals of *L. lynniana* are proportionately narrower and reflexed, and the laterals are semiconnate. The petals of both species are small, those of *L. ciliaris* being twice longer and lunate in shape. The lips of both species are "horse shoe-shaped."

Lepanthes octocornuta Luer, sp. nov.

Fig. 318.

Ety.: From the Latin *octocornutus*, "eight-horned," referring to the projections of the petals and lip.

Species haec *L. pilosellae* Rehb.f. similis, sed petalis trifurcatis et lamello bicornuto differt.

Plant medium in size for the subgenus *Brachycladium*, epiphytic, pendent, long-repent, up to 10 cm long or longer, the rhizome 3-4 mm long between ramicauls, each segment enclosed by 2 long-spiculate sheaths with dilated, long-ciliate ostia; roots slender, along the rhizome. Ramicauls abbreviated, 0.5 mm long, enclosed by a long-pubescent sheath. **Leaf** descending, coriaceous, long-pubescent, elliptical, subacute, 7-11 mm long, 4-5 mm wide, 3- to 5-veined, the base cuneate into a petiole ca. 0.5 mm long. **Inflorescence** a single flower, borne by a slender, upcurved peduncle 0.5-0.6 mm long; floral bract long-pubescent, 1 mm long; pedicel 1 mm long; ovary 0.6 mm long; **sepals** yellowish with purple-brown stripes, glabrous, the dorsal sepal deeply concave, suborbicular, obtuse to rounded at the apex, 8 mm long, 7 mm wide unexpanded, 7-veined, connate to the lateral sepals for 1 mm, the lateral sepals connate long, 3 mm into a narrowly ovate, bifid synsepal with acute apices, 8.5 mm long, 3.5 mm wide, 4-veined; **petals** glabrous, narrowly trifurcate, 2.5 mm long, 0.5 mm wide, the lobes slender, the middle lobe longest, with basal lobes ca. 0.5 mm long; **lip** glabrous, subquadrate-trilobed, broadly truncate-retuse, 1.5 mm long, 1.5 mm wide expanded, 3 mm across lateral lobes expanded, with the sides clasping the column, the lobes expanded, slender, 1 mm long, from the base of the blade, the base connate to the base of the column; **column** terete, 2 mm long, the anther dorsal, the stigma apical.

ECUADOR: **Zamora-Chinchi**: San Francisco station between Loja and Zamora, alt. 2200 m, 9 June 2000, F. Werner 329A (Holotype: MO), C. Luer illustr. 19426.

This species, known only from this original collection, is superficially similar to *L. pilosella* because of the large, orbicular, deeply concave, striped dorsal sepal. The lateral sepals form a narrowly ovate, bifid synsepal. The petals are trifid, with a long, middle segment and a short segment at either side of the base. The lip is subquadrate with sides clasping the column, and with narrow, erect, basal lobes.

Lepanthes persimilis Luer & Sijm, sp. nov.

Fig. 319.

Ety.: From the Latin *persimilis*, "very similar," referring to its similarity to *L. pilosella*.

Species haec *L. pilosellae* Rchb.f. similis, sed sepalò dorsali quinquinervoso, petalis magnitudine dimidiis et labello cordato duplo majore differt.

Plant average in size for the subgenus, epiphytic, pendent-repent, with branches up to 10 cm long or longer, the rhizomes stout, subflexuous, 5-7 mm long between ramicauls, enclosed by 2 long-spiculate, imbricating, lepanthiform sheaths; roots slender, from nodes along the rhizome. Ramicauls 1 mm long, concealed by 1 long-ciliate, lepanthiform sheath. **Leaf** pendent or prostrate, coriaceous, densely ciliate-pubescent, elliptical-ovate, subacute to obtuse, 11-14 mm long, 8-9 mm wide, 5-veined, the base contracted into a petiole less than 1 mm long. **Inflorescence** a successive, single flower, borne by an ascending peduncle 1.5-2.5 mm long, borne laterally from a ramicaul; floral bract ciliate, 1.5-2 mm long; pedicel 3 mm long; ovary smooth, 1 mm long; **sepals** glabrous, the dorsal sepal translucent, prominently striped in purple along the veins, orbicular, concave, 5 mm long, 5 mm wide, 5-veined, free from the lateral sepals, the lateral sepals connate 2 mm into an ovate, bifid lamina, 5 mm long, 3.75 mm wide, 4-veined, with the apices acute; **petals** glabrous, oblong-triangular, subacute, 0.8 mm long, 0.4 mm wide; **lip** glabrous, ovate-cordate, 2.3 mm long, 2 mm wide expanded, with the apex broadly rounded, with the basal angles obtuse, with the sides encircling and protruding beyond the column, the base connate to the base of the column; column 2 mm long, the anther and the stigma apical.

ECUADOR: without collection data, obtained from Johannes Pap, flowered in cultivation, 11 Aug. 2000, by A.P. Sijm 991112 (Holotype: MO), C. Luer illustr. 19384.

Superficially, this species is similar to *L. pilosella* and its relatives with ciliate-pubescent, elliptical-ovate leaves. The sheaths are long-spiculate. The flower is similar with a large, rounded, concave, purple-striped, dorsal sepal, and a bifid synsepal. The petals are minute, half the size of those of *L. pilosella*. The lip is considerably larger and ovate with the sides incurved, surrounding the column, and with the broadly rounded apex protruding beyond the column. The lip is longer than broad.

Lepanthes tridactyla Luer, sp. nov.

Fig. 320.

Ety.: From the Greek *tridactylos*, "three-fingered," referring to the shape of the petals.

Species haec *L. platysepalae* Luer & Escobar similis, sed synsepalo angustiore, petalis trifurcatis, et labello ovato obtuso quam columna longiore differt.

Plant medium in size for the subgenus *Brachycladium*, epiphytic, pendent, long-repent, up to 10 cm long or longer, the rhizome 4-5 mm long between ramicauls, each segment enclosed by 2 long-spiculate sheaths with dilated, long-ciliate ostia; roots slender, along the rhizome. Ramicauls abbreviated, 1 mm long, enclosed by a long-pubescent sheath. **Leaf** descending, coriaceous, long-pubescent, elliptical, subacute, 8-10 mm long, 2-3 mm wide, 3-veined, the base cuneate into a petiole less than 0.5 mm long. **Inflorescence** a single flower, borne by a slender, upcurved peduncle 0.5 mm long; floral bract long-pubescent, 1 mm long; pedicel 0.5 mm long; ovary 0.6 mm long; **sepals** yellowish with purple-brown stripes, glabrous, the dorsal sepal shallowly concave, obovate, obtuse to subacute, 7.5 mm long, 5 mm wide, 7-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals connate 2.5 mm into a narrowly ovate, bifid synsepal with acute apices, 6 mm long, 3 mm wide, 4-veined; **petals** glabrous, narrowly trifurcate, 3 mm long, 0.5 mm wide, the lobes slender, the middle lobe longest, with basal lobes ca. 0.5 mm long; **lip** glabrous, ovate-shield-shaped, obtuse, 2.5 mm long, 1.75 mm wide expanded, with the sides and the narrowly obtuse basal lobes erect, to the side of the column, the base connate to the base of the column; **column** terete, 1.5 mm long, the anther dorsal, the stigma apical.

ECUADOR: **Zamora-Chinchipe**: San Francisco station between Loja and Zamora, alt. 2200 m, 9 June 2000, F. Werner 329B (Holotype: MO), C. Luer illustr. 19427.

This species, known only from this original collection, is superficially similar to *L. platysepala* because of the large, erect, obovate, obtuse, shallowly concave, striped dorsal sepal. The lateral sepals form a narrowly ovate, bifid synsepal. The petals are trifid, with a long, middle segment and a short segment at either side of the base. The ovate-oblong lip protrudes beyond the column while the sides curve up to either side of the column.

Lepanthes wernerii Luer, sp. nov.

Fig. 321.

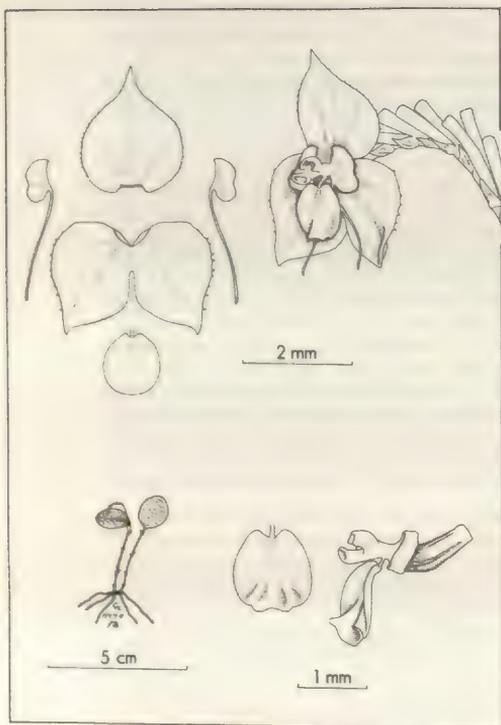
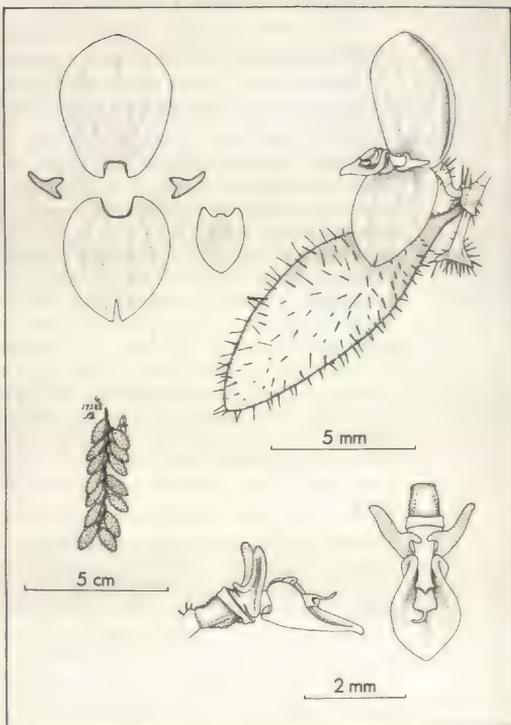
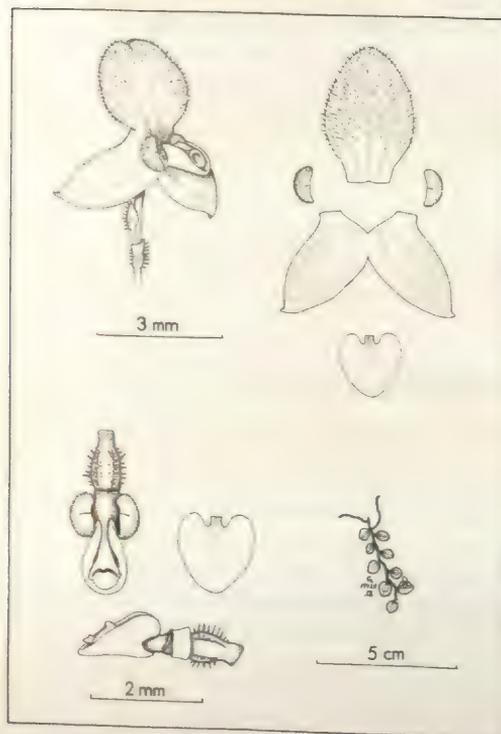
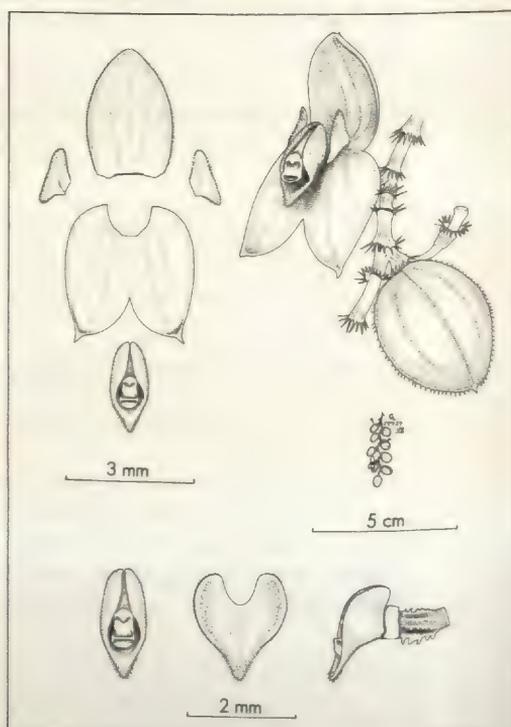
Ety.: Named for Florian Werner, University of Bayreuth, who collected this species at the Estación Científica San Francisco.

Species haec *L. ciliari* Luer & Hirtz affinis, sed floribus majoribus, sepalis breviter pubescentibus lateralibus acutis, petalorum lobis oblique late triangularibus, et labelli lobis oblique erectis triangularibus differt.

Plant small to medium in size for the subgenus *Brachycladium*, epiphytic, pendent, up to 20 cm long, the rhizome slender but proportionately stout, 3-4 mm long between ramicauls, enclosed by 2-3 loose, ciliated sheaths, roots slender along the rhizome. Ramicauls 0.5-1 mm long, enclosed by 1 infundibular, ciliated sheath. **Leaf** pendent, distichous, thickly coriaceous, glabrous, elliptical-suborbicular, 4.5-7 mm long and 3.5-7 mm wide, the base broadly cuneate to rounded, contracted into a petiole ca. 0.5 mm long. **Inflorescence** an erect, loose, successively 2- to 3-flowered raceme, up to 7 mm long, borne by a slender, suberect peduncle 4-6 mm long; floral bracts 1-1.5 mm long; pedicels 1.5-2.5 mm long; ovary 1-1.5 mm long, echinate; **sepals** purple, widely spread, the dorsal sepal elliptical-ovate, obtuse, pubescent within, 2.5-3.5 mm long, 2.5-3 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals cellular-glandular, diverging, ovate-triangular, oblique, acute, apiculate, 3-3.5 mm long, 1.75-2 mm wide, 2-veined, connate 1 mm; **petals** rose, transversely bilobed, cellular-glandular, 0.6 mm long, 1.3-2 mm wide, the lobes equal, triangular, acute, oblique, introrse; **lip** rose, cellular-glandular, bilobed, 1.5-2 mm long, 1.5-3 mm wide expanded, the apex subacute to rounded, the lobes triangular, erect, oblique with the basal angles acute to obtuse, embracing the column, the body long, connate to the base of the column; **column** terete, 1.5 mm long, with a long rostellum, the anther dorsal, the stigma apical.

ECUADOR: **Zamora-Chinchi**: San Francisco station between Loja and Zamora, alt. 2200 m, 2000. *F. Werner 333* (Holotype: MO), C. Luer illustr. 19429. Without collection data, obtained from José Portilla, cultivated in Howell, MI, flowered Sept. 2000 by *Lynn O'Shaughnessy PLO0508* (MO), C. Luer illustr. 19423.

Lepanthes wernerii is distinguished by the small habit with elliptical to suborbicular, glabrous leaves; short, ascending, successively-flowered racemes of widely spread, purple flowers. The dorsal sepal is broad, obtuse and pubescent, while the lateral sepals are widely spread, acute, apiculate and only cellular-glandular. The lobes of the petals are triangular and opposite. The lip is simply bilobed with the lobes erect, triangular and either obtuse or acute, and with the apex entire without an appendix.

