



SCHEDULAE ORCHIDIANAE

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         III: 18  
 fundi *Ames*, IX: 50  
 glandulosum *Ames*,  
     VII: 5; IX: 51

*globosum Jacq.*, IX: 46  
*gravidum Lindl.*, IV: 1, 42  
*guanacastense A. & S.*, X: 64  
*Hoffmannii Schltr.*, III: 14  
*icthyphyllum Ames*, II: 28  
*imatophyllum Lindl.*,  
     IV: 43; VIII: 44  
*imbricatum Lindl.*,  
     IV: 50; X: 67, 68  
*integrilabium A. & S.*,  
     VIII: 46  
*intermixtum A. & S.*, X: 65  
*ionophlebium Reichb.f.*,  
     III: 14; VI: 77  
*isomerum Schltr.*, X: 65  
*jamaicense Lindl.*, VIII: 45  
*Karwinskii Reichb.f.*, V: 24  
*Kienastii Reichb.f.*, V: 29  
*lacertinum Lindl.*, II: 31  
*lacustre Lindl.*, VII: 7  
*lamprocaulon Reichb.f.*,  
     III: 19  
*lancilabium Schltr.*, VIII: 49  
*Lankesteri Ames*,  
     IV: 45; VIII: 41, 42  
*laterale Rolfe*, III: 19  
*laterale Rolfe*, III: 20; V: 29  
*Laucheanum Rolfe*, IV: 39  
*ledifolium A. Rich. & Gal.*,  
     III: 19; V: 26  
*leucochilum Lindl.*, non  
     *Klotzsch*, VII: 7  
*linifolium Ames*, VII: 7  
*linifolium Ames*, X: 69  
*lockhartioides Schltr.*,  
     VIII: 46  
*lorifolium Schltr.*,  
     IV: 43, 44, 45  
*luteoroseum A. Rich. & Gal.*,  
     III: 1, 15

- macrobotryum* Lindl. ex  
*Reichb.f.*, III: 14  
*magnibracteatum* Ames, I: 16  
*magnibracteatum* Ames, non  
 Kränzl., II: 33  
*microcardium* Schltr., X: 71  
*microdendron* Reichb.f.,  
 X: 70, 71  
*mirabile* A. & S., X: 67  
*miserrimum* Reichb.f., IX: 51  
*modestiflorum* Schltr., X: 68  
*muscicola* Schltr.,  
 VII: 8; X: 69  
*myodes* Reichb.f., X: 75  
*nervosiflorum* A. & S.,  
 VIII: 47  
*neurosum* Ames, I: 17  
*nonchinense* Reichb.f., VII: 4  
*nutans* Sw., X: 75  
*nutantirhachis* A. & S., X: 69  
*obesum* Ames, II: 31  
*ochranthum* A. Rich., V: 28  
*Otonis* Reichb.f., II: 32  
*Ovulum* Lindl., III: 16, 17, 18  
*pachycarpum* Schltr., III: 14  
*pachyrachis* Ames, II: 32  
*palmense* Ames, II: 33; VII: 5  
*palpigerum* Reichb.f.,  
 IV: 43, 44, 45  
*pansamalae* Schltr., IV: 38  
*paranthicum* Reichb.f., VII: 8  
*patens* Sw., II: 27  
*pentotis* Reichb.f., III: 18  
*peraltense* Ames, IV: 46  
*phyllocharis* Reichb.f., IV: 40  
*piestocaulos* Schltr., VIII: 51  
*Pittieri* Ames, I: 18  
*platystigma* Reichb.f., X: 70  
*poaeforme* Schltr., IX: 51, 52  
*Porpax* Reichb.f.,  
 IV: 48; VIII: 43  
*Porpax* Reichb.f., IV: 51  
*porphyreum* Lindl., V: 31  
*Powellii* Schltr., X: 59  
*propinquum* A. Rich. & Gal.,  
 III: 19; V: 26  
*prorepens* Ames, II: 33  
*prostratum* Schltr., non Cogn.,  
 X: 61  
*prostratum* (Lindl.) Cogn.,  
 X: 61  
*pruinoseum* A. Rich. & Gal.,  
 I: 19  
*pudicum* Ames,  
 VI: 71; VII: 11  
*quadratum* Lindl., VIII: 45  
*radiatum* Lindl.,  
 III: 14; VI: 77  
*radicans* Lindl., VIII: 44  
*Radlkoferianum* Schltr., III: 21  
*ramonense* Reichb.f.,  
 IV: 47; V: 28  
*ramosissimum* A. & S.,  
 VIII: 48; X: 65  
*ramosum* Jacq.,  
 III: 20; IV: 49; X: 58  
*reflexum* A. & S., VIII: 49  
*rigidum* Jacq., X: 58  
*Rousseauae* Schltr.,  
 III: 19, 20; V: 29, 30  
*rugosum* Ames,  
 VI: 74; IX: 50; X: 71, 72  
*Sanchoi* Ames,  
 IV: 48; IX: 50; X: 70  
 var. *exasperatum* A. & S.,  
 X: 72

*santaclarensis* Ames,  
 IV: 49; VII: 3  
*scabrum* Ruiz & Pav., I: 19  
*Schlechterianum* Ames,  
 VIII: 9  
*seriatum* Lindl., III: 15  
*serricardium* Schltr., VIII: 48  
*simulacrum* Ames,  
 VI: 75; VII: 11  
*singuliflorum* Schltr.,  
 IV: 41; IX: 50  
*sisyrinchiiifolium* A. Rich. &  
 Gal., III: 16, 17, 18  
*soratae* Reichb.f., I: 20, 21  
*squalidum* Lindl., non  
 La Llave & Lex., V: 24  
*Stamfordianum* Batem.,  
 III: 20  
*Standleyi* Ames, IX: 52  
*Steinbachii* Ames, I: 20  
*Storkii* Ames, VII: 10  
*strobiliferum* Reichb.f., X: 64  
*suaveolens* Ames, I: 21  
*subnutans* A. & S., X: 73  
*suborbiculare* Schltr., VIII: 45  
*tampense* Lindl., I: 14  
*teretifolium* Sw.,  
 V: 28; IX: 52, 53  
*tetraceros* Reichb.f., V: 26  
*torquatum* Lindl., I: 22  
*trachycarpum* Lindl., IV: 1, 50  
*trachythece* Schltr.,  
 VI: 75; X: 71  
*triangulabium* A. & S., X: 75  
*turalvae* Reichb.f., VIII: 51  
*Ulei* Schltr., X: 61  
*vagans* Ames, VI: 76  
*variegatum* Hook., X: 76

*venosum* Lindl., I: 15, 16  
*vestitum* Ames,  
 IV: 48, 51; VII: 6  
*viejii* Reichb.f., V: 26  
*virens* Lindl., V: 28, 29  
*virgatum* Lindl., II: 29, 30  
*vitellinum* Lindl., II: 30  
*volutum* Lindl., III: 21  
*Wagneri* Klotzsch, V: 28  
*Wercklei* Schltr., X: 56

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*Elmeri* Ames, VI: 12  
*erosa* A. & S., X: 9  
*Ramosii* Ames, VI: 14

#### ERIA Lindl.

*dagamensis* Ames, V: 32  
*philippinensis* Ames, V: 32  
*Taylori* Ames, V: 31  
*vagans* Ames, V: 32

#### ERYTHRODES Bl.

*Boettcheri* Ames, VI: 8  
*Weberi* Ames, VI: 9  
*Wenzelii* Ames, VI: 9

#### EULOPHIA R.Br.

*graminea* Lindl., X: 79  
*ramosa* Hayata, X: 79, 80  
*sinensis* Miq., X: 79, 80

#### EURYSTYLES Wawra

*actinosophila* (Rodr.) Schltr.,  
 IX: 10  
*auriculata* Schltr., IX: 10  
*Standleyi* Ames, IX: 9

#### FRACTIUNGUIS Schltr.,

IX: 48  
*cuniculatus* Schltr., IX: 48

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*altissima* Reichb.f., VI: 6

- Ledgeri *F. v. Muell.*, VI: 6  
 philippinensis *Ames*, VI: 5
- GOMPHICHIS** *Lindl.*  
 foliosa *Ames*, I: 1  
 valida *Reichb.f.*, I: 2
- GOODYERA** *R. Br.*  
 Ramosii *Ames*, VI: 14
- GOVENIA** *Lindl.*  
 ciliilabia *A. & S.*, X: 80
- GYROSTACHYS** *Pers.*  
 aguacatensis *Ktze.*, II: 7  
 hemichrea *Ktze.*, II: 10  
 pyramidalis *Ktze.*, II: 15
- HABENARIA** *Willd.*  
 alata *Hook.*, VI: 1; X: 2  
 avicula *Schltr.*, II: 4; X: 2  
 aviculoides *A. & S.*, X: 1  
 caldensis *Kränzl.*, VIII: 1  
 intrudens *Ames*, VI: 1  
 lacertifera *Ames*, non *Benth.*,  
 VI: 1  
 lacertifera (*Lindl.*) *Benth.*,  
 VI: 3, 5  
 Lankesteri *Ames*, IV: 2  
 paludosa *Rodr.*, VIII: 1  
 patentiloba *Ames*, II: 4  
 repens *Nutt.*, IV: 3
- HETAERIA** *Bl.*  
 leytensis *Ames*, VI: 14  
 micrantha *Bl.*, VI: 15
- HEXISEA** *Lindl.*  
 cuniculata (*Schltr.*) *Ames*,  
 IX: 48  
 Lankesteri *Ames*, IX: 47  
 oppositifolia *Reichb.f.*,  
 VIII: 40
- sigmoidea *A. & S.*, VIII: 39
- ISOTRIA** *Raf.*  
 verticillata (*Willd.*) *Raf.*  
 VI: 5
- JACQUINIELLA** *Schltr.*  
 globosa (*Jacq.*) *Schltr.*, IX: 46
- LAELIOPSIS** *Lindl.*  
 chinensis *Lindl.* ex *Reichb.f.*,  
 VII: 4
- LANKESTERELLA** *Ames*,  
 IV: 3  
 costaricensis *Ames*, IV: 4
- LEPANTHES** *Sw.*  
 abnormis *Schltr.*, X: 42  
 acoridilabia *A. & S.*, X: 38  
 Acostaei *Schltr.*, X: 39  
 acuminata *Schltr.*, III: 10  
 appendiculata *Ames*, III: 9  
 barbae *Schltr.*, X: 48  
 blepharistes *Reichb.f.*, X: 40  
 cascajalensis *Ames*, IV: 27  
 Chameleon *Ames*,  
 IV: 28; V: 23; X: 45  
 confusa *A. & S.*, X: 40  
 decipiens *A. & S.*, X: 41  
 Dussii *Urb.*, X: 43  
 eciliata *Schltr.*, IV: 28, 31  
 Ekmanii *Schltr.*, VIII: 38  
 estrellensis *Ames*,  
 IV: 30; IX: 44  
 exasperata *A. & S.*, VIII: 36  
 eximia *Ames*, V: 21; X: 42  
 fimbriata *Ames*,  
 III: 11; IV: 32  
 fractiflexa *A. & S.*, X: 1, 42  
 gibberosa *Ames*, III: 12  
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- guanacastensis *A. & S.*, X: 45  
 guatemalensis *Schltr.*, III: 13  
 horrida *Reichb.f.*,  
     IV: 29, 30; V: 23; IX: 43  
 inaequalis *Schltr.*, IV: 34  
 inaequiloba *A. & S.*, X: 46  
 Jimenezii *Schltr.*, X: 50  
 Johnsonii *Ames*, II: 24; X: 46  
 latisepala *A. & S.*, X: 48  
 Lindleyana *Reichb.f.*, X: 42  
 Loddigesiana *Reichb.f.*, X: 43  
 micrantha *Ames*,  
     IV: 31; VIII: 37  
 minutilabia *A. & S.*, X: 49  
 mirabilis *Ames*, I: 12  
 oreocharis *Schltr.*, X: 39  
 ovata *A. & S.*, VIII: 37  
 pristidis *Reichb.f.*, IV: 32  
 rostrata *Ames*, V: 22  
 rostrata *Ames*, IX: 43  
 samacensis *Ames*,  
     II: 25; III: 10  
 Sanchoi *Ames*, IV: 34  
 Standleyi *Ames*, IX: 44  
 subdimidiata *A. & S.*,  
     VIII: 38  
 tipulifera *Reichb.f.*, V: 22  
 Tonzuziana *Schltr.*, IX: 45  
 tridens *Ames*, IV: 32  
 Tuereckheimii *Schltr.*, II: 25  
 turialvae *Reichb.f.*,  
     II: 26; III: 12; VIII: 39;  
     IX: 45; X: 48  
 Wrecklei *Schltr.*, X: 49
- LIMODORUM** *L.*, X: 79  
 campanulatum (*La Llave &*  
*Lex.*) *A. & S.*, X: 79  
 diurnum *Jacq.*, V: 28, 29
- Lankesteri *A. & S.*, X: 78
- LIPARIS** *L.C.Rich.*  
 bontocensis *Ames*, VI: 38  
 latifolia *Lindl.*, VI: 39  
 palawanensis *Ames*, VI: 39  
 trichoglottis (*Ames*) *Schltr.*,  
     VI: 39
- LOCKHARTIA** *Hook.*  
 integra *A. & S.*, X: 108  
 Lankesteri *Ames*, V: 36  
 micrantha *Reichb.f.*,  
     V: 37; X: 109  
 parthenoglossa *Reichb.f.*,  
     VIII: 82  
 Pittieri *Schltr.*, VIII: 82  
 triangulabia *A. & S.*, VIII: 80  
 variabilis *A. & S.*, VIII: 81
- MALAXIS** *Sw.*  
 atosanguinea *Ames*, VI: 30  
 aurea *Ames*, V: 3  
 boliviana (*Schltr.*) *Ames*,  
     IX: 18  
 brachyrrhyncha (*Reichb.f.*)  
     *Ames*, IV: 8  
 bulusanensis *Ames*, VI: 33  
 dentata *Ames*, VI: 35  
 epiphytica *Ames*, VI: 34  
 hastilabia (*Reichb.f.*) *Ktze.*,  
     VI: 37; X: 16  
 Javesiae (*Reichb.f.*) *Ames*,  
     IV: 8  
 lagotis (*Reichb.f.*) *Ktze.*,  
     IV: 8  
 Lankesteri *Ames*, IV: 7  
 lilacina *Ames*, VI: 35  
 linguella (*Reichb.f.*) *Ames*,  
     V: 5  
 Maxonii *Ames*, VI: 36; X: 16

- McGregorii *Ames*, VI: 35  
 micrantha (*Hook.f.*) *Ames*,  
 VI: 35  
 negrosiana *Ames*, VI: 36  
 Taylorii *Ames*, VI: 34  
 Tonduzii (*Schltr.*) *Ames*, V: 3  
 uncinata *A. & S.*, X: 15  
 Wenzelii *Ames*, VI: 32
- MASDEVALLIA** *Ruiz & Pav.*  
*aperta* Kränzl., VII: 17, 18  
*exigua* *A. & S.*, X: 17  
*fimbriata* *A. & S.*, X: 18  
*guatemalensis* *Schltr.*, V: 8  
*linearifolia* *Ames*, V: 7; X: 19  
*Livingstoneana* *Roese* &  
*Reichb.f.*, IV: 10, 11; V: 9  
*Livingstoneana* *Schltr.*, IV: 9  
*panamensis* (*Schltr.*) *Ames*,  
 IV: 9; V: 9, 11  
*picturata* *Reichb.f.*, X: 19  
*pusilla* *A. & S.*, VIII: 10  
*pygmaea* Kränzl., X: 18  
*simula* *Reichb.f.*, V: 8; X: 18  
*triaristella* *Reichb.f.*, X: 19  
*Veitchiana* *Reichb.f.*, II: 25
- MAXILLARIA** *Ruiz & Pav.*  
*alba* *Lindl.*, VIII: 66; X: 85  
*albiflora* *A. & S.*, VIII: 56  
*Alfaroi* *A. & S.*, X: 83  
*anceps* *A. & S.*, X: 84  
*angustisegmenta* *A. & S.*,  
 X: 86  
*arachnitiflora* *A. & S.*, X: 87  
*attenuata* *A. & S.*, X: 89  
*brachybulbon* *Schltr.*, X: 90  
*Brenesii* *Schltr.*, X: 87  
 var. *longiloba* *A. & S.*, X: 90  
*brevipedunculata* *A. & S.*,  
 X: 91  
*chartacifolia* *A. & S.*, X: 92  
*chiriquensis* *Schltr.*, VIII: 59  
*confusa* *A. & S.*,  
 VIII: 57; X: 90  
*crassifolia* *Reichb.f.*, X: 93  
*curtipes* *Hook.f.*, VIII: 61  
*diuturna* *A. & S.*, VIII: 58  
*elatior* *Reichb.f.*, VIII: 62  
*Endresii* *Reichb.f.*, X: 88  
*foliosa* *A. & S.*,  
 VIII: 60; X: 84  
*inaudita* *Reichb.f.*  
 var. *minor* *A. & S.*, X: 94  
*Lankesteri* *Ames*, VII: 11  
*lepidota* *Lindl.*, X: 88  
*linearifolia* *A. & S.*, X: 95  
*longipetiolata* *A. & S.*,  
 VIII: 61  
*maleolens* *Schltr.*, VIII: 62  
*microphyton* *Schltr.*,  
 VII: 12, 13; VIII: 61  
*nasuta* *Reichb.f.*, X: 92  
*pachyacron* *Schltr.*,  
 VIII: 57, 58  
*parvilabia* *A. & S.*, VIII: 62  
*pulla* *Linden & Reichb.f.*,  
 VIII: 57  
*ramonensis* *Schltr.*, X: 90  
*Reichenheimiana* *Endres &*  
*Reichb.f.*, VIII: 58  
*ringens* *Reichb.f.*, VIII: 58  
*rufescens* *Lindl.* II: 35  
*semiorbicularis* *A. & S.*,  
 VIII: 64  
*trinitatis* *Ames*,  
 II: 34; VIII: 57  
*vagans* *A. & S.*, VIII: 65

Valerioi *A. & S.*, X: 96  
 variabilis *Batem.*, X: 84  
**MICROSTYLIS** Nutt.  
*boliviana* Schltr., IX: 18  
*hastilabia*, Reichb.f., X: 17  
*micrantha* Hook.f., VI: 35  
**MYRMECHIS** Bl.  
*gracilis* Bl., VI: 16  
*perpusilla* Ames, VI: 15  
**MYROBROMA** Salisb.  
*fragrans* Salisb., VII: 86  
**NEOTTIA** Auct., non L.C.  
 Rich.  
*glandulosa* Sims, X: 14  
**NIDEMA** Britton & Millsp.  
*Otonis* Britton & Millsp.,  
 II: 32  
**NOTYLIA** Lindl.  
*albida* Klotzsch, V: 35  
*bicolor* Lindl.,  
 VIII: 74; X: 103  
*coffeicolor* Schltr., VIII: 74  
*Lankesteri* Ames, V: 34  
*latilabia* *A. & S.*, VIII: 71  
*linearis* *A. & S.*, VIII: 72  
*multiflora* Hook., VIII: 72  
*paniculata* *A. & S.*, X: 102  
*pentachne* Reichb.f., VIII: 72  
*ramonensis* Schltr.,  
 VIII: 74; X: 103  
*tamaulipensis* Reichb.f.,  
 VIII: 72  
**OBERONIA** Lindl.  
*cylindrica* Lindl., VI: 41  
*Reilloi* Ames, VI: 40  
**OCTOMERIA** R.Br.  
*costaricensis* Schltr., X: 52

Valerioi *A. & S.*, X: 51  
**ONCIDIUM** Sw.  
*ascendens* Lindl., VIII: 80  
*Baueri* Lindl., VII: 14  
*bracteatum* Reichb.f. &  
*Warsz.*, X: 107, 108  
*ebrachiatum* *A. & S.*, VIII: 75  
*floridanum* Ames, VII: 13  
*Henrici-Gustavi* Kränzl.,  
 X: 108  
*Lankesteri* Ames, IV: 53  
*paleatum* Schltr., X: 108  
*panduriforme* *A. & S.*,  
 VIII: 77  
*sphacelatum* Ames, non Lindl.,  
 VII: 13  
*sphacelatum* Lindl., VII: 14  
*Storkii* *A. & S.*, X: 106  
*suave* Lindl., IV: 53  
*Suttonii* *Batem.*, IV: 54  
*teres* *A. & S.*, VIII: 76, 78  
**ORCHIDOTYPUS** Kränzl.  
*muscoides* Kränzl., IX: 58  
**ORNITHIDIUM** Salisb.  
*Alfaroi* *A. & S.*, X: 98  
*anceps* Reichb.f.  
 X: 99, 100, 101  
*Biolleyi* Schltr., IV: 53  
*bracteatum* Schltr., IV: 53  
*conduplicatum* *A. & S.*,  
 VIII: 66  
*fulgens* Reichb.f., VIII: 68  
*Lankesteri* Ames,  
 IV: 52; X: 84  
*parvulum* Schltr., VII: 12, 13  
*Pittieri* Ames, II: 35  
*simulans* *A. & S.*, X: 99  
*stenophyllum* Schltr., X: 101

ORNITHOCEPHALUS *Hook.*  
*bicornis* *Lindl.*, V: 35  
*diceras* *Schltr.*, V: 35, 36  
*Elephas* *Reichb.f.*,  
     III: 25; X: 104  
*falcatus* *Focke*, III: 25  
*Lankesteri* *Ames*, III: 24  
*lanuginosus* *Ames*, V: 35, 36  
*Valerioi* *A. & S.*, X: 103  
  
 PACHYSTELE *Schltr.*  
*corallorrhiza* *Ames*, IX: 45  
*densa* *Schltr.*, IX: 46  
  
 PAPHIOPEDILUM *Pfütz.*  
*Schlimii* *Pfütz.*, II: 2  
  
 PELEXIA *L.C.Rich.*  
*callosa* *Ames*, VII: 15; X: 6  
*congesta* *A. & S.*, X: 5  
*Funciana* (*A.Rich. & Gal.*)  
     *Schltr.*, II: 6; VIII: 3; X: 6  
*guatemalensis* *Schltr.*,  
     VIII: 3, 4  
*hondurensis* *Ames*,  
     II: 4; VII: 17  
*longipetiolata* (*Reichb.f.*)  
     *Schltr.*, II: 5  
*Pringlei* *Fernald*, VII: 3, 4  
*subaequalis* *Ames*, II: 5  
  
 PHOLIDOTA *Lindl.*  
*carnea* (*Bl.*) *Lindl.*, VI: 20  
*rhomphora* *Reichb.f.*, V: 1  
 PHYSINGA *Lindl.*  
*prostrata* *Lindl.*, X: 61  
  
 PHYSOSIPHON *Lindl.*  
*Cooperi* *Ames*, I: 2; VIII: 14  
*guatemalensis* *Rolfe*, I: 3  
*minutiflorus* *A. & S.*, VIII: 11

*obliquipetalus* *A. & S.*,  
     VIII: 12  
 PLATYSTELE *Schltr.*,  
     X: 24, 25  
*bulbinella* *Schltr.*, X: 24, 25  
*compacta* *Ames*, X: 24, 25  
 PLEUROTHALLIS *R.Br.*  
*abbreviata* *Schltr.*, II: 18  
*abjecta* *Ames*,  
     II: 17; VII: 25; IX: 38, 35  
*acicularis* *A. & S.*, X: 21  
*acrisepala* *A. & S.*,  
     VIII: 22; X: 28  
*acuminata* *Lindl.*, X: 38  
*acutipetala* *Schltr.*,  
     II: 24; IV: 21  
*Aguilarii* *Ames*, IX: 28  
*alpestris* (*Sw.*) *Lindl.*,  
     VIII: 31  
*alpina* *Ames*, V: 14  
*amethystina* *Ames*,  
     IV: 14; VII: 25  
*angusta* *A. & S.*, VIII: 23  
*aperta* *Ames*, VII: 17  
*araguensis* *Ames*, I: 9  
*archidiaconi* *Ames*, IX: 1, 29  
*arietina* *Ames*,  
     IV: 16, 23; VII: 25  
*bicarinata* *Lindl.*, VIII: 26  
*bifalcis* *Schltr.*, IV: 15; IX: 29  
*Blaisdellii* *S.Wats.*, X: 33  
*Brenesii* *Schltr.*, X: 27  
*brevis* *Schltr.*, IX: 41  
*Brighamii* *S.Wats.*,  
     II: 18, 20, 21; VII: 19, 23,  
     25; VIII: 22, 23  
*cabellensis* *Reichb.f.*, IV: 19  
*cachensis* *Ames*,  
     IV: 17; VII: 25; VIII: 27

- canae* Ames,  
 II: 18; IV: 15; VII: 26;  
 VIII: 24; IX: 29  
*cardiothallis* Reichb.f.,  
 II: 24; IV: 21; VIII: 32;  
 X: 25  
*Cardium* Reichb.f., IX: 30  
*casualis* Ames, IX: 30; X: 27  
*cedralensis* Ames,  
 IV: 18; VII: 26; IX: 33  
*cereca* Ames, IV: 19; VII: 26  
*cingens* A. & S., X: 23  
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## ERRATA

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- II: 28, line 31  
for *Fuegii* read *fuegi*
- II: 37, under PLEUROTHALLIS  
for *Fuegii* read *fuegi*  
for *schistopedala* read *schistopetala*
- II: 38, under SARCOGLOTTIS  
for *lobata*. . .12 read 13  
for *Smithii*. . .12 read 18
- II: 38, under STELIS  
for *Dusii* read *Dussii*
- III: 14, line 10  
for *E. macrobotryum* Lindl. read *E. macrobotryum* Lindl. ex  
Reichb.f.
- III: 19, line 35  
delete *Epidendrum laterale* Rolfe in Orch. Rev. 20 (1912) 280,  
319, nomen tantum; 28 (1920) 160
- III: 26, under EPIDENDRUM  
for *macrobotryum* Reichb.f read *macrobotryum* Lindl. ex  
Reichb.f.  
for *sisyrinchiiifolium* read *sisyrinchiiifolia*
- IV: 13, line 17  
for *Sanchoii* read *Sanchoi*
- IV: 26, line 22  
for *Sanchoii* read *Sanchoi*
- IV: 35, lines 34 and 36  
for *Encyelia Powellii* Schltr. and *Encyelia Powellii* Schltr. read  
*Encyelia Hunteriana* Schltr. and *Encyelia Hunteriana* Schltr.
- IV: 39, line 10 and p. 59 (index)  
for *laucheanum* read *Laucheanum*

- IV: 48, line 19  
for *Sanchoii* read *Sanchoi*
- IV: 59, under *ENCYCLIA*  
for *Powellii* Schltr. read *Hunteriana* Schltr.
- IV: 59, under EPIDENDRUM  
for *Sanchoii* read *Sanchoi*
- IV: 60, under PLEUROTHALLIS  
for *Sanchoii* read *Sanchoi*
- IV: 60, under STELIS  
for *Sanchoii* read *Sanchoi*
- IV: 60, under STENORRHYNCHUS  
for *ceracifolius* Schltr. read *ceracifolius* Rodr.
- V: 26, lines 32 and 34  
for *Viejii* read *viejii*
- V: 41, under EPIDENDRUM  
for *Viejii* read *viejii*
- VI: 24, fig. 6  
for *Acoridium mindanense* read *Acoridium mindanaense*
- VI: 60, line 19  
for *Pantasmii* read *pantasmii*
- VI: 97, under COELOGYNE  
for *carnea* Bl. read *carnea* Reichb.f.
- VI: 99, under PLEUROTHALLIS  
for *Pantasmii* read *pantasmii*
- VII: 8, line 38  
for *musicolum* read *musicola*
- VII: t.6  
for *P. jolocensis* read *P. jocolensis*
- VII: index, under EPIDENDRUM  
for *inusicolum* read *musicola*
- VIII: 28, line 33  
for *dentipetala* Ames read *dentipetala* Rolfe ex Ames

- VIII: 39, line 19  
for *Turialvae* read *turialvae*
- VIII: 43, line 8  
for *porpax* read *Porpax*
- VIII: 51, line 5  
for *Turialvae* read *turialvae*
- VIII: 55, line 32  
for *corazoi* Ames read *corazoi* Lankester & Ames
- VIII: 74, line 2 and index, under NOTYLIA  
for *caffEICOLOR* read *caffEICOLA*
- VIII: index, under CAMARIDIUM  
for Bradeorum. . .64 read 65
- VIII: index, under DIPTEROSTELE  
for multiflora read minutiflora
- VIII: index, under EPIDENDRUM  
for *porpax* read *Porpax*  
for *Turialvae* read *turialvae*
- VIII: index, under LEPANTHES  
for *Eckmanii* read *Ekmanii*  
for *Turialvae* read *turialvae*
- VIII: index, under MAXILLARIA  
for *alba*. . .65 read 66
- VIII: index, under PLEUROTHALLIS  
for *dentipetala* Ames read *dentipetala* Rolfe ex Ames
- VIII: index, under SOBRALIA  
for *corazoi* Ames read *corazoi* Lankester & Ames
- IX: 45, lines 4 and 10  
for *Turialvae* and *Turialvae* read *turialvae* and *turialvae*
- IX: 61, under LEPANTHES  
for *Turialvae* read *turialvae*
- X: 24, line 20  
for *Pantasmii* read *pantasmii*
- X: 48, line 4  
for *Turialvae* read *turialvae*

- X: 48, line 5  
for *Barbae* read *barbae*
- X: 79, lines 11 and 13  
for (Llave & Lex.) and Llave & Lex. read (La Llave & Lex.)  
and La Llave and Lex.
- X: 118, line 8  
for *BLETIA* read *BLETIA*  
for *campanulata* Llave & Lex. read *campanulata* La Llave & Lex.
- X: 114, under LEPANTHES  
for *abnormis* *Schltr.* read *abnormis* *Schltr.*  
for *Barbae* read *barbae*  
for *Turialvae* read *turialvae*
- X: 114, under LIMODORUM  
for *campanulatum* (*Llave & Lex.*) *A. & S.* read *campanulatum*  
(*La Llave & Lex.*) *A. & S.*
- X: 115, line 20  
for *NEOTTIA L.* read *NEOTTIA* *Auct., non L.C. Rich.*
- X: 115, under ORNITHIDIUM  
for *stenophyllum* read *stenophyllum* *Schltr.*
- X: 115, under PLEUROTHALLIS  
for *Blaisdelii* read *Blaisdellii*  
for *Pantasmii* read *pantasmii*



## CORRIGENDA

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Since the publication of this work, many changes in nomenclature have been necessitated. Some of these changes have resulted from the study of more ample material and from changes in the rules governing nomenclatorial procedure.

These changes are noted in the following list.

- I: 10, *Pleurothallis poasensis* Ames is a synonym of *P. dolichopus* Schlechter.
- I: 13, *Epidendrum alanjense* Ames is a synonym of *E. oncioides* Lindley var. *gravidum* (Lindl.) Ames, Hubbard, & Schweinfurth.
- I: 14, *Epidendrum colonense* Ames is a synonym of *E. sculptum* Reichenbach filius.
- I: 16, *Epidendrum magnibracteatum* Ames is a synonym of *E. coriifolium* Lindley.
- I: 19, *Epidendrum pruinosum* A. Richard & Galeotti is a synonym of *E. concolor* La Llave & Lexarza.
- II: 11, *Sarcoglottis pubilabia* Ames is a synonym of *S. Schaffneri* (Reichb.f.) Ames.
- II: 13, *Sarcoglottis zamororae* Ames is a synonym of *S. Schaffneri* (Reichb.f.) Ames.
- II: 19, *Pleurothallis jocolensis* Ames is a synonym of *P. corniculata* Lindley.
- II: 24, *Pleurothallis Schlechteriana* Ames is a synonym of *P. cardiothallis* Reichenbach filius.
- II: 26, *Epidendrum benignum* Ames is a synonym of *E. subpatens* Schlechter.

- II: 28, *Epidendrum ichthyphyllum* Ames is a synonym of *E. virgatum* Lindley.
- II: 33, *Epidendrum palmense* Ames is a synonym of *E. coriifolium* Lindley.
- II: 33, *Epidendrum prorepens* Ames is a synonym of *E. abbreviatum* Schlechter.
- III: 3, *Stelis glandulosa* Ames is a synonym of *S. Endressii* Reichenbach filius.
- III: 5, *Pleurothallis cucullata* Ames is a synonym of *P. Rowleei* Ames.
- III: 8, *Pleurothallis hamata* Rolfe is a synonym of *P. aperta* (Kränzl.) Ames.
- III: 11, *Lepanthes fimbriata* Ames is a synonym of *L. Lindleyana* Oersted & Reichenbach filius var. *major* Ames, Hubbard & Schweinfurth.
- III: 16, *Epidendrum Ovulum* Lindley is a synonym of *E. microbulbon* Hooker.
- IV: 7, *Malaxis Lankesteri* Ames is a synonym of *M. brachyrrhynchos* (Reichb.f.) Ames.
- IV: 9, *Masdevallia panamensis* (Schltr.) Ames is a synonym of *M. Livingstoneana* Roesl & Reichenbach filius.

Subsequent study has proven that Schlechter's concept of *M. Livingstoneana* is identical with that of Roesl and Reichenbach filius.

- IV: 11, *Stelis cascajalensis* Ames is a synonym of *S. leucopogon* Reichenbach filius.
- IV: 21, *Pleurothallis glomerata* Ames is a synonym of *P. ruscifolia* R. Brown.
- IV: 31, *Lepanthes micrantha* Ames is a synonym of *L. Lindleyana* Oersted & Reichenbach filius.
- IV: 35, *Epidendrum alanjense* Ames is a synonym of *E.*

- oncioides *Lindley* var. *gravidum* (*Lindl.*) *Ames, Hubbard & Schweinfurth.*
- IV: 36, *Epidendrum amandum* *Ames* is a synonym of *E. oncioides Lindley* var. *gravidum* (*Lindl.*) *Ames, Hubbard & Schweinfurth.*
- IV: 38, *Epidendrum cristobalense* *Ames* is a synonym of *E. Laucheanum* [*Rolfe*] *ex Bonhof.*
- IV: 42, *Epidendrum gravidum* *Lindley* is a synonym of *E. oncioides Lindley* var. *gravidum* (*Lindl.*) *Ames, Hubbard & Schweinfurth.*
- IV: 46, *Epidendrum peraltense* *Ames* is a synonym of *E. oncioides Lindley* var. *gravidum* (*Lindl.*) *Ames, Hubbard & Schweinfurth.*
- IV: 49, *Epidendrum santaclarensense* *Ames* is a synonym of *E. ramosum Jacquin* var. *imbricatum* (*Lindl.*) *Ames, Hubbard & Schweinfurth.*
- IV: 57, *Campylocentrum Lankesteri* *Ames* is a synonym of *C. Sullivani* *Fawcett & Rendle.*
- V: 22, *Lepanthes rostrata* *Ames* is a synonym of *L. horrida Reichenbach filius.*
- V: 36, *Lockhartia Lankesteri* *Ames* is a synonym of *L. micrantha Reichenbach filius.*
- VI: 9, *Adenostylis philippinensis* *Ames* should be **Zeuxine philippinensis** (*Ames*) *Ames, comb. nov.*
- VI: 10, *Adenostylis zamboangensis* *Ames* should be **Zeuxine zamboangensis** (*Ames*) *Ames, comb. nov.*
- VI: 12, *Epipactis Elmeri* *Ames* should be **Goodyera Elmeri** (*Ames*) *Ames, comb. nov.*
- VI: 14, *Epipactis Ramosii* *Ames* should be restored to *Goodyera Ramosii Ames.*
- VI: 27, *Acoridium Serratoi* *Ames* is a synonym of *A. Curranii Ames* var. *Serratoi* (*Ames*) *Ames.*

- VI: 53, *Stelis distantiflora* Ames is a synonym of *S. effusa* Schlechter.
- VI: 54, *Stelis eximia* Ames is a synonym of *S. leucopogon* Reichenbach filius.
- VI: 55, *Stelis propinqua* Ames is a synonym of *S. Endresii* Reichenbach filius.
- VI: 58, *Pleurothallis dichotoma* Ames is a synonym of *P. divexa* Ames.
- VI: 65, *Pleurothallis peraltensis* Ames is a synonym of *P. Blaisdellii* S. Watson.
- VI: 67, *Pleurothallis peregrina* Ames is a synonym of *P. dolichopus* Schlechter.
- VI: 75, *Epidendrum simulacrum* Ames is a synonym of *E. difforme* Jacquin var. *simulacrum* (Ames) Ames, Hubbard & Schweinfurth.
- VII: 5, *Epidendrum glandulosum* Ames is a synonym of *E. Stangeanum* Reichenbach filius.
- VII: 7, *Epidendrum lacustre* Lindley sensu Ames is a synonym of *E. obesum* Ames.
- VII: 7, *Epidendrum linifolium* Ames is a synonym of *E. muscicola* Schlechter.
- VII: 10, *Epidendrum Storkii* Ames is a synonym of *E. difforme* Jacquin var. *Storkii* (Ames) Ames, Hubbard & Schweinfurth.
- VII: 27, *Pleurothallis cucullata* Ames is a synonym of *P. Rowleei* Ames.
- VII: 27, *Pleurothallis diuturna* Schlechter is a synonym of *P. sororia* Schlechter.
- VII: 28, *Pleurothallis glomerata* Ames is a synonym of *P. ruscifolia* R. Brown.
- VII: 28, *Pleurothallis jocolensis* Ames is a synonym of *P. corniculata* Lindley.

- VII: 29, *Pleurothallis peraltensis* Ames is a synonym of *P. Blaisdellii* S. Watson.
- VII: 29, *Pleurothallis peregrina* Ames is a synonym of *P. dolichopus* Schlechter.
- VII: 30, *Pleurothallis poasensis* Ames is a synonym of *P. dolichopus* Schlechter.
- VII: 31, *Pleurothallis Williamsii* Ames is a synonym of *P. Broadwayi* Ames.
- VII: 31, *Polystachya Powellii* Ames is a synonym of *P. costaricensis* Schlechter.
- VIII: 14, *Stelis Alfaroii* Ames & Schweinfurth is a synonym of *S. purpurascens* A. Richard & Galeotti.
- VIII: 16, *Stelis elliptica* Ames & Schweinfurth is a synonym of *S. Cooperi* Schlechter.
- VIII: 17, *Stelis fractiflexa* Ames & Schweinfurth is a synonym of *S. Wrecklei* Schlechter.
- VIII: 18, *Stelis minutiflora* Ames & Schweinfurth is a synonym of *S. costaricensis* Reichenbach filius.
- VIII: 29, *Pleurothallis melicoides* Schlechter is a synonym of *P. Johannis* Schlechter.
- VIII: 49, *Epidendrum reflexum* Ames & Schweinfurth is a synonym of *E. paniculatum* Ruiz & Pavon.
- VIII: 57, line 15 and p. 58, lines 23 and 29, *Maxillaria pachyacron* Schltr. is a synonym of *M. Reichenheimiana* Endres & Reichb.f.
- VIII: 59, line 34, *Maxillaria chiriquensis* Schltr. is a synonym of *M. variabilis* Batem.
- VIII: 63, line 34, *Camaridium simile* Schltr. is a synonym of *C. dendrobioides* Schltr.
- VIII: 74, *Brassia parviflora* Ames & Schweinfurth is a synonym of *B. chlorops* Reichenbach filius.
- VIII: 81, *Lockhartia variabilis* Ames & Schweinfurth is a synonym of *L. Pittieri* Schlechter.

- VIII: 83, *Dichaea verrucosa* Ames & Schweinfurth is a synonym of *D. muricata* (Sw.) Lindley.
- IX: 45, *Pachystele corallorrhiza* Ames is a synonym of *Scaphyglottis corallorrhiza* (Ames) Ames, Hubbard & Schweinfurth.
- IX: 51, *Epidendrum glandulosum* Ames is a synonym of *E. Stangeanum* Reichenbach filius.
- X: 8, *Spiranthes Valerioi* Ames & Schweinfurth is a synonym of *S. parasitica* A. Richard & Galeotti.
- X: 9, *Epipactis erosa* Ames & Schweinfurth is a synonym of *Goodyera erosa* (A. & S.) Ames, Hubbard & Schweinfurth.
- X: 15, *Malaxis uncinata* Ames & Schweinfurth is a synonym of *M. hastilabia* (Reichb. f.) O. Ktze.
- X: 23, *Pleurothallis cingens* Ames & Schweinfurth is a synonym of *P. gacayana* Schlechter.
- X: 61, *Epidendrum congestoides* Ames & Schweinfurth is a synonym of *E. Schlechterianum* Ames.
- X: 76, *Epidendrum variegatum* Hooker is a synonym of *E. crassilabium* Poeppig & Endlicher.
- X: 78, *Limodorum Lankesteri* Ames & Schweinfurth is a synonym of *Bletia Lankesteri* (A. & S.) Ames, Hubbard & Schweinfurth.
- X: 79, line 10, *Limodorum campanulatum* (La Llave & Lex.) Ames & Schweinfurth should be restored to *Bletia campanulata* La Llave & Lex.
- X: 81, *Catasetum suave* Ames & Schweinfurth is a synonym of *C. dilectum* Reichenbach filius.
- X: 91, *Maxillaria brevipedunculata* Ames & Schweinfurth is a synonym of *M. nasuta* Reichenbach filius.

10 (39) C. J. 3, 40 10. 1/2 (copy)

SCHEDULAE ORCHIDIANAE

No. 1

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ORCHIDACEAE QUAEDAM  
AMERICANAE

BY  
OAKES AMES

BOSTON, MASSACHUSETTS

1922

## SCHEDULAE ORCHIDIANAE

## NO. 1

## Orchidaceae Quaedam Americanae

BY

OAKES AMES

RECENT studies of tropical American orchids have brought to light species which seem to be undescribed or which have been inadequately described. The following descriptions have been prepared from herbarium material. The arrangement of the genera follows the sequence proposed in Engler and Prantl's "Die Pflanzenfamilien."

**Gomphichis foliosa** *Ames sp. nov.* Herba valida, foliosa, foliis ligulatis utrinque attenuatis. Racemus densiflorus, glanduloso-pubescent. Flores numerosi. Sepala lateralia elliptico-oblonga, glandulosa. Sepalum dorsale simile. Petala anguste oblongo-elliptica, ciliata, externe glandulosa. Labellum incrassatum, anguste ellipticum, obtusum, basi bicallosum. Columna valde curvata, antice glandulosa.

Plant about 60 cm. tall, basal portion leafy. Roots very coarse, 5 mm. in diameter. Leaves oblong, tapering toward both ends, sheathing the stem at base, about 15 cm. long, nearly 1.5 cm. wide, thickish, acute, obliquely ascending, concealing the basal part of the stout stem, passing above into spreading foliaceous bracts. Raceme densely flowered, nearly 10 cm. long, 12 mm. in diameter, scape below the raceme glandular-pubescent. Rachis glandular-pubescent. Floral bracts elliptic-oblong, about 1 cm. long, acute, glandular-pubescent. Pedicel and ovary about 1 cm. long, rather densely pubescent, blackish when dry, stout. Lateral sepals



ORCHIDACEAE QUAEDAM AMERICANAE

9 mm. long, about 4 mm. wide, strongly concave, elliptic-oblong, acute, glandular-hairy on the dorsal surface, 3-nerved. Dorsal sepal similar, subacute or obtuse, 8 mm. long. Petals about 8 mm. long, 2.5 mm. wide, elliptic-oblong, obtuse, 1-nerved, margin and dorsal surface glandular-hairy. Labellum 1 cm. long, very fleshy, narrowly elliptic-oblong, rounded at the apex, sulcate through the middle above, minutely glandular, but not hairy, except for the two basal calli, one on each side. Column 5 mm. long, curved backward, dilated above, urceolate at the summit, pubescent in front.

*Gomphichis valida* Reichb. f. is a near ally, but different in having a smoothish column.

COLOMBIA, State of Cauca, Páramo de Moras, between Mozoco and Pitayó, Tierra Adentro, *H. Pittier 1397*, February 1906. 3000-3500 meters altitude. (TYPE in U. S. Nat. Herb. No. 531592.)

**Physosiphon Cooperi** *Ames sp. nov.* Radices fibratae. Caules secundarii erecti, monophylli, vaginis tubulatis, prope apicem infundibuliformibus vestiti. Folium apice bilobulatum, breviter petiolatum, anguste ellipticum. Pedunculus folio longior, multiflorus. Flores parvi. Sepala carinata, acuta. Petala abbreviata, oblonga, apice irregulariter lobata. Labellum trilobatum, incrassatum, lobis lateralibus antice rotundatis, callo ornato, lobo medio obtuso, incrassato. Columna apice irregulariter dentata, in pedem brevem producta.

Roots fibrous, whitish, less than 1 mm. thick, smooth. Secondary stems 1.3-2 cm. long, slender, erect, monophyllous, concealed by several loosely appressed tubular sheaths, which are .5-1.5 cm. long, dilated at the mouth, elongated-infundibuliform, brownish when dry. Leaf with the petiole up to 6 cm. long, lamina 3.5-4.5 cm. long, 9-13 mm. wide, narrowly elliptical, bilobed at the marginate summit with a short apicule between the lobes, sulcate through the middle on the upper surface. Petiole 1-1.5 cm. long, rather slender, sulcate. Peduncles 1-3, with the raceme up to 7 cm. long, paucibracteate below the inflorescence. Raceme up to 5 cm.

ORCHIDACEAE QUAEDAM AMERICANAE

long, about fifteen-flowered. Floral bracts about 2 mm. long, embracing the rachis, infundibuliform, obliquely truncate. Pedicel and ovary about 3.5 mm. long, slender. Flowers nearly 4 mm. long, subdistichous, the lowermost ones 5-8 mm. apart. Lateral sepals 4 mm. long, united to about the middle, free portion 1 mm. wide, oblong, tapering to an acute tip, 3-nerved, prominently carinate. Dorsal sepal similar to the laterals, united with them to about the middle, 3-nerved, acute, carinate. Petals about 1 mm. long, oblong, obtusely 3-lobed at the tip, 1-nerved, membranaceous. Labellum 2 mm. long, 3-lobed; lateral lobes erect, rounded in front, about 1 mm. long, with a large callus near the tip; middle lobe 1 mm. long, about 1 mm. wide, suborbicular, obtuse, fleshy, margin obscurely erose; disc very fleshy, 3-nerved. Column 3 mm. long including the concave foot, irregularly toothed at the summit.

Closely allied to *Physosiphon guatemalensis* Rolfe, from which it differs conspicuously in having smaller flowers and different petals.

COSTA RICA, Cartago, *Juan J. Cooper 481*, May 1888. 5000 feet altitude. (TYPE in U. S. Nat. Herb. No. 814957. DUPLICATE TYPE in Herb. Ames No. 22527.)

***Stelis chihobensis*** *Ames sp. nov.* Herba caespitosa. Caules secundarii elongati, monophylli. Folium ligulatum, utrinque attenuatum. Pedunculus cum racemo folium excedens. Sepala lateralia ovata, obtusa, margine ciliolata. Petala subrhomboidea. Labellum carnosum, late reniforme, in medio disci callo ornatum. Columna usque ad apicem dilatata.

Roots fibrous, about 1 mm. in thickness, whitish, smooth. Secondary stems caespitose, erect, about 2 mm. in diameter, up to 7 mm. long, longitudinally sulcate when dry, trivaginate. Sheaths brownish, prominently nerved, the lower one concealing the base of the stem, closely appressed, tubular; middle sheath 16-20 mm. long, truncate; upper sheath from 2.5-3 cm. long, loosely appressed, tubular, truncate, concealing the central portion of the stem. Leaf conspicuously petiolate; lamina 6-7 cm. long, about 1 cm.

ORCHIDACEAE QUAEDAM AMERICANAE

wide, ligulate, attenuated at each end, obtuse, coriaceous. Petiole 1–1.5 cm. long, sulcate above. Peduncles slender, arising singly or in pairs from a complanate sheath, with the raceme 10–12 cm. long. Sheath about 12 mm. long. Raceme up to 8 cm. long, flowers 2.5 mm. apart. Floral bracts 1.5 mm. long, obliquely infundibuliform, acute, embracing the stem, shorter than the pedicellate ovary, brownish when dry. Pedicel with the ovary 2 mm. long. Flowers distichous. Lateral sepals 2 mm. long, 2 mm. wide, broadly ovate, obtuse, 3-nerved, glandular-pubescent, margins minutely ciliolate. Dorsal sepal similar. Petals hardly 1 mm. long, subrhomboidal from a wide base. Labellum 1 mm. long, about 1 mm. wide, very fleshy, broadly reniform from a short claw, rounded in front, concave, near the middle traversed by a thickened ridge, minutely papillose. Column fleshy, dilated toward the summit.

Allied to *Stelis conmixta* Schltr. and *S. perplexa* Ames, having a very similar labellum. From the former it is readily distinguished by the dissimilar floral bracts, from the latter it is very different in having elongated secondary stems and distinctly ciliolate sepals.

GUATEMALA, Department of Alta Verapaz, Chihob, *Harry Johnson 939*, October 23, 1920. Epiphyte. 3000 feet altitude. (TYPE in Herb. Ames No. 22089.)

***Stelis colombiana*** Ames *sp. nov.* Herba caespitosa, caulibus secundariis elongatis. Folium elliptico-oblongum. Racemus multiflorus. Sepala late ovata, trinervosa. Petala suborbicularia. Labellum crassum, usque ad medium in-crassato-callosum, infra apicem excavatum. Columna antice bilobata.

Roots coarsely fibrous, white, smooth, about 1 dm. long. Secondary stems caespitose, about 1 dm. long, the upper half surrounded by a closely appressed, tubular sheath, monophyllous. Leaf narrowly elliptic-oblong, obtuse, tapering from about the middle toward both ends, with the petiole 6–11 cm. long, 1.5–1.8 cm. wide, coriaceous, midnerve prominent beneath. Petiole about 2 cm. long, sulcate above. Peduncles single or in pairs, emerging from a complanate

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sheath, about 7 cm. long, floriferous nearly to the base. Racemes slender, bearing as many as twenty-five brown-purple flowers. Floral bracts 2-3 mm. long, obliquely infundibuliform, acute, enclosing the rachis, equalling the persistent pedicel. Pedicel and ovary 3 mm. long. Flowers about 2 mm. apart, distichous, reddish brown when dry. Sepals coherent at base, about 2.25 mm. long, broadly ovate from a wide base, obtuse, 3-nerved. Petals 1 mm. long, 1.5 mm. wide near the end, flabellate-semiorbicular, apical margin much thickened, 3-nerved, nerves clavate in outline. Labellum fleshy, about 1 mm. long, transversely elliptical from a wide cuneate base, obtusely apiculate, callose-thickened to about the middle, with a foveola in front of the callus. Column fleshy, dilated above into rounded lobes, one on each side.

Allied to *Stelis crassilabia* Schltr.

COLOMBIA, State of Cauca, Headwaters of Rio Lopez, Rio Palo basin, Tierra Adentro, *H. Pittier 1093*, January 1906. 2500-3000 meters altitude. (TYPE in Herb. Ames No. 7968.)

*Stelis insignis* Ames *sp. nov.* Herba caespitosa, caulibus secundariis validis. Folium carnosum, oblongo-ellipticum in petiolum brevem contractum. Racemi subdensiflori. Sepala similia, rotundato-ovalia. Petala conspicue cucullata, vix incrassata. Labellum basi cuneata, superne transverse ellipticum, apiculatum. Discus callo bilobo ornatus. Columna carnososa.

Roots fibrous, whitish, smooth, about 4 cm. long. Secondary stems caespitose, 17-18 cm. long, rigid, 3-4 mm. in diameter, sulcate in dried specimens, provided with a tubular sheath above the middle, which is 3-4 cm. long, closely appressed, scarious, brown-annulate at the point of origin. Leaf 11.5-13 cm. long, about 3.5 cm. wide, oblong-elliptic, obtuse, coriaceous, nervose when dry, midnerve prominent, at base contracted into a rigid sulcate petiole, shorter than the inflorescence. Petiole about 2 cm. long. Peduncles 3, arising through a closely appressed complanate sheath. Sheath 1.5 cm. long, prominently nerved. Peduncle

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with the raceme about 14 cm. long, rigid, erect, many-flowered, with several closely appressed tubular sheaths below the inflorescence. Raceme up to 9.5 cm. long, slender. Floral bracts about 2 mm. long, clasping the rachis, loosely appressed, acute. Pedicel with the ovary about 3 mm. long. Sepals coherent at base, subequal, the laterals 2 mm. long, 2 mm. wide, round-oval, obtuse, 3-nerved, margin smooth. Dorsal sepal 2.5 mm. long, 2 mm. wide, broadly ovate from a wide base, 3-nerved, obtuse. Petals hardly 1 mm. long, cuneate-suborbicular, distinctly cucullate at the rounded apex, hardly thickened (margin sharply bent inward to form a hood), 3-nerved. Labellum 1 mm. long, widely cuneate below the middle, apical half transversely elliptical, with an incurved apicule at the broad tip. Callus prominent on the disc, bilobed in front, the lobes rounded, porrect. Column fleshy, dilated at the apex.

In habit similar to *Stelis apiculata* Schltr., from which it differs in the hooded petals.

COLOMBIA, State of Cauca, Around Huila, Indian village in Rio Paez Valley, Tierra Adentro, *H. Pittier 1299*, January 1906. 1600-1900 meters altitude. (TYPE in U. S. Nat. Herb. No. 531497.)

*Stelis longipetiolata* Ames sp. nov. Herba caespitosa. Foliolum anguste oblongo-ellipticum in petiolum perlongum contractum. Sepala ovato-deltaidea. Petala rotundato-ovata, valde obtusa, incrassata. Labellum reniforme, valde incrassatum, callo transverso ornatum. Columna crassa, usque ad apicem dilatata.

Roots fibrous, very slender. Secondary stems crowded, forming dense tufts, 2-3 cm. long, very slender, trivaginate, lowermost sheath 3-4 mm. long, inflated, the uppermost sheaths 1-1.5 cm. long, tubular, longitudinally nervose, concealing the stem. Leaf narrowly elliptic-oblong, attenuated at both ends, the base contracted into a slender sulcate petiole; lamina 4.5-5.5 cm. long, 7-11 mm. wide; petiole 2-2.5 cm. long. Peduncles solitary, with the raceme about 8 cm. long, very slender, many-flowered, arising from a closely appressed complanate spathe; basal flowers 5-7 mm.

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apart, those of the upper part of the raceme 2 mm. apart. Floral bracts 1.5 mm. long, basal portion shallowly infundibuliform, upper portion semiovate, obtuse. Pedicel with the ovary 2.5 mm. long, blackish when dry. Lateral sepals deltoid-ovate, obtuse, 2-2.5 mm. long, conspicuously 3-nerved, smooth. Dorsal sepal similar. Petals 1 mm. long, ovate or suborbicular, thickened nearly to the base, abruptly excavated below the thickening, apex minutely and obscurely papillose. Labellum .75 mm. long, 1.5 mm. wide, reniform, very fleshy, dorsal surface rounded, somewhat concave above with a prominent obscurely bilobed callus in the middle its side decurrent laterally or forming a transverse ridge. Column slightly shorter than the petals, dilated upwards, posterior membrane entire, margin minutely papillose.

*Stelis longipetiolata* is closely allied with *S. microstigma* Reichb. f., from which species it differs in its round-ovate petals thickened to near the base, and in its obtuse sepals.

PANAMA, Province of Chiriqui, Humid forest between Alto de las Palmas and top of Cerro de la Horqueta, W. R. Maxon 5460, March 18, 1911. Epiphyte on trees. 2100-2268 meters altitude. (TYPE in U. S. Nat. Herb. No. 675844.)

*Stelis perplexa* Ames sp. nov. Herba caespitosa. Caules secundarii abbreviati. Folium ligulatum, utrinque attenuatum. Pedunculus cum racemo elongatus, multiflorus. Sepala late ovata, similia. Petala subrhomboidea, apice obtuse angulata. Labellum subrhomboideum, callo prope medium disci. Columna usque ad apicem dilatata.

Roots fibrous, whitish, smooth. Secondary stems caespitose, about 2.5 cm. high, about 1.5 mm. thick, when young concealed by tubular sheaths, monophyllous. Leaf ligulate, 5-7.5 cm. long, 6-9 mm. wide, obtusely and unequally bilobed at the tip, tapering gradually toward the base, much exceeded by the raceme. Peduncle solitary, with the raceme up to 14 cm. long, with several short, tubular bracts below the raceme, erect or arcuate. Raceme slender, many-flowered, 8-12 cm. long. Flowers about 4 mm. apart. Floral bracts 1.5 mm. long, surrounding the rachis,

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obliquely infundibuliform, acute, about half as long as the pedicels. Pedicel and ovary 2.5 mm. long. Flowers brownish in dried specimens. Lateral sepals 2 mm. long, 2 mm. wide, broadly ovate, tapering to the obtuse or subacute apex, coherent near the base, 3-nerved, fleshy. Dorsal sepal similar, acute. Petals hardly 1 mm. long, 1 mm. wide at the apex, thickened, narrowly triangular in cross section at the tip, broadly rhomboid from a wide base, obtuse angled at the summit, 3-nerved. Labellum 1 mm. long, about 1 mm. wide, much thickened, subrhomboidal from a wide base, obtuse angled at the tip, with a transversely thickened callus in the middle. Callus dilated at each side, constricted at the center, apical half of the lip in front of the callus strongly concave. Column dilated above, equalling the petals.

Closely allied with *Stelis gracilis* Ames and *S. sarcodantha* Schltr. From *S. gracilis* it is distinct in the broad sepals and stouter peduncles. From *S. sarcodantha* it differs in having less leathery leaves, a more slender inflorescence, shorter secondary stems, and a differently shaped labellum.

GUATEMALA, Department of Alta Verapaz, Banks of Chisaxte River, below Secanquim, *H. Pittier* 308, May 9, 1905. 250 meters altitude. (TYPE in U. S. Nat. Herb. No. 472971.)

***Stelis vagans* Ames sp. nov.** Herba scandens. Caules secundarii monophylli. Racemus gracilis, multiflorus. Sepala ovata, acuta. Petala flabellata, apice angulato-rotundata. Labellum trulliforme, acutum. Columna crassa, ad apicem antice bilobulata.

