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## THE ORCHIDACEAE OF MEXICO

LOUIS O. WILLIAMS

(Continued)

38. PLEUROTHALLIS CORNICULATA (Sw.) Lindley in Bot. Reg. Misc. p. 83. 1842; Lindley, Folia Orch. Pleurothallis p. 42. 1859.

*Epidendrum corniculatum* Swartz, Nov. Gen. & Sp. Pl. Prodr. 123. 1788.

*Dendrobium corniculatum* Swartz Fl. Ind. Occ. 3: 1537. 1799.

*Pleurothallis alata* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 17. 1845.

*Pleurothallis nubigena* Lindley in Ann. Nat. Hist. ser. 3, 1: 326. 1858.

*Pleurothallis jocolensis* Ames, Sched. Orch. 2: 19. 1923; Ames, Sched. Orch. 7: 28, t. 6. 1924, in part.

Range: Mexico (state not given), Guatemala, Honduras, Costa Rica, the West Indies and British Guiana.

No Mexican specimens of this species have been seen and it is included in this flora because the Richard or Galeotti drawing of *P. alata* seems to belong here. There is no specimen in Richard's herbarium at Paris.

39. PLEUROTHALLIS SEGOVIENSIS Reichenbach filius in Bonplandia 3: 223. 1855.

*Pleurothallis Wercklei* Schlechter in Fedde Repert. 9: 213. 1911.

*Pleurothallis bifalcis* Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2: 395. 1918.

*Pleurothallis Wagneri* Schlechter in Fedde Repert. 17: 141. 1921.

*Pleurothallis falcatiloba* Ames in Proc. Biol. Soc. Wash. 34: 152. 1921.

*Pleurothallis amethystina* Ames, Sched. Orch. 4: 14. 1923; Ames, Sched. Orch. 7: 25, t. 13. 1924, in part.

Range: Mexico (Chiapas), Guatemala, Honduras, Costa Rica and Panama.

New to the flora of Mexico.

40. PLEUROTHALLIS SCHIEDEI Reichenbach filius in Linnaea 22: 826. 1849; Lindley, Folia Orch. Plerothallis p. 27. 1859.

*Pleurothallis ornata* Reichenbach filius ex Wittm. in Gartenzeit. 1: 106. 1882; F. Oliver in Nature 36: 303. 1887; Hooker filius in Bot. Mag. 106: t. 7094. 1890.

Range: Mexico (Vera Cruz (?), Oaxaca and Chiapas).

*Pleurothallis Schiedeii* may be distinguished from all other Mexican species of the genus (perhaps from all species) by the peculiar hyaline, clavellate appendages on the margins of the sepals.

The origin of the type of *P. Schiedeii* is not recorded, either in the description or on the specimen, except as Mexico. It is possible that it may have been collected in the State of Vera Cruz.

*Pleurothallis ornata* was described from horticultural material.

41. PLEUROTHALLIS PFAVII Reichenbach filius in Flora 69: 555. 1886.

Range: Mexico (Chiapas), Costa Rica (?) and Panama.

*Pleurothallis Pfavii* is new to the flora of Mexico. The original locality for the species is Panama. If *Pleurothallis*

*platyrachis* Rolfe is a synonym, as seems to be the case, then the species occurs also in Costa Rica and then appears again in south Mexico.

42. *PLEUROTHALLIS MURICATA* Schlechter in Fedde Repert. 10: 293. 1912.

*Pleurothallis sororia* Schlechter in Fedde Repert. 10: 294. 1912.

*Pleurothallis diuturna* Schlechter in Fedde Repert. Beihefte 17: 19. 1922; Ames, Sched. Orch. 7: t. 10. 1924, in part.

Range: Mexico (state not indicated), British Honduras, Guatemala, Honduras, Costa Rica and Panama

There seems to be no doubt that the names cited above all represent the same species.

43. *PLEUROTHALLIS CRENATA* Lindley in Gard. Chron. 207. 1846; Lindley, Folia Orch. Pleurothallis p. 38. 1859.

Range: Mexico (state unknown), Costa Rica and Panama. No Mexican material of this species has been seen.

43a. *PLEUROTHALLIS HINTONII* L. O. Williams in Bull. Am. Orch. Soc. 9: 69, t. 1940.

Range: Mexico (Guerrero).

A distinctive species by reason of the terete leaves and the echinate ovary.

44. *PLEUROTHALLIS IMMERSA* Linden & Reichenbach filius in Bonplandia 3: 224. 1855; Lindley, Folia Orch. Pleurothallis p. 38. 1859; Hooker filius in Bot. Mag. 118: t. 7189. 1891; Kränzlin in Xenia Orch. 3: 163, t. 294, f. II et t. 297, f. 11-17. 1900.

*Pleurothallis Krameriana* Reichenbach filius in Hamb. Gartenzeit 21: 294. 1865.

*Pleurothallis lasiosepala* Schlechter in Fedde Repert. 11: 43. 1912.

*Pleurothallis calerae* Schlechter in Fedde Repert. Beih. 19: 184. 1923.

Range: Mexico (Vera Cruz, Guerrero, Oaxaca and Chiapas), Guatemala, Honduras, Costa Rica, Venezuela and (?) Colombia.

*Pleurothallis immersa* is a rather variable species as to the size of the plant, of the flowers and in the color of the flowers.

*Pleurothallis Krameriana* seems to belong here; there is a photograph of the type and of Reichenbach's analytical drawings in the Ames Herbarium which would indicate this.

45. PLEUROTHALLIS HIRSUTA Ames, Orch. 2: 270, fig. 1908.

Range: Mexico (Mexico, Morelos, Michoacan and Guerrero), Guatemala and Honduras.

The type of *Pleurothallis hirsuta* is a specimen which was grown in Ames' greenhouse from material sent from Mexico by Pringle. The species is variable as to size.