Fig. 310. *Lepanthes bibarbullata*Fig. 311. *Lepanthes chilopsis*Fig. 312. *Lepanthes cordilabia*Fig. 313. *Lepanthes exigua*

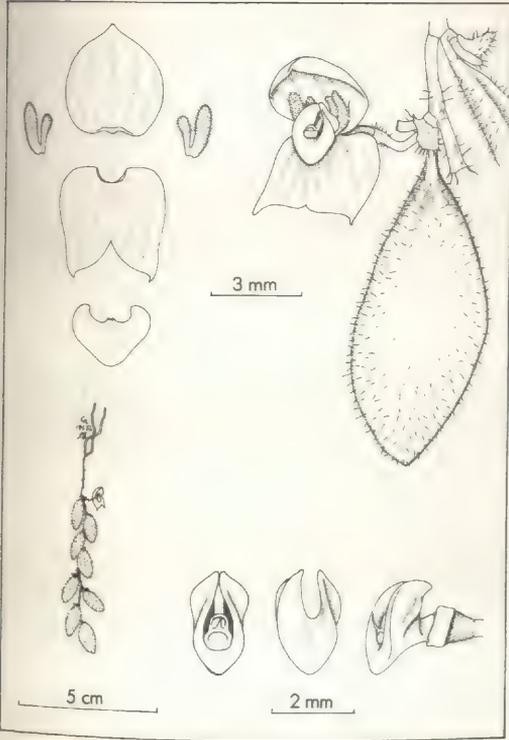


Fig. 314. *Lepanthes geminipetala*

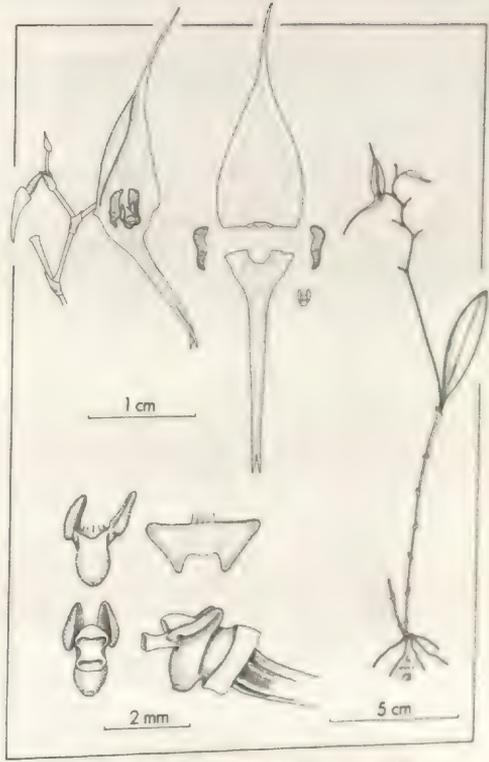


Fig. 315. *Lepanthes inaequisepala*

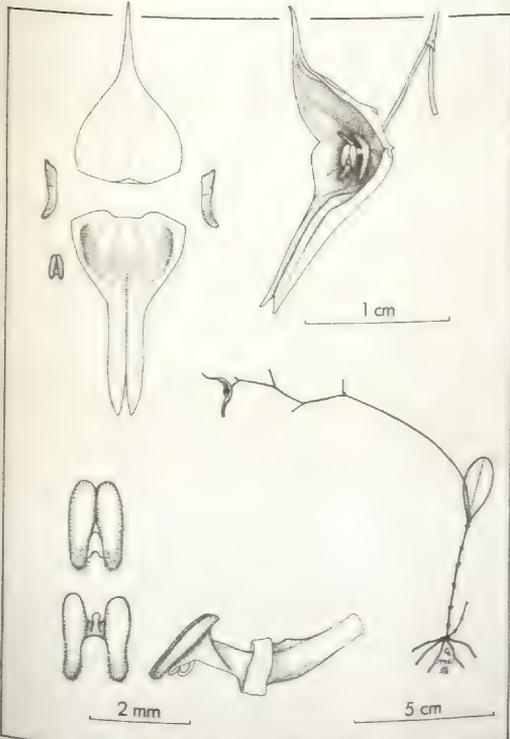


Fig. 316. *Lepanthes laxa*

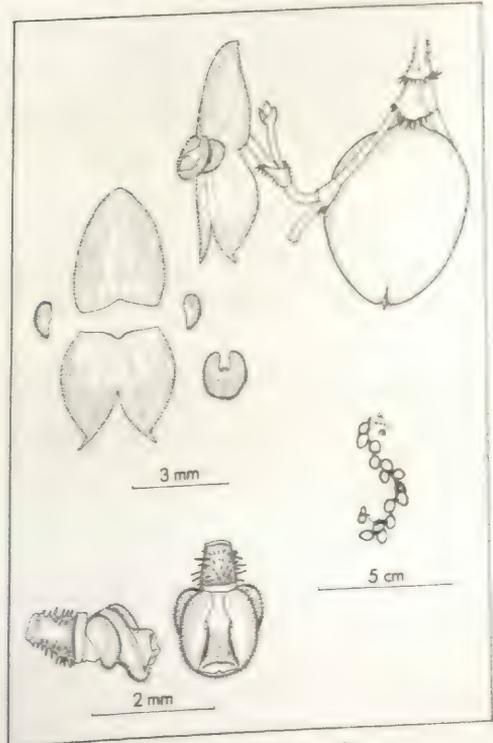


Fig. 317. *Lepanthes lynniana*

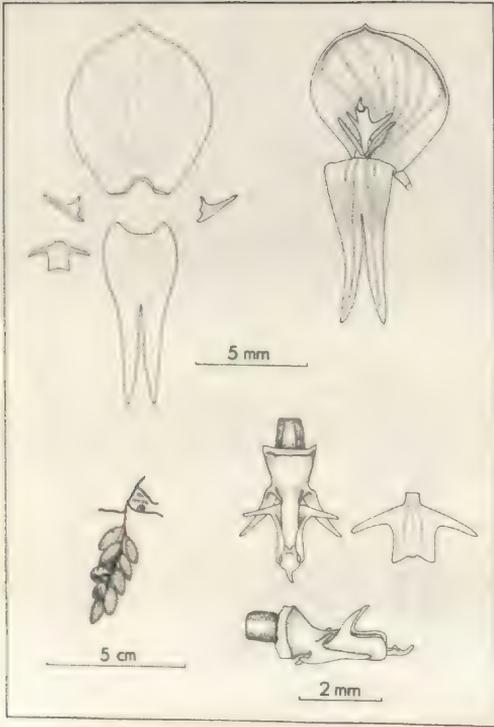


Fig. 318. *Lepanthes octocomuta*

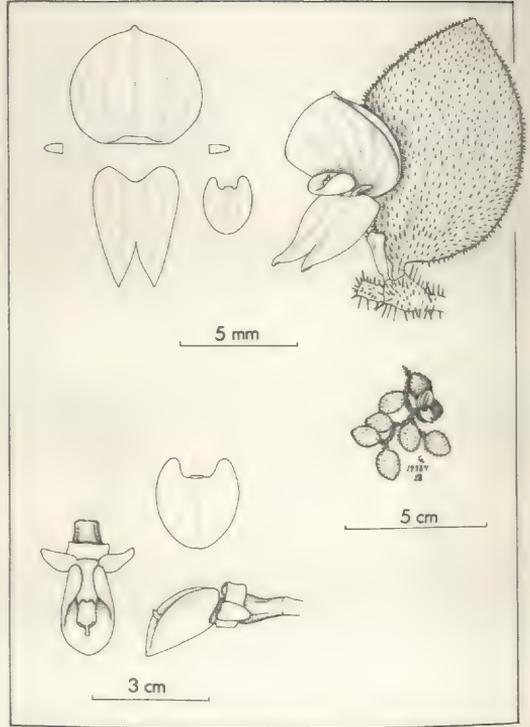


Fig. 319. *Lepanthes persimilis*

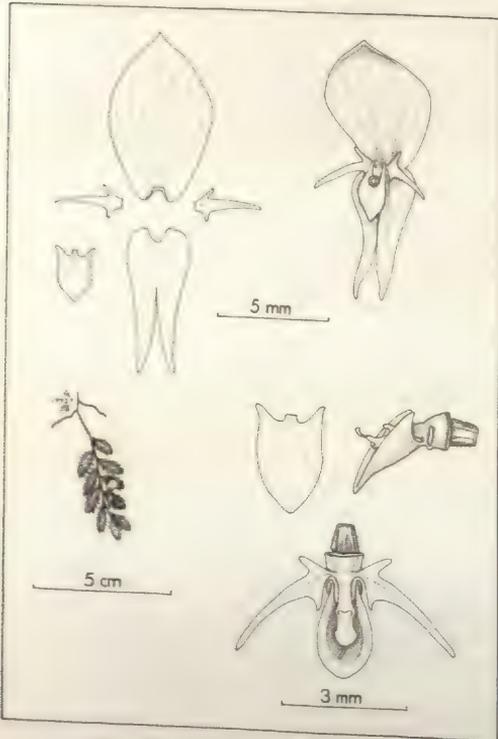


Fig. 320. *Lepanthes tridactyla*

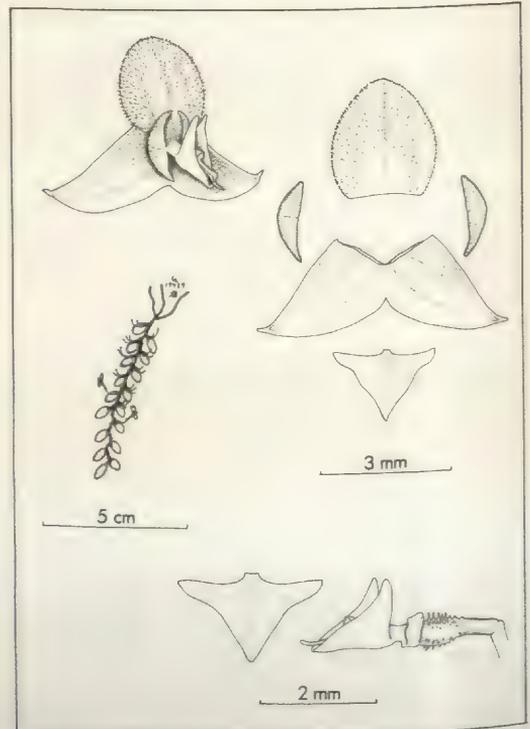


Fig. 321. *Lepanthes wernerii*

ADDENDA TO *BARBOSELLA*, *DRACULA*, *DRESSLERELLA*,
LEPANTHOPSIS, *PLATYSTELE*, *PLEUROTHALLIS*, *RESTREPIA*,
SCAPHOSEPALUM, *TEAGUEIA* AND *TRICHOSALPINX*

ABSTRACT

The following species of *Barbosella* Schltr., *Dracula* Luer, *Dresslerella* Luer, *Lepanthopsis* Sw., *Lepanthopsis* Ames, *Platystele* Schltr., *Pleurothallis* R.Br., *Restrepia* H.B.K., *Scaphosepalum* Pfitz., *Teagueia* Luer and *Trichosalpinx* Luer are added to the genera already revised in previous numbers of *Icones Pleurothallidarum*.

New species:

- Fig. 1. *Barbosella portillae* Luer
 Fig. 2. *Dracula antonii* Luer
 Fig. 3. *Dracula barrowii* Luer
 Fig. 4. *Dracula christineae* Luer
 Fig. 5. *Dracula deniseana* Luer
 Fig. 6. *Dracula nigrifolia* Luer
 Fig. 7. *Dracula sijmii* Luer
 Fig. 8. *Dracula tsubotae* Luer
 Fig. 9. *Dresslerella portillae* Luer & Hirtz
 Fig. 10. *Dresslerella sijmiana* Luer
 Fig. 11. *Lepanthopsis calva* Dod ex Luer
 Fig. 12. *Lepanthopsis purpurata* Dod ex Luer
 Fig. 13. *Lepanthopsis rinkei* Luer
 Fig. 14. *Lepanthopsis woodsiana* Dod ex Luer
 Fig. 15. *Platystele portillae* Luer
 Fig. 16. *Pleurothallis adrianae* Luer & Sijm
 Fig. 17. *Pleurothallis cauda-hirundinis* Luer & Portilla
 Fig. 18. *Pleurothallis cyPELLIGERA* Luer & Hirtz
 Fig. 19. *Pleurothallis rostratissima* Luer & Portilla
 Fig. 20. *Pleurothallis sextonii* Luer
 Fig. 21. *Pleurothallis sijmii* Luer
 Fig. 22. *Restrepia portillae* Luer
 Fig. 23. *Scaphosepalum bicristatum* Luer
 Fig. 24. *Scaphosepalum merinoi* Luer
 Fig. 25. *Scaphosepalum portillae* Luer
 Fig. 26. *Teagueia portillae* Luer
 Fig. 27. *Trichosalpinx aestrochila* Luer
 Fig. 28. *Trichosalpinx manningii* Luer
 Fig. 29. *Trichosalpinx sijmii* Luer
 Fig. 30. *Trichosalpinx wernerii* Luer

***Barbosella portillae* Luer, sp. nov.**

Ety.: Named for José Portilla of Gualaceo, in whose collection this species is cultivated.

Inter species generis *Barbosellae*, planta parva caespitosa, pedunculo foliis parvis multilongiore, sepalis liberis late divergentibus distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 4-5 mm long, enclosed by 2 thin, loose, tubular sheaths. **Leaf** erect, thickly coriaceous, linear-obovate, obtuse, 20-25 mm long, 3-4 mm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** a solitary long, 3-4 mm wide, gradually narrowed below into the subpetiolate base. **Flower**, produced singly; peduncle slender, erect, 7-8 cm long; floral bract thin, tubular, 2 mm long, enclosing the pedicel; pedicel stout, 1 mm long, with a filament 2.5 mm long; ovary smooth, 2 mm long; **sepals** membranous, light brown, the dorsal sepal free, erect, narrowly linear, acute, 13 mm long, 1.5 mm wide, 3-veined, the lateral sepals free, diverging nearly 180°, narrowly triangular, acute, 15 mm long, 3.5 mm wide, 3-veined; **petals** olive green, narrowly linear, narrowly angular, acute, 15 mm long, 3.5 mm wide, 3-veined; **lip** olive green, thick, fleshy, obtuse, thickened above the middle, 6 mm long, 0.5-1 mm wide; **labellum** deeply concave, articulated with the bulbous apex of the column-foot, the disc with a central cavity, with 3 low, parallel

calli above the middle; **column** greenish white, stout, longitudinally winged above the middle, 3.5 mm long, the apex cucullate, the foot thick with the apex of the ovary, the apex free, bulbous.

ECUADOR: **Morona-Santiago**: above El Pangui, alt. 1000 m, cultivated at Ecuagenera, Gualaceo, 7 Mar, 2001, *C. Luer 19796* (Holotype: MO).

This small, caespitose species, known only from southeastern Ecuador, is unique in the genus. In only one other species, the lateral sepals part, but they remain connate toward the base. A partial parting of the lateral sepals occasionally occurs in other species, especially in old flowers. In *B. portillae*, the narrowly triangular lateral sepals are totally free, and diverge nearly 180°. The flower is light brown and held well above the thick, elliptical leaves. The petals are narrow and thickened. The lip is basically similar to the other Andean species.

***Dracula antonii* Luer, sp. nov.**

Ety.: Named for A.P. Sijm, who cultivates this species at his Orchideeënkwekerij Venhuizen in Holland.

Species haec *D. erythrochaete* (Rchb.f.) Luer leviter similis, sed labello minore, epicheilio 45° deflexo cum lamella centrali quam marginibus altiore distinguitur.

Plant medium in size, epiphytic, caespitose; roots coarse. Ramicauls erect, slender, 3 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, narrowly linear-obovate, acute, 20-24 cm long, 1-2 cm wide, gradually narrowed below to the conduplicate, subpetiolate base. **Inflorescence** a successively few-flowered raceme, borne by a slender, horizontal to descending peduncle 9-11 cm long, from low on the ramicaul; floral bract tubular, 10-12 mm long; pedicel ca. 15 mm long; ovary thick, 5 mm long, round in cross section; **sepals** white, yellow-brown at the base, shortly pubescent within, the dorsal sepal transversely ovate, 9 mm long, 13 mm wide, connate to the lateral sepals for 5 mm to form a broad, shallow, sepaline cup, the apex rounded, contracted into an erect, slender, color tail nearly 5 cm long, the lateral sepals connate 8 mm into a transversely oblong lamina, 13 mm long, 22 mm wide, with a shallow mentum, the obtuse apices contracted into slender, descending tails more than 5 cm long; **petals** cream, marked with brown, cartilaginous, oblong, 3 mm long, 1.5 mm wide, the apex bivalvate, minutely densely verrucose between the laminae, the inner lamina obtuse, minutely denticulate, the outer lamina rounded; **lip** white, suffused with rose, spatulate, 5 mm long, 3.5 mm wide, the epichile deflexed 45°, round, 3 mm long, 3.5 mm wide, shallowly concave with smooth margins, the central lamella taller than the margins, with an incomplete accessory lamella on either side, plus a few short, marginal segments, the hypochile oblong, 3 mm long, 2.3 mm wide, with erect, obtuse marginal angles, deeply cleft centrally, the concave base hinged to the column-foot; **column** light yellow, stout, semiterete, 4 mm long, with a stout foot nearly as long.

COLOMBIA: Without collection data, purchased from Tsubota as "Eva-6," Eva Gardens, Pereira, Colombia, cultivated at Orchideeënkwekerij Venhuizen, the Netherlands, 2001, by *A.P. Sijm s.n.* (Holotype: MO), *C. Luer* illustr. 20123.

This species is known only from Colombia without collection data. Although it was first thought to be another of the multitude of hybrids that have been encountered recently, it has distinctive features that suggest specific differences. The leaves are small but long and narrowly linear. The peduncle is relatively short. The flower is small, densely pubescent with broadly obtuse sepals with long, slender tails. The epichile of the lip is round, only three and a half millimeters wide, approximately the same size of the hypochile, and deflexed about 45°. It is shallowly concave with the central lamella taller than the margins, and with broken accessory lamellae with teeth inside the margin.

***Dracula barrowii* Luer, sp. nov.**

Ety.: Named for Roy Barrow of Royden Orchids, Great Missenden, England, who cultivates this species.

Inter species generis *Draculae* Luer, planta parva, foliis angustissimis, pedunculo crasso suberecto brevi, flore parvo caudibus crassissimis, sepalis dense ferrugineo punctatis minute papillosis que, epichilio non profunde concavo cum laminis marginalibus disruptis distinguitur.

Plant small, epiphytic, caespitose; roots coarse. Ramicauls erect, stout, 2.5-3 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, very narrowly obovate, subacute, 12-15 cm long, 1.3-1.5 cm wide, gradually narrowed below to the conduplicate, subpetiolate base. **Inflorescence** a successively few-flowered raceme, borne by a stout, suberect to horizontal peduncle 3.5 cm long, from low on the ramicaul; floral bract tubular, 10 mm long; pedicel 8 mm long; ovary thick, 6 mm long, round in cross section; **sepals** rosy white, diffusely spotted with rusty red-brown, with a short, dense, papillary pubescence within, the dorsal sepal broadly ovate, 12 mm long, 12 mm wide, connate to the lateral sepals for 4 mm to form a broad, shallow, sepaline cup, the apex obtuse, contracted into a 2.5 mm broad, erect, dark red-brown tail ca. 33 mm long, the lateral sepals connate 10 mm into a broad, bifid lamina, ca. 18 mm long, 20 mm wide, with a shallow mentum, the obtuse apices contracted into 2 mm broad, descending tails similar to that of the dorsal sepal; **petals** cream, marked with brown, cartilaginous, oblong, 3 mm long, 2 mm wide, the apex bivalvate, densely verrucose between the laminae, the inner lamina short, acute, the outer lamina rounded; **lip** white, suffused with rose, spatulate, 8 mm long, 4.75 mm wide, the epichile ovate with the apex rounded, 5 mm long, 4.75 mm wide, shallowly concave with denticulate margins, the concavity with 3 incomplete, undulating lamellae plus a few small, incomplete segments, the hypochile oblong, 3 mm long, 3.25 mm wide, with erect, round, marginal angles, cleft centrally, the concave base hinged to the column-foot; **column** light yellow, stout, semiterete, 5 mm long, with a stout foot equally long.