Stems branching, apparently scandent, rooting, about 3 mm. thick. Secondary stems (branches) about 3 cm. long, concealed by several tubular nervose sheaths, obliquely ascending, unifoliolate. Leaf ligulate, tapering to both ends, with the petiole 3-5 cm. long, 5-11 mm. wide, coriaceous. Peduncle with the raceme up to 7 cm. long, emerging from a complanate sheath near the base of the petiole, floriferous almost to the base. Floral bracts 2.5 mm. long, infundibuliform, acute, embracing the rachis, about 2 mm. apart, exceeding the pedicellate ovary. Lateral sepals coherent at

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the base, 1.8 mm. long, ovate-acute, 3-nerved, greenish yellow. Dorsal sepal 2 mm. long, similar to the laterals. Petals about as long as the labellum, 1-nerved, flabellate, with a rounded apex, apical margin much thickened. Labellum .6 mm. long, basal half quadrate, much thickened by a large callus which is truncate in front; apical half triangular-trulliform, acute, concave, membranaceous. Column stout, with a large, rounded lobe on each side at the apex.

Allied to *Stelis Trianae* Schltr., but separable from it by the obtusely angled petals and acute labellum.

COLOMBIA, State of Cauca, Headwaters of Rio Lopez, Rio Palo basin, Tierra Adentro, *H. Pittier 1061*, January 1906. Flowers greenish yellow. 2500-3000 meters altitude. (TYPE in U. S. Nat. Herb. No. 531263.)

**Pleurothallis araguensis** *Ames sp. nov.* Caules secundarii elongati, rigidi, monophylli. Folium oblongo-ellipticum. Flores inter se distantes in racemo laxo dispositi. Sepala lateralia usque ad apicem cohaerentia. Sepalum dorsale ovatum, lanceolatum. Petala incrassata, lanceolata. Labellum in circuitu suborbiculare, bicallosum.

Roots coarse, 2 mm. thick, whitish, fasciculate. Secondary stems about 22 cm. long, 2.5 mm. in diameter, bivaginate; sheaths about 3 cm. long, closely appressed. Leaf about 15 cm. long, 3 cm. wide near the middle, oblong-elliptic, gradually tapering toward the base, subacute, coriaceous, nervose when dry. Peduncle slender, with the few-flowered raceme 5-10 cm. long, arising from a rigid complanate sheath. Flowers 2 cm. apart. Pedicel and ovary 5-10 mm. long, subtended by a slender, loosely appressed infundibuliform bract which is about 5 mm. long. Flowers greenish purple, with purple longitudinal stripes. Lateral sepals coherent to the tip, forming an ovate lamina 1 cm. long, about 7 mm. wide, 6-nerved; nerves purplish. Dorsal sepal 1 cm. long, about 5 mm. wide, ovate-lanceolate, acute, 3-nerved. Petals 7 mm. long, narrowly lanceolate, very fleshy, apex thickened, 3-nerved. Labellum 4.7 mm. long, suborbicular when spread flat, acute, sharply deflexed



from about the middle, callose-thickened on each side near the middle, the round tip of each callus extending nearly to the margin. Column 3 mm. long.

Similar to *Pleurothallis Lindenii* Lindl., but with smaller flowers, and rotund labellum. In habit not unlike *P. strobilifera* Lehm. & Kränzl., but with very dissimilar flowers.

VENEZUELA, State of Aragua, Colonia Tovar and vicinity, *H. Pittier 10004*, December 26, 1921. Epiphyte. 2100-2200 meters altitude. (TYPE in Herb. Ames No. 22496.)

***Pleurothallis poasensis* Ames sp. nov.** Caules secundarii caespitiosi, monophylli. Folium oblongo-ellipticum, racemo brevius. Flores mediocres. Sepala lateralia libera, lineari-triangulara, caudata. Sepalum dorsale simile. Petala oblonga, uninervia. Labellum panduratum, trinervium, ecallosum. Columna gracilis, ad apicem in laminam acutam producta.

Roots fibrous, whitish, smooth, 7 cm. long. Secondary stems caespitose, 5-9 cm. long, slender, about 1 mm. in diameter, paucivaginate, the sheaths elongated, closely appressed and soon disappearing. Leaf 5-9 cm. long, up to 1.9 cm. wide, elliptic-oblong, obtuse, contracted at base into a rigid petiole, pale yellow when dry, coriaceous. Peduncle solitary, arising from a short coriaceous sheath, including the raceme 10-12 mm. long, with several closely appressed sheaths. Raceme about 7 cm. long, bearing as many as ten flowers. Floral bracts 2-3 mm. long, infundibuliform, acute. Lateral sepals about 9 mm. long, free nearly to the base, 1 mm. wide below the middle, 3-nerved, linear-triangular, tapering gradually to a subfiliform tip. Dorsal sepal similar, 7.6 mm. long, 3-nerved, about 1 mm. wide near the base. Petals 3 mm. long, 1 mm. wide, oblong, conspicuously 1-nerved along the middle, tapering abruptly into an acute tip. Labellum ecallose, 3 mm. long, 1.5 mm. wide below the middle when spread flat, panduriform-lanceolate, obtuse, conspicuously 3-nerved, the nerves somewhat thickened-carinate. Column slender, 2.5 mm. long, prolonged behind the anther into a triangular subulate membrane.

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From dried specimens it would seem that the lip when fresh is obscurely 3-lobed, when dry it assumes, when spread out, a distinctly pandurate outline.

Similar in habit to *Pleurothallis dolichopus* Schltr., but with much smaller flowers. From *P. stenopetala* Schltr. it differs in its pandurate lip.

COSTA RICA, Volcan du Poas, H. Pittier 3054, July 31, 1890. 2500 meters altitude. (TYPE in U. S. Nat. Herb. No. 579517.)

***Pleurothallis Rowleei*** Ames sp. nov. Caules secundarii elongati, monophylli. Folium oblongo-lanceolatum. Pedunculus elongatus. Flores in racemo laxo, paucifloro dispositi. Sepala lateralia usque ad apicem connata. Petala oblongo-lanceolata, serrata. Labellum sagittatum, nervo medio incrassatum.

Roots fibrous, 3-5 cm. long, smooth, whitish. Secondary stems approximate. About 6 cm. tall, sheathed at base and near the middle, slender, rigidly erect, in dried specimens about 1 mm. thick, smooth. Sheaths tubular, about 2 cm. long, closely appressed, soon passing away. Leaf oblong-lanceolate, about 5 cm. long, 1.5 cm. wide, coriaceous, acute, clasping the stem. Peduncle solitary, several-flowered, clothed at base with an ancipitous sheath, with the raceme about 4 cm. long, slender. Floral bracts somewhat infundibuliform, about 2 mm. long, much shorter than the pedicel. Pedicel and ovary about 6 mm. long, slender. Flowers about 6 mm. apart, five or more in number, 9 mm. long. Lateral sepals united to the tip forming an ovate sub-acute plate, which is 8.5 mm. long and 6 mm. wide. Dorsal sepal similar, 9 mm. long, 5 mm. wide. Petals oblong-lanceolate, about 8 mm. long, 2 mm. wide near the middle, coarsely serrate-dentate, acute, 3-nerved, the middle nerve rather prominent forming a carinate rib on the dorsal side. Labellum sagittate when the round-triangular basal lobes are spread out, 4 mm. long, 2.5 mm. wide near the base, abruptly contracted near the middle, the apical portion narrowly triangular, broadly acute, 3-nerved, the middle nerve clavate-thickened toward the end. Column

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1.75 mm. long, constricted near the middle, dilated above, entire.

COSTA RICA, La Palma, W. W. & H. E. Rowlee 236, July 8, 1918. (TYPE in Herb. Ames No. 22497.)

**Lepanthes mirabilis** *Ames sp. nov.* Herba caespitosa. Caules vaginis tubulatis obtecti. Vaginae usque ad apicem dilatatae, nervis scabridulis, apice infundibuliformi-dilatatae. Folium marginatum, breviter petiolatum, anguste ellipticum. Sepala cohaerentia, lateralibus ovatis, longe caudatis, sepalo dorsali triangulari-caudato. Labellum trilobatum, lobis lateralibus lineari-triangularibus, divaricatis ad basim cohaerentibus, lobo medio parvo, anguste oblongo-subacuto. Columna brevis.

Roots very coarse, about 1 cm. long, 1 mm. thick. Secondary stems caespitose, 1 cm. long, concealed by two tubular sheaths that become dilated and obliquely infundibuliform near the apex, nerves of the sheaths minutely scabrous. Leaf 8-11 mm. long, 4-5 mm. wide, narrowly elliptical, marginate, tapering toward the tip, contracted at base into a short petiole. Peduncle with the raceme up to 22 mm. long, slender, erect, with a few closely appressed sheaths below the raceme. Raceme 5-8 mm. long, bearing about eight flowers. Floral bracts acute. Pedicels 1 mm. long. Flowers pale yellow, about 1 mm. apart. Sepals united at base, membranaceous, the laterals coherent nearly to the middle, ovate, caudate from a broad base, 7 mm. long, 2.5 mm. wide above the point of union, abruptly caudate; cauda 3 mm. long, linear-triangular, 1-nerved. Dorsal sepal triangular, 6.8 mm. long, caudate tipped, 3-nerved, about 3 mm. wide across the base. Petals nearly 2 mm. long, .5 mm. wide, oblong, acuminate, acute, enervose. Labellum 3-lobed; lateral lobes elongated, 2 mm. long, .5 mm. wide at base, divaricate, linear-triangular, united at base above the minute middle lobe, enervose; middle lobe less than .5 mm. long, linear-subacute, hardly equalling the protuberant rounded anterior basal angle of the lateral lobes. Column about 1 mm. long.

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COLOMBIA, State of Cauca, Córdoba, Dagua Valley, Pacific Coastal Zone, *H. Pittier* 592, December 1905. Epiphyte. 30-100 meters altitude. (TYPE in U. S. Nat. Herb. No. 530780.)

***Epidendrum alanjense*** *Ames sp. nov.* Pseudobulbi obpyriformes, diphylli. Folia ligulata, utrinque attenuata, coriacea, obtusa. Pedunculus quam folia brevior, paucibracteatus. Racemus pauciflorus, laxis. Flores flavidi. Sepala lateralia elliptico-oblonga, apice leviter incrassata. Sepalum dorsale simile. Petala elliptico-spathulata, acuta. Labellum trilobatum, lobis lateralibus triangulari-lanceolatis obtusis, lobo medio orbiculari. Callus in disco permagnus, elongatus, in carinas tres productus. Columna infra apicem utrinque angulata.

Pseudobulbs about 2.5 cm. long, obpyriform, bifoliate. Leaves up to 30 cm. long, 1.2-1.4 cm. wide, ligulate, coriaceous, tapering toward both ends, obtuse, longer than the peduncle. Peduncle with the few-flowered raceme about 20 cm. long. Flowers about six, each subtended by a short squamiform bract. Pedicel with the ovary 1.7 cm. long, slender, scabridulous. Lateral sepals 16 mm. long, 4 mm. wide near the middle, narrowly elliptic-oblong, spreading, fleshy, somewhat thickened near the tip. Dorsal sepal similar, 16 mm. long, 4 mm. wide near the middle, elliptic-spatulate, acute. Petals 15 mm. long, 3 mm. wide above the middle, elliptic-spatulate, acute, 5-nerved at the base, fleshy. Labellum 3-lobed, 13 mm. long (measured from the base of the column); lateral lobes 8 mm. long, 2 mm. wide near the middle, enclosing the column, triangular-lanceolate, obtuse, separated from the middle lobe by a short isthmus; middle lobe (isthmus included) 8 mm. long, 7.5 mm. wide, orbicular, margin entire. Callus cushion-like, extending beyond the base of the middle lobe, terminating in three raised nerves which reach nearly to the tip of the labellum, where they become branched and minutely papillose; on either side of the three central nerves there is a supplementary raised nerve with lateral branches. Column free, 7 mm. long,

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appressed to the labellum, angulate on each side below the summit.

Allied to *Epidendrum tampense* Lindl., from which it differs in having smaller flowers and the peduncle much shorter than the leaves. The column is minutely angled on each side, in front, so as to suggest rudimentary divaricate stelia.

PANAMA, Province of Chiriqui, Alanje, *H. Pittier s. n.* (TYPE from plant cultivated in Washington, D. C., U. S. Nat. Herb. No. 716250.)

***Epidendrum colonense* Ames sp. nov.** Caules rigidi. Folia disticha, ligulata, obtusa. Flores terminales, duo. Sepala petalaeque lineari-oblonga. Labellum trilobatum; lobi laterales semiovati; lobus medius anguste lanceolatus, sulcatus, nervo prominenti in medio. Columna abbreviata, crassa.

Roots fibrous, branched, smooth. Stems about 2 dm. tall, stout. Leaves about 4.5 cm. long, up to 1.3 cm. wide, very thick, much wrinkled when dry, ligulate, rounded at the tip, deeply sulcate through the middle, jointed to the rigid closely appressed sheaths, distichous, 1-1.5 cm. apart. Flowers terminal, apparently in pairs, each flower subtended by a rigid complanate spathaceous bract. Pedicel with the ovary 1 cm. long, rigid. Lateral sepals about 1.4 cm. long, 2 mm. wide, linear-oblong, tapering gradually to an acute tip, very fleshy, rigid, many-nerved. Dorsal sepal similar, obtuse. Petals 1.4 cm. long, 2 mm. wide, similar in texture to the sepals, linear-oblong, subacute, many-nerved. Labellum 1.4 cm. long, 3-lobed; lateral lobes semiovate, 5 mm. long, obtuse, each forming a deep sinus with the middle lobe, its blunt apex porrect; middle lobe 9 mm. long, 3 mm. wide near the middle, narrowly lanceolate, acute, deeply sulcate, with a conspicuously raised median nerve, which passes to the base of the labellum and forms two distinct divergent ridges; on either side of the middle lobe near the base is a distinct callus-like thickening. Column about 3 mm. long, stout, toothed at the tip.

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A very distinct species of the section *Euepidendrum*. The type specimen lying in the United States National Herbarium was referred to *E. florijugum* Rodr. by Dr. Rudolf Schlechter, from which it is quite distinct.

PANAMA, Province of Colon, Rio Indio de Fató, *H. Pittier* 4265, August 24, 1911. Near sea level. (TYPE in U. S. Nat. Herb. No. 679376.)

***Epidendrum Diguettii*** *Ames sp. nov.* Aff. *E. venoso* Lindl., sed in lobis labelli et in magnitudine differt. Pseudobulbi ovoidei, in sicco flavescentes, diphylli. Folium ligulatum, utrinque attenuatum. Pedunculus quam folium brevior. Racemus pauciflorus. Sepala lateralibus anguste oblongo-lanceolata, acuta. Sepalum dorsale simile. Petala quam sepala angustiora, anguste spatulata, acuta. Labellum trilobatum, lobis lateralibus triangularibus, acutis, divaricatis, lobo medio suborbiculari, obtuso. Discus callosus prope basim, nervis tribus prominentibus ornatus. Columna apice trilobata.

Roots fibrous, whitish. Pseudobulbs about 2.5 cm. long, ovoid, glossy, yellowish when dry and much wrinkled, diphyllous. Leaves ligulate, tapering near both ends, rounded or subacute at the tip, 8-9 cm. long, 9-11 mm. wide, midnerve prominent beneath. Peduncle with the raceme about 6 cm. long, shorter than the leaves, with two tubular abbreviated sheathing bracts near the base. Raceme few-flowered (1-3). Floral bracts about 3 mm. long, concave, triangular, acute. Pedicel and ovary 8-10 mm. long, glabrous. Lateral sepals yellowish, fleshy, narrowly oblong-lanceolate, acute, 1.4-1.6 cm. long, 3 mm. wide, spreading. Dorsal sepal similar. Petals narrower than the sepals, 1.4 cm. long, narrowly spatulate, acute, very fleshy, margins revolute (when dry). Labellum 1.4 cm. long, 8 mm. wide across the middle lobe, whitish, stained sparingly with pale purple near the base, for the most part free from the column; lateral lobes minute, triangular, acute, hardly porrect, rather divergent, 1.5 mm. long from the tip to sinus formed with the middle lobe, 8 mm. long from tip to base of column; middle lobe 5.5 mm. long, suborbicular, rounded in front,

entire or sparingly sinuous, narrowed abruptly into a wide isthmus. Disc provided with a cushion-like callus, from the tip of which three raised nerves arise; from near its base, one on each side, two thickened nerves extend nearly to the tip of the middle lobe. Column 6 mm. long, purplish, conspicuously 3-lobed at the summit, the lateral lobes rounded at the tip and porrect, under surface beneath the stigma glandular-hairy.

Closely allied to *Epidendrum venosum* Lindl., from which it differs conspicuously in size, in having acute lateral lobes, and a round mid-lobe.

MEXICO, State of Jalisco, Sierra del Olo, *M. L. Diguet s.n.*, May 1902. Flowers white and yellow. Growing on oak trees. 2000 meters altitude. (TYPE in Herb. Ames No. 22492. DUPLICATE TYPE in Herb. Mus. Par.)

***Epidendrum magnibracteatum* Ames sp. nov.** Caules validi, complanati, foliosi. Folia oblonga, valde obtusa, apice bilobata. Pedunculus bracteis ancipitibus tectus. Bractee inflorescentiae permagnae, conduplicatae, flores aequantes, apice carinatae. Flores in racemo laxo dispositi, distichi. Sepala lateralia ovato-lanceolata, apice carinata. Sepalum dorsale oblongo-lanceolatum, apice rostriforme. Petala lineari-oblonga, nervo medio prominenti, obtusa. Labellum cordato-reniforme, nervo valde incrassato in medio disci, prope apicem callo carunculato ornatum. Columna incrassata.

Stems stout, about 25 cm. long, complanate. Leaves 10-15 cm. long, 2-4 cm. wide, broadly ligulate, oblong, about 14 wide across the bilobed tip, heavily carinate, alternate, jointed to rigid sheaths which are 3-5 cm. long and complanate. Inflorescence terminal, 1.4-2 dm. long. Peduncle concealed by large imbricating rather closely appressed sheathing bracts, about 4 cm. long, carinate. Bracts subtending the flowers similar to those that conceal the peduncle, about 4 cm. long, conduplicate, carinate, completely enclosing the pedicellate ovary, rigid, coriaceous. Raceme about 1 dm. long, flowers about eight, alternate, about 2 cm. apart. Pedicel with the ovary about 1.5 cm. long, stout. Lateral

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sepals 21–24 mm. long, about 11 mm. wide, ovate-lanceolate, carinate-acute, the carina minutely serrate. Dorsal sepal about 22 mm. long, 6 mm. wide, strongly concave, cucullate near the tip below the rostriform apex. Petals about 17 mm. long, 2 mm. wide, linear-oblong, obtuse, 3-nerved, with the middle nerve prominent. Labellum adnate to the column, 22 mm. long, 20 mm. wide, cordate-reniform, retuse. Disc traversed longitudinally by a fleshy prominence which terminates near the retuse apex of the lip in a carunculate callus. Column very fleshy, 13 mm. long.

Allied with *Epidendrum coriifolium* Lindl., from which it differs in having broader leaves, and a carunculate callus near the apex of the labellum.

COSTA RICA, La Palma, A. I. Tonduz 9688, August 1895. (TYPE in U. S. Nat. Herb. No. 815038.)

***Epidendrum neurosum* Ames sp. nov.** Pseudobulbi clavati, complanati, bifoliati. Folia ligulata, coriacea, obtusa. Inflorescentia valde abbreviata, uniflora (?), terminalis. Flores carnosi, albidi. Sepala lineari-lanceolata. Petala anguste elliptica, utrinque attenuata. Labellum simplex, ovatum, acuminatum, acutum. Columna incrassata.

Pseudobulbs clavate, 6–7.5 cm. long, compressed, 6–8 mm. thick near the middle, tapering toward each end, paucivaginate at the base, 2–3 cm. apart on a stout creeping rhizome, bifoliate. Leaves 11–19 cm. long, about 1 cm. wide, ligulate, coriaceous, obtuse, mid-vein prominent beneath, carinate near the tip, and near the base. Inflorescence terminal, from summit of pseudobulb to base of lateral sepals, about 2 cm. long, subtended by two large spathaceous bracts. Flowers apparently solitary, white, faintly odorous. Lateral sepals 2.3 cm. long, 3.5 mm. wide above the base, linear-lanceolate, tapering gradually to a sharp point, mid-nerve prominent beneath. Dorsal sepal similar. Petals about 21 mm. long, 4.5 mm. wide near the middle, narrowly elliptic-lanceolate, acuminate, acute, tapering from the middle toward both ends, 7-nerved, fleshy, similar to the sepals in texture. Labellum simple, adnate to the lower half of the column, 18.5 mm. long, 7.5 mm. wide near the



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middle, ovate, acuminate, acute, fleshy, prominently 9-11-nerved, some of the nerves forked or branching. Column 5 mm. long, fleshy, with a rounded tooth at the summit in front of which a membranous obcuneate ligule is situated.

Closely allied to *Epidendrum abbreviatum* Schltr., but with larger flowers and differently shaped perianth segments.

GUATEMALA, Department of Alta Verapaz, Finca Mocca, *Harry Johnson 141*, December 15, 1919. (TYPE in U. S. Nat. Herb. No. 1014699. FRAGMENT OF TYPE in Herb. Ames No. 22528.)

***Epidendrum Pittieri* Ames sp. nov.** Caules rigidi, polyphylli. Folia disticha, ovali-oblonga. Flores in racemo laxo dispositi. Labellum trilobatum, lobis lateralibus semi-orbicularibus, margine denticulatis, lobo medio oblongo, margine integro. Discus prope basim bicallosus, longitudinaliter incrassatus per medium. Columna sectionis.

Stems rigid, 2.5 dm. tall in the type which is incomplete, sparingly branched near the tip. Leaves 2.5-3 cm. long, up to 11 mm. wide, coriaceous, oval-oblong, acute, 1.5-2 cm. distant, distichous, persistent on the coriaceous cylindrical rough rugose sheaths which conceal the stem, mid-nerve prominent beneath, margin slightly revolute in dried material. Peduncle with the raceme 6 cm. long, terminal, about 7-flowered, floriferous nearly to the base. Floral bracts linear-lanceolate, acute, 6-8 mm. long, equalling or shorter than the pedicellate ovary. Pedicel and ovary 7-8 mm. long, non-scabrous. Flowers greenish white, fleshy, nervose when dry. Lateral sepals oblong-oblancoate, 1.3-1.4 cm. long, heavily 3-nerved, acute, apex shortly carinate beneath, the carina prolonged into a cusp. Dorsal sepal ligulate, 1.3 cm. long, heavily 3-nerved, tapering toward both ends, 3.5 mm. wide near the middle. Petals linear-spatulate, obtuse, 12.5 mm. long, hardly 2 mm. wide near the tip, 3-nerved, the mid-nerve prominent. Labellum distinctly 3-lobed, including the column 15 mm. long, fleshy; lateral lobes about 4 mm. long from base to sinus formed with middle lobe, hardly 3 mm. wide, semiorbicular, margin denticulate; middle lobe nearly 4 mm. long, 3 mm.

wide, oblong, rounded at the tip, thickened along the middle nerve. Disc bicallose near the summit of the column, calli rounded, smooth. Column 10-11 mm. long, adnate to the labellum.

Closely allied to *Epidendrum scabrum* Ruiz & Pav., from which it is in part distinguished by larger flowers and longer column. Jamieson No. 10 (referred to *E. scabrum* by Lindley) has similar flowers, but the plants are of a more branching habit with longer leaves. From *Epidendrum chioneum* Lindl., it is readily distinguished by the linear-spatulate petals.

COLOMBIA, State of Cauca, Headwaters of Rio Lopez, Rio Palo basin, Tierra Adentro, *H. Pittier 1067*, January 1906. 2500-3000 meters altitude. (TYPE in U. S. Nat. Herb. No. 531269.)

***Epidendrum pruinatum*** A. Rich. & Gal. in Ann. Sci. Nat. ser. 3, 3 (1845) 20, *Ames ampl.* Pseudobulbs 1.5 cm. long, globose, unifoliate, subtended by several elongated acute sheathing bracts. Leaf oblong-lanceolate, tapering toward both ends, acute, 6-9 cm. long, 1-1.8 cm. wide, coriaceous. Peduncle including the raceme about 14 cm. long, with several squamiform scarios bracts. Raceme laxly 5-7-flowered. Floral bracts about 2 mm. long, deltoid-lanceolate, acuminate, acute. Pedicel smooth, with the ovary about 1.8 cm. long, slender. Flowers about 8 mm. long. Lateral sepals broadly spatulate, rather fleshy, 8 mm. long, 2.5 mm. wide above the middle, rounded at the tip. Dorsal sepal 8 mm. long, 2 mm. wide near the apex, tapering gradually to a broad base, obtuse. Petals 7 mm. long, 1.5 mm. wide near the tip, spatulate, obtuse. Labellum adnate to the lower half of the column, 7.5 mm. long, distinctly 3-lobed; lateral lobes 4 mm. long, 2.5 mm. wide, obovate, obtuse, divaricate, membranaceous; middle lobe about 3.5 mm. long, 6 mm. wide, retuse, transversely oblong, beneath the summit of the column on the disc of the lip there is a cushion-like callus which terminates in three raised tuberculate nerves which extend on the middle lobe. Column stout, 5 mm. long, ebrachiate.

This species was originally published with a most inadequate description and has remained obscure. Although the type specimen was preserved by Richard together with a colored sketch, no trace of it has been discoverable in the Richard Herbarium at the Jardin des Plantes in Paris. Recently, in an examination of the Reichenbachian Herbarium at Vienna, I found both the original specimen and the colored drawing. With the aid of this material it has been possible to identify a Mexican specimen distributed many years ago by C. A. Purpus under the number 3616. From this specimen and from Richard's material the above description was prepared.

The type specimen was collected in Oaxaca. The flowers were described as "*jaune-orange, labelle blanc jaune. Colom verte & violette.*"

MEXICO, State of Puebla, Vicinity of San Luis Tultitlanapa, near Oaxaca, C. A. Purpus 3616, June 1908. (Herb. Ames No. 22531.)

**Epidendrum Steinbachii** Ames *sp. nov.* Caules alti, rigidi, ramosissimi, dense foliosi. Flores in racemis brevibus dispositi. Sepala ligulata. Petala lineari-spathulata. Labellum ellipticum, bicallosum. Columna gracilis.

In general habit similar to *Epidendrum soratae* Reichb. f. Roots fibrous, smooth, branched. Stems 5 (-10) dm. high, about 5 mm. thick near the base, copiously branched; branches 2 cm. apart, 2-6 cm. long, obliquely ascending, divaricately branched near the end, rather closely beset with rigid leaves. Leaves 1.2-3 cm. long, 2-3.5 mm. wide, narrowly oblong, deciduous from subcylindrical sheaths, distichous, about 6 mm. apart, sulcate above, carinate beneath, the terminal one of each branch equalling or exceeding the raceme. Racemes terminal, 3-4-flowered, about 1 cm. long. Pedicel with the ovary 4 mm. long. Floral bracts about 2 mm. long, oblong, tapering to a subacute apex. Flowers yellowish, column stained with purple. Lateral sepals 6 mm. long, asymmetrically oblanceolate-apiculate from a broad base, carinate near the upper margin, strongly concave at the tip. Dorsal sepal 6 mm. long, oblong-ligulate, subacute, 3-nerved.

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Petals about 6 mm. long, linear-spatulate, hardly .5 mm. wide near the tip. Labellum simple, obscurely apiculate, adnate to the column, expanded part 3 mm. long, 4 mm. wide, transversely elliptical, fleshy, many-nerved, with two minute rounded confluent calli at base beneath the summit of the column. Column slender, 5 mm. long, anther simple.

Closely allied to *Epidendrum soratae* Reichb. f. which it resembles in habit, but from which it is distinct in having a simple, obscurely apiculate lip. Another difference from *E. soratae* is found in the more slender petals. In *E. soratae* the lip is obscurely 3-lobed above the middle, with the middle lobe retuse. Reichenbach's sketch of the flower of Mandon No. 1138 (the type of *E. soratae*) plainly shows the lobing of the lip which was apparent in the flowers of specimens preserved in Vienna.

BOLIVIA, Province of Sacaba, Department of Cochabamba, *Steinbach* 5926, November 19, 1921. On trees. Flowers greenish yellow. Plants .50-1 meter high. 2500 meters altitude. (TYPE in the Gray Herbarium. FRAGMENT OF TYPE in Herb. Ames No. 22529.)

***Epidendrum suaveolens* Ames sp. nov.** Caules ramosi, foliosi. Folia elliptico-oblonga. Flores in racemo sublaxo dispositi. Sepala ligulata, apice conduplicato-carinata. Labellum trilobatum, lobis subaequalibus, lateralibus denticulatis. Columna sectionis.

Stems several decimeters tall, branching near the summit, stout, 8 mm. or more in diameter, leafy. Leaves elliptic-oblong, 4-7 cm. long, 1.5-2 cm. wide, obtuse, coriaceous, 1-3 cm. apart, subdistichous, rigid, mid-nerve prominent beneath, soon deciduous from the closely appressed cylindrical rugose sheaths that conceal the stems. Peduncle with the raceme 5-6 cm. long, nodding, bearing ten or more greenish white very odorous fleshy flowers in a rather compact terminal raceme. Floral bracts linear-lanceolate, 5-8 mm. long. Pedicel with the ovary 15 mm. long, non-scabrous. Flowers about 5 mm. apart. Lateral sepals ovate-oblong, 1.5 cm. long, about 6 mm. wide near the middle, conspicuously 5-nerved, conduplicate-thickened at

the tip, acute. Dorsal sepal 1.5 cm. long, 7 mm. wide, elliptic-oblong, cuspidate-acute, 5-nerved. Petals 12-13 mm. long, 7 mm. wide, oval, rounded at the tip, narrowed at the base, 3-nerved, each nerve prominent and more or less branched. Labellum with the column 1.8 cm. long, conspicuously 3-lobed; lateral lobes suborbicular, 7 mm. long, 5 mm. wide, margin irregularly denticulate; middle lobe cuneate, emarginate, obscurely and bluntly apiculate, 6.5 mm. long, 7 mm. wide across the tip. Disc shortly bicarinate beneath the summit of the column, with three conspicuous nerves. Column fleshy, 1 cm. long.

Allied with *Epidendrum torquatum* Lindl., from which it differs conspicuously in the larger flowers, less capitate and much longer inflorescence.

COLOMBIA, State of Cauca, Headwaters of Rio Lopez, Rio Palo basin, Tierra Adentro, *H. Pittier 1066*, January 1906. 2500-3000 meters altitude. (TYPE in U. S. Nat. Herb. No. 531268.)

**Elleanthus towarensis** *Ames sp. nov.* Aff. *E. furfuraceo* Lindl. Caules elongati, simplices, foliosi. Folia anguste oblongo-lanceolata, nervosa, basi vaginantia. Racemus abbreviatus, plus minusve decemflorus. Bractee inflorescentiae cymbiformes, acutae, flores excurrentes. Pedicellus furfuraceus. Sepala lateralibus oblonga, acuta. Sepalum dorsale simile. Petala oblonga, apice irregulariter crenulata. Labellum suborbiculare, margine irregulariter dentatum, prope basim bicallosum. Calli permagni, in sicco nigrescentes. Columna crassa.

Plant about 56 cm. tall, unbranched. Stems erect, 3 mm. thick, with several tubular sheaths. Leaves distichous, 4-5 cm. apart, 8.5-13 cm. long, 1.5-2 cm. wide, narrowly oblong-lanceolate, tapering to a blunt tip, contracted at base into a sheathing tubular petiole, nervose. Peduncle arising from a complanate spathe-like bract, with the raceme 4.5 cm. long (spathe 3 cm. long), furfuraceous, blackish when dry. Raceme about ten-flowered, 3.5 cm. long in the type (longer as the apical flowers mature). Floral bracts cymbiform, 2 cm. long when fully developed, lanceolate, acuminate,

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nervose, much exceeding the flowers. Pedicel with the ovary about 8 mm. long, rigid, stout, densely furfuraceous. Flowers pink-purple. Lateral sepals about 7 mm. long, 3 mm. wide, oblong, tapering to an acute tip, carinate dorsally, furfuraceous on the exterior surface. Dorsal sepal similar. Petals 6 mm. long, 2 mm. wide, oblong, rounded at the tip, irregularly and minutely crenulate on the apical margin, submembranaceous. Labellum 6.5 mm. long, about 7 mm. wide, suborbicular, margin irregularly dentate, bicallose near the base. Calli about 1.5 mm. long, narrowly ellipsoidal. Column 3.5 mm. long, fleshy.

Similar in habit to *Elleanthus furfuraceus* Lindl., from which it is distinguishable by the suborbicular labellum.

VENEZUELA, State of Aragua, Colonia Tovar and vicinity, *H. Pittier 10010*, December 26, 1921. Epiphyte. Flowers pinkish purple. 2150-2200 meters altitude. (TYPE in Herb. Ames No. 22495.)

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SCHEDULAE ORCHIDIANAE  
No. 2

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ORCHIDACEAE QUAEDAM  
AMERICANAE

II

BY  
OAKES AMES

BOSTON, MASSACHUSETTS

1923





SELENIPEDIUM *chica* Reichb.f.

# SCHEDULAE ORCHIDIANAE

NO. 2

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## Orchidaceae Quaedam Americanae

BY

OAKES AMES

IN the following pages, new or little-known species from tropical America receive attention. The arrangement of genera follows the sequence proposed in Engler and Prantl's "Die Pflanzenfamilien."

**Selenipedium chica** Reichb. f. Xen. Orch. 1 (1854)

3. t. 2, figs. I, 1-5.

**Cypripedium chica** Kränzl. Orch. 1 (1897) 36.

Stems leafy, 3 mm. thick near the summit, erect, 3-5 m. tall, branching above, the lower part becoming very hard as the plants mature, the leafy shoots having the aspect of some species of bamboo. Leaves 14-30 cm. long, up to 4 cm. wide, narrowly elliptic-lanceolate, acuminate, acute, subdistichous, obliquely ascending, membranaceous, nervose, the lamina contracted at base into a closely appressed prominently nerved cylindrical sheath. Inflorescence bearing twenty or more flowers, terminal, 5 cm. or more long, elongating during anthesis, subtended by much reduced leaves. Flowers opening in succession (fruits and buds simultaneously present), soon deciduous if pollination fails, the perianth and ovary falling away together. Floral bracts elongated, about 2.5 mm. apart, inserted at right angles to the densely pubescent rachis, or slightly ascending, 8-18 mm. long, up to 4 mm. wide near the base, lanceolate, acute, glandular-pubescent on the upper and lower surface. Pedicel with the ovary about 3 cm. long in mature flowers,

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densely glandular-pubescent. Ovary triangular in cross-section, three-celled. Sepals about 19 mm. long, the laterals coalescent nearly to the apex, 1 cm. wide, elliptical, acute, glandular-pubescent. Petals linear-oblong, abruptly acute, 19 mm. long, about 2 mm. wide near the base, spreading and slightly deflexed, sparsely pubescent on the dorsal surface along the midnerve, densely glandular-pubescent near the base on the inner surface. Labellum about 2.4 cm. long, 18 mm. wide, calceiform, suggesting *Paphiopedilum Schlimii* Pfitz., but with a much larger opening, margins strongly involute to form a circular orifice 8 mm. across, densely glandular-hairy within beneath the gynostemium. Gynostemium inconspicuous, staminodium about 5 mm. long, spatulate, obtuse, slightly exceeding the stigma, smooth; stigma wider than the staminodium, pentagonal, densely papillose, trisulcate; anthers prominent at the base of the staminodium, with the pollen forming spherical bodies. Capsules blackish in dried specimens, slenderly fusiform, pubescent, about 4 cm. long, 2 mm. in diameter.

This extraordinary species has remained in doubt ever since it was described and figured by Reichenbach in 1854. In fact, recent monographic treatments of the *Diandrea* have indicated dependence on the original plate and description of *Selenipedium chica* for a knowledge of its characters. Specimens were first obtained by Duchassaing, who secured them from an Indian chief in the mountains of Panama, where the species was said to be known as "Vanilla en Arbol," because the fruits yielded a flavoring substance suggestive of Vanilla, or used like Vanilla.

Ellsworth P. Killip obtained specimens on Ancon Hill, Panama, in 1917, but as the flowers of his material that I have examined are so much larger than the flowers figured by Reichenbach, I was for a long time uncertain about their relationship to *Selenipedium chica*. The most recent collections are those of Mr. C. W. Powell. These consist of leafy stems and alcoholized flowers. To Mr. Powell I am indebted for the opportunity to give the above description and to have prepared an accurate drawing of the plant. I am also indebted to Mr. Powell for data which remove all doubt as

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to the authenticity of the records of the height to which *Selenipedium chica* grows. It will be remembered that Duchassaing's specimens were said to be from twelve to fifteen feet high. Powell describes his specimens as being from ten to twelve feet high, with branches along the upper part of the stems. In other words, *Selenipedium chica* is the tallest orchid known to science.

When I examined the specimens of *Selenipedium* in the Reichenbachian Herbarium at Vienna, I was unable to find the type of *S. chica*. The only record of the species that I saw was a duplicate of the plate published in *Xenia Orchidacea*. Perhaps Reichenbach did not have specimens. From the plate, which is, I fear, a bit enhanced by the imagination of its maker, I have arrived at the conclusion that the flowers observed were simply expanding buds, those represented on nearly mature capsules having been restored from the remains of withered flowers. The flowering period is a long one, as both fruits and buds are present simultaneously. Furthermore, only one or two flowers expand at a time to exhibit full perfection of floral development. The more mature buds of Powell's alcoholized material look suspiciously like the supposedly mature flowers of Reichenbach's plate. From this observation I conclude that the disparity in size between the flowers of Powell's specimens and the flowers of Reichenbach's plate is explained.

PANAMA, Canal Zone, C. W. Powell, November 1922; Powell 258, November 1922. Grows in semi-shade in damp, cool places. Flowers open in succession, and if not pollinated the first day fall off at nightfall. 200-300 feet altitude: Ancon Hill, Ellsworth P. Killip 3034, September 22, 1917. In dense woods. (Buds, expanded flowers, and fruits present simultaneously in the same inflorescence.) 175 meters altitude.

PLATE 1. Plant slightly less than life-size, drawn from specimens collected in the Republic of Panama by C. W. Powell. 1, dorsal sepal. 2, petal. 3, lateral sepals. 4, labellum. 5, diagrammatic suggestion of the height of the plant. 6, gynostemium, viewed from the under side,

showing the stigma with an anther on either side; staminodium overhanging the stigma. 7, gynostemium viewed from the side.

**Habenaria avicula** Schltr. in Fedde Repert. 17 (1921) 138.

*Habenaria patentiloba* Ames in Proc. Biol. Soc. Wash. 34 (1921) 151.

From studies of analytical drawings prepared from Schlechter's type material of *Habenaria avicula*, it is clear that *H. patentiloba* should be reduced to synonymy.

**Pelexia hondurensis** Ames sp. nov. Folia longe petiolata, lamina late ovata, acuminata, membranacea. Scapus elongatus, in racemum laxum productus. Sepala lateralia mentum saccatum formantia, lanceolata, acuta, glandulosa. Sepalum dorsale lanceolatum, prope basim valde concavum. Petala lineari-spathulata. Labellum in laminam suborbicularem productum, prope basim biauriculatum. Discus infra medium glanduloso-pubescent. Columna infra apicem gracilis; rostellum in membranam oblongo-linearem productum.

Roots fleshy, fasciculate (?). Leaves radical, imbricate at the base, including the slender petiole up to 26 cm. long; lamina 10-13 cm. long, up to 8.5 cm. wide, broadly ovate, acuminate, acute, membranaceous, abruptly contracted at base; petiole up to 13.5 cm. long, slender, conduplicate at base. Scape with the raceme about 40 cm. long, erect, with numerous elongated linear-lanceolate scarious bracts, short-pubescent above. Bracts 2-3.5 cm. long, the lower ones sheathing and closely appressed. Raceme about 26 cm. long, loosely many-flowered, about 4 cm. in diameter; rachis densely glandular-pubescent. Flowers obliquely ascending, with the pedicellate ovary about 3 cm. long. Bracts of the inflorescence about 2 cm. long, linear, acute, scarious, glandular-pubescent, tinged with purple in dried specimens. Pedicel with the ovary 1-1.5 cm. long, glandular-pubescent. Sepals forming a saccate mentum, linear-lanceolate, acute, including the mentum about 1.8 cm.

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long, 2 mm. wide above the middle, sparsely glandular on the exterior surface, margins involute. Mentum about 7 mm. long, glandular without, adnate to the ovary, the conical tip free. Dorsal sepal about 1.5 cm. long, 4.5 mm. wide above the middle, lanceolate, acute, strongly concave at the base, arching forward, adnate to the petals, glandular-pubescent on the outer surface. Petals 1.4 cm. long, about 1.5 mm. wide above the middle, linear-spatulate from a slender linear-oblong base, acute, smooth, membranaceous, with the upper sepal forming a narrow hood above the gynostemium. Labellum, — including the basal portion concealed by the mentum, — 1.5 cm. long, the upper half below the expanded apex adherent to the elongated gynostemium, narrowed above the dilated biauriculate base then gradually broadening, 4 mm. wide (when free and spread out) in front of the suborbicular lamina in which it terminates, minutely lobulate on each side or simply constricted; apical lamina 2.5 mm. long, 2.5 mm. wide; basal auricles retrorse, somewhat thickened. Disc of the labellum glandular-hairy in front of the auricles. Gynostemium about 1 cm. long, very slender, dilated above into an orbicular body which is terminated by the linear-oblong rostellum; rostellum about 1 mm. long, minutely trilobulate at the apex.

This species appears to be most closely allied with *Pelexia longipetiolata* (Reichb. f.) Schltr., from which it differs in the outline of the leaves, in the shorter petioles and in the trilobulate or denticulate apex of the rostellum.

HONDURAS, San Pedro Sula, *Carl Thieme* 785, May 26, 1889. Roadside in forest. (TYPE in U. S. Nat. Herb. No. 814643.)

*Pelexia subaequalis* Ames sp. nov. Caulis subnullus. Folium longe petiolatum, ellipticum, acutum, chartaceum in sicco, quam scapus vix brevius. Scapus erectus, bracteosus. Racemus laxis. Bractee inflorescentiae lineares. Sepala lateralia linearia, acuta, glanduloso-pubescentia. Sepalum dorsale anguste ellipticum. Petala lineari-lanceolata, ad sepalum dorsale affixa. Labellum elongato-panduriforme, basi sagittatum, intus basim supra dense glanduloso-

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pubescens. *Gynostemium elongatum*, gracile, rostello producto.

Roots stout, about 4-5 mm. in diameter, villiferous. Leaf long-petiolate; petiole apparently rising from the roots; lamina 15 cm. long, 6.7 cm. wide near the middle, elliptic, apex triangular-acuminate, acute, rounded at base where it is abruptly contracted into the sulcate petiole, chartaceous when dry; petiole 16 cm. long, slender. Scape 30 cm. long, clothed at the base by several tubular loosely appressed sheaths, above the base ornamented with about three sheathing alternate acute bracts which are 3.7-3.9 cm. long; below the inflorescence there are three linear acute bracts which are obliquely ascending and mostly free. Raceme about 9 cm. long, elongating during anthesis, lax, about 4.5 cm. in diameter; rachis glandular-pubescent. Bracts of the inflorescence about 2 cm. long when the flowers are expanded, linear, acute, ascending, somewhat glandular-pubescent near the base. Pedicel abbreviated, with the glandular-pubescent ovary about 1 cm. long. Lateral sepals, including the free spur-like mentum, about 2 cm. long, linear-oblong, glandular-pubescent, spreading. Mentum blunt. Dorsal sepal about 1.5 cm. long, narrowly elliptic-lanceolate, 3.5 mm. wide near the middle, tapering gradually to a broad base, acuminate from above the middle to form a blunt tip, densely glandular-pubescent, 3-nerved. Petals adherent to the dorsal sepal, about 1.4 cm. long, linear-lanceolate, acute, glandular-pubescent on the outer margin. Labellum 1.8 cm. long, constricted near the apex where it is 3-lobed, when spread out elongated-panduriform with a sagittate base; lateral lobes rounded, small, hardly 1 mm. wide (at the base of the middle lobe the lamina of the lip is about 4 mm. wide); middle lobe 3 mm. long, 3.5 mm. wide; above the sagittate base the limb of the labellum is densely glandular-hairy and about 1.75 mm. wide. *Gynostemium* about 1 cm. long, very slender below the dilated summit; rostellum about 1.5 mm. long.

From *Pelexia Funckiana* (A. Rich. & Gal.) Schltr., with which it is allied, the broader leaf with elongated petiole and relatively shorter scape are differentiating characters.

GUATEMALA, Department of Alta Verapaz, Cubilquitz, *H. v. Tuerckheim* (John Donnell Smith Distribution No. 7994), May 1901. 350 meters altitude. (TYPE in Herb. Ames No. 6930.)

*Spiranthes aguacatensis* Reichb. f. in Bonpl. 3 (1855)

214.

*Spiranthes Brenesii* Schltr. in Fedde Repert. 10 (1912)

481. *Brachystele aguacatensis* Schltr. in Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 371. *Brachystele Brenesii* Schltr. in Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 372. *Gyrostachys aguacatensis* Ktze. Rev. Gen. 2 (1891) 664.

This species was originally collected by Oersted "in monte Aguacate," Costa Rica. It was described by Reichenbach in 1855. The identity of the species has remained in doubt. In August, 1922, I examined Reichenbach's material. The type is clarified by a series of crude analytical sketches. It resembles both in habit and in floral structure the Costa Rican specimens which Schlechter published as a new species in 1912 under the name *Spiranthes Brenesii*. In my studies I have been unable to detect substantial differences between *Spiranthes Brenesii* and *Spiranthes aguacatensis*. In a letter dated September 14, 1921, Schlechter wrote to me: "I am much afraid, now, that it [*S. Brenesii*] is identical with *Brachystele aguacatensis* (R. f.) Schltr."

Up to the present time I have failed to find justification for Schlechter's new genus *Brachystele*. The characters relied on for segregation from *Spiranthes* are by no means so dependable as it is reasonable to expect generic characters to be. To accept *Brachystele* is only justifiable, in my opinion, as a result of that impatience which is stimulated by contemplation of the apparent hodge-podge that *Spiranthes* presents when taken in the broader and traditional sense. *Spiranthes* is a genus which baffles attempts to make clear-cut divisions that will unite like elements. Even such well-established groups as *Stenorhynchus* and *Sarcoglottis* are questionable segregates. Bentham and Hooker admitted four sections under *Spiranthes* in the *Genera Plantarum*, namely, *Euspiranthes*, *Sauroglossum*, *Sarco-*



glottis, and *Stenorhynchus*. Schlechter, in his recent revision of the *Spiranthis*, recognized four distinct groups of genera. By reliance on slight differences discernible in the structure of the gynostemium, but not always clear, and not always correlated with a second constant character, he admitted twenty-four genera, seventeen of which he proposed as new. That such a goodly number of heretofore unrecognized genera should exist in a group that has been intensively investigated by capable systematists, would indicate that deep-seated characters of value for taxonomic purposes have been previously neglected, disregarded, or overlooked.

In facies, except for the ample sheathing bracts of the stem, *Brachystele aguacatensis*, to mention only one of the fourteen species admitted to the genus *Brachystele* in Schlechter's monograph, resembles such species as *Spiranthes Beckii* Lindl. The structure of the lip is essentially that of *Euspiranthes*. Although the lateral sepals are distinctly coherent at base and decurrent on the ovary to form a small sac, this cohesion is simply a matter of degree. If for generic segregation reliance is placed on a peculiarity of the gynostemium correlated with a tendency toward cohesion of the lateral sepals, a character that attains its highest development in such genera as *Sarcoglottis* and *Stenorhynchus*, the risk is run of establishing genera which depend for recognition on a recondite character of the gynostemium. This seems hardly worth while if we hope to keep genera within the capacity to understand of those who identify plants.

***Spiranthes amabilis* Ames sp. nov.** Herba terrestris, foliis basilaribus, scapo elongato. Racemus bi-triflorus. Sepala lateralia lineari-oblonga, acuta, uninervia. Sepalum dorsale cum petala galeam formans, lineari-oblongum. Petala spathulata, basi anguste lineari-oblonga, margine crenato-dentato. Labellum oblongum infra apicem, prope apicem in laminam late reniformem expansum, prope basim bicallosum. Gynostemium infra medium gracile.

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Plants 18–21 cm. tall, leafy at the base, the 2–3-flowered inflorescence borne at the summit of a slender peduncle. Roots few, rather coarse. Leaves approximate; petioles 1.5–2.5 cm. long, sheathing at base, slender above; lamina 1.5–2.5 cm. long, up to 1.2 cm. wide, ovate, acute, chartaceous when dry, mid-vein conspicuous. Peduncle, including the raceme, 12–18.5 cm. long, glandular-pubescent above, with four to five sheath-like bracts 2–2.5 cm. long, which are spreading and acute at the tip. Raceme few-flowered (2–3). Bracts of the inflorescence linear-lanceolate, acute, exceeding the pedicellate ovary, scarious, erect. Ovary very sparsely glandular-pubescent, about 1 cm. long, ascending or erect, narrowly fusiform. Flowers yellowish white when dry. Lateral sepals 8 mm. long, linear-oblong from a dilated base, acute, 1-nerved, translucent, spreading. Dorsal sepal 7 mm. long, about 1 mm. wide, linear-oblong, obtuse, adherent to the petals, concave at base. Petals about 7 mm. long, spatulate, acute, slender at base and for one half their length, 1 mm. wide near their tip, rather coarsely crenate-dentate on the upper margin, conspicuously 1-nerved. Labellum 7 mm. long, 2 mm. wide near the middle, rounded at the base, contracted abruptly into the short claw, apical fourth expanded into a broadly reniform obtuse plate, 2 mm. long, 3 mm. wide. Disc 5-nerved, with two inconspicuous papilliform calli, one on each side at base. Gynostemium 6 mm. long, slender up to the middle, where it is abruptly dilated into an ovate-lanceolate acute plate.

Allied to *Spiranthes elata* L. C. Rich., but much smaller, with fewer-flowered racemes and a different labellum.

GUATEMALA, Department of Alta Verapaz, Cobán, *H. v. Tuerckheim II* 1787, May 1907. 1350 meters altitude. (TYPE in U. S. Nat. Herb. No. 825828.)

**Sarcoglottis hemichrea** (Lindl.) Ames comb. nov.

*Spiranthes hemichrea* Lindl. Gen. & Sp. Orch. (1840)

473. *Spiranthes pulchra* Schltr. in Fedde Repert. 15 (1918)

198. *Deiregyne hemichrea* Schltr. in Beihefte Bot. Centralbl.

37, Abt. 2 (1920) 427. *Deiregyne pulchra* Schltr. in Beihefte

Bot. Centralbl. 37, Abt. 2 (1920) 428. *Gyrostachys hemichrea* Ktze. Rev. Gen. 2 (1891) 664.

Although there are slight differences in the labellum as represented by the sketches of *Spiranthes hemichrea* in Lindley's Herbarium at Kew and of *Spiranthes pulchra* in Schlechter's Herbarium at Berlin, these differences are, I believe, attributable to normal variation. In his original description Schlechter referred to his material as being comparable to *Spiranthes sceptrum* Reichb. f., a species of which I have failed to find a published record. If *Spiranthes sceptrodes* Reichb. f. was intended, this would indicate alliance with *Sarcoglottis*. Schlechter in his monograph of the Spiranthinae referred *S. pulchra* to a new genus, *Deiregyne*, and suggested relationship with *Spiranthes hemichrea*. From my studies it seems best to regard *Spiranthes pulchra* as conspecific with *Sarcoglottis hemichrea*. Among the differences emphasized by Schlechter are the more copiously flowered racemes and stouter habit of *Spiranthes pulchra*, yet with Lindley's type of *S. hemichrea* there is a note in quotation marks, probably taken from Skinner's account of the species, which is as follows, "Spikes sometimes much larger."

***Sarcoglottis orbiculata* Ames sp. nov.** Herba terrestis, foliis rosulatis, suborbicularibus vel orbicularibus. Scapus erectus, vaginatus vaginis arcte appressis acutis. Racemus densiflorus. Bractee inflorescentiae permagnae, lanceolatae, acutae. Ovarium glanduloso-pubescent. Sepala lateralium mentum formantia, ascendunt demum deflexa, curvata, subacuta. Sepalum dorsale cum petalis galeam formans. Labellum basi sagittatum, auriculis elongatis; lamina longe panduriformis, apice in lobum ovatum expansa. Gynostemium elongatum.

Plant about 30 cm. high, stout, with orbicular or suborbicular obtuse basal leaves and a short raceme of large flowers. Leaves 8-10 cm. long including the short petiole, up to 6.7 cm. wide, apparently rosulate. Peduncle with pubescent internodes, sheathed by several closely appressed bracts which are cylindrical at base and free above, acute.

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Raceme about 1 dm. long, 4-5 cm. in diameter; rachis pubescent. Bracts of the inflorescence 2-3 cm. long, lanceolate, acute. Ovary shortly pedicellate, about 2 cm. long. Lateral sepals decurrent on the column forming a distinct glandular-pubescent mentum, at first ascending then deflexed, 3.2 cm. long from tip to base of mentum, scimeter-shaped, tapering to the subacute apex. Dorsal sepal 2.2 cm. long, adnate to the petals and with them forming a narrow hood above the gynostemium. Petals slightly shorter than the upper sepal, narrowly oblong. Labellum ascending from the inside of the mentum, about 2.6 cm. long, sagittate at base, elongated-panduriform, simple, expanded above into a deflexed ovate obtuse lamina; auricles 4 mm. long, narrowly triangular subacute. Gynostemium slender below the stigma, reaching to the middle of the dorsal sepal.

Similar to *Sarcoglottis ochracea* (A. Rich. & Gal.) Schltr., but taller and stouter, with much larger leaves, denser raceme, and blunter labellum.

GUATEMALA, Department of Quiché, San Miguel Uspantán, Heyde & Lux (John Donnell Smith Distribution No. 3504), April 1892. 6000-12000 pp. (TYPE in U. S. Nat. Herb. No. 826141.)

***Sarcoglottis pubilabia*** Ames *sp. nov.* Herba terrestri radicebus fasciculatis, valde incrassatis, aphylla. Scapus elongatus, vaginatus in racemum sublaxum productus. Racemus multiflorus, elongatus. Bracteae inflorescentiae lanceolatae, acuminatae. Sepala lateralia triangulari-oblonga. Sepalum dorsale cum petalis galeam valde concavam formans. Labellum basi conspicue sagittatum, prope apicem in lobum suborbicularem constrictum. Discus glanduloso-pubescent. Gynostemium abbreviatum rostello denticulato.

Terrestrial herb, apparently very variable in height, the type 62 cm. tall, leafless at anthesis. Roots fasciculate, extraordinarily fleshy, 5-11 cm. long, up to 8 mm. in diameter. Scape about 60 cm. tall, rather stout, with several sheathing bracts which are prolonged into a free triangular

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acute tip. Raceme 11–22 cm. long, barely 2 cm. in diameter, many-flowered, buds and faded flowers simultaneously present; rachis glandular-pubescent. Bracts of the inflorescence glandular-ciliate on the margin, lanceolate, acuminate, acute, 1 cm. or more long. Ovary shortly pedicellate, densely glandular-pubescent, about 9.5 mm. long. Lateral sepals decurrent on the ovary, scarcely 1 cm. long from tip to base of mentum, about 3 mm. wide, triangular-oblong, obtuse, 3-nerved. Dorsal sepal 6 mm. long, adherent to the petals and with them forming a deeply concave hood over the gynostemium, glandular-pubescent on the exterior surface, narrowly elliptic-lanceolate, obtuse. Petals about 6 mm. long, falcate-lanceolate, obtuse, 3-nerved, glandular-ciliate on the outer margin. Labellum about 8 mm. long, sagittate at the base, constricted near the apex to form a suborbicular terminal lobe 2 mm. long and 3.5 mm. wide; lamina 5 mm. wide below the point of constriction, rounded above, gradually tapering to the wide sagittate base. Disc conspicuously glandular-hairy below the middle; auricles nearly 2 mm. long, flattened, very fleshy. Gynostemium 4 mm. long measured from the base of the dorsal sepal to the denticulate tip of the slender rostellum.

Allied to *Spiranthes Schaffneri* Reichb. f., from which it differs in the 3-lobed labellum and absence of leaves at flowering time. From *Sarcoglottis zamororae* Ames it is distinguished by the glandular hairs on the disc of the labellum and by the more strongly concave cucullate dorsal sepal.

MEXICO, C. G. Pringle 8867. (TYPE in Herb. Ames No. 6648.)

***Sarcoglottis valida* Ames sp. nov.** Herba terrestris valida. Folia? Scapus erectus bene vaginatus, vaginis subimbricatis scariosis acutis. Racemus validus, erectus, multiflorus, glanduloso-pubescent. Sepala lateralia oblonga, acuta, mentum obtusum formantia. Sepalum dorsale galeam formans, valde concavum. Petala oblonga, obtusa. Labellum basi sagittatum, apice trilobatum lobis subaequalibus. Discus puberulus. Gynostemium elongatum, antice puberulum.

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Terrestrial herb represented in the type collection by leafless scapes 24–25 cm. high which are thickly beset with approximate scarious sheaths 3–4 cm. long, tinged with pink-purple, internodes where revealed glandular-pubescent with hairs canescent and weak. Raceme 6–9 cm. long, up to 6 cm. in diameter; rachis and ovaries densely glandular-pubescent. Bracts of the inflorescence about 2 cm. long, lanceolate, acuminate, acute, scarious. Ovary shortly pedicellate, about 2 cm. long, obliquely ascending, somewhat arcuate. Lateral sepals decurrent on the ovary, forming an obtuse glandular-pubescent mentum, including the mentum up to 22 mm. long, 4.5 mm. wide near the middle, oblong, tapering very gradually to the obtuse tip, glandular-pubescent on the outer surface, ascending, then sharply bent and protruding. Dorsal sepal with the adherent petals forming a strongly concave hood above the gynostemium, 1.8 cm. long, narrowly elliptic, glandular-pubescent, obtuse, lightly carinate at the tip on the exterior surface. Petals about 1.8 cm. long, 2.5 mm. wide near the middle, oblong, obtuse, slightly tapering toward both ends. Labellum 3 cm. long, subequally 3-lobed at the tip, tapering to the sagittate base; lateral lobes semiorbicular, 5 mm. long, 3 mm. wide; middle lobe semiorbicular, about 4 mm. long, 7 mm. wide, rounded in front; limb of the labellum puberulous near the margin both on the inner and outer surface; basal auricles about 3 mm. long. Gynostemium slender below the stigma, puberulous on the inner face.