46. PLEUROTHALLIS RESUPINATA Ames, Orch. 2: 272, fig. 1908.

Range: Mexico (Michoacan).

47. PLEUROTHALLIS DOLICHOPUS Schlechter in Fedde Repert. 10: 394. 1912.

*Pleurothallis lamprophylla* Schlechter in Fedde Repert. 15: 205. 1918.

*Pleurothallis poasensis* Ames, Sched. Orch. 1: 10. 1922; Ames, Sched. Orch. 7: 30, t. 12. 1924, *in part*.

*Pleurothallis peregrina* Ames, Sched. Orch. 6: 67. 1923; Ames, Sched. Orch. 7: 29, t. 18. 1924, *in part*.

Range: Mexico (Mexico and Chiapas), Guatemala, Costa Rica and Panama.

*Pleurothallis dolichopus* is new to the flora of Mexico. The Mexican specimens are all small flowered forms of this extremely variable species.

48. PLEUROTHALLIS PLATYSTYLIS Schlechter in Fedde Repert. 10: 395. 1912.

*Pleurothallis Bernoullii* Schlechter in Fedde Repert. 15: 204. 1918.

Range: Mexico (Vera Cruz), Guatemala and Honduras.  
*Pleurothallis platystylis* is new to the flora of Mexico.

49. PLEUROTHALLIS LONGISPICATA L. O. Williams in Bot. Mus. Leafl. Harv. Univ. 12: 240. 1946.

Range: Mexico (Morelos, Michoacan and Colima).

50. PLEUROTHALLIS LIEBMANNIANA Kränzlin in Saertryk. af Vidensk. Medd. Foren. 71: 170. 1920.

Range: Mexico (Oaxaca and Chiapas).

51. PLEUROTHALLIS GHIESBREGHTIANA Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 16. 1845.

*Pleurothallis racemiflora* Lindley in Loddiges Bot. Cab. t. 949. 1825, non (Sw.) Lindley 1824.

*Pleurothallis longissima* Lindley, Folia Orch. Pleurothallis p. 31. 1859; Reichenbach filius, Xenia Orch. 2: 114, t. 137, f. 6-9. 1867; Reichenbach filius in Saunders Ref. Bot. 2: t. 141. 1882.

*Pleurothallis lyroglossa* Schlechter in Fedde Repert. 8: 566. 1910.

*Pleurothallis Niederleinii* Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2: 396. 1918.

Range: Mexico (Mexico, Guerrero, Michoacan, Nayarit and Oaxaca), British Honduras, Guatemala, Honduras, Costa Rica, Panama and the West Indies.

*Pleurothallis Ghiesbreghtiana* is a rather variable species as to size of plant, leaves and flowers. If *Pleurothallis quadrifida* (Llave & Lexarza) Lindley could be proved to be this species then that name would take precedence over the later *P. Ghiesbreghtiana*.

51a. PLEUROTHALLIS GHIESBREGHTIANA Richard & Galeotti, var. **cleistogama** L. O. Williams var. nov.

Forma typica speciei clinandrio trilobo, rostello obscuro, floribus cleistogamis atque vulgo minoribus differt.

Mexico: on trees, "Paso del Toro", region of Jalapa, Vera Cruz, alt. 1000 m., March 26, 1935, *Nagel and Juan González 4681* (TYPE in Herb. Escuela Agrícola Panamericana).

52. PLEUROTHALLIS PACHYGLOSSA Lindley in Bot. Reg. 26: Misc. p. 68. 1840; Kränzlin in Xenia Orch. 3: 106, t. 295, f. I, 1-5. 1892; Kränzlin, in Xenia Orch. 3: 166, t. 296, f. 3, 7-13. 1900.

*Pleurothallis conanthera* Reichenbach filius ex Kränzlin in Xenia Orch. 3: 41, t. 217. f. I, 1-9. 1881.

*Pleurothallis formosa* Schlechter in Fedde Repert. 10: 291. 1912.

Range: Mexico (Vera Cruz and Puebla), Guatemala and Costa Rica.

53. PLEUROTHALLIS TUERCKHEIMII Schlechter in Fedde Repert. 10: 292. 1912.

Range: Mexico (Chiapas), Guatemala, Honduras, Costa Rica and Panama.

*Pleurothallis Tuerckheimii* is new to the flora of Mexico.

54. PLEUROTHALLIS HALBINGERIANA R. E. Schultes in Bot. Mus. Leafl. Harv. Univ. 9: 30. 1941.

Range: Mexico (Oaxaca).

A very small repent species allied to *P. lancilabris* (Reichb. f.) Schltr.

55. PLEUROTHALLIS LANCILABRIS (Reichb. f.) Schlechter in Fedde Repert. 12: 205. 1913.

*Stelis lancilabris* Reichenbach filius in Beitr. Orch. Centr.-Am. 94. 1866.

*Pleurothallis oxyglossa* Schlechter in Fedde Repert. 10: 205. 1912.

*Pleurothallis Schulzeana* Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2: 396. 1918.

*Platystele lancilabris* Schlechter in Fedde Repert. Beihefte 19: 102. 1923.

Range: Mexico (Oaxaca), Guatemala and Costa Rica.  
New to the flora of Mexico.

56. PLEUROTHALLIS XANTHOPHTHALMA (Reichb. f.) L. O. Williams in Bot. Mus. Leafl. Harv. Univ. 8: 144. 1940.

*Restrepia xanthophthalma* Reichenbach filius in Hamb. Gartenzeit. 21: 300. 1865.

*Restrepia Lansbergii* "Reichb." ex Hooker in Bot. Mag. 87: t. 5257. 1861.

Range: Mexico (Guerrero, Oaxaca and Chiapas), Guatemala, Honduras and Costa Rica. Possibly also South America.