PERU: without collection data, obtained from Manuel Arias, of Lima Peru, cultivated at Royden Orchids, Great Missenden, Buckinghamshire, England, Jan. 2002, by *R. Barrow 010* (Holotype: MO), *C. Luer* illustr. 20083.

This species is apparently endemic in Peru, but without known locality. With the thick tails it is most similar to Ecuadorian *D. navarroorum*. *Dracula barrowii* is distinguished by the small habit with narrow leaves and a short, stout, suberect peduncle that bears a small flower. The sepals are densely papillose-pubescent within, and diffusely spotted with red-brown. The tails are broad and thickly rigid. The petals are small and verrucose between a short inner valve and a round outer valve. The epichile of the lip is ovate and shallowly concave with incomplete lamellae radiating from the margins to an incomplete central keel and an irregularly disrupted lesser keel on either side.

Dracula christineana Luer, sp. nov.

Ety.: Named for Mrs. Christine Chowning of Lexington, KY, who submitted this species for identification.

Species haec *D. lafleuri* Luer & Dalström affinis, sed habitu floribusque minoribus, sepalis late obtusis, et labelli epichilio minore saccato profunde concavo distinguitur.

Plant medium in size to large, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 3-4 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, narrowly obovate, acute, 10-25 cm long including an indistinctly petiolate base, 1.5-4 cm wide, gradually narrowed below into the conduplicate base. **Inflorescence** a congested, successively few-flowered raceme, borne by a horizontal to descending peduncle ca. 10 cm long, from low on the ramicaul; floral bract, tubular, 8 mm long; pedicel 10 mm long; ovary 4 mm long, round in cross section; **sepals** yellow, suffused and spotted with brown in rows between veins below the middle, shortly pubescent within, the dorsal sepal transversely ovate, transversely obtuse, 11 mm long, 16 mm wide, connate to the lateral sepals for 8 mm to form a widely gaping flower, the apex abruptly contracted into a slender, erect, purple-black tail 3.3 cm long, the lateral sepals colored as the dorsal but white basally, 13 mm long, 13 mm wide, connate 9 mm to form a synsepal 22 mm wide, with a shallow mentum, the transverse apices contracted into tails similar to that of the dorsal sepal; **petals** cream, dark brown at the apex, cartilaginous, oblong, 3 mm long, 1.75 mm wide, the apex bivalvate, papillose between the laminae, the inner lamina rounded, denticulate, the outer lamina rounded; **lip** white, suffused with rose, spatulate, 8 mm long, 5.5 mm wide, the epichile suborbicular, 4.5 mm long, 5.5 mm wide, deeply concave with the anterior margin incurved and inflated, with numerous, radiating veins within on either side of the central midrib, the hypochile oblong, 4 mm long, 3.25 mm wide, with erect, incurved, uncinat, marginal angles, cleft centrally, the base concave, hinged to the column-foot; **column** yellow-white, stout, semiterete, 3.5 mm long, with a stout foot 2 mm long.

ECUADOR: Without locality, purchased from Eduardo Sánchez of Cuenca, by Christine Chowning of Lexington, KY, flowered in cultivation, May 1996, *C. Luer 17873* (Holotype: MO).

This species was purchased from Dr. Eduardo Sánchez of Cuenca, Ecuador. With little doubt, it had been collected in southern Ecuador. The small flowers with yellow sepals marked with brown below the middle are reminiscent of variations of *D. erythrochaete*, but the small, deeply concave epichile with numerous radiating veins is distinctive. Except for the smaller size, the lip is similar to that of *D. laefurii*. The sepals of the latter are much larger and acuminate into tails, while the sepals of *D. christineana* are transverse and abruptly contracted into tails.

***Dracula deniseana* Luer, sp. nov.**

Ety.: Named for Denise Barrow of Royden Orchids, Great Missenden, England.

Species haec *D. hirsutae* Luer & Andreetta affinis, sed pedunculo plusminusve erecto brevior, sepalis infra medium ferrugineis supra medium albescentibus et sepalorum caudibus divergentibus brevioribus distinguitur.

Plant medium in size to large, epiphytic, caespitose; roots coarse. Ramicauls erect, stout, 3-4 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, very narrowly obovate, subacute, 13-18 cm long, 1.5-1.8 cm wide, gradually narrowed below to the conduplicate, subpetiolate base. **Inflorescence** a successively few-flowered raceme, borne by a stout, erect to suberect peduncle 7-8 cm long, from low on the ramicaul; floral bract tubular, 7 mm long; pedicel stout, 12 mm long; ovary thick, 6-7 mm long, 3.5 mm thick, round in cross section; **sepals** rusty red-brown below the middle in confluent spots, dull whitish above the middle, with a short, white, dense, papillary pubescence within, the dorsal sepal broadly ovate, 15 mm long, 15 mm wide, connate to the lateral sepals for 5 mm to form a broad, shallow, sepaline cup, the apex obtuse, contracted into an erect, maroon tail 2.5 cm long, the lateral sepals connate 14 mm into a transversely oblong lamina, 20 mm long, 27 mm wide, with a shallow mentum, the obtuse apices contracted into diverging tails similar to that of the dorsal sepal; **petals** cream, marked with brown, cartilaginous, oblong, 3 mm long, 2 mm wide, the apex bivalvate, minutely densely verrucose between the laminae, the inner lamina acute, minutely denticulate, the outer lamina rounded, slightly revolute; **lip** white, suffused with orange, spatulate, 11 mm long, 5.5 mm wide, the epichile oblong-ovate with the apex rounded, 8 mm long, 5.5 mm wide, shallowly concave with denticulate margins, the concavity with 3 tall, incomplete, undulating lamellae plus a few shorter, incomplete segments, the hypochile oblong, 3 mm long, 2.75 mm wide, with erect, obtuse marginal angles, cleft centrally, the concave base hinged to the column-foot; **column** light yellow, stout, semiterete, 4 mm long, with a stout foot nearly as long.

PERU: **Huánuco**: without locality, alt. 1700 m, obtained from Manuel Arias of Lima, Peru, cultivated at Royden Orchids, Great Missenden, Buckinghamshire, England, Jan. 2002, by R. Barrow R09 (Holotype: MO), C. Luer illustr. 2008A.

This species is apparently endemic in Peru, but without known locality. It is most similar to *D. hirsuta* which is known from both Ecuador and Peru.

Dracula deniseana is distinguished by long, narrow leaves and a short, stout, suberect peduncle that bears a medium-sized flower. The sepals are densely papillose-pubescent within, with coalescing rusty red-brown spots below the middle, and whitish above. The petals are very small and minutely verrucose between the valves. The epichile of the lip is oblong-ovate and shallowly concave with incomplete lamellae radiating from the margins to an incomplete central keel and an irregularly disrupted lesser keel on either side.

***Dracula nigritella* Luer, sp. nov.**

Ety.: From the Latin *nigriellus*, "a little black one," referring to the color of the sepals.

Species haec *D. anthracinae* Luer & Escobar similis, sed sepalis minoribus, petalis proportionem majoribus, et labelli epichilio nonconcavo lamellis tortuosis distinguitur.

Plant small to medium in size, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 3 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, narrowly linear-elliptical, acute, 14-16 cm long including an indistinctly petiolate base, gradually narrowed below into the conduplicate base. **Inflorescence** a congested, successively few-flowered raceme, borne by a horizontal to descending peduncle ca. 7 cm long, from low on the ramicaul; floral bract, tubular, 8 mm long; pedicel 10 mm long; ovary 6 mm long, round in cross section; **sepals** deep purple-brown-black, shortly pubescent within, the dorsal sepal broadly

ovate, obtuse, 11 mm long, 11 mm wide, connate to the lateral sepals for 4 mm to form a widely gaping flower, the apex obtuse, contracted into a slender, erect, purple-black tail 2 cm long, the lateral sepals 11 mm long, connate 8 mm to form a synsepal 17 mm wide, with a shallow mentum, the apices obtuse, contracted into slender tails 2 cm long, similar to that of the dorsal sepal; **petals** cream, black at the apex, cartilaginous, oblong, 3.25 mm long, 2 mm wide, the apex bivalvate, densely papillose between the laminae, the inner lamina rounded, denticulate, the outer lamina rounded, recurved; **lip** pink, spatulate, 6 mm long, 4.5 mm wide, the epichile suborbicular, 4.5 mm long, 4.5 mm wide, shallowly concave with the margins not incurved, with about 4 tortuous lamellae on either side of the minutely verrucose midrib, slightly verrucose externally, the hypochile oblong, 2.5 mm long, 2.75 mm wide, with erect, obtuse, marginal angles, cleft centrally, the base concave, hinged to the column-foot; **column** yellow-white, stout, semiterete, 3.5 mm long, with a stout foot 2 mm long.

ECUADOR: **Pichincha**: near Mindo, collected by M. and F. Navarro, flowered in cultivation in Quito, 9 Mar. 2001, *C. Luer 19866* (Holotype: MO).

This species, recently discovered on the western slopes of Pichincha in northern Ecuador, is superficially similar to *D. anthracina*, which has also been found recently in the same area. The deep purple-brown, nearly black sepals are smaller than those of *D. anthracina*, and with shorter tails. The petals with rounded, black, prickly apices are larger than the column. The shallowly concave epichile of the lip contains about four tortuous lamellae on either side. The lamellae are as tall as the non-incurved edges of the epichile.

***Dracula sijmii* Luer, sp. nov.**

Ety.: Named for A.P. Sijm of Venhuizen, Holland, who cultivates this species.

Species haec *D. houteanae* (Rchb.f.) Luer affinis, sed sepalis in tubum conicum connatis, sepalis extus atropurpureis intus cinereopurpureis sparsim spiculatis, petalis latioribus, labelli epichilio leviter majore et hypochilio ad medium papilloso differt.

Plant medium in size, densely caespitose; roots slender. Ramicauls stout, erect, 2.5-3 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, narrowly obovate, acute, 14-18 cm long, 1.8-2 cm wide, gradually narrowed below into the conduplicate base. **Inflorescence** a successive, distantly few-flowered raceme, borne by an ascending to horizontal peduncle 10-15 cm long, from low on the ramicaul; floral bract tubular, 11 mm long; pedicel 11 mm long; ovary purple-black, 5 mm long, round in cross section; **sepals** deep purple-black, glabrous externally, grayish purple within, sparsely spiculate, the dorsal sepal transversely obovate, 14 mm long, 16 mm wide, connate to the lateral sepals for 7 mm to form a conical or a cupped, gaping flower, the apex transverse, abruptly contracted into a slender, black tail 3 cm long, the lateral sepals broadly ovate, oblique, connate 14 mm into a transverse lamina, 17 mm long, 16 mm wide, with a broad, shallow mentum, the apices obtuse, contracted into slender tails similar to that of the dorsal sepal; **petals** white, heavily marked with purple-brown, cartilaginous, oblong, 3.5 mm long, 2.5 mm wide, the apex bivalvate, papillose between the laminae, the inner lamina obtuse, denticulate, the outer lamina obtuse, slightly recurved, denticulate; **lip** white, spatulate, 7 mm long, 4 mm wide, the epichile subcircular, shallowly concave, 4 mm long, 4 mm wide, with the margins curved, toothed, with a primary lamella flanked on either side a lesser lamella and incomplete parts of other lamellae, the hypochile oblong, 3 mm long, 2.5 mm wide, with erect, rounded, marginal angles, cleft centrally, with the margins of the cleft papillose, the base concave, hinged to the column-foot; **column** yellowish white, stout, semiterete, 4 mm long, with a stout foot nearly as long.

ECUADOR: without collection data, obtained from José Portilla, Feb. 1997, cultivated in Venhuizen, Holland by A.P. Sijm 200811 (Holotype: MO), *C. Luer illustr.* 18879.

This species collected in Ecuador is closely related to the variable *Dracula houteana* of Colombia. In the key to the species (*Icones Pleurothallidarum-10*), it keys out to *D. houteana*. With narrowly obovate leaves, the two species are indistinguishable vegetatively. The racemes of *D. sijmii* are distantly flowered; the sepals are deep purple-black externally, gray-purple and sparsely spiculate within, and deeply connate into a conical, sepaline cup or tube. The round epichile of the lip is proportionately slightly wider with incomplete lamellae flanking a central lamella. Both margins of the cleft of the hypochile have a pair of papillae.

***Dracula tsubotae* Luer, sp. nov.**

Ety.: Named for Shigenobu Tsubota of Eva Orchids, Pereira, Colombia, who cultivates this species.

Species haec *D. lafleurii* Luer & Dalström affinis, sed floribus minoribus, sepalis late obtusis, et labelli epichilio suborbiculari concavo minore intus multivenoso distinguitur.

Plant medium in size to large, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 3-4 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, narrowly obovate, acute, 12-17 cm long including an indistinctly petiolate base, 2-2.8 cm wide, gradually narrowed below into the conduplicate base. **Inflorescence** a lax, successively few-flowered raceme, borne by a more or less horizontal peduncle ca. 17 cm long, from low on the ramicaul; floral bracts, oblique, 10 mm long; pedicel 15-17 mm long; ovary 5 mm long, round in cross section; **sepals** greenish white, intensely spotted with dull dark purple below the middle, densely short-pubescent within, the dorsal sepal broadly ovate, obtuse, 18 mm long, 20 mm wide, connate to the lateral sepals for 6 mm to form a widely spread flower, the apex contracted into a slender, erect, purple-black tail 7 cm long, the lateral sepals broadly ovate, 18 mm long, connate 14 mm into a broad synsepal 30 mm wide, with a shallow mentum, the apices obtuse, contracted into slender tails also 7 cm long; **petals** cream, dark brown at the apex, cartilaginous, oblong, 3.5 mm long, 2 mm wide, the apex bivalvate, densely papillose between the laminae, the inner lamina rounded, denticulate, the outer lamina rounded; **lip** white, spatulate, 9.5 mm long, 7 mm wide, the epichile suborbicular, 5 mm long, 7 mm wide, deeply concave with the anterior margin erect, incurved, with numerous, radiating veins within on either side of the central midvein, the hypochile oblong, 4.5 mm long, 3 mm wide, with low, rounded, marginal angles, cleft centrally, the base concave, hinged to the column-foot; **column** yellow-white, stout, semiterete, 4.5 mm long, with a stout foot 4 mm long.

COLOMBIA: without collection data, purchased from S. Tsubota of Eva Orchids in 1997, cultivated by Royden Orchids, Great Missenden, England, Feb. 2002, *R. Barrow RO8* (Holotype: MO). **Nariño**: near Samaniego, collected in 1995 by J.L. Aguirre, cultivated by Orquídeas del Valle, Cali, Colombia, flowered Mar. 2002. *J.C. Uribe s.n.* (MO), C. Luer illustr. 20113.

This species is apparently endemic in southernmost Colombia where it was discovered by José Luis Aguirre. Several clones have become known as “*Dracula tsubotae*” in collections, apparently because of its having been obtained from Shigenobu Tsubota’s Eva Orchids in Pereira, Colombia.

Although vegetatively rather large, the widely spread flower of this species is medium in size. The sepals are broadly ovate, obtuse, densely pubescent, and long-tailed. With the basic whitish or greenish color densely spotted in dark purple-brown below the middle, the flower is reminiscent of *D. vlad-tepes*. The subspherical, deeply concave epichile of the lip with multiple, radiating veins is similar to that of the Ecuadorian *D. lafleurii*, and also the presently described *D. christineana*.

***Dresslerella portillae* Luer & Hirtz, sp. nov.**

Ety.: Named for José Portilla who cultivates this species at Ecuagenera in Gualaceo, Ecuador.

Species haec *D. hirsutissimae* (C.Schweinf.) Luer affinis, sed pedunculo multibreuiore flore subsessile, sepalsi marginibus infra apicem contiguus, et labello pandurato longifimbriato differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls suberect, stout, 3-5.5 cm long, enclosed by 3 spotted, sparsely pubescent, tubular, imbricating sheaths. **Leaf** green, suberect to horizontal, erect in relationship to the ramicaul, thickly fleshy, pilose on both surfaces, elliptical, obtuse, 3-4.5 cm long, 1-1.5 cm wide, the base broadly cuneate, sessile. **Inflorescence** a succession of single flowers, borne by a stout, suberect, pubescent peduncle ca. 1 mm long, with a basal sheath at the base of the leaf; floral bract tubular, long-pubescent, 5 mm long; pedicel pubescent, 2 mm long; ovary densely long-pubescent, 1 mm long; **sepals** translucent dull yellow with dull purple spots, covered externally by a long, white pubescence, the dorsal sepal ovate, acute, acuminate, 11 mm long including the slender, apical portion 4 mm long, 3.5 mm wide, essentially free from the lateral sepals, the lateral sepals connate to the apex into a deeply concave, obtuse, scaphoid synsepal, 12 mm long, 6 mm wide unexpanded, with the margins touching for ca. 2 mm, 3-4 mm below the apex; **petals** spotted with purple spots, obovate below the middle, oblique, 9 mm long, 2.8 mm wide, the apex acute, acuminate, the slender apical portion 3 mm long; **lip** yellow, intensely dotted with purple toward the apex, trilobed, obovate-pandurate or pyriform, 7 mm long, 1.5-3 mm wide, the apex rounded, the margins long-fimbriate above the middle, the lateral

lobes on the basal quarter, thin, erect, uncinata, ca. 1 mm long, the disc with a low pair of converging carinae from the bases of the lobes, the claw with an erect, obtuse callus, the base truncate with minute marginal lobules, firmly hinged to the column-foot; **column** slender, semiterete, 4 mm long, the apex bidentate, the base developed into a thick, pedestal-like foot with the apex of the ovary.

ECUADOR: **Morona-Santiago**: near Chigüinda, alt. 1400 m, cultivated at Ecuagenera, Gualaceo, 5 Mar, 2001, *C. Luer 19665* (Holotype: MO).