Similar to *Sarcoglottis Smithii* (Reichb. f.) Schltr. in general shape of the labellum. *Sarcoglottis lobata* (Lindl.) Baxt. is also a close ally, but the sagittate base of the labellum different.

COSTA RICA, San José, *P. Biolley* 3521, February 1891. Haies aux environs de San José. 1135 meters altitude. (TYPE in U. S. Nat. Herb. No. 579419.)

*Sarcoglottis zamororae* Ames sp. nov. Herba terrestris. Folia? Scapus erectus, vaginatus. Racemus laxus, multiflorus. Bracteae inflorescentiae flores æquant, lanceolatae, acutae. Sepala lateralia oblonga, usque ad apicem

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attenuata. Sepalum dorsale anguste ellipticum. Petala cum sepalo dorsali galeam formantia. Labellum trilobatum, lobis lateralibus inconspicuis, basi sagittatum. Gynostemium abbreviatum, rostello denticulato.

Plant slender, probably exceeding 30 cm. in height, leafless at time of anthesis. Scape provided with several sheaths which are 3-4 cm. long, closely appressed below the middle, dilated upward, and continued obliquely into an acute spreading tip. Raceme about 12 cm. long, loosely many-flowered, with a glandular-pubescent rachis. Bracts of the inflorescence lanceolate, acuminate, acute, 1-1.9 cm. long (the lowermost are largest). Pedicel very short, with the glandular-pubescent ovary about 1.3 cm. long, somewhat arcuate. Flowers scarcely 1 cm. long. Lateral sepals 7.5 mm. long, including the mentum 11 mm. long, in front decurrent on the ovary, oblong, near the middle 2.5 mm. wide, gradually attenuated into an obtuse tip, 3-nerved. Dorsal sepal 8 mm. long, adherent to the petals, with which it forms a strongly concave hood over the gynostemium, narrowly elliptic, obtuse. Petals 7.5 mm. long, about 1 mm. wide, oblong-lanceolate, obtuse, 3-nerved. Labellum about 1 cm. long, 3-lobed near the tip; lamina about 5 mm. wide near the middle, elliptical or suborbicular, contracted above to form the small inconspicuous hardly produced lateral lobes and the broadly triangular-ovate middle lobe, sagittate at the base with the auricles 2 mm. long thickened and subterete; middle lobe 2 mm. long, 2.25 mm. wide across the base. Gynostemium about 6 mm. long, suddenly dilated above the short base into a lanceolate plate the apex of which is formed by the minutely denticulate rostellum.

Allied to *Spiranthes Schaffneri* Reichb. f., but taller, leafless at flowering time, and with a 3-lobed labellum.

GUATEMALA, Department of Santa Rosa, Zamorora, *Heyde & Lux* (John Donnell Smith Distribution No. 4625), April 1893. (TYPE in Herb. Ames No. 6404. DUPLICATE TYPE in U. S. Nat. Herb. No. 576405.)

*Spiranthes pyramidalis* Lindl. Gen. & Sp. Orch. (1840) 473.

*Spiranthes cobanensis* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 377. *Schiedeella cobanensis* Schltr. in Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 380. *Schiedeella pyramidalis* Schltr. in Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 381. *Gyrostachys pyramidalis* Ktze. Rev. Gen. 2 (1891) 664. *Spiranthes cylindrica* Lindl. *apud* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 377.

This species, which was originally collected in Guatemala by Skinner, is represented in Lindley's Herbarium by a single specimen. I am unable to discover substantial differences between Lindley's type and *Spiranthes cobanensis* Schltr. In the notes that accompany the original description of *S. cobanensis*, Schlechter referred to his species as being a near ally of *Spiranthes cylindrica* Lindl. I cannot find that Lindley ever published this name. The reference is undoubtedly to *S. pyramidalis* Lindl., as it was with this species that Schlechter made comparison when he published his monograph of the *Spiranthisinae* in 1920.

*Spiranthes pyramidalis* Lindl. is also a native of Salvador, where specimens were recently found by Paul C. Standley.

SALVADOR, Volcán de San Salvador, Paul C. Standley 22994, April 7, 1922. In dry thicket near base of volcano. 1000-1800 meters altitude.

*Spiranthes rubrocalosa* Robins. & Greenm. in Amer. Journ. Sci. 50 (1895) 165.

*Spiranthes porphyricola* Schltr. in Fedde Repert. 3 (1906) 18.

This very distinct species which appeared among C. G. Pringle's collections made in the State of Chihuahua, Mexico, in 1887, has already received two names. Schlechter's description of *S. porphyricola* was based on a duplicate of the type number of *S. rubrocalosa*.

*Stelis trinitatis* Ames sp. nov. Caules secundarii trivaginati, monophylli. Folium oblongo-ellipticum vel ellipticum, acutum vel obtusum, coriaceum. Petiolus



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obsoletus. Racemus gracilis, plus minusve quindecim florus. Bracteae inflorescentiae infundibuliformes. Flores mediocres. Sepala subaequalia, late ovata, acuta. Petala infra medium cuneato-flabellata, apice triangularia, valde incrassata. Labellum valde carnosum, antice rotundatum, disco excavato. Columna dilatata, apice trilobulata.

Plants caespitose from fibrous whitish roots. Secondary stems 4-5 cm. long, concealed by three scarios sheaths, the lowermost one abbreviated, the uppermost one elongated, up to 3.5 cm. long, dilated upward. Leaf solitary at the summit of each secondary stem, 7-11.5 cm. long, 1.3-2.5 cm. wide, narrowly oblong-elliptic, very obtuse or acute, attenuated toward the base, epetiolate, the slender base conduplicate. Peduncle with the raceme 11-15 cm. long, usually exceeding the leaf, solitary, emerging from a scarios concave loosely appressed sheath which is about 1 cm. long. Raceme about 8 cm. long, slender, with fifteen flowers or more opening in succession, the lowermost ones falling away before the terminal ones expand. Bracts of the inflorescence infundibuliform, acute, about 3 mm. long. Ovary 2 mm. long. Sepals coherent, broadly ovate, acute; laterals 2 mm. long, nearly 4 mm. wide, 3-nerved with a supplementary nerve, nerves free, fleshy. Dorsal sepal 3 mm. long, 4 mm. wide, 3-nerved with a supplementary nerve, nerves free, similar to the lateral sepals in texture. Petals 1 mm. long, about 1 mm. wide, lower half cuneate-flabellate, upper half triangular-thickened, very fleshy. Labellum 1 mm. long, 1 mm. wide, very fleshy, .75 mm. thick, rounded at the tip. Disc obliquely excavated, appearing shallowly concave, lateral margins erect, lobulate in aspect, thickened, rounded. Column dilated upward, trilobulate at the summit.

This species is much taller than *Stelis scabrida* Lindl. and has larger flowers. From *Stelis Dussii* Cogn., it is distinguished by its epetiolate longer leaves and in having fewer nerves in the sepals.

TRINIDAD, B. W. I., Heights of Aripo, W. E. Broadway 9886, January 10-26, 1922. On small trees. (TYPE in Herb. Ames No. 22671.)

**Pleurothallis abjecta** *Ames sp. nov.* Herba epiphytica, dense caespitosa. Caules secundarii abbreviati, monophylli. Folium in petiolum sulcatum productum; lamina elliptica, marginata, apice breviter apiculata, coriacea, quam pedunculus brevior. Pedunculus singulus, filiformis, infra flores nudus. Flores subfasciculati vel in racemum valde abbreviatum contracti, purpureo-tincti. Sepala lateralia usque ad medium vel supra medium cohaerentia, laminam ellipticam formantia. Sepalum dorsale valde concavum, quam sepala lateralia multo angustius. Petala triangulari-lanceolata, acuminata, acuta. Labelium anguste linguiforme, per medium sulcatum, utrinque prope marginem incrassatum, obtusum, margine dense pilifero. Columna in pedem brevem producta, apice denticulato.

Plants densely caespitose with slender spreading whitish roots. Secondary stems slender, up to 5 mm. long, clothed with scarious sheaths which soon pass away, monophyllous. Leaf with the petiole included up to 1 cm. long, about 3 mm. wide; lamina 5 mm. long, elliptical, apiculate at the tip, strongly marginate, coriaceous, rigid, erect. Peduncle single, with the raceme up to 1.5 cm. long, very slender, naked below the contracted few-flowered raceme, erect, slightly exceeding the leaves. Flowers few, purplish, subfasciculate, subtended by infundibuliform scarious acute bracts. Pedicels persistent, about 2 mm. long, slender. Ovary 2 mm. long, dilated upward from a slender base, articulated with the pedicel. Lateral sepals 3-4 mm. long, coherent (for about three-fourths or one-half of their length), forming an elliptical lamina 2 mm. wide across the middle, 4-nerved, free tips somewhat convergent, subacute. Dorsal sepal 3.5 mm. long, elliptic-lanceolate, elongate-cucullate, obtuse, 3-nerved. Petals 3 mm. long, about 1 mm. wide near the middle, triangular-lanceolate from a broad base, acuminate, acute, 1-nerved. Labellum nearly 3 mm. long, hardly 1 mm. wide, up to the base provided with hairs of irregular length along the strongly deflexed margin, oblong-lanceolate; apex obtuse, entire, with shaggy glandular hairs. Disc sulcate to about the middle, thickened on each

side of the groove. Column 2 mm. long, produced into a short foot, dilated upward, denticulate at the apex.

A close ally of *Pleurothallis abbreviata* Schltr., from which it differs in having an entire, hairy labellum.

GUATEMALA, Department of Alta Verapaz, Chamá, *Harry Johnson 905*, August 5, 1920. On trees. 900 feet altitude. (TYPE in Herb. Ames No. 22741. DUPLICATE TYPE in U. S. Nat. Herb. No. 1081164.)

***Pleurothallis Brighamii* S. Wats.** in Proc. Amer. Acad. 23 (1888) 285.

This species has come to light again from Jocoló and Chacón. The flowers, about five in number, are borne in fascicles and open in succession. The type specimen in the Gray Herbarium is fragmentary. It was prepared from a plant cultivated in the Botanic Garden of Harvard University and represents an early stage in the development of the inflorescence, only a single flower having opened when the specimen was made. The cluster of bracts subtending the pedicels is characteristic.

GUATEMALA, Department of Izabal, Jocoló, Rio Jocoló, *Harry Johnson 1281*, March 1921. On trees. Flowers brown and greenish yellow. 100 feet altitude: Rio Chacón, *Harry Johnson 1180*, February 11, 1921. On tree near river. Flowers greenish yellow in mouth, brown-red at base. 100 feet altitude.

***Pleurothallis canae* Ames sp. nov.** Herba epiphytica, caespitosa. Caules secundarii vaginati, erecti, monophylli. Folia anguste elliptica, obtusa, coriacea. Pedunculus elongatus, in racemum laxum productus. Sepala lateralia coherentia, apicibus liberis, dense lanata, apiculata. Sepalum dorsale simile. Petala oblongo-elliptica, apice rotundata. Labellum trilobatum; lobis lateralibus minutis, porrectis; lobo medio oblongo, obtuso. Discus prope basim bilamellatus, prope medium bicarinatus, carinis convergentibus. Columna apice denticulata.

Roots whitish, smooth, fibrous, hardly 1 mm. thick. Secondary stems 1.9–3 cm. long, caespitose, erect, with

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as many as four tubular sheaths, monophyllous. Leaves up to 7.7 cm. long, 12-14 mm. wide, narrowly elliptical, obtuse, coriaceous, conduplicate at base. Peduncles solitary from the axil of the leaf, 13 cm. or more long, flowers opening in succession. Racemes lax, about 7 cm. long. Bracts of the inflorescence scarious, about 4 mm. long, infundibuliform, shorter than the pedicellate ovary, obliquely truncate, acute. Pedicel with the ovary 6.5 mm. long. Flowers purplish, 7-12 mm. apart, nodding. Lateral sepals 8 mm. long, coherent for two-thirds of their length, forming a narrowly elliptical lamina which is 4 mm. wide across the middle, terminal lobes long, triangular, apiculate, outer third of the lamina on each side densely matted-hairy. Dorsal sepal 7 mm. long, narrowly elliptical, acute, carinate on the outer surface along the median line, with matted hairs near the margin on each side of the upper surface. Petals smooth, 3 mm. long, 1.5 mm. wide near the middle, elliptic-oblong, rounded at the tip, 1-nerved along the median line. Labellum, including the slender abbreviated claw, 4 mm. long, 1.75 mm. wide below the blunt rounded tip, 3-lobed, smooth; lateral lobes much reduced, 1 mm. long, free portion porrect, very narrow, parallel-sided, obtuse, and slightly thickened at the apex; middle lobe 3 mm. long, oblong, with two slightly depressed lamellae which arise at the margin in front of the lateral lobes and converge near the middle of the disc, where they terminate abruptly within 1 mm. of the apex. Disc bilamellate at the base, the lamellae 1.5 mm. long, approximate. Column nearly 3 mm. long, arcuate, dilated above the middle; clinandrium obscurely 3-lobulate, minutely denticulate.

A close ally of *Pleurothallis Wercklei* Schltr., from which it is most readily distinguished by the reduced lateral lobes of the labellum and by the broader leaves.

PANAMA, Cana and vicinity, *R. S. Williams* 971, April 27, 1908. On trees. Flowers purplish. 6000 feet altitude. (TYPE in Herb. Ames No. 10751.)

*Pleurothallis jocolensis* Ames *sp. nov.* Radices fibratae, albidae. Caules secundarii graciles, monophylli. Folium

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anguste elliptico-oblongum, apice bilobulatum cum apiculo interjecto, basi attenuatum. Pedunculus filiformis, uniflorus, folium excedens. Flores flavidi. Sepala lateralialia fere usque ad apicem cohaerentia, laminam anguste ellipticam formantia. Sepalum dorsale basi valde concavum, apice subacutum, quam lamina sepalorum lateralium angustius, trinervium. Petala late et irregulariter obovata, acuminata, acuta. Labellum oblongum, obtusum, apice minute papillosum. Columna utrinque stelidio acuto.

Plants similar in habit to *Pleurothallis Brighamii* S. Wats. Roots fibrous, slender, whitish. Secondary stems caespitose, monophyllous, abbreviated, about 4 mm. long, clothed by three brownish sheaths, the uppermost one of which is dilated, much longer than the others, exceeding the stem and conspicuously nerved. Leaf with the petiole 1.5-3 cm. long, marginate; lamina 1-2 cm. long, 4-6 mm. wide, inconspicuously bilobulate at the tip, with an apicule between the lobules, narrowly oblong-elliptical, fleshy, with the mid-nerve prominent beneath; petiole slender, sulcate. Peduncle solitary at the summit of a secondary stem, 3-4 cm. long, very slender, erect, bearing a single yellow flower. Bracts subtending the pedicel 2.5 mm. long, tubular, dilated upward. Pedicel with the ovary about 9 mm. long, very slender. Lateral sepals 5 mm. long, coherent almost to the tip, forming a narrowly elliptical 4-nerved lamina 1.75 mm. wide, mid-nerve of each sepal forming a conspicuous keel on the outer surface; each member of the synsepalous lamina is apparently 2-nerved, with an inconspicuous nerve near the line of cohesion. Dorsal sepal 5 mm. long, subequal to the laterals, strongly concave at the base, 3-nerved, subacute. Petals about 2.25 mm. long, 1 mm. wide, unequally obovate (the anterior margin more protuberant than the posterior), acuminate, acute, with a posteriorly situated apicule, 1-nerved. Labellum 2 mm. long, oblong-lingulate, ascending from the tip of the column-foot then sharply curved forward, somewhat conduplicate at the base, obtuse and minutely papillose at the apex, ecallose. Column 1.5 mm. long, produced into a foot which is 1 mm. long, 3-toothed at the summit.

the lateral teeth or steldia, — one on each side in front, — triangular, acute.

From *Pleurothallis Brighamii* S. Wats., with which it is closely allied, it differs in having smaller flowers, which are more delicate in texture and clear yellow, and in having the lateral sepals coherent nearly to the apex. In *P. Brighamii* each lateral sepal is conspicuously 3-nerved. *P. pyrsoides* Reichb. f. is another closely related species, differing from *P. jocolensis* in having larger flowers and in the lamina formed by the lateral sepals being more deeply bilobed. *P. vilipensa* Reichb. f. is also closely related, but different in the structure of the labellum.

GUATEMALA, Department of Izabal, Jocoló, Rio Perdónalis, *Harry Johnson 1048*, December 25, 1920. Epiphyte in jungle. Flowers yellow. (TYPE in Herb. Ames. No. 22745.)

***Pleurothallis Johnsonii* Ames sp. nov.** Caules secundarii vaginis laxis elongatis vestiti, ascendentes, monophylli. Folia ovato-lanceolata, utrinque attenuata, coriacea, in petiolum subobsoletum contracta. Pedunculus singulus, quam folium brevior, usque supra basim pluriflorus. Bractee inflorescentiæ infundibuliformes. Flores purpureo-maculati. Sepala lateralia vix connata, carnosa, triangularia, acuta, prope apicem carinata, glanduloso-puberula. Sepalum dorsale oblongo-lanceolatum. Petala carnosa, ciliata, glanduloso-puberula, oblonga, utrinque attenuata. Labellum linguiforme, carnosum, abrupte acutum, trinerviū, nervis lateralibus callosis. Unguis brevis, callo instructus. Columna apice trilobata.

Roots fibrous, elongated, 2 mm. thick when dry, spreading, villiferous. Secondary stems 3.5–5 cm. long, ascending, clothed with loose overlapping sheaths of which the uppermost one often encloses the base of the leaf, monophyllous. Leaf 8–10 cm. long, about 2.5 cm. wide, ovate-lanceolate, acute, contracted at base into a very short inconspicuous sulcate petiole. Peduncle terminal, with the raceme about 3 cm. long. Raceme 5– or more–flowered, erect, shorter than the leaf. Bracts of the raceme infundib-

uniform, about 3 mm. long, 2 mm. wide across the opening, reaching nearly to the base of the flowers. Lateral sepals very fleshy, 12 mm. long, up to 4 mm. wide below the middle, free almost to the base, triangular, more or less glandular-papillose on the exterior and interior surfaces and on the margin, carinate near the tip. Dorsal sepal 12 mm. long, oblong-lanceolate, acute, with glandular excrescences on the outer surface, very fleshy, strongly concave at base. Petals about 7 mm. long, 2 mm. wide near the middle, oblong, tapering gradually to an obtuse tip, glandular-ciliate on the margin and shortly glandular on the interior surface, very fleshy. Labellum 5.5 mm. long, about 2.5 mm. wide, lingulate, fleshy, tapering gradually toward the apex then abruptly subacute; claw cuneate, deflexed. Disc 3-nerved, the middle nerve extending nearly to the apex of the labellum, the other nerves somewhat shorter, callous-thickened for the greater part of their length. Claw about 1 mm. long with a fleshy callus in the middle. Column 3-lobed at the summit.

In habit resembling *Pleurothallis Cogniauxiana* Schltr., but with a very different labellum and sepals. Johnson in his field notes describes the flowers as reddish. In dried material the sepals are blotched with purple, the petals are claret color, and on the claw of the labellum there is a claret-colored callus.

GUATEMALA, Department of Alta Verapaz, Chamá to Cobán, *Harry Johnson 901*, August 15, 1920. Growing on rocks. 3000 feet altitude. (TYPE in Herb. Ames No. 22747. DUPLICATE TYPE in U. S. Nat. Herb. No. 1081162.)

***Pleurothallis samacensis* Ames sp. nov.** Herba epiphytica, dense caespitosa. Caules secundarii abbreviati, vaginati, monophylli. Folium marginatum, petiolatum, oblanceolatum, apice inconspicue bilobulatum, apiculo interjecto. Pedunculus gracilis pauciflorus. Flores purpureo-tincti. Sepala lateralia triangularia, caudata, margine glanduloso-ciliato. Sepalum dorsale lineari-triangulari, in caudam productum, margine glanduloso-ciliato. Petala in caudam producta, a basi oblongo-cuneata, aristata et den-

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tata. Labellum subpanduratum, minute denticulatum, callo flabellato instructum. Columna apice integra.

Densely caespitose epiphyte with slender whitish roots. Secondary stems ascending or erect, abbreviated, up to 3 mm. long, concealed when young by chartaceous whitish translucent sheaths. Leaf long-petiolate, including the petiole up to 1.6 cm. long; lamina marginate, 1 cm. long more or less, up to 4 mm. wide, oblanceolate, bilobed at the apex, with a minute apicule between the lobes. Petiole slender, about 6 mm. long, sulcate. Peduncle solitary at the apex of a secondary stem, exceeding the leaf, 1.5-2 cm. long, filiform, with several infundibuliform bracts at intervals below the raceme. Raceme 2-3-flowered, lax. Bracts of the inflorescence infundibuliform, scarious. Pedicel and ovary about 3 mm. long. Lateral sepals free almost to the base, 4 mm. long, 1 mm. wide, triangular-lanceolate, caudate-tipped, 1-nerved and lightly carinate along the median line, with a short supplementary nerve, margin glandular-ciliate. Dorsal sepal nearly 5 mm. long, linear-triangular, terminating in a slender caudate tip, 3-nerved, margin glandular-ciliate. Petals 4 mm. long, lower third cuneate-oblong, about .5 mm. wide, dentate and aristate where they are abruptly narrowed to form the linear-caudate terminal two-thirds, 1-nerved. Labellum 2.25 mm. long, angled on each side at base, gradually dilated to about the middle, when it becomes expanded into an obovate lightly retuse lamina with unevenly denticulate margin; basal third of the labellum ornamented with a flabellate callus. Column 2 mm. long, dilated upwards, cucullate at the summit, entire.

In habit not unlike *Pleurothallis Fuegii* Reichb. f., but distinct in the perianth segments. Related to *P. hastata* Ames, but distinguished from it by the awned petals. *P. setigera* Lindl. belongs to the same alliance, and in shape of the petals is very similar. *P. schistopetala* Schltr. is another near ally, but is larger in all its parts and has more ciliate petals.

GUATEMALA, Department of Alta Verapaz, Samac to Cobán, *Harry Johnson* 765, October 20, 1920. On tree



trunks in shady forest. Flowers purplish. 4500 feet altitude. (TYPE in Herb. Ames No. 22743.)

**Pleurothallis Schlechteriana** Ames *nom. nov.*

*Pleurothallis costaricensis* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 395, non Rolfe.

Under the name *Pleurothallis costaricensis*, Rolfe described, in 1917, a species collected by Lankester (no. 21). The type of Rolfe's species is missing from the Kew Herbarium. In my herbarium there is a specimen kindly placed in my possession by Captain Arthur W. Hill, Director of the Royal Gardens, Kew, which was prepared from a plant cultivated in the orchid houses at Kew. This plant, although it no longer bears the collection number, was received from Mr. Lankester in 1915, when the type was imported. It agrees satisfactorily with the description of *P. costaricensis* Rolfe, although the flowers are orange-yellow rather than greenish-yellow, and the lip is rather oblong than pandurate.

*Pleurothallis Schlechteriana* is a member of an entirely different section of the genus. From records in my herbarium it is a near ally of *P. cardiothallis* Reichb. f. and of *P. acutipetala* Schltr.

**Lepanthes Johnsonii** Ames *sp. nov.* Radices crassae.

Caules secundarii trivaginati, monophylli. Vaginae hispidulae, tubulosae. Pedunculi singuli vel bini. Flores purpureotincti, plus minusve quattuor, succedanei, permagni. Sepala cohaerentia, caudata. Petala longe triangularia. Labellum trilobatum; lobi laterales triangulares; lobus medius abbreviatus, oblongus, obtusus. Columna valida, abbreviata.

Roots very fleshy, closely appressed to the substratum. Secondary stems about 1 cm. long, concealed by about three closely appressed elongated hispidulous sheaths, monophyllous. Sheaths 3-4 mm. long, dilated abruptly at the summit into a thickened ring-like hispid rim which is produced on one side into a slender rigid acute point. Leaf 1-1.2 cm. long, 4 mm. wide, elliptical, coriaceous, bilobed, apiculate at the apex, contracted at base into an

abbreviated slender petiole, conspicuously marginate. Peduncles single or in pairs from the summit of a secondary stem, with the raceme about 1.5 cm. long. Bracts of the inflorescence tubular-infundibuliform. Raceme lax, about 4-flowered. Flowers opening in succession, very delicate in texture, about 2 mm. apart, pink-purple. Sepals united, forming a 3-lobed calyx with the lobes caudate-tipped; lateral sepals or lobes 11 mm. long to base of column, about 7 mm. long to the sinus, free portion triangular-caudate, 4 mm. wide; dorsal sepal or posterior lobe opposite to the laterals 1 cm. long to the base of the column, triangular-caudate, free portion about 3.5 mm. wide. Petals narrowly triangular, acute, 3 mm. long in a line parallel to the dorsal sepal, .75 mm. wide near the point of insertion, rounded on the outer angle nearest the point of insertion. Labellum 3-lobed; lateral lobes much larger than the middle one, similar to the petals, 2 mm. long, .5 mm. wide, rounded at base; middle lobe about .5 mm. long, longer than broad, porrect, obtuse. Column fleshy, short.

A very distinct species among the Central American representatives of the genus, extraordinarily large flowers in conjunction with diminutive vegetative parts giving the plant a characteristic appearance. The united sepals in their relation to one another recall the flowers of *Masdevallia Veitchiana* Reichb. f. *Lepanthes Tuerckheimii* Schltr. is a near ally, but much larger in its vegetative parts with a very different labellum.

GUATEMALA, Department of Alta Verapaz, Chamá, Harry Johnson 420, July 26, 1920. Growing on coffee tree. Flowers pink. 900 feet altitude. (TYPE in Herb. Ames No. 22739. DUPLICATE TYPE in U. S. Nat. Herb. No. 1081116.)

*Lepanthes samacensis* Ames sp. nov. Radices fibratae. Caules secundarii elongati, vaginis hispidulis, monophylli. Folium orbiculare, apiculatum, marginatum, breviter petiolatum. Sepala lateralia usque ad medium cohaerentia; laminam suborbicularem bilobatam formantia, pellucida, lobis usque ad apicem angustatis, acutis. Sepa-

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lum dorsale ovato-lanceolatum, usque ad apicem attenuatum, acutum, basi rotundatum. Petala transverse subcrescentiformia, antice rotundata, utrinque attenuata, ad apices laterales acuta vel subacuta, margine minute et breviter ciliolata. Labellum subquadratum, antice profunde bilobatum, lobis obtusis ciliolatis. Columna apice bilobata.

Roots fibrous, spreading. Secondary stems erect or ascending, when mature about 3 cm. long, with four elongated tubular sheaths which are lanceolate and acute at the summit, nerves of the sheaths hispidulous. Leaves with the abbreviated petiole up to 22 mm. long, 8-13 mm. wide; lamina orbicular, apiculate, tridenticulate at the apex, marginate, coriaceous, up to 1.9 cm. long; petiole deeply sulcate. Peduncle arising from the axil of the leaf, about 9 mm. long, with a closely appressed bract near the middle, few-flowered. Bracts subtending the flowers infundibuliform. Lateral sepals coherent to about the middle, about 2 mm. long, forming a suborbicular bilobed lamina 2 mm. wide, lobes somewhat deltoid, acute, 1 mm. wide. Dorsal sepal coherent at base with the laterals, about 3 mm. long, ovate-lanceolate, acute, tapering to the tip from about the middle, rounded at base. Petals transversely 4 mm. long, 1 mm. long through the longitudinal middle, subcrescentiform, the apex nearest the labellum acute, the apex nearest the dorsal sepal obtuse, margin minutely ciliolate. Labellum 1.5 mm. long, up to 1.25 mm. wide, subquadrate-cordate, the base with a rounded lobe on each side, apex deeply cleft to about the middle or bilobed, lobes subquadrate, obtuse, ciliate, convergent. Column slender up to the bilobed apex.

Allied to *Lepanthes turialvae* Reichb. f., but in part distinguished by the ciliate terminal lobes of the labellum.

GUATEMALA, Department of Alta Verapaz, Samac, *Harry Johnson* 880, October 20, 1920. On trees. 4500 feet altitude. (TYPE in Herb. Ames No. 22748.)

***Epidendrum benignum*** *Ames sp. nov.* Caules elongati, foliosi. Folia disticha, elliptico-oblonga, utrinque attenuata, coriacea, persistentia. Pedunculus terminalis,

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basi bracteis parvis imbricantibus vestitus. Racemus multiflorus, laxis, flexuosus, cum caulibus ut videtur dependens; rachis racemi glabra. Pedicelli cum ovario graciles, elongati. Flores inter se distantes. Sepala spathulata, carnosa, patentia. Petala spathulata, valde obtusa vel subtruncata. Labellum trilobatum; lobis lateralibus semi-orbicularibus, quam lobo intermedio bifido multo majoribus. Discus callis duobus prope apicem columnae, per medium trinervius, nervis prominentibus. Columna adnata.

Stems 30 cm. or more long, leafy. Leaves distichous, 12-14.5 cm. long, up to 4 cm. wide, oblong-elliptic, acute or subacute, coriaceous, jointed on closely appressed cylindrical sheaths which are 1-4 cm. long (the uppermost ones shortest). Raceme terminal, often exceeding 40 cm. in length, clothed at base with several closely appressed sheaths, floriferous almost to the point of origin, slender, flexuous. Bracts of the inflorescence about 2 mm. long, scale-like, subacute, concave. Pedicel with the ovary 2-2.5 cm. long, smooth, grooved longitudinally when dry. Flowers twenty-five (more or less) in elongated lax racemes, 1-2 cm. apart on the smooth rachis. Lateral sepals 2 cm. long, spatulate, fleshy, obtuse or simply subacute, about 4 mm. wide near the tip. Dorsal sepal 2 cm. long, up to 7 mm. wide, elliptic-spatulate, fleshy. Petals 2 cm. long, 4 mm. wide near the tip, spatulate from a slender base, obtuse. Labellum from tip of the deeply split mid-lobe to the base of the column 2.7 cm. long, 3-lobed; lateral lobes about 1.5 cm. long, 1 cm. wide, spreading or deflexed, semi-orbicular, rounded to a cordate base, fleshy; middle lobe bilobulate, 8 mm. long, lobules divaricate, oblong, obtuse, 6 mm. long, 5 mm. wide, on the inner side forming an acute angle. Disc bicarinate or shortly bicarinate in front of the column with a raised median nerve that extends nearly to the base of the middle lobe, and two shorter raised nerves one on each side of the middle nerve. Column about 12 mm. long, slender at the base, dilated upward, wholly adnate to the labellum.

Allied to *Epidendrum patens* Sw., for which it has been mistaken. Here, for example, I refer Skinner's Guatemalan material which Lindley confused with *E. patens*.

COSTA RICA, Forêts de Nicoya, A. *Tonduz* 13928, May 1900. (TYPE in U. S. Nat. Herb. No. 577906.): Province of Cartago, Atirro, *J. Donnell Smith* s. n., April 1896. 6000 feet altitude.

GUATEMALA, *Skinner*. (Herb. Lindl.)

***Epidendrum ichtyphyllum*** *Ames* sp. nov. Radices crassae. Pseudobulbi validi, basi vaginati, pyriformes. Folia elongato-ligulata, coriacea. Scapus elongatus. Flores in paniculam ramosam laxam dispositi. Sepala lateralalia lanceolata, acuta, carnosa. Petala spathulata, subacuta, carnosa. Labellum inaequaliter trilobatum; lobis lateralibus lineari-oblongis, acutis; lobo terminali basi oblongo, supra medium subelliptico. Discus inter lobos laterales callo elevato ornatus, per medium trinervius. Columna apice utrinque lobulata.

Roots very coarse, up to 3 mm. or more thick, whitish, smooth. Pseudobulbs about 8 cm. long, tapering gradually upwards, pyriform, clothed at base with several elongated sheaths which soon break down into straggling fibres. Leaves several, up to 60 cm. or more long, 2.5-3 cm. wide, ligulate, tapering gradually to a pointed tip, imbricating at base, mid-nerve prominent. Peduncle with the paniculate inflorescence as much as 13 dm. long; the branches of the panicle obliquely ascending, 1 dm. more or less apart, often exceeding 30 cm. in length, subtended by triangular-lanceolate concave acute bracts which are 1.5 cm. long. Flowers numerous, about 1.5 cm. distant on the slender branches of the panicle, subtended by concave acute triangular bracts which are 5-12 mm. long. Pedicel with the ovary 2 cm. long in well-developed flowers, smooth, very slender. Lateral sepals 1-1.2 cm. long, 3.75-4 mm. wide near the middle, lanceolate from a broad base, acute, thickened at the tip, fleshy, reddish brown in dried specimens. Dorsal sepal 1-1.3 cm. long, narrowly oblanceolate from a wide base, obtuse or subacute. Petals 1-1.2 cm. long, 3 mm. wide above the middle, about 1 mm. wide at base, spatulate, subacute, fleshy. Labellum 9-10 mm. long, unequally 3-lobed, adnate to the column only at base, fleshy

(probably whitish or yellowish when alive, with scattered purplish dots); lateral lobes 3 mm. long, about 1 mm. wide, narrowly oblong, pointed, divaricate; middle lobe 5 mm. long, 5 mm. wide just below the tip, oblong at base, gradually dilated and subelliptical above the middle, subtruncate at the tip. Disc between the lateral lobes ornamented with a large cushion-like callus from which three nerves extend forward, the middle one prominent near its base. Column 5 mm. long, rather stout, obtusely lobed on each side at the summit.

A very distinct species allied to *Epidendrum virgatum* Lindl., with which it has been confused, but from which it is distinct in having much longer leaves, a longer inflorescence, and a differently shaped labellum.

In Folia Orchidacea (*Epidendrum* 13), under *E. virgatum*, Lindley cited a single collection, that of Hartweg from the mountains of Cobán, Guatemala (erroneously localized in Mexico by Lindley). This specimen is conspecific with *E. ichthyphyllum*, and should not be confused with the type of *E. virgatum*, which is a Mexican species brought from the State of Oaxaca by Karwinski and preserved in the Herbaria of Martius and Zuccarini. In Lindley's Herbarium at Kew there is a fragment of a Mexican specimen from Zuccarini, which I take to be the true *E. virgatum*. This has the suborbicular or obovate mid-lobe of the labellum characteristic of all Mexican material I have examined. In addition to the Zuccarini specimen there is, in Lindley's Herbarium, a specimen collected by Jurgensen in Mexico which Lindley did not determine, but which Rolfe accepted as *Epidendrum virgatum*.

*Epidendrum virgatum*, although variable in the shape of the labellum lobes, is usually well characterized by its vegetative parts, the pseudobulbs rarely exceeding 4 cm. in length, the leaves averaging about 20 cm. in length. In 1905 I received from C. G. Pringle a number of living specimens of the species collected in Mexico, which flowered very freely in my greenhouses. The dried specimens prepared from this material show broader lateral lobes of the labellum than are characteristic of the specimens in Lindley's

Herbarium, also the petals are much narrower in proportion to their length than in other Mexican material I have referred to *E. virgatum*. Whether or not there is a third species in this alliance is at present a debatable question.

With Lindley's specimens there is a sketch of a lip. This was probably made from the Mexican plant, as it exhibits the rounded mid-lobe characteristic of the Mexican material I have observed, and agrees with the Zuccarini specimen rather than with that of Hartweg, both of which are mounted on the same sheet in Lindley's Herbarium. One wonders if by any chance Lindley could have had before him both the Mexican and Guatemalan specimens at the time he drew up the original description of *Epidendrum virgatum*. In the original description, his characterization of the inflorescence seems to include the Guatemalan specimen from Cobán. He described the flowers as being in a long, lax, graceful panicle, the branches of which are simple and sometimes as much as a foot long, with nearly twenty flowers on each. Undoubtedly Lindley regarded the Mexican and Guatemalan specimens as one and the same species (as already stated they are mounted on the same sheet in his herbarium). In *Folia Orchidacea*, under *E. virgatum*, he cites only the Cobán specimen, but in his notes he compared the general appearance of the plant to *Epidendrum vitellinum*, a comparison which is hardly comprehensible unless he had in mind the more dwarf habit of Mexican specimens. In the original description, in the third volume of Hooker's *Journal of Botany*, he omitted a reference to pseudobulbs and leaves, as at that time he had seen only the inflorescence. However treated the situation is extremely perplexing. From the present state of our knowledge it seems best to regard the Zuccarini specimen as the type of *E. virgatum* and to refer the Hartweg specimen from Cobán to *Epidendrum ichthyophyllum*, with which it seems to be conspecific.

GUATEMALA, Department of Alta Verapaz, Cobán, *H. v. Tuerckheim II 1797*, May 1907. Auf der Erde in Fichtenwäldern. 1350 meters altitude. (TYPE (two sheets, one showing the habit, the other the inflorescence) in Gray

Herb. DUPLICATE TYPE in U. S. Nat. Herb. Nos. 825830, 825831): Cobán, *H. v. Tuerckheim* 54, April 1879. Epiphyte. (U. S. Nat. Herb. No. 814235.)

**Epidendrum obesum** *Ames sp. nov.* Herba valida, paucifoliata. Folia disticha, elliptico-oblonga, obtusa, coriacea. Vaginae foliorum amplae, usque ad apicem dilatatae. Pedicellus cum ovario elongatus, gracilis, glaber. Sepala lineari-oblonga, patentia. Petala lineari-oblonga, sepalis angustiora. Labellum trilobatum, in circuitu hastatum; lobis lateralibus rotundatis; lobo medio triangulari-lineari. Discus prope apicem columnae bicallosus; calli incrasati, triangulares, porrecti, permagni; nervi prominentes tres per medium lobi terminalis extendunt. Columna apice denticulata, labello usque ad apicem adnata.

Plant 2 dm. or more high, very stout, with three to four distichous elliptic-oblong leaves jointed at a wide base to ample complanate sheaths. Lamina of the leaves 14 cm. or more long, 4-5 cm. wide, 2-3 cm. apart, very leathery, obtuse. Complanate sheaths up to 5 cm. long, dilated upwards, sometimes 1 mm. through at base and 3 cm. across at the summit. Pedicel with the ovary about 9 cm. long, slender, smooth, at least not verruculose or scabrid. Lateral sepals 4 cm. long, about 5-6 mm. wide, linear-oblong, acute. Dorsal sepal similar. Petals about 4 cm. long, 2-3 mm. wide, linear, acute. Labellum about 4 cm. long from base of the adnate column to tip of the middle lobe, 3-lobed, bicallose in front of the column; lateral lobes rounded, 7 mm. long, 4 mm. wide, forming a triangular sinus at the base of the mid-lobe; middle lobe linear-triangular, 16 mm. long, 3.5 mm. wide at base, mid-nerve of disc prominent, with a raised nerve on each side. Calli fleshy, triangular, 5 mm. long, the free portion porrect, nearly equaling or slightly exceeding the sinuses formed by the lateral lobes. Column 2 cm. long, dilated upward from a slender base, denticulate at the summit.

Although vegetatively very distinct from *Epidendrum lacertinum* Lindl., the flowers suggest that species. The lateral lobes of the labellum are rounded, not triangular-acute.



COSTA RICA, Las Lajas de San Isidro Heredia, *H. Pittier* 14053, September 1900. 1800 meters altitude. (TYPE in U. S. Nat. Herb. No. 577951. FRAGMENT OF TYPE in Herb. Ames No. 22655.)

**Epidendrum Ottonis** *Reichb. f.* in Hamb. Gartenz. 14 (1858) 213.

*Nidema Ottonis* *Britton & Millsp.* Bahama Fl. (1920) 94.

This species has been reported from Venezuela, Porto Rico, Cuba, Jamaica, and Trinidad. In the Kew Herbarium there is material collected by Powell which extends the range to Panama.

PANAMA, *C. W. Powell* 131. (Herb. Kew.)

**Epidendrum pachyrachis** *Ames sp. nov.* Caules rigidi. Folia disticha, coriacea, elliptico-lanceolata, acuta. Racemus deflexus; rachis valde incrassata. Bractee inflorescentiae triangulares, rigidae. Flores carnosae. Sepala lateralibus elliptico-lanceolata, acuta. Sepalum dorsale ellipticum, acutum. Petala quam sepala multo angustiora, acuta. Labellum transverse ellipticum vel subreniforme, valde carnosum, margine irregulariter et sparse crenatum, apice retusum et apiculatum. Discus bicallosus. Columna brevis.

Epiphytic herb up to 36 cm. tall, with leathery distichous elliptic-lanceolate leaves, terminated by a rigidly deflexed raceme of fleshy flowers. Roots very coarse, spreading, about 2 mm. in diameter. Stems rigid. Leaves 4-6.5 cm. long, up to 1.7 cm. wide, very coriaceous, rigid, margins revolute when dry, mid-nerve prominent beneath, elliptic-lanceolate, acute, jointed to the closely appressed cylindrical sheaths which conceal the stem. Sheaths about 1.5 cm. long, rugulose in dried specimens, about 5 mm. in diameter. Raceme terminal, subtended by several sheathing rigid bracts, with the peduncle about 4 cm. long; rachis very much thickened, about 2 mm. thick. Bracts of the inflorescence thick, rigid, 5-6 mm. long, triangular, acuminate from a broad base. Ovary smooth, about 1 cm. long. Flowers very fleshy. Lateral sepals about 8 mm. long, 4.5 mm. wide, elliptic-lanceolate, acuminate, acute. Dorsal

sepal 7 mm. long, 3.5 mm. wide above the middle, elliptic-acute. Petals 7 mm. long, 1.75 mm. wide, narrowly lanceolate, acute, broadest in the middle, 5-nerved, fleshy. Labellum, including the part which is adnate to the column, 1 cm. long, dilated beyond the column into a transversely elliptical or subreniform lamina which is 7 mm. long, 10-11 mm. wide, at the apex deeply retuse, sharply apiculate, margin irregularly lobulate. Disc bicallose at base, traversed longitudinally by three approximate conspicuous somewhat bullate ridges. Column stout, about 4 mm. long.

A very distinct species with no near relatives in Central America. The rigid, thickened rachis and rigid triangular bracts that subtend the flowers give the sharply deflexed raceme a characteristic aspect.

GUATEMALA, Department of Izabal, Jocoló, *Harry Johnson 305*, April 10, 1920. Specimen from a tree bending over logs. 150 feet? altitude. (TYPE in Herb. Ames No. 22708.)

***Epidendrum palmense* Ames nom. nov.**

*Epidendrum magnibracteatum* Ames in Sched. Orch. 1 (1922) 16, non Kränzl.

By an oversight the prior use of the specific name "magnibracteatum" for a Colombian species was not noticed when the Costa Rican species, now given a new name, was published.

***Epidendrum prorepens* Ames sp. nov.** Rhizoma repens. Pseudobulbi fusiformes, diphylli. Folia lineari-oblonga, obtusa, coriacea. Pedunculus terminalis, abbreviatus, pauciflorus. Flores tres, carnosae. Sepala lateralia anguste triangularia, apice carinata. Sepalum dorsale concavum, ligulatum. Petala anguste spathulata. Labelum elliptico-ovatum, acutum, valde concavum. Columna carnosa, clinandrio trilobulato, lobulis lateralibus triangularibus, lobulo medio lineari obtuso.

Rhizome creeping, elongated, rooting at intervals, 3-4 mm. in diameter. Pseudobulbs 6-6.9 cm. long, about 7 mm. thick near the middle, fusiform from a slender terete

base, obliquely ascending 2-2.5 cm. apart on the rhizome, diphyllous. Leaves 13-14 cm. long, 7-10 mm. wide, linear-oblong, obtuse, conduplicate at base, coriaceous, divergent. Peduncle abbreviated, with the raceme 1 cm. long, few-flowered. Floral bracts about 3 mm. long, subacute or obtuse. Pedicellate ovary about 9 mm. long, ascending. Lateral sepals about 1 cm. long, 2-2.5 mm. wide, narrowly triangular-lanceolate, acute, carinate at the apex, very fleshy. Dorsal sepal 9 mm. long, about 2 mm. wide near the middle, ligulate, tapering gradually from about the middle to the acute thickened tip, very fleshy. Petals 8.5-9 mm. long, 1 mm. wide above the middle, spatulate from a slender base, acute, with a median purple stripe, somewhat carinate near the apex. Labellum 9-10 mm. long, 5 mm. across the middle when spread out, ovate, acute, strongly concave, whitish with a few longitudinal purplish stripes, very fleshy in texture, margin hardly undulate. Disc with a thickening on each side above the base, otherwise ecallose. Column about 5 mm. long, fleshy, with a triangular erect lobule on each side at the summit and a posterior elongated linear tooth which is erect and 1 mm. long in a line parallel to the axis of the column.

Closely related to *Epidendrum abbreviatum* Schltr., which, from sketches preserved in my herbarium, is more slender in habit, with a rather orbicular than ovate labellum, more broadly spatulate petals, and a different column.

GUATEMALA, Department of Alta Verapaz, Chamá, *Harry Johnson 234*, June 15, 1920. Epiphytic on trees. Flowers whitish. 900 feet altitude. (TYPE in Herb. Ames No. 20709.)

**Maxillaria trinitatis** *Ames sp. nov.* Pseudobulbi congesti, complanati, monophylli. Folium ligulatum, acutum, basi conduplicatum. Scapus ascendens, uniflorus. Sepala lateralia oblonga, obtusa. Sepalum dorsale concavum, elongatum. Petala lineari-oblonga, obtusa. Labellum trilobatum; lobis lateralibus antice rotundatis; lobo medio incrassato, obtuso, subquadrato. Columna carnosae.

Roots fibrous, numerous, spreading. Pseudobulbs apparently congested, 4 cm. long, complanate, 2 cm. or more through the longest diameter, monophyllous, very much wrinkled when dry. Leaf about 4.4 dm. long, up to 4.5 cm. wide, ligulate, tapering to the apex, acute, conduplicate at base, coriaceous, much longer than the flower scape. Scapes ascending from the base of the pseudobulb, about 13 cm. long, clothed with about seven somewhat complanate tubular sheaths, 2 mm. thick. Sheaths 1.5-2.7 cm. long, acute. Flower solitary, yellowish white with pink markings. Lateral sepals 2.4 cm. long, about 4 mm. wide, oblong, obtuse, rather fleshy, decurrent on the foot of the column, forming a distinct mentum, 5 mm. wide at base. Dorsal sepal 2.2 cm. long, 5 mm. wide, strongly concave, obtuse. Petals 2.2 cm. long, about 3 mm. wide, linear-oblong, obtuse. Labellum 1.5 cm. long, distinctly 3-lobed in front, the basal three-fourths when spread out forming an elliptical lamina from the front of which the middle lobe projects; lateral lobes rounded, erect, 1.1 cm. long to the claw of the labellum; middle lobe about 3 mm. long, 3 mm. wide, fleshy, subquadrate, obtuse. Disc traversed longitudinally by a narrow thickened ridge, nerves prominent in dried specimens. Column 7 mm. long, very fleshy.

Allied to *Maxillaria rufescens* Lindl., but much larger vegetatively with longer scapes and a differently shaped labellum.

TRINIDAD, B. W. I., Heights of Aripo, *W. E. Broadway* 9890, January 10-26, 1922. On trees. Flowers yellowish white with pink markings. (TYPE in Herb. Ames No. 22672.)

**Ornithidium Pittieri** Ames *sp. nov.* Rhizoma lignosum, elongatum, vaginis arcte appressis vestitum. Folia ligulata, coriacea, basi conduplicata, articulata. Flores numerosi, congesti, axillares. Sepala similia, carnosa, vix patentia, ovato-lanceolata, apice incrassata, mentum formantia. Petala quam sepala breviora, subcarnosa, ovato-oblonga, obtusa. Labellum simplex, lanceolatum, apice valde incrassatum, basi excavato-concavum, ecallosum. Columna valida, in pedem brevem producta.

ORCHIDACEAE QUÆDAM AMERICANÆ

Rhizome or primary stem elongated, rigid, about 7 mm. in diameter, terete, clothed with tubular closely appressed sheaths, branching, bearing at intervals tufts of coriaceous rigid leaves that are articulated with conduplicative persistent imbricating bases: leafy shoots arising 10 cm. apart. Leaves ligulate, 7-14 cm. long, up to 2 cm. wide, tapering gradually to the apex, conduplicate at base where they are jointed with a persistent base from which they are soon deciduous, ring of articulation protuberant; leaf-base conduplicate, up to 2.5 cm. long. Flowers axillary in dense tufts, arising from crowded sheath-like bracts. Pedicels exceeding the bracts, rugose in dried specimens, rigid, with the ovary about 1 cm. long. Perianth 8-9 mm. long, with the segments hardly spreading. Lateral sepals about 8 mm. long, about 4 mm. wide near the base, concave, ovate-lanceolate, conspicuously thickened at the subobtuse tip, forming with the base of the labellum a blunt rounded mentum, 5-nerved. Dorsal sepal similar. Petals shorter than the sepals, 7 mm. long, about 3 mm. wide below the middle, ovate-oblong, obtuse, concave. Labellum very fleshy, simple, 4.1 mm. long, lanceolate, obtuse, thickened dorso-ventrally above the middle, rostriform at the apex, the apical margin membranaceous and involute, very slightly thickened, but shortly concave below the middle, 3-nerved, ecallose. Column fleshy, 2.5 mm. long, erect, produced at base into a thick foot. Pollinia four, attached to a membranaceous subquadrate disc, sessile, pyriform.

COSTA RICA, San Isidro de Heredia, *H. Pittier* (Herb. Instit. physico-geogr. nat. costaricensis No. 14048), September 1900. Arbres du les pâturages de Las Lajas. 1500 meters altitude. (TYPE in Herb. Ames No. 21754.)

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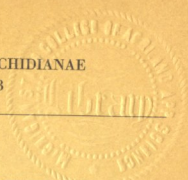
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NEW OR NOTEWORTHY  
ORCHIDS

BY  
OAKES AMES

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## New or Noteworthy Orchids

BY

OAKES AMES

IN the following pages new or noteworthy orchids receive attention. With one exception the new species are natives of tropical America. Several Central American species have been reduced to synonymy after a careful examination of type material.

The arrangement of the genera follows the sequence proposed by Pfitzer in Engler and Prantl's "Die natürlichen Pflanzenfamilien."

Descriptions of new species have been prepared from herbarium material.

Reference is made under *Epidendrum luteoroseum* A. Rich. & Gal. to specimens and drawings of Achille Richard's types which are to be found in H. G. Reichenbach's Herbarium in Vienna. These specimens and drawings represent some of the Mexican species described by Richard and Galeotti in 1845. It would seem that this precious material was loaned to Reichenbach by the Museum d'Histoire Naturelle of Paris. That Reichenbach intended to return this material to those who loaned it to him is indicated by the tracings he made from the colored drawings of the habit and from the analytical drawings of the floral structure of types. The tracings are now mounted on the same sheets that bear the drawings, a few of them actually superimposed on the originals. The most charitable view to take of this extraordinary situation is the one which leads us to believe that Reichenbach's efforts to incorporate in his herbarium tracings of Richard's species were interrupted by death, and that if he had lived he would have

returned the originals. But it is difficult to overlook the motives which prompted Reichenbach to have his herbarium, together with loaned specimens, sealed for a quarter of a century; that is, for a sufficient length of time to deprive his contemporaries of its service and to interfere with the progress of orchidology. When death overtook the man who criticised Achille Richard's brevity and who attempted to outlaw Richard's species, his last will and testament put under lock and key the evidence on which some of Richard's work was based. This is the explanation of the mysterious absence of many critical specimens and drawings from the Richard Herbarium in Paris.

**Stelis cuspidata** *Ames sp. nov.* Caules secundarii elongati, vaginati, monophylli. Folium anguste elliptico-lanceolatum, coriaceum, utrinque attenuatum, quam pedunculus cum racemo brevius. Pedunculus cum racemo gracilis. Flores ut videtur flavescens, satis distantes, distichi. Bractee racemi infundibuliformes, acutae. Sepala late ovata, acuta, trinervia. Petala cuneata, apice valde incrassata, acuta, trinervia. Labellum subquadratum trilobatum; lobis lateralibus porrectis, obtusis; lobo medio ascendenti, lineari-triangulari, acuto, sulcato, carnosum. Columna abbreviata.

Plants caespitose. Secondary stems 2.8 cm. or more long, about 2 mm. in diameter, vaginate, monophyllous. Leaf 5-7.5 cm. long, 7-9 mm. wide, narrowly elliptic-lanceolate, acute, coriaceous, contracted at base into a distinct petiole, shorter than the inflorescence. Petiole about 1 cm. long, sulcate. Peduncle 7-8.5 cm. long, with a closely appressed sheath at base, floriferous for the greater part of its length. Bracts of the inflorescence about 2 mm. long, infundibuliform, acute, diaphanous. Flowers about 4 mm. apart. Pedicel and ovary 4-7 mm. long. Flowers very small, yellowish in dried specimens. Lateral sepals 1.75-2 mm. long, about 1 mm. wide, broadly ovate, acute, 3-nerved. Dorsal sepal similar to the laterals. Petals hardly 1 mm. long, cuneate, abruptly acute, thickened at the tip, 3-nerved. Labellum about 1 mm. long, about .75 mm.

wide, subquadrate, apiculate, 3-nerved, slightly narrowed toward the front, apparently 3-lobed; lateral lobes porrect and obtuse, united in front of the middle lobe by a membrane; middle lobe acute, sulcate, ascending, very fleshy, exceeding the blunt lateral lobes. Column minute.

Allied to *Stelis tricuspis* Schltr., which is different in habit. The labellum of these species is similar in being prolonged in front to form a cusp-like terminal lobe, but different in the texture being more fleshy in *S. tricuspis*, which has a distinct callus on the disc between the lateral lobes. The sepals of *S. tricuspis* are acuminate and more narrowly ovate than in *S. cuspidata*.

COSTA RICA, *C. H. Lankester*. (TYPE in Herb. Ames No. 22858 from a plant cultivated in Hort. Bot. Reg. Kew. September 1922. Duplicate from the type plant in Herb. Kew.)

***Stelis glandulosa* Ames sp. nov.** Caules secundarii elongati, monophylli. Folium anguste ellipticum, utrinque attenuatum, obtusum, in petiolum gracile contractum. Pedunculus cum racemo folium multo excedens. Racemus laxiflorus. Flores inter se satis distantes, in sicco purpureo-tincti. Sepala lateralia late ovata, obtusa, basi rotundata, intus dense glandulosa, margine ciliato-glandulosa, trinervia. Sepalum dorsale simile. Petala flabellata, apice valde incrassata, trinervia. Labellum semiglobosum, valde carnosum, antice apiculo erecto ornatum, margine erectum. Discus per medium incrassatus. Columna usque ad apicem dilatata. Pollinia pyriformia.

Secondary stems elongated (incomplete), monophyllous. Leaf about 5 cm. long, 9-11 mm. wide, narrowly elliptical, obtuse, tapering gradually to the base from below the middle, contracted into a slender petiole, mid-nerve prominent beneath. Petiole about 5 mm. long, slender, sulcate above. Peduncle with the raceme about 1.5 dm. long, very slender, with one or more infundibuliform sheathing bracts below the raceme, erect, more than three times longer than the leaf. Raceme about 1 dm. long, bearing as many as seventeen flowers, distichously arranged, 1 cm.

apart on the slender rachis. Bracts of the inflorescence about 2 mm. long, infundibuliform, acute, diaphanous when dry, shorter than the pedicels. Ovary 2 mm. long. Flowers brown-madder when dry. Lateral sepals 3 mm. long, about 3.5 mm. wide, broadly ovate, rounded at base, obtuse, conspicuously 3-nerved, densely glandular on the inner surface, glandular-ciliate on the margin, smooth on the dorsal surface. Dorsal sepal similar and equal to the laterals and coherent with them at base. Petals 1 mm. long, 1.5 mm. wide at the summit, flabellate, thickened on the apical margin, somewhat excavated on the inner surface below the summit, 3-nerved. Labellum 1 mm. long, 1 mm. wide, semiglobular, with an erect apicule at the apex and with a thickened ridge along the middle of the upper surface, margin more or less erect to form a thin rim along the sides and in front. Column dilated upward, obscurely 3-lobed at the summit, otherwise entire. Pollinia two, pyriform.

Allied with *Stelis parvibracteata* Ames, from which it differs conspicuously in the larger flowers, which are much more glandular on the inner surface of the sepals, and in the flowers being farther apart on the elongated rachis. *Stelis Endresii* Reichb. f. has smaller flowers and a different labellum.

COSTA RICA, C. H. Lankester. (TYPE in Herb. Ames No. 22860 from a plant cultivated in Hort. Bot. Reg. Kew. Duplicate from the type plant in Herb. Kew.)

*Stelis Lankesteri* Ames sp. nov. Herba caespitosa, epiphytica. Caules secundarii vaginis inflatis complanatis investi, monophylli. Folium petiolatum. Lamina folii oblongo-elliptica, apice bilobata, apiculo interjecto, coriacea. Flores permagni, in racemum sublaxum dispositi, purpurei. Sepala lateralia laminam suborbicularem formantia, novem-nervia. Sepalum dorsale simile. Petala rhombica, valde incrassata. Labellum valde incrassatum. Columna a basi dilatata.

Caespitose epiphytic herb, 20-22 cm. tall to apex of the inflorescence. Secondary stems erect or ascending, 4 cm. or more long, concealed by ample sheaths, the up-

permost one 5 cm. long, complanate, obtuse, about 1 cm. wide at the summit, 3 mm. wide at the base, partly concealing the peduncle. Leaf distinctly petiolate; petiole about 2 cm. long, sulcate; lamina oblong-elliptic, 8.5-9 cm. long, 2-2.5 cm. wide, bilobulate and apiculate at the apex, coriaceous. Peduncle including the raceme up to 18.5 cm. long, solitary, arising 2 cm. below the insertion of the petiole, clothed at base with two ancipitous imbricating sheaths which are about 7 mm. long, paucibracteate below the raceme, slender. Raceme up to 11 cm. long, bearing about sixteen brown-purple flowers. Floral bracts infundibuliform, about 3 mm. long, equaling the pedicellate ovary. Lateral sepals united to the apex forming a suborbicular lamina which is 8 mm. long, 7.5 mm. wide, minutely glandular-pubescent within, 9-nerved, the nerves more or less prominent on the inner surface. Dorsal sepal about 9 mm. long, 7 mm. wide, ovate, obtuse, 9-nerved, coalescent at base with the lateral sepals, minutely glandular-pubescent within. Petals about 2 mm. long, 2 mm. wide, very fleshy, rhombic, subobtuse, anterior and posterior angles joined by a fleshy ridge. Labelum very fleshy, 1 mm. long, 2 mm. wide, with a raised transverse ridge, triangular in median longitudinal section. Column shorter than the petals, dilated upwards.