The species is new to Mexico. Although the plant and its allies have always been considered to be a genus distinct from *Pleurothallis* there seems to be little reason for so considering them. If the genus *Barbosella* Schlechter is to be considered as a synonym of *Pleurothallis*, as seems to be the case, then *Restrepia* must also be treated as a synonym of *Pleurothallis*. In fact when one searches for characters to maintain *Restrepia* as a separate genus their absence becomes conspicuous when the multitudinous forms of *Pleurothallis* are taken into account. The only character that one finds is the clavellate condition of the dorsal sepal and the petals but this character is hardly of generic significance.

#### EXCLUDED OR OBSCURE SPECIES OF PLEUROTHALLIS

*PLEUROTHALLIS AMONEA* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 16. 1845; Lindley in Folia Orch. *Pleurothallis* p. 23. 1859.

Unrecognized, perhaps unrecognizable. Type not at Paris.

*PLEUROTHALLIS APTHOSA* Lindley in Bot. Reg. 24: Misc. p. 42. 1838; Folia Orch. *Pleurothallis* p. 18. 1859.

*Pleurothallis peduncularis* Hooker in Journ. Bot. 3: 308. 1843.

Possibly not of Mexican origin, no wild specimens have been collected in that country and the country of origin of the cultivated types was dubious.

*PLEUROTHALLIS DISTICHA* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 16. 1845; Lindley, Folia Orch. *Pleurothallis* p. 26. 1859 = *Lepanthes* sp.

PLEUROTHALLIS MICROPHYLLA Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 17. 1845; Lindley, Folia Orch. Pleurothallis p. 41. 1859.

Unrecognized. The type was not located at Paris, if it is lost the species may possibly never be recognized.

PLEUROTHALLIS PICTA Hooker in Bot. Mag. 68: t. 3897. 1842.

Although accredited to Mexico the species is possibly Brazilian as Lindley first indicated. Later (Folia Orch. Pleurothallis) he indicated it as possibly Mexican. Hooker credited the species to Mexico.

PLEUROTHALLIS PUBESCENS Lindley in Comp. Bot. Mag. 2: 355. 1836; Folia Orch. Pleurothallis p. 24. 1859.

Unrecognized. Lindley (Folia Orch. Pleurothallis) says "my specimens of this plant having disappeared..."

PLEUROTHALLIS QUADRIFIDA (Llave & Lex.) Lindley in Bot. Reg. 28: Misc. p. 70. 1842; Lindley, Folia Orch. Pleurothallis p. 31. 1859.

*Dendrobium quadrifidum* Llave & Lexarza Nov. Veg. Descr. 2: Orch. Opusc. 40. 1824.

Even though Lindley made the combination to Pleurothallis he did not know exactly what the plant was as is indicated in Folia Orchidacea Pleurothallis. He thought that it might be the same as *P. longissima* Lindley (*P. Ghiesbreghtiana*), which is a possibility. Without authentic material or records of the species it is not wise to take up the name.

PLEUROTHALLIS RETUSA (Llave & Lex.) Lindley in Bot. Reg. 28: Misc. p. 81. 1842; Lindley, Folia Orch. Pleurothallis p. 44. 1859.

*Dendrobium retusum* Llave & Lexarza Nov. Veg. Descr. fasc. 2: Orch. Opusc. p. 40. 1842.

Unrecognized, perhaps unrecognizable. Type doubtless destroyed.

PLEUROTHALLIS SCARIOSA (Llave & Lex.) Lindley in Bot. Reg. 28: Misc. p. 71. 1842; Lindley, Folia Orch. Pleurothallis p. 37. 1859.



*Dendrobium scariosum* Llave & Lexarza Nov. Veg. Descr. fasc. 2: Orch. Opusc. p. 39. 1825.

Unrecognized, perhaps unrecognizable. Type doubtless destroyed.

PLEUROTHALLIS STRUPIFOLIA Lindley in Bot. Mag. 24: Misc. p. 2. 1838; Lindley, Folia Orch. Pleurothallis p. 24. 1859; Cogniaux in Martius Fl. Bras. 3, pars 4: 525. 1896. Probably Brazilian.

PLEUROTHALLIS TRICHOPODA Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 17. 1845; Lindley, Folia Orch. Pleurothallis p. 41. 1859.

Unrecognized and description inadequate. The type at Paris is an unrecognizable fragment.

PLEUROTHALLIS VILLOSA Knowles & Westcott Flor. Cab. 2: 78. 1838.

No authentic material or record of this species from Mexico is available. The description does not seem to apply well to any Mexican species.

22. MALAXIS Solander ex Swartz in Nov. Gen. & Sp. Pl. Prodr. 119. 1788; Fl. Ind. Occ. 3: 1439. 1799; Kongl. Vet. Akad. Hya Handl. 21: 233. 1800, mainly; O. Kuntze, Rev. Gen. Pl. 2: 672. 1891.

Terrestrial, rarely epiphytic, herbs with leafy stems and often with the base thickened into a pseudobulb. Sepals free or the laterals connate, spreading. Petals smaller than the sepals, narrow or often filiform. Lip sessile, erect or spreading, often broad, concave, simple or lobed, often with auricles at the base which more or less surround the column. Column very short. Anther erect; pollinia 4, ceraceous. (*Achroanthes* Rafinesque in Med. Repos. N. Y. 5: 352. 1808; *Dienia* Lindley Bot. Reg. 10: t. 825. 1824; *Microstylis* [Nutt.] Lindley Orch. Sel. 17. 1826; *Pedilea* Lindley Orch. Sel. 27. 1826.).

Malaxis has its greatest development in Asia and Oceania. Central America with adjacent South America is also quite rich in species. The Mexican members of the genus, while not great in numbers, offer many difficulties in their study.