This species, closely related to sympatric *D. hirsutissima*, has recently been discovered in southeastern Ecuador. The leaves of both species are thickly fleshy and covered by a long pubescence on both sides. The peduncle of *D. portillae* is very short, causing the slightly smaller flower to rest in the sulcus at the base of the leaf. The dorsal sepal and petals of *D. portillae* are similar to those of *D. hirsutissima*, but they lack the clavate tips of the attenuated apices. The margins of the boat-like synsepal meet a few millimeters below the apex to create an apical aperture separate from the main opening. The lip is long-fimbriate above the middle, but similar, uncinata, lateral lobes are present on the lower portion.

Dresslerella sijmiana Luer, sp. nov.

Ety.: Named for A.P. Sijm of Venhuizen, Holland, who cultivated this species.

Species haec, *D. hirsutissimae* (C.Schweinf.) Luer affinis, sed pedunculo brevior, folio late elliptico ciliato, petalis obliquis acuminatis et labello pandurato supra medium expanso eroso differt.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-2.5 cm long, enclosed by 3-4 spotted, sparsely pubescent, tubular, imbricating sheaths. **Leaf** green, spotted with purple beneath, erect, thickly fleshy, densely ciliate, also ciliate along the midvein on the dorsum, broadly elliptical to suborbicular, obtuse, 1-3 cm long, 1.5 cm wide, the base broadly cuneate, sessile. **Inflorescence** a succession of single flowers in a fascicle, each borne by a suberect, pubescent peduncle 6-7 mm long, with a basal sheath at the base of the leaf; floral bract tubular, shortly-pubescent, 4-5 mm long; pedicel 7-8 mm long; ovary densely pubescent, 2 mm long; **sepals** dull yellow with irregular, dull purple spots, covered externally by a short pubescence, the dorsal sepal ovate, acute, acuminate, 9 mm long including the slender apex, 3.5 mm wide, essentially free from the lateral sepals, the lateral sepals connate to near the apex into a deeply concave, obtuse, scaphoid synsepal, 10 mm long, 6 mm wide unexpanded; **petals** spotted with purple, obovate below the middle, oblique, 7 mm long, 2.5 mm wide, the apex acute, acuminate, the slender apical portion 2 mm long; **lip** yellow, dotted with purple, trilobed, obovate-pandurate, 5 mm long, 3 mm wide, the isthmus 1 mm wide, the apical lobe oblong, transversely expanded, prominently veined, with the margins erose, the lateral lobes on the lower half, erect, obtuse, with a minute, marginal, uncinata, process, the disc between the lateral lobes tricarinate, with an erect point at the base of the middle carina, the base truncate with minute marginal lobules, firmly hinged to the column-foot; **column** slender, semiterete, 2.5 mm long, the apex bidentate, the base developed into a thick, pedestal-like foot with the apex of the ovary.

ECUADOR: Without locality, obtained from José Portilla, cultivated in 2000 in Hem, Venhuizen, Holland, by A.P. Sijm 200424 (Holotype: MO); *C. Luer*, illustr. 19402.

This species, closely related to sympatric *D. hirsutissima*, has recently been discovered in Ecuador. It is characterized by suborbicular, densely ciliate leaves, and a fascicle of short-pedunculate flowers. The dorsal sepal with a narrowly acuminate apex is shorter than the synsepal. The petals are oblique with acuminate tips. The lip is pandurate with a broadly expanded, erose, apical lobe, separated from obtuse lateral lobes by a very narrow isthmus.

Lepanthopsis calva Dod ex Luer, sp. nov.

Ety.: From the Latin *Calvus*, "bald," referring to the glabrous sepals.

Species haec *L. micheleae* Dod similis, sed ramicauliorum vaginis crasse ciliatis, foliis ad basim rotundis abrupte petiolatis, racemo stricto disticho, et sepalis glabris differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 5-6 cm long, enclosed by 8 coarsely pubescent, lepanthiform sheaths with dilated, coarsely ciliate ostia. **Leaf** erect, thickly coriaceous, convex, with the margins minutely denticulate, elliptical, obtuse, 20 mm long, 11 mm wide, the base broadly cuneate to rounded, contracted into a petiole 2 mm long. **Inflorescence** a sub-

dense, strict, distichous with opposite-facing flowers, simultaneously several-flowered raceme, up to 35 mm long including the capillary peduncle 17 mm long, from near the apex of the ramicaul; floral bracts 1.25 mm long; pedicels 1.25 mm long; ovary costate, 0.6 mm long; color of flowers not stated; **sepals** membranous, subcarinate, ovate, subacute, glabrous, the dorsal sepal 2.5 mm long, 1.5 mm wide, incompletely 3-veined, free from the lateral sepals, the lateral sepals free to near the base, oblique, 2.5 mm long, 1.3 mm wide, incompletely 2-veined; **petals** ovate, acute, slightly acuminate, 1.75 mm long, 0.75 mm wide, 1-veined, glabrous; **lip** ovate-cordate, thick, 1.8 mm long, 1.4 mm wide, the apex rounded with a narrowly grooved margin, the basal lobes rounded, encircling the column, the disc with a large glenion at the base; **column** 0.5 mm long, 0.5 mm wide, the anther apical, the stigma bilobed, apical.

HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 1150 m, 1 Jan. 1983, flowered in cultivation 17 Oct. 1983, *D.D. Dod s.n.* (Holotype: MO), C. Luer illustr. 12294.

This species is similar to and sympatric with *L. micheleae* in one known area on the Massif de la Hotte in southern Haiti. It differs from *L. micheleae* in stout, coarsely pubescent-ciliate, lepanthiform sheaths; a thicker, convex leaf rounded at the base and abruptly short-petiolate; and similar flowers but with glabrous sepals and petals. The lips of both species are margined toward the apex, and with basal lobes that encircle the column.

Lepanthopsis purpurata Dod ex Luer, sp. nov.

Ety.: From the Latin *purpuratus*, "colored purple," referring to the flowers.

Species haec *L. anthoectenio* Reichenbach filius affinis, sed floribus leviter majoribus, sepalis convexis, sepalis lateralibus leviter supra medium connatis differt.

Plant small but average in size for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 1.5-3 cm long, enclosed by 3-7 blackish brown lepanthiform sheaths with long-ciliate ostia. **Leaf** erect, coriaceous, slightly convex, with the margins smooth, elliptical, obtuse to rounded at the apex, 15-20 mm long including a petiole 1 mm long, 8-9 mm wide, the base cuneate into the petiole. **Inflorescence** a congested, distichous, simultaneously several-flowered raceme, with the flowers overlapping and back to back in two ranks, up to 28 mm long including the peduncle 10 mm long, from near the apex of the ramicaul; floral bracts 1 mm long; pedicels 0.75 mm long; ovary 0.75 mm long, 3-ribbed; **sepals** red-brown-purple, glabrous, ovate, obtuse, lightly convex, the dorsal sepal 3 mm long, 2 mm wide, 3-veined, essentially free from the lateral sepals, the lateral sepals ovate, 3 mm long, connate 3 mm into a bifid lamina 2.5 mm wide, each 1-veined; **petals** colored as the sepals, broadly ovate, rounded at the apex, 1 mm long, 0.8 mm wide, 1-veined; **lip** colored as the sepals, circular-cordate, rounded at the apex, 1 mm long, 1.1 mm wide, the base with obtuse lobes that flank the column, the disc featureless except for a shallow, indistinct glenion at the base; **column** stout, broad, 0.5 mm long and wide, the anther apical, the stigma bilobed, apical.

HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 1100 m, Apr. 1992, *D. Dod 2260* (Holotype: ?; Isotype: MO), C. Luer illustr. 16536.

This species is known only from the Formond area of the Massif de la Hotte in southern Haiti. The elliptical leaves are smooth on the margins. A short peduncle bears the tip of the crowded raceme of back-to-back flowers beyond the leaf. The broadly ovate sepals and suborbicular petals are deep purple and convex. The lip is suborbicular with short, basal angles embracing the column.

Lepanthopsis rinkei Luer, sp. nov.

Ety.: Named for Bryon Rinke of Wichita, KS, who cultivates this species.

Planta mediocris caespitosa, inflorescentia folio late elliptico brevior, racemo congestissimo disticho parviflora, sepalis obtusis ad apicem minute pubescentibus, sepalis lateralibus elliptico ad basim connatis leviter divergentibus, petalis ovatis, labello glabro suborbiculato.

Plant medium to large for the genus, presumably epiphytic, caespitose; roots slender. Ramicauls erect, stout, 1.5-6 cm long, enclosed by 5-6 ciliate, lepanthiform sheaths. **Leaf** erect, coriaceous, broadly elliptical, obtuse to rounded at the apex, 20-35 mm long, 13-20 mm wide, the base contracted into a petiole 2-3 mm long. **Inflorescence** a congested, simultaneously several-flowered raceme in 2 opposite ranks, 5-7 mm long, borne by a filiform peduncle 20-23 mm long, from near the apex of the ramicaul; floral bracts 0.5 mm long; pedicels 0.5 mm long; ovary 0.5 mm long; **sepals** translucent rose-purple,

white at the base, minutely pubescent toward the apices, the dorsal sepal broadly ovate, obtuse, 2 mm long, 1.75 mm wide, 3-veined, barely connate to the lateral sepals, the lateral sepals elliptical-oblong, slightly oblique, obtuse, slightly diverging, 2.2 mm long, 1 mm wide, connate less than 0.5 mm, 1-veined; **petals** dark purple, glabrous, elliptical-ovate, obtuse, 0.6 mm long, 0.3 mm wide, faintly 1-veined, if at all; **lip** dark purple, glabrous, broadly ovate, rounded at the apex, slightly concave, 1.2 mm long, 1.5 mm wide, the base broadly bilobed, the basal lobes rounded, flanking the column, the disc featureless; **column** 0.3 mm long and broad, the anther apical, the stigma bilobed, apical.

PANAMA?: without collection data, purchased from Andy's Orchids, who had obtained the plant from Maduro in Panama, cultivated in Wichita, Kansas, by Bryon Rinke, who submitted a specimen for identification, Sept. 2001, *C. Luer 20048* (Holotype: MO).

Although obtained from Panama, I suspect that this species is Andean in origin. No other collections are known. All features of this species, except for the size, are found in other species of the genus, but not in the present combination.

Vegetatively large for the genus, the leaf and ramicaul are similar to but larger than those of *L. floripecten*. The leaf of *L. rinkei* is broader, being broader than the leaf of any known species of the genus. Common to a few species (*L. abbreviata*, *L. atrosetifera*, and *L. ubangii*), a congested, two-ranked raceme does not exceed the leaf. The obtuse dorsal sepal; slightly diverging, oblong, lateral sepals; minute petals; and broadly rounded, large lip are most similar to those of *L. glandulifera* and *L. melanantha*. A proportionately large, rounded lip is seen in many species, but the disc of the lip of *L. rinkei* is featureless.

***Lepanthopsis woodsiana* Dod ex Luer, sp. nov.**

Ety.: Named for

Species haec *L. stellaris* Dod affinis, sed habitu floribusque triplomajoribus, racemo congesto subflexuoso, et labello suborbiculato leviter concavo lobis basalibus elongatis columnam amplectentibus differt.

Plant small but large for the genus, epiphytic, caespitose; roots comparatively fleshy. Ramicauls erect, slender, 1.5-5 cm long, enclosed by 3-7 sparsely long-pubescent lepanthiform sheaths with long-ciliate, dilated ostia. **Leaf** erect, coriaceous, lightly pustulate, with the margins minutely denticulate, elliptical, obtuse to rounded at the apex, 10-25 mm long including a petiole 1-3 mm long, 7-14 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, subdistichous, few-flowered raceme, up to 6 flowers open simultaneously, up to 40 mm long including the peduncle 10-20 mm long, from near the apex of the ramicaul; floral bracts 1 mm long; pedicels 1 mm long; ovary 0.75 mm long, 3-ribbed; **sepals** yellowish, suffused with rosy brown, especially along the veins, shiny brown externally, glabrous, subcarinate, obtuse, lightly acuminate, the dorsal sepal broadly ovate, obtuse, 4.5 mm long, 3.25 mm wide, 3-veined, essentially free from the lateral sepals, the lateral sepals ovate, oblique, subacute, 5.5 mm long, 3 mm wide, 2-veined below the middle, connate 1.5 mm; **petals** colored as the sepals, ovate, oblique, acute, 3.75 mm long, 1.9 mm wide, 1-veined, with the margins cellular-glandular; **lip** brown, thick, cellular-glandular, ovate-cordate, obtuse, 2.75 mm long, 2.25 mm wide, the base with lobes that surround the column, the disc featureless except for a shallow, margined cavity at the base; **column** stout, broad, 1 mm long, 1.5 mm wide, the anther apical, the stigma bilobed, apical.

HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 1100 m, Apr. 1992, *D. Dod 2263* (Holotype: ?; Isotype: MO), *C. Luer* illustr. 16535.

Vegetatively and florally, this species is the largest of the genus in the Antilles. The flowers are nearly one centimeter across from tip of dorsal sepal to tip of a lateral sepal. The raceme is a congested array of overlapping flowers that reaches or surpasses the tip of the leaf. The sepals are broadly ovate and slightly acuminate with the tips of the laterals diverging. The petals are comparative large and also slightly acuminate. The lip is rounded with elongated basal lobes that encircle the column.

Platystele portillae Luer, sp. nov.

Ety.: Named for José Portilla of Gualaceo, Ecuador, who collected and cultivated this species.

Planta parva caespitosa, racemo flexuoso laxe plurifloro foliis spatulatis plus minusve duplo longioribus, sepalis petalisque ciliatis reflexis, labello ovato sepalo aequanti distinguitur.

Plant small, epiphytic, caespitose; roots slender, densely fasciculate. Ramicauls slender, erect, 4-6 mm long, with a close, thin, tubular sheath. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 20-30 mm long, 4.5-5.5 mm wide, gradually cuneate below into an indistinct petiole 5-10 mm long. **Inflorescence** a loose, flexuous, successively few-flowered raceme, up to 5 cm long, including the peduncle ca. 2 cm long, from a node on the ramicaul below the abscission layer; floral bracts 1 mm long; pedicels 3-4 mm long; ovary 0.4 mm long; **sepals** long-ciliate, yellow, the dorsal sepal elliptical, obtuse to round at the apex, concave, 1.5 mm long, 1 mm wide, 1-veined, the lateral sepals free, reflexed, elliptical-obovate, obtuse, 1.5 mm long, 1 mm wide, 1-veined; **petals** long-ciliate, yellow, elliptical-subfalcate, the apex acute, acuminate, incurved, 1.5 mm long, 0.4 mm wide, 1-veined; **lip** purple, fleshy, ovate, obtuse, microscopically cellular-papillose, 1.5 mm long, 1 mm wide, the base with a minute glenion, truncate, inflexibly attached to the base of the column; column clavellate, 0.4 mm long, the anther and bilobed stigma apical, the foot rudimentary.

ECUADOR: **Zamora-Chinchipec**: Loyola, east of Valladolid, alt. 1800 m, cultivated at Ecuagenera, Gualaceo, 12 Apr. 2001, A. Hirtz 7601 (Holotype: MO), C. Luer illustr. 20033.

This little species from southern Ecuador is similar in habit to many species of the genus. A hairlike, flexuous raceme that bears a tiny flower successively, surpasses the little, narrowly obovate leaves. The sepals are obtuse and ciliate with the laterals reflexed. The petals are narrower and incurved. The ovate lip, as large as the sepals, protrudes.

Pleurothallis adrianae Luer & Sijm, sp. nov.

Ety.: Named for Adriana, wife of A.P. Sijm of Venhuizen, Holland, who collected this species.

Species haec *P. obovatae* (Lindl.) Lindl. affinis, sed habitu multimagiore, sepalis acutis, petalis acuminatis, et labello majore atropurpureoque differt.

Plant large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 20-28 cm long, with a tubular sheath above the middle and 2-3 other sheaths below and about the base. **Leaf** erect, coriaceous, elliptical, subacute, petiolate, 12-15 cm long, 3-4 cm wide, cuneate below into the channeled petiole ca. 2 cm long. **Inflorescence** a fascicle of several loose, secund, simultaneously few-flowered racemes, 2.5-3 cm long including the peduncle 0.5 cm long, subtended by a spathe 3-4 mm long, from an annulus 2-3 mm below the apex of the ramicaul; floral bracts tubular, 4 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** yellow-green, glabrous, ovate-triangular, acute, the dorsal sepal 5 mm long, 1.75 mm wide, 3-veined, the lateral sepals free, oblique, forming a shallow mentum below the column-foot, 4.5 mm long, 1.75 mm wide, 3-veined; **petals** yellow-green, narrowly ovate, oblong below the acuminate apical third, acute, 3.75 mm long, 1 mm wide, with margins microscopically erose; **lip** dark purple, oblong, 2.5 mm long, 1 mm wide, the apex fleshy, obtuse, the disc shallowly sulcate, the base subtruncate, biauriculate, hinged to the column-foot; **column** stout, winged above the middle, denticulate at the apex, 2 mm long, the foot thick, 1.5 mm long, the anther and the stigma ventral.

ECUADOR: Without locality, collected ca. 1994, cultivated in Venhuizen, Holland, flowered in cultivation 7 Aug. 2001, A.P. Sijm 210807 (Holotype: MO), C. Luer illustr. 20035.

This species is the largest vegetatively in the subgenus *Aciminatia*, but closely related to *P. citrina*, *P. angustilabia* and *P. obovata*. It is distinguished from them by the much larger habit with a stout ramicaul over 20 centimeters tall and a large, petiolate leaf. Several short, secund, few-flowered racemes are produced simultaneously. The sepals are yellow-green and acute, and the petals are acuminate. The lip is oblong and dark purple.

***Pleurothallis cauda-hirundinis* Luer & Portilla, sp. nov.**

Ety.: From the Latin *cauda-hirundinis*, "the tail of a swallow," in allusion to the lobes of the lip. *Hirundo*, the genus of swallows.

Species haec *P. cauda-focae* Luer & Hirtz affinis, sed labelli lobis anguste triangularibus erectis et callo minute bi-apiculato differt.