In the size of the flowers *Stelis Lankesteri* suggests *S. leucopogon* Reichb. f., from which it differs conspicuously in having the lateral sepals wholly coherent to form a suborbicular lamina. In the size of the flowers it is the largest species of the genus so far known to be a native of Central America, and is one of the largest flowered species of the genus.

COSTA RICA, La Florida, C. H. Lankester 365. (Blooming at Las Cónovas October-November 1922.) In hot forest. Flower vinaceous brown. 150 meters altitude. (TYPE in Herb. Ames No. 22847.)

***Pleurothallis cucullata* Ames sp. nov.** Caules secundarii elongati, graciles, vaginati, monophylli. Folium elliptico-oblongum, utrinque attenuatum, epetiolatum, valde coriaceum, quam pedunculus cum racemo brevius. Pedunculus

## NEW OR NOTEWORTHY ORCHIDS

*gracilis*. Racemus laxiflorus, floribus inter se satis distantibus. Sepala lateralia usque ad apicem cohaerentia, laminam lanceolatam formantia, apice laminae obtusa, cucullata. Sepalum dorsale lanceolatum, apice cucullatum. Petala lanceolata, margine denticulata, nervo medio claviformi. Labellum sagittatum, auriculis basilaribus rotundatis, lobo medio triquetro. Columna prope medium constricta.

Secondary stem about 3.5 cm. long, approximately 1 mm. in diameter, vaginate, monophyllous. Leaf elliptic-oblong, about 5 cm. long, 1.8 cm. wide, coriaceous, epetiolate. Peduncle with the raceme 8 cm. or more long, about twice longer than the leaf, sheathed at base by an ancipitous sheath. Raceme loosely 8-flowered, 5.5 cm. long. Bracts of the inflorescence 2.5-3 mm. long, infundibuliform, diaphanous, much exceeded by the pedicellate ovary, which is about 8 mm. long. Lateral sepals 8 mm. long, coherent up to the apex, forming a 4-nerved lanceolate lamina which is 3 mm. wide below the middle and distinctly cucullate at the obtuse tip. Dorsal sepal 7.5 mm. long, lanceolate, about 2 mm. wide, strongly concave, cucullate at the obtuse tip, 3-nerved, the lateral nerves closed (that is, confluent with the mid-nerve about 2 mm. below its tip). Petals 6 mm. long, nearly 2 mm. wide, lanceolate, acuminate, acute, denticulate on the margin, triquetrous at the tip, 3-nerved with the median nerve slenderly clavate at the tip, the lateral nerves much shorter. Labellum 2 mm. long, sagittately 3-lobed in outline when spread out, about 1.5 mm. wide near the base; the basal lobules more or less erect and obtuse; the middle lobe 1 mm. long, linear-triangular, subacute, triquetrous, with a claviform nerve in the middle. Disc between the lateral lobes much thickened, with a transverse ridge near the anterior end. Column 2 mm. long, dilated at the base and at the summit, slightly constricted near the middle, margin of the clinandrium entire.

The flowers appear to have been tinged with purple. There are no near allies of this species in Central America if we except *Pleurothallis dentipetala* Rolfe and *P. Rowleei* Ames. From *P. dentipetala* it is readily distinguished by

the more slender sepals, elongated narrowly lanceolate petals and different labellum.

COSTA RICA, *C. H. Lankester*. (TYPE in Herb. Ames No. 22859 from a plant cultivated in Hort. Bot. Reg. Kew. August 3, 1922. Duplicate from the type plant in Herb. Kew.)

***Pleurothallis dentipetala* Rolfe, nomen ex sched.**

Caulis secundarii elongati, vaginati, monophylli. Folium elliptico-lanceolatum, sessile, acuminatum. Pedunculus cum racemo folium excedens. Racemus gracilis, plus minusve quindecimflorus. Sepala lateralia usque ad apicem cohaerentia, laminam suborbicularem formantia, leviter bicarinata. Sepalum dorsale valde concavum, subacutum. Petala oblanceolata, margine denticulato, binervia, nervis clavato-incrassatis. Labellum sagittatum, obtusum, trinervium, nervo medio clavato-incrassatum. Columna abbreviata, apice integra.

Secondary stems 8 cm. or more long, erect, about 1.5 mm. in diameter, monophyllous. Leaf 8-9.5 cm. long, 2.7-3.3 cm. wide, elliptic-lanceolate, acuminate, sessile. Peduncle with the raceme 11-13 cm. long. Raceme about 7 cm. long, slender, about 15-flowered. Bracts of the inflorescence about 2 mm. long, infundibuliform. Lateral sepals about 5 mm. long, coherent, forming a suborbicular concave entire lamina 3.5 mm. wide which is slightly bicarinate on the dorsal surface. Dorsal sepal 4.5 mm. long, strongly concave, elliptical when spread out, 3-nerved, subacute. Petals 4 mm. long, 1.5 mm. wide, oblanceolate, subacute, with the margin rather evenly dentate, 2-nerved, with the nerves clavate-thickened at the tip. Labellum up to 3 mm. long, 1.5 mm. wide above the short claw, 1 mm. wide below the tip, sagittate, obtuse, auricles retrorse and obtuse, 3-nerved with the middle nerve terminating in a claviform thickened tip. Column abbreviated, 1.5 mm. long, conspicuously dilated toward the summit, entire.

In the structure of the flowers not unlike *Pleurothallis Rowleei* Ames, but very different in habit and in the elongated inflorescence.

COSTA RICA, *C. H. Lankester*. (TYPE in Herb. Ames No. 22857 from a plant cultivated in Hort. Bot. Reg. Kew. September 1918. Duplicate from the type plant in Herb. Kew.)

***Pleurothallis hamata*** *Rolfe* in *Orch. Rev.* 24 (1916) 187, nomen.

Caules secundarii abbreviati, vaginati, monophylli. Folium coriaceum, elliptico-oblongum, utrinque attenuatum, obtusum. Pedunculus gracilis, pendulus (?). Racemus laxiflorus, plus minusve quinqueflorus. Sepala conniventia. Sepala lateralia anguste navicularia, conspicue carinata, usque ad medium cohaerentia, trinervia, apice in caudam producta, hamata. Sepalum dorsale simile. Petala pandurato-spathulata, valde carnea, abrupte acuta, trinervia, glabra, integra. Labellum oblongo-lingulatum, supra medium ovatum, obtusum, papillosum, trinervium. Columna curvata, apice trilobata; lobis lateralibus triangularibus, denticulatis; lobo medio suborbiculari, antheram excedenti, denticulato.

Secondary stems abbreviated, about 1.2 cm. long, provided with tubular sheaths, monophyllous. Leaf 4 cm. or more long, about 1.1 cm. wide, elliptic-oblong, attenuated at both ends, coriaceous, obtuse. Peduncle with the few-flowered raceme 5 cm. or more long. Bracts of the inflorescence tubular, diaphanous. Ovary about 4 mm. long, dilated upward from a slender base, tripartite, the wings extending along the sepals as deep keels. Flowers five or more, about 1 cm. apart, yellowish green tinged or dotted with brown. Lateral sepals coherent to about the middle, up to 1.3 cm. long, about 4 mm. wide, oblong-lanceolate, navicular, 3-nerved, apical third caudate-hamate, on the dorsal surface conspicuously and deeply carinate along the middle, the keels 2 mm. deep decurrent on the ovary and extending from the base to the tip of each sepal. Dorsal sepal similar to the laterals, the keel decurrent on the ovary. Petals 4.5 mm. long, 1.5 mm. wide near the tip, pandurate-spatulate, tapering abruptly above the middle to an acute tip, conspicuously 3-nerved, fleshy. Labellum 5.5 mm. long, about 2



mm. wide, oblong-lingulate, with the margins of the basal half erect, convergent and thickened in front, the apical half ovate-obtuse from a broad base, conspicuously papillose on the upper surface, 3-nerved, ecallose. Column slightly arcuate, 3-lobed at the summit; the lateral lobes triangular, acute, denticulate on the margin; the middle lobe posteriorly situated, suborbicular, denticulate on the margin, exceeding the anther. Anther calyptriform.

In the *Orchid Review* for 1916 (24:187), in a note entitled "Orchids at Kew," the following reference to *Pleurothallis hamata* occurs: "Pleurothallis hamata Rolfe, a native of Costa Rica, is blooming very freely." This is the only published reference to the species that I have been able to find. In the herbarium at Kew there are three specimens; one of these is briefly characterized by Rolfe as to color only: "Fl. greenish yellow spotted with brown. Lip minutely dotted. Pet. with 3 stripes." The inflorescence bears seven flowers. The other specimens were prepared, presumably, from the type plant cultivated at Kew. This plant was contributed by C. H. Lankester (no. 350). In August 1922 the original plant was flowering freely, and from it the specimen was made on which my description is based. Although contrary to approved usage, I have taken up Rolfe's name for the species, and supplied the above description.

The navicular sepals with a prominent keel along the middle of each, which extends to the tip formed by the caudate hooked apical third, and the conspicuously tri-lobate ovary distinguish *Pleurothallis hamata* from all other species of the genus now known to be natives of Central America. The secondary stems appear to arise from a more or less creeping rhizome.

COSTA RICA, C. H. Lankester 350. (TYPE in Herb. Kew. and a specimen from the type plant cultivated in Hort. Bot. Reg. Kew. in Herb. Ames No. 22856.)

**Lepanthes appendiculata** Ames sp. nov. Herba epiphytica, pusilla. Radices fibratae. Caules secundarii caespitiosi, graciles, monophylli, vaginis arcte appressis hispid-

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ulis obtecti. Folium ovatum, acuminatum, apice in dentes tres subaequales divisum. Petioli plus minusve duo. Racemus abbreviatus. Flores distichi, succedanei. Sepala lateralialia usque ad medium cohaerentia, ovata, acuminata, valde acuta, in sicco diaphana. Sepalum dorsale ovato-lanceolatum, acutum. Labellum trilobatum; lobis lateralibus subquadratis, valde obtusis; lobo medio valde incrassato, glanduloso, abbreviato. Columna gracilis.

Plant epiphytic, up to 9.5 cm. high. Roots fibrous, whitish. Secondary stems 1.5-7 cm. long, monophyllous, very slender, the longer ones with six closely appressed sheaths which are hispidulous longitudinally along the prominent nerves, dilated at the summit, terminating in an acute tip, purplish when dry. Leaf 2-3 cm. long, up to 1.7 cm. wide, coriaceous, ovate, acuminate, subequally tridentate at the apex, contracted at base into a short sulcate petiole. Peduncles one to three, shorter than the leaf, with the raceme about 1.5 cm. long, very slender. Bracts of the inflorescence minute. Flowers distichous, crowded, opening in succession. Lateral sepals about 2 mm. long, coherent to about the middle, ovate, acuminate, acute, 3 mm. wide from margin to margin at the point of coalescence (free portion of each sepal 1.5 mm. wide). Dorsal sepal 2.5 mm. long, 2 mm. wide, ovate-lanceolate, acute, 1-nerved. Petals 1 mm. long, about 2 mm. wide, deeply bilobed or crescentiform, the lobes obtuse. Labellum 1 mm. long, 3-lobed; lateral lobes oblong, subquadrate, obtuse, much exceeding the middle lobe, carinate on the upper surface; middle lobe fleshy, rounded, thicker than wide, covered with glandular spreading hairs, narrowed into a slender claw. Column slender, gradually dilated toward the summit.

In habit *Lepanthes appendiculata* resembles *L. samacensis* Ames, but differs from it in the form of the petals and labellum. In the shape of the petals it is comparable to *L. acuminata* Schltr.

GUATEMALA, Department of Alta Verapaz, Samac, Harry Johnson 879, October 20, 1920. On trees. (TYPE in Herb. Ames No. 22853.)

**Lepanthes fimbriata** *Ames sp. nov.* Radices fibratae. Caules secundarii monophylli, caespitiosi, vaginis hispidulis obtecti. Folium ovatum, acuminatum, coriaceum, in petiololum brevem contractum. Flores succedanei, in racemum compactum dispositi. Sepala lateralia supra medium cohaerentia, laminam ovatam bilobatam formantia. Sepalum dorsale ovatum, acutum. Petala bilobata, margine ciliato; lobo posteriore anguste ovato; lobo anteriore oblongo-triangulo. Labellum trilobatum, margine ciliatum; lobis lateralibus ad apicem convergentibus, triangularibus; lobo medio anguste oblongo. Columna supra basim dilatata.

Plants about 9 cm. tall. Roots fibrous, clustered. Secondary stems caespitose, about 5.5 cm. long, slender, concealed by as many as seven elongated closely appressed sheaths which become infundibuliform-acute at the summit, nerves of the sheaths and margin of the expanded tip hispidulous. Leaf about 3 cm. long, up to 1.5 mm. wide, ovate, acuminate, coriaceous, rigid, contracted at base into a short petiole. Peduncles solitary or several, 1-2 cm. long, very slender. Inflorescence racemose, up to 8 mm. long, flowers opening in succession. Bracts of the inflorescence distichous, crowded, narrowly lanceolate, hispidulous, acute, shorter than the obliquely ascending pedicels. Lateral sepals 3 mm. long, united for nearly two thirds of their length, forming an ovate bilobed 4-nerved lamina which is 3 mm. wide near the middle; lobes triangular, acute. Dorsal sepal 3.5 mm. long, 2 mm. wide near the middle, ovate from a broad base, tapering gradually to an acute tip, 3-nerved. Petals about 1 mm. long, 3 mm. wide, bilobed, 3-nerved, ciliate on the margin; posterior lobe narrowly ovate, obtuse, 1 mm. wide; anterior lobe narrower, oblongo-triangular, obtuse. Labellum ciliate on the margin, 3-lobed, 2 mm. long, 1.5 mm. wide, cordate at base, the basal auricles subacute; lateral lobes porrect, the tips slightly convergent, about 1 mm. long, narrowly triangular, subacute; middle lobe about 1 mm. long, narrowly oblong, subacute, ciliate on the margin, porrect, almost equaling the lateral lobes. Disc 3-nerved, the lateral nerves clavate in outline. Column 1.6 mm. long, slightly dilated above the base.

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A near ally of *Lepanthes turialvae* Reichb. f., but readily distinguished by the ciliate petals and labellum.

COSTA RICA, Alto de Ochomogo, *Tonduz* (Herb. Instit. physico-geogr. nat. costaricensis No. 10387), December 1896. 1550 meters altitude. (TYPE in U. S. Nat. Herb. No. 815046.)

*Lepanthes gibberosa* Ames sp. nov. Herba caespitosa, epiphytica. Caules secundarii erecti vel ascendentes, monophylli, vaginis hispidulis obtecti. Folium ellipticum, marginatum, coriaceum. Pedunculus gracilis. Inflorescentia laxa. Flores succedanei. Sepala lateralibus usque ad medium cohaerentibus, laminam bilobatam formantibus, lobis in caudam elongatam productis, margine interiore prope basim caudae protuberanti. Sepalum dorsale triangulari-ovatum, in caudam productum. Petala cuneato-deltaeidea. Labellum a basi cordata bilobatum; lobis obtusis, carina membranacea ornatis. Columna gracilis.

Plants up to 5 cm. tall including the inflorescence, caespitose, epiphytic. Roots fibrous, spreading, slender. Secondary stems monophyllous, 1.3-2 cm. long, concealed by several elongated sheaths with hispid nerves and infundibuliform summit, the margin of the infundibuliform summit hispid. Leaf elliptic, marginate, up to 9 mm. long, 5 mm. wide, coriaceous, shortly petiolate. Peduncles two or more from the summit of a secondary stem, exceeding the leaves, 2 cm. or more long. Inflorescence lax, several-flowered. Bracts of the inflorescence infundibuliform, 1.5 mm. long, brownish when dry. Lateral sepals about 6 mm. long, coherent nearly to the middle, forming a deeply bilobed 4-nerved lamina 4 mm. wide each lobe of which is abruptly narrowed into a linear-caudate termination which is 2.5 mm. long; at the base of the caudate termination each sepal is strongly protuberant on the inner margin. Dorsal sepal 6 mm. long, 3.5 mm. wide where it joins the lateral sepals, triangular-ovate, 3-nerved, with a shortly caudate tip. Petals widely cuneate-deltoid, about 1 mm. long, 2.5 mm. wide. Labellum 1.75 mm. long, cordate at base, auricles rounded, deeply bilobed in front, the lobes obtuse, each

with a membranaceous keel. Column slender, about 1.5 mm. long.

Plant similar in habit and in the size of the flowers to *Lepanthes guatemalensis* Schltr., from which it differs in the lateral sepals being protuberant on the inner margin near the base of a caudate tip.

GUATEMALA, Department of Alta Verapaz, Ainal, *H. v. Tuerckheim* 967, July 1886. 4500 pp. altitude. (TYPE in U. S. Nat. Herb. No. 814565. DUPLICATE TYPE in Herb. Ames No. 22852.)

***Epidendrum Chloë* Reichb. f.** in Bonpl. 4 (1856) 327.

*Epidendrum culmiforme* Schltr. in Fedde Repert. 10 (1912) 485.

The type of this species is preserved in Lindley's Herbarium at the Royal Gardens, Kew. It was collected by Skinner in Guatemala. In habit it resembles *Epidendrum filicaule* Lindl. I have compared *Epidendrum culmiforme* Schltr. with Lindley's specimens without being able to detect specific differences.

GUATEMALA, Department of Alta Verapaz, Cobán, *H. v. Tuerckheim* 804, 1887. 550 meters altitude. (The type of *E. culmiforme* Schltr. is *v. Tuerckheim* 804 from Pansamala.): *H. v. Tuerckheim* 2489, July 1912. Epiphytisch im Wald. 1550 meters altitude.

***Epidendrum cnemidophorum* Lindl.** Fol. Orch. Epid. (1853) 53.

*Epidendrum affine* Reichb. f. in Bonpl. 4 (1856) 327. *Encyclia affinis* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 471.

From my studies it would seem that *Epidendrum affine* Reichb. f. is hardly distinct from *E. cnemidophorum* Lindl. Schlechter in his Kritische Aufzählung der bisher aus Zentral-Amerika bekanntgewordenen Orchideen, referred *Epidendrum affine* Reichb. f. to *Encyclia* and proposed the new combination *Encyclia affinis*. I have been unable to discover on what evidence he relied in making this change, as the type of *Epidendrum affine* Reichb. f. is a representative of

Sect. *Eupidendrum*. The type specimen in Lindley's Herbarium (no. 50 of Reichenbach's citation) is in excellent condition. It is a tall, leafy species with imbricating bracts subtending the inflorescence. If there were any doubt as to what Reichenbach understood to be *Epidendrum affine*, this doubt would be removed by a specimen in the Gray Herbarium (*Skinner*, Guatemala) which is a duplicate of the type collection with the name written in Reichenbach's handwriting. Reichenbach in his description compared *E. affine* to *E. macrobotryum* Lindl., a species with much the same aspect, but with denser racemes.

GUATEMALA, *Skinner*.

***Epidendrum ionophlebium* Reichb. f.** Beitr. Orch. Centr. Am. (1866) 103.

*Epidendrum Hoffmannii* Schltr. in Fedde Repert. 16 (1920) 444.

Reichenbach drew his description of *Epidendrum ionophlebium* from a specimen collected by Dr. Carl Hoffmann near Curidabad, Costa Rica, in May 1857. The type suggests *E. radiatum* Lindl., from which it differs in the outline of the labellum and in the structure of the column. Dr. Schlechter, in 1920, published *Epidendrum Hoffmannii*. The type of the species was collected by C. Hoffmann (no. 570) near Curidabad in Costa Rica in May 1857. From my records of the types of these two species it would seem that they are hardly distinct. The labellum of *E. Hoffmannii* is perhaps a little narrower than that of *E. ionophlebium*, and more acuminate, but these differences are not greater than one would expect in flowers of a species which belongs in the same alliance with the extremely variable *Epidendrum radiatum* Lindl. Furthermore, the type specimens of both species were collected in the same place, in the same month and year, by the same collector. It would seem that Schlechter overlooked *E. ionophlebium* when he described *E. Hoffmannii*, as in his citation of allied species he mentions only *E. pachycarpum* Schltr. which is not so much like the type as is *E. ionophlebium*.

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COSTA RICA, Curidabad, *Hoffmann s. n.* [570], May 1857. (TYPE in Herb. Reichenbach at Vienna.)

SALVADOR, Volcán de San Salvador (?), *Salvador Calderón* 684, May 2, 1922.

GUATEMALA, Department of Quezaltenango, Jardín de San Carlos Miramar, *Tonduz & Rojas 181*, March 19, 1921. 750 meters altitude.

***Epidendrum luteoroseum*** A. Rich. & Gal. in *Ann. Sci. Nat.* ser. 3, 3 (1845) 19.

*Epidendrum seriatum* Lindl. *Fol. Orch. Epid.* (1853) 59.

Lindley in his *Folia Orchidacea* referred *Epidendrum luteoroseum* A. Rich. & Gal. and *E. seriatum* Lindl. to widely separated sections of *Epidendrum*, the former to Sect. *Encyclium*, the latter to Sect. *Amphiglottium*. Nevertheless, they are conspecific; *E. luteoroseum* by priority of publication is the name by which the species should be known. Schlechter in his list of Central American Orchids (in *Beihefte Bot. Centralbl.* 36, Abt. 2 (1918) ) recognized *E. luteoroseum* and *E. seriatum* as distinct species, notwithstanding Reichenbach's illuminating discussion in *Saunders' Refugium Botanicum* 2 (1869) sub. t. 90, in which he pointed out that these species are conspecific and that *E. luteoroseum* was the earliest name. Reichenbach, it is true, adopted the name *E. seriatum*, but for reasons which modern rules of nomenclature do not sanction. "Dr. Lindley," he wrote, "having obtained a garden specimen from J. Bateman, Esq., was so unfortunate as to place it in a wrong section, as well as to speak of the lip as being linear, an error which arose from his specimens not being well pressed. Yet Dr. Lindley has well described the inflorescence and the flower, when Achille Richard had given such a diagnosis 'that *Ædipus* himself would not have guessed the plant,' speaking even from glandulae, where there are none. According to our principles we have preferred Lindley's name. We are quite disposed to leave to Achille Richard the priority for all species not described later by Lindley or by ourselves, and we possess now types of nearly all his species."

There are two sheets of *E. luteoroseum* in Herb. Mus. Par. that bear the number 5233 of Galeotti's Mexican material. One of these is marked "Type," but I suspect that the actual type is represented by a sheet in Reichenbach's Herbarium at Vienna which is accompanied by a drawing of the flower probably from Richard's hand. This specimen, with several other types described by A. Richard from Galeotti's Mexican collections, together with sketches and water color drawings, was loaned to Reichenbach by the Museum d'Histoire Naturelle of Paris. All of this material was sealed up with Reichenbach's collection for twenty-five years, when at his death the extraordinary terms of his will were observed. One wonders if Reichenbach referred to these specimens when he wrote, "We now possess types of nearly all of his [Richard's] species."

**Epidendrum Ovulum** Lindl. in Bot. Reg. (1843) Misc. 55.

*Epidendrum sisyrinchiifolium* A. Rich. & Gal. in Ann. Sci. Nat. ser. 3, 3 (1845) 19. *Encyclia ovulum* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 473. *Encyclia sisyrinchiifolia* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 474.

Roots coarsely fibrous. Pseudobulbs 3 cm. long, 1.5 cm. in diameter near the middle, pyriform, bifoliate, sometimes trifoliate, partly concealed when young by large sheaths which at anthesis are usually reduced to fibrous remains. Leaves linear-oblong, 7.5-10.5 cm. long, 3.5-5 mm. wide, subobtuse or acute, coriaceous. Peduncle terminal, with the raceme about 15 cm. long. Raceme laxly few-flowered (3-flowered in Lindley's type, 3-5-flowered in Pringle's specimen, 3-flowered in Ghiesbreght no. 5). Bracts of the raceme about 2 mm. long, squamiform, acute. Pedicel with the ovary smooth, up to 3 cm. long, slender. Sepals fleshy, similar, 1.3-1.5 cm. long, about 3 mm. wide, oblong, obtuse. Petals 1.4-1.6 cm. long, oblong-spatulate, broadest near the tip, obtuse. Labellum 3-lobed, 1.4-1.8 cm. long (about 1.5 cm. long in Lindley's type, 1.5 cm. long in Galeotti no. 5188); lateral lobes 2.5-3.5 mm. long from the obtuse tip to the base of the sinus formed with the middle



lobe, obliquely porrect, 1-2 mm. wide, densely papillose on the veins; middle lobe including the slender isthmus 8-9.5 long, 6-7 mm. wide, suborbicular, margin crenulate, obtuse or retuse at the rounded apex, upper surface densely papillose to the base of the isthmus. Disc ecallose. Column free, 6.5-8.5 mm. long, tinged with purple, on each side (in front) prolonged into a triangular erect subacute or obtuse lobe.

This species was originally described by Lindley from material collected near Bolanos, Mexico. In 1845 what appears to be the same species was published by Achille Richard and Galeotti under the name *Epidendrum sisyrinchiifolium*, the brief description having been drawn from a specimen collected in the State of Oaxaca, Mexico. Representative material of this Mexican *Epidendrum* is very scarce in herbaria. In addition to the type of *E. Ovulum* I have only seen five other collections: the solitary specimen of *E. sisyrinchiifolium* represented by Galeotti's 5188 in Herb. Mus. Par., two Ghiesbreght specimens from Oaxaca also preserved in Herb. Mus. Par., a specimen collected in Oaxaca by Conzatti (no. 1447) preserved in the Gray Herbarium and a Pringle specimen in my herbarium. The Pringle specimen was prepared from plants received alive from Mexico in December 1905 and cultivated in my greenhouses at North Easton, Mass. In Reichenbach's Herbarium in Vienna there is a colored sketch of Galeotti's specimen apparently made from living material. This is number 118 of the Galeotti series of drawings. It is accompanied by a note which gives the source of the plant as Cerro San Felipe, at an altitude of 7000 feet. A note on the drawing gives March as the flowering season.

One of the characteristic peculiarities of *E. Ovulum* is the scaly surface of the labellum, the numerous radiating veins being thickly beset with papillose emergences. In dried specimens these emergences become flattened and suggest the scales of a butterfly wing.

The original descriptions of the species are inadequate, and as there are no published plates which set forth the specific characters, the above redescription is offered.

MEXICO, State of Jalisco, Bolanos, *Hort. Loddiges* (TYPE of *E. Ovulum* in Herb. Kew. (Lindley Coll.)): State of Oaxaca, *Galeotti* 5188, 1840. On trees. 7000 feet altitude. (TYPE of *E. sisyrinchiiifolium* in Herb. Mus. Par. (Richard Coll.)); *Ghiesbreght* 5, 1842. Flowers in March; *Ghiesbreght* s. n., 1842; Cerro San Felipe C. *Conzatti* 1447, August 13, 1905: Without localization C. G. *Pringle* s. n. Living plants collected in December 1905. Flowered under cultivation at North Easton in July 1907.

***Epidendrum pentotis* Reichb. f.** in *Linnaea* 41 (1876) 81.

*Epidendrum fragrans* Sw. var. *megalanthum* Lindl. *Fol. Orch. Epid.* (1853) 39. *Epidendrum confusum* Rolfe in *Orch. Rev.* 7 (1899) 197. *Epidendrum Beyrodtianum* Schltr. in *Orchis* 9 (1915) 49, t. 4, figs. 14-21.

Rolfe based his *Epidendrum confusum* on the type of *E. fragrans* Sw. var. *megalanthum* Lindl. which is preserved in Lindley's Herbarium at Kew. The type consists of two flowers which Rolfe recognized as the Guatemalan material collected by Skinner. In the *Orchid Review* for June 1908 (p. 189) he reduced *E. confusum*, referring it to synonymy under *E. pentotis* Reichb. f. He effected this reduction on the evidence furnished by the drawing of a flower, presumably identified by Reichenbach, which is part of the Day Collection of drawings preserved at Kew. Rolfe also was influenced in arriving at this conclusion by specimens from the Glasnevin Botanic Garden which he identified as *E. pentotis*. In the *Orchid Review* for 1914 he published additional notes on the history of *E. pentotis* in which he showed that the Guatemalan origin of the species rests on substantial evidence through material distributed by John Donnell Smith (no. 3499) collected by Heyde and Lux near Santa Rosa, in the Department of Santa Rosa, Guatemala, in May 1892. At this point in his studies he realized that the Brazilian habitat originally given by Reichenbach was erroneous or at least in need of confirmation.

*Epidendrum pentotis* is represented in Reichenbach's Herbarium at Vienna by about twelve flowers mounted on

a single sheet. Whether or not these flowers came from Minas Geraës, Brazil (Ex horto Lindeniano), the source given for the type, one is assisted toward a conception of the type by means of a sketch mounted on the same sheet with the flowers. On the sketch Reichenbach wrote a description which is pretty much the same as that which he published in *Linnaea*.

In 1915 Rudolf Schlechter proposed a new species, to which he gave the name *Epidendrum Beyrodtianum*. On the evidence of Schlechter's diagnosis and plate published in *Orchis*, and on the evidence of drawings from the type, preserved in my herbarium, it would seem that Schlechter's species is conspecific with *E. pentotis*. It has the elongated pseudobulbs characteristic of the Heyde and Lux specimens from Guatemala, and flowers equal in size to those of *E. pentotis* as represented in Reichenbach's Herbarium. It is interesting to note that Schlechter distinguished his species, in part, from *E. pentotis* by means of its longer, more slender pseudobulbs, a distinction for which it is difficult to discover justification, as Reichenbach did not describe pseudobulbs or leaves. Furthermore the type specimen of *E. pentotis* consists only of flowers and a sketch.

***Epidendrum propinquum*** A. Rich. & Gal. in *Ann. Sci. Nat.* ser. 3, 3 (1845) 21.

*Epidendrum lamprocaulon* Reichb. f. in *Bot. Zeit.* 10 (1852).

*Epidendrum propinquum* and *E. lamprocaulon* were described from specimens of Galeotti's no. 5265. I have examined the type material of both species. They agree in floral structure, in the elongated floral bracts which seem to differentiate them from *E. ledifolium* A. Rich. & Gal., and in habit.

***Epidendrum Rousseauae*** Schltr. in *Beihefte Bot. Centralbl.* 36, Abt. 2 (1918) 407.

*Epidendrum laterale* Rolfe in *Orch. Rev.* 20 (1912) 280, 319, nomen tantum; 28 (1920) 160.

In the *Orchid Review* (20:280), among notes on an exhibition of orchids held by the Royal Horticultural Society, the first reference to a new species of *Epidendrum* named *E. laterale* occurs. This reference is hardly a description. It is as follows: "J. J. Neale, Esq., Lynwood, Penarth (gr. Mr. H. Hadden), sent *Epidendrum laterale*, a curious little plant bearing two spikes of green flowers from rudimentary growths, as in *E. Stamfordianum*." On page 319 of the same volume the following additional reference occurs: "August 27th: EPIDENDRUM LATERALE.— Mr. O'Brien showed for Mr. Neale, Penarth, a plant of *Epidendrum laterale* (Central America), and remarked that the inflorescence is produced on a rudimentary pseudobulb, as in *E. Stamfordianum* (probably the only similar case), a peculiarity that seems to show that the normal mode of flowering is from the base of the mature pseudobulb. A Botanical Certificate was awarded to the plant on the proposition of Mr. O'Brien." The first characterization of the species that approaches a botanical description was published in the *Orchid Review* for 1920 (28:160). Here the species is treated in a very rambling style under the heading *Epidendrum laterale* Rolfe and we are informed that it is a native of Costa Rica.

In 1918 Dr. Schlechter published *Epidendrum Rousseauae*, basing his description on material obtained in Panama by Mrs. Rousseau. He only had two inflorescences and a single leaf. He surmised erroneously that the habit of the plant must resemble that of *E. ramosum* Jacq. Later he studied plants collected in Panama by C. W. Powell which he identified as *E. Rousseauae*. Excellent material of Powell's specimens are in my herbarium and from them it would seem that *E. Rousseauae* is the same species as that which Rolfe described as *E. laterale*. The only differences between Rolfe's material and Powell's are of such minor importance that it would be straining a point to regard them as sufficient for the recognition of two species. As *E. laterale* was not properly characterized prior to 1918, it would seem that *E. Rousseauae* is the name by which this curious species should be known.

*Epidendrum volutum* Lindl. in Paxt. Flow. Gard. 2 (1851-52) 151, fig. 215.

*Epidendrum Radlkoferianum* Schltr. in Fedde Repert. 17 (1921) 142.

I have been unable to separate *Epidendrum Radlkoferianum* Schltr. from *E. volutum* Lindl. In facies and floral structure they are so similar that attempts at specific differentiation are unwise.

*Epidendrum volutum* was originally localized in Central America. Recent collections made by C. W. Powell (no. 89) in Panama (Veraguas, Chiriqui) indicate a more definite geographical position. The type of *E. Radlkoferianum* was also collected in Panama.

*Zygopetalum trinitatis* Ames sp. nov. Radices fibratae, albidae, glabrae. Folia oblongo-oblancoolata, acuminata, acuta, membranacea. Scapus gracilis, erectus vel ascendens, ut videtur uniflorus. Bracteae inflorescentiae duae, pedicellum florum subtendentes. Sepala patentia; lateralia undulata, lanceolata, acuta. Sepalum dorsale oblongum, obtusum. Petala oblonga acuta. Labellum simplex, unguiculatum, in laminam ellipticam expansum. Crista prope basim disci in laminas septem divisa. Columna simplex. Pollinia duo.

Roots whitish, smooth, densely clustered. Stems abbreviated, 1 cm. long more or less, at first concealed by the sheathing bases of the leaves, thickened, attenuated upwards. Leaf jointed to a conduplicate base; lamina 7.5-13 cm. long, up to 1.5 cm. wide, oblong-oblancoolate, many-nerved, acuminate, acute, pliable, longer than the scape. Scape erect or ascending, about 5 cm. long, 1-flowered, paucibracteate, slender. Pedicellate ovary up to 8 mm. long, slender, subtended by two bracts, the outer bract surrounding the base of the pedicel nearly 5 mm. long, the inner one oblong and acute. Lateral sepals spreading, 9-11 mm. long, up to 4 mm. wide, somewhat undulate on the margin, lanceolate, tapering gradually to an acute tip, forming a short mentum at base. Dorsal sepal similar, obtuse, about 1 cm. long. Petals 9 mm. long, 3 mm. wide,

oblong, tapering gradually to an acute tip, undulate on the margin, 3-nerved. Labellum 8 mm. long, entire, 4.5 mm. wide above the middle, about 2 mm. wide at base where it is contracted into an oblong 5-nerved claw, expanded in front of the claw into an elliptical obtuse lamina. Crest in front of the claw about 3 mm. long, very fleshy, composed of seven porrect keels, the central one tridentate at the apex, the others laterally compressed and obtuse. Column simple, about 7 mm. long, fleshy. Pollinia two, sessile on an oblong disc.

TRINIDAD, B. W. I., Rio Claro — Guyaguayare Road, 7th mile, *R. A. Farfan s. n.*, December 5, 1922. (TYPE in Herb. N. Y. Bot. Gard.)

**Bulbophyllum lipense** *Ames sp. nov.* Rhizoma longe repens. Pseudobulbi semifusiformes, monophylli, inter se distantes. Folium ligulatum, apiculatum, utrinque attenuatum, septemnervium. Scapus quam folium longior, gracilis, uniflorus. Sepala lateralia triangularia, acuminata, subcaudata, trinervia, mentum obtusum formantia. Sepalum dorsale lanceolatum, in apicem caudatum productum. Petala lanceolata, margine glanduloso-ciliata, uninervia. Labellum supra medium valde deflexum, dense glanduloso-pubescens, basi rotundata duplicatum. Columna in pedem longum producta, apice in stelidia lineari-triangularia erecta producta.

Roots slender, fibrous, from the base of the pseudobulbs. Rhizome creeping, elongated, very slender, .75 mm. thick. Pseudobulbs 5–10 mm. apart, 1 cm. long, tapering upward from a broad base, monophyllous. Leaf 2–3 cm. long, 3 mm. wide, narrowly ligulate, tapering to both ends, apiculate, contracted at base into a short petiole or epetiolate, chartaceous when dry, 7-nerved, nerves unequal in length, closed. Scapes up to 3.5 cm. long, filiform, with a single tubular sheath near the base, bearing a single flower at the summit. Pedicel with the ovary about 3 mm. long, slender, smooth, subtended by an infundibuliform bract about 1 mm. long. Lateral sepals 6–7 mm. long, about 2 mm. wide near the base, decurrent on the slender foot of the column, forming

a rounded mentum, triangular, subcaudate at least attenuated into a slender tip, 3-nerved, pellucid when dry. Dorsal sepal 6 mm. long, lanceolate, acuminate, attenuated into a slender tip, concave at base, 3-nerved, pellucid. Petals 3.5 mm. long, 1 mm. wide, narrowly elliptic-lanceolate, acute, glandular-ciliate on the margin, 1-nerved. Labellum about 2.5 mm. long, mobile at the tip of the upcurved column-foot, apical third sharply deflexed, fleshy and conspicuously glandular-pubescent, base rounded, margins erect, that is, the basal portion of the labellum is duplicative. Column 1.5 mm. long, produced into a foot 2 mm. long, at the summit, — on each side, — prolonged into an erect linear-triangular stelidium.

In habit similar to *Bulbophyllum exile* Ames, but with longer scapes and a glandular-pubescent labellum.

PHILIPPINES, Mindanao, Bukidnon Subprovince, *M. Ramos & G. Edaño Bur. Sci.* 38582, July 9, 1920. In damp forest on trees. Flowers yellow and white with purple labellum. 4000 feet altitude. (TYPE in Herb. Ames No. 22855.)

**Telipogon Lankesteri** *Ames sp. nov.* Radices crassae, repentes. Folia ut videtur decidua. Caules inflorescentiae erecti, ramosi, multiflori, graciles. Flores parvi, inter se satis distantes, bractee breves. Sepala similia, uninervia, ovato-lanceolata, acuta. Petala minute ciliata, ovata, acuta, trinervia, purpureo-tincta. Labellum oblongum, acutum, trinervium, margine retrorso-ciliatum, toto disco glanduloso-pubescenti. Gynostemium abbreviatum, longe barbatum.

Roots very coarse, spreading. Leaves deciduous, absent at flowering time. Flowering stems about 2 dm. high, branching, scarcely 1 mm. thick, green, with several alternating abbreviated scarious bracts on the part below the branches, each flowering stem two or more branched, the branches up to 12 cm. long, wiry, many-flowered. Bracts of the inflorescence scale-like, triangular, acute, about 1 mm. long. Flowers 5–8 mm. apart. Pedicels 2 mm. long, ovary about 3 mm. long. Lateral sepals 2.5 mm. long, 1.25 mm. wide at about the middle, ovate-lanceolate, tapering grad-

ually to an acute tip, 1-nerved, somewhat concave, strongly divaricate, membranaceous. Dorsal sepal similar. Petals nearly 3 mm. long, 1.5 mm. wide near the middle, ovate, acute, 3-nerved, minutely ciliate on the margin, purplish, membranaceous, densely and shortly glandular-pubescent toward the base on the upper surface. Labellum 3.5 mm. long, 1 mm. wide, simple, oblong, gradually attenuated from above the middle to the acute tip, 3-nerved, retrorsely ciliate on the margin, densely and shortly glandular-pubescent on the upper surface. Column abbreviated, scarcely 1.5 mm. long, stout, provided with numerous elongated spreading hair-like appendages on the sides and at the back, shortly glandular-pubescent in front. Anther membranaceous, cordate.

The nearest affinity of this species is *Telipogon minutiflorus* Kränzl. which is in part distinguished by 1-nerved petals and an ovate-triangular labellum. Both *T. Lankesteri* and *T. minutiflorus* represent aberrant species of *Telipogon* and may be members of the genus *Stellilabium* which Schlechter erected for the reception of *Telipogon astroglossus* Reichb. f.

From dried specimens the flowers appear to have been purplish.

COSTA RICA, Peralta (Las Lajas) C. H. Lankester 361, September 14, 1922. On forest undergrowth. 800 meters altitude. (TYPE in Herb. Ames No. 22854.)

**Ornithocephalus Lankesteri** Ames *sp. nov.* Herba epiphytica, pusilla, foliis equitantibus ad vaginas duplicatas articulatis, lineari-oblongis, acutis vel obtusis. Pedunculus glaber, longitudinaliter alatus, cum racemo folia excedens, plus minusve decemflorus. Bracteae inflorescentiae patentes, conspicuae, acutae. Sepala lateraliter obovata, apiculata, carinata. Sepalum dorsale valde concavum. Petala flabellata, truncata. Labellum a basi oblonga dilatatum, apice abrupto acutum. Callus in disco prope basim columnae. Columna abbreviata, rostello elongato.



Epiphytic herb, with the inflorescence up to 7 cm. tall, acaulescent. Roots coarse, white, with white villi. Leaves equitant, up to 4.5 cm. long, about 4 mm. wide, linear-oblong, acute or obtuse, very fleshy, rigid when dry, articulated to persistent sheaths, arranged like the ribs of a fan. Sheaths about 5 mm. long. Peduncle including the raceme up to 6.5 cm. long, bracteose and floriferous nearly to the base, longitudinally alate, otherwise smooth. Bracts of the inflorescence distichous, 1.5 mm. long, the lowermost ones being the longest, rigid, acute, spreading, clasping the rachis. Pedicel and ovary up to 4 mm. long, smooth. Flowers ten or more, crystalline white with a green callus on the labellum. Lateral sepals 2 mm. long, 1.5 mm. wide near the tip, obovate, apiculate, conspicuously carinate through the middle on the dorsal surface, strongly concave, deflexed and bent sharply backward. Dorsal sepal 2 mm. long, similar to the laterals, strongly concave, subhemispherical. Petals 3 mm. long, 3 mm. wide near the tip, flabellate. Labellum 6 mm. long, about 3 mm. wide near the tip, 2 mm. wide near the middle, gradually dilated near the tip, abruptly acute, somewhat concave in front of the conspicuous bilobed or disc-like callus which seems to arise from the base of the column. Callus 2 mm. long, having the appearance of a circular disc or sometimes divided through the middle, minutely papillose on each side near the base. Column characteristic of the genus; rostellum 4 mm. long. Caudicle of the pollinia 4 mm. long.

Allied with *Ornithocephalus Elephas* Reichb. f. which differs in having a navicular labellum with a very dissimilar termination. *O. falcatus* Focke is another close ally, but different in the petals and labellum.

COSTA RICA, Las Cónavas, C. H. Lankester 368. Flowers crystalline white, crest of lip green. On willow trunks, 6-8 feet from the ground, hanging downward. 4700 feet altitude. (TYPE in Herb. Ames No. 22844.)

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SCHEDULAE ORCHIDIANAE

NO. 4

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ADDITIONS TO THE ORCHID  
FLORA OF CENTRAL  
AMERICA

WITH OBSERVATIONS ON NOTEWORTHY SPECIES

BY

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## Additions to the Orchid Flora of Central America with Observations on Noteworthy Species

BY

OAKES AMES

IN this paper I have proposed one new genus and forty new species. These represent for the most part Costa Rican orchids sent for identification by Captain Arthur W. Hill, Director of the Royal Gardens, Kew, and by C. H. Lankester. Several species from Panama which appear to be new are included, these having been detected in recent collections made by C. W. Powell near Panama City. I have also included several species which demand attention at this time because they have remained obscure since the date of publication or have been misunderstood in recent work on the orchids of Central America. For the opportunity to illustrate and amplify the original descriptions of *Epidendrum gravidum* Lindl. and *E. trachycarpum* Lindl., two Mexican orchids which have been extremely perplexing because insufficiently characterized when proposed, I am indebted to the Director of Kew, who supplied flowers from the type specimens. The vegetative parts of *E. trachycarpum* and the raceme of *E. gravidum* were drawn with the aid of the camera-lucida from photographs preserved in my herbarium, these photographs having been taken from the type specimens. The type specimen of *E. gravidum* consists only of a raceme. Lindley did not have the pseudobulbs and leaves of this species.

The colors in Mr. Lankester's field-notes are those given in Ridgway's "Color Standards and Color Nomenclature."

The descriptions are from herbarium specimens.

The arrangement of genera and species follows Pfitzer's system proposed in Engler and Prantl's "Die natürlichen Pflanzenfamilien."

**Habenaria Lankesteri** *Ames sp. nov.* Herba terrestis. Caules prope basim foliosi. Bractee supra folia vaginantes. Flores virides, in racemum subdensum dispositi. Sepala lateralibus deflexa, ovato-oblonga, concava. Sepalum dorsale erectum, late ovatum, valde concavum. Petala oblongo-triangularia, antice prope basim in dentem abbreviatum producta. Labellum tripartitum, divisionibus subaequalibus, lineari-oblongis. Calcar dependens, ovarium subaequans.

Terrestrial herb 12-18 cm. tall. Leaves approximate, more or less basal, 4-5 cm. long, about 7 mm. wide, narrowly elliptic-oblong, tapering gradually toward both ends, acute, obliquely ascending, two of the leaves well developed, passing gradually into the acuminate bracts that sheath the upper part of the stem. Bracts of the stem two, alternate, closely appressed, 1.5-2.3 cm. long. Raceme 3-4 cm. long, five or more flowered. Bracts of the raceme about 1 cm. long, closely appressed to the ovary, lanceolate, acuminate. Pedicels very short, the ovary nearly sessile. Flowers green when alive, becoming brownish when dry. Lateral sepals slightly exceeding 4 mm. in length, about 2 mm. wide, pendent, ovate-oblong, strongly concave, fleshy, obtuse, somewhat thickened at the tip. Dorsal sepal 4 mm. long, elliptic-ovate, strongly concave, erect, the margin overlapping the petals. Petals 3.5 mm. long, about 1.5 mm. wide, triangular-oblong, subacute, fleshy, with a short obliquely ascending tooth at the base on the anterior margin. Labellum fleshy, tripartite, the divisions subequal and linear-oblong, the laterals slightly shorter than the middle one, from base of labellum to tip of middle division

4 mm. long; lateral divisions subparallel to the middle one, 3 mm. long, hardly 1 mm. wide; middle division slightly exceeding 3 mm. in length, twice broader than the lateral divisions. Spur pendent, about 1 cm. long, slender. Stigmatic process prominent.

Allied to *Habenaria repens* Nutt., but differs in the structure of the labellum and petals.

COSTA RICA, Jocosal, C. H. Lankester 342, December 16, 1919. (TYPE in Herb. Kew.)

**Lankesterella** Ames gen. nov. Sepalum dorsale erectum, liberum. Sepala lateralia cum columnae basi cohaerentia, mentum distinctum formantia. Petala angustata, libera. Labellum basi columnae affixum, exunguiculatum; lamina erecta basi subsaccata e sepalis lateralibus tamen non protrudens, intus glabra, plus minusve pandurata. Columna brevis, prope medium valde curvata, transverse complanata in pedem semiliberum producta. Rostellum nonevolutum vel valde membranaceum. Anthera sagittata, erecta, longe stipitata, apicem columnae excedens. Pollinia pulvereo-granulosa. Capsula ovoidea. Herba epiphytica, glandulosa. Folia radicalia plura, vix petiolata, membranacea, caulina nulla. Flores mediocres in racemo laxo. Bracteae inflorescentiae membranaceae, magnae.

Dorsal sepal erect, free from the petals, inserted just below the point of origin of the anther. Lateral sepals erect, hardly spreading, coherent at the base, united with the lower half of the column forming a distinct rounded mentum which includes and conceals the base of the labellum. Petals parallel to the dorsal sepal, inserted on the column, erect. Labellum affixed to the foot of the column, erect, sessile, strongly concave or subsaccate, continued upward into a panduriform lamina, provided below the middle on each side with a margined appendage. Column transversely flattened, curved sharply backward from about the middle, continued obliquely downward on the summit of the ovary into a distinct foot. Rostellum abbreviated. Anther inserted near the base of the erect portion of the column, stipitate, sagittate. Pollinia granulose. Capsule



CENTRAL AMERICAN ORCHIDS

ovoid, glandular-pubescent. Epiphytic herb with radical, sessile, membranaceous leaves. Scape densely long-hairy. Flowers ascending or erect in loose few-flowered racemes. Bracts of the inflorescence ample.

*Lankesterella* is a member of the *Spiranthis*ae, distinguished in part from its allies by the free petals, and transversely complanate curved column which is produced into a foot. There is not any rostellar projection as in *Spiranthes* and its allies. In habit suggesting those species of *Stenorhynchus* which Schlechter transferred to *Cladobium*.

***Lankesterella costaricensis* Ames sp. nov.** Radices carnosae, albidae, villosae, patentes. Folia rosulata, membranacea, sessilia, margine ciliata, elliptica, acuta. Scapus longe glanduloso-pubescent, infra racemum ebracteatus. Racemus plus minusve quinqueflorus, laxi-vel densiflorus. Rachis flexuosa. Bracteae inflorescentiae flores juveniles aequantes, ovatae, longe glandulosae. Pedicellus cum ovario dense et longe glandulosus, demum bracteas excedens. Flores plus minusve inter se distantes. Sepala lateraliam mentum obtusum formantia, supra basim libera, longe triangularia, acuta, extus dense glanduloso-villosa. Sepalum dorsale liberum, oblongum, subobtusum, concavum, extus dense glanduloso-villosum. Petala oblonga, usque ad apicem angustata, apice villifera, trinervia. Labellum elongatum, basi saccatum vel valde concavum; lamina supra saccum pandurata, margine utrinque prope basim labelli breviter appendiculata. Columna in pedem producta, supra medium transverse complanata, recurvata. Anthera sagittata.

Roots coarse, whitish, villose. Stems abbreviated. Leaves rosulate spreading, epetiolate, 1-2.5 cm. long, up to 1 cm. wide, narrowly elliptic, acute, narrowed toward the base, ciliate on the margin, membranaceous, reddish brown when dry. Scape with the raceme 5-10 cm. long, densely glandular-villose. Raceme 3-7 cm. long, three to ten or more flowered. Rachis flexuose, densely glandular-villose. Bracts of the raceme 5-15 mm. long, ovate, acuminate,

villose, clasping the base of the ovary. Flowers 5-10 mm. apart. Ovary densely glandular-villose, sessile. Lateral sepals about 7 mm. long, oblong-triangular, acute, forming a blunt mentum, densely glandular-villose on the external surface. Dorsal sepal 6 mm. long, 2 mm. wide, oblong, densely glandular-villose on the exterior surface, free from the petals. Petals 6 mm. long, about 1 mm. wide, oblong, obtuse, with several apical villi, 3-nerved. Labellum 8 mm. long, elongate-panduriform from a strongly concave or subsaccate base, obtuse, glandular on the inner surface above the middle, apical margin involute; there is a thickened dentate callus—one on each side—situated on the margin near the base of the labellum. Column sigmoid, transversely complanate, produced obliquely downward on the summit of the ovary into a distinct foot, free portion of the column 2 mm. long, the foot 2 mm. long. Rostellum not at all produced. Anther inserted near the base of the free portion of the column, sagittate, long-stipitate. Pollinia granulose.

In habit not unlike *Stenorrhynchus ceracifolius* Rodr. (*Cladobium ceracifolium* Schltr.), but with more flowers in the raceme and a very different column.

COSTA RICA, La Estrella, C. H. Lankester & Alfredo Sancho 387, January 9, 1923. Roadside on polled fence-tree. Spikes pendent. (TYPE in Herb. Ames No. 23725.)

**Cranichis Lankesteri** Ames sp. nov. Radices fibratae, elongatae, albido-villosae. Folia longipetiolata, basilaria; lamina foliorum late ovata, acuminata, basi rotundata in petiolum abrupte contracta. Scapus elongatus folia multo excedens, supra albido-villosus, gracilis, paucibracteatus. Racemus subdensiflorus. Bracteae inflorescentiae anguste lanceolatae, acutae, sparse et breviter villosae. Pedicellus gracilis, sparse glandulosus, oblique ascendens. Sepala lateralia elliptico-ovata, acuta, patentia, trinervia, extus glandulosa. Sepalum dorsale simile. Petala oblonga, obtusa, margine superiore longe ciliata. Labellum unguiculatum, obtuse hastatum, apice longe ciliatum. Columna generis.

Roots elongated, fibrous, villose, the hairs white in dried specimens. Leaves basal, few. Petioles slender, 3-4 cm. long; lamina of the leaf 7-8.5 cm. long, 4 cm. or more wide, membranaceous, broadly ovate from a rounded base, acuminate, acute. Scape with the raceme about 22 cm. long, hairy above. Bracts of the inflorescence greenish, narrowly lanceolate, 4-7 mm. long, sparsely pubescent. Raceme nearly 4 cm. long, about 1.5 cm. in diameter. Pedicels about 1 cm. long, sparsely glandular. Flowers resupinate. Lateral sepals 5.5 mm. long, 3 mm. wide, elliptic-ovate, acute, glandular on the exterior surface, 3-nerved. Dorsal sepal 5.5 mm. long, similar to the laterals. Petals 4.5 mm. long, 2 mm. wide, inserted on the base of the column, oblong, rounded at the tip, obtuse, upper margin long-ciliate. Labellum 5 mm. long, unguiculate, about 4 mm. wide in front of the claw when spread out, hastate, rounded at the tip, long-ciliate on the margin of the apical third. Column 2.5 mm. long, fleshy, truncate at the summit. Anther elliptical, fleshy. Pollinia elongated, slenderly pyriform, attached to a round thickened disc.

I have referred this species to *Cranichis* although in the structure of the unguiculate labellum it is dissimilar to the characteristic species of the genus. There are no near allies in the Central American orchid flora.

COSTA RICA, Cachi, *C. H. Lankester* 81, October 22, 1916. Leaves satin-surfaced, dusky olive-green (Ridgway), darkest in the region of the veins. Rachis ochre-red (Ridgway); bracts light cress-green, obverse sepals testaceous. Lower edge of petals ciliate, these with the whole flower pure white, except two side lobes of lip orange-yellow, end of lip ciliate with a testaceous spot inside. (TYPE in Herb. Kew.)

***Cranichis saccata*** *Ames sp. nov.* Herba terrestris. Folia basilaria, breviter petiolata, ovato-elliptica. Scapus erectus, paucibracteatus, supra medium glandulosus. Racemus sublaxus. Sepala lateralia basi protuberantia, supra insertionem triangularia, extus glandulosa. Sepalum dorsale anguste ellipticum, acutum, uninervium, sparse glandulosum. Petala membranacea, elliptico-oblonga, apice

## CENTRAL AMERICAN ORCHIDS

rotundata, conspicue uninervia, margine sparse ciliolata. Labellum basi profunde saccatum, antice in laminam conduplicatam extensum. Columna generis.

Terrestrial herb about 20 cm. tall, with nine or more leaves clustered at the base. Leaves petiolate, spreading; petioles up to 1.5 cm. or more long, sheathing the stem at base; lamina of the leaf membranaceous, 1.5–2.5 cm. long, up to 1.5 cm. wide, the smaller ones nearest the base of the stem. Scape with few bracts, glandular-pubescent above the middle, lowermost bract foliaceous, upper ones more or less closely appressed, 1–2 cm. long, acute, glabrous. Raceme ten or more flowered, exceeding 3.5 cm. in length; rachis glandular-pubescent. Bracts of the raceme oblong-lanceolate, not exceeding the ovary in length. Pedicellate ovary about 7 mm. long, densely glandular. Lateral sepals 4 mm. long from the point of insertion at the base of the column to their tip, with a conspicuous rounded posterior protuberance which is 2 mm. long, triangular-acute above the middle, sparsely glandular-pubescent on the outer surface. Dorsal sepal 5 mm. long, 2 mm. wide near the middle, narrowly elliptical, obtuse, mid-nerve conspicuous. Petals about 4 mm. long, 1.5 mm. wide, elliptic-oblong, rounded-obtuse at the apex, median nerve conspicuous, lower margin obscurely ciliolate. Labellum 6 mm. long, deeply saccate, with the sac subcylindrical and blunt; lamina above the sac porrect, more or less conduplicate, obtuse, truncate, 4 mm. long, hardly 2 mm. wide when spread out, with a prominent erect callus at the base in front of the opening of the sac; basal margin of the labellum obscurely crenate-dentate. Column 3 mm. long.

In the structure of the labellum *Cranichis saccata* differs from all other species in the Central American area. The protuberant basal portion of the lateral sepals is anomalous in the genus.

COSTA RICA, Cascajal, C. H. Lankester K351. In pastures. 5500 feet altitude. (TYPE in Herb. Kew.)

**Malaxis Lankesteri** Ames sp. nov. Herba terrestris, bifoliata, foliis prope medium plantae. Radices fibratae.

Caulis elongatus, gracilis. Folia approximata, subelliptica, in sicco valde membranacea, obtusa. Racemus congestus, flores subumbellati. Bracteae inflorescentiae squamiformes, acutae. Pedicelli graciles, oblique ascendentes. Sepala lineari-oblonga, margine valde revoluta. Petala filiformia. Labellum valde concavum, vix auriculatum, apice obscure trilobatum; lobis lateralibus porrectis, obtusis; lobo medio producto, obtuso, lateralibus angustiori. Discus in medio carinatus. Columna brevis.

Terrestrial herb up to 28 cm. high, bifoliate near the middle. Leaves approximate, 5.5 cm. long, 3 cm. wide, subelliptical, obtuse, membranaceous, mid-nerve prominent beneath. Peduncle, — or stem, — above the leaves, 18 cm. long, very slender, longitudinally sulcate. Inflorescence subumbellate. Bracts of the inflorescence squamiform, about 1 mm. long, acute, greenish, concave, much shorter than the slender pedicels. Flowers crowded. Pedicels obliquely ascending, with the ovary 5–12 mm. long, smooth, forming an obconical cluster. Lateral sepals nearly 4 mm. long, linear-oblong, obtuse, with the margin strongly revolute. Dorsal sepal similar. Petals filiform, 3.5 mm. long, obtuse. Labellum subsimple, 3 mm. long, without distinct basal auricles, about 2 mm. wide when flattened out, strongly concave, with a raised median carina within, obscurely 3-lobed at the tip; lateral lobes rounded and porrect; middle lobe narrower than the laterals and directed forward. Column short, hardly 1 mm. long.