- A. Inflorescence a subumbel.  
 B. Lip orbicular to (rarely) ovate. 1. *M. Parthonii*.
- BB. Lip not orbicular.  
 C. Lip 3-lobed.  
 D. Lip without basal auricles; lobes of the lip large.  
 E. Sinus between the lobes of the lip deep, lateral lobes acute; plant unifoliate. 9. *M. Javesiae*.
- EE. Sinus between the lobes of the lip shallow; lateral lobes not acute; plant bifoliate. 5. *M. Reichei*.
- DD. Lip with erect basal auricles; lobes of the lip not very large, sometimes inconspicuous.  
 F. Dorsal sepal more than 7 mm. long. 7. *M. Maxonii*.
- FF. Dorsal sepal less than 6 mm. long. 6. *M. excavata*.
- CC. Lip not 3-lobed or if lobulate at the apex then the lobules very inconspicuous and obtuse.  
 G. Lobules or auricles at the base of the lip uncinata. 8. *M. Rosei*.
- GG. Lobules or auricles at the base of the lip, when present, not uncinata.  
 —. Stems bifoliate. 2. *M. fastigiata*.
- . Stems unifoliate.  
 \*. Lip plane, not excavated nor with calluses. 4. *M. corymbosa*.
- \*\* . Lip not plane, excavated at the base and callused. 3. *M. aurea*.
- AA. Inflorescence spicate or racemose.  
 H. Apex of the lip retuse or notched.  
 I. Pedicel at least twice as long as the flowers; inflorescence racemose. 17. *M. unifolia*.
- II. Pedicels much less than twice as long as the flowers; inflorescence spicate.  
 J. Lip with apical half rounded; common species. 16. *M. Soulei*.
- JJ. Lip with apical half cuneate; rare species. 18. *M. streptopetala*.
- HH. Apex of the lip not retuse nor notched.  
 K. Stems bifoliate.  
 L. Lip hastate or triangular.  
 Z. Pedicels 3-4 or more times longer than the flowers. 2. *M. fastigiata*.
- ZZ. Pedicels short, not 3-4 or more times longer than the flowers.

- M. Sepals more than 5 mm. long; lip lepidote; flowers large for the genus.  
24. *M. lepidota*.
- MM. Sepals much less than 5 mm. long; lip not lepidote; flowers ordinary size for genus.  
10. *M. ocreata*.
- LL. Lip not hastate nor triangular.  
N. Lip trulliform, without a transverse ridge toward the apex; rare species.  
11. *M. Nelsonii*.
- NN. Lip ovate-lanceolate, with a transverse ridge toward the apex; common species.  
12. *M. myurus*.
- KK. Stems unifoliate.  
O. Lip 3-lobed or at least prominently constricted toward the apex.  
P. Dorsal sepals ovate; leaf usually not broadly cordate; apical lobe of the lip usually erect; common species.  
15. *M. carnosa*.
- PP. Dorsal sepal lanceolate; leaf broadly cordate; apical lobe of the lip probably not erect; rare species.  
14. *M. cordata*.
- OO. Lip not 3-lobed nor prominently constricted toward the apex.  
R. Lateral sepals connate nearly to their tips.  
S. Sepals acute.  
/. Sepals 4-7 mm. long; leaves cordate.  
13. *M. tenuis*.  
//. Sepals up to 3 mm. long; leaves not cordate.  
23. *M. Pringlei*.
- SS. Sepals obtuse.  
21. *M. majanthemifolia*.
- RR. Lateral sepals free nearly to their bases.  
T. Lip about twice as long as broad.  
U. Petals strongly arcuate, deflexed.  
22. *M. stricta*.
- UU. Petals not arcuate.  
V. Sepals 1.5-3 mm. long.  
19. *M. Ehrenbergii*.
- VV. Sepals 4-7 mm. long.  
13. *M. tenuis*.
- TT. Lip nearly as broad as long.  
W. Sepals 4-7 mm. long.  
13. *M. tenuis*.
- WW. Sepals less than 4 mm. long.  
X. Sepals 3-nerved.  
20. *M. tepicana*.

## XX. Sepals 1-nerved.

\*. Lip not prominently auriculate; flowers reddish.

17a. *M. Ehrenbergii*  
var. *platyglossa*.

\*\* . Lip auriculate; flowers greenish.

21. *M. majanthemifolia*.

1. MALAXIS PARTHONII Morren in Bull. Acad. Roy. Belge 5: 485, t. 1838; Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 3: 123. 1935.

*Microstylis histionantha* Link, Klotzsch & Otto, Ic. Pl. Rar. Hort. Berol. 1: 11, t. 5. 1841; Hooker in Bot. Mag. 70: t. 4103. 1844.

*Microstylis Parthonii* Reichenbach filius in Walp. Ann. 6: 206. 1861.

*Microstylis Brenesii* Schlechter in Fedde Repert. 19. 167. 1923.

Range: Mexico (Vera Cruz, San Luis Potosí, Guerrero, Colima and Oaxaca), Guatemala, Honduras, El Salvador, Costa Rica, Panama, Colombia, Venezuela, Brazil and Peru.

*Malaxis Parthonii* is easily distinguished from the other Mexican species of the genus by the large orbicular lip.

2. MALAXIS FASTIGIATA (Reichb. f.) O. Kuntze, Rev. Gen. Pl. 2: 673. 1891; Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 3: 116. 1935.

*Microstylis fastigiata* Reichenbach filius in Linnaea 22: 834. 1849.

*Microstylis ophioglossoides* Nuttall BETA *mexicana* Lindley Bot. Reg. 15: t. 1290. 1829, in part, except as to enlarged analysis.

*Malaxis maianthemifolia* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 18. 1845, not Schlechtendal & Chamisso.

*Dienia majanthemifolia* Reichenbach filius in Linnaea 19: 369. 1847.

*Microstylis brachyrrhynchos* Reichenbach filius in Flora 71: 152. 1838.

*Malaxis brachyrrhynchos* Ames in Proc. Biol. Soc. Wash. 35: 84. 1922; as *brachyrrhyncha*; Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 3: 113. 1935.