Plant medium in size, epiphytic, caespitose; roots slender, densely fasciculate. Ramicauls slender, erect, round in cross section, 2-8 cm long, with close, tubular sheaths above the base. **Leaf** erect, coriaceous, ovate, acute, 1.5-2.5 cm long, 0.8-1 cm wide, the base cuneate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a prostrate spathe 3 mm long, at the base of the leaf; peduncles 3-5 mm long; floral bract 3 mm long; pedicel 3-4 mm long; ovary 3 mm long; **sepals** glabrous, pale yellow with brown spots, the dorsal sepal ovate, acute, deeply concave in the lower half, 6 mm long, 3.5 mm wide unexpanded, 3-veined, the lateral sepals connate into an ovate, acute, shortly acuminate, deeply concave synsepal, 6 mm long, 5 mm wide, unexpanded, 4-veined; **petals** glabrous, pale yellow with brown spots, obliquely sub-falcate, the apex acute, acuminate, with a subacute angle on the lower margin, 5 mm long, 2.5 mm wide, 3-veined; **lip** pale yellow, bilobed, the lobes triangular, erect, curving around the column, 3 mm long, 1.2 mm wide, the apices acute, the body thick, 1 mm long, truncate, with a minute, 2-pronged callus at the middle, the base firmly hinged above the base of the column; column cylindrical, 1 mm long, the anther and single-lobed stigma apical, the foot rudimentary.

ECUADOR: **Carchi**: Palón, west of Chical, alt. 1000 m, cultivated at Ecuagenera, Gualaceo, 5 Mar, 2001, *C. Luer 19675* (Holotype: MO).

This species of northwesternmost Ecuador is related to *P. cauda-phocae* from nearby. Although basically similar, *P. cauda-hirundinis* differs markedly in some respects. It is characterized by ovate, acute leaves and slender ramicauls. The solitary flowers are short-pedicellate, and borne in a fascicle at the base of the leaf. The dorsal sepal and synsepal are concave and acuminate; the petals are large and falcate with a lower marginal angle; the lip bears a minute, two-pronged callus, while triangular lateral lobes curve upward to surround the cylindrical, essentially footless column.

***Pleurothallis cypelligera* Luer & Hirtz, sp. nov.**

Ety.: From the Latin *cypelliger*, "bearing a beaker, or cup," referring to the lip.

Inter species subgeneris *Ancipitia* habitu mediocris, sepalo dorsali synsepalique cymbiformibus, petalis oblongis, labello suborbiculari concavo marginibus leviter irregularibus distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, compressed above the middle, 5-11 cm long, 2 mm deep at the leaf, with a tubular sheath below the middle and 2-3 sheaths at the base. **Leaf** coriaceous, erect to spreading, ovate, acute, 3-4.5 cm long, 1.5-1.8 cm wide, the base sessile, rounded to subcordate. **Inflorescence** a fascicle of single, successive flowers borne from a reclining spathe 3 mm long, at the base of the leaf; peduncle slender, suberect, 5-7 mm long; floral bract thin, tubular, 4 mm long; pedicel 5-8 mm long; ovary 2-3 mm long; **sepals** greenish white, the dorsal sepal ovate, narrowly obtuse, 7 mm long, 3 mm wide unexpanded, 3-veined, the lateral sepals completely connate into a cymbiform synsepal, 7 mm long, 4 mm wide unexpanded, 4-veined; **petals** suffused with rose, oblong, acute, 7 mm long, 1.25 mm wide, 1-veined; **lip** suffused with rose, subspherical, obtuse, concave, 3.5 mm long, 2.5 mm wide, the apex broadly rounded with the margin thickened, with the lateral margins minutely irregular with angles near the middle, the disc within with a shallow depression near the apex, the base broad, subtruncate, hinged to the base of the column; **column** slender, semiterete, 3.5 mm long, the anther and stigma apical, with an obsolescent column-foot.

ECUADOR: **Morona-Santiago**: west of Macas, new road toward Guamote, alt. 2300 m, *C. Luer, J. Luer & A. Hirtz 19625* (Holotype: MO); above Limón, alt. ca. 1500 m, cultivated at Ecuagenera, Gualaceo, 7 Mar, 2001, *C. Luer 19687* (MO).

This species, from southeastern Ecuador, is distinguished from the other members of subgenus *Ancipitia* by concave, greenish white sepals and petals and lip suffused with rose; oblong petals; and a concave, suborbicular lip with minutely irregular lateral margins.

***Pleurothallis rostratissima* Luer & Portilla, sp. nov.**

Ety.: From the Latin *rostratissimus*, "great-beaked," referring to the prolonged apex of the column.

Species haec *P. trichostomae* Luer affinis, sed foliis late ellipticis abrupte petiolatis, synsepalo profunde inflato et labello tricarinato columna rostrata minore differt.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls stout, erect, 0.5-1.5 cm long, enclosed by a tubular sheath and 2 short sheaths at the base. **Leaf** erect, coriaceous, broadly elliptical, obtuse, 2.5-3 cm long including a petiole 0.3 cm long, 1.5-1.8 cm wide, abruptly contracted below into the petiole. **Inflorescence** a weak, suberect to arching, lax, distichous, flexuous, successively several-flowered raceme, up to 8 cm long including the peduncle 3 cm long, borne below the apex of the ramicaul; floral bracts 2 mm long; pedicels 4 mm long; ovary 1.75 mm long; **sepals** densely long-pubescent within above the middle, glabrous externally, the dorsal sepal oblong, obtuse, 7 mm long, 2.25 mm wide, 3-veined, the lateral sepals connate to the apiculate tips into a deeply concave, obovoid to pyriform, obtuse synsepal, 7 mm long, 3 mm wide unexpanded, 3 mm deep, 6 veined; **petals** spatulate, rounded at the apex, unguiculate, 2 mm long, 1.6 mm wide, 3-veined, callous and minutely verrucose along the midvein externally; **lip** oblong, unguiculate, 2.6 mm long, 1 mm wide, acute at the apex with a minutely verrucose callus, obtusely angled above the claw, the disc with a pair of longitudinal carinae and a central, shallowly channeled carina, with a verrucose callus above the claw, the claw 0.5 mm long, truncate, hinged to the column-foot; **column** semiterete, serrate-fimbriate, 4 mm long including a long-aristate tip 1.5 mm long, the foot 1.5 mm long with a central patch of dense pubescence, the anther, rostellum and stigma ventral.

ECUADOR: without collection data, cultivated at Ecuagenera, Gualaceo, Ecuador, Sept. 2000, *J. Portilla* 253 (Holotype: MO), *C. Luer* illustr. 19406.

This species is known from a single collection. Among the members of subgenus *Effusia*, this species is distinguished by the dense cluster of overlapping, broadly elliptical, abruptly short-petiolate leaves; a loose, flexuous, successively flowered raceme; sepals long-villous within; a deeply inflated, obovoid synsepal; spatulate petals; and an unguiculate lip that is tricarinate and with a verrucose callus at both the apex and above the claw.

***Pleurothallis sextonii* Luer, sp. nov.**

Ety.: Named for Dr. Laurence A. Sexton of Batavia, IL, who cultivates this species.

Species haec *P. lopezii* Luer & Escobar similis, sed foliis ad basim cuneatis, floribus majoribus et labello cordato integro differt.

Plant large, epiphytic, shortly repent-caespitose; roots slender. Ramicauls stout, erect, 11-15 cm long, with a short, closely fitting, tubular sheath below the middle, and another 1-2 sheaths at the base. **Leaf** erect, coriaceous, elliptical-ovate, acute, acuminate, 9-12 cm long, 4-5 cm wide, the base cuneate, sessile. **Inflorescence** a loose, distichous, simultaneously many-flowered raceme, ca. 15 cm long including the peduncle ca. 6 cm long, subtended by a reclining spathe 1.5 cm long; floral bracts thin, tubular, 3-3.5 mm long; pedicels 3-4.5 mm long; ovary 3-3.5 mm long; **sepals** translucent purple, glabrous, the dorsal sepal elliptical, acute, acuminate, concave, 12 mm long, 5 mm wide, 3-veined, the lateral sepals connate into a concave, elliptical-oblong, subacute synsepal, 12 mm long, 5 mm wide, 4-veined; **petals** purple, elliptical-ovate, oblique, acute, acuminate, 10 mm long, 3 mm wide, 3-veined, with the margins irregularly fimbriate; **lip** purple, cordate, acute, convex, entire, 2.5 mm long, 2.25 mm wide, the disc featureless, the base hinged to a rudimentary column-foot; column semiterete, 2.5 mm long, the anther apical, the stigma subapical, the foot thick, rounded.

COLOMBIA: without collection data, obtained from Orquídeas del Valli, Cali, Colombia, cultivated by L. Sexton, Batavia, IL, *C. Luer* 20050 (Holotype: MO).

This species has affinities with several members of *Pleurothallis* subsection *Acroniae*, perhaps most similar to *P. lopezii*. From the latter, it is distinguished by leaves that are cuneate basally instead of deeply cordate-lobed; twice larger flowers; and an entire, cordate lip. From *P. dentipetala* Rolfe ex Ames, it is distinguished by thrice larger flowers in a raceme longer than the leaf. From *P. gomezii* Luer & Escobar, it is distinguished by a raceme longer than the leaf; minutely but coarsely erose-fimbriate petals; and a cordate lip. From *P. rowleei* Ames, it is distinguished

by a larger habit; erose-fimbriate petals; and a cordate lip. From *P. longipedicellata* Ames & C. Schweinf., it is distinguished by twice larger flowers; short-pedicellate flowers in a raceme longer than the leaf; and erose-fimbriate petals.

***Pleurothallis sijmii* Luer, sp. nov.**

Ety.: Named in honor of A.P. Sijm, Venhuizen, the Netherlands, who collected this species.

Species haec *P. macrophyllae* H.B.K. affinis, sed sepalis acuminatis, petalis ellipticis apicibus longi-linearis, et labello oblongo supramedium minute fimbriato breviter acuminato differt.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, more than 15 cm long, enclosed by a tubular sheath from below the middle and 2-3 sheaths at the base. **Leaf** erect, thickly coriaceous, rigid, elliptical, sessile, 15 cm long, 4.5 cm wide, cuneate into the base. **Inflorescence** a suberect to horizontal, loose, secund, simultaneously several-flowered raceme up to 20 cm long including the peduncle ca. 10 cm long, from a spathe 1.5 cm long, at the base of the leaf; floral bracts thin, tubular, 5 mm long; pedicels 7 mm long; ovary 8 mm long; **sepals** white, spotted and mottled with purple above the base, glabrous, the dorsal sepal narrowly ovate, concave, acute, acuminate, 30 mm long, 8 mm wide expanded, 3-veined, the lateral sepals connate into an ovoid, acute, concave synsepal, 28 mm long, 9 mm wide expanded, 6-veined; **petals** finely mottled with rose, elliptical in lower third, acute, 12-13 mm long, 6.5 mm wide, 3-veined, contracted into a narrowly terete tail 15 mm long, with small verrucae, entire length 29 mm; **lip** purple, oblong, 14 mm long, 4.5 mm wide, concave below the middle with smooth, gradually rounded, erect sides, elliptical above the middle, minutely spiculate-verrucose, with the margins minutely fimbriate, the apex obtuse, shortly acuminate, the disc smooth below the middle, the base broadly truncate, attached to the column-foot; **column** terete, 9 mm long, the anther subapical, the rostellum and stigma ventral, the foot thick, 3 mm long.

PERU: Huánuco: Nov. 1998, A.P. Sijm 200425 (Holotype: MO), C. Luer illustr. 19408.

This large, handsome species of subgenus *Elongatia* is apparently endemic in northern Peru. It is characterized by a rigid, thickly coriaceous, elliptical, sessile leaf that is surpassed by a loose raceme of large, showy flowers. The acuminate sepals are mottled with purple. From an elliptical blade the apex of the petal is narrowly terete and with small warts. The oblong lip is elliptical above the middle with a minutely fringed margin, and below the middle the margins are smooth, erect and broadly rounded.

***Restrepia portillae* Luer, sp. nov.**

Ety.: Named for José Portilla of Gualaceo, Ecuador, in whose collection this species is cultivated.

Species haec *R. brachypodi* Rchb.f. affinis sed synsepalo concavo, labello panduriformi, hypochilio proportione grande lobis filamentosis minutis et epichilio cuneiformi dense spiculato distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 4-6 cm long, enclosed by 6 loose, compressed, imbricating sheaths, with only the lower sheaths minutely dotted. **Leaf** erect, suffused with purple beneath, coriaceous, elliptical, obtuse, 4-4.5 cm long, 2.5-2.8 cm wide, the base broadly cuneate, contracted into a twisted petiole ca. 2 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 4-4.5 cm long; floral bract tubular, 5 mm long; pedicel stout, 2-3 mm long, with a slender filament 3 mm long; ovary 4 mm long; **sepals** membranous, the dorsal sepal free, erect, light yellow with the midvein red, narrowly ovate in the lower half, attenuated above with the apex clavate, 19 mm long, 3.5 mm wide, 5-veined, the lateral sepals connate to near the apex into a concave, elliptical-ovate, shortly bifid synsepal, light yellow with red spots, 19 mm long, 12 mm wide, multiple(18)-veined, the apices obtuse, free 3 mm; **petals** membranous, narrowly linear-ovate, the margins minutely erose-subfimbriate near the base, attenuated above the lower third with the apex clavate-thickened, 12 mm long, 1.75 mm wide above the base; **lip** yellow with purple dots, pandurate, 9 mm long, the epichile cuneate-truncate, densely spiculate, 3 mm wide, 1.5 mm wide at the isthmus, the hypochile oblong-subquadrate, 4 mm long, 4 mm wide, concave, with minute, hair-like lobes from the middle of the sides, the base subtruncate, connected to the column-foot by a short, thick neck; **column** greenish white, slender, clavate, 5 mm long, the base pedestal-like with a pair of small, inconspicuous, pubescent calli.

ECUADOR: **Morona Santiago**: near Cuigüinda, alt. ca. 2500 m, cultivated at Ecuagenera, Gualaceo, 5 Mar. 2001, C. Luer 19663 (Holotype: MO).

This species, known so far by only the original collection in southeastern Ecuador, is characterized by the medium-sized habit with elliptical leaves that are purple beneath. The flowers, about average in size for the genus, are borne near the tips of the leaves. The red-spotted synsepal is broadly concave, more or less incurved near the middle with the broad apex shortly bifid. The petals are minutely fringed toward the base. The panduriform lip is most distinctive with a cuneate, spiculate epichile; a narrow isthmus; and a proportionately large, concave hypochile with extremely slender, short lobules.

Scaphosepalum bicristatum Luer, sp. nov.

Ety.: From the Latin *bicristatus*, referring to the fimbriate crests of the lip.

Planta parva, foliis late ellipticis longipetiolatis, racemo elongato quam folio multilongiore, pedunculo laevi, sepalis mediani cauda incrassato, petalis oblongis apiculatis unguiculatis, et labello arcuato disco alte bicristato apice late rotundo minute serrulato distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, proportionately stout, 8-10 mm long, enclosed by a tubular sheath and another at the base. **Leaf** erect, coriaceous, long-petiolate, 2.5-3 mm long including a petiole 9-12 mm long, the blade elliptical, obtuse, 10-12 mm wide, cuneate below into the petiole. **Inflorescence** a loose, distichous, flexuous, flexible, successively many-flowered raceme up to 15 cm long or longer, including the slender, smooth peduncle, 12-13 cm long, from low on the ramicaul; floral bracts 3 mm long; pedicels 3-4 mm long; ovary smooth, 3 mm long; **sepals** yellow with darker veins, glabrous, carinate, the dorsal sepal ovate, concave, thickened at the narrowly rounded apex, 6 mm long, 3 mm wide, barely connate to the lateral sepals, the lateral sepals minutely ciliate, connate 5 mm into an ovoid, scaphoid, carinate lamina, 6 mm long, 5 mm wide unexpanded, the apical third of each lateral sepal occupied by a triangular cushion with indistinct margins, 2 mm long, 1 mm wide, the obtuse apices contracted into acute tails 1 mm long; **petals** translucent, oblong, oblique with the labellar margin broadly rounded, 3.5 mm long, 1.75 mm wide, the apex shortly acuminate, apiculate, the base unguiculate; **lip** purple, arcuate, oblong-subpandurate, 2.75 mm long, 1.5 mm wide, the margins thin and dilated below the apical third, the apical third rounded, minutely serrulate, the disc with a pair of tall, fimbriate lamellae; **column** slender, semiterete, arcuate, winged above the middle with a crest at the apex, 3 mm long, the foot thick, 2 mm long.

COLOMBIA: without collection data, cultivated by Ecuagenera, Gualaceo, Apr. 2001, A. Hirtz 7629 (Holotype: MO), C. Luer illustr. 20039.

This species is characterized by the small habit with spatulate leaves, and a progressively lengthening, lax, flexuous, successively flowering raceme. The much longer peduncle is smooth, but the rachis is microscopically subverrucose. The median sepal is ovate and concave with a thick apex. The synsepal is deeply concave and boat-shaped with tails only one millimeter long. The lateral margins and apices of the cushions are ill-defined. The petals are dilated on the labellar margin, the apex is apiculate, and the base is unguiculate. The lip is arcuate with the sides thin and dilated, the apex is round and minutely serrulate, and the disc has a pair of tall, fringed lamellae.

Scaphosepalum merinoi Luer, sp. nov.

Ety.: Named for Gilberto Merino of Gualaceo, Ecuador, collector of this species.