This is a close ally of *Malaxis lagotis* (Reichb. f.) Ktze., *M. brachyrrhyncha* (Reichb. f.) Ames and *M. Javesiae* (Reichb. f.) Ames. From *M. lagotis* it is at once separable by the single carina of the labellum. *M. brachyrrhyncha* has broad sepals and a different labellum. *M. Javesiae* is monophyllous with quite a different labellum.

COSTA RICA, Las Cóncavas, C. H. Lankester 350, July 1919. (TYPE in Herb. Kew.)

**Cryptophoranthus Powellii** Ames sp. nov. Herba epiphytica, pusilla. Caules secundarii plus minusve elongati, vaginis tubulatis ciliatis purpureo-maculatis arcte ap-

pressis obtecti, monophylli. Folium bene marginatum, margine minute ciliatum, anguste ellipticum, utrinque attenuatum, nervo medio subtus minute ciliatum. Flores atrosanguinei. Sepala in basi cohaerentia. Sepala lateralia laminam valde concavam formantia, extus glandulosa, usque ad apicem obtusum cohaerentia. Sepalum dorsale multo angustius, valde concavum, glandulosum, triangulari-lanceolatum. Petala subspathulata, acuta, binervia, labello multo longiora. Labellum unguiculatum, subsagittatum, subacutum, bilamellatum, lamellis convergentibus. Unguis utrinque lobulis prope basim. Columna valde incrassata.

Secondary stems densely caespitose, 1-2.5 cm. long, when young concealed by tubular purple-spotted hispidulous sheaths, monophyllous. Leaves 2.5-4 cm. long, about 7 mm. wide at the middle, tapering at both ends, narrowly elliptic, marginate, the margins and median nerve distinctly and closely ciliate. Pedicel short, concealed by an ample sheath which is closed in front for half of its length. Ovary 4 mm. long, glandular-pubescent. Flowers atrosanguineous, about 1 cm. long. Lateral sepals coherent at base with the upper sepal, forming a strongly concave glandular-pubescent lamina which is broadly elliptical when spread out. Dorsal sepal 8.5 mm. long, linear-triangular, densely glandular-pubescent. Petals 6 mm. long, about 2 mm. wide above the middle, subspatulate, 2-nerved, glandular-pubescent on the upper half, acute. Labellum 2.5 mm. long, 1 mm. wide near the middle, distinctly unguiculate with a minute lobule on each side at the base of the claw, subsagittate in front of the claw, subacute at the apex, bilamellate, with the lamellae converging. Column about 1.5 mm. long, very stout.

PANAMA, Foothills east of Panama, C. W. Powell 278. Grows in shady places. Leaves dark velvety green, lying flat on the limbs of trees. Flowers in February. Sea level. (TYPE in Herb. Ames No. 23160.)

**Masdevallia panamensis** (Schltr.) Ames comb. nov.

Scaphosepalum panamense Schltr. in Fedde Repert. 12 (1913) 205. Masdevallia Livingstoneana Schltr. in Fedde Repert. Beihefte 17 (1922) 15, non Roesl & Reichb. f.

The type of this species was collected by H. Pittier in the Canal Zone in 1911. Dr. Schlechter placed it in the genus *Scaphosepalum*, but on what characters I do not know, as the floral structure and the habit of the plant indicate quite clearly that the species is a *Masdevallia*. Schlechter had occasion to study the species intensively when he prepared his enumeration of the orchids of Panama collected by C. W. Powell. In his revision of former views he reduced his *Scaphosepalum panamense* to synonymy under *Masdevallia Livingstoneana* Roezl & Reichb. f.

*Masdevallia Livingstoneana* has been numbered among those orchids which were inadequately described by Reichenbach. Until the Reichenbachian herbarium was opened it was impossible to obtain any evidence as to the aspect of the species, because Reichenbach "had given such a diagnosis that 'Oedipus himself would not have guessed the plant.'" In the original description no reference is made to the petals and labellum.

In Reichenbach's herbarium I was unable to find the type specimen of *Masdevallia Livingstoneana*. I did find, however, a water-color sketch of a flowering plant accompanied by a manuscript description which is almost word for word the description that was published in the *Gardeners' Chronicle*. Perhaps this water-color sketch was the only available evidence as to the floral characters, and served for a tentative description while the type plant which was sold at auction in London was being induced to grow and produce flowers. I am unable to explain on any other reasonable assumption Reichenbach's failure to describe the petals and labellum.

The specimens that I have examined of Schlechter's *Scaphosepalum panamense*—I refer to the type and to specimens given me by Mr. Powell—seem to be different from the plant represented by the water-color drawing referred to. The most conspicuous difference is found in the upper lobe of the calyx, this being elongated, erect and slender in *M. Livingstoneana*, but subequal to the lateral lobes of the calyx and sharply bent back in Schlechter's *Scaphosepalum panamense*. Another difference, which is clearly apparent,

is found in the more open throat of *Masdevallia Livingstoneana* caused by the lateral lobes of the calyx being deflexed as Reichenbach described them.

What I take to be *Masdevallia Livingstoneana* is represented by a specimen submitted by Mr. Powell. This is No. 78 of the Panama series. As far as one can tell by comparing a dried flower with a water-color drawing, this specimen is probably *M. Livingstoneana*, and may temporarily be taken to represent that species.

***Stelis cascajalensis* Ames sp. nov.** Caules secundarii elongati, vaginati, monophylli. Folium coriaceum, oblongo-ellipticum, in sicco nervosum, usque ad basim attenuatum. Vagina pedunculi abbreviata, complanata. Pedunculus elongatus, folio multo longior. Bracteae inflorescentiae distichae, inter se distantes. Pedicellus cum ovario bracteam excedens, gracilis. Flores permagni, purpurei. Sepala lateralia deltoideo-ovata, quinquenervia, obtusa. Sepalum dorsale simile. Petala valde incrassata, subflabellata, truncata. Labellum carnosum, quadrato-dolabriliforme, apice oblique truncatum, prope apicem minute apiculatum, apiculo erecto. Discus leviter excavatus, per medium leviter carinatus. Columna apice valde dilatata.

Secondary stems erect, 4.5 cm. or more long, for the most part concealed by an elongated tubular sheath, monophyllous. Leaf 10.5 cm. long, 2.7 cm. wide, elliptic-oblancoate, obtuse, narrowed toward the base, much shorter than the peduncle. Sheath at base of peduncle in axil of the leaf 1 cm. long, complanate. Peduncle about 17 cm. long, floriferous nearly to the base, the raceme being 14 cm. long. Bracts of the raceme about 8 mm. apart, distichous, 3.5 mm. long, subinfundibuliform, obliquely truncate. Pedicel with the ovary up to 8 mm. long, slender, somewhat drooping. Flowers translucent, purplish, about 12 mm. in diameter when the sepals are spread out. Lateral sepals 5.5 mm. long, 6.5 mm. wide, deltoid-ovate, obtuse, 5-nerved. Dorsal sepal similar. Petals 1.5 mm. long, 2 mm. wide across the tip, fleshy-thickened, subflabellate, truncate. Labellum 1 mm. long, 1 mm. wide, quadrate-dolabriliform, obliquely



truncate in front, with an erect inconspicuous apicule near the apex. Disc shallowly excavated with a raised keel through the middle. Column about 1 mm. long, dilated upward.

In habit similar to *Stelis Lankesteri* Ames, from which it differs in the number of nerves in the sepals, in the regular not bilabiate flowers, and in the petals and labellum. The flowers are larger than in *Stelis leucopogon* Reichb. f. and *S. Tonduziana* Schltr.

COSTA RICA, Cascajal, C. H. Lankester 93. 5500 feet altitude. (TYPE in Herb. Kew.)

***Stelis inaequalis* Ames sp. nov.** Herba parvula, epiphytica. Caules secundarii dense caespitosi, erecti vel ascendentes, valde abbreviati, monophylli. Folium oblanceolatum, apice rotundatum, usque ad basim angustatum. Pedunculus quam folium multo longior, paucibracteatus, bracteis vaginantibus. Racemus plus minusve decemflorus. Flores in sicco atrobrunnei, bilabiati. Sepala lateralia abbreviata, usque ad apicem plus minusve cohaerentia, laminam transverse ellipticam formantia, supra medium valde deflexa. Sepalum dorsale valde dissimile, oblongum, obtusum, trinervium. Petala flabellata, leviter incrassata. Labellum apice carnosum, subquadratum, trinervium, antice excavatum, truncatum, utrinque prope apicem minute lobulatum. Columna apice trilobata.

Secondary stems densely caespitose, up to 3 mm. long, concealed by an ample hyaline sheathing bract. Leaf about 2 cm. long, up to 5 mm. wide, oblanceolate, distinctly marginate, obscurely if at all bilobulate or bidentate at the obtuse tip, narrowed toward the base, coriaceous. Peduncle erect, with the raceme up to 5 cm. long, very slender, paucibracteate. Raceme 1.5 cm. long, about 5 mm. in diameter, ten or more flowered. Flowers dark brown, about 1 mm. apart. Bracts at the base of the pedicels infundibuliform, embracing the rachis, hyaline when dry. Pedicels hardly 1 mm. long. Lateral sepals 1 mm. long, coherent nearly to the apex, forming a transversely elliptical lamina which is 2 mm. wide, sharply deflexed at about the middle. Dorsal

sepal 2.5 mm. long, about 1 mm. wide, very unlike the lateral sepals, and with them giving a bilabiate aspect to the flower, 3-nerved, oblong, obtuse. Petals about .75 mm. long, broadly flabellate, thickened. Labellum .75 mm. long, subquadrate, rather thin below the middle, much thickened near the apex, strongly concave in front of the obtuse tip, 3-nerved. Column about equaling the petals in length, 3-lobed at the summit.

*Stelis inaequalis* is without near allies in the Central American flora. The unequal sepals and very distinctive labellum are differentiating characters.

PANAMA, Near San Juan in the foothills of the upper reaches of the Chagres River, C. W. Powell 272. Growing on upper side of large limbs of trees. Flowers chocolate-brown. Flowers in January and February. Sea level. (TYPE in Herb. Ames No. 23748.)

**Stelis Sanchoii** Ames sp. nov. In habitu *S. microchilae* Schltr. similitudinem gerit. Radices fibratae, patentes, albidae, glabrae. Caules secundarii abbreviati, vaginati, nervis vaginarum in sicco longitudinaliter prominentibus, monophylli. Folium coriaceum, anguste elliptico-lanceolatum, in petiolum sulcatum elongatum contractum. Pedunculus cum racemo folium permulto excedens, infra racemum paucibracteatus. Racemus elongatus, multiflorus, vix flexuosus. Bractee inflorescentiae oblique infundibuliformes, in sicco brunneae, inter se satis distantes. Pedicellus cum ovario bractea vix longior. Flores bicolores. Sepala lateralia usque ad medium cohaerentia, ovata, trinervia, obtusa. Sepalum dorsale simile. Petala flabellata, apice valde incrassata. Labellum valde incrassatum, basi breviter cuneatum, prope basim transverse calloso-incrassatum, antice semiorbiculare, oblique excavatum. Columna usque ad apicem dilatata, utrinque lobata.

Roots fibrous, whitish, spreading. Secondary stems caespitose, about 5 mm. long, concealed by tubular brownish sheaths, monophyllous. Sheaths nearly 1 cm. long, when dry prominently nervose. Leaf with the petiole about 2.5 cm. long, the narrowly elliptic-lanceolate lamina 1.5 cm.

long, 4-5 mm. wide, minutely tridenticulate at the subacute apex. Peduncle with the raceme up to 10.5 cm. long, floriferous to below the middle, subfiliform, with a few dilated infundibuliform bracts below the raceme. Bracts of the raceme 2 mm. long, surrounding the rachis, brownish in dried specimens, hardly shorter than the pedicels of the flowers. Lateral sepals hyaline, about 3 mm. long, 3 mm. wide, united to about the middle, broadly ovate, obtuse, 3-nerved, pale greenish. Dorsal sepal 3.5 mm. long, about 3 mm. wide, obtuse, 3-nerved, maroon. Petals 1 mm. long, slightly exceeding 1 mm. in width, flabelliform, much thickened along the apical margin. Labellum scarcely 1 mm. long, 1 mm. wide near the middle, the subcuneate base erect and nearly parallel to the column, provided with a transverse callus in front of the erect portion, the apical portion deflexed, semiorbicular, obtuse, obliquely excavated or shallowly concave. Column about as long as the petals, dilated above the middle, with an obtuse lobe on each side at the summit, posterior membrane of the clinandrium obscurely trilobed, the lobes obtuse.

It is distinguished in part from *Stelis Bradei* Schltr. by the shorter secondary stems and smaller leaves. It differs from *S. rhodochila* Schltr. in having twice larger flowers. In habit it suggests *S. microchila* Schltr., but is very dissimilar in the structure of the labellum.

COSTA RICA, La Estrella, C. H. Lankester & Alfredo Sancho 438, February 3, 1923. (TYPE in Herb. Ames No. 23732.)

**Pleurothallis amethystina** Ames *sp. nov.* Radices fibratae, albidae. Caules secundarii abbreviati, vaginati, monophylli. Folium anguste oblanceolatum, obtusum, obscure marginatum, pedunculo brevius. Pedunculus cum racemo folium multo excedens. Racemus quinque ad quindecimflorus, plus minusve secundus. Bracteae flores subtendentes scariosae, infundibuliformes, oblique truncatae, acutae. Pedicellus cum ovario bracteis longior. Sepala lateralia paene usque ad apicem cohaerentia, apice bidentata, laminam anguste ellipticam purpureo-villosam convexam

formantia, lamina subtus bicarinata. Sepalum dorsale anguste ellipticum, obtusum, prope basim valde concavum, subtus per medium valde unicarinatum, supra pilis longiusculis purpureis appressis adpersum. Petala amethystina, columnam aequantia, oblonga, glabra, abrupte acuta, carnosa. Labellum amethystinum, inaequaliter trilobatum; lobis lateralibus erectis, porrectis, oblongis, obtusis, basi truncatis; lobo medio permagno, oblongo, apice obtuse rotundato, glabro. Discus supra basim lobi terminalis bicarinatus, carinis valde incrassatis, prope unguem brevem bicallosus. Columna leviter arcuata, androclinio minute denticulato.

Secondary stems 1–1.5 cm. long, slender, concealed by a tubular closely appressed sheath, monophyllous. Leaf 6–9 cm. long, 5–12 mm. wide. Peduncle with the raceme 6–15 cm. long, with the flowers about 5 mm. apart. Floral bracts up to 3 mm. long. Pedicel with the ovary up to 5 mm. long. Lateral sepals 8 mm. long, united to form a narrowly elliptical lamina which is bidentate at the tip, villose on the upper surface, more densely so near the margin than in the centre; when spread out the lamina is about 3 mm. wide. Petals 3 mm. long, 2 mm. wide. Labellum with the short claw 4 mm. long; lateral lobes basal, 2 mm. long, .75 mm. wide; middle lobe 3 mm. long, about 1.5 mm. wide. Column about 3 mm. long, at base produced into a short foot.

Closely allied to *Pleurothallis Wercklei* Schltr., *P. canae* Ames, *P. Johannis* Schltr., *P. bifalcis* Schltr. and several other species of the Central American orchid flora. From *P. Wercklei*, with which it has been confused, it differs conspicuously in having the lateral lobes of the labellum much broader in relation to their length, in the truncate base of the lip forming with the claw a right angle on each side, and in the tip of the petals being abruptly acute, not triangular acute and obscurely trilobed when spread out.

GUATEMALA, Department of Alta Verapaz, Samac, Harry Johnson 878, October 20, 1920. Flowers purplish. 4000 feet altitude. (TYPE in Herb. Ames No. 21282.);

Cobán, *H. v. Tuerckheim* 3997, November 1912. 1550 meters altitude.

**Pleurothallis arietina** *Ames sp. nov.* Radices graciles, fibratae. Caules secundarii valde elongati, conspicue alati, paucivaginati. Vaginae caulis elongatae, arcte appressae. Folium lanceolatum, acutum, coriaceum. Flores fasciculati, quam folium multo breviores, e spatha complanata orientes. Sepala lateralibus usque ad apicem cohaerentia, laminam concaviusculam oblongam formantia. Sepalum dorsale simile. Petala unguiculata, supra unguem oblonga, triquetra, obtusa, valde incrassata, minute et breviter glandulosa. Labellum unguiculatum, explanatum triangulari-crescentiforme, longe auriculatum auriculis porrectis, antice valde incrassatum, glandulosum. Discus callo transverso in basi et carina incrassata in medio. Columna elongata, antice prope basim callo instructa, usque ad apicem minute glandulosa.

Roots fibrous. Secondary stems 20-25 cm. long, conspicuously alate, provided above with two elongated closely appressed cylindrical sheaths, one near the middle of the stem, the other basal, monophyllous. Leaf up to 8.5 cm. long, 3.5 cm. wide below the middle, lanceolate, rounded at base, acuminate, acute, coriaceous, longer than the inflorescence. Flowers fasciculate in the axil of the leaf, the pedicels arising from a complanate sheath. Flower-stalks about 3 cm. long, slender, subfiliform. Lateral sepals 9 mm. long, united to the tip, forming a more or less fleshy, oblong, navicular lamina which is about 3 mm. wide when spread out. Dorsal sepal 8 mm. long, similar to the lamina formed by the lateral sepals, 3-nerved, the nerves prominent. Petals 8 mm. long, 1 mm. wide, unguiculate, oblong above the claw and triquetrous-thickened, subacute, minutely glandular. Labellum suggesting a ram's head when spread out, about 2 mm. long to the base of the slender claw, triangular-crescentiform when the lateral lobes which are normally porrect are spread out, acute, 2 mm. wide in front of the basal porrect auricles which are 1 mm. long and narrowly triangular-acute, apical third of the labellum

thickened, minutely glandular. Disc with a T-shaped callus in front of the claw. Column 3 mm. long, minutely glandulose, with a cornute projection near the base in front.

This appears to be a near ally of *Pleurothallis crocodiliceps* Reichb. f., but is much taller, with shorter, broader leaves, and with the sepals very much broader than the petals.

COSTA RICA, Cartago, La Estrella, C. H. Lankester & Alfredo Sancho s. n. Flower Pinard-yellow (Ridgway). Labellum spotted with purple. (TYPE in Herb. Ames No. 23161.)

***Pleurothallis cachensis* Ames sp. nov.** Caules secundarii valde elongati, vagina tubulata laxe appressa vestiti, monophylli. Vagina scariosa in sicco, usque ad apicem leviter dilatata. Folium lineari-oblongum, obtusum, utrinque attenuatum, racemum multo excedens, sessile. Pedunculus cum racemo usque ad medium folii extensus, e vaginis spathaceis oriens. Racemus subdistichiflorus. Bractee flores subtendentes satis approximatae, infundibuliformes. Sepala lateralia supra medium libera, basi valde saccata, laminam ovatam bifidam formantia. Sepalum dorsale lineare, acutum. Petala linearia, acuta, uninervia, sepalis multo breviora. Labellum sagittatum, marginibus basilaribus erectis. Columna utrinque dentata, post antheram denticulata.

Secondary stems up to 14 cm. long, slender, with an elongated scarios sheath below the middle, monophyllous, hardly 2 mm. thick. Sheath 4.5 cm. long, more or less inflated toward the obtuse tip. Leaf about 10 cm. long, up to 9 mm. wide, very coriaceous, two or more times longer than the inflorescence, linear-oblong. Peduncle with the raceme up to 1.5 cm. long, arising from a scarios complanate sheath. Raceme about 4 cm. long, about 18-flowered. Bracts of the raceme infundibuliform, dilated upward, 3-4 mm. long, interbracteal spaces 1 mm. long. Ovary about 1 mm. long. Lateral sepals united beyond the middle, 8 mm. long; united portion when spread out ovate, acuminate, bifid, 4 mm. wide, when in natural position forming a

strongly concave sac-like base within which the labellum is concealed; free portion of each sepal linear-triangular, acute, 3-3.5 mm. long; mid-nerve of each lateral sepal forming a prominent carina on the outer surface. Dorsal sepal 8 mm. long, fleshy, hardly 1 mm. wide above the base, linear, acute, 1-nerved, the margins somewhat involute. Petals about 3 mm. long, linear, acute, very delicate in texture. Labellum 3 mm. long, unguiculate, 2 mm. wide between the lateral lobes when spread out, sagittately 3-lobed, acute; basal lobes erect, rounded, slightly retrorse, forming a cordate base in front of the slender thickened claw; middle lobe 2 mm. long, 1 mm. wide. Disc ecallose. Column 2.5 mm. long, with an erect tooth on each side at the summit in front. Clinandrium minutely denticulate behind the anther.

In habit not unlike *Pleurothallis rufa* Rolfe, but very different from that species in the structure of the inflorescence.

COSTA RICA, Cachi, C. H. Lankester 76. Leaves Andover-green (Ridgway). Flowers honey-yellow (Ridgway), pendent. 3750-4000 feet altitude. (TYPE in Herb. Kew.)

***Pleurothallis cedralensis* Ames sp. nov.** Herba epiphytica, ramosa, vagula. Caules plus minusve erecti, polyphylli, vaginis hispidulis tubulatis obtecti. Folia valde coriacea, anguste elliptica, apice bilobulato apiculo obtuso interjecto, vix petiolata. Racemus simplex, elongatus septem ad decemflorus, glaber. Bracteae inflorescentiae infundibuliformes. Pedicelli graciles, ascendentes, glabri. Flores sulphurei, delicatuli. Sepala lateralia lineari-triangularia, usque ad apicem attenuata, patentia, uninervia. Sepalum dorsale lanceolatum, acuminatum, acutum, trinervium. Petala elliptico-lanceolata, quam sepala multo breviora, subacuta, uninervia. Labellum trilobatum, usque ad medium cuneato-dilatatum lobos laterales obtusos formans, lobo medio lineari-oblongo, uninervio, minute papilloso. Discus infra medium labelli trinervius. Columna gracilis, prope medium constricta.

Stems more or less straggly, elongated, concealed by hispidulous sheaths which are obliquely truncate and acute, leafy. Leaves up to 8 mm. long, about 3 mm. wide, narrowly elliptical, coriaceous, obscurely bilobed with a blunt apicule at the apex, narrowed to a sulcate base. Peduncle with the raceme about 2-5 cm. long, smooth. Raceme 2 cm. long, 7-10-flowered, flexuose. Bracts of the raceme infundibuliform, minute. Pedicel with the ovary about 2.5 mm. long, very slender. Flowers sulphur-yellow when fresh, membranaceous, more or less hyaline when dry. Lateral sepals 5 mm. long, about 1.25 mm. wide at the base, linear-triangular, subcaudate at the tip, at base forming with the front of the column a distinct mentum, 1-nerved. Dorsal sepal 5.5 mm. long, narrowly lanceolate, acuminate, acute, 3-nerved, strongly concave at base. Petals 3 mm. long, 1 mm. wide near the middle, elliptic-lanceolate, obtuse, 1-nerved. Labellum membranaceous, 3.5 mm. long, gradually dilated from the base up to the middle, becoming 1.5 mm. wide at this point where it is abruptly contracted to form the linear-oblong terminal half, 3-nerved up to the middle, 1-nerved beyond the middle, thickened at the tip. Column 3 mm. long including the foot, narrowed toward the middle, dilated at the summit. Pollinia two.

In habit similar to *Pleurothallis cabellensis* Reichb. f., but very different from that species in the structure of the flowers.

COSTA RICA, Cedral, C. H. Lankester 352, July 28, 1919. Flowers sulphur-yellow (Ridgway), lip pale greenish yellow (Ridgway). Leaves spinach-green (Ridgway), becoming purple with age. 5000 feet altitude. (TYPE in Herb. Kew.); La Estrella de Cartago, Lankester & Sancho 399, January 1923. (Herb. Ames No. 23157.); Cachi, Lankester 80, November 1916. Flowers very pale yellowish green. (Herb. Kew.)

***Pleurothallis cerea*** Ames sp. nov. Caules secundarii elongati, validi, monophylli. Folium anguste ellipticum, basi conduplicatum, usque ad apicem attenuatum. Flores congesti, prope apicem caulis secundarii orientes. Sepala



lateralia usque ad basim libera, ligulato-oblonga, obtusa, membranacea. Sepalum dorsale simile. Petala ligulato-oblonga, obtusa, trinervia, membranacea. Labellum oblongum, obtusum, simplex, trinervium. Columna carnosae.

Secondary stems about 20 cm. long, 5 mm. thick near the inflorescence, with several elongated tubular closely appressed sheaths. Leaf 17 cm. or more long, 6.3 cm. wide, narrowly elliptic, conduplicate at the base. Flowers numerous, crowded. Peduncles much abbreviated. Pedicellate ovary about 6 mm. long. Lateral sepals 8 mm. long, 2 mm. wide, free, ligulate-oblong, obtuse, 3-nerved, each lateral nerve with a supplementary branch. Dorsal sepal 9 mm. long, 2 mm. wide, ligulate-oblong, obtuse, somewhat thickened. Petals about 8 mm. long, about 2 mm. wide, 3-nerved, similar to the lateral sepals. Labellum 3 mm. long, 1 mm. wide, oblong, obtuse, 3-nerved, simple, truncate at the base, mobile on the foot of the column, fleshy, thickened on the basal margin. Column 2.5 mm. long, produced into a conspicuous foot. Clinandrium entire.

Allied to *Pleurothallis octomerioides* Lindl., from which it differs in the shape of the leaf and structure of the labellum.

COSTA RICA, Agua Caliente, C. H. Lankester 358. Labellum with a submarginal purple line; flowers waxy in consistency. Anther purple. (TYPE in Herb. Kew.)

***Pleurothallis crescentilabia* Ames sp. nov.** Caules secundarii elongati, validi, monophylli. Folium ovatum, usque ad apicem angustatum, coriaceum, in sicco nervosum, basi subcordatum, in petiolum conduplicatum brevem contractum. Flores glomerati. Sepala lateralialia usque ad apicem cohaerentia, laminam ovato-lanceolatam formantia, basi valde concava, extus nervis prominentibus. Sepalum dorsale lanceolatum, acuminatum, acutum, trinervium, nervis prominentibus, concavum. Petala valde incrassata semiteretia, linearia, usque ad apicem angustata, sepala aequantia. Labellum crescentiforme, basi arrectum statim deflexum, auriculis post columnam attingentibus. Columna brevis, simplex vix in pedem producta.

Secondary stems erect, about 17 cm. long, up to 5 mm. thick, monophyllous, vaginate, the sheaths tubular and elongated. Leaf 17.5 cm. long, 8 cm. or more wide, ovate, gradually tapering from below the middle to the pointed tip, coriaceous, many-nerved, the nerves conspicuous in dried specimens, base subcordate, contracted into a short petiole. Petiole more or less conduplicate, 8 mm. long. Flowers crowded, springing from a dense cluster of scarious bracts. Pedicels about 5 mm. long. Lateral sepals 11 mm. long, united throughout their length, forming a strongly concave ovate-lanceolate lamina, which is provided on the outside with several carinate or thickened nerves. Dorsal sepal about 12 mm. long, lanceolate, acute, 3-nerved, the median nerve prominent. Petals 11 mm. long, about 1 mm. wide near the middle, linear, semiterete, rounded on the outer side, tapering gradually to the tip, 3-nerved. Labellum crescentiform when seen from above, the horns of the crescent touching or overlapping behind the column; basal half erect; apical half sharply bent downward, and partly coherent to the basal half, 3 mm. wide, very fleshy. Column 1.5 mm. long, somewhat constricted near the middle.

In habit resembling *Pleurothallis cardiothallis* Reichb. f., *P. acutipetala* Schltr. and *P. glomerata* Ames, but wholly distinct in the structure of the flower.

COSTA RICA, Without exact locality, *C. H. Lankester* 359. Sepals hyaline, the upper one with three, the lower with four purple stripes. Petals deep port-wine-purple. Anther-cap yellow. Labellum horseshoe-shaped enclosing the column. Lateral sepals connate, cochleate. (TYPE in Herb. Kew.)

***Pleurothallis glomerata* Ames sp. nov.** Herba epiphytica, valida. Caules secundarii elongati, monophylli. Folium anguste lanceolatum, in petiolum sulcatum contractum. Flores congesti in axillis petioli. Sepala lateralia usque ad apicem cohaerentia, linearia. Sepalum dorsale lanceolatum, acuminatum, basi valde concavum. Petala linearia, trinervia. Labellum abbreviatum, circuitu ovatum,

acutum, obscure trilobatum, supra medium valde deflexum. Columna ebrachiata.

Epiphytic herb up to 44 cm. tall. Secondary stems about 3 mm. in diameter in dried specimens, monophyllous. Leaf 16 cm. long, 5.3 cm. wide, narrowly lanceolate or elliptic-lanceolate, contracted at base into an elongated sulcate petiole which is about 2.5 cm. long. Flowers in a dense cluster near the base of the petiole, glomerate, spreading on slender pedicels, yellowish. Pedicels with the ovary about 9 mm. long, very slender, sheathed by an ample hyaline bract near the base. Lateral sepals 8-9 mm. long, united to the tip, forming a linear 4-nerved lamina which has involute margins. Dorsal sepal 8 mm. long, 2.5 mm. wide below the middle, strongly concave at the base, lanceolate, acuminate, 3-nerved, the nerves prominent on the exterior surface. Petals 7 mm. long, up to 1 mm. wide, linear, tapering gradually to the acute tip, 3-nerved. Labellum fleshy, 2 mm. long, hardly 2 mm. wide at the base, ovate in outline, obscurely 3-lobed; lateral lobes rounded; middle lobe 1 mm. long, triangular, acute, 3-nerved. Column about 1 mm. long, simple.

Similar in habit to *Pleurothallis ruscifolia* R. Br., but larger throughout, with a 3-lobed labellum. From *P. ventricosa* Lindl., which it resembles in general aspect, it differs conspicuously in the structure of the labellum.

COSTA RICA, Cachi, *C. H. Lankester* 357. (TYPE in Herb. Kew.)

***Pleurothallis Nelsonii* Ames sp. nov.** Radices fibratae, albidae. Caules secundarii elongati, superne valde alati, complanati, vaginis quattuor instructi. Vaginae caulis secundarii tubulatae, elongatae, in sicco brunneae. Folium anguste oblongo-lanceolatum, acuminatum, acutum. Pedunculus filiformis, uniflorus. Sepala lateralia paene usque ad apicem cohaerentia, laminam ligulatam formantia. Sepalum dorsale simile. Petala linearia, acuta, minute glandulosa, prope apicem incrassata, prope basim in unguem carinatum contracta. Labellum unguiculatum, valde glanduloso-pubescens, in auriculas lineari-trianguulares

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productum, antice triangulari-subacutum. Unguis labelli gracilis, membranaceus. Discus prope unguem callo permagno instructus. Columna gracilis, minute glandulosa, antice supra unguem labelli prominens.

Roots fibrous, whitish, smooth. Secondary stems about 12 cm. long, conspicuously two-winged above, clothed with four tubular closely appressed sheaths, the uppermost 3.5 cm. long, brownish when dry. Leaf 7 cm. long, about 2 cm. wide near the middle, oblong-lanceolate, acuminate, acute, coriaceous, shortly conduplicate at base. Peduncle slender, about 3.5 cm. long, with a tubular bract near the middle, 1-flowered. Lateral sepals about 1 cm. long, coherent nearly to the apex, forming a narrowly elliptical lamina which is 3 mm. wide near the middle and shortly bidentate at the tip. Dorsal sepal similar, 1 cm. long, acute, 3-nerved, the nerves prominent on the inner surface. Petals 8.5 mm. long, hardly 1 mm. wide, linear-falcate, acute, thickened on the anterior margin, minutely glandulose, contracted near the base to form a narrowly oblong claw which is heavily carinate along the middle on the outer surface. Labellum 2 mm. long from the point of insertion to the tip, when spread out suggestive of a ram's head, the lateral lobes or auricles representing the horns, the triangular middle lobe representing the head; lateral lobes 2 mm. long, probably porrect, narrow, acute, glandular-hairy; middle lobe hardly 1 mm. long, obtuse, densely glandular-hairy. Disc with a prominent callus in front of the claw and a thickened median nerve. Column 3 mm. long, densely puberulous, with a small projection in front near the base.

Closely allied to *Pleurothallis arietina* Ames, from which it is readily distinguished by means of the flattened petals which are only thickened on the anterior margin and not at all triquetrous. Vegetatively it is a smaller plant.

MEXICO, State of Chiapas, Chicharras, E. W. Nelson 3763, February 6, 1896. 3000-6000 feet altitude. (TYPE in Herb. Ames No. 7885.)

**Pleurothallis pergrata** Ames sp. nov. Herba epiphytica. Radices graciles, fibratae. Caules secundarii valde elongati, monophylli, vaginis angulosis muricatis vestiti. Vaginae tubuliformes, apice dilatatae, marginatae. Folium coriaceum, ellipticum, apice bidentatum apiculo interjecto, marginatum, breviter petiolatum vel basi conduplicatum. Flores fasciculati, folium vix aequantes. Sepala lateralia prope basim cohaerentia, lineari-lanceolata, in caudam perlongam producta, subtus leviter carinata. Sepalum dorsale valde concavum, lanceolatum, in caudam longissimam terminans, trinervium. Petala late spatulata, obtusa, uninervia, columnam superantia. Labellum subpanduriforme, membranaceum, basi valde concavum, extus per medium leviter carinatum, obtusum, intus ecarinatum. Columna gracilis, rostello elongato permagno.

Epiphytic herb. Roots finely fibrous, spreading. Secondary stems 2.5-6 cm. long, slender, caespitose, monophyllous, concealed by elongated muricate angulate sheaths .5 mm. in diameter. Sheaths about five in number, 5 mm. long, closely appressed, the muriculate appendages whitish and spreading, apex of each sheath dilated, marginate, acute. Leaf 1.5-2 cm. long, up to 7 mm. wide, elliptical, obtuse, bidentate at the tip with a short apicule between the teeth, marginate, narrowed at the base into a conduplicate petiole. Flowers fasciculate, arising from the axil of the leaf, the pedicels hardly equaling the petiole in length. Lateral sepals about 1.8 cm. long, for the most part free, hardly 2 mm. wide where they are joined, free portion linear-lanceolate and prolonged into a filiform tail, lightly carinate on the outer surface through the middle, membranaceous, hyaline, tinged with pink-purple when dry, the tails yellowish. Dorsal sepal 1.8 cm. long, about 2 mm. wide near the base, lanceolate, similar to the lateral sepals, 3-nerved. Petals 2.5 mm. long, about 1 mm. wide at the middle, broadly spatulate, obtuse, membranaceous, similar to the sepals in texture, 1-nerved, margin obscurely glandular. Labellum 4 mm. long, basal margin erect, apical margin deflexed, subpanduriform when spread out, obtuse, with a concave base, mid-nerve prominent on the outer surface.

in texture similar to the petals, ecallose. Column 2 mm. long, rostellum dilated, deflexed over the stigma.

In habit *Pleurothallis pergrata* resembles *Pleurothallis Williamsii* Ames, a native of Panama, but differs in having the flower-stalks much shorter than the leaves, in the caudate sepals and in the dissimilar labellum which lacks carinae on the upper surface.

COSTA RICA, Cartago, La Estrella, C. H. Lankester & Alfredo Sancho 436. Flowers pansy-purple (Ridgway). 5000 feet altitude. (TYPE in Herb. Ames No. 23721.)

***Pleurothallis saccata* Ames sp. nov.** Caules secundarii elongati, validi, erecti, monophylli. Folium ellipticum vel ovato-ellipticum, valde coriaceum, basi cordatum. Pedunculi folium aequantes, fasciculati. Bracteae infra racemum tubulatae, arcte appressae, apice vix dilatatae. Bracteae flores subtendentes anguste infundibuliformes. Racemus arcuatus, floribus numerosis secundis purpureo-maculatis. Sepala lateralibus usque ad apicem cohaerentia, saccum semiovatum formantia, extus utrinque carinata, carinis usque ad apicem extensis. Sepalum dorsale ellipticum, obtusum, trinervium, porrectum. Petala clavato-spathulata, supra medium valde incrassata, obtusa. Labellum basi arrectum, statim deflexum, basi ipsa columnam amplectenti, valde incrassatum, oblongum, apice rotundatum, minute apiculatum, basi cordatum, auriculis basilaribus retrorsis leviter incurvis triangularibus. Discus bicallosus, callis prope basim labelli prominentibus. Columna carnosa.

Epiphytic herb. Secondary stem stout, elongated, erect, 4 mm. in diameter near the base of the leaf. Leaf incomplete, apparently up to 15 cm. long, 9 cm. more or less wide, ovate-elliptic, leathery, rigid, nervose, cordate at base. Peduncles fasciculate, four or five in each fascicle, with the raceme up to 10 cm. long. Bracts below the raceme about 4 mm. long, closely appressed, tubular, hardly dilated at the summit. Bracts of the raceme about 3.5 mm. long, tubular, hardly dilated, obliquely truncate at the apex. Pedicellate ovary about 4 mm. long. Flowers more or less secund, cream color spotted with purple, globular in aspect. Lateral

sepals 5 mm. long, united up to the apex, forming a deep semiovate sac which is bicarinate on the outside with the carinae converging and united at the tip of the sac. Dorsal sepal 4.5 mm. long, 2.5 mm. wide, elliptic, obtuse, 3-nerved, forwardly inclined. Petals 2 mm. long, clavate-spatulate, obtuse, conspicuously thickened above the middle, 3-nerved. Labellum 2 mm. long, 1 mm. wide, oblong, rounded at the tip, apiculate, cordate at the base, the auricles retrorse and closely appressed to the column. Disc bicallose, with a protuberant rounded callus on each side near the base, one in front of each triangular auricle. (Seen from the side, the erect base of the labellum appears to have fused with the abruptly deflexed pendent apical part.) Column fleshy, 1.75 mm. long. Pollinia two, slenderly pyriform.

In habit similar to *Pleurothallis Pittieri* Schltr., but in floral structure entirely different from it. It would seem that this species after anthesis becomes much larger in its vegetative parts. The labellum is similar to that of *P. geniculata* Lindl.

COSTA RICA, Cascajal, C. H. Lankester K340. When fully developed over one meter high. (TYPE in Herb. Kew.)

***Pleurothallis Sanchoii* Ames sp. nov.** Radices graciles. Caules secundarii elongati, folium multo excedentes, erecti, monophylli. Folium ellipticum. Flores fasciculati. Pedunculus cum flore vix folium aequans, gracilis, uniflorus. Pedicellus cum ovario elongatus. Sepala lateralia usque ad apicem cohaerentia, laminam suborbicularem quadrinerviam formantia. Sepalum dorsale multo angustius, obtusum, trinervium. Petala lineari-triangularia, apice incrassata, acuta, uninervia, leviter curvata. Labellum rotundato-cordatum, acutum, carnosum, ecallosum. Columna carnosae, prope medium constricta.

Roots slender, whitish, spreading. Secondary stems 2.5-6 cm. long, shorter when immature, very slender, with about two closely appressed cylindrical sheaths, monophyllous. Leaf up to about 3 cm. long, usually not exceeding 2.6 cm. in length, about 11 mm. wide near the middle, elliptical, coriaceous, exceeding the slender peduncle

in length. Inflorescence fasciculate. Peduncle with the flower about 2 cm. long. Lateral sepals 5 mm. long, coherent to the tip, forming a suborbicular lamina which is about 5 mm. wide at the middle and 4-nerved nearly to the tip. Dorsal sepal 6 mm. long, about 3 mm. wide, concave, narrowly elliptical, obtuse, 3-nerved. Petals 4 mm. long, linear-triangular, acute, subtriquetrous above the middle, thickened at the tip, 1-nerved. Labellum fleshy, 2 mm. long from point of insertion to the tip, orbicular-cordate, apiculate, auricles of the cordate base obtuse. Disc ecallose. Column about 2 mm. long, with an abbreviated foot, fleshy, entire at the apex, constricted near the middle.

In the structure of the flower somewhat resembling *Pleurothallis leucantha* Schltr., but dissimilar to it in the cordate base of the labellum. Habitally very distinct from *P. leucantha* in having elliptical leaves.

COSTA RICA, La Estrella, C. H. Lankester & Alfredo Sancho 394, January 9, 1923. Sepals hyaline, greenish. Petals delicate purple. Borders of labellum purplish. (TYPE in Herb. Ames No. 23159.)

***Lepanthes cascajalensis*** Ames sp. nov. Radices fibratae, elongatae. Caules secundarii caespitiosi, vaginis glabris vestiti, monophylli. Vaginae arcte amplectentes, ostio dilatatae, ovatae, acuminatae, marginatae. Folium elliptico-lanceolatum, valde acuminatum, in sicco purpureo-tinctum, coriaceum, apice tridentatum. Pedunculus cum racemo folio brevior. Flores succedanei. Sepala lateralibus usque ad medium cohaerentia, ovata, acuminata, acuta, extus carinata, binervia, glabra. Sepalum dorsale ovatum, acuminatum, acutum, trinervium. Petala transverse sublanceolata, utrinque obtusa, post columnam attingentia, partibus anterioribus labellum aequantibus, trinervia. Labellum parvulum, bipartitum; lobis lateralibus anguste oblongo-ellipticis, obtusis, carnosus; lobo medio subobsoleto, glanduloso. Columna integra vel obscure lobata.

Roots fibrous, spreading, slender. Secondary stems 6-12 cm. long, concealed by ten to eleven glabrous sheaths, monophyllous. Sheaths closely appressed, dilated at the



apex into an ovate acuminate marginate lamina. Leaf 2.5-5 cm. long, 8-13 mm. wide, when dry more or less tinged with purple, elliptic-lanceolate, acuminate, rather suddenly contracted near the acuminate tridentate tip. Peduncle with the raceme 2 cm. or more long, very slender. Flowers large, opening in succession. Lateral sepals 6 mm. long, 2-nerved, united almost to the middle, ovate, acuminate, acute, with four external carinae, membranaceous, fused portion 6 mm. wide, free portion of each sepal 3.5 mm. wide, triangular, 4 mm. long from the tip to the point of fusion. Dorsal sepal 6.5 mm. long, 3.5 mm. wide, triangular-ovate, abruptly acuminate, acute, 3-nerved. Petals 3-nerved, overlapping behind the column, transversely asymmetrically lanceolate, 4.5-5 mm. wide; posterior lobe 3 mm. long, 2 mm. wide, round-obtuse; anterior lobe 2 mm. long, 1 mm. wide, tapering gradually to the obtuse tip. Labellum 2 mm. long, conspicuously 2-lobed; lateral lobes hardly 1 mm. wide, parallel, narrowly oblong-elliptical, obtuse, unguiculate from the middle; middle lobe much abbreviated, subobsolete, glandulose. Column 2 mm. long, entire or obscurely lobed at the summit.

Allied to *Lepanthes eciliata* Schltr., from which it differs in the smooth vegetative parts, in the larger flowers, and in the different petals and labellum.

COSTA RICA, Cascajal, C. H. Lankester K350. Sepals bronze-red, petals dull, deep rose. (TYPE in Herb. Kew.)

**Lepanthes Chameleon** Ames sp. nov. Herba epiphytica, caespitosa. Caules secundarii elongati, vaginis muricatis obtecti, monophylli. Folium ellipticum, apice tridenticulatum, marginatum, basi breviter conduplicatum. Pedunculi folium excedentes, singuli vel fasciculati, filiformes, infra racemum paucibracteati. Racemus flexuosus, pedicellis oblique ascendentibus. Sepala lateralia usque ad medium cohaerentia, laminam lanceolatam bicaudatam formantia, supra dense et longe glandulosa, margine ciliato-glandulosa. Sepalum dorsale ovatum, acuminatum, longe caudatum, margine ciliato-glandulosum, intus glabrum, extus nervis tribus conspicue glandulosis instructum. Petala

latiora quam longiora, minute glanduloso-puberula, transverse bilobata, lobo posteriore oblongo, obtuso, lobo anteriore lineari, subacuto. Labellum trilobatum; lobis lateralibus anguste ellipticis, e medio unguiculatis, per medium carinatis ut videtur, glanduloso-puberulis, margine glanduloso-ciliatis; lobo medio partem anteriorem loborum lateralium vix demidio aequanti, lineari, dense glanduloso, apice bulboso. Columna apice valde cuneato-dilatata. Pollinia duo, anguste pyriformia.

Epiphytic herb, caespitose. Roots fibrous. Secondary stems erect or ascending, up to 9 cm. long, slender, concealed by about ten elongated closely appressed sheaths which are about 7 mm. apart. Sheaths densely muricate, dilated at the tip, the expanded portion marginate. Leaf up to 3.5 cm. long, 9-11 mm. wide, elliptical, tridenticulate at the tip, narrowed below into an abbreviated conduplicate base. Peduncle up to 4 cm. long, three or more flowered, the flowers opening in succession. Raceme up to 2 cm. long, flexuose. Pedicels obliquely ascending. Lateral sepals up to 2.4 cm. long, 6 mm. wide near the base, coherent up to the middle, forming a lanceolate-bicaudate lamina, densely glandulose-hairy on the upper surface, apparently yellow tinged with purple when fresh, fading to yellow as the flowers mature. Dorsal sepal about 2 cm. long, up to 6 mm. wide near the base, ovate-acuminate, terminating in a slender caudate tip, glandular-ciliate on the margin, smooth on the inner surface, glandulose on the outer surface on the three prominent nerves, the mid-nerve deeply carinate. Petals 5 mm. wide, hardly .75 mm. long opposite the point of insertion, posterior portion oblong, 2 mm. long, anterior portion linear, 3 mm. long. Labellum glandulose, 1.25 mm. long, 3-lobed; lateral lobes elliptic, 1.25 mm. long; middle lobe porrect between the lateral lobes, linear, half as long as the anterior portion of the lateral lobes, densely glandular. Column about 2 mm. long.

In habit similar to *Lepanthes horrida* Reichb. f., from which it differs in the middle lobe of the labellum and in the outline of the petals. The lateral sepals appear to have been yellow suffused with purple, the upper sepal deep

purple, the tails of the sepals yellow. As the flowers mature the purple fades away.

COSTA RICA, Near Cartago, C. H. Lankester s. n. (TYPE in Herb. Ames No. 23722.)

**Lepanthes estrellensis** Ames sp. nov. Radices fibratae. Caules secundarii caespitosi, erecti vel ascendentes, vaginis breviter muricatis vestiti, monophylli. Vaginae elongatae, arcte appressae, apice marginatae, vix dilatatae. Folium ellipticum, apice tridenticulatum, basi breviter conduplicatum. Pedunculi plus minusve duo, folio breviores. Bracteae inflorescentiae scariosae, valde ciliatoglandulosae. Pedicelli distichi, rigidi, persistentes, bracteis multo longiores. Sepala lateralia usque ad medium cohaerentia, ovato-lanceolata, acuta, laminam latam ovatam bilobam formantia, glabra. Sepalum dorsale oblongo-ovatum, breviter acuminatum, acutum, trinervium, glabrum. Petala bilobata, lobis subaequalibus divaricatis obtusis, glabra, margine inconspicue et minute glanduloso-ciliata. Labellum bilobatum, lobis subreniformibus, lobo medio ut videtur obsolete. Columna usque ad apicem dilatata.

Secondary stems up to 9 cm. long, clothed throughout their length with shortly muricate sheaths, monophyllous. Sheaths about six, closely appressed, 1.5 cm. long, dilated at the tip, the triangular-acute apex marginate. Leaf 4-5 cm. long, up to 2.6 cm. wide, elliptical, tridenticulate at the apex, coriaceous. Peduncle with the raceme about 2 cm. long, slender. Raceme 5 mm. long, more or less, with scarios, glandulose bracts. Pedicels about 2 mm. long, distichous. Flowers opening in succession. Lateral sepals about 6 mm. long, united to about the middle, 5 mm. wide near the base, the free portion 3 mm. wide. Dorsal sepal 5.5 mm. long, 4 mm. wide, united at base with the lateral sepals. Petals bilobed, the lobes oblong obtuse and obliquely divaricate, the anterior lobe 4 mm. long, 1 mm. wide, the posterior one 4.5 mm. long and 1 mm. wide. Labellum bilobed, the middle lobe apparently obsolete, lobes reniform, 3 mm. long, 2 mm. wide. Column 2 mm. long, dilated toward the summit.

Plant similar to *Lepanthes eciliata* Schltr., from which it differs in having muricate sheaths on the secondary stems and dissimilar perianth segments.

COSTA RICA, Cartago, La Estrella, C. H. Lankester & Alfredo Sancho 385, January 9, 1923. Bracts of the stem blackish. Sepals pale hyaline green, labellum and lobes of the column pale yellowish green, front of column and central portion of the two lower lobes of the labellum red-purple. (TYPE in Herb. Ames No. 23602.)

***Lepanthes micrantha* Ames sp. nov.** Radices fibratae, copiosae. Caules secundarii dense caespitiosi, vaginis muriculatis vestiti, monophylli. Vaginae elongatae, nervis muriculatis, apice dilatatae, laminam ovato-lanceolatam acutam formantes. Folium ellipticum vel elliptico-lanceolatum, apice aequaliter bidentatum apiculo interjecto, coriaceum. Pedunculi breves, folio multo breviores. Flores succedanei. Sepala lateralia usque ad medium cohaerentia, laminam orbicularem bilobatam margine ciliatam formantia; lobis triangularibus, acutis. Sepalum dorsale oblongum, acutum, trinervium. Petala transverse elongata, anguste elliptica, apicibus obtusis, margine minute ciliata. Labellum trilobatum; lobis lateralibus columnae appressis, supra medium expansis et transverse ellipticis, columnam amplectentibus, ciliatis; lobo medio brevi, ciliato. Columna brevis, superne dilatata.

Roots fibrous, tangled, spreading. Secondary stems about 4 cm. long, densely caespitose, concealed by elongated sheaths which are densely and finely muriculate on the longitudinal nerves, monophyllous. Sheaths five to six, about 7 mm. long, expanded at the tip into an ovate-lanceolate acuminate lamina. Leaf 1.5-2 cm. long, about 6 mm. wide, obtusely bidentate at the tip with an apicule between the teeth, elliptic or elliptic-lanceolate, coriaceous, contracted at base. Racemes several, with the peduncle 7-10 mm. long. Bracts of the raceme diaphanous, densely glandular, nearly equaling the pedicels. Pedicels 1 mm. long. Flowers scarcely 2 mm. long, trigonal in bud. Lateral sepals 2 mm. long, united to about the middle forming

an orbicular bilobed lamina which is 2 mm. wide across the middle, margin glandulose-ciliate; lobes triangular, acute, smooth on their opposed edges. Dorsal sepal 2 mm. long, 1.5 mm. wide, semielliptic or oblong, acute, 3-nerved, the nerves prominent on the outer surface and minutely glandular. Petals transversely elliptical, 2 mm. wide, hardly .5 mm. long, posterior portion about equal to the anterior portion, margin finely ciliolate. Labellum 3-lobed, 1 mm. long; lateral lobes narrowly transversely elliptical, appressed to the column, fleshy, ciliolate; middle lobe perfect, ciliolate. Column 1 mm. long, dilated upward; clinandrium entire. Pollinia two.

Not unlike *Lepanthes pristidis* Reichb. f. in habit, but with differently formed petals and labellum. Clearly distinguished from *L. fimbriata* Ames by the smaller flowers and abbreviated peduncles.

COSTA RICA, Cartago, La Murta, C. H. Lankester 349. Under side of leaves dark green stained with maroon, upper surface ivy-green (Ridgway). Sepals semitransparent, greenish, petals bilobed, orange, edged anteriorly with rhodomine-purple (Ridgway). Labellum of the same color, concealing the column. 5500 feet altitude. (TYPE in Herb. Kew.): Alto de Ochomogo, Tonduz (Herb. Instit. physico-geogr. nat. costaricensis No. 10387<sup>1</sup>), December 1896. 1550 meters altitude. (In U. S. Nat. Herb. No. 815046, mingled with the type of *Lepanthes fimbriata* Ames.)

***Lepanthes tridens* Ames sp. nov.** Radices fibratae, graciles. Caules secundarii graciles, caespitiosi, erecti vel ascendentes, vaginis tubulatis obtecti, monophylli. Vaginae stramineae, plus minusve decem, minute glandulosae, inter se satis distantes, apice in laminam lanceolatam acutam marginatam dilatatae. Folium anguste lanceolatum, elongatum, apice longe tridentatum, in sicco purpurascens. Pedunculi quam folium multo breviores. Racemus abbreviatus, usque ad octoflorus. Pedicelli distichi. Flores parvi, succedanei. Sepala lateralia usque ad medium cohaerentia, margine ciliato-glandulosa, ovata, acuminata, binervia, laminam late ovatam bilobatam formantia, in textura valde mem-

branacea. Sepalum dorsale late deltoideo-ovatum, usque ad apicem attenuatum, acutum, trinervium. Petala bilobata, lobo superiore elliptico obtuso, lobo anteriore triangularifalcato subacuto incurvo. Labellum trilobatum, incrassatum; lobis lateralibus late unguiculatis, anguste ellipticis, utrinque obtusis; lobo medio abbreviato triangulo-apiculato, margine glanduloso. Discus glaber. Columna usque ad apicem dilatata, apice bilobata. Pollinia duo, anguste pyriformia.

Epiphytic herb with slender fibrous roots. Secondary stems 3-5 cm. long, slender, concealed by about ten elongated closely appressed cylindrical sheaths which are inconspicuously muriculate, monophyllous. Sheaths about 5 mm. long, dilated at the tip into a lanceolate marginate lamina which is minutely muriculate. Leaf up to 4.5 cm. long, 4.5 mm. wide below the middle, narrowly lanceolate, acuminate, tridentate at the tip, the middle tooth exceeding 1 mm. in length, the lateral ones a little shorter, purplish suffused with green in dried specimens. Peduncles fasciculate, shorter than the leaf, with the raceme about 11 mm. long, slender. Raceme flexuose, about 5 mm. long. Pedicels persistent, distichous. Flowers opening in succession. Lateral sepals 3.5 mm. long, united to about the middle to form a broadly ovate bilobed lamina which is 4 mm. wide where it joins the dorsal sepal, outer margins glandular-ciliate, inner margins glabrous; free portion of each sepal triangular, acute, 1.5 mm. wide at the point of union, 1 mm. long, the tips incurved, convergent. Dorsal sepal 3.5 mm. long, 4 mm. wide, deltoid-ovate, acuminate, subacute, 3-nerved, like the lateral sepals hyaline and membranaceous. Petals 2.5 mm. wide, hardly 1 mm. long from the point of insertion to the tip, transversely bilobed, with the posterior lobe of one petal overlapping the posterior lobe of the other behind the column; anterior lobe much narrower than the posterior one, triangular-falcate, subobtuse, the tip incurved. Labellum 3-lobed; lateral lobes unguiculate, elliptical, about 1 mm. long; middle lobe triangular-apiculate, porrect, equaling the lateral lobes, glandular. Column about 1 mm. long, dilated upward, bilobed posteriorly at the summit. Pollinia two, narrowly pyriform.

Plant similar to *Lepanthes inaequalis* Schltr., but dissimilar to it in the long acuminate leaves and overlapping petals. The conspicuously tridentate leaves are characteristic, and in this peculiarity it also resembles *L. inaequalis* Schltr.

COSTA RICA, Cartago, road to La Estrella, C. H. Lankester & Alfredo Sancho 432, February 9, 1923. Stem and bracts dull straw-color, leaves dull, velvety, horn-green, trifid at the apex. Sepals yellowish, hyaline, other segments pruinose orange-purple. 1700 meters altitude. (TYPE in Herb. Ames No. 23747.)

**Lepanthes Sanchoii** Ames sp. nov. Herba epiphytica. Radices fibratae. Caules secundarii erecti vel ascendentes, vaginis dense muricatis vestiti, monophylli. Vaginae apice dilatatae, marginatae. Folium ellipticum, coriaceum, apice bidentatum apiculo interjecto. Pedunculi graciles, fasciculati. Racemus distichiflorus, flexuosus. Pedicelli oblique ascendentes. Bracteae inflorescentiae glandulosae. Sepala lateralia longe triangularia, supra sparse glandulosa, acuta vel subobtusa, margine conspicue glandulosa. Sepalum dorsale prope basim oblongum, longe acuminatum, in caudam filiformem productum, margine glandulosum, trinervium, nervis prominentibus, extus glandulosus. Petala transverse elongata, latiora quam longiora, vel transverse bilobata lobo posteriore oblongo-lanceolato, obtuso, lobo anteriore lineari-triangulari, subacuto. Labellum trilobatum; lobis lateralibus unguiculatis, subellipticis, glandulosis, utrinque obtusis, margine interiore carinatis; lobo medio lineari, parvo, inter lobos laterales, porrecto, dense glanduloso. Columna gracilis, apice crasse fimbriata vel laciniata, laciniis valde inaequalibus.

Epiphytic herb with slenderly fibrous roots. Secondary stems 3-6 cm. long, concealed by from six to eleven elongated muricate closely appressed sheaths, monophyllous. Sheaths about 6 mm. long, dilated at the apex, the expanded rim marginate and muricate. Leaf about 2.7 cm. long, 6 mm. wide, elliptical, marginate, bidentate-apiculate at the apex, contracted below into an abbreviated conduplicate base. Peduncles fasciculate, with the raceme up

to 3.5 cm. long. Raceme up to 1.5 cm. long, flexuose. Flowers seven or more, 2 mm. apart on obliquely ascending rigid pedicels, usually only one flower open at a time. Bracts glandulose. Lateral sepals 1.4 cm. long, about 2 mm. wide near the base, oblong-triangular, acute, sparsely glandulose on the upper surface to about the middle, densely glandular-ciliate on the margin, lightly carinate near the outer margin. Dorsal sepal 1.4 cm. long, about 4 mm. wide near the base, coherent with the lateral sepals, more or less oblong below the middle, from below the middle more or less elongated, triangular, abruptly contracted above to form a slender caudate tip, margin glandulose, prominently 3-nerved on the outer surface, the nerves glandulose. Petals transversely elongated, 4 mm. wide, hardly 1 mm. long, posterior portion oblong-lanceolate, obtuse, the anterior portion linear-triangular. Labellum 3-lobed, about 1.5 mm. long; lateral lobes subelliptical-dolabriform, extended posteriorly into blunt triangular auricles, in front more or less oblong, minutely ciliate on the margin, longitudinally carinate near the inner margin on the upper surface; mid-lobe about .5 mm. long, linear, about equaling the anterior portion of the lateral lobes, porrect, densely glandular, somewhat bulbous at the apex. Column slender, coarsely and unequally fringed at the apex.