*Microstylis linguella* Reichenbach filius in Flora 71: 153. 1888.

*Malaxis linguella* Ames in Proc. Biol. Soc. Wash. 35: 84. 1922.

*Microstylis longisepala* Ridley in Journ. Linn. Soc. 24: 327. 1888.

*Malaxis longisepala* O. Kuntze, Rev. Gen. Pl. 2: 673. 1891.

*Ophrys ensifolia* Pavon ex Ridley in Journ. Linn. Soc. 24: 326. 1888, in synonym.

*Malaxis Lankesteri* Ames, Sched. Orch. 4: 7. 1923.

Range: Mexico (Nuevo Leon, Coahuila, Chihuahua, San Luis Potosí, Jalisco, Mexico, Distrito Federal, Morelos, Puebla, Michoacan and Oaxaca), Guatemala, Honduras and Costa Rica.

*Malaxis fastigiata* is an extremely variable species and it seems quite impossible to distinguish in satisfactory manner the several species which have been proposed.

See also *Malaxis brachystachya* Reichenbach filius among the obscure and excluded species at the end of the genus.

While the inflorescence of the species is usually subumbellate it may be racemose as in a few of the specimens examined.

3. MALAXIS AUREA Ames, Sched. Orch. 5: 3, fig. 1. 1923.

*Microstylis guatemalensis* Schlechter in Fedde Repert. 21: 334. 1925.

Range: Mexico (Jalisco and Oaxaca), Guatemala, Honduras and Costa Rica.

4. MALAXIS CORYMBOSA (S. Wats.) O. Kuntze, Rev. Gen. Pl. 2: 673. 1891.

*Microstylis corymbosa* S. Watson in Proc. Am. Acad. 18: 195. 1882-1883.

Range: Arizona and New Mexico (U.S.A.), Mexico (Tamaulipas, Nuevo Leon, Chihuahua, Hidalgo, Puebla, Mexico, Oaxaca and Baja California), Guatemala and Honduras.

5. MALAXIS REICHEI (Schltr.) Ames & Schweinfurth in Bot. Mus. Leaflet. Harv. Univ. 3: 124. 1935.

13. MALAXIS TENUIS (S. Wats.) Ames in Proc. Biol. Soc. Wash. 35: 85. 1922.

*Microstylis tenuis* S. Watson in Proc. Am. Acad. 24: 152. 1896.

Range: Mexico (Chihuahua, Hidalgo and Mexico).

14. MALAXIS CORDATA (Lindley) O. Kuntze, Rev. Gen. Pl. 2: 673. 1891.

*Dienia cordata* Lindley in Bot. Reg. 24: Misc. p. 73. 1838.

*Microstylis cordata* Reichenbach filius in Walp. Ann. 6: 207. 1861.

Range: Mexico (State unknown).

*Malaxis cordata* is closely allied to *M. myurus* (Lindl.) O. Kuntze from which it differs chiefly in having a single cordate leaf.

15. MALAXIS CARNOSA (HBK.) C. Schweinfurth in Bot. Mus. Leaf. Harv. Univ. 10: 32. 1941.

*Stelis carnosa* Humboldt, Bonpland & Kunth, Nov. Gen. & Sp. Pl. 1: 362. 1816.

*Malaxis calycina* (Lindl.) O. Kuntze, Rev. Gen. Pl. 2: 673. 1891; Ames & Schweinfurth in Bot. Mus. Leaf. Harv. Univ. 3: 114. 1935.

*Dienia calycina* Lindley, Gen. & Sp. Orch. Pl. 23. 1830.

*Ophrys monophyllos* Pavon ex Lindley, Gen. & Sp. Orch. Pl. 23. 1830, in synonym.

*Microstylis gracilis* Ridley in Journ. Linn. Soc. 24: 32. 1888.

*Microstylis calycina* Ridley in Journ. Linn. Soc. 24: 331. 1888.

*Serapias parasitica* Pavon ex Ridley in Journ. Linn. Soc. 24: 331. 1888, synonym.

*Microstylis monticola* Schlechter in Fedde Repert. 3: 17. 1906.

*Microstylis microtoides* Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2: 381. 1918.

*Malaxis monticola* Ames in Proc. Biol. Soc. Wash. 35: 84. 1922.

Range: Mexico (Vera Cruz, Distrito Federal, Morelos,

Jalisco, Michoacan, Oaxaca and Chiapas), Guatemala, Costa Rica and Peru.

*Malaxis calycina* may be distinguished by the broad sepals and the details of the lip. It is not uncommon in Central Mexico.

16. *MALAXIS SOULEI* L. O. Williams in Ann. Mo. Bot. Gard. 21: 343. 1934.

*Microstylis montana* Rothrock in Wheeler Rept. U. S. Geol. Surv. W. 100th Merid. 6: 264. 1878.

*Malaxis montana* O. Kuntze, Rev. Gen. Pl. 2: 673. 1891, non Blume.

*Malaxis densiflora* Richard & Galeotti ex Ridley in Journ. Linn. Soc. 24: 331. 1888, in synonym.

*Achroanthes montana* Greene, Pittonia 2: 183. 1891.

*Microstylis macrostachya* "(Llave & Lex.) Lindl." ex Lindley in Bentham Pl. Hartw. 52. 1845, hardly *Ophris macrostachya* La Llave & Lexarza.

*Malaxis macrostachya* "(Llave & Lex.) O. Kuntze" ex Ames & Schweinfurth in Bot. Mus. Leaflet. Harv. Univ. 3: 120. 1935, hardly *Malaxis macrostachya* (Llave & Lex.) O. Kuntze.

Range: New Mexico and Arizona (U.S.A.), Mexico (Lower California, Nuevo Leon, Chihuahua, Coahuila, Durango, San Luis Potosí, Vera Cruz, Hidalgo, Jalisco, Distrito Federal, Mexico, Guerrero and Oaxaca), Guatemala, Costa Rica and Panama.