Species haec *S. gibberoso* (Rchb.f.) Rolfe affinis, sed sepalis impari brevioribus, sepalorum callis non elongatis, et labelli cristis majoribus differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-2 cm long, enclosed by a tubular sheath and another at the base. **Leaf** erect, coriaceous, long-petiolate, 8-10 cm long including a petiole 3-3.5 cm long, the blade elliptical, acute, 1.2-1.7 cm wide, narrowly cuneate below into the slender petiole. **Inflorescence** a loose to distichous, successively several-flowered raceme borne by a slender, verrucose, more or less horizontal peduncle, ca. 12 cm long, from low on the ramicaul; floral bracts 4 mm long; pedicels 6-7 mm long; ovary verrucose, 5 mm long; **sepals** translucent

white with purple stripes and spots, minutely ciliate, carinate, the dorsal sepal ovate basally, concave, acute, narrowed with the margins recurved into a twice longer, thick, terete tail, the entire length 18 mm, 5 mm wide, barely connate to the lateral sepals at the base, the lateral sepals connate 8 mm into an ovoid, concave, carinate synsepal, 10 mm long, 8 mm wide, the apical half of each lateral sepal occupied by a triangular cushion, 5 mm long, 3 mm wide, the rounded bases abruptly contracted into slender, white tails 22-25 mm long; **petals** translucent, ovate, oblique, dilated on the labellar margin, 4.5 mm long, 2.5 mm wide, the apex subacute, narrowed and apiculate; **lip** thin, arcuate, pandurate, 3.5 mm long, 1.5 mm wide, longitudinally winged below the middle, constricted above the middle, expanded above the constriction into a suborbicular epichile with erose margins, the disc with an erect pair of denticulate-fringed, lamellate crests at the middle, the base truncate with a minute auricle in each corner, hinged to the column-foot; **column** slender, arcuate, broadly winged above the middle, 4 mm long, the thick foot, 2 mm long.

ECUADOR: **Zamora-Chinchipe**: Cordillera del Condor, near Paquisha, alt. ca. 1400 m, collected by G. Merino, cultivated at Ecuagenera, Gualaceo, 17 Apr. 2001, A. Hirtz 7598 (Holotype: MO), C. Luer illustr. 20038.

This species, presently known only from the Cordillera del Condor, is similar to the Colombian *S. gibberosum*. It is characterized by narrow, petiolate leaves and a coarsely verrucose, more or less horizontal peduncle. The tail of the dorsal sepal is thick and elongate; the cushions of the synsepal are triangular with rounded bases abruptly contracted into slender tails more than twice as long as the synsepal. The petals are dilated on the labellar margin. The lip is arcuate and subpandurate with a suborbicular, minutely erose apical lobe. Across the middle is a tall pair of fringed lamellae.

Scaphosepalum portillae Luer, sp. nov.

Ety.: Named for José Portilla of Gualaceo, Ecuador, in whose establishment this species is cultivated.

Planta mediocris, foliis anguste ellipticis longipetiolatis racemo elongato aequilongo, pedunculo laevi suberecto, sepalis dorsali cauda incrassato, petalis multangulis, labello parvo epichilio anguste oblongo deflexo distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1.5-2.5 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, long-petiolate, 8-9 cm long including a petiole 3-3.5 cm long, the blade elliptical, subacute, 1 cm wide, narrowly cuneate below into the slender petiole. **Inflorescence** a loose to subdense, distichous, successively several- to many-flowered raceme up to 10-11 cm long, including the slender, smooth, suberect peduncle, 3-4 cm long, from low on the ramicaul; floral bracts 3 mm long; pedicels 4-6 mm long; ovary smooth, 3 mm long; **sepals** light green with faint dots on the synsepal, glabrous, carinate, the dorsal sepal ovate, concave, narrowed near the middle into the thickened tail with revolute margins, 9 mm long, 3 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 6 mm into an ovate, concave, carinate lamina, 8 mm long, 6 mm wide, the apical portion of each lateral sepal occupied by a triangular cushion, 3 mm long, 2 mm wide, the rounded apices contracted into slender, greenish white tails 6 mm long; **petals** translucent, multangular, 2 mm long, 1.5 mm wide, the apex obtuse, shortly acuminate, the labellar margin broadly rounded, the opposite margin bilobulate; **lip** green, thin, the blade oblong, flat with the base subunguiculate with a thin strap, 2.5 mm long, 1 mm wide, the apical lobe oblong, deflexed, 1 mm long, 0.5 mm wide; **column** slender, semiterete, arcuate, winged above the middle, 3 mm long, the thick foot spiculate-pubescent, 3 mm long.

ECUADOR: **Pichincha**: near Mindo, alt. ca. 1600 m, cultivated at Ecuagenera, Gualaceo, 5 Mar, 2001, C. Luer 19729 (Holotype: MO).

This species, recently collected on a western slope of Pichincha, is distinguished by narrow, long-petiolate leaves, and an equally long, suberect, successively flowered raceme. The sepals and petals are not remarkably distinctive, but the lip is proportionately small with an oblong blade and a narrow, deflexed, apical lobe, similar to that of *S. digitale*.

***Teagueia portillae* Luer, sp. nov.**

Ety.: Named for José Portilla of Gualaquico, Ecuador, who cultivates this species.

Inter species generis *Teagueiae* Luer, species haec minutis caespitosa, racemo laxe paucifloro foliis petiolatis duplolongiore, sepalis longi-acuminatis, petalis filamentosis, labello ovoideo supra medium fisso distinguitur.

Plant very small for the genus, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-5 mm long, enclosed by 1-2 thin, tubular sheaths. **Leaf** erect, coriaceous, petiolate, 2.5-3 cm long including a petiole 1-1.5 cm long, the blade elliptical, obtuse, 0.6 cm wide, the base acuminate into the petiole. **Inflorescence** an erect, loosely few-flowered raceme with 2-3 flowers open simultaneously, up to 7 cm long including the slender peduncle 2-3 cm long, from near the middle of the ramicaul; floral bracts thin, 1.5 mm long; pedicels 2.5-3 mm long; ovary 0.5 mm long; flowers greenish white; **sepals** glabrous, the dorsal sepal ovate, acute, 4.5 mm long, 0.6 mm wide, 1-veined, long-acuminate into a filiform tail, the lateral sepals elliptical, oblique, acute, long-acuminate, 1-veined, 5 mm long, each 0.6 mm wide, connate 0.6 mm; **petals** narrowly linear, 1.8 mm long, 0.2 mm wide, reflexed; **lip** white, ovoid, 1.5 mm long, 0.6 mm wide, cellular-papular, the sides incurved above the middle to the narrowly obtuse apex, the disc cleft above the middle, ciliate-pubescent, the base truncate, hinged to the base of the column; **column** 0.6 mm long and broad, footless, the apex dentate, the anther subapical, the stigma ventral.

ECUADOR: **Zamora-Chinchipec**: Parqué Nacional Podocarpus, south of Nambija, alt. 2500 m, cultivated at Ecuagenera, Gualaquico, 4 Mar. 2001, C. Luer 19744 (Holotype: MO).

This tiny species, superficially resembling a *Platystele*, is the smallest known in the genus *Teagueia*. It is characterized by an erect, hair-like rachis and peduncle about twice longer than the petiolate leaves. The raceme bears a few, distant flowers in succession. The sepals are long-acuminate into filiform tails. The hair-like petals reflex. The proportionately large, ovoid lip is held perpendicularly below the short, stout column. The lip is cellular-papillose with the cleft, common to all species of the genus, ciliate and pubescent.

***Trichosalpinx aestrochila* Luer, sp. nov.**

Ety.: From the Greek *aestrochila*, "with daring needle-like lip," referring to the labellum.

Species haec *T. orbicularis* (Lindl.) Luer affinis, sed sepalis lateralibus semiconnatis, petalis long-acuminatis, et labello supra medium acuminato marginibus revolutis differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 5-7 cm long, enclosed by 7-8 coarsely ciliated, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, broadly elliptical-ovate, obtuse to subacute at the apex, 2.5-3 cm long, 1.2-2 cm wide, round or cuneate below into a petiole 2-3 mm long. **Inflorescence** a congested, simultaneously 2- to 3-flowered raceme, born by a peduncle 4-8 mm long, from near the apex of the ramicaul; floral bracts 1.5 mm long; pedicels 1-1.5 mm long; ovary 0.75 mm long; **sepals** white, rose toward the base, glabrous, carinate, thickened toward the apices, the dorsal sepal ovate, acute, 4.5 mm long, 2 mm wide, 3-veined, the lateral sepals narrowly ovate, acute, connate to near the middle, 5 mm long, 2.75 mm wide together, each 3-veined; **petals** white, membranous, narrowly ovate-triangular, 3.25 mm long, 0.7 mm wide, 1-veined, with the margins subserrulate; **lip** purple, yellow-white at the tip, narrowly ovate, 3.25 mm long, 0.3 mm wide, the apex long-acuminate with the margins revolute, the disc with a narrow, longitudinal carina in the center, tall at the base, the base truncate with a lobule in each corner, hinged to the column-foot; **column** semiterete, winged above the middle, 1.75 mm long, denticulate at the apex, the anther and stigma ventral, the foot 1.5 mm long.

COLOMBIA: **Antioquia**: Río Caldera, collected by E. Valencia, Feb. 1988, flowered in cultivation at Colomborquídeas 16 May 1993, C. Luer 16908 (Holotype: MO).

This species is closely allied to *T. orbicularis*, the two species appearing similar except for the petals and lip. The petals are narrowly ovate with the apex narrowly acuminate. The lip is also narrowly ovate with the margins of the long-acuminate apex revolute.

Trichosalpinx manningii Luer, sp. nov.

Ety.: Named in honor of Steve Manning of Tarporley, England, who collected this species.

Inter species *Trichosalpincis* subgen. *Tubellae*, species haec mediocris prolificans, sepalis petalisque longissime attenuatis et labello trilobo ad medium excavato distinguitur.

Plant medium in size, epiphytic, prolific; roots slender. Ramicauls erect, slender, producing another ramicaul at the apex, 2-4.5 cm long, enclosed by 4-5 closely appressed, lepanthiform sheaths with dilated ostia. **Leaf** erect, coriaceous, broadly elliptical, obtuse to rounded at the apex, 15-22 mm long, 10-16 mm wide, cuneate below into a twisted petiole 2-3 mm long. **Inflorescence** a loose, lightly flexuous, flexible, simultaneously 5- to 7-flowered raceme, 5-6 cm long, including the peduncle 1-3 cm long, from near the apex of the ramicaul; floral bracts 2 mm long; pedicels 3-5 mm long; ovary 1 mm long; **sepals** white, faintly suffused with rose, glabrous, the dorsal sepal elliptical in the basal third, 15 mm long including the acuminate, filiform apex, the blade 2 mm wide, 3-veined, the lateral sepals free, similar to the dorsal sepal, 15 mm long, 1.5 mm wide in the basal third, each 2-veined; **petals** white, faintly suffused with green, similar to the sepals, narrowly elliptical in the basal fifth, 15 mm long, 1.3 mm wide, 1-veined; **lip** white faintly suffused with green, trilobed, 3 mm long, 2 mm wide expanded, the apical lobe ovate, subacute, half the length of the lip, with the margins thin, recurved, the basal lobes below the

middle, erect, uncinata, antrorse, the disc with a narrow, longitudinal cavity in the center; the base rounded, hinged to the column-foot; **column** terete, slender, 2 mm long, bidentate at the apex, the anther apical, the stigma ventral, the foot 0.5 mm long.

PERU: Without collection data, purchased and cultivated in Tarporley, England, Feb. 2000, S. Manning 980709 (Holotype: MO), C. Luer illustr. 19333.

This species is cultivated by Stephen Manning in the National Pleurothallid Collection in Tarporley, UK, but without collection data. It is distinguished from all other species of the genus by long-attenuate petals that are similar to the sepals. Vegetatively, it is characterized by a prolific habit, and broadly elliptical leaves, that are surpassed by a loose, few-flowered raceme. The free sepals and petals are translucent white and long-acuminate. The lip is three-lobed with the lateral lobes below the middle, uncinata and antrorse. In the center of the disc is a deep, longitudinal, well-defined cavity.

Trichosalpinx sijmii Luer, sp. nov.

Ety.: Named in honor of A.P. Sijm, Venhuizen, the Netherlands, who collected this species.

Inter species *Trichosalpincis* subgen. *Trichosalpincis*, ramicaulibus fractiflexis, racemis paucis laxae paucifloris folio anguste elliptico brevioribus, sepalis glabris mentum profundum formantibus, petalis acutis ciliatis et labello arcuato ligulato infra medium ciliato ad basim bilobulato distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, flexuous, 4-5.5 cm long, enclosed by 5-6 lepanthiform sheaths with oblique, long-ciliated ostia. **Leaf** erect, coriaceous, narrowly elliptical, acute, 5-6.5 cm long, 1 cm wide, cuneate below into a petiole 7-8 mm long. **Inflorescence** 3-4 loose, successively few-flowered racemes, 1.5-2.5 cm long, including the peduncle ca. 1 cm long, from near the apex of the ramicaul; floral bracts ciliated, 2.5-3 mm long; pedicels 3-3.5 mm long; ovary 1 mm long; **sepals** orange, glabrous, thickened toward the apex, the dorsal sepal ovate, concave, subacute, 8.5 mm long, 5 mm wide, 3-veined, the lateral sepals suffused with red-purple, lunate, oblique, connate 3 mm over a basal convexity into an arcuate synsepal, forming a deep mentum with the column-foot, 7.5 mm long, each 3.5 mm wide, 3-veined; **petals** orange, subtriangular, acute, ciliate, 4.5 mm long, 1.8 mm wide, 1-veined; **lip** red-purple, arcuate, ligulate-obovate, thickened at the rounded apex, ciliate below the middle, 5 mm long expanded, 2.5 mm wide, the disc convex, narrowed and thickened toward the base, biauriculate, hinged to the column-foot; **column** broadly bilobate from below the middle, denticulate at the apex, 4 mm long, the anther and stigma ventral, the foot 3 mm long.

PERU: **Junín**: Chanchamayo valley, alt. 1500 m, 3 Nov. 1995, cultivated in Tarporley, England, A.P. Sijm 210115 (Holotype: MO), C. Luer illustr. 20031.

This species, without close relatives, is apparently endemic in Peru. It is distinguished from all other members of the genus by a stout, flexuous ramicaul with long-ciliated ostia of the sheaths; a narrowly elliptical leaf; and a

fascicle of a few, successively few-flowered racemes. The colorful flowers are relatively large with the lateral sepals forming a deep mentum with an elongated column-foot. The petals are acute and ciliate. The lip is arcuate, reaching out of the mentum with its obovate blade. It is ciliate below the middle and biauriculate at the base.

***Trichosalpinx weneri* Luer, sp. nov.**

Ety.: Named for Florian Werner, University of Bayreuth, who collected this species at the Estación Científica San Francisco in the province of Zamora-Chinchipe.

Species haec *T. hirtzii* Luer affinis, sed racemo brevior, flore magnimentoso, labelli lobo antico anguste lineari ciliatis differt.

Plant small, epiphytic, pendent; roots slender at the base of the ramicaul. Ramicauls pendent, slender, producing another ramical from the apex, 1-3 cm long, enclosed by 3 closely appressed, microscopically scabrous, lepanthiform sheaths. **Leaf** descending, thickly coriaceous, narrowly elliptical, fusiform, acute, 28-30 mm long, 4 mm wide, 3 mm thick, cuneate below into a petiole 1-2 mm long. **Inflorescence** a congested, simultaneously 3- to 4-flowered raceme, 6-8 mm long, including the filiform peduncle ca. 2 mm long, from near the apex of the ramicaul; floral bracts 1 mm long; pedicels 1 mm long; ovary 0.8 mm long; **sepals** translucent dark purple, glabrous, ovate, with subacute, slightly thickened apices, the dorsal sepal 3.5 mm long, 1.75 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals 4 mm long, 1.2 mm wide, 1-veined, connate 1 mm; **petals** dark purple, ovate, subacute, 2.75 mm long, 1.2 mm wide, 1-veined; **lip** dark purple, 3-lobed, 3 mm long, 2 mm wide expanded, the apical lobe narrowly linear, ciliate, retuse at the tip, 1 mm long, the lateral lobes erect, broadly rounded with an low, curved callus above the middle, the disc with a low, longitudinal, midline callus, the base broadly truncate, hinged to the column-foot; **column** semiterete, 1.2 mm long, the anther apical, the stigma ventral.

ECUADOR: **Zamora-Chinchipe**: San Francisco station between Loja and Zamora, alt. 2200 m, 9 June 2000, *F. Werner 12017* (Holotype: MO), C. Luer illustr. 19378.

This species is closely related to *T. hirtzii* Luer. Both species are characterized by long, flexible, pendent chains of prolific ramicauls with narrowly fusiform leaves about as long as the ramicauls. The purple flower of *T. weneri* is produced simultaneously in a short, congested raceme. The lateral sepals form a deep, rounded mentum with an elongated column-foot; the petals are large but simple; and the lip is also deeply trilobed. The anterior lobe is narrowly linear, ciliate, and retuse at the tip. The lateral lobes are broadly rounded and erect.