In habit similar to *Lepanthes horrida* Reichb. f., but with a very different labellum and petals.

COSTA RICA, Road to La Estrella, C. H. Lankester & Alfredo Sancho 441, February 9, 1923. Sepals acajou-red or jasper-red (Ridgway) on inner surface. Dorsal sepal 3-keeled, the keels hispid, bordered on either side with a stripe of red, otherwise hyaline, yellowish green. 1700 meters altitude. (TYPE in Herb. Ames No. 23162.)

***Epidendrum alanjense*** Ames Sched. Orch. 1 (1922) 13.

*Encyclia Powellii* Schltr. in Fedde Repert. Beihefte 17 (1922) 46.

I have examined the type number of *Encyclia Powellii* Schltr. without being able to detect specific characters to separate it from *Epidendrum alanjense*.



## ERRATUM

### Schedulae Orchidianae No. 4

On page 35, under *Epidendrum alanjense* Ames, *Encyclia Powellii* Schltr. should read *Encyclia Hunteriana* Schltr.

**Epidendrum amandum** Ames sp. nov. Herba epiphytica. Radices validae, albae. Pseudobulbi univel bifoliati, pyriformes. Folia ligulata, coriacea, acuta, ascendencia. Pedunculus folia subaequans, pauciflorus. Bractee inflorescentiae triangulares, acutae, abbreviatae. Pedicellus cum ovario glaber. Sepala lateralia anguste oblongo-elliptica, apice leviter incrassata. Sepalum dorsale sub-simile. Petala spathulata, obtusa. Labellum trilobatum; lobis lateralibus oblongis, obtusis; lobo medio suborbiculari, obtuso. Discus infra apicem columnae callo excavato ornatus. Columna valida, utrinque ala oblonga inflexa ornata.

Roots coarse, whitish, spreading. Pseudobulbs caespitose, pyriform, rugose, up to 2 cm. long, with one or two leaves at the summit, when immature concealed by ample sheaths which soon break down into spreading fibres. Leaves 4-15 cm. long, about 1 cm. wide, ligulate, coriaceous, tapering abruptly at each end, acute, with a prominent mid-nerve. Peduncle with the raceme 8-14 cm. long, equaling the leaves, provided with about four closely appressed sheathing acute scarious bracts. Raceme 2-4-flowered, up to 6 cm. long. Flowers 1.5-2 cm. apart on the smooth rachis. Bracts of the raceme about 3 mm. long more or less, sheathing, scarious, triangular, acute. Pedicel with the ovary 1.5-2 cm. long, smooth. Flowers more or less olive-green. Lateral sepals 11 mm. long, 4 mm. wide, narrowly oblong-elliptic, subacute, slightly thickened beneath the tip. Dorsal sepal 11 mm. long, 3 mm. wide, dilated at the middle, tapering gradually toward the ends, obtuse. Petals 11 mm. long, nearly 4 mm. wide above the middle, spatulate subobtuse, or oblanceolate. Labellum 3-lobed, almost entirely free from the column, 11 mm. long; lateral lobes appressed to the sides of the column, 5 mm. long, 2 mm. wide, oblong, obtuse, separated from the middle lobe by a short almost obsolete isthmus; middle lobe 6 mm. long, 7 mm. wide, suborbicular, obtuse. Disc much thickened between the lateral lobes, with an excavated callus which terminates in three prominent nerves that extend beyond the middle of the middle lobe. Column about 7 mm. long, with an inflexed short oblong obtuse wing on each side in front.

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A near ally of *Epidendrum chloroleucum* Hook., from which it differs conspicuously in the suborbicular obtuse middle lobe of the labellum. In dried specimens the middle lobe is provided with one or more purplish stripes.

PANAMA, Foothills east of Panama, C. W. Powell 271. Flowers in January and February. Sea level. (TYPE in Herb. Ames No. 23749.)

***Epidendrum crescentilobum* Ames sp. nov.** Caules caespitiosi, elongati, foliosi, vaginis foliorum obtecti. Folia subcoriacea, oblongo-lanceolata, subobtusa vel acuta, in sicco nervosa. Racemus laxiflorus, cylindraceus. Bracteae inflorescentiae triangulares, acutae. Pedicelli graciles. Flores roseo-purpurei. Sepala lateralia oblonga, usque ad basim leviter attenuata, acuta, apice incrassata. Sepalum dorsale simile. Petala spathulata, obscure apiculata. Labellum trilobatum; lobis lateralibus oblongis, obtusis, divaricatis; lobo medio subcrescentiformi, antice retuso-apiculato; isthmus labelli abbreviatus, quadratus. Callus in disco inter lobos laterales. Columna crassiuscula, apice plus minusve bilobata, lobis denticulatis.

Plants 3 dm. high, more or less. Stems about 2 mm. thick, caespitose, leafy, concealed by the closely appressed cylindrical warty bases of the leaves, terminating in a cylindrical raceme of rose-purple flowers. Leaves subcoriaceous, about 5 cm. long, 1 cm. wide near the base, oblong-lanceolate, acute or subobtuse, about 1 cm. apart, the lower ones soon deciduous. Raceme 7-8 cm. long, 4 cm. in diameter, bearing from ten to twenty or more flowers, the rachis more or less verruculose or muricate. Bracts of the inflorescence 3-5 mm. long, strongly concave, triangular, acute, much shorter than the slender pedicels, rigid. Pedicels with the ovary up to 1.5 cm. long, smooth. Lateral sepals 6-8 mm. long, up to 3 mm. wide, oblong, acute, gradually narrowed toward the base, thickened at the apex. Dorsal sepal similar. Petals 6-8 mm. long, 3 mm. wide near the obscurely apiculate apex, spatulate from a very narrow base. Labellum adnate to the column, including the adnate portion 8 mm. long, conspicuously 3-lobed, with the terminal lobe

crescentiform and retuse-apiculate in front, with a spread of 6 mm., about 1 mm. wide; lateral lobes divaricate, 3 mm. long, up to 2 mm. wide, oblong, obtuse, together equaling the spread of the terminal lobe; isthmus of the labellum abbreviated, hardly 1 mm. long, 1.5 mm. wide. Disc of the labellum with a sulcate callus between the lateral lobes and a thickened ridge through the middle. Column 6-7 mm. long, bilobed at the summit, with the lobes minutely denticulate.

The nearest affinity of this species appears to be *Epidendrum pansamalae* Schltr., which has larger flowers and a very different labellum and column.

COSTA RICA, Cascajal, C. H. Lankester 60. Flowers rose-purple, fragrant. 5500 feet altitude. (TYPE in Herb. Kew.); Lankester K359. Flowers rose. 5500 feet altitude. (Herb. Kew.); Lankester K367. Flowers rose. 6000 feet altitude. (Herb. Kew.)

***Epidendrum cristobalense* Ames sp. nov.** Caules elongati, foliosi. Folia ligulata, usque ad apicem attenuata, valde coriacea, acuta, basi vaginantia. Pedunculus valde elongatus, in racemum multiflorum productus. Bractee pedunculi arcte vaginantes, complanatae, imbricatae, acutae, elongatae. Bractee inflorescentiae lineari-triangulares, acutae. Flores carnosissimi, inter se distantes. Sepala lateraliter deflexa, oblongo-elliptica, obtusa, valde incrassata. Sepalum dorsale simile, concavum. Petala spathulata, valde carnosissima, carinata. Labellum cum columna cohaerens, cordatum, valde carnosissimum, subconduplicatum, carinatum. Columna brevis, carnosissima.

Stems elongated, leafy. Leaves coriaceous, up to 19 cm. long, 8 mm. or more wide, narrowed toward the apex, acute. Peduncle sheathed by several elongated complanate imbricating bracts, which are from 5 to 12 cm. long, and acute at the tip. Raceme 5 dm. or more long, 1.5 cm. in diameter, bearing as many as fifty pinkish flowers, arching or drooping. Flowers 1 cm., more or less, apart. Floral bracts rigid, linear-triangular, acute, about 5 mm. long. Pedicels with the ovary about 5 mm. long. Lateral sepals

9 mm. long, 5 mm. wide, somewhat spreading, extraordinarily fleshy, oblong-elliptical, obtuse. Dorsal sepal similar, strongly concave. Petals 9 mm. long, 2 mm. wide above the middle, spatulate, obtuse, very fleshy, thickly carinate along the middle on the outer surface. Labellum adherent to the column, free portion 5 mm. long, broadly cordate, obtuse, extraordinarily fleshy, more or less conduplicate. Column about 4 mm. long, very stout, with a hamate wing or tooth on each side at the summit.

The nearest affinity of this species is *Epidendrum laucheanum* Rolfe, from which it differs in having larger, fleshier flowers, different petals, and much more rigid leaves.

COSTA RICA, San Cristobal, C. H. Lankester & Alfredo Sancho 381, January 12, 1923. A common species at medium elevations. Flower about Verona-brown (Ridgway), under side of the lip greenish; in sunny stations the flowers are reddish ochre. 5000-8000 feet altitude. (TYPE in Herb. Ames No. 23728); Cascajal, C. H. Lankester K365, February 14, 1920. (Herb. Kew.)

***Epidendrum equitantifolium* Ames nom. nov.**

*Epidendrum equitans* Lindl. in Bot. Reg. (1838) Misc. 44, non Ruiz & Pav. (1798).

There are two species which have passed under the name *Epidendrum equitans*. The older one was described by Ruiz and Pavon from Peruvian material. For the Central American species, now known to range from Mexico to Panama, I propose the new name *Epidendrum equitantifolium*.

***Epidendrum estrellense* Ames sp. nov.** Caules elongati, radicanes, ramosi, foliosi. Folia articulata, ligulata, utrinque attenuata, acuminata, acuta vel obtusa. Vaginae foliorum arcte appressae, complanatae. Inflorescentia terminalis, floribus distichis in racemum abbreviatum dispositis. Bracteae infra inflorescentiam imbricatae, valde complanatae. Flores flavidi, bracteas racemi vix excedentes. Sepala lateralia anguste elliptico-oblonga. Sepalum dorsale simile. Petala spathulata, obtusa. Labellum col-

umnae adnatum, simplex, suborbiculare, basi cordatum. Columna brevis.

Stems about 4 mm. in diameter, branched, rooting. Leaves distichous, 8-12 cm. long, up to 2.5 cm. wide, narrowly elliptic-oblong, rounded at base, gradually narrowed toward the acute or obtuse tip, rigid, jointed to rigid closely appressed complanate sheaths, the leaves 1-2.5 cm. apart. Inflorescence terminal. Flowers light viridine-yellow (Ridgway) when fresh, distichous in short racemes, the subtending bracts exceeding the pedicellate ovary. Raceme 2.5 cm. long, about 2 cm. across, few-flowered, subtended by seven or more closely imbricating complanate sheathing bracts which are 11-16 mm. long. Floral bracts about 12 mm. long, glumaceous. Pedicel with the ovary about 7 mm. long, wholly concealed by the subtending floral bract. Lateral sepals 1 cm. long, 3 mm. wide, narrowly elliptic-oblong, terminating in a blunt thickened tip, the three central nerves much thickened in dried specimens. Dorsal sepal about 1 cm. long, oblong, obtuse. Petals about 1 cm. long, 4 mm. wide above the middle, spatulate, obtuse, the nerves thickened. Labellum adnate to the column, including the adnate base 1 cm. long, up to 8 mm. wide, suborbicular-cordate, obtuse. Disc tricarinate, the middle keel extending to the tip of the labellum. Column 3 mm. long, with the clinandrium entire.

Undoubtedly a close ally of *Epidendrum phyllocharis* Reichb. f., from which it differs in being ecallose at the base of the labellum and in having the pedicellate ovary of each flower entirely concealed by an ample imbricating bract.

COSTA RICA, Cartago, La Estrella, C. H. Lankester & Alfredo Sancho 379, January 1923. (TYPE in Herb. Ames No. 23724.)

***Epidendrum exile*** Ames sp. nov. Radices fibratae. Caules ramosi, foliosi. Flores singuli. Bractea floris pedicellum cum ovario excedens, valde complanata, spathacea. Sepala lateralia anguste lanceolata, longe acuminata, nervosa, subtus prope apicem carinata. Sepalum dorsale simile. Petala anguste lanceolata, longe acuminata, ecarinata. Labellum triangulari-lanceolatum, longe acumina-

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tum, acutum, ecallosum, nervo medio prope apicem laminae prominenti. Columna carnosa, labello adnata.

Plant about 18 cm. tall, branched, the branches terminated by a solitary yellowish flower, leafy. Branches 4-6 cm. long, compressed, concealed by the sheathing bases of the leaves. Leaves 2-5 cm. long, up to 8 mm. wide, ligulate-oblong, bilobed at the tip, the lobes rounded and obtuse, coriaceous, distichous. Peduncles terminal on the branches, about 1 cm. long, concealed by the conduplicate base of the uppermost leaf, one-flowered. Pedicel with the ovary about 7 mm. long, concealed by a spathaceous scarious glumaceous bract, somewhat roughened or minutely verruculose. Bract 9-12 mm. long. Lateral sepals apparently spreading, 1.7 cm. long, about 3 mm. wide near the base, narrowly lanceolate, acuminate, acute, conspicuously carinate beneath near the apex, prominently nerved. Dorsal sepal similar. Petals about 1.5 cm. long, 3 mm. wide below the middle, narrowly lanceolate, acuminate, acute, more or less fleshy with thickened nerves. Labellum 1.5 cm. long, similar in texture to the sepals and petals, adnate to the column, the free portion about 6 mm. wide across the base, triangular-lanceolate in outline, long and slenderly acuminate, the apical portion with strongly conduplicate margins. Disc ecallose in front of the column, the mid-nerve prominent above the middle of the lamina. Column about 5 mm. long, fleshy.

Undoubtedly a close ally of *Epidendrum singuliflorum* Schltr., from which it differs in the more acuminate perianth segments of the larger flowers, in the differently shaped long-acuminate acute labellum, and in the larger leaves. From *E. Boissierianum* Schltr. it differs in having larger flowers, a very different labellum, and narrower leaves. In the type specimen there is no distinct callus at the base of the labellum in front of the adnate column, the only conspicuous thickening being a longitudinal one from the middle caused by the protuberant or raised mid-nerve.

COSTA RICA, Cartago, La Estrella, C. H. Lankester & Alfredo Sancho 430, January 9, 1923. Common in open pasture fences, flowers pale yellowish green. (TYPE in Herb. Ames No. 23156.)

***Epidendrum gravidum* Lindl.** in Journ. Hort. Soc. 4 (1849) 114.

*Encyclia gravida* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 472.

Lindley's specimen only consists of an inflorescence which is about 18 cm. long. It appears to have been 7-flowered in a loose raceme. The perianth appears never to have opened. Sepals about 12 mm. long, the laterals about 3 mm. wide, heavily carinate at the tip. Petals 1 cm. long, about 3 mm. wide, narrowly elliptic-oblong, subacute from a broad base. Labellum about 1 cm. long, 3-lobed; lateral lobes 6 mm. long, 3 mm. wide at base, narrowed gradually to an obtuse tip; middle lobe including the subquadrate isthmus 7 mm. long, about 4.5 mm. wide across the middle, ovate-lanceolate, heavily nerved on the upper surface (the nerves prominent in dried material). Disc heavily 5-nerved, the alternate nerves prominent on the isthmus and coalescent—at the base of the middle lobe—with the mid-nerve which extends to the tip of the lip. Column 6 mm. long, constricted at the middle, obscurely 3-lobed at the summit, the lobes rounded; in front below the summit there is a short obtuse inflexed membranous wing or auricle on each side. The capsules are fusiform, bluntly muriculate and with the pedicel about 4 cm. long.

This species was described from Mexican material, but so inadequately characterized that it has remained in doubt. In my herbarium there is a specimen collected by Purpus (No. 62) in Mexico that Schlechter communicated to me under the name *Epidendrum gravidum*. It differs in several details from Lindley's type preserved in Kew, but is undoubtedly conspecific with it.

The foregoing description has been prepared from Lindley's type, a flower from the unique specimen having been submitted for study by Captain Arthur W. Hill, Director of the Royal Gardens, Kew. The type was collected by Hartweg in February 1837. It was said to have been collected at Xapatam, Mexico. It is quite possible that Xapatam is an erroneous spelling of Zacualpan.



In the specimen collected by Purpus the inflorescence is about 20 cm. long, with eight flowers in a loose raceme. Raceme 13 cm. long. The perianth, muriculate capsule, and slender pedicel taken together are about 4 cm. long. Pseudobulbs about 4 cm. long, trifoliate. Leaves rigid, coriaceous, up to 18 cm. long, about 1.5 cm. wide.

*Epidendrum gravidum* appears to be a cleistogamous species.

MEXICO, Xapatam, Hartweg, February 1837. (TYPE in Herb. Kew. (Lindley Coll.)): Federal District, Zacualpan, C. A. Purpus 62, 1907.

PLATE 2. 1, raceme drawn from a photograph of Lindley's type, three-fourths natural size. 2, column drawn from a flower of Lindley's type ( $\times 4$ ). 3, flower, the perianth segments spread out, drawn from the type ( $\times 1\frac{1}{2}$ ). 4, plant drawn from a specimen collected by C. A. Purpus no. 62, three-fourths natural size.

*Epidendrum imatophyllum* Lindl. Gen. & Sp. Orch. (1831) 106.

*Epidendrum palpigerum* Reichb. f. in Gard. Chron. ser. 2, 12 (1879) 40. *Epidendrum lorifolium* Schltr. in Fedde Repert. Beihefte 17 (1922) 35.

*Epidendrum imatophyllum* Lindl., as I understand it, is a widespread species in tropical America. It ranges from Mexico to Brazil. From my field observations it would seem to grow in the nests of ants on trees and to flower throughout its Central American range from February to May.

Dr. Rudolf Schlechter, in his recent paper devoted to C. W. Powell's Panama orchids, proposed a new species under the name *Epidendrum lorifolium*. He would have us believe that this represents a Central American plant which has passed as *Epidendrum imatophyllum* Lindl. In his notes he implies that it is different in the structure of the labellum from Schomburgk's Guiana plant from which Lindley prepared the description of *E. imatophyllum*.

I have examined herbarium material of *E. lorifolium* submitted to me by Mr. Powell; I have studied living plants in Mr. Powell's garden in Balboa. This material is

specifically inseparable from the species I have observed in Mexico, Honduras, Costa Rica, and Panama that is usually referred to *Epidendrum imatophyllum* Lindl. In habit and floral structure it resembles the Guiana plant in Lindley's herbarium so closely that to recognize it as a new species seems unwise. The only differences between the labellum of *E. lorifolium* and *E. imatophyllum* that I have been able to detect are such as normally occur in species which are characterized by dentate, laciniate or fimbriate perianth segments.

The labellum of *E. imatophyllum* both in Central American and Guiana material exhibits a wide range of variation. This is very true of the terminal lobe which is sometimes entire, but not infrequently more or less dentate. In Lindley's sketch the tip of the labellum is drawn as if it were retuse, but the original description calls for an apiculate tip.

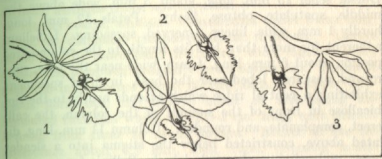
Lindley described and drew the petals of *E. imatophyllum* as laciniate on the margin. In my studies I have found a wide range of variation in the margin of the petals. Recently, in Yucatan, I found a large clump of the species in which the flowers exhibited entire, crenate and dentate petals. Consequently I regard this character as of trivial importance in any attempt to recognize significant differences in *E. imatophyllum*.

In 1879 Reichenbach published a new Mexican plant under the name *Epidendrum palpigerum*. Although this plant has remained obscure it is pretty well clarified by a flower and sketches in Reichenbach's herbarium. My studies have convinced me that it is conspecific with *E. imatophyllum*. If, however, it should prove that a new name is needed for the Central American species, then *E. palpigerum* Reichb. f. would take precedence over *E. lorifolium* Schltr.

To bring out clearly the position I have taken with regard to *E. lorifolium*, I have had prepared the series of drawings reproduced below. These drawings do not indicate the extremes of variation, but simply exhibit Lindley's semi-diagrammatic sketch of a flower of *E. imatophyllum*, a

camera-lucida drawing of a flower from Powell's specimen of *E. lorifolium* and Reichenbach's sketch of a flower of *E. palpigerum*.

FIGURE. 1, *Epidendrum imatophyllum* Lindl. drawn with the aid of camera-lucida from Lindley's sketch. (Apiculate tip of labellum not shown.) 2, *E. lorifolium* Schltr. drawn with the aid of the camera-lucida from a flower furnished by C. W. Powell. 3, *E. palpigerum* Reichb. f. drawn with the aid of the camera-lucida from Reichenbach's sketch of the type flower. Drawings by Blanche Ames.



***Epidendrum Lankesteri* Ames sp. nov.** Caules elongati. Folia anguste lanceolata, acuminata, acuta, utrinque attenuata, basi vaginantia. Pedunculus valde bialatus, complanatus. Bractea inflorescentiam subtendens complanata, nervosa. Inflorescentia breviter ramosa. Bractea inflorescentiae glumaceae. Pedicellus cum ovario gracilis, glaber. Sepala spathulata, obtusa, usque ad basim angustata, coriacea. Petala filiformia, uninervia. Labellum integrum; lamina subrotundata, obtusa, margine obscure lobatum. Discus prope apicem columnae bicallosus, callis erectis valde complanatis. Columna infra apicem valde attenuata.

Stems elongated, slender, probably leafy, but in the fragment which constitutes the only available material there is a single leaf. Leaf about 15 cm. long, 1.8 cm. wide near the middle, narrowly lanceolate, acuminate, acute, gradually narrowed toward the base where it sheaths the stem. Pe-

duncle with the shortly branched inflorescence about 15 cm. long, conspicuously two-winged, below the inflorescence provided with a large sheathing conduplicate bract which is 3 cm. long. Inflorescence branched, with the branches about 2 cm. long. Bracts of the inflorescence 5-9 mm. long, conduplicate, subimbricated, glumaceous when dry, many-nerved, some of them apparently sterile. Pedicel with the ovary about 12 mm. long, slender, smooth. Lateral sepals 13 mm. long, 2.5 mm. wide near the middle, fleshy, nervose, asymmetrically spatulate from a narrow base, obtuse. Dorsal sepal 13 mm. long, about 3 mm. wide above the middle, spatulate, obtuse, fleshy. Petals 12 mm. long, hardly 1 mm. wide, linear, 1-nerved, spreading. Labellum adherent for more than half its length to the column, free portion about 6 mm. long, 4 mm. wide near the base, subrotund, obscurely lobed near the base, in dried specimens exhibiting a central ridge which extends nearly to the tip, bicallose in front of the summit of the column, the calli erect, complanate, and rounded. Column 11 mm. long, dilated above, constricted below the stigma into a slender base; androclinium obscurely lobed. Pollinia four.

The conspicuously two-winged peduncle and the subimbricating glumaceous bracts of the inflorescence separate this species clearly from its nearest allies. Unfortunately the only specimen obtained is fragmentary. It seems to represent the upper part of a leafy stem. The flower suggests affinity with *Epidendrum floribundum* H. B. K., from which it is distinguishable by the simple labellum, contracted inflorescence, and large glumaceous bracts.

COSTA RICA, Cascajal, *C. H. Lankester* 63. Sepals greenish, petals white. 5500 feet altitude. (TYPE in Herb. Kew.)

PLATE 3. Drawn from the type, three-fourths life size. 1, habit. 2, flower ( $\times 1 \frac{1}{2}$ ). 3, labellum and column ( $\times 3$ ). 4, labellum ( $\times 3$ ).

***Epidendrum peraltense* Ames sp. nov.** Radices valde carnosae, albae. Pseudobulbi magni, pyriformes, triphylli. Folia ligulata, coriacea, apicem racemi subaequantia.

Racemus elongatus, breviter ramosus, multiflorus. Bracteae inflorescentiae rigidae, abbreviatae, subacutae, concaviusculae. Pedicellus cum ovario glaber. Flores plus minusve in ramis racemi congesti. Sepala lateralia ligulata, utrinque angustata, apice incrassata, breviter carinata. Sepalum dorsale simile. Petala anguste oblanceolata, acuta. Labellum trilobatum, usque ad basim liberum; lobis lateralibus oblongis, obtusis, purpureo-tinctis, nervis purpureis; lobo medio orbiculari-ovato, acuto. Discus callosus, callo sulcato in nervis tribus incrassatis producto. Columna carnosae, utrinque prope apicem alata.

Roots coarse, whitish. Pseudobulbs about 5 cm. long, 3 cm. in diameter, globose-pyriform, trifoliolate. Leaves 18-30 cm. or more long, 2-2.5 cm. wide, ligulate, very coriaceous, narrowed gradually to an obtuse tip. Peduncle with the inflorescence about 40 cm. long, the upper two-thirds floriferous, the flowers borne on alternating abbreviated branches which are 1.5-3 cm. long, each branch bearing from three to seven flowers. Bracts of the inflorescence about 1.5 mm. long, rigid, concave, acute. Pedicel with the ovary 1.5 cm. long, smooth. Lateral sepals 11 mm. long, 3 mm. wide, ligulate, narrowed toward both ends, acute, shortly carinate-thickened beneath the tip. Dorsal sepal similar. Petals about 11 mm. long, 2.5 mm. wide above the middle, narrowly oblanceolate, acute. Labellum free from the column to the base, about 1 cm. long, 3-lobed; lateral lobes appressed to the column, oblong, obtuse, 5 mm. long, 2 mm. wide, rounded at the tip, stained and striped with rose-purple; middle lobe including the short isthmus 8 mm. long, 5 mm. wide, orbicular-ovate, acute. Disc provided with a fleshy excavated or sulcate callosus which extends upon the middle lobe where it terminates in three raised nerves. Column 5 mm. long, provided in front, — on each side, — with a short obtuse wing as in *E. diurnum* (Jacq.) Reichb. f.

Related to *Epidendrum ramonense* Reichb. f., from which it differs conspicuously in the denser, shortly branched inflorescence. The flowers appear to have been greenish yellow with purple markings on the lip.

COSTA RICA, Peralta, C. H. Lankester & Alfredo Sancho 378. 1500 feet altitude. (TYPE in Herb. Ames No. 23726.)

**Epidendrum Porpax** Reichb. f. in Bonpl. 3 (1855) 220, non Reichb. f. in Flora 48 (1865) 278.

This species is a native of Panama, Costa Rica, and Nicaragua.

Unfortunately Reichenbach described two distinct species under the name *Epidendrum Porpax*. One of these is a native of Cuba, the other one was described from Nicaraguan material. By an error in bibliographical citation, Schlechter, in his enumeration of C. W. Powell's Panama orchids, indicates that the Cuban *E. Porpax* is a native of Central America. The same error occurs in Schlechter's earlier paper entitled "Kritische Aufzählung der bisher aus Zentral-Amerika bekanntgewordenen Orchidaceen," published as a supplement to the Botanischen Centralblatt in 1918.

For the Cuban species (*cf. infra*) I have proposed the new combination *Epidendrum vestitum*.

**Epidendrum Sanchoii** Ames *sp. nov.* Herba epiphytica, valde ramosa. Caulis primarius validus, elongatus; caules secundarii abbreviati, foliosi. Folia linearia, coriacea, ad vaginas verruculosas articulata, obtusa. Racemi pauciflori, terminales. Rachis valde fractiflexa. Bracteae inflorescentiae pedicellum cum ovario aequantes, scariosae. Flores virides. Sepala lateralia oblongo-lanceolata, acuta, apice conduplicata, carinata. Sepalum dorsale simile. Petala linearia, acuta. Labellum simplex, triangulare, subacutum, apice incrassatum, ecallosum, nervis incrassatis. Columna labello adnata, ecornuta.

Epiphytic herb up to 30 cm. tall, with thickened primary stem, much branched, fruticose. Secondary branches up to 2 cm. long, concealed by the verruculose closely appressed sheaths of the leaves, somewhat complanate. Leaves 1.5 cm. long, about 2 mm. wide, linear, obtuse or subtruncate at the apex, coriaceous, distichous. Racemes terminal on the branches, usually 3-flowered, about 1 cm. long, the smooth rachis flexuose. Bracts of the

inflorescence about 3.5 mm. long, concave, acute, equaling the ovary, scariosus in dried specimens. Lateral sepals about 5 mm. long, 2 mm. wide, oblong, acuminate, acute, with the apex carinate-thickened, 5-nerved. Dorsal sepal 5 mm. long, about 2 mm. wide, rounded toward the base, oblong, acuminate, acute, 5-nerved. Petals 4.5 mm. long, .75 mm. wide, linear, acute, fleshy, 3-nerved. Labellum adnate to the column, the free portion about 4 mm. long, 2 mm. wide at the base, triangular with the basal angles rounded, apical third much thickened. Disc ecallose, veins thickened. Column 2 mm. long, fleshy, entire at the apex.

Allied to *Epidendrum ramosum* Jacq., from which it differs conspicuously in its more densely branching habit, and smaller leaves.

COSTA RICA, near Cartago, C. H. Lankester & Alfredo Sancho 384. 6000 feet altitude. (TYPE in Herb. Ames No. 23158.)

***Epidendrum santaclarensis* Ames sp. nov.** Caules rigidi, ramosi, foliosi. Folia disticha, rigida, ligulata, valde coriacea, nervo medio subtus prominenti. Racemus plus minusve sexflorus, terminalis. Flores virides, distichi, inter se distantes. Bractee inflorescentiae elongatae, margine involuto, pedicellum obtegentes. Sepala lateralia ligulata, usque ad apicem angustata, subacuta, rigida. Sepalum dorsale subsimile. Petala lineari-oblonga. Labellum a basi cordata in laminam lanceolatam productum. Discus callo excavato, acuto instructus; callus antice in lineam in-crassatam productus. Columna apice minute denticulata.

Stems about 4 mm. in diameter, branching, leafy, sparsely rooting above on the defoliated portions. Leaves 4-6.5 cm. long, up to 1.5 cm. wide, jointed to rigid closely appressed complanate sheaths, 5-20 mm. apart, distichous, the lamina rigidly coriaceous, ligulate, with the mid-nerve prominent. Peduncle floriferous nearly to the base, terminal, with the raceme 7-8 cm. long, about 2.5 cm. across, six to seven or more flowered, subtended by about two closely appressed obtuse bracts and by the much reduced uppermost leaf of the stem. Bracts of the inflorescence 2.5 cm.

long, the margins involute or overlapping, enclosing the pedicel and the lower portion of the ovary. Flowers greenish, 7-10 mm. apart. Pedicel with the ovary 2.5-3 cm. long. Lateral sepals 14 mm. long, 3.5 mm. wide at the base, ligulate, narrowed gradually to the subacute tip, fleshy, more or less rigid, hardly spreading. Dorsal sepal sub-similar. Petals 13 mm. long, about 1.5 mm. wide, linear-oblong, subacute, fleshy. Labellum adnate to the column, about 12 mm. long, cordate-lanceolate, subacute, margins more or less erect, the basal portion strongly concave, with prominent nerves. Disc near the apex of the column with an excavated or sulcate triangular callus formed by two converging keels, the acute apex produced into a thickened mid-nerve which extends to the tip of the labellum. Column stout, 6 mm. long, clinandrium minutely denticulate on the posterior margin.

A near ally of *Epidendrum imbricatum* Lindl., from which it is readily distinguished by the distant flowers and involute floral bracts.

COSTA RICA, Cartago, Santa Clara, C. H. Lankester & Alfredo Sancho 443. 6000-6500 feet altitude. (TYPE in Herb. Ames No. 23727.)

***Epidendrum trachycarpum* Lindl.** in Benth. Bot. Voy. Sulph. (1844) 172.

*Encyclia trachycarpa* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 474.

Pseudobulbs about 7 cm. long, about 2 cm. in diameter near the base, elongated, pyriform, with basal sheaths which soon break down into straggling fibres, trifoliate. Leaves 26 cm. or more long, up to 1 cm. wide, ligulate, acute. Peduncle slender, with the few-branched raceme 28-35 cm. long, about 7-flowered. Flowers up to 3.75 cm. across, fleshy, in dried specimens blackish, the petals margined with orange. Pedicellate ovary nearly 2 cm. long, scabridulous or verruculose. Lateral sepals 1.8 cm. long, 7 mm. wide near the middle, elliptic-oblong, acute, very fleshy, narrowed toward the base. Dorsal sepal similar. Petals 1.7 cm. long, about 5 mm. wide near the middle, spatulate, acute, fleshy,



7-nerved, the mid-nerve prominent in dried material. Labellum about 1.5 cm. long, 3-lobed; lateral lobes much shorter than the middle lobe, 3 mm. long on the inner margin, 2 mm. wide, lanceolate, obtuse; middle lobe including the isthmus 11 mm. long, about 8 mm. wide, rotundate, emarginate, heavily veined. Callus fleshy, very prominent (in dried specimens 2 mm. thick), shallowly excavated, oblong, extending beyond the base of the middle lobe, rounded in front, abruptly decurrent at the apex into three raised carinate nerves. Column 8 mm. long, very fleshy, produced on each side into a broad triangular acute wing, but not auriculate.

MEXICO, Manzanilla Bay, *Hinds*.

The prominent callus and large middle lobe, in combination with conspicuously smaller lateral lobes, give to the flowers of *Epidendrum trachycarpum* an aspect which is unusual in the genus. I only know this species through the material in Lindley's herbarium at Kew. For the opportunity to amplify Lindley's brief description I am indebted to Captain Arthur W. Hill, Director of the Royal Gardens, Kew, who kindly submitted a flower of the type for examination.

PLATE 3. 1, raceme drawn from a photograph of Lindley's type, three-fourths natural size. 2, pseudobulbs and leaves drawn from a photograph of Lindley's type, three-fourths natural size. 3, labellum and column drawn from a flower of Lindley's type ( $\times 1 \frac{1}{2}$ ). Drawn with the aid of the camera-lucida by Blanche Ames.

*Epidendrum vestitum* Ames *nom. nov.*

*Epidendrum Porpax* Reichb. f. in Flora 48 (1865) 278, non Reichb. f. in Bonpl. 3 (1855) 220.

Reichenbach described two species under the name *Epidendrum Porpax*, one from Nicaragua in 1855 the other from Cuba in 1865. The Cuban species is without a valid name. The new name here proposed alludes to the ample sheaths which conceal the stems.

CUBA, *Wright* 3343.

**Ornithidium Lankesteri** *Ames sp. nov.* Herba epiphytica, valida, floribunda. Caules erecti vel ascendentes, foliosi. Folia disticha, ligulata, valde coriacea, apice obtuse et inaequaliter bilobata, nervo medio prominenti. Flores numerosi ex axillis vaginarum. Vaginae complanatae caulem obtegentes. Pedunculi elongati, graciles. Sepala lateralialia oblonga, acuta. Sepalum dorsale simile. Petala elliptico-oblonga, utrinque attenuata, acuta. Labellum trilobatum, callosum, carinis tribus prope basim, carnosum, petalis multo brevius; lobis lateralibus porrectis, obtusis; lobo medio lobos laterales multo excedenti, triangulari, apice incrassato subtriquetro. Callus in disco valde incrassato usque ad basim lobi medii extensus, antice truncatus. Columna in pedem brevem producta, usque ad apicem leviter dilatata.

Epiphytic herb 60-90 cm. high, with numerous distichous leaves and many flowers from the axils of the leaf-sheaths. Stems about 1.4 cm. in diameter, somewhat complanate above. Leaves about 2 cm. apart, jointed to closely appressed sheaths, 7-12.5 cm. long, up to 1.5 cm. wide, narrowly oblong, obtusely and unequally bilobed at the tip, somewhat conduplicate at the base. Leaf-bases up to 1.3 cm. long, imbricating. Peduncles 5-6 cm. long, slender, with several closely appressed elongated bracts, apparently fasciculate. Bract subtending the pedicel 1 cm. or more long, conduplicate, embracing the base of the pedicel, ovate-lanceolate, acute, the apex extending beyond the base of the upper sepal and closely appressed. Lateral sepals about 1.6 cm. long, 4 mm. wide, oblong, acute. Dorsal sepal similar. Petals about 1.5 cm. long, 4 mm. wide, narrowly elliptic-oblong, acuminate, acute. Labellum fleshy, 7 mm. long, about 4 mm. wide when spread out between the tips of the lateral lobes; lateral lobes quadrate, rounded at the tip, 2 mm. wide; middle lobe much exceeding the laterals, 3 mm. long, 2 mm. wide near the base, 3-nerved, triangular, acute or obtuse, somewhat triquetrously thickened near the apex. Disc with three raised keels near the base of the labellum and with a dilated truncate median callus which extends to the base of the middle lobe. Column 6 mm. long, ex-

tended at the base into a short foot to the tip of which the labellum is rigidly attached. Pollinia four, cohering in pairs at the apex of an oblong caudicle.

Allied to *Ornithidium Biolleyi* Schltr. and *O. bracteatum* Schltr., from which it is very different in the structure of the floral segments.

COSTA RICA, San Cristobal, C. H. Lankester & Alfredo Sancho 421, January 12, 1923. Common on trees standing in the pastures on ridges or upper slopes, a delightful natural object. Lower leaves deciduous. Segments of the flower crystalline white, petals suffused centrally at base with pink. Labellum empire-yellow (Ridgway), basal two-thirds of column aster-purple (Ridgway), this color also tinging the lateral lobes of the labellum. Anther-cap white. 5500 feet altitude. (TYPE in Herb. Ames No. 23735.)

**Oncidium Lankesteri** Ames sp. nov. Est planta habitu *O. suave* Lindl. pseudobulbis et foliis minor (Lankester). Pseudobulbi et folia desiderantur. Inflorescentia decemramosa, rami sex ad septemflori, patentes vel leviter ascendentes. Bractee ramos subtendentes permagnae, arcte appressae. Bractee inflorescentiae flores subtendentes late triangulari-ovatae, scariosae, pedicellis multo breviores. Sepala lateralia unguiculata, oblonga, undulata, valde carinata. Sepalum dorsale unguiculatum, oblongum, acutum, ecarinatum. Petala oblongo-elliptica, obtusa, vix unguiculata. Sepala petalaeque brunnea, marginibus lutea. Labellum panduratum; lobis lateralibus suborbicularibus; lobo medio obreniformi, emarginato, aureo, isthmo brunneo-maculato. Crista quinquelobata. Columna alis dolabroformibus instructa.

Pseudobulbs and leaves as in *Oncidium suave* Lindl., but smaller. Inflorescence up to 9 dm. long, racemose-paniculate, the lateral branches up to ten, 14-19 cm. long, each branch 6-7-flowered, with the flowers 2.5-3 cm. apart. Bracts subtending the branches about 1.3 cm. long, scarious, breaking down into fibres, closely appressed. Bracts subtending the flowers about 5 mm. long, scarious, broadly triangular-ovate. Pedicels with the ovary 2-2.5 cm. long. Lateral

sepals up to 1.4 cm. long, 4 mm. wide, undulated, brown margined with yellow, unguiculate, oblong, obtuse, strongly carinate along the median nerve. Dorsal sepal 1.2 cm. long, about 5 mm. wide, unguiculate, oblong, acute, undulate, ecarinate, colored like the lateral sepals. Petals hardly unguiculate, oblong-elliptic, obtuse, 1.4 cm. long, 5 mm. wide, undulate. Labellum 1.4 cm. long, 1 cm. wide across the base, 1.3 cm. wide across the tip, pandurate, about 4 mm. wide near the middle; lateral lobes suborbicular, 2.5 mm. wide; middle lobe broadly obreniform or transversely elliptical, emarginate, 8 mm. long, bright yellow heavily marked with brown on the isthmus. Crest basal, 5-lobed, puberulous, four of the lobes in pairs, the fifth one terminal and trilobulate, acute, porrect. (In dried specimens each member of the basal pair of lobes of the crest has a thickened lobule on its upper surface, the members of the anterior pair are affixed to the disc of the labellum and confluent with the ventral side of the trilobulate terminal lobe which is fleshy at the base and produced in front into a rostrate porrect tip.) Column 5 mm. long, with dolabriform wings.

The nearest ally of this species is *Oncidium Sultonii* Batem., which has a different crest on the labellum, somewhat smaller flowers, and the branches of the paniculate raceme shorter. In the type specimen of *Oncidium Sultonii* the larger and more characteristic inflorescence has five flowers on each branch of the raceme. In *O. Lankesteri* there are usually six or seven flowers on each branch. While it is true that the number of flowers is variable, and not a reliable guide to specific difference, it serves, with the other characters described, to make differentiation possible.

COSTA RICA, Irazu Volcano, Slopes in valley of Reventado, C. H. Lankester & Alfredo Sancho 415. Repulsively aromatic after sundown. Sepals and petals brown margined with yellow. Labellum bright yellow. 6000 feet altitude. (TYPE in Herb. Ames Nos. 23729, 23730, and 23731); Cartago, C. H. Lankester K339. (Herb. Kew.)

***Chondrorrhyncha estrellensis* Ames sp. nov.** Herba epiphytica, acaulis. Radices elongatae, glabrae, in sicco

albidae. Folia articulata, erecto-patentia, basi vaginis amplectentibus oblecta, anguste lineari-lanceolata vel oblongo-lanceolata, acuminata, acuta, basim versus sensim angustata. Inflorescentia ex axillis vaginarum, uniflora, pedunculo gracili paucivaginato. Ovarium valde trialatum. Sepala lateralialia deflexa, valde curvata, anguste oblonga, utrinque angustata, acuta, in sicco valde nervosa. Sepalum dorsale simile. Petala sepalis latiora, late oblanceolata, obtusa, in sicco valde nervosa. Labellum antice obscure trilobatum, basi rotundatum, concavum, margine undulatum, in circuitu quadrato-ovatum, obtusum, callo plus minusve membranaceo apice bilobato ornatum. Callus utrinque bidentatus, apice bilobato libero. Columna elongata.

Epiphytic herb up to 23 cm. tall from the base to the tip of the longest leaf. Roots elongated, about 2 mm. thick, whitish, smooth, spreading. Leaf-bases equitant, 2-3.5 cm. long. Leaves articulated, up to 19 cm. long, 1.5-2.5 cm. wide near the middle, narrowly lanceolate, acuminate, acute, membranaceous, pliable, nervose when dry. Peduncles from the axils of the leaves, about 13 cm. long, few-bracted. Flower solitary. Pedicel with the ovary 2 cm. long. Ovary conspicuously 3-winged. Lateral sepals 2.7 cm. long, about 5 mm. wide, narrowly oblong, narrowed toward both ends, acute, deflexed, spreading. Dorsal sepal similar, erect. Petals 2.5 cm. long, 9-10 mm. wide near the middle, obtuse, broadly oblanceolate, erect. Labellum 2.5-3 cm. long, about 2 cm. wide when spread out, broadly ovate in outline, obscurely 3-lobed in front with the margin undulate, strongly concave at base. Disc smooth, with a partly free membranaceous plate or callus which is deeply bilobed at the tip with two small, blunt teeth on each side. Column about 12 mm. long. Pollinia four.

In habit closely resembling *Chondrorrhyncha Endresii* Schltr. and *C. Reichenbachiana* Schltr. From the former it differs conspicuously in having the disc smooth in front of the callus. From *C. Reichenbachiana* it is separable in having a distinctly bilobed callus which does not extend laterally to the margins of the labellum.

COSTA RICA, Estrella de Cartago, C. H. Lankester & Alfredo Sancho 396, January 10, 1923. Radiating lines of labellum burnt-lake. Sepals and petals very pale baryta-yellow. Callus of the labellum empire-yellow. (Colors according to Ridgway.) (TYPE in Herb. Ames No. 23733.)

**Dichaea Lankesteri** Ames sp. nov. Herba epiphytica. Caules dense foliati. Folia decidua, linearia. Flores singuli e foliorum axillis orientes. Pedunculus tenuis, prope basim vagina pellucida vestitus, infra ovarium bibracteatus. Ovarium dense setulosum. Sepala lateralia triangulari-lanceolata, longe acuminata, acuta, concaviuscula. Sepalum dorsale simile, apice deflexum. Petala anguste lanceolata, acuminata, acuta. Labellum e basi cuneata valde dilatatum, utrinque acutangulum, angulis plus minusve productis valde retrorsis, apice acuminatum, acutum. Discus ecallosus. Gynostemium crassiusculum, breviter pubescens.

Roots fibrous, spreading, whitish. Stems more or less caespitose, up to 14 cm. high, densely foliose, complanate, entirely concealed by the sheathing bases of the deciduous leaves, the lower portion defoliated at anthesis. Leaves up to 4.5 cm. long, about 3 mm. wide below the middle, spreading, decurved, distichous, linear, tapering gradually toward the acute tip, more or less membranaceous. Flowers shortly pedicellate, arising singly from the axils of the leaves. Peduncle slender, with an elongated sheath near its base and two more or less hyaline bracts near its summit, one of the bracts linear-triangular 5 mm. long, the other bract broadly oval concave and 5 mm. long. Ovary abbreviated, densely setulose. Lateral sepals about 8 mm. long, 3.5 mm. wide, triangular-lanceolate, acuminate, acute, the tip sharply bent downward. Dorsal sepal similar to the laterals. Petals 6.5 mm. long, narrowly lanceolate, acuminate, acute, strongly concave at the base. Labellum 6 mm. long, unguiculate, claw cuneate, dilated above the claw into a round-triangular lamina which is about 5 mm. wide across the base, with an acute angle on each side which is strongly retrorse, acuminate, acute at the apex, the tip thickened and deflexed. Disc

ecallose, minutely glandular. Column stout, 2 mm. long, dilated upward.

In habit not unlike *Dichaea graminoides* (Sw.) Lindl., but with a very different labellum. In outline the labellum suggests *D. Willdenowiana* Kränzl., but is characterized by an elongated thickened tip.

COSTA RICA, Cascajal, C. H. Lankester K353. Flower white, very faintly greenish tinged, with a faint purple stain round the edge of the stigmatic surface. (TYPE in Herb. Kew.)

**Campylocentrum Lankesteri** Ames *sp. nov.* Radices elongatae, plus minusve complanatae, in sicco longitudinaliter sulcatae, albescentes. Caules multo abbreviati, subobsoleti, aphylli. Pedunculi quattuor, conferti, paene usque ad basim floriferi, erecti. Racemus gracilis, floribus distichis instructus. Bracteae flores subtendentes rigidae, patentes, concaviusculae, triangulares, acutae, ovarium pedicellatum excedentes. Flores minuti, albidi, oblique ascendentes. Sepala lateralia oblonga, obtusa, infra apicem apiculata, uninervia, membranacea. Sepalum dorsale ovatum, obtusum, infra apicem apiculatum. Petala elliptico-oblonga, obtusa, uninervia, diaphana. Labellum saccatum, in laminam trulliformem productum; lamina labelli explanata pentagona, abrupte acuta. Saccus scrotiformis. Columna incrassata.

Leafless epiphyte. Roots elongated, becoming whitish when dry, spreading, 4-5 cm. or more long, about 2 mm. thick, longitudinally sulcate. Stems subobsolete. Peduncle with the raceme up to 4 cm. high, the raceme itself up to 3.5 cm. long, slender. Bracts of the raceme about 1 mm. long, at right angles to the rachis, rigid, more or less concave, triangular, acute, exceeding the pedicellate ovary. Flowers distichous, about 2 mm. apart, hardly 3 mm. long, whitish. Lateral sepals connivent, about 2 mm. long, oblong, 1-nerved, obtuse, with a short apicule which arises from the thickened nerve just beneath the tip. Dorsal sepal about 2 mm. long, ovate, 1-nerved, obtuse, apiculate. Petals hardly 2 mm. long, oblong, obtuse. Labellum saccate at base, the sac

CENTRAL AMERICAN ORCHIDS

scrotiform and 2 mm. long; lamina of the lip trulliform, 2 mm. long, pentagonal when spread out or quadrate with an abruptly acute tip. Column fleshy, very short.

In habit similar to *Campylocentrum Sullivanii* Fawc. & Rendle, from which it differs in the outline of the labellum which has the neuration less heavy.

COSTA RICA, Reventazu River, *C. H. Lankester* 71. 100 feet (?) altitude. (TYPE in Herb. Kew.)



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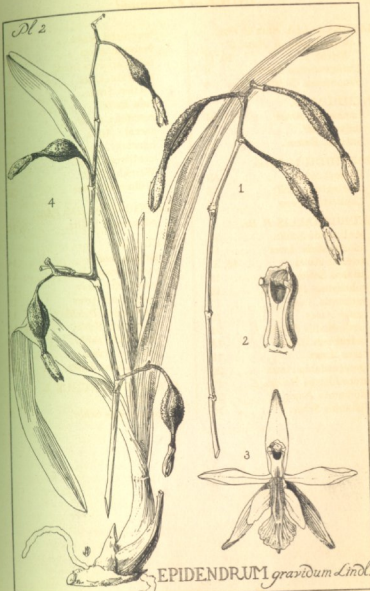
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Pl 2



EPIDENDRUM *gravidum* Lindl.



Pl. 3

EPIDENDRUM  
*trachycarpum*  
Lindl.



EPIDENDRUM  
*Lankesteri* Ames

SCHEDULAE ORCHIDIANAE  
No. 5

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NEW OR NOTEWORTHY  
ORCHIDS

FROM CENTRAL AMERICA AND THE  
PHILIPPINE ISLANDS

BY  
OAKES AMES

BOSTON, MASSACHUSETTS

1923

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## New or Noteworthy Orchids from Central America and the Philippine Islands

BY

OAKES AMES

IN further study of the flora of Central America and the Philippine Islands, the following orchids appear to deserve recognition as new species or to require nomenclatorial attention.

The descriptions have been prepared from herbarium specimens.

The genera follow the sequence proposed by Pfitzer in Engler and Prantl's "Die natürlichen Pflanzenfamilien."

**Acoridium montanum** *Ames nom. nov.*

*Acoridium linearifolium* *Ames* Orchidaceae 7 (1922) 141, non Rolfe.

At the time of the publication of fascicle seven of Orchidaceae the earlier use of *Acoridium linearifolium* by Rolfe was overlooked.

PHILIPPINES, LUZON, Benguet Province, Mount Boadan, *Ramos & Edaña* 56, September 26, 1921. On trees in mossy forest. 6800 feet altitude.

**Acoridium rhombophorum** (*Reichb. f.*) *Ames comb. nov.*

*Coelogyne rhombophora* *Reichb. f.* in *Linnaea* 41 (1877)

116. *Pholidota rhombophora* *Reichb. f.* in *Linnaea* 41 (1877)

117, sub *Coelogyne rhombophora*; *Pfitz. & Kränzl.* in *Engl.*

*Pflanzenreich* IV. 50. II. B. 7 (1907) 153. *Acoridium* Whit-

*fordii* Rolfe ex Ames Orchidaceae 1 (1905) 73. *Dendrochilum Whitfordii* Pfitz. in Engl. Pflanzenreich IV. 50. II. B. 7 (1907) 162. *Dendrochilum rhombophorum* Ames Orchidaceae 3 (1908) 7.

The synonymy given above indicates the history of the Philippine species which Rolfe described as *Acoridium Whitfordii*. It was first obtained by Wallis from "Manila" and published as a new *Coelogyne* by Reichenbach. From Reichenbach's description it was quite impossible to identify the species. Pfitzer in his monograph of the *Coelogyne*inae referred it to *Pholidota*, stating that he had not seen the type. In 1905, Rolfe identified a Philippine orchid collected in Luzon as a new species for which he proposed the name *Acoridium Whitfordii*.

In my herbarium there is a specimen from the original Wallis collection, for which I am indebted to the Director of the Botanische Abteilung des Naturhistorischen Museums, Vienna. I also possess a tracing from the type preserved in Reichenbach's Herbarium. The Wallis specimen proves to be similar to the specimens from Luzon from which Rolfe drew his description of *Acoridium Whitfordii*.

Our present knowledge of the species indicates that it is confined to Luzon.

PHILIPPINES, Luzon, Provinces of Bataan, Laguna and Tayabas.

***Acoridium saccolabium*** (Kränzl.) Ames comb. nov.  
*Dendrochilum saccolabium* Kränzl. in Annal. k.k. Hofmus. Wien 30 (1916) 56.

The deeply saccate labellum of this extraordinary species is unusual in the genus. It exhibits an extreme development of a tendency toward concavity of the labellum which is one of the traits of *Acoridium*, and in its inflorescence suggests such species as *Acoridium Wenzelii*.

My knowledge of this species is based on material cultivated in Hort. München-Nymphenburg, said to have come from the type plant. For this material I am indebted to Dr. Rudolf Schlechter.

PHILIPPINES, without locality, *Loher*.

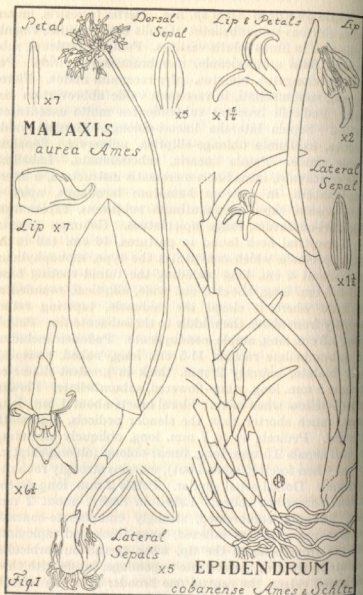


NEW OR NOTEWORTHY ORCHIDS

*Malaxis aurea* Ames sp. nov. Herba terrestris, monophylla, floribus subumbellatis. Caulis basi tumidus, vaginis amplis mox in fibras solutis vestitus. Folium ellipticum, subobtusum, basi amplexicaule, membranaceum, viride. Pedunculus elongatus, bialatus, infra racemum nudus. Flores congesti, subumbellati, in racemum valde abbreviatum dispositi. Pedicelli bracteas subtendentes multo excedentes, graciles. Sepala lateralialia lineari-oblonga, margine valde revoluta, explanata oblongo-elliptica, uninervia. Sepalum dorsale simile. Petala linearialia, subcircinnata. Labellum valde concavum, intus lineis incrassatis instructum, a latere complanatum, in rostrum hamatum terminans, apice a latere visum caput elephantinum subjiciens, explanatum orbiculari-cordatum, longe apiculatum. Columna generis.

Terrestrial herb found in pastures, 16 cm. tall in the single specimen which constitutes the type, monophyllous. Stem about 4 cm. long including the tumid rooting base. Leaf 5.8 cm. long, about 3 cm. wide, elliptical, rounded at the base where it clasps the peduncle, tapering rather abruptly from above the middle to the subacute tip. Petiole about 1.5 cm. long, ample, conduplicate. Peduncle including the subumbellate raceme 11.5 cm. long, naked, conspicuously bialate, scarcely 2 mm. thick in greatest diameter. Raceme 5 mm. long, many-flowered, subumbellate. Flowers apricot-yellow when alive. Floral bracts about 1 mm. long, green, much shorter than the slender pedicels, apparently deflexed. Pedicels up to 7 mm. long, obliquely ascending. Lateral sepals 2.5 mm. long, linear-oblong (oblong-elliptical obtuse when forcibly spread out), margins strongly revolute, 1-nerved. Dorsal sepal similar. Petals 2 mm. long, linear, obtuse, somewhat coiled. Labellum fleshy, about 2 mm. long, laterally compressed, strongly complanate-concave, margins more or less inflexed, apex thickened, apiculate-rostrate from beneath the tip, when spread out orbicular-cordate in front of the rostrate appendage, inside with three thickened ridges, the central one broader than the laterals. Column minute.

The floral structure suggests *Malaxis Tonduzii* (Schltr.) Ames, but the petals and sepals are different, and the solitary



leaf is larger with a noncrispate margin. *Malaxis linguella* (Reichb. f.) Ames, a native of Mexico, but with a very different labellum, is similar vegetatively. [Fig. 1.]

COSTA RICA, Cóncevas, C. H. Lankester 346. Flowers apricot-yellow, leaf and rachis yellowish oil-green. (Colors according to Ridgway's standards. Pl. V.) (TYPE in Herb. Kew.)

**Appendicula irigensis** Ames sp. nov. Caules elongati, ramosi, foliosi, vaginis foliorum omnino obiecti. Folia disticha, elliptico-lanceolata, apice obtuse bilobulata mucrone rigido interjecto. Pedunculi terminales et laterales. Racemi folia subaequant, bracteis flores subtendentibus elongatis linearibus. Sepala lateralibus triangularia, acuta, mentum obtusum formantia, extus per medium carinata. Sepalum dorsale ovato-lanceolatum, concavum. Petala oblonga, margine obscure erosa, apice nonnihil inconspicue apiculata. Labellum supra medium in laminam suborbicularem minute erosam expansum, basi concavum, erectum. Callus in disco. Columna brevis, rostello oblique erecto, in apicem excisum producta.

Stems branching, 30 cm. or more long, leafy, the lower leaves soon deciduous. Leaves distichous, numerous, 3-5 cm. long, 5-9 mm. wide, elliptic-lanceolate, bilobed at the apex with a mucro between the lobes; at base each leaf is articulated with a tubular sheath, the sheaths persistent and concealing the stem. Peduncles terminal or lateral, with the raceme up to 3 cm. long, shorter than or equaling the leaves. Bracts of the raceme up to 5 mm. long, spreading, linear. Lateral sepals 3 mm. long, triangular, acute, forming a prominent obtuse mentum, carinate along the middle nerve on the outside. Mentum 2 mm. long. Dorsal sepal 4 mm. long, ovate-lanceolate from a broad base, concave. Petals 3 mm. long, about 1 mm. wide, oblong, obtuse, obscurely apiculate, margin minutely erose-dentate. Labellum suborbicular above, 3 mm. wide, about 4 mm. long, lower portion concave, quadrate. Disc with a lamelliform callus at the base of the orbicular lamina. Callus posteriorly rounded, in

front passing into strongly curved submarginal keels. Column to the tip of the excised rostellum 2 mm. long, produced at base into a conspicuous foot.