The name *Malaxis macrostachya* (Llave & Lex.) O. Kuntze is dubious as to application at best. The La Llave and Lexarza description is not adequate to determine the species with certainty. Lindley probably never saw the type and his determination of Hartweg's number 395 (in Bentham, Pl. Hartw. 52. 1845) is not infallible. Ames and Schweinfurth have taken up the name, as indicated above, apparently accepting it on the basis of Lindley's determination of the Hartweg plant, concerning which they say "we have a photograph with floral analysis (apparently made by Finet)." The plant in the photograph mentioned by Ames & Schweinfurth shows two leaves, a condition not met with in any other specimens in all of the collections at my disposal. The floral analysis mentioned seems, however, to be that of *Malaxis Soulei* L. Wms. but Ames has

made a copy of the drawing that Lindley made of the Hartweg specimen and it shows a floral condition more like that of *Malaxis myurus* (Lindl.) O. Kuntze than of *M. Soulei*.

17. *MALAXIS UNIFOLIA* Michaux, Fl. Bor.-Am. 2: 157. 1803; Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 3: 125. 1935.

*Malaxis ophioglossoides* Muhlenberg ex Willdenow, Sp. Pl. ed. 4, 4: 90. 1805.

*Achroanthes ophioglossoides* Rafinesque in Med. Repos. N. Y. Hex. 2, 5: 352. 1808.

*Microstylis ophioglossoides* "Nuttall" ex Eaton Man. Bot. No. & Mid. States, ed. 3: 353. 1822.

*Microstylis ophioglossoides* var. *mexicana* Lindley in Bot. Reg. 15: t. 1290. 1829, pro parte.

*Malaxis thaspiformis* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 18. 1845.

*Microstylis unifolia* Britton, Sterns & Poggenberg, Prelim. Cat. Anthoph. & Pteridoph. N. Y. 51. 1881.

*Microstylis Grisebachiana* Fawcett & Rendle in Journ. Bot. 47: 7. 1909.

*Malaxis Grisebachiana* Fawcett & Rendle Fl. Jam. 1. 43, t. 6, figs. 18-23. 1910.

Range: Newfoundland to Manitoba (Canada), south to Kentucky, Georgia and Illinois (U.S.A.), Mexico (Baja California, Durango, Jalisco, Puebla, Mexico, Morelos, Michoacan, Guerrero and Oaxaca), Guatemala, Honduras and the West Indies.

*Malaxis unifolia* is a widespread and variable species but one which is easily distinguished in the broad sense.

18. *MALAXIS STREPTOPETALA* (Rob. & Greenm.) Ames in Proc. Biol. Soc. Wash. 35: 84. 1922.

*Microstylis streptopetala* Robinson & Greenman in Proc. Am. Acad. 32: 36. 1896; Greenman in Proc. Am. Acad. 32: 297. 1897.

Range: Mexico (Distrito Federal and Oaxaca).

A peculiar condition exists in this species. It is known to occur only in two very small areas, one in the Distrito Federal where a uniformly large flowered form is found. The



second locality is on Cerro San Felipe in Oaxaca where the typical small flowered form is found.

19. MALAXIS EHRENBERGII (Reichb. f.) O. Kuntze, Rev. Gen. Pl. 2: 673. 1891; Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 3: 115. 1935.

*Microstylis Ehrenbergii* Reichenbach filius in Linnaea 22: 835. 1849; Ridley in Journ. Linn. Soc. 24: 320. 1888, sub *Microstylis porphyrea*.

*Microstylis purpurea* S. Watson in Proc. Am. Acad. 18: 195. 1883, non Lindley.

*Microstylis arachnifera* Ridley in Journ. Linn. Soc. 24: 320. 1888.

*Microstylis porphyrea* Ridley in Journ. Linn. Soc. 24: 320. 1888.

*Achroanthes purpurea* Greene, Pittonia 2: 184. 1891.

*Malaxis arachnifera* O. Kuntze, Rev. Gen. Pl. 2: 673. 1891.

*Malaxis porphyrea* O. Kuntze, Rev. Gen. Pl. 2: 673. 1891.

*Microstylis minutiflora* Schlechter in Bull. Herb. Boiss. 7: 540. 1899.

*Achroanthes porphyrea* Wootton & Standley in Contr. U. S. Nat. Herb. 16: 116. 1913.

*Malaxis purpurea* "O. Kuntze" ex Ames Enum. Orch. U. S. & Canada 78. 1924; Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 3: 116. 1935, non *Malaxis purpurea* (Lindl.) O. Kuntze, 1891.

Range: Arizona and New Mexico (U.S.A.), Mexico (Tamaulipas, Coahuila, Chihuahua, Durango, Mexico, Distrito Federal, Guerrero and Chiapas) and Guatemala.

*Malaxis Ehrenbergii* is a very small flowered but handsome species.

19a. MALAXIS EHRENBERGII (Reichb. f.) O. Kuntze var. PLATYGLOSSA (Rob. & Greenm.) L. O. Williams in Ceiba 1: 187. 1950.

*Microstylis platyglossa* Robinson & Greenman in Proc. Am. Acad. 32: 35. 1895.

*Malaxis platyglossa* Ames in Proc. Biol. Soc. Wash. 35: 84. 1922.

Range: Mexico.

The description is inadequate for certain determination. Type apparently not in existence. See discussion under *Malaxis Soulei* L. O. Williams.

MALAXIS MONTICOLA Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 18. 1845.

Range: Mexico.

Unrecognized. The description is inadequate and the type specimen is not at Paris and has not been located elsewhere.

MALAXIS UMBELLIFLORA Swartz, Prodr. 119. 1788; Fawcett & Rendle Fl. Jam. 1: 42. 1910; Schlechter in Beihefte Bot. Centralb. 36, Abt. 2: 440. 1918.