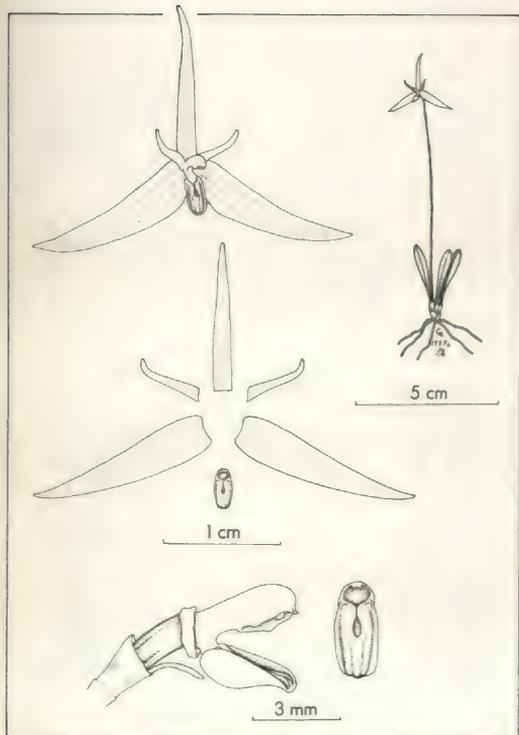


Fig. 1. *Barbosella portillae*

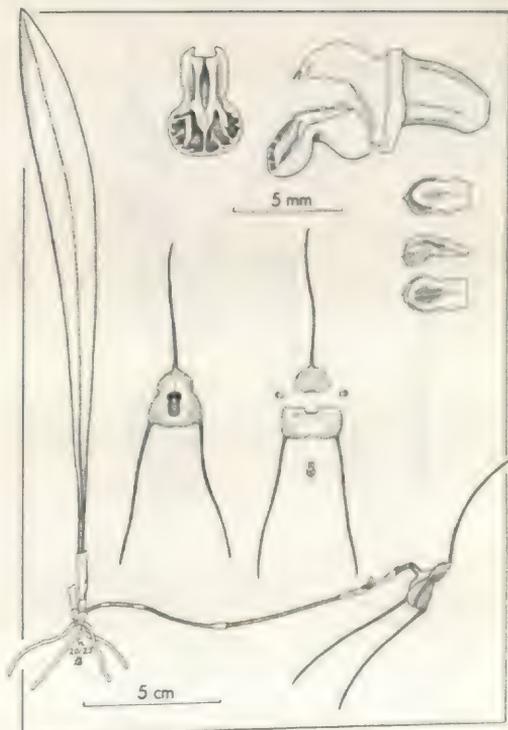


Fig. 2. *Dracula antonii*

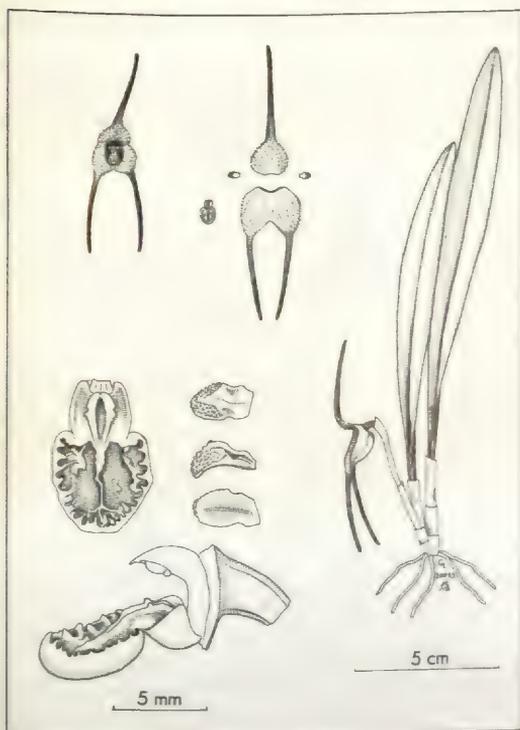


Fig. 3. *Dracula barrowii*

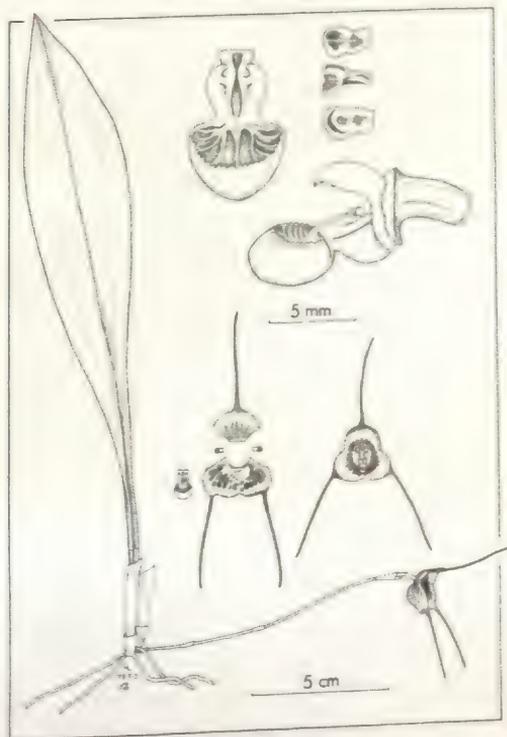
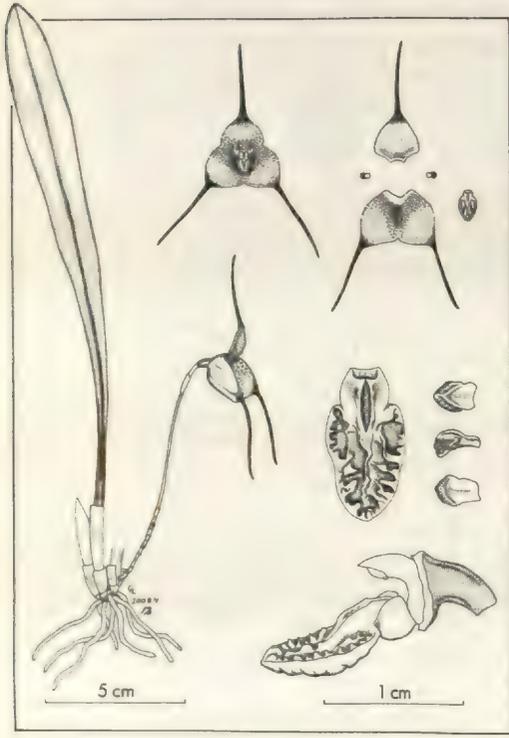
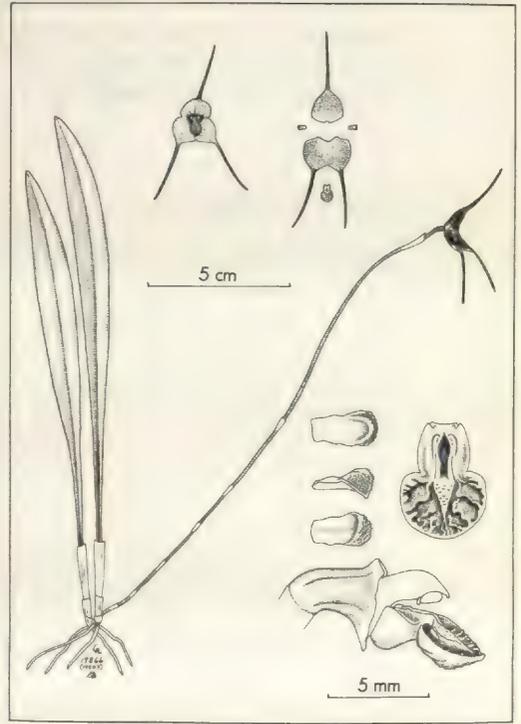
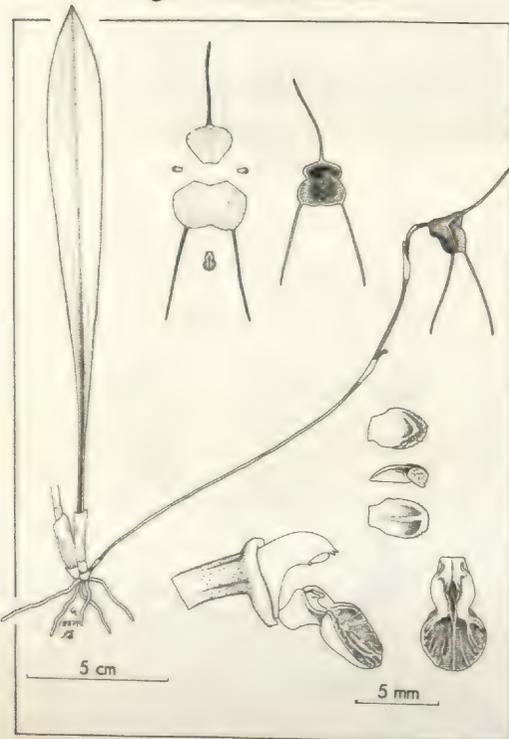
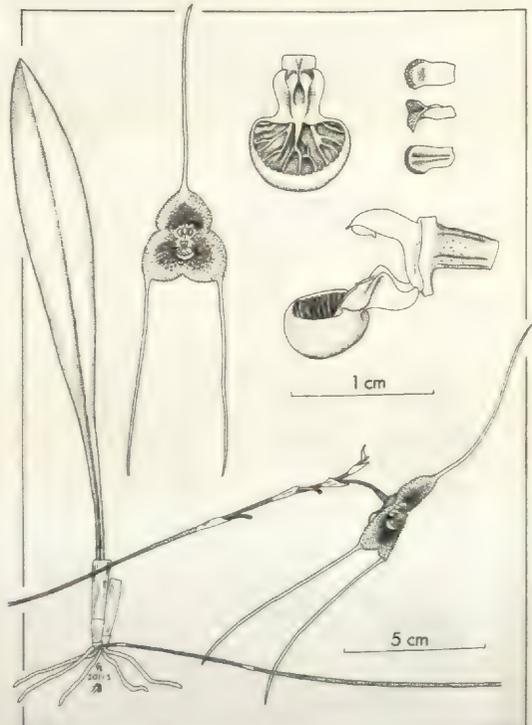


Fig. 4. *Dracula christineae*

Fig. 5. *Dracula deniseana*Fig. 6. *Dracula nigritella*Fig. 7. *Dracula sijii*Fig. 8. *Dracula tsubotae*