Allied to *Appendicula maquilingensis* Ames, from which it differs in the elongated linear floral bracts and in the crose-dentate margin of the labellum.

PHILIPPINES, LUZON, Rizal Province, Mount Iriga, M. Ramos, Bureau of Science 41941C, February 16, 1923. On trees in dense forest. 3000 feet altitude. (TYPE in Philip. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 25933.)

***Appendicula polyantha* Ames sp. nov.** Caules elongati, foliosi, in axillis foliorum paene usque ad basim florigeri. Folia disticha, inter se satis distantia, anguste lanceolata, in sicco chartacea, apice bilobulata apiculo interjecto. Vaginae foliorum caulem omnino obtegentes, persistentes, demum scariosae. Pedunculi cum racemo abbreviato paucifloro quam folia multo breviores, ex axillis foliorum orientes. Flores plus minusve quinque, albi. Bractee inflorescentiae lineari-lanceolatae. Pedicelli multo abbreviati, subobsoleti. Ovarium minute verrucosum. Sepala lateralia triangularia, acuta, mentum prominens formantia. Sepalum dorsale anguste ellipticum, valde concavum, obtusum, extus prope basim verruculosum. Petala elliptico-oblonga, obtusa, trinervia. Labellum supra medium in laminam orbicularem expansum, infra medium columnae pedis marginibus affixum, saccum obtusum formans. Discus prope basim laminae labelli pilis glandulosis ornatus. Saccus e sepalis lateralibus non protrudens, intus in pariete antico valde carinatus. Columna brevis, in pedem conspicue producta. Rostellum breviter excisum.

Stems up to 60 cm. or more long, about 5 mm. thick near the base, terete, concealed by the sheathing bases of the distichous leaves. Leaves twenty-five or more, up to 8.5 cm. long, 1-1.5 cm. wide, narrowly lanceolate, tapering gradually to the minutely bilobed tip, with a slender apicule between the lobes, articulated at base to persistent sheaths. Peduncles with the raceme up to 1.5 cm. long, rather stout, much shorter than the leaves, produced from the axils of

the leaves for nearly the entire length of the leafy portion of the stem. Racemes about 5-flowered. Bracts of the raceme about 5 mm. long, linear-lanceolate, acute, spreading. Pedicels very short, almost obsolete, with the verruculose unfertilized ovary 3 mm. long, the fertilized ovary at maturity 8 mm. long. Lateral sepals 3 mm. long, triangular, acute, forming a blunt mentum which is 3.5 mm. long. Mentum 2.5 mm. in greatest diameter, laterally flattened or compressed. Dorsal sepal 3 mm. long, narrowly elliptical, strongly concave, obtuse, near the base on the outer surface somewhat verruculose. Petals 3 mm. long, 1.5 mm. wide, elliptic-oblong, obtuse, 3-nerved. Labellum with the lower half adnate to the wide foot of the column forming a blunt sac which is wholly concealed by the sepalous mentum, upper half expanded into a suborbicular or orbicular obtuse fleshy lamina which is 2 mm. long; the sac itself is almost 3 mm. long with a heavily thickened keel on the inner side of the anterior wall. Disc near the opening to the sac provided with long, weak, glandular hairs. Column from the base of the upper sepal to the tip of the deep excised rostellum 2 mm. long, prolonged at base into a conspicuous elongated foot.

In habit not unlike *Appendicula Fenixii* Ames, but very different from it in the structure of the labellum.

PHILIPPINES, LUZON, Rizal Province, Mount Angilog, G. Lopez, Bureau of Science 42058, February 15, 1923. Flower white. 2200 meters altitude. (TYPE in Herb. Philip. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 25911.)

**Masdevallia linearifolia** Ames *sp. nov.* Herba epiphytica, pusilla. Radices fibratae, albae. Caules secundarii abbreviati, vaginati, caespitosi. Folia coriacea, linearia, apice bilobulata apiculo interjecto, usque ad basim angustata. Pedunculi abbreviati, cum floribus inter caules secundarios occulti. Flores parvuli, purpurei. Sepala lateralia vix ad medium cohaerentia, ovata, longe caudata, trinervia. Sepalum dorsale simile. Petala irregulariter et inaequaliter dolabriformia, obtusa, uninervia. Labellum unguiculatum, basi sagittatum, antice orbiculare, margine

denticulato vel breviter fimbriato, utrinque prope unguem callosum. Columna gracilis, utrinque triangulari-alata, alis dependentibus acuminatis acutis; clinandrio post antheram longe producto.

A small epiphytic herb up to 4 cm. high, with the flowers more or less concealed among the secondary stems and leaves in the manner of *Masdevallia simula* Reichb. f. Secondary stems 6 mm. long, caespitose, monophyllous, vaginate. Sheaths equaling or exceeding the secondary stems, scarious. Leaf up to 3 cm. long, about 2 mm. wide, bilobulate at the tip with a short apicule between the lobules, narrowed toward the base, linear, coriaceous. Peduncle with the pedicellate ovary about 1 cm. long, slender, 1-flowered. Lateral sepals united almost to the middle, ovate, 5 mm. long to the tip, free portion up to 2 mm. wide, 3-nerved, caudate, the tail 2 mm. long being the prolongation of a carinate median nerve. Dorsal sepal 7 mm. long including the caudate tip, 2 mm. wide, the caudate tip 3 mm. long, tricarinate, the median keel prominent. Petals 2 mm. long, variable, about 2 mm. wide below the tip, dolabriform, emarginate on the anterior margin, obtuse; below the middle on the upper half — on the inner surface — a papilliform callus is situated on or near the anterior margin. Labellum 2.5 mm. long, 1.5 mm. wide near the tip, unguiculate, sagittately 3-lobed; the lateral lobes or auricles retrorse, parallel with or appressed to the claw, with a prominent complanate callus at the base of each lobe; middle lobe subacute, round-obtuse in front, the lateral margins denticulate or fimbriate. Column 3 mm. long, produced at base into a short foot, on each side near the summit with a deflexed or pendent triangular-acuminate acute wing; clinandrium obscurely crenulate, produced behind the anther into a linear denticulate membrane.

Closely allied to *Masdevallia simula* Reichb. f., but clearly distinguished from that species by the strongly caudate sepals, and by differences in the structure of the labellum and column. From *M. guatemalensis* Schltr. it differs also in having caudate sepals.

GUATEMALA, Department of Alta Verapaz, Cubilquitz,  
*H. v. Tuerckheim* 7784, August 1900. Flowers rose-brown.  
 (TYPE in Herb. Ames No. 7341.)

*Masdevallia Livingstoneana* *Roezl & Reichb. f.* in  
*Gard. Chron.* ser. 2, 2 (1874) 322; *Reichb. f.* in *Gard. Chron.*  
 ser. 2, 4 (1875) 290; Woolward & Lehm. *Genus Masdev.*  
 (1896) 151, under Species now excluded from the Genus  
*Masdevallia* (Referred to *Pleurothallis*); Rolfe in *Orch.*  
*Rev.* 26 (1918) 119; *Schltr.* in *Fedde Repert. Beihefte*  
 17 (1922) 15; Ames *Sched. Orch.* 4 (1923) 9.

*Scaphosepalum panamense* *Schltr.* in *Fedde Repert.*  
 12 (1913) 205. *Masdevallia panamensis* Ames *Sched. Orch.*  
 4 (1923) 9.

The type of *Masdevallia Livingstoneana* was discovered  
 by Benito Roezl in the autumn of 1873, presumably near  
 Culebra on the Isthmus of Panama. Most of the plants  
 which made up the type collection were nearly dead when  
 they reached England, but a few which survived the ocean  
 voyage were sold at auction in London for F. Sander.

Reichenbach published two descriptions. The first one  
 appeared in the *Gardeners' Chronicle* of 1874. At Roezl's  
 request the species was dedicated to Dr. Livingstone. The  
 first description was sadly incomplete. In it no mention  
 whatever was made of petals, labellum or column. It would  
 seem that Reichenbach had to rely on a water-color sketch  
 in the preparation of his diagnosis. At all events, a water-  
 color sketch found a place in his herbarium and bears on its  
 face what appears to be a rough draft of the original de-  
 scription.

In 1875, when Reichenbach published his second de-  
 scription, he began the English characterization with these  
 significant words: "I have just the first two fresh flowers at  
 hand." From this statement I assume that he had not seen,  
 at an earlier date, dried flowers which were serviceable for  
 analysis. It may well be that with the first flowers available  
 for a complete diagnosis he hastened to clarify a species  
 which he knew well had been imperfectly characterized.

Unfortunately there are perplexing speculations as to what constitutes the actual type of *Masdevallia Livingstoneana*, because there were two importations of the species from which Reichenbach might have obtained the material on which he relied for amplification of the original description. Mr. F. Sander informed R. A. Rolfe that after the sale of the first importation (the plants having been distributed simply as *Masdevallia* sp.), Roezl arrived at the old nursery in George Street, St. Albans, with living specimens and dried flowers. It was at this time that Roezl suggested the name *Masdevallia Livingstoneana*, in honor of Dr. Livingstone, whose body had just been brought home by Stanley. Reichenbach did not abolish ambiguity as to the material that constitutes the type when he attempted to make atonement for his ill-advised attempt to establish a new species with an incomplete description, for in his notes he failed to assure us that the flowers he examined came from specimens collected by Roezl in Panama. He simply reported that the fresh flowers came from Baden, where they had appeared in the orchid collection of the Prince Egon von Fürstenberg. In view of the evidence it would seem that the sketch on which Reichenbach wrote the first rough draft of the description which appeared in the 1874 issue of the *Gardeners' Chronicle* is the actual type of *Masdevallia Livingstoneana*.

Although living plants of the species reached England it promptly passed into the category of imperfectly known orchids. Miss Woolward, in her monograph of *Masdevallia*, referred it to *Pleurothallis*. Rolfe, in the *Orchid Review*, when he published a reply to enquiries regarding *Masdevallia Livingstoneana*, was unable to furnish a clue as to its identity or affinity, notwithstanding his exceptional opportunities for dissipating the mists which surrounded many of Reichenbach's secluded types.

Dr. Schlechter, in his recent studies of the orchids of Panama collected by C. W. Powell, arrived at the conclusion that a specimen collected near Arrijan, west of the Canal, represented the long-lost *Masdevallia*. I gave my reasons, in *Schedulae Orchidianae* 4, for taking exception to Dr.



Schlechter's conclusion. It seemed to me that Powell's specimens did not agree in the aspect of the flowers with the colored sketch in the Reichenbachian Herbarium. The posture of the sepals, their coloration and their relative length did not give the impression of being similar to the species which Reichenbach had attempted to describe from a drawing. Furthermore, in the light of Reichenbach's amplified description, the petals and labellum of Powell's specimens seemed to be quite different from those of *M. Livingstoneana*. Very recently I have been able to make exhaustive studies of the species through herbarium material and specimens preserved in alcohol. These studies have substantiated Dr. Schlechter's conclusion, and indicate that the water-color sketch of the type is simply a record of one of the extremes of variation to which *Masdevallia Livingstoneana* is subject.

The accompanying illustration has been prepared to exhibit the range of variation that characterizes the flowers of *Masdevallia Livingstoneana*. The sketches in the lower right-hand corner were drawn with the aid of the camera-lucida from material collected and preserved in alcohol by Mr. Powell. In the upper right-hand corner a portion of the colored sketch, which I have designated as the type, has been reproduced from a photograph, the salient details having been drawn with the camera-lucida. The analytical drawings of the petal, labellum and column were made from the flower marked *a*. The flower marked *b* represents Powell's No. 223, which is representative of the form which has been called *Masdevallia panamensis*. With the exception of the analytical drawings, all figures are natural size. The labellum petals and column remain fairly constant in outline and structure, notwithstanding the variations noticeable in the calyx. [Fig. 2.]

*Stelis crescentiicola* Schltr. in Fedde Repert. 16 (1920) 442.

*Stelis flexuosa* Kränzl. in Engl. Bot. Jahrb. 26 (1899) 450, non Lindl. *Stelis Isthmi* Schltr. In Fedde Repert. Beihefte 17 (1922) 17. *Stelis praemorsa* Schltr. in Fedde Repert. Beihefte 17 (1922) 17.



## NEW OR NOTEWORTHY ORCHIDS

The type of this species was collected by F. C. Lehmann (No. 4540) along the Chagres River. It is well characterized by the apical part of the labellum having translucent cells, each cell with a bundle of calcium oxalate crystals in its centre. In recent studies of material from Panama I have examined specimens of Powell's 232 (type number of *S. Isthmi* Schltr.) and 234 (type number of *S. praemorsa* Schltr.), and also flowers preserved in alcohol of Powell's 284 sent to me without a name. I have been unable to discover structural differences which admit of specific differentiation between the plants designated by these numbers and *Stelis crescenticola*. Slight differences in the structure of the labellum occur in flowers from the same plant that are fully as weighty, for specific differences, it seems to me, as those emphasized by Dr. Schlechter in his characterizations of *S. Isthmi*, *S. praemorsa* and *S. crescenticola*. To utilize such differences for the recognition of distinct species seems hardly worth while. Powell in his field notes indicates that the flowers of *S. Isthmi* are purple, those of *S. praemorsa* yellow-green with the basal part purple, but these color distinctions do not appear to me to be correlated with structural differences, and simply indicate individual variation. Powell 285 is structurally similar to the other specimens examined, but lacks the purplish or pinkish tinge which is the normal color of the species. The flowers are described as being white.

The Lehmann specimens in the United States National Herbarium indicate that the plants were collected before the racemes had attained full development. This gives them a somewhat dissimilar aspect to the Powell plants. In the flowers examined I found that the labellum had shrivelled considerably in drying. As a result of this it exhibits differences from fresh material and from well-preserved herbarium specimens that might be regarded as of sufficient importance for the recognition of a distinct species. The structure of the labellum, however, is the same as in the Powell specimens.

*Stelis crescenticola* Schltr., *S. barbata* Rolfe and *S. microchila* Schltr. are closely related species characterized in part by the labellum having a fleshy basal half and a blunt

somewhat spongy more or less dorso-ventrally flattened apical half. In *S. crescenticola* the apical half is variable in length and breadth, and sometimes, perhaps by injury or in dried specimens by desiccation, may become obsolescent, the tendency toward obsolescence being by no means uniform in the same plant. From the description of *Stelis praemorsa* it would seem that the flowers studied were in this latter category.

PANAMA.

***Stelis Williamsii* Ames** *Orchidaceae* 7 (April 1922) 133.

*Stelis collina* Schltr. in Fedde *Repert. Beihefte* 17 (December 1922) 15.

This species, which is in part distinguished by the glandulose upper margin of the petals and by purplish flowers, is represented in my herbarium by the type collected in Cana by R. S. Williams and by a duplicate of Powell's 180, on which Schlechter relied in drawing up his description of *Stelis collina*. Structurally *S. Williamsii* and *S. collina* are identical, although in Powell's 180 the sepals are slightly shorter than in the type of *S. Williamsii*.

PANAMA.

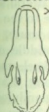
***Pleurothallis alpina* Ames sp. nov.** *Caules secundarii caespitiosi, triangulares, longitudinaliter sulcati, erecti, basi vaginis brunneis chartaceis vestiti, monophylli. Folium valde coriaceum, elliptico-lanceolatum, apice bidenticulatum apiculo interjecto. Flores mediocres, in axilla folii congesti. Pedunculi tri- vel quadriflori, e bractea spathacea orientes. Bractee flores subtendentes infundibuliformes. Sepala lateralia demum libera, valde coriacea, margine minute glandulosa, oblongo-lanceolata, acuta, extus per medium carinata, carina minute scabridula, trinervia. Sepalum dorsale oblongum, supra medium usque ad apicem angustatum, incrassato-carnosum, extus per medium carinatum. Petala membranacea, oblonga, apice angustata, in acumen brevem producta, margine supra medium sparse et irregulariter denticulata, trinervia, sepalis multo breviora.*

Fig. 3

Flower x4



Labellum x7



Column and labellum x6



Column



Lateral sepals

Dorsal sepal

Petal x6



PLEUROTHALLIS

*alpina* Ames

Labellum carnosum, spathulatum, obtusum, margine supra medium inaequaliter dentatum, infra medium labelli utrinque unidentatum vel unilobulatum; lobulis triangularibus, acutis, erectis, porrectis, apice lobulorum medium labelli excedentibus. Discus glaber, supra medium utrinque breviter bicarinatus, trinervius. Columna carnosus, apice paucidenticulata.

Secondary stems 4–20 cm. long, with elongated brownish sheaths at the base, triangular with a groove between each angle, monophyllous, somewhat dilated above. Leaf 8–10 cm. long, 1.5–2 cm. wide, narrowly elliptic-lanceolate, very coriaceous, bidenticulate at the tip with a short apicule between the teeth, narrowed below and passing imperceptibly into the dilated summit of the secondary stem. Peduncles congested in the axil of the leaf, clothed with several infundibuliform bracts, with the 4-flowered raceme about 1 cm. long, stout, sheathed at base by an ample spathaceous bract. Pedicel with the ovary 2.5–3 mm. long, stout, subtended by infundibuliform bracts. Lateral sepals at first coherent nearly to the tip, becoming free to the base, 6 mm. long, 2 mm. wide, oblong-lanceolate, acute, very fleshy, traversed longitudinally — along the middle of the outer surface — by a minutely scabridulous keel, margin obscurely glandulose. Dorsal sepal 6.5 mm. long, 2.5 mm. wide, oblong, subacute, very fleshy, minutely glandulose on the margin and outer surface, carinate. Petals 3 mm. long, 1 mm. wide, oblong, terminating in a slender acumen, 3-nerved, the margin of the upper half minutely and irregularly denticulate. Labellum very fleshy, 4 mm. long, 1.5 mm. wide above the middle, spatulate, with a triangular acute lobe on each side 1.5 mm. above the base, margin of the upper half conspicuously dentate, the lower teeth larger than the upper ones and curved sharply forward; lobules 1 mm. long. Disc smooth, 3-nerved, with a short keel on each lateral nerve near the middle. Column 4 mm. long, produced into an abbreviated foot at base, apex minutely and unequally denticulate or tridentate.

This species is very closely allied to *Pleurothallis sicaria* Lindl., a native of Trinidad. At first glance I mistook the

Panama plant for that species. In proposing *P. alpina* I do so with the realization that it differs from *P. sicaria* in minor details only, and may prove to be nothing more than a geographical variety. The labellum is obtuse, not acute as in *P. sicaria*, with the upper two-thirds spatulate rather than lanceolate. Lindley referred material from widely separated localities to *P. sicaria*, including *P. tripteris* Reichb. f. — a native of Venezuela—and on the same sheet with what I take to be the type of his species he mounted specimens of *P. pantasmi* Reichb. f. which had been obtained by Oersted in Nicaragua. His analytical drawings are from the Loddiges specimen originally sent from Trinidad. [Fig. 3.]

PANAMA, Province of Chiriqui, "Caramillia," C. W. Powell 282, collected in 1923. Grows in sunny locations; found on decayed tree trunks. Flowers in March. Sepals and petals olive-green on outer side, striped with dark purple-brown on the inner side. Lip purple. The stems are triangular with a groove between each angle. 4500 feet altitude. (TYPE in Herb. Ames No. 25025.)

**Pleurothallis praegrans** Ames sp. nov. Caules secundarii elongati, verisimiliter caespitosi, vagina ampla prope medium vestiti. Folium permagnum, orbiculari-ovatum, acuminatum, acutum, in sicco vix concavum, basi cordatum. Pedunculi fasciculati, plus minusve septem, ex axilla folii orientes, vagina complanata spathacea subtenti, apicem folii vix aequantes. Racemi multiflori. Pedicellus cum ovario gracilis, elongatus, bracteam racemi multo excedens. Flores mediocres, sepalis minute purpureo-maculatis. Bractee inflorescentiae diaphanae, infundibuliformes. Sepala lateralia usque ad apicem cohaerentia, laminam valde concavam semi-ovatum formantia. Sepalum dorsale concaviusculum, oblongo-ovatum, trinervium, apice acutum. Petala spathulata, e medio usque ad apicem obtusum in-crassata, trinervia. Labellum circuitu transverse et anguste ellipticum, in positu naturali triangulari-ovatum a latere visum, intus utrinque callosum, callis obliquis. Columna abbreviata. Pollinia duo.

Secondary stems probably caespitose, with a large sheath near the middle, up to 83 cm. long, exceeding 6 mm. in diameter, when dry longitudinally sulcate, monophyllous. Sheath 10.5 cm. long, dilated, acute, scarious. Leaf 31.5 cm. long, 20.5 cm. wide below the middle, orbicular-ovate, acuminate, acute, cordate at the base, nervose, subcoriaceous when dry. Peduncles fasciculate, about seven, emerging from a complanate spathaceous bract near the axil of the leaf, with the raceme up to 21 cm. long, flexuose. Bracts of the raceme subinfundibuliform, translucent, about 2.5 mm. long, much shorter than the pedicel, about 1 mm. wide at the mouth. Pedicel with the ovary about 7 mm. long, very slender, ascending. Flowers whitish in dried specimens, dotted with dark purple. Lateral sepals 3.5 mm. long, united to the apex, forming a deeply concave lamina which is suborbicular when spread out. Dorsal sepal 2.5-3 mm. long, 1 mm. or more wide, oblong-ovate, acute, 3-nerved, the lateral nerves closed. Petals nearly 2 mm. long, hardly 1 mm. wide, spatulate, 3-nerved, much thickened above the middle. Labellum 1 mm. long, 3 mm. wide, narrowly transverse-elliptical when spread out, apiculate, sessile; when in natural position it is conduplicate and is semi-elliptical or triangular-ovate when seen from the side. Disc with a fleshy, obliquely situated, protuberant callus on each side. Column 1 mm. long, fleshy. Pollinia two, elongated, pyriform.

*Pleurothallis praegrans* is one of the largest species of the genus known to occur in the Central American flora. It belongs to the same alliance as *P. galeata* Lindl., from which it differs conspicuously in having thickened, spatulate petals and a different labellum.

PANAMA, Cana and vicinity. *R. S. Williams* 973, April 17 to June 8, 1908. On trees. 6000 feet altitude. (TYPE in N. Y. Bot. Gard.)

***Pleurothallis scandens* Ames sp. nov.** Caules primarii valde elongati, scandentes, vaginis minute verruculosi arcte appressis vestiti; caules secundarii ad nodos caulium primariorum plus minusve tres, graciles, infra medium vaginis hispidulis arcte appressis vestiti, superne vaginis





similibus retrorso-hispidulis obtecti, monophylli, basi radicantes. Folia vix coriacea, anguste linearia, utrinque angustata, apice minute tridenticulata. Flores ex axillis foliorum orientes, bracteis spathaceis rufis glandulosis subtendentibus. Sepala lateralia usque ad medium plus minusve cohaerentia, elliptico-oblonga, trinervia, acuta vel subobtusa, extus glandulosa. Sepalum dorsale lanceolatum, acutum, trinervium. Petala triangularia, subacuta, trinervia, margine obscure et sparse glandulosa, apice incrassata. Labellum carnosum, subpanduratum, obtusum, glandulosum, per medium bicarinatum. Columna in pedem elongatum producta, usque ad apicem dilatata; clinandrium post antheram sparse et breviter laciniatum vel breviter excisum. Pollinia duo.

A scandent herb with the primary stems up to 30 cm. long, terminated at the growing point by a grass-like leaf 7-8 cm. long and bearing — at intervals of 10-18 cm. — fascicles of three or four secondary stems. Sheaths of the primary stem closely appressed, about 1 mm. in diameter, rusty-red when dry, the younger sheaths densely retrorse-hispidulous, becoming minutely verruculose as they mature. Secondary stems monophyllous, proliferous, 2-6 cm. long, slender, concealed by about four cylindrical closely appressed sheaths of which the lower two are provided with retrorse bristles; uppermost sheath dilated toward the apex, the expanded portion clasping the base of the leaf. Leaf 5-7 cm. long, 3-4 mm. wide, linear, gramineous when dry, minutely tridenticulate at the tip, narrowed and conduplicate at the base. Flowers with abbreviated peduncles clustered near the axil of the leaf, subtended by dilated rufous spathaceous glandular bracts. Pedicels 2 mm. long. Ovary 1.5 mm. long. Lateral sepals united to about the middle, 4 mm. long, 1 mm. wide above the middle, elliptic-oblong, 3-nerved, forming a concave base. Dorsal sepal about 5 mm. long, up to 2 mm. wide, lanceolate, acute, 3-nerved, each lateral nerve branched. Petals 5 mm. long, 1 mm. wide near the base, long-triangular, thickened near the apex, subacute, 3-nerved, with the margin obscurely, sparsely and irregularly glandulose. Labellum 1.5 mm. long.

fleshy, panduriform, obtuse, glandulose. Disc conspicuously bicarinate, with the keels extending nearly to the apex of the labellum. Column including the foot 3 mm. long, dilated upward, with a tooth on each side near the summit; clinandrium behind the anther sparsely and shortly laciniate or bifid. Pollinia two.

A very distinct species without any close allies in Central America. [Fig. 4.]

COSTA RICA, Cartago, La Estrella, C. H. Lankester & Alfredo Sancho 401. A delightful scandent species occurring in forest-ridges. (TYPE in Herb. Ames No. 24726.)

**Lepanthes eximia** Ames *sp. nov.* Herba pusilla, epiphytica, inconspicue hispidula. Caules caespitosi, usque ad quinquevaginati, erecti vel ascendentes, graciles, monophylli. Vaginae ore acuminato, elongatae, caules obtegentes, arcte appressae, nervis maculatis. Folium ellipticum, marginatum, bidenticulatum apiculo interjecto. Pedunculi singuli vel fasciculati. Racemi pauciflori. Sepala lateralia vix usque ad medium cohaerentia, lanceolata, subacuta, margine glandulosa, uninervia nervo carinato. Sepalum dorsale triangulare, acutum, margine sparse glandulosum, trinervium nervo medio carinato glanduloso. Petala linearia, margine anteriore protuberanti. Labellum subquadratum vel oblongum, antice profunde bilobatum; lobis rotundato-obtusis, porrectis. Discus glaber. Columna brevis.

Epiphytic herb 2.5–3.5 cm. high. Secondary stems 1–2.5 cm. long, caespitose, sheathed, unifoliate. Sheaths about five, closely appressed, muriculate on the longitudinal nerves, expanded abruptly into an ovate-lanceolate acuminate tip which is marginate and muriculate on the margin. Leaf elliptical, up to 1 cm. long, 5 mm. wide, coriaceous, distinctly marginate, abruptly contracted at base into an abbreviated petiole, tridenticulate at the apex, the middle tooth an apiculate continuation of the mid-nerve. Peduncles few or solitary in the axil of the leaf, with the few-flowered raceme about 1 cm. long, slender. Flowers minute, solitary or as many as three in a loose raceme. Bracts of the

inflorescence infundibuliform, sparsely glandular. Pedicel with the ovary about 2 mm. long. Ovary conspicuously winged longitudinally. Lateral sepals united almost to middle or for one-third of their length, 2.5 mm. long, about 1 mm. wide near the base, lanceolate, subacute, glandular on the margin, 1-nerved through the middle, the nerve prominent. Dorsal sepal united with the lateral sepals, 2.5 mm. long, up to 2 mm. wide, triangular or triangular-ovate, acute, glandular-ciliate on the margin, 3-nerved, the middle nerve lightly carinate and glandular. Petals 1 mm. long, equaling the column and parallel with it, linear above the base, the margin protuberant on the anterior basal portion. Labellum 1.5 mm. long, scarcely 1 mm. wide, subquadrate, bilobed or bifid at the apex; the lobes or divisions obtuse, rounded and porrect. Disc ecallose. Column short, without a distinct foot.

Without close allies in the Central American flora, but habitually similar to *Lepanthes tipulifera* Reichb. f. The floral structure indicates transitional tendencies toward *Pleurothallis*.

COSTA RICA, Cartago, Estrella, C. H. Lankester & Alfredo Sancho 437 (TYPE in Herb. Ames No. 24409): Hills south of Cartago, C. H. Lankester K334 (Herb. Kew.).

**Lepanthes rostrata** Ames sp. nov. Radices fibratae. Caules secundarii caespitiosi, ascendentes, vaginis muriculatis vestiti, monophylli. Vaginae elongatae, apice in laminam marginatam hispidulam expansae. Folium coriaceum, ellipticum, prope apicem abrupte contractum, terminationem rostriformem formans, basi in petiolum brevem conduplicatum angustatum. Pedunculus folium excedens, filiformis, in racemum pauciflorum terminans. Rachis racemi nonnihil flexuosa. Flores rubrotincti, pellucidi. Sepala lateralia usque ad medium cohaerentia, laminam lanceolatam bifidam formantia, eglandulosa, valde membranacea, apice breviter caudata, margine interiore prope apicem partis liberae protuberanti. Sepalum dorsale ovato-lanceolatum, longe acuminatum, in caudam productum, valde concavum. Petala multo latiora quam longiora, transverse bilobata; lobis valde inaequalibus, oblongis, subobtusis.

## NEW OR NOTEWORTHY ORCHIDS

Labellum trilobatum; lobis lateralibus angustatis, post columnam extendentibus; lobo medio gracili, ciliato. Columna brevis, superne dilatata.

Epiphytic, caespitose herb. Roots fibrous, smooth. Secondary stems 2.5-3.5 cm. long, slender, concealed by elongated sheaths, monophyllous. Sheaths about six, 6 mm. long, sparsely hispidulous, with the bristles elongated, dilated at the apex into an ovate marginate hispidulous-margined lamina. Leaf 1.5-2.4 cm. long, up to 8.5 mm. wide, coriaceous, elliptical, abruptly contracted near the end, forming a rostrate tip which is tridentate at the apex. Peduncle about 2.8 cm. long, about twice longer than the leaf, terminating in a short loosely few-flowered somewhat flexuose raceme. Bracts of the raceme tubular, smooth. Ovary conspicuously 6-winged. Lateral sepals 1.6 cm. long, forming a lanceolate bifid 6-nerved lamina which is about 6 mm. wide at the base; free portion of each sepal 8 mm. long, 2 mm. wide at base, oblong, the interior margin — below the apex — protuberant, apex itself shortly caudate, the abbreviated tail about 1 mm. long. Dorsal sepal 1.3 cm. long, about 4 mm. wide, ovate-lanceolate, strongly concave, prolonged into a slender caudate tip. Petals transversely linear-oblong, apiculate, about 5 mm. wide, scarcely 1 mm. long, appressed to the sides of the column, the posterior portion longer and broader than the anterior. Labellum trilobed; lateral lobes 2 mm. long, about .5 mm. wide, unguiculate from about the middle, narrowly elliptical, the basal portion obliquely spreading and prolonged behind the column, the anterior portion inclined obliquely inward in front of the column; middle lobe an inconspicuous filiform densely glandulose appendage, thickened at the tip. Column 2 mm. long, dilated upward.

It differs from *Lepanthes Chameleon* Ames in having eciliate sepals. *L. horrida* Reichb. f. is a close ally of *L. rostrata*, but differs conspicuously in having all of the sepals caudate, a dissimilar labellum and hispidulous petals.

COSTA RICA, Cascajal, C. H. Lankester 59. Flowers large on long peduncles, semi-transparent, stained with red. 5500 feet altitude. (TYPE in Herb. Kew.)

**Epidendrum bicameratum** Reichb. f. in Gard. Chron. (1871) 1194.

*Epidendrum squalidum* Lindl. Fol. Orch. Epid. (1853) 8, non La Llave & Lex. *Epidendrum Karwinskii* Reichb. f. in Gard. Chron. (1869) 710, non Reichb. f. in Bonpl. 4 (1856) 327. *Encyclium squalidum* Lindl. apud Stein Orchideenb. (1892) 224, in synonym.

The type specimen was collected by Karwinsky in Mexico and given to Lindley by Bateman. It consists of an inflorescence. Lindley confused the species with *Epidendrum squalidum* La Llave & Lex. Reichenbach described it as a new species under the name *E. Karwinskii*, unmindful of an earlier publication in which he had given the name to quite another species. In Reichenbach's Herbarium there is a specimen from Galeotti (No. 5313) which represents *E. bicameratum*. The specimen resembles Lindley's. It also resembles material in the Kew Herbarium which Rolfe identified as *E. bicameratum*. This very interesting and extremely rare species was omitted without comment from Schlechter's Kritische Aufzählung der bisher aus Zentral-Amerika bekanntgewordenen Orchidaceen.

**Epidendrum bisulcatum** Ames sp. nov. Herba epiphytica, valde ramosa, ramis plus minusve elongatis vel abbreviatis, vaginis mox deciduis obtectis. Folia duo (vel tria?), approximata, oblonga, utrinque attenuata, acuta, in petiolum conduplicatum valde abbreviatum a latere compressum contracta, racemo paucifloro vix longiora. Pedunculus valde bialatus, erectus. Racemus abbreviatus, plus minusve septemflorus. Bracteae flores subtendentes ascendentes, rigidae, triangulares, acutae, ovario pedicellato multo breviores. Sepala lateralia patentia, late oblonga, abrupte et inaequaliter acuta, carnosae, in vivo olivaceo-viridia. Sepalum dorsale erectum, incurvatum vel supra medium recurvatum, oblongum, subobtusum, basi leviter angustatum. Petala valde reflexa, lineari-spathulata, acuta vel obtusa, carnosae, olivaceo-viridia. Labellum suborbiculare, valde incrassatum, simplex, apice breviter retusum, prope basim disci bicallosum, callis papilliformibus in-

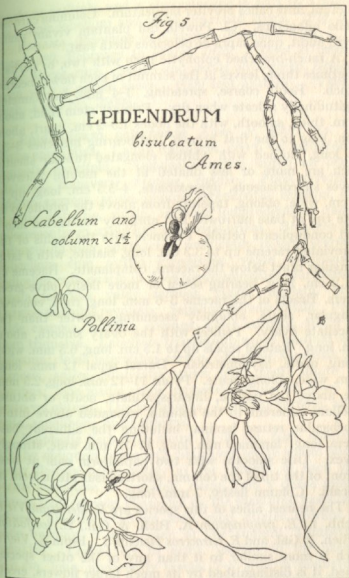
Fig 5

EPIDENDRUM  
*bisulcatum*  
Ames.

Labellum and  
column  $\times 1\frac{1}{2}$



Pollinia



structum, ante callos breviter bisulcatum. Columna carnosa, labello adhaerens. Cl. Powell, qui plantam vivam examinavit, addit, quae supra de coloribus dicta sunt.

A much-branched epiphytic herb with two, or perhaps sometimes three, leaves at the summit of each flower-bearing branch. Roots coarse, spreading, 3-4 mm. in diameter, longitudinally sulcate when dry. Primary stem rigid, about 3 mm. thick, smooth, with the nodes 1.5-2 cm. apart, about 7 cm. long to the first branch, leaf-bearing branches 3-3.5 cm. long, clothed with whitish elongated tubular sheaths which are more or less dilated at the mouth, 2-leaved. Leaves subcoriaceous, approximate, 4-5.5 cm. long, up to 1.2 cm. wide, oblong, tapering from above the middle to an acute tip, at base narrowed and abruptly contracted into a short conduplicate petiole. Peduncle with the rachis of the abbreviated raceme up to 3.3 cm. long, bialate, with a large triangular bract below the raceme, complanate. Raceme up to 1.2 cm. long, bearing seven or more fleshy olive-green flowers. Bracts of the raceme 3-6 mm. long, rigid, concave, triangular, acute, obliquely ascending, shorter than the pedicellate ovary. Pedicel with the ovary smooth, about 1 cm. long. Lateral sepals up to 1.5 cm. long, 6.5 mm. wide, oblong, acute, asymmetrical. Dorsal sepal 12 mm. long, 6 mm. wide, oblong, acute. Petals 11-12 mm. long, 2.5 mm. wide above the middle, linear-spatulate, acute or obtuse. Labellum adherent to the column, expanded above into a suborbicular retuse lamina, including the adherent base 1.5 cm. long; lamina 9 mm. long, 11-12 mm. wide, strongly convex. Disc smooth, with two papilliform calli at base in front of the tip of the column, shortly bisulcate in front of the calli. Column fleshy, 7 mm. long.

The nearest allies of this species are *Epidendrum Viejii* Reichb. f., *E. propinquum* A. Rich. & Gal., *E. ledifolium* A. Rich. & Gal. and *E. tetraceros* Reichb. f. From *E. Viejii*, which is more similar to it than any of the other species named, it is distinguished by its much larger flowers, erect, not decurved, peduncles and by the different calli on the disc of the labellum. It belongs to that section of *Euepidendrum* which lacks large spathaceous bracts subtending the pe-



duncle or pedicels, and is characterized in part by a more or less simple labellum and much-branched stems. [Fig. 5.]

PANAMA, Province of Chiriqui, Palo-alto Hill, C. W. Powell 280, February to March 1923. Grows in medium sunny places, rare. Sepals and petals olive-green, labellum green with a purple sheen. 6000 feet altitude. (TYPE in Herb. Ames No. 25006.)

***Epidendrum cobanense* Ames & Schltr. sp. nov.**

Herba epiphytica. Caules caespitosi, erecti vel ascendentes, vaginati, paucifolii. Vaginae foliorum usque ad ostium dilatatae, transverse rugosae, rigidae. Folia teretia ut videtur, carnosa, acuta, oblique ascendente, disticha, inter se satis distantia, rigida, in sicco longitudinaliter rugosa. Inflorescentia ex axilla folii superioris oriens. Bracteae infra pedunculum duae, spathaceae, imbricatae, in sicco scariosae, pedicellum cum ovario excedentes, valde complanatae. Pedicellus cum ovario in sicco longitudinaliter plurisulcatus. Sepala lateralia valde carnosa, rigida, ligulata, acuta, margine nonnihil revoluta. Sepalum dorsale simile. Petala valde carnosa, anguste oblonga, apice hamata, supra medium triquetra. Labellum trilobatum, supra medium valde deflexum; lobis lateralibus erectis, columnae appressis, subcarnosis, antice rotundatis, quam lobo medio multo brevioribus; lobo medio valde incrassato, subtereti, apice subacuto vel obtuso. Discus callosus. Columna carnosa, abbreviata, semilibera, apice integra.

Epiphytic herb with stems 10-30 cm. high, characterized by obliquely ascending distichous terete leaves and by fleshy flowers borne singly at the summit of each stem. Stems caespitose or crowded, rising from a dense mass of fibrous roots, simple, concealed by the sheathing bases of the leaves. Sheaths 1-2.5 cm. long, rigid, dilated upward to a wide opening, 5 mm. wide at the summit, transversely wrinkled. Leaves six to eight, jointed to the sheaths, 3-7 cm. long, apparently terete, 2-3 mm. in diameter in dried specimens, obliquely ascending, somewhat curved, the uppermost leaf subtending the spathaceous bracts of the inflorescence. Flower solitary. Pedicellate ovary about

1.6 cm. long, entirely concealed by two ample spathe-like scarious imbricating bracts which are sessile in the axil of the uppermost leaf. Lateral sepals 1 cm. long, about 3 mm. wide, very fleshy, ligulate-oblong, margin more or less revolute, apex acute. Dorsal sepal of similar texture, ligulate, subacute. Petals about 1 cm. long, 2.5 mm. wide, narrowly oblong, sharply reflexed at the tip, apical portion triquetrously thickened, acute. Labellum about 1 cm. long, distinctly 3-lobed; lateral lobes rounded in front, erect, closely appressed to the column, much less thickened than the middle lobe, about twice longer than the column; middle lobe sharply deflexed or decurved, 6 mm. long, about 1.5 mm. wide, subterete or obscurely quadrangular, acute, rugose when dry. Disc callose beneath the column. Column about 4 mm. long, fleshy, with the clinandrium entire.

In general aspect this species suggests *Epidendrum teretifolium* Sw., from which it differs conspicuously in the structure of the labellum. [Fig. 1.]

GUATEMALA, Department of Alta Verapaz, Cobán, *H. v. Tuerckheim II 1612*, May 1908. 1350 meters altitude (Type): Samác, *Harry Johnson 321*, May 1, 1920. Flower brown, succulent. 4000 feet altitude. (TYPE in U. S. Nat. Herb. No. 795714. FRAGMENT OF TYPE in Herb. Ames No. 23746. DUPLICATE TYPE in Herb. Schlechter.)

***Epidendrum diurnum*** (*Jacq.*) *Reichb. f.* Beitr. Orch. Centr. Am. (1866) 81, sub *E. ramonense* Reichb. f.; Cogn. in Urb. Symb. Antill. 6 (1910) 497.

*Limodorum diurnum* *Jacq.* Icon. Pl. Rar. (1786-93) t. 603. *Cymbidium diurnum* *Sw.* in Schrad. Journ. Bot. 1 (1799) 221. *Epidendrum ochranthum* *A. Rich.* in Sagra Hist. Nat. Cub. 11 (1850) 237, t. 78 bis. *Epidendrum virens* *Lindl.* in Paxt. Flow. Gard. 1 (1851) 152. *Epidendrum Wageneri* *Klotzsch* in Allg. Gartenz. 19 (1851) 250. *Encyclia virens* *Schltr.* Orchideen (1914) 212. *Encyclia diurna* *Schltr.* in Fedde Repert. Beihefte 6 (1919) 75; Britton & Millsp. Bahama Fl. (1920) 92. *Encyclia Wageneri* *Schltr.* in Fedde Repert. Beihefte 6 (1919) 75.

*Epidendrum diurnum* (Jacq.) Reichb. f. and *E. virens* Lindl. are sometimes regarded as distinct species. Lindley's specimens of *Epidendrum virens* resemble so closely the figure of *Limodorum diurnum* Jacq. that we are justified in agreeing with Cogniaux that they constitute a single species. Reichenbach in proposing the combination *Epidendrum diurnum* cited *E. virens* Lindl. as a synonym.

TROPICAL AMERICA, Mexico, Guatemala, West Indies and Venezuela.

***Epidendrum Kienastii* Reichb. f.** in Gard. Chron. ser. 3, 2 (1887) 126.

This rare Mexican species which is known to me only through the type specimen in Reichenbach's Herbarium and a specimen in the Kew Herbarium received from Kienast in 1898, presumably from the type plant cultivated in Zurich, is not included in Schlechter's *Kritische Aufzählung der bisher aus Zentral-Amerika bekanntgewordenen Orchidaceen*. It is a very distinct species, quite unlike any other Mexican *Epidendrum* that I have seen. The sepals and petals are about 2 cm. long, the former oblong and acute, the latter spatulate. The labellum is about 2 cm. long, somewhat less than 1 cm. wide across the large terminal lobe. The lateral lobes are smaller than the middle one and are spatulate in outline. On the disc between the lateral lobes there is a forcipate callus. The flowers are described as being rose-color with a white labellum.

MEXICO.

***Epidendrum laterale* Rolfe** in Orch. Rev. 20 (1912) 280, 319, nomen tantum; 28 (1920) 160.

In *Schedulae Orchidiana* 3 (1923) 19, I referred this species to synonymy under *E. Rousseauae* Schltr. It seemed to me that the only substantial difference between Rolfe's type specimen and the material of *E. Rousseauae* that I had been able to study was one of size, *E. laterale* having larger flowers and more robust vegetative parts. Rolfe described *E. laterale* as follows: "It bears tufts of cylindrical pseudo-

bulbs, two to three inches long, with a single oblong leaf, some three inches long by about one broad. The slender spikes are about half as long as the pseudobulbs, and are borne on a small lateral growth, as in *Cattleya Walkeriana*, which afterwards develops into a pseudobulb. The spikes are protected by one or two short basal sheaths, and the flowers are light green, and over an inch across, the lip being uppermost, three-lobed, and its stalk completely confluent with the column. The lateral sepals are slightly concave, and broader than the odd one, while the petals are narrowly linear-lanceolate. It is a very distinct and very interesting little plant."

Among specimens sent to me from Costa Rica by C. H. Lankester I have found excellent material of an *Epidendrum* which is clearly referable to *E. laterale* Rolfe. It has the large flowers of the type. I have compared this specimen with authentic material of *E. Rousseauae*, and have arrived at the conclusion that two distinct species are represented. It would seem that the difference in size between the flowers is simply a conspicuous manifestation of other differences. *Epidendrum Rousseauae* from the tip of the upper sepal to the tip of the labellum is about 1.9 cm. long. Measured similarly the flowers of *E. laterale* are 3-3.5 cm. long. Rolfe described the flowers of *E. laterale* as over one inch across. *E. Rousseauae* is slightly more than one-half inch across when the lateral sepals are spread out, while *E. laterale*, as represented by Lankester's specimen, is from one to one and one-eighth inches across. In the middle lobe of the labellum there is a conspicuous difference between the two species, this lobe in *E. laterale* being dilated upward from a cuneate base, while in *E. Rousseauae* it is only slightly dilated from an oblong base.

COSTA RICA, Las Cóncevas, C. H. Lankester & Alfredo Sancho 372, December 1922. Flowers pale viridine-yellow; Lankester 54, December 2, 1918. Flowers and bracts mar-tius-yellow (Ridgway). Rachis green. Pseudobulbs terete, monophyllous. Inflorescence radical, pendent. (TYPE in Herb. Kew., Lankester 192.)

*Epidendrum porphyreum* Lindl. in Hook. Journ. Bot. 3 (1841) 86, tt. 7, 8.

On the evidence of a Bernoulli specimen preserved in the Kew Herbarium, the range of this Peruvian species was extended to Guatemala by Hemsley in *Biologia Centrali-Americana*. Schlechter, in his *Kritische Aufzählung der bisher aus Zentral-Amerika bekanntgewordenen Orchidaceen* (*Bot. Centralbl.* 36, Abt. 2 (1918) 466), admitted the species to his list without comment. The Bernoulli specimen is very different from *E. porphyreum*, and seems to be conspecific with *Epidendrum Clowesii* Batem. From available evidence it would seem that *E. porphyreum* is not a native of Central America.

*Eria Taylori* Ames sp. nov. Herba epiphytica, pauciramosa, foliis prope apicem ramorum confertis. Caules rigidi ramis foliosis distantibus. Folia in sicco plus minusve chartacea, anguste lanceolata, nervosa, acuminata, acuta, plus minusve quattuor. Pedunculi ex axillis foliorum orientes, folia aequantes vel excedentes. Racemus multiflorus, arcuatus. Pedicelli cum ovario fusco-glandulosi. Bracteae glabrae. Sepala lateralia triangulari-ovata, subacuta, quinquenervia, membranacea, mentum obtusum formantia. Sepalum dorsale lanceolatum, subacutum, basi valde concavum. Petala elliptico-lanceolata, subacuta, trinervia, nervis lateralibus ramosis. Labellum ovatum, obtusum, margine prope medium labelli inaequaliter dentatum, ecallosum. Columna carnea, sepalo dorsali plus minusve duplo brevior.

Roots fibrous, stiff, spreading. Stems 30 cm. or more long, sparingly branched, about 5 mm. in diameter near the base, concealed for the most part by elongated tubular sheaths which in dried specimens are rubeolous. Leaves up to 12 cm. long, 1-1.6 cm. wide below the middle, narrowly lanceolate, rounded at the base, tapering gradually from above the middle to an acute tip, chartaceous when dry, crowded on the upper part of the branches, usually four or five in number. Peduncles ascending from the axils of the leaves, densely and shortly glandular, with the raceme 12 cm.

or more long, with several ovate-lanceolate smooth somewhat spreading bracts. Racemes about 7 cm. long. Bracts of the raceme 5 mm. long, smooth or only sparsely glandular along the margin. Lateral sepals 7.5–8 mm. long, 3 mm. wide at the base, triangular-ovate, forming a conspicuous mentum which is 2.5 mm. long and obtuse. Dorsal sepal about 8 mm. long, lanceolate, subacute, strongly concave at the base, more than twice longer than the column. Petals 7.5 mm. long, 2 mm. wide below the middle, elliptic-lanceolate from a broad base, subacute, 3-nerved. Labellum 6 mm. long, about 4 mm. wide near the base, broadly ovate, obtuse, with the margin on each side — near the middle — coarsely and unequally dentate, 3-nerved, the lateral nerves much branched. Disc ecallose. Column fleshy, 3 mm. long, produced at the base into an elongated foot.

The nearest ally of this species is *Eria philippinensis* Ames, which has much larger flowers, different leaves and stouter stems which are provided with swollen sheaths. From *E. vagans* Ames it differs in habit. The structure of the labellum suggests *E. dagamensis* Ames, but from that species it is quite distinct in habit.

PHILIPPINES, Luzon, Laguna Province, Mount Maquiling, *Edward H. Taylor* 25, December 13, 1922. On trees in mossy forest. Flower lavender, the tips of the petals yellow. 1000 meters altitude. (TYPE in Herb. Ames No. 25857.)

***Trigonidium Lankesteri* Ames sp. nov.** Rhizoma repens, validum. Pseudobulbi inter se satis distantes, apice quinquefoliati. Scapus e basi pseudobulbi oriens. Folia oblongo-lanceolata, in petiolum conduplicatum contracta. Sepala infra medium conniventia, supra medium valde patentia, ligulata, acuta. Petala quam sepala multo minora, ligulata, apiculata. Labellum trilobatum, carnosum; lobis lateralibus erectis, porrectis, apice triangulari-acutis; lobo medio oblongo, obtuso. Columna carnosae.

Rhizome 20–35 cm. long between the pseudobulbs, 6 mm. in diameter, yellowish, with closely appressed cylindrical obtuse sheaths which are 2 cm. long. Pseudobulbs

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8 cm. long, tapering upward from a broad base which is 3 cm. thick in greatest diameter, yellowish and deeply sulcate when dry, subtended by rigid imbricating sheaths, 5-leaved at the summit, the leaves imbricating at the base, distichous. Leaves 22.5-27 cm. long, 4 cm. or more wide, thinly coriaceous, oblong-lanceolate, acute, contracted at base into a conduplicate petiole which is about 5 cm. long. Flower solitary on a short scape which arises from the young rhizome at the base of the terminal pseudobulb. Scape completely concealed by imbricating sheaths, stout. Lateral sepals 5 cm. long, 1.6 cm. wide, oblong, abruptly rounded to the acute tip, sharply reflexed above the middle, connivent below the middle and with the dorsal sepal forming a tube. Dorsal sepal similar, but a little narrower. Petals 2.4 cm. long, about 8 mm. wide, broadly oblanceolate, apiculate, with a callus-thickening on the inside near the tip. Labellum 1.4 cm. long, 5 mm. wide near the apex, 3-lobed, oblanceolate in outline when spread out; lateral lobes erect, the free portion of each lobe 1.5 mm. long, triangular-acute (from tip of the lateral lobes to the base of the labellum 9 mm. long); middle lobe 6 mm. long, oblong-orbicular, obtuse, upper surface minutely glandular, under surface heavily verrucose along the middle. Disc with a median bilobed callus, minutely glandular. Column 1 cm. long, fleshy.

*Trigonidium Lankesteri* is readily distinguished among the Central American species of the genus by means of its exceptionally large flowers, elongated rhizome and 5-leaved pseudobulbs.

COSTA RICA, Las Cónccavas, in cultivation, *C. H. Lankester* 367 (Type) & 465, February 2, 1923. Sepals cinnamon or clay color (Ridgway), on the frontal portion, exteriorly, veined purplish, where forming tube olive ochre to light yellowish olive. Petals shining, veined chocolate spotted with purple, also a suffused patch of chocolate on inner upper angle of sepals. Labellum only just visible without spreading sepals and petals, ivory white, spotted beneath and above with deep chocolate. Flowers 4.2 cm. across from tip to tip of the lateral sepals, 3.9 cm. long from angle formed

by the reflexed sepals to summit of the ovary. (TYPE in Herb. Ames No. 24135.)

**Notylia Lankesteri** *Ames sp. nov.* Pseudobulbi mihi non visi. Folium coriaceum, oblongum, obtusum, nervo medio subtus prominenti, basi rotundatum. Pedunculus validus, infra racemum bracteis scariosis acuminatis vestitus, dependens. Racemus cylindricus, densiflorus, bracteis flores subtendentibus lineari-triangularibus scariosis ovarium pedicellatum excedentibus. Flores albidii, petalis aurantiaco-maculatis. Sepala lateralialia usque ad basim libera, vix patentia, elliptico-ovata, valde concava, acuta, apice incrassata, breviter et obscure apiculata. Sepalum dorsale simile. Petala elliptica, basi breviter et late unguiculata, leviter concaviuscula, intus prope basim aurantiaco-maculata. Labellum valde carnosum, ovato-lanceolatum, acutum, apice lateraliter compressum, margine plus minusve erecto, prope basim callo triangulari valde complanato erecto in medio disci ornatum. Callus antice in carinam prominentem productus. Columna generis.

Pseudobulbs not seen. Leaf with the abbreviated petiole 12.5 cm. long, 3 cm. wide, oblong, obtuse, with the median nerve prominent beneath, rounded at the base and rather abruptly contracted to form the conduplicate petiole, coriaceous, bilobed at the apex. Petiole about 1 cm. long. Peduncle pendent, about 2 mm. thick, clothed below the raceme with several elongated scariosus acuminate bracts. Raceme 4 cm. or more long, about 1 cm. in diameter, cylindrical, densely many-flowered. Bracts of the raceme 4-5 mm. long, linear-acuminate, scariosus, exceeding the pedicellate ovary. Flowers white with the petals finely spotted with orange, aromatic, fleshy. Lateral sepals free, 5 mm. long, 3 mm. wide near the middle, elliptic-ovate, acute, thickened near the tip, shortly apiculate, 3-nerved, fleshy, very strongly concave, hardly spreading, rather porrect beneath the labellum. Dorsal sepal similar, 5 mm. long, strongly concave, obscurely, if at all, apiculate. Petals 4.5 mm. long, 2.5 mm. wide near the middle, lightly concave, elliptical, obtuse from a broad abbreviated unguiculate base,



heavily and broadly thickened — on the outside — along the middle near the point of insertion, the lower half finely dotted with orange on the inside. Labellum 4 mm. long, 2.5 mm. wide below the middle, very fleshy, ovate-lanceolate, acute, with the tip laterally compressed, margins obliquely ascending. Disc traversed longitudinally by a prominent thickening which is decurrent from a large, laterally complanate, fleshy, triangular, erect callus which is situated in the middle near the base of the labellum. Column fleshy, about 3 mm. long.

In general aspect not unlike *Notylia albida* Klotzsch, but differing from it in the entirely free lateral sepals and fleshy flowers.

COSTA RICA, Rio Estella, C. H. Lankester & Alfredo Sancho 373. Common in open undergrowth near streams. Flowers aromatic, pungently spicy. (TYPE in Herb. Ames No. 24909.)

**Ornithocephalus bicornis** Lindl. in Benth. Bot. Voy. Sulphur (1846) 172.

*Ornithocephalus lanuginosus* Ames in Proc. Biol. Soc. Wash. 34 (1921) 152. *Ornithocephalus diceras* Schltr. in Fedde Repert. Beihefte 17 (1922) 87.

Lindley, with unpardonable brevity, described this species as follows: "foliis ensiformibus erectis racemo hirsuto longioribus, sepalis subrotundis apiculatis petalisque conformibus unguiculatis ciliatis, labelli carnosii bipartiti laciniis lanceolatis recurvis canaliculatis. — Panama." He omitted any reference to the canaliculate median appendage which is such a conspicuous part of the labellum. In his herbarium, however, he drew the labellum in detail and clearly showed this median appendage. Without the type specimen and Lindley's drawing it would be quite simple to exclude *O. bicornis* from contemplation in attempts to identify species of *Ornithocephalus*. From the synonymy given above it is evident that two species, which I now regard as inseparable from Lindley's *O. bicornis*, have been proposed recently. In proposing *O. diceras* Schlechter wrote: At first I believed that *O. bicornis* was before me,

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since the presence of the two horns above the base of the labellum indicated this, but the linear lip-appendage disposed of this suspicion. (Is it not probable that in Lindley's type this process had become broken?)

In reducing *O. lanuginosus* and *O. diceras* to *O. bicornis* I have been influenced by structural resemblances which indicate close relationship. It is true that slight differences in the size of the flower are noticeable between *O. lanuginosus* and *O. diceras*, but these differences are accounted for, I believe, by growing conditions, and by the point of maturity to which the plants had attained when herbarium specimens were prepared. Schlechter describes smaller flowers than are present in my specimen of the type number of *O. lanuginosus*, but it is probable that his material of *O. diceras*, like mine, was taken from a plant in Mr. Powell's garden at Balboa that was just beginning to bloom. *O. lanuginosus* when collected by Killip was past floral prime.

PANAMA, *Dr. Sinclair*; Veragua, *Hinds*; Province of Panama, edge of forest along Panama-Pecora Road, near Tecumen River, *Elsworth P. Killip 3314*, December 30, 1917. On trees. 75 meters altitude; Hills east of Panama City, *C. W. Powell 174*. Grows generally in moss on upper sides of limbs. Flowers white and green. Flowers November to December. Sea level to 500 feet altitude.

**Lockhartia Lankesteri** *Ames sp. nov.* Caules caespitiosi, omnino foliosi. Folia disticha, imbricata, triangularia, superne vix vel non decrescentia. Inflorescentiae apicales vel paulo infra apicem caulium, pauciflorae, bracteis magnis scariosis instructae; rachis quam folia brevior. Bracteae cordatae, late ovatae. Sepala lateralia oblongo-elliptica, acuta, concaviuscula, valde membranacea, aurantiaca, apiculo infra apicem. Sepalum dorsale simile, valde concavo-cucullatum, trinervium. Petala ovato-elliptica, obtusa, trinervia, valde membranacea, aurantiaca. Labellum trilobatum; lobis lateralibus oblongo-linearibus, obtusis, divaricatis, quam lobo medio multo minoribus, membranaceis; lobo medio obscure quadrilobulato vel sub-

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rhombeo, apice retuso, membranaceo. Discus callo permagno instructus. Callus antice minute trilobulatus, basi cristatus. Columna brevis.