*Malaxis umbellulata* Swartz in Fl. Ind. Occ. 1444. 1806.  
*Microstylis umbellulata* Lindley, Gen. & Sp. Orch. Pl. 19. 1830.

*Microstylis umbelliflora* Hitchcock in Rep. Mo. Bot. Gard. 4: 132. 1893.

Reported from Mexico by Fawcett & Rendle and by Schlechter but we have seen no specimens from Mexico. It is possible that a specimen of the closely allied *Malaxis fastigiata* (Reichb. f.) O. Kuntze has been confused with *Malaxis umbelliflora*.

23. LIPARIS L. C. Richard in Mem. Mus. Par. 4: 43, 52. 1818; Ridley in Journ. Linn. Soc. 22: 244. 1886.

Small or medium sized terrestrial herbs with leafy stems often with the base thickened into a bulb. Sepals free, usually narrow, spreading. Petals similar to the sepals except usually shorter and narrower. Lip entire or 3-lobed, affixed to the base of the column or rarely somewhat adnate to it. Column usually elongated, arcuate, footless. Anther terminal, operculate; incumbent; pollinia 4, ceraceous. (*Sturmia* Reichenbach filius in Moessler Handb. ed. 2, 2: 1576. 1828; Consp. 69. 1828.)

Liparis is closely allied to *Malaxis* from which it is distinguished mainly by the incumbent (not erect) anther and by the long (not short) column. The study of the species is difficult.

Leaves cordate.

Lamina of the lip with lateral projection near the middle.

1. *L. fantastica*.

Lamina of the lip without lateral projections near the middle.

1a. *L. fantastica*  
var. *cordiformis*.

Leaves not cordate.

Leaves one or rarely two.

Leaf one.

3. *L. vexillifera*.

Leaves two.

3a. *L. vexillifera*  
var. *arnoglossophylla*.

Leaves three or more.

2. *L. elata*.

1. *LIPARIS FANTASTICA* Ames & Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 2: 97, t. 1934.

Range: Mexico (Chiapas) and Guatemala.

1a. *LIPARIS FANTASTICA* var. *CORDIFORMIS* (C. Schweinf.) L. O. Williams in Ceiba 1: 127. 1950.

*Liparis cordiformis* C. Schweinfurth in Bot. Mus. Leafl. Harv. Univ. 4: 110. 1937.

Range: Mexico (Michoacan), Guatemala and Honduras.

2. *LIPARIS ELATA* Lindley Bot. Reg. 14: t. 1175. 1828; Ridley in Journ. Linn. Soc. 22: 259. 1886.

*Liparis alata* Scheidweiler in Otto & Dietr. Allg. Gartenzeit. 10: 293. 1842.

Range: Florida (U.S.A.), Mexico (Vera Cruz, Guerrero and Chiapas), Guatemala, Honduras, Costa Rica, Panama, the West Indies, Venezuela, Brazil and Ecuador.

*Liparis elata* is a widely distributed species although apparently not common in Mexico.

Although we have seen no authentic material of *Liparis alata* Scheidw. the description indicates that it possibly belongs here as a synonym.

3. *LIPARIS VEXILLIFERA* (Llave & Lex.) Cogniaux in Mart. Fl. Bras. 3, pars 4: 289. 1895.

*Cymbidium vexilliferum* Llave & Lexarza, Nov. Veg. Descr. 2: 11. 1825.

*Malaxis elliptica* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 18. 1845.

*Malaxis Lindeniana* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 18. 1845.

*Malaxis Galeottiana* A. Richard in Ann. Sci. Nat. ser. 3, 3: 18. 1845.

*Liparis Galeottiana* Hemsley in Gard. Chron. N. S. 11: 559. 1879.

*Liparis Lindeniana* Hemsley in Gard. Chron. N. S. 11: 559. 1879.

*Liparis vexillifera* (Llave & Lex.) Cogn. var. *Galeottiana* Ames & Correll in Bot. Mus. Leafl. Harv. Univ. 10: 79. 1942.

Range: Mexico (Durango, Sinaloa, Vera Cruz, Hidalgo, Jalisco, Mexico, Morelos, Michoacan, Guerrero and Oaxaca), Guatemala, Honduras, Costa Rica, the West Indies, Venezuela, Colombia, British Guiana, Bolivia and Argentina.

*Liparis vexillifera* is an extremely variable species but one which it seems difficult to segregate because of the apparent intergrades. If the species as here treated is separated into a species and a variety *Liparis Lindeniana* should be considered the variety.

There seems to be no doubt about the La Llave and Lexarza description hence it is accepted.

3a. *LIPARIS VEXILLIFERA* var. *ARNOGLOSSOPHYLLA* (Reichb. f.) R. E. Schultes in Bot. Mus. Leafl. Harv. Univ. 7: 123. 1939.

*Sturmia arnoglossophylla* Reichenbach filius in Bonplandia 4: 217. 1856.

*Liparis arnoglossophylla* "Rchb. f." ex Hemsley in Godman & Salvin, Biol. Centr.-Am. Bot. 3: 212. 1883.

Range: Mexico (Oaxaca) and Guatemala.

A bifoliate, large flowered variation of *Liparis vexillifera* (Llave & Lex.) Cogn.

## OBSURE OR UNRECOGNIZED SPECIES

LIPARIS ANDROCHILUS Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2: 441. 1918.

*Androchilus campestris* Liebmann in Bot. Not. 101. 1844, non *Liparis campestris* Rodríguez.

The species is not known to me.

24. HEXISEA Lindley in Hooker Journ. Bot. 1: 7. 1834; Reichenbach filius in Walp. Ann. 6: 469. 1862; Bentham and Hooker, Gen. Pl. 3: 524. 1883, as *Hexisia*.