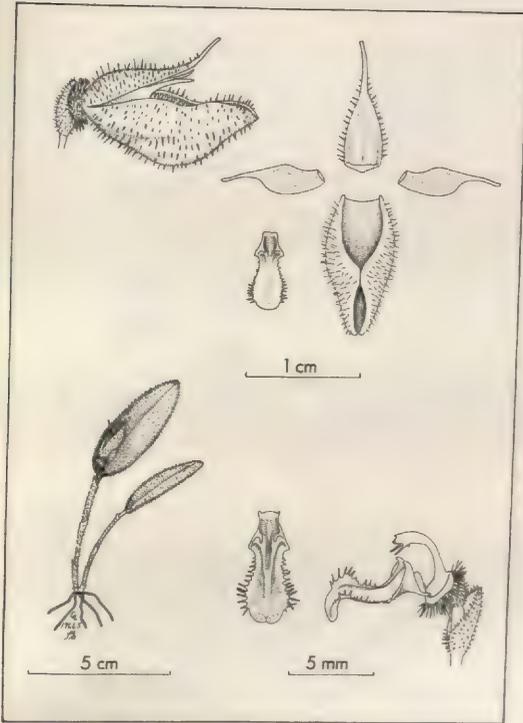


Fig. 9. *Dresslerella portillae*

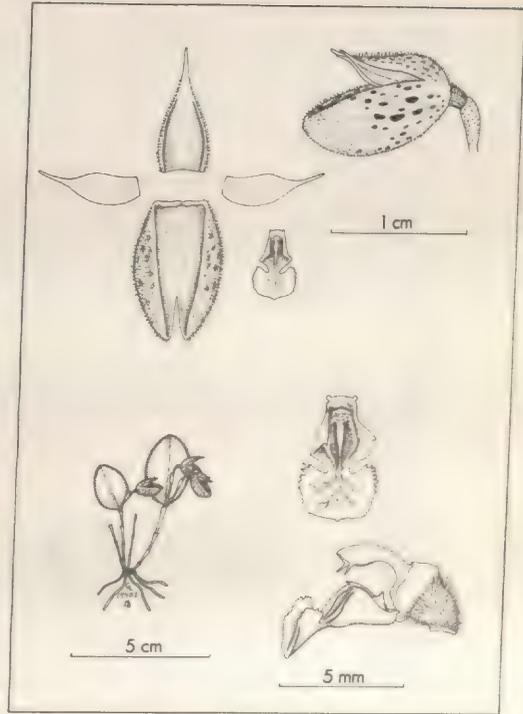


Fig. 10. *Dresslerella sijmiana*

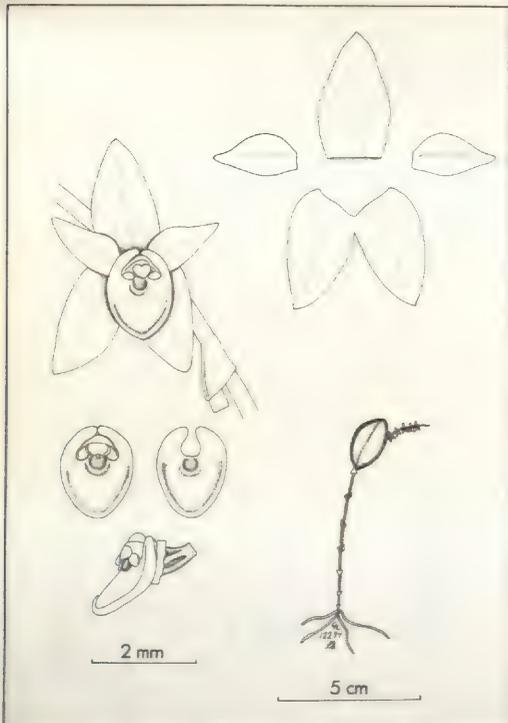


Fig. 11. *Lepanthopsis calva*

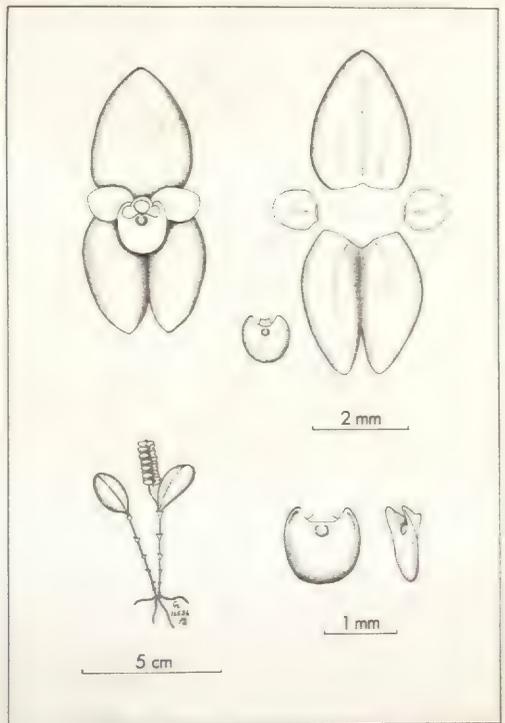


Fig. 12. *Lepanthopsis purpurata*

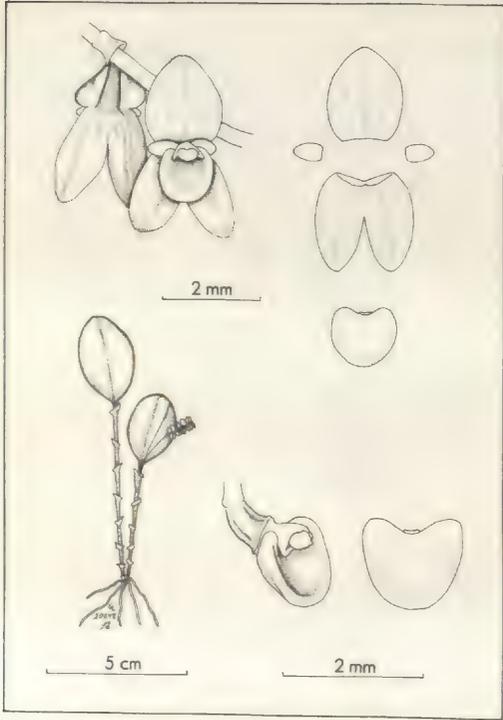


Fig. 13. *Lepanthopsis rinkei*

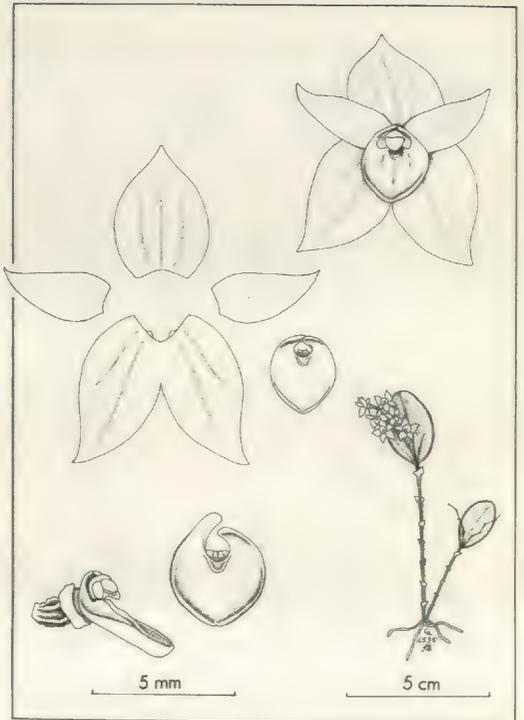


Fig. 14. *Lepanthopsis woodsiana*



Fig. 15. *Platystele portillae*

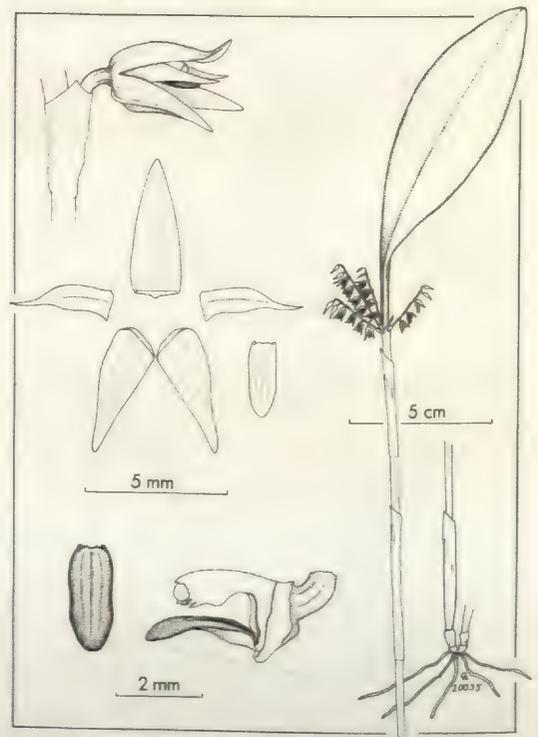


Fig. 16. *Pleurothallis adrianae*

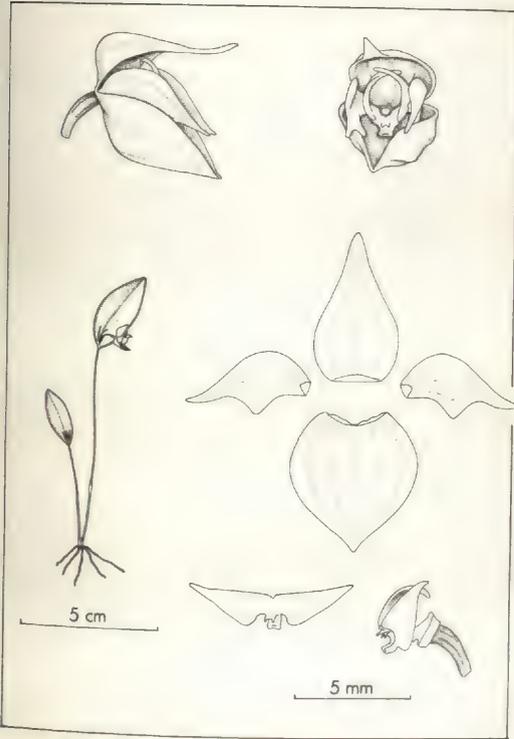


Fig. 17. *Pleurothallis cauda-hirundinis*

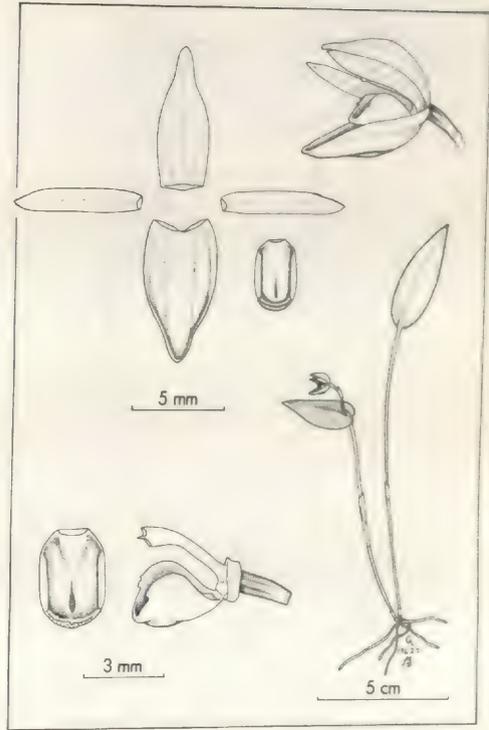


Fig. 18. *Pleurothallis cypelligera*

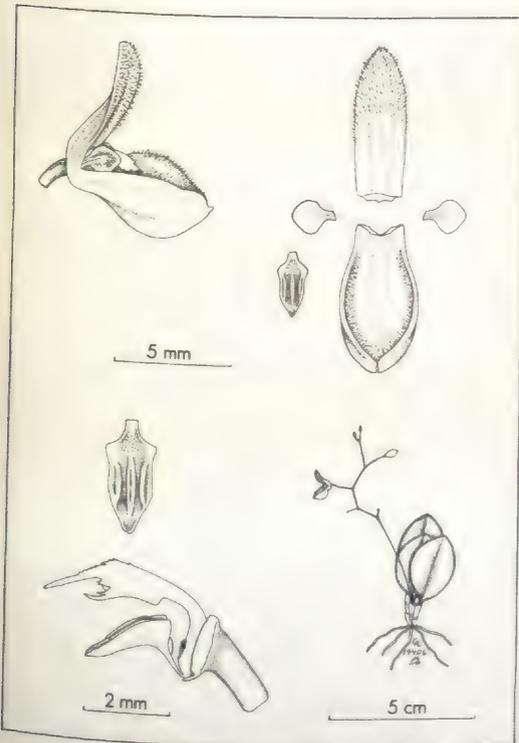


Fig. 19. *Pleurothallis rostratissima*

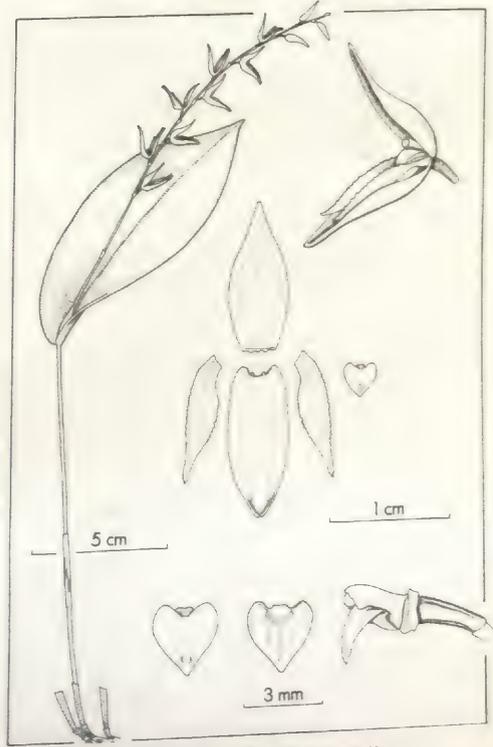


Fig. 20. *Pleurothallis sextonii*

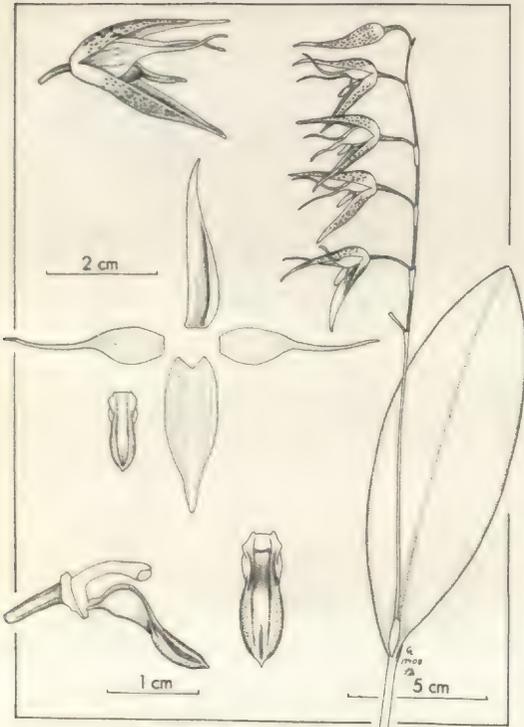


Fig. 21. *Pleurothallis sijmii*

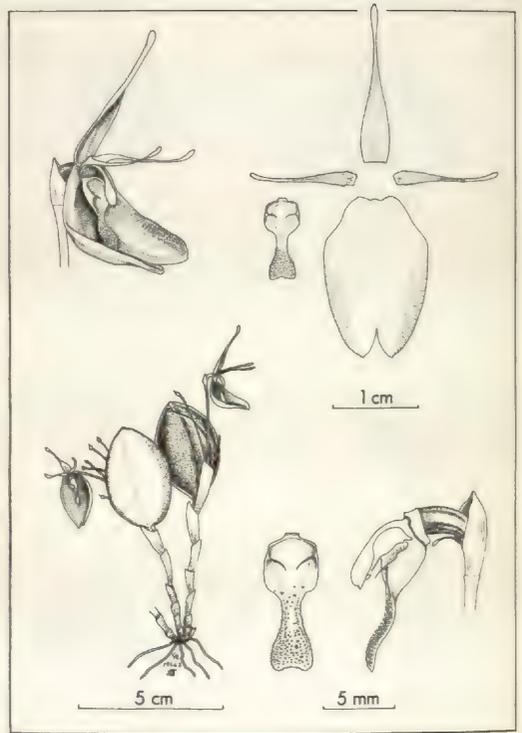


Fig. 22. *Restrepia portillae*

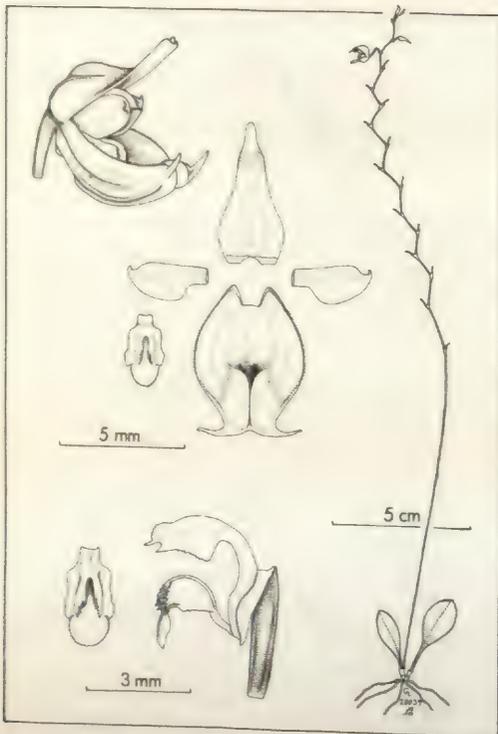


Fig. 23. *Scaphosepalum bicristatum*

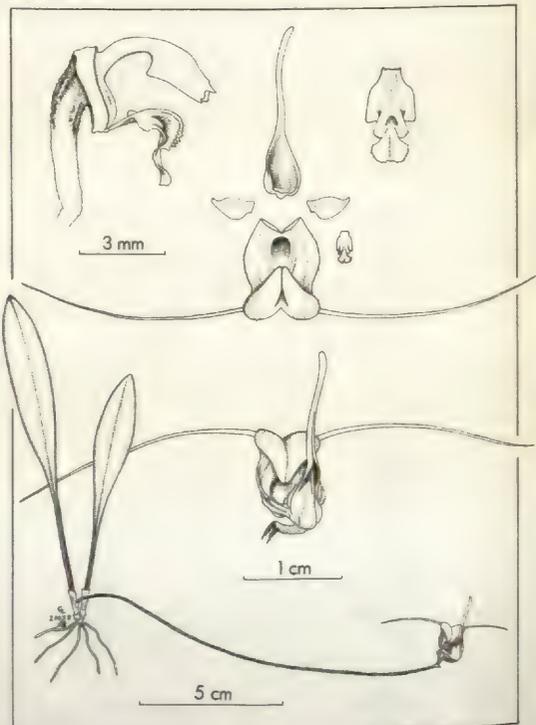


Fig. 24. *Scaphosepalum merinoi*

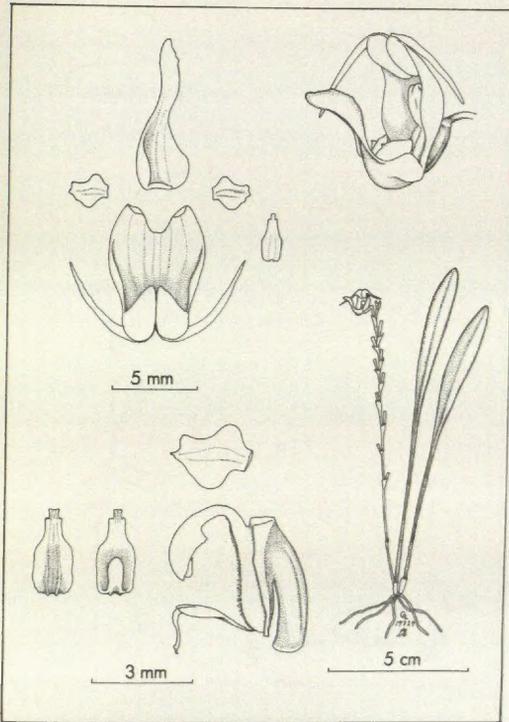


Fig. 25. *Scaphosepalum portillae*

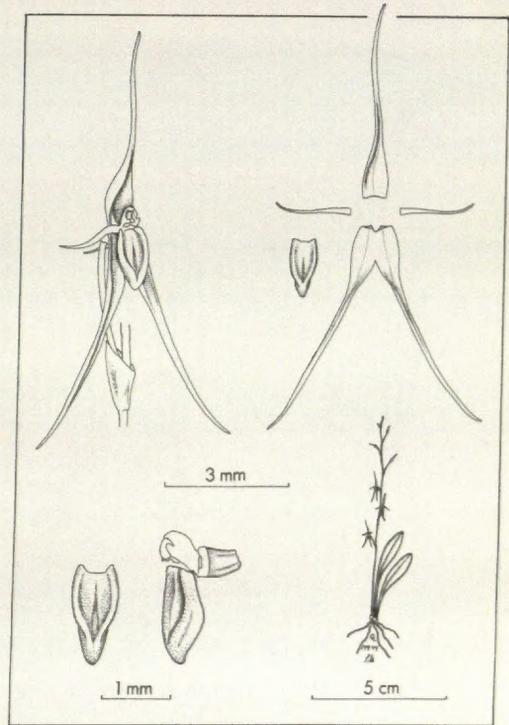


Fig. 26. *Teagueia portillae*

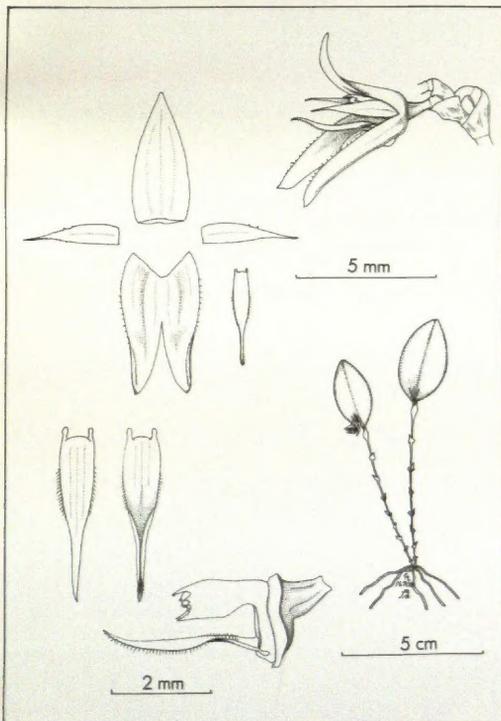


Fig. 27. *Trichosalpinx aecastochila*

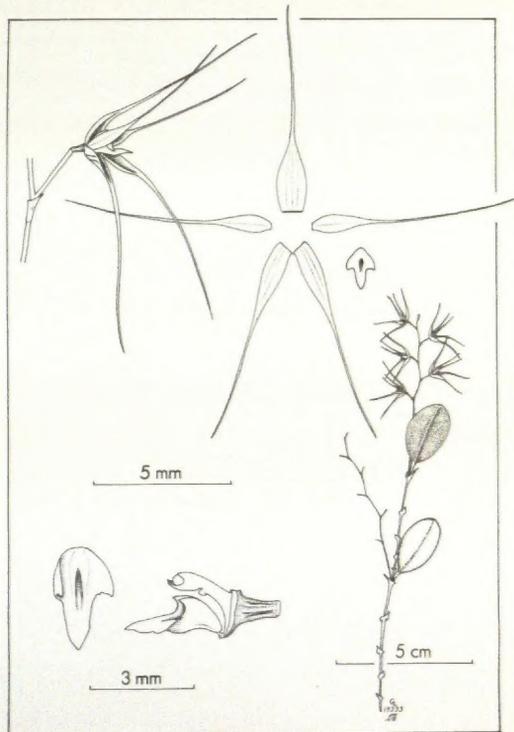
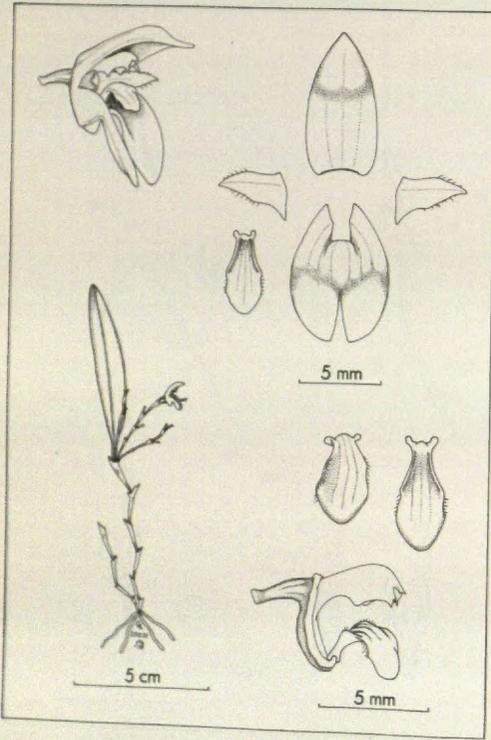
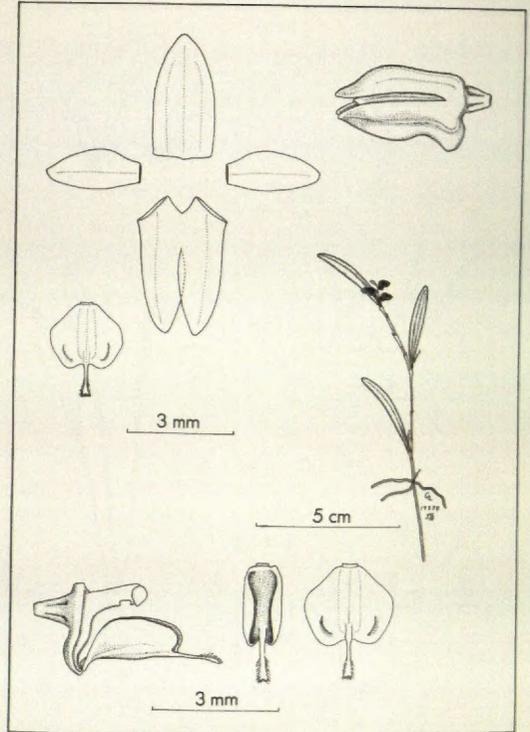


Fig. 28. *Trichosalpinx manningii*

Fig. 29. *Trichosalpinx sijmii*Fig. 30. *Trichosalpinx wernerii*

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