Epiphytic herbs with simple or branched stems of superimposed pseudobulbs. Leaves few, subopposite. Inflorescence a terminal, short, few-flowered raceme, peduncle covered with imbricated, coriaceous bracts. Sepals subequal, erect or spreading, free or the laterals adnate to the base of the lip. Petals similar to the sepals. Lip erect or spreading, simple or with obscure lateral lobes, adnate with the column, gibbous toward the base. Column short, joined above the middle with the lip. Clinandrium 3-lobed. Anther incumbent, operculate, 4-loculate; pollinia 4, collateral, not compressed. (*Euothonaea* Reichenbach filius in Bot. Zeit. 10: 772. 1852.)

A small genus occurring mainly in Central America and northern South America.

I. HEXISEA BIDENTATA Lindley in Hooker Journ. Bot. 1: 8. 1834; Reichenbach filius in Walp. Ann. 6: 470. 1862.

*Diothonaea imbricata* Lindley, Sert. Orch. t. 40, no. 1. 1841.

*Epidendrum oppositifolium* Richard & Galeotti in Ann. Sci. Nat. ser. 3, 3: 21. 1845.

*Euothonaea imbricata* Reichenbach filius in Bot. Zeit. 10: 772. 1852.

*Euothonaea oppositifolia* Reichenbach filius in Bot. Zeit. 10: 772. 1852.

*Hexisea imbricata* Reichenbach filius in Walp. Ann. 6: 470. 1862.

*Hexisea oppositifolia* Reichenbach filius in Walp. Ann. 6: 470. 1862.

Range: Mexico (Colima, Guerrero, Michoacan and Oaxaca), Honduras, Costa Rica, Panama, Colombia and British Guiana.

Although *Hexisea bidentata*, *H. oppositifolia* and *H. imbricata* have always been considered to be distinct species there seems to be no reason for so considering them. Florally there seems to be no difference greater than one might expect within a single species, or a single collection for that matter. Vegetatively there are some differences to be observed but these do not seem to be of specific importance as they are mainly in size.

25. ALAMANIA Llave & Lexarza Nov. Veg. Descr., Orch. Opusc. 31. 1825; Bentham in Bentham & Hooker, Gen. Pl. 2: 526. 1833.

Small repent epiphytic herbs. Pseudobulbous stems short, inconspicuous, 1-3-foliolate. Inflorescence terminal (!), from an aphyllous pseudobulb; raceme short, densely flowered. Sepals subequal, narrow, spreading or erect. Petals similar to the sepals. Lip adnate to the column, erect; lamina similar to the sepals. Column forming a tube with the claw of the lip from about its middle, free above, wingless; anther terminal, operculate, incumbent, cells with longitudinal septae; pollinia 4, broadly ovate, compressed, inappendiculate or joined by a few granules.

A monotypic genus which is closely allied to *Hexisea* Lindl.

1. ALAMANIA PUNICEA Llave & Lexarza, Nov. Veg. Descr., Orch. Opusc. 31. 1825.

*Epidendrum puniceum* Reichenbach filius in Walp. Ann. 6: 323. 1862.

Range: Mexico (Vera Cruz, Puebla, Mexico, Michoacan and Oaxaca).

Adequate material of this rare genus is now at hand.

This is the only one of the numerous species of orchids described by Llave and Lexarza of which we know an authentic specimen to exist. In the Delessert Herbarium in Geneva is a specimen collected by Lexarza. This specimen was apparently sent by Lexarza to Alaman who gave it to A. P. De Candolle.

26. NAGELIELLA L. O. Williams in Bot. Mus. Leafl. Harv. Univ. 8: 144. 1940.

Epiphytic herbs from a repent rhizome. Pseudobulbs up to 6 cm. long, unifoliate, slender. Leaves fleshy, sessile, oblong-lanceolate to linear. Inflorescence terminal; scape elongated (rarely short) with a terminal few-many-flowered dense raceme. Sepals subequal, erect, connivent, the dorsal free, the laterals adnate to the column-foot and forming a short mentum. Petals similar to the sepals but narrower. Lip ventricose or saccate at the base, adnate up to the middle of the column, lamina abruptly recurved, spreading, ovate, entire, with a transverse callus at the base. Column narrowly winged above the junction with the lip, wings forming auricles near the apex of the column; anther operculate, incumbent; pollinia 4, ceraceous, in one series, ovate, equal, laterally compressed. (*Hartwegia* Lindley Bot. Reg. 23: sub. t. 1970. 1837, non Nees 1831).

1. NAGELIELLA PURPUREA (Lindl.) L. O. Williams in Bot. Mus. Leafl. Harv. Univ. 8: 144. 1940.

*Hartwegia purpurea* Lindley Bot. Reg. 23: sub. t. 1970. 1837; Reichenbach filius in Saunders, Ref. Bot. 2: t. 94. 1869.

*Hartwegia comosa* Lindley ex Pfitzer in Engler & Prantl, Nat. Pflanzenf. 2, Abt. 6: 143. 1889, nomen, non Nees.

Range: Mexico (Vera Cruz, Oaxaca and Chiapas), Guatemala and Honduras.

*Nageliella purpurea* has been in cultivation occasionally.

27. EPIDENDRUM Linnaeus, Sp. Pl. ed. 2: 1347. 1763; Ames, Hubbard & Schweinfurth, Genus Epidendrum in U. S. & Mid. Am. 6. 1936; non Linnaeus Sp. Pl. 957. 1753. Conserved name, type *E. nocturnum* Jacq.

Small to large epiphytic or semi-terrestrial herbs or shrubs with or without the stems swollen into pseudobulbs. Sepals free (rarely adnate to the column) and subequal, spreading or reflexed or rarely suberect and subconnivent. Petals similar to the sepals, often much narrower, rarely broader. Lip simple to 3-lobed or 3-partite, the divisions sometimes redivided; claw parallel to the column and free from or adnate