Stems caespitose, 7-23 cm. or more long, erect, entirely concealed by fleshy imbricating distichous leaves which decrease in size imperceptibly above and below the middle, complanate, rather rigid. Leaves triangular, about 1.5 cm. long, 5 mm. wide at the base. Peduncles terminal or from the axils of the uppermost leaves, shorter than the leaves. Bracts of the inflorescence up to 4 mm. long, ovate-cordate, acute, scarious. Racemes abbreviated, few-flowered. Pedicel with the ovary about 6 mm. long, slender, smooth. Flowers orange-yellow. Lateral sepals 4 mm. long, hardly 3 mm. wide, strongly concave, oblong-elliptical, acute, with an apicule on the under side just beneath the tip. Dorsal sepal similar strongly concave or cucullate. Petals 4 mm. long, 2 mm. wide, ovate-elliptical, round-obtuse, 3-nerved. Labellum 3-lobed, 4-5 mm. long, 5 mm. wide below the tips of the lateral lobes; lateral lobes 2 mm. long, .75 mm. wide, linear-oblong, obtuse, divaricate, membranaceous; middle lobe up to 4 mm. long, about 3 mm. wide near the middle, obscurely lobulate on each side above the middle, deeply retuse at the tip where it is about 1.5 mm. wide. Disc smooth except for a cushion-like callus in front of the column. Callus compressed dorso-ventrally, slightly concave, obscurely and minutely 3-lobulate in front, with a crest of bristle-like appendages on the basal margin near the base of the column. Column dilated above the base, 4-lobed.

Closely allied to *Lockhartia micrantha* Reichb. f., from which it differs in the lateral lobes of the labellum and in lacking appendages on the disc of the labellum in front of the basal callus.

COSTA RICA, San Carlos, *C. H. Lankester* 448, March 30, 1923. (TYPE in Herb. Ames No. 25858.)

***Campylocentrum hondurensis* Ames sp. nov.** Herba parvula, epiphytica, radicibus longe patentibus. Caules multo abbreviati. Folia disticha, approximata, oblongo-ligulata, coriacea, apice inaequaliter bilobulata. Pedunculi

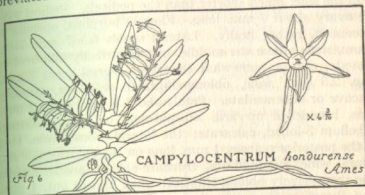
## NEW OR NOTEWORTHY ORCHIDS

ex axillis vaginarum orientes, folia aequantes vel subaequantes, distichiflori, rachide glanduloso-scabridula. Flores albi, breviter pedicellati. Bractee inflorescentiae pedicellos excedentes, triangulares, concavae, acuminatae, acutae, rigidae. Sepala petalaeque conniventia. Sepala lateralibus usque ad basim libera, longe triangularia, acuta, uninervia, extus leviter carinata per medium, membranacea, labello longiora. Sepalum dorsale triangulare, subacutum, uninervium. Petala lineari-oblonga, acuta, uninervia. Labellum triangulari-trulliforme, acutum, basi concavum in calcar leviter sigmoideum productum. Calcar sepalis longius, teres, utrinque attenuatum, valde elongatum, vix scrotiforme, apice obtusum. Columna valde abbreviata. Anthera permagna. Capsula ellipsoidea, sexangularis, sparse glandulosa.

Roots fibrous, up to 15 cm. long, spreading, longitudinally sulcate. Stems 8 mm. long, complanate, concealed by the sheathing imbricating bases of the leaves, erect or ascending. Leaves about seven, distichous, up to 2.7 cm. long, 3.5-5 mm. wide, broadest above the middle, oblong, ligulate, articulated with a conduplicate base which is 2.5 mm. long, unequally bilobed at the tip, mid-vein prominent beneath. Peduncles with the raceme 1.4-2.7 cm. long, arising from the axil of the leaf-sheath. Raceme 1-2 cm. long. Bracts of the inflorescence 1.75 mm. long, exceeding the pedicels of the flowers, rigid, triangular, acute, concave. Flowers about ten, white, distichous, 3 mm. apart on the glandular-scabridulous rachis. Lateral sepals 2 mm. long, about 1 mm. wide at the base, triangular, acute, 1-nerved, carinate along the middle on the outer surface, connivent. Dorsal sepal 2 mm. long, triangular, subacute, 1-nerved. Petals 1.75 mm. long, linear-oblong, 1-nerved, acute, membranaceous, parallel with the upper sepal. Labellum hardly 2 mm. long, .75 mm. wide near the base, triangular-trulliform or lanceolate, acute, membranaceous, produced at base into a slender spur, ecallose. Spur 3 mm. long, terete, lightly sigmoid, attenuated at the ends, obtuse, more or less porrect. Column stout, abbreviated. Capsule 5 mm. long, ellipsoidal, 6-angled, sparsely glandulose.

NEW OR NOTEWORTHY ORCHIDS

A very distinct species without any near allies in the Central American flora. The elongated spur and abbreviated stems are characteristic. [Fig. 6.]



SPANISH HONDURAS, Lancetilla Farm near Tela, Ames II 210, March 16, 1923. On small tree overhanging the Tela River. 250 feet altitude. (TYPE in Herb. Ames No. 25261.)

**Sarcochilus zamboangensis** Ames *sp. nov.* Caules validi, abbreviati, e radicibus fibratis orientes. Folia ligulata, congesta, coriacea, oblique ascendente, apice inaequaliter bilobulata. Pedunculus elongatus, infra racemum gracilis. Racemus multiflorus, incrassatus. Pedicelli abbreviati. Sepala lateralia inaequaliter elliptica, obtusa. Sepalum dorsale oblongo-ellipticum, subacutum, valde concavum. Petala oblonga vel spatulata, obtusa. Labellum trilobatum, in calcar curvatum productum; lobis lateralibus subquadratis, rotundato-obtusis, erectis; lobo medio transverse oblongo-elliptico, infra apicem breviter carinato, calcar infra apicem tubulato, apice valde inflato. Columna arcuata, antice concaviuscula.

Stems 3-4 cm. long, stout, rigid, concealed by the bases of the distichous leaves. Leaves 20-30 cm. long, up to 4.5 cm. wide, ligulate, coriaceous, obliquely ascending, unequally bilobed at the obtuse apex. Peduncle with the raceme 10-18 cm. or more long, slender below the raceme, about

NEW OR NOTEWORTHY ORCHIDS

1 mm. thick, with several closely appressed bracts. Rachis thickened. Bracts of the raceme rigid, about 1 mm. long, quaquaversal, thickened, somewhat triangular when seen from the side, much shorter than the pedicels. Pedicel with the ovary about 7 mm. long. Flowers purplish, opening in succession, rather fleshy. Lateral sepals 6.5-7 mm. long, 4 mm. wide above the middle, asymmetrically elliptical or obovate, obtuse, somewhat concave. Dorsal sepal 7 mm. long, 2.5 mm. wide, oblong-elliptical, subacute, strongly concave or subcucullate. Petals about 6 mm. long, 2 mm. wide, broadened upward, subspatulate or oblong, obtuse. Labellum 3-lobed, calcarate; the lateral lobes 2 mm. long on the posterior margin, 1 mm. long on the anterior margin, 1 mm. wide, subquadrate, truncate-obtuse, erect; middle lobe transversely oblong-elliptical when spread out, 1 mm. long, 2 mm. wide, conduplicate, with a thickened abbreviated keel beneath; spur 8 mm. long, sharply curved, slightly dilated and infundibuliform at the throat, tubular below, the apical portion inflated, dorso-ventrally compressed, the dilated portion 2 mm. in diameter (measured transversely). Column 4 mm. long, arcuate, produced at base into a foot which is 1.25 mm. long.

In habit similar to *Sarcochilus pallidus* Reichb. f., from which it is in part distinguished by the much smaller flowers.

PHILIPPINES, Mindanao, Zamboanga Province, Flecha Point, *E. D. Merrill 11640*, September 30, 1922. On trees in primary forest. Flowers pinkish. About 10 meters altitude. (TYPE in Philip. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 25860.)

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SCHEDULAE ORCHIDIANAE  
No. 6

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NEW OR NOTEWORTHY  
ORCHIDS

BY  
OAKES AMES

BOSTON, MASSACHUSETTS  
1923

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## New or Noteworthy Orchids

BY

OAKES AMES

IN this paper orchids from the Philippine Islands and from North and Central America receive attention. Among them are many that I have been unable to refer to species heretofore described. The arrangement of the genera follows closely the sequence adopted in Engler and Prantl's "Die natürlichen Pflanzenfamilien."

For an opportunity to examine some recently described species supposedly of Philippine origin I am indebted to Dr. Fritz Kränzlin, who kindly loaned to me his type specimens prepared from plants cultivated in the botanic garden of München-Nymphenburg.

**Habenaria alata** Hook. Exot. Flora 3 (1826) t. 169.

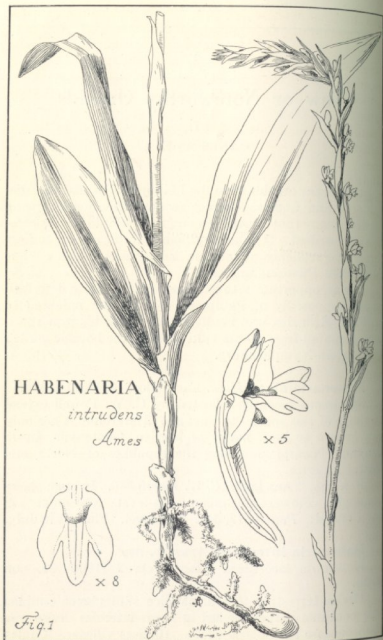
Specimens recently collected by C. W. Powell extend the range of this species to Panama. Heretofore it has only been known to be a native of Mexico, Guatemala, Costa Rica and Nicaragua among the republics of North and Central America.

PANAMA, "Ana lago," C. W. Powell 316. In open places in sunlight. Flowers pale green. Sea-level. McComber hill near Corazal: Powell 317, 318. Sea-level. Flowers in July.

**Habenaria intrudens** Ames sp. nov.

*Habenaria lacertifera* Ames Orch. 2 (1908) 39, non Benth.

Herba terrestris, tenera, caudice subterraneo simplici caule continuo perpendiculari in fibras laterales diviso imo tuberi carnosio subgloboso enato. Radices villosae. Caules

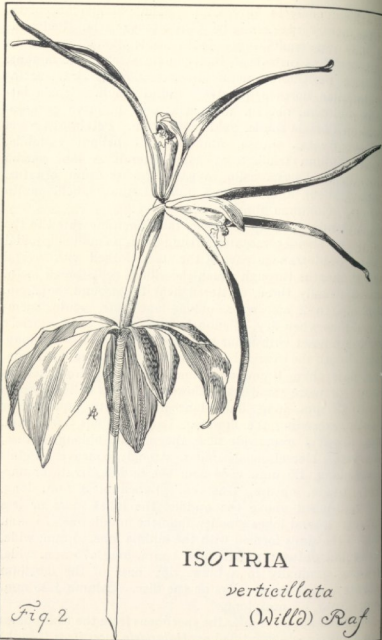


## NEW OR NOTEWORTHY ORCHIDS

infra folia conferta abbreviati. Folia oblongo-lanceolata, acuta, membranacea, sessilia, plus minusve tria. Pedunculus vel pars caulis supra folios valde elongatus, foliolis decrescentibus instructus, in racemum strictum terminans. Racemus multiflorus, nonnihil secundiflorus. Bracteae inflorescentiae flores aequantes. Flores albidii. Sepala lateralia oblonga, obtusa, uninervia, plus minusve carnosae. Sepalum dorsale simile, valde concavum. Petala ovata vel anguste ovata, obtusa, uninervia. Labellum variabile, supra medium trilobatum; lobis lateralibus lobo medio minoribus. Discus callo magno infra medium ornatus. Calcar labelli abbreviatum, quam limbus labelli multo brevius. Columna abbreviata.

A slender herb up to 39 cm. tall (when measured to the tip of the slender raceme), arising from a small ellipsoidal tuber. Subterranean part of the stem clothed with several dilated sheaths through which the villous roots break forth. Leaves usually three, clustered near the ground, 8-12 cm. long, up to 2 cm. wide, oblong-lanceolate, acute, membranaceous when dry. Peduncle 12.5-32 cm. long, sparsely or closely beset with foliar bracts which are 1.5-4 cm. long. Pedicel with the ovary about 12 mm. long. Raceme 8-15 cm. long, less than 1 cm. in diameter, bearing from ten to twenty or more small white flowers. Bracts of the raceme about 12 mm. long, linear-lanceolate, acute, equaling or slightly exceeding the flowers. Lateral sepals 3.5-4 mm. long, about 1 mm. wide near the middle, oblong, obtuse, 1-nerved. Dorsal sepal similar, strongly concave. Petals 3 mm. long, 1.5 mm. wide near the middle, ovate or narrowly ovate, obtuse, 1-nerved. Labellum 3 mm. long, fleshy, 3-lobed above the middle, the lobes more or less porrect; lateral lobes smaller than the middle one, .75 mm. long to the sinus formed with the middle lobe, .5 mm. wide, triangular, obtuse; middle lobe 1 mm. long, .75 mm. wide, tapering gradually to a blunt tip; base of the labellum cuneate with a large callus on the disc. Column 1.25 mm. long. Spur 1.5 mm. long.

To this species I refer the specimens from the Philippines that I previously identified as *Habenaria lacertifera* (Lindl.)



ISOTRIA

*verticillata*

(Willd) Raf

Fig. 2

Benth. The labellum is very different from the labellum of typical *H. lacertifera* as the lateral lobes are shorter and smaller than the middle lobe (sometimes much shorter). Unless *H. lacertifera* is a much more variable species than we now know it to be, it would be unwise to merge the Philippine ally with it. In my studies of specimens of *H. intrudens* from Rizal Province I have found that the lateral lobes are sometimes relatively shorter when contrasted with the middle lobe than the above description of the type indicates. In *H. lacertifera* the lateral lobes of the labellum are normally much longer than the middle one, often filiform. [Fig. 1.]

PHILIPPINES, Luzon, Rizal Province, Antipolo, *M. Ramos, Bureau of Science 21999*, October 1913. Flowers white. In thick forest. 100 meters altitude. (TYPE in Herb. Ames No. 15455): Luzon, Bulacan Province, Angat, *M. Ramos, Bureau of Science 21706*, September 27, 1913. Flowers white. 90 meters altitude: Luzon, Benguet Province, Baguio, *H. M. Curran, Forestry Bureau 5085*, August 24, 1906. Flowers white. Pine woods, ridges: *R. S. Williams 1933*, October 6, 1904. Flowers white.

***Isotria verticillata*** (Willd.) Raf. in *Med. Repos.* N. Y. 5 (1808) 357.

The accompanying figure represents a two-flowered specimen of the species in which fasciation has taken place. The pedicels of the flowers and the basal portion of the ovaries have become united. My records do not show that a similar type of fasciation has been reported for *Isotria verticillata*. [Fig. 2.]

MASSACHUSETTS, North Easton, *H. Walter Child & Oakes Ames*. May 29, 1923.

***Galeola philippinensis*** *Ames sp. nov.* Herba scandens, verisimiliter aphylla. Caules validi, nodis radicantibus. Inflorescentia ampla, bracteis foliosis ramos subtendentibus. Sepala lateralia carnosae, concava, supra medium dilatata, obtusa vel subacuta. Sepalum dorsale oblongum, utrinque attenuatum, apice cucullatum, sep-

temnervium. Petala oblonga, subspathulata, quinquenervia, apice angustata. Labellum simplex, supra basim in laminam ellipticam emarginatam concavam expansum, nervis conspicue papillois, usque ad apicem carinatum. Columna elongata, superne dilatata.

A scandent herb rooting at the nodes of the more or less rigid leafless stems. Inflorescence much branched, paniculiform, many-flowered. Flower-bearing branches 4-5 cm. long. Flowers quaquaversal on thickened axes. Floral-axis, or that part of the much-branched inflorescence which bears the flowers, 2-3 cm. long, up to 3 mm. thick, smooth, ten or more flowered, rigid. Bracts that subtend each floral branch foliaceous, 3 cm. or more long. Lateral sepals 1.7 cm. long, about 5 mm. wide above the middle, oblong, dilated gradually toward the apex, strongly concave, somewhat cucullate at the tip, fleshy. Dorsal sepal about 1.5 cm. long, 4 mm. wide near the middle, oblong, slightly narrowed toward the base, 7-nerved, apex cucullate. Petals 1.9 cm. long, 3 mm. wide near the middle, oblong, somewhat dilated upward, 5-nerved. Labellum 1.5 cm. long, simple, about 8 mm. wide above the middle, more or less elliptical in outline with a deeply emarginate apex, the basal margin adherent to the base of the slender column, upper surface (chiefly along the veins) studded with erect papillose emergences. Disc with a thin dorso-ventrally flattened lamella which extends from the base of the column for two thirds of the length of the labellum and then becomes abruptly narrowed into a raised laterally compressed keel which extends to the tip of the labellum. Column 1 cm. long, slender, suddenly dilated near the tip. Capsules fusiform 8-13 cm. long.

In habit *Galeola philippinensis* resembles *G. altissima* Reichb. f., but has larger and very different flowers. The structure of the labellum suggests the Australian *G. Ledgeri* F. v. Muell.

PHILIPPINES, Luzon, Sorsogon Province, Irosin, Mount Bulusan, A. D. E. Elmer 16122. May 1916. (TYPE in Herb. Ames No. 16070.)



**Aphyllorchis halconensis** Ames *sp. nov.* Herba aphylla, vaginis amplis instructa. Racemus laxiflorus, bracteis flores subtendentibus elongatis, anguste lanceolatis, ovarium aequantibus vel superantibus. Ovarium glandulosum. Sepala lateralia oblongo-lanceolata, acuta, prope apicem plus minusve carinata, extus sparse glandulosa. Sepalum dorsale subsimile, valde concavum, extus sparse glandulosum. Petala oblongo-lanceolata, leviter curvata, extus per medium leviter carinata, acuta. Labellum trilobatum, sepala lateralia vix aequans; lobis lateralibus late triangularibus, quam lobo medio multo minoribus; lobo medio lanceolato, subtus valde carinato, margine irregulariter crenulato. Discus inter lobos laterales incrassatus, prope basim lobi medii bicarinatus, carinis plus minusve crenulatis. Columna elongata, curvata, superne dilatata.

A leafless herb 11.5 dm. tall, stems clothed at intervals with loose tubular sheaths, those near the base of the plant closer together than those near the summit. Sheaths .5-3 cm. long, the upper ones longest about 10 cm. apart, the lowermost ones shortest about 1.5 cm. apart. Raceme 10 cm. long, loosely flowered. Floral bracts 1.5-2 cm. long, 3 mm. wide, linear-lanceolate, equaling or slightly exceeding the pedicellate ovary, spreading or slightly deflexed. Pedicel with the ovary up to 23 mm. long, densely glandular-pubescent, obliquely ascending. Lateral sepals about 1.3 cm. long, 3.5 mm. wide, oblong-lanceolate, acute, becoming strongly carinate on the outer surface toward the tip, sparsely glandulose. Dorsal sepal 1.5 cm. long, strongly concave, arching forward over the slender column. Petals 1.5 cm. long, about 3.5 mm. wide above the middle, more delicate in texture than the sepals, oblong-lanceolate, acute, lightly carinate on the outer surface, with one central branching nerve. Labellum 1.3 cm. long, unequally 3-lobed; lateral lobes basal, 2.5 mm. long to the sinus formed with the middle lobe, triangular, subacute; middle lobe 1 cm. long, about 5 mm. wide below the middle, lanceolate, deeply carinate at the cymbiform tip. Disc thickened between the lateral lobes, bicarinate at the base of the middle lobe, the

keels somewhat crenulate. Column 9 mm. long, slender, curved forward, dilated upward.

PHILIPPINES, Mindoro, Calapan Province, Mount Halcon, *M. Ramos & G. Edano s. n.*, March 16, 1922. Terrestrial. Flower bluish purple and white. 3000 feet altitude. (TYPE in Herb. Ames No. 26234.)

***Stenorrhynchus orchoides* (Sw.) L. C. Rich.** De Orch. Europ. Annot. (1817) 37 et in Mem. Mus. Par. 4 (1818) 59.

Among specimens recently collected in Panama this common tropical American species is represented. *Stenorrhynchus* is an addition to the genera known to occur in Panama.

PANAMA, Savannas near Pacora, *C. W. Powell 300*, May 1923. Terrestrial. Grows in full sun. Flowers green and white. Sea-level.

***Erythrodes Boettcheri* Ames sp. nov.** Herba ter-  
restris, erecta, e rhizomate subterraneo. Caules foliosi,  
foliis prope basim plantae confertis, supra medium albido-  
glandulosi. Folia ovata, basi rotundata, apice acuta, in  
petiolum contracta, petiolis basi caulem breviter vaginan-  
tibus. Bracteae caulinae ascendentes, alternae. Racemus  
laxiflorus. Bracteae racemi anguste lanceolatae, ovarium  
aequantur vel breviter superantes, extus glandulosae. Sepala  
lateralia lanceolata, obtusa, apice leviter cucullata, extus  
sparse glandulosa, nervo medio prominenti. Sepalum dor-  
sale simile, valde concavum. Petala spathulata, obtusa,  
glabra. Labellum basi saccato-ventricosum, sacco bilobato,  
supra basim marginibus involutis, parte terminali in laminam  
suborbicularem expansa. Saccus glaber, quinquenervius.  
Columna elongata.

Terrestrial herb up to 30 cm. tall, arising from a creep-  
ing rhizome. Leaves more or less crowded near the base of  
the plant, 2-6 cm. long, up to 2.7 cm. wide, ovate, rounded  
at the base, acute, membranaceous, contracted into wide  
petioles which sheath the stem. Leafless portion of the plant  
16-24 cm. long, provided with closely appressed, ascending

bracts, covered with a whitish glandular pubescence above. Raceme up to 7 cm. long, loosely flowered, rachis pubescent. Floral bracts about equal to the shortly pedicellate ovary, lanceolate, glandulose. Ovary about 9 mm. long, densely glandular. Lateral sepals 6 mm. long, 2 mm. wide, lanceolate, obtuse, minutely cucullate at the tip, sparsely glandular on the outer surface, mid-nerve slightly prominent and conspicuous in dried specimens. Dorsal sepal 6 mm. long, similar to the laterals, strongly concave, arching forward over the column. Petals 6 mm. long, up to 1 mm. wide, spatulate, obtuse, with a conspicuous mid-nerve. Labellum 7 mm. long, ventricose-saccate at the base, with the sac distinctly bilobed, ecallose, 5-nerved, the lobes .75 mm. long, blunt, terminal part of the labellum expanded into a suborbicular lamina which is 2 mm. long and nearly 3 mm. wide. Column 4.5 mm. long.

A near ally of *E. Wenzelii* Ames and *E. Weberi* Ames, from which it differs in having the sac of the labellum ecallose (cf. Ames Orch. 7 (1922) 66).

PHILIPPINES, Luzon, Kalinga Province, Balbalan, *George Boettcher s. n.*, March 18. Flower reddish brown. 1000 meters altitude. (TYPE in Herb. Ames No. 26320.)

***Adenostylis philippinensis* Ames sp. nov.** Herba terrestris e rhizomate subterraneo, infra medium foliosa, foliis inter se satis distantibus. Folia bene lanceolata, acuta, verisimiliter reticulato-nervosa, basi in petiolum contracta, petiolis basi caulem breviter vaginantibus. Caulis supra folia albido-glandulosus, bracteis ascendentibus infra medium tubulatis lanceolatis instructus. Racemus gracilis, multiflorus, floribus inter se satis distantibus. Sepala lateralia lanceolata, acuminata, subacuta, extus longe et sparse glandulosa. Sepalum dorsale simile, valde fornicato-concavum, extus glandulosum. Petala sepalo dorsali agglutinata, lanceolata, obtusa, margine anteriore prope basim protuberanti. Labellum ventricosum-saccatum, antice in laminam subreniformem vel triangularem expansum, intus bicallosum, callis valde curvatis vel hamatis. Columna abbreviata.

Terrestrial herb 24–28 cm. tall, from a creeping rhizome. Plant leafy below the middle. Leaves about 1.5 cm. apart, alternate, 2.5–5.5 cm. long, up to 1.8 cm. wide below the middle, membranaceous, lanceolate, acute, contracted abruptly into a short petiole 1 cm. long, which at its base loosely sheaths the stem. Stem above the leaves sparsely covered with weak, whitish glandular hairs and provided with about four erect or ascending lanceolate bracts which are shortly tubular at the base. Raceme elongating during a long flowering period, 6–12 cm. long, flowers 3–6 mm. apart on the glandular rachis. Bracts of the inflorescence 7–10 mm. long, lanceolate, acuminate, sparsely glandular. Lateral sepals 3 mm. long, 1.5 mm. wide, lanceolate, subacute with a cucullate apex, sparsely glandular on the outer surface with the glands weak and elongated. Dorsal sepal similar to the laterals, strongly concave. Petals 3 mm. long, about 1 mm. wide, lanceolate, adherent to the upper sepal, the anterior margin protuberant near the base, mid-nerve conspicuous in dried specimens. Labellum 3 mm. long, ventricose-saccate, narrowed in front, the anterior wall densely glandular, apical portion expanded into a subreniform or triangular plate which is more or less acute, .5 mm. long, 1 mm. wide, minutely glandular; sac 1 mm. deep with a strongly curved or hamate appendage on each side within. Column 2.5 mm. long, stout, with the rostellum deeply excised, the rostellar arms distinctly spatulate.

Allied to *Adenostylis Elmeri* Ames.

PHILIPPINES, Leyte, C. A. Wenzel 0375, March 28, 1913. Terrestrial in forest, sepals green, petals white, leaf thin. 60 meters altitude. (TYPE in Herb. Ames No. 15305): Wenzel 0224, July 31, 1913. Terrestrial in forest. Flowers white. 60 meters altitude.

***Adenostylis zamboangensis* Ames sp. nov.** Rhizoma longe repens, ad nodos radicans. Radices crassae, villosae. Caulis ascendens, erectus, foliosus, foliis inter se satis distantibus, basi petioli caulem amplectentibus. Folium impariter lanceolatum, acuminatum, acutum, basi rotundatum in petiolum gracile contractum. Pedunculus vel pars

caulis aphylla gracilis, breviter albido-villosus, paucibracteatus. Racemus satis elongatus, sublaxiflorus. Bracteae inflorescentiae anguste lanceolatae, ovarium aequantes vel excedentes. Ovarium breviter glandulosum. Sepala lateralia ovata, subobtusa, extus per medium leviter carinata, plus minusve concava, trinervia. Sepalum dorsale valde concavum, cum petalis galeam formans, extus per medium leviter carinatum et minute glandulosum. Petala impariter et late ovata, margine anteriore protuberantia, membranacea, nervo prope marginem posteriorem leviter prominenti. Labellum basi ventricosum, prope medium valde constrictum, deinde in laminam transversam expansum, intus prope sacci basim utrinque appendice carnosa ornatum. Columna abbreviata, rostello profunde exciso.

Terrestrial herb up to 30 cm. or more tall from an elongated, creeping rhizome. Roots about 3 cm. long arising from the nodes of the rhizome, villose, about 3 mm. in diameter. Nodes of the rhizome 3 cm. more or less apart. Stems succulent, ascending, erect, about 4 mm. thick, leafy. Leaves asymmetrically lanceolate, contracted into a slender petiole which at base forms a tubular sheath. Lamina of the leaf 5-6.5 cm. long, 2.4 cm. wide just below the middle, acuminate, acute, rounded at the base. Petioles including the sheathing base 2-2.2 cm. long, about 2 cm. apart on the stem. Peduncle or leafless part of the stem 15-16 cm. long, slender, covered with soft whitish hairs, few-bracteate, the bracts 1-12 mm. long, closely appressed, lanceolate, acute. Raceme about 5 cm. long, loosely flowered, the flowers opening in succession, greenish white, odorless. Bracts of the raceme 6 mm. long, equaling or exceeding the ovary, lanceolate, acuminate, acute. Ovary shortly pedicellate, 9 mm. long, glandular-pubescent. Lateral sepals 4.5 mm. long, 2.5 mm. wide, ovate, obtuse and slightly thickened at the tip, 3-nerved with the median nerve prominent on the outer surface. Dorsal sepal 4 mm. long, strongly concave, forming with the petals a deep hood, externally glandular-pubescent. Petals lightly adherent to the upper sepal, 4 mm. long, 2.75 mm. wide near the middle, unequally and broadly ovate, rounded on the anterior

margin, membranaceous, the nerve near the posterior margin somewhat prominent. Labellum 4 mm. long, with the terminal portion expanded into a transverse lamina which is 3-4 mm. wide; base of the labellum strongly ventricose-saccate, 2.5 mm. long, with a conspicuous hamate appendage within on either side of the prominent mid-nerve, constricted in front with each lateral margin convergent on the short isthmus which separates the sac from the terminal lamina; isthmus 1 mm. long; lamina narrowly subreniform, obscurely if at all apiculate in front. Column rather stout, with the rostellum deeply excised.

In habit and flower structure *A. zamboangensis* suggests *A. benguetensis* Ames, but is much larger in all of its parts.

PHILIPPINES, Mindanao, Zamboanga District, *E. B. Copeland* 1567, December 11, 1904. Terrestrial in forest. 400 feet altitude. (TYPE in Herb. Ames No. 7291.)

**Epipactis Elmeri** Ames *sp. nov.* Herba pusilla, plus minusve quadrifoliata, foliis inter se satis distantibus. Rhizoma repens, ad nodos radicans. Folia bene reticulata, ovata, acuta, in petiolum contracta. Caulis supra folios paucibracteatus. Racemus gracilis, plus minusve decemflorus, minute glandulosus. Bracteae inflorescentiae ovarium pedicellatum superantes, anguste triangulari-lanceolatae, glabrae. Ovarium glabrum vel inconspicue et sparse glandulosum. Flores glabri. Sepala lateralia ovata, obtusa, uninervia. Sepalum dorsale valde concavum, ellipticum, obtusum, uninervium. Petala sepalo dorsali adhaerentia, cum sepalo dorsali galeam formantia, subspathulata, obtusa, uninervia. Labellum valde saccatum, antice in laminam semiellipticam productum, intus longe glandulosum. Columna generis rostello bicuspidato.

Rhizome creeping, about 2 mm. in diameter, rooting at the nodes. Stems 14-17 cm. long, minutely glandular above, leafy. Leaves 1.5-2 cm. apart, 1.5-4 cm. long. 9-20 mm. wide, ovate from a broad base, conspicuously reticulate-veined, acute, contracted at base into a slender petiole, the base of the petiole sheathing the stem. Between the uppermost leaf and the base of the raceme there are

Fig. 3

EPIPACTIS

*Elmeri*

*Ames*



Labellum  $\times 10$

several ascending bracts, 5-10 mm. long. Raceme slender, 3-4.5 cm. long, ten or more flowered, glandular-pubescent. Bracts of the inflorescence up to 7 mm. long, triangular-lanceolate, smooth, exceeding the shortly pedicellate ovary. Ovary smooth. Lateral sepals 2-3 mm. long, 1.25-2 mm. wide, ovate, obtuse, 1-nerved, smooth, concealing the saccate base of the labellum. Dorsal sepal about 2.5 mm. long, concave. Petals 2 mm. long, adhering lightly to the upper sepal, somewhat spatulate, obtuse, 1-nerved. Labellum 2.5 mm. long, strongly saccate, with several clavate glands within, produced in front into a more or less expanded lamina which is obtuse and semielliptical. Column about 2 mm. long, with the rostellum deeply and broadly excised.

Allied to *Epipactis Ramosii* Ames comb. nov. (*Good-yaera Ramosii* Ames in Phil. Journ. Sci. 8 (1913) 409), but with smaller flowers and a different labellum. [Fig. 3.]

PHILIPPINES, LUZON, Sorsogon Province, Irosin, Mount Bulusan, A. D. E. Elmer 14884, November 1916. (TYPE in Herb. Ames No. 26302.)

**Hetaeria leytensis** Ames sp. nov. Herba terrestris. Caulis herbaceus, simplex, ascendens, basi repens, inferne glaber, foliosus, superne breviter albido-villosus, foliis squamiformibus vaginantibus praeditus. Folia triangulari-lanceolata, acuminata, variegata, basi in petiolum abbreviatum canaliculatum ima vaginantem attenuata. Racemus erectus, plus minusve gracilis. Ovarium glandulosum. Sepala lateralia ovato-lanceolata, subacuta. Sepalum dorsale basi valde concavum, supra medium triangulare, obtusum. Petala inaequaliter ovato-lanceolata, subacuta, sepalo dorsali adhaerentia. Labellum valde concavum vel ventricosum, basim versus cum tuberculis recurvis duobus instructum, supra medium utrinque incrassatum deinde valde constrictum, in apicem triangularem productum. Columna erecta, rostello valde bifido, utrinque stigmatifera. Anthera sagittata.

Terrestrial herb up to 20 cm. tall from a creeping rhizome. Roots 2-4 cm. long, hairy. Stems smooth below, leafy, pubescent above, with bract-like leaves which de-



crease in size. Leaves 5.5-7 cm. long, up to 2.2 cm. wide near the base, triangular-lanceolate, acuminate, with canaliculate petioles which sheath the stem. Leaf-like bracts 1-2 cm. long, closely appressed. Raceme 3-4 cm. or more long, slender. Bracts of the raceme equaling or exceeding the flowers. Ovary and abbreviated pedicel about 8 mm. long, glandular. Lateral sepals about 3 mm. long, ovate-lanceolate, subacute, membranaceous. Dorsal sepal about 3 mm. long, strongly concave at the base, somewhat ovate in outline when spread out, obtuse. Petals agglutinated to the dorsal sepal, 3 mm. long, 2 mm. wide below the middle, unequally ovate, acute or subacute. Labellum 3 mm. long, ventricose-saccate, with two hooked appendages within near the base, one on each side, thickened in front near the anterior margin of the sac where it is narrowed into an isthmus; apical portion of the labellum triangular, .75 mm. long and broad. Column about 2 mm. long with the rostellum deeply bifid. Anther sagittate.

Allied to *Hetaeria micrantha* Bl., from which it differs in the foliage, in the petals and in the shape of the labellum.

PHILIPPINES, Leyte, Mount Abucayan, *G. Edaño*, Bureau of Science 42081b, January 20, 1923. On stony slopes in forest. 900 feet altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26073.)

**Myrmechis perpusilla** *Ames sp. nov.* Herba perpusilla, foliosa, e rhizomate subterraneo. Folia alterna, petiolata, patentia, ovata, acuta, basi rotundata, superiora magis approximata, petiolis basi caulem breviter vaginantibus. Pedunculus terminalis, erectus, pubescens. Bractea solitaria, scariosa, margine glandulosa, ovarium ad basim cingens. Flores mediocres, verisimiliter albidii. Pedicellus sparse glandulosus. Sepala lateralia anguste ovato-lanceolata vel triangulari-lanceolata, obtusa, uninervia, basi ventricosa labellum inferne amplectentia eique subtus paulum adnata. Sepalum dorsale cum petalis agglutinatum, fornicato-ascendens. Petala rhombico-lanceolata, uninervia, obtusa. Labellum e basi scrotiformi-inflata medio con-

strictum, apice in limbum brevem transverse dilatatum expansum. Saccus labelli glandulis duabus intus ornatus. Columna abbreviata.

A diminutive herb 3-6 cm. tall, from a slender creeping rhizome. Leaves alternate, 6-10 mm. long, 4-7.5 mm. wide, ovate, acute, contracted at base into a short petiole which sheaths the stem. Stems above the uppermost leaf glandular-pubescent. Flower terminal, subtended by a scarious, glandular bract which is subequal to the ovary. Pedicel slender, sparsely glandular, 6 mm. long (with the ovary). Lateral sepals, 6.5 mm. long, 2.5 mm. wide near the base, ovate-lanceolate or triangular-lanceolate, hardly acute, 1-nerved, membranaceous, ventricose at the base. Dorsal sepal 5.5 mm. long, subacute, ventricose at the base, 1-nerved. Petals lightly adherent to the dorsal sepal, about 5.5 mm. long, rhombic-lanceolate, about 2.5 mm. wide near the middle, membranaceous, 1-nerved. Labellum 6.5 mm. long, strongly ventricose at the base, constricted above the ventricose base into a narrow isthmus which is 3 mm. long with involute margins, then expanded transversely into an oblong limb which is 4.5 mm. wide and 1.5 mm. long; ventricose base 3 mm. long, 2 mm. deep, with a quadrate complanate gland on each side within. Column about 2.5 mm. long, with an elongated tooth-like process on each side below the stigmatic lobe.

A close ally of the Javan *Myrmechis gracilis* Bl., from which species it differs in the form of the petals and in having longer processes on the column.

PHILIPPINES, Luzon, Benguet Province, Pauai, *E. B. Copeland* 124, May 10, 1913. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26319.)

**Tropidia Robinsonii** *Ames sp. nov.* Herba terrestris, erecta, foliosa, nonnihil simplex, plerumque ramosa. Caules graciles, teretes, foliis in vaginis tubulosis nervosis sessilibus. Folia linearia, acuta, superiora plus minusve conferta, inferiora inter se satis distantia, alterna, graminea, oblique ascendentia, demum recurvata. Inflorescentia terminalis. Racemus parvus, e vaginis foliorum terminalium erumpens.

## NEW OR NOTEWORTHY ORCHIDS

pauciflorus. Bracteae racemi plus minusve rigidae, basi concavae, ovario longiores, nervosae, virides, persistentes. Ovarium pedicellatum plus minusve sulcatum. Sepala lateralia oblonga, usque ad apicem angustata, apice breviter carinata, basi cohaerentia, mentum breve obtusum formantia. Sepalum dorsale cymbiforme, sepalis lateralibus multo angustius. Petala triangulari-oblonga, usque ad apicem angustata, valde curvata. Labellum ventricososaccatum apice valde decurvatum. Columna generis.

Terrestrial herb 30 cm. or more tall, simple or commonly branching above, with the branches 10-16 cm. or more long. Stems terete, hardly 2 mm. thick, erect, leafy. Leaves 4-8 cm. long, 3-6 mm. wide, linear, grass-like, narrowed toward the ends, sessile on the tubular sheathing bases which conceal the stem. Racemes terminal from the axils of the uppermost leaves, with the abbreviated peduncle 1-1.5 cm. long, few-flowered, with the flowers crowded. Bracts of the raceme about 5 mm. long, rigid, persistent, triangular, concave, nervose. Ovary shortly pedicellate, about 4 mm. long, longitudinally sulcate. Lateral sepals 8 mm. long, 2 mm. wide, oblong, narrowed to a shortly carinate tip, united at base, forming a distinct obtuse mentum which conceals the base of the labellum. Dorsal sepal 8 mm. long, cymbiform, arching forward over the column, acute. Petals 7 mm. long, 2.5 mm. wide, triangular-falcate, acute, protuberant on the anterior margin at the base. Labellum including the strongly deflexed tip, 8 mm. long, ventricososaccate, distinctly bilobed at the base, sulcate beneath where it is longitudinally thickened, with a prominent keel within near the base and with a distinct keel on each side above the middle; the deflexed apical portion is somewhat cucullate at the obtuse tip. Column about 4 mm. long.

*Tropidia Robinsonii* is distinguished from the closely allied *T. gracilis* Schltr. by its broad triangular floral bracts and large flowers.

PHILIPPINES, Luzon, Tayabas Province, Siniloan Trail, C. B. Robinson, *Bureau of Science* 9496, September 5, 1909. Flower white. (TYPE in Herb. Ames No. 26329.)

**Coelogyne candoonensis** *Ames sp. nov.* Radices fibratae. Rhizoma validum, plus minusve repens. Pseudobulbi in serie, approximati, anguste ampullacei, usque ad apicem attenuati, diphylli, in rhizomate crasso repenti congesti. Folia anguste elliptico-lanceolata, acuta, subtus prominenter quinquenervia, in petiolum sensim contracta. Pedunculus terminalis, folium multo superans, basi nudus, infra racemum valde bialatus, rachide fractiflexa. Bracteae inflorescentiae ovarium pedicellatum superantes, deciduae. Sepala lateralialia oblonga, basi valde concava, sensim acuta. Sepalum dorsale simile sed valde concavum. Petala lineari-triangularia, acuta, trinervia. Labellum conspicue trilobatum; lobis lateralibus superne dilatatis, apice leviter emarginatis; lobo medio cuneato-obovato, abrupte triangulari-acuto, supra medium minute glanduloso. Discus callo alte sulcato ornatus. Columna valde arcuata, apicem versus alata, ala inconspicue undulata.

Roots 2 mm. in diameter, smooth. Rhizome 8-10 mm. thick, bearing the approximate pseudobulbs in linear series. Pseudobulbs 8-12 cm. long when mature, very slender, up to 1.5 cm. thick near the base, tapering gradually to the summit, diphyllous. Leaves 24 cm. long, up to 3.6 cm. wide above the middle, narrowly elliptic-lanceolate, acute, prominently 5-nerved beneath, contracted into a short sulcate petiole. Peduncle terminal, arising between the leaves, with the raceme 30 cm. long more or less, conspicuously bialate below the inflorescence, with the rachis conspicuously flexuose, elongating during anthesis. Bracts of the inflorescence deciduous, glumaceous, about 3 cm. long, yellowish, those at the tip of the elongating rachis closely imbricating. Pedicels 8-10 mm. long including the ovary. Lateral sepals about 1.4 cm. long, 4 mm. wide, oblong, acute, concave at the base. Dorsal sepal similar, about 1.5 cm. long, concave, arching forward over the column. Petals 13 mm. long, about 2 mm. wide near the base, linear-triangular, acute, tapering gradually to the tip, 3-nerved. Labellum conspicuously 3-lobed, 11.5 mm. long; lateral lobes 5 mm. long from tip to sinus formed with the middle lobe, 5 mm. wide at the tip, inner margin protuberant, apex

COELOGYNE *candoonensis*  
Ames

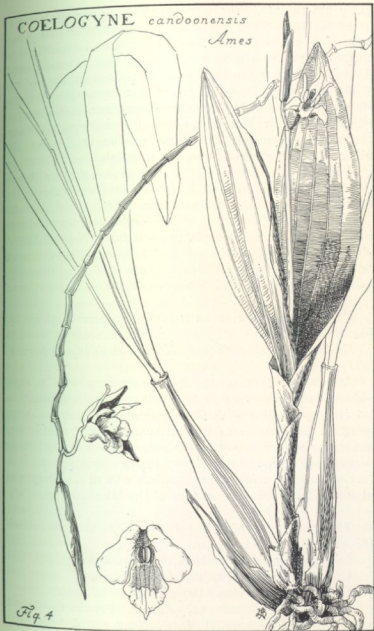


Fig 4

lightly emarginate, otherwise truncate, upper surface minutely and densely glandulose; middle lobe 9 mm. long, 6 mm. wide above the middle, obovate from a cuneate base, contracted at the tip in a triangular apicule, upper half minutely and very densely glandulose. Disc in front of the middle lobe provided with an erect more or less sulcate callus which is suborbicular when spread out with a central longitudinal keel. Column about 9 mm. long, arcuate, conspicuously winged, the wing prominent behind the anther with the margin obscurely undulate.

Vegetatively similar to *Coelogyne longirachis* Ames, from which it differs in the details of the labellum, in the callus and in the wings of the column. [Fig. 4.]

PHILIPPINES, Mindanao, Bukidnon Subprovince, Mount Candoon, *M. Ramos & G. Edaño, Bureau of Science 3889A*, July 8, 1920. On tree on mossy forest slopes. Flower brown and white. 5500 feet altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26323.)

***Coelogyne marmorata* Reichb. f.** in *Linnaea* 41 (1877) 116.

*Coelogyne Zahlbrucknerae* Kränzl. in *Fedde Repert.* 17 (1921) 389.

An examination of the type specimen of *Coelogyne Zahlbrucknerae* preserved in Kränzlin's herbarium indicates that it is conspecific with *C. marmorata* Reichb. f. In reducing *C. Zahlbrucknerae* to synonymy I have relied on a drawing preserved in my herbarium, which was made from Reichenbach's type preserved in Vienna.

*Coelogyne Merrillii* Ames is a close ally of *C. marmorata*, but differs from it in the contour of the labellum.

***Pholidota carnea* (Bl.) Lindl.** *Gen. & Spec. Orch.* (1830) 37.

*Coelogyne carnea* Reichb. f. in *Walp. Ann.* 6 (1861) 237.  
*Crinonia carnea* Bl. *Bijdr.* (1825) 339.

*Crinonia Elmeri* Ames *Orch.* 5 (1915) 67 *nomen.*

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, *A. D. E. Elmer 1383A*, September

1912. Somewhat creeping clusters along the nether side of moss-covered tree trunks on a wind-swept ridge of Masoy at 5500 feet; stems few, bendable, descending and curved upwardly, occasionally short branched, covered by imbricate dry bracts; pseudobulbs ascending, reddish-tinged on the upper or exposed side; leaves in ascending pairs, arising from the apex of the pseudobulbs, twistingly recurved, quite rigid and coriaceous, paler green beneath; spike arising from the basal side of the pseudobulb, erect at the base, which is densely clothed with marcescent sheaths; otherwise the green rachis is gracefully recurved; the ovary yellowish striate; the floral organs testaceous brown: Davao District, Mount Apo, *E. B. Copeland s. n.*, April 1904. On mossy tree. 6300 feet altitude.

Since the publication of the fifth fascicle of *Orchidaceae* I have been able to compare the Philippine species, now referred to *Pholidota carnea*, with an abundance of material from Java. The characters on which I relied for the recognition of a new species seem to be inconsequential, and I believe it is best to neglect them. *Pholidota carnea* is an addition to the orchid flora of the Philippines. I have seen Philippine specimens only from Mindanao.

***Acoridium exasperatum*** *Ames sp. nov.* Herba epiphytica, pusilla. Radices fibratae, ramosae, glabrae. Pseudobulbi semifusiformes, juniores vaginis acutis demum in fibras solutis inclusi, vagina summa pseudobulbum multo superans, caespitosi, monophylli. Folium oblongum utrinque attenuatum, coriaceum, acutum, in petiolum brevem contractum. Pedunculus terminalis, pars pedunculi infra racemum folio brevior, nuda, filiformis. Racemus elongatus folii apicem superans, distichiflorus. Bracteae inflorescentiae glumaceae, pedicellum cum ovario superantes, late rotundato-ovatae, acutae, nervosae, margine involutae. Sepala lateralia lanceolata, acuta, per medium conspicue uninervia. Sepalum dorsale ovato-lanceolatum, acutum. Petala late ovata, acuta. Labellum trilobatum; lobis lateralibus falcatis, obtusis, erectis; lobo medio subquadrato, apiculato vel trilobulato, lobulo terminali triangulari.

Discus leviter concavus, prope basim lobi lateralis utriusque et in depressione disci callus vel papilla. Columna generis.

Epiphytic caespitose herb. Roots much branched, spreading, smooth. Pseudobulbs 1.5 cm. long, 2 mm. in diameter at the base, 1 mm. thick at the summit, yellowish when dry, wrinkled, when young covered with closely appressed sheaths (when mature surrounded by the fibrous remains of the sheaths), monophyllous. Leaf 3.5-8 cm. long, 5-6 mm. wide near the middle, oblong, acute, obscurely apiculate, with the mid-nerve conspicuous beneath. Petiole about 1 cm. long, slender. Peduncle including the rachis of the raceme up to 10 cm. long, naked below the raceme, very slender. Raceme 4-5 cm. long, about 5 mm. in diameter, with the white flowers distichously arranged. Bracts of the raceme 2 mm. long, round-ovate, acute, longitudinally nerved, exceeding the ovary. Pedicel with the ovary about 1.5 mm. long. Lateral sepals 2 mm. long, 1 mm. wide below the middle, lanceolate, acute, mid-nerve evident. Dorsal sepal 2 mm. long, 1 mm. wide below the middle, lanceolate, acute. Petals 1.75 mm. long, 1 mm. wide, broadly ovate, or elliptic, acute, with the mid-nerve evident. Labellum 3-lobed, 1 mm. long, 1.75 mm. wide across the lateral lobes when spread out; lateral lobes falcate, obtuse, erect, each with a papilliform callus at the base near the sinus formed with the mid-lobe; middle lobe subquadrate, apiculate or trilobulate in front with the middle lobe triangular acute. Disc lightly concave with a small papilliform callus in the center. Column ebrachiate.

Closely allied with *Acoridium microchilum* (Schltr.) Ames and *A. tenue* Ames, but separable from them by the petals being broadly ovate or elliptical. In contour the labellum is very similar to that of *A. microchilum* (cf. Ames Orch. 2 (1908) t. 21, fig. 2). [Fig. 6.]

PHILIPPINES, LUZON, Rizal Province, Mount Lumutan. *M. Ramos, Bureau of Science 42338*, April 21, 1923. On tree in mossy forest. 4000 feet altitude. (TYPE in Herb. Ames No. 26729.)



**Acoridium marginatum** Ames *sp. nov.* Herba epiphytica, caespitosa, maxime *A. rhombophoro* affinis, quod haec species habitu et structura conspicue simulat. Radices albae, fibratae. Pseudobulbi conferti, anguste obpyriformes, in sicco valde rugosi, monophylli. Folium oblongo-lanceolatum, bene marginatum, apice rotundatum, apiculatum, usque ad basim attenuatum, in petiolum contractum. Pedunculus gracilis, cum racemo folium permulto excedens. Racemus usque ad vigintiflorus, rachide anfracta vel flexuosa. Bracteae pedunculi infra racemum imbricantes; bracteae flores subtendentes glumaceae, patentes, pedicellum cum ovario excedentes. Flores aurei, distichi. Sepala lateralia ovata, obtusa vel subacuta, carnosa, trinervia. Sepalum dorsale anguste ellipticum. Petala cuneato-flabellata vel subrhomboidea, apice rotundata, obtusa. Labellum valde carnosum, panduratum, basi valde concavum vel subsaccatum. Columna generis.

Epiphytic herb up to 24 cm. high when measured from the base of the pseudobulb to the tip of the raceme. Roots rather coarse, whitish, smooth. Pseudobulbs about 1.5 cm. long, obpyriform, deeply wrinkled longitudinally when dry, 5 mm. in diameter near the base, monophyllous. Leaf 6-12 cm. long, up to 11 mm. wide, narrowly oblong-lanceolate, with a conspicuous raised median nerve, marginate, obtuse with a distinct mucro, narrowed toward the base into a slender petiole. Petiole 2-3 cm. long. Peduncle with the raceme up to 23 cm. long, naked to the base of the raceme where it is provided with several closely imbricating scarious bracts. Raceme 6-9 cm. long, about 1.5 cm. across, bearing from ten to twenty flowers, rarely more. Flowers distichous, yellow, about 4 mm. apart, rather fleshy, opening in succession. Bracts of the raceme about 3 mm. long, ovate, glumaceous, exceeding the pedicellate ovary. Lateral sepals spreading, 4 mm. long, 2.75 mm. wide below the middle, ovate, obtuse or subacute, lightly carinate along the middle on the outer surface, 3-nerved. Dorsal sepal 4.75 mm. long, 2 mm. wide, narrowly elliptical, obtuse, 3-nerved. Petals 4 mm. long, 4 mm. wide above the middle, flabelliform, rounded at the tip, 3-nerved, with the lateral



Fig. 5

ACORIDIUM  
*marginatum*  
Ames

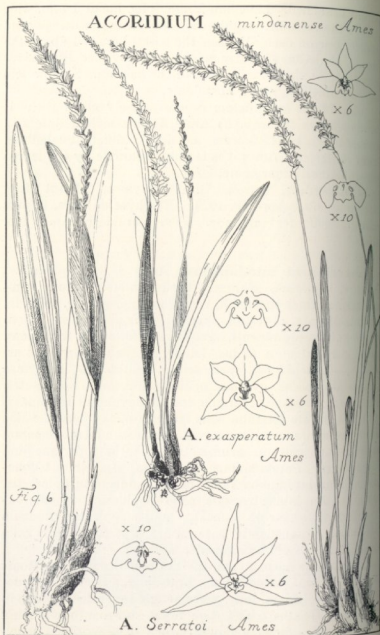
nerves branched. Labellum 2 mm. long, about 1 mm. wide above the middle, pandurate (sometimes with porrect lobules, one on each side near the base), broadest above the middle, sometimes bluntly apiculate, fleshy, deeply concave or saccate at the base in front of the column. Column less than 1 mm. long, stout, ebrachiate.

*Acoridium marginatum* is most closely allied with *A. rhombophorum* (Reichb. f.) Ames, from which it differs in having much larger flowers and a very different labellum. From *A. irigense* Ames it is readily separable by the leaves being distinctly marginate. [Fig. 5.]

PHILIPPINES, Luzon, Rizal Province, Mount Irig, *M. Ramos s. n.*, April 19, 1922. Epiphyte on trees, flowers yellow. 4900 feet altitude. (TYPE in Herb. Ames No. 26137.)

*Acoridium mindanaense* Ames *sp. nov.* Radices fibratae, ramosae, glabrae. Pseudobulbi graciles, semifusiformes, in sicco flavidi, corrugati, monophylli. Folium anguste lineare, obtusum, apice breviter apiculatum, nervo medio subtus prominenti. Pedunculus filiformis, ascendens, usque ad racemum nudus, folium excedens. Racemus arcuatus, distichiflorus, pergracilis, multiflorus. Bractee racemi glumaceae, ovarium pedicellatum multo superantes, subtiliter nervosae, margine leviter involuta, rotundato-ovatae. Sepala lateralia bene lanceolata, acuminata, valde acuta, membranacea, uninervia, basi rotundata. Sepalum dorsale lanceolatum, acuminatum, acutum, per medium uninervium. Petala similia sed minora. Labellum trilobatum; lobis lateralibus subellipticis, valde obtusis, erectis, prope basim lobi utriusque callo papilloso triangulo instructis; lobo medio cuneato, antice apiculo triangulo instructo. Discus leviter saccatus, in depressione disci callo papilliformi. Columna generis.

Epiphytic herb, 20 cm. tall to tip of the raceme. Roots fibrous, 10 cm. or more long, branching, smooth. Pseudobulbs about 1.5 cm. long, when young concealed by closely appressed sheaths which soon break down into spreading fibres, semifusiform, yellowish when dry, wrinkled longi-



tudinally, about 2 mm. in diameter at the base, 1 mm. thick at the summit, unifoliate. Leaf 3-8 cm. long, 2 mm. wide, linear, tapering near the base into a slender sulcate petiole, obtuse, minutely apiculate, only the mid-nerve prominent beneath. Peduncle (up to the base of the raceme) 4.5-9 cm. long, filiform, ascending, with a sterile glumaceous bract at the base of the raceme, otherwise naked below. Raceme 4-7 cm. long, 3-4 mm. in diameter, with numerous distichously arranged flowers. Bracts of the raceme about 2 mm. long, 2 mm. wide, round-ovate, finely many-nerved, exceeding the ovary, glumaceous, with the margins somewhat involute. Pedicellate ovary 1 mm. long, slender. Lateral sepals scarcely 2 mm. long, .75 mm. wide, lanceolate, acuminate, acute, with a conspicuous mid-nerve. Dorsal sepal 1.75 mm. long, similar to the laterals. Petals 1.25 mm. long, less than 1 mm. wide, lanceolate, acute, with the mid-nerve conspicuous. Labellum about 1 mm. long, about 1 mm. wide across the lateral lobes; mid-lobe .25 mm. long, cuneate, rather fleshy, shallowly emarginate, with a triangular apicule at the tip; lateral lobes .5 mm. long, sub-elliptical, obtuse, erect, parallel with the column, each lobe with a minute, triangular-papilliform callus at the base near the sinus formed with the mid-lobe. Disc somewhat saccate or shallowly concave with an erect papilla in the middle. Column .5 mm. long.

A near ally of *Acoridium tenue* Ames, from which it differs most conspicuously in the narrow leaves, smaller flowers and different sepals and petals. [Fig. 6.]

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta. A. D. E. Elmer 14095, October 1912. (TYPE in Herb. Ames No. 13440.)

***Acoridium Serratoi* Ames sp. nov.** Radices fibratae, ramosae, glabrae. Pseudobulbi semifusiformes, graciles, in sicco longitudinaliter corrugati, juniores vaginati, vaginis demum fibratis, monophylli. Folium anguste lanceolatum, obtusum vel subacutum, breviter apiculatum, basi in petiolium gracilem contractum, nervo medio subtus prominenti. Pedunculus terminalis, cum racemo foliis multo longior,

filiformis, usque ad racemum nudus. Racemus gracilis, distichiflorus. Bracteae racemi glumaceae, ovarium pedicellatum superantes, late ovatae, abrupte acutae, nervosae. Sepala lateralia anguste triangulari-lanceolata, valde acuta, trinervia, petalis longiora. Sepalum dorsale simile. Petala oblongo-lanceolata, acuta. Labellum trilobatum, saccatum; lobis lateralibus semicrescentiformibus, obtusis, erectis, membranaceis; lobo medio anguste reniformi, antice breviter apiculato. Discus prope basim lobi lateralis utriusque callo papilliformi instructus et in depressione disci callo minuto ornatus. Columna generis.

Epiphytic herb. Roots spreading, fibrous, much branched, smooth. Pseudobulbs 1.5–2 cm. long; caespitose, when dry about 2 mm. in diameter near the base and 1 mm. in diameter at the summit, semifusiform, longitudinally wrinkled, unifoliate. Leaf 7.5–11 cm. long, 6–9 mm. wide near the middle; narrowly lanceolate, obtuse or subacute, with an apiculate tip, contracted below into a slender petiole which is 1–1.5 cm. long. Peduncle terminal, naked up to the raceme, including the raceme up to 15 cm. long. Raceme about 7.5 cm. long, about 5 mm. in diameter, composed of numerous distichously arranged whitish flowers. Bracts of the raceme 2.5 mm. long, broadly ovate from a wide base, abruptly acute, nervose, glumaceous, exceeding the pedicellate ovary. Lateral sepals 3.5 mm. long, about 1 mm. wide at the base, narrowly triangular-lanceolate, acuminate, acute, 3-nerved. Dorsal sepal 3.5 mm. long, similar to the laterals. Petals 3 mm. long, 1 mm. wide, oblong-lanceolate from a broad base, acuminate, acute, membranaceous, mid-nerve evident. Labellum about 1 mm. long, ascending, saccate, 3-lobed; lateral lobes erect, curved slightly forward, semicrescentiform, .5 mm. long, obtuse, exceeding the middle lobe, membranaceous; middle lobe narrowly reniform, apiculate, about 1 mm. wide when spread out, somewhat fleshier than the lateral lobes. Disc with a papilliform callus at the base of each lateral lobe near the sinus formed with the middle lobe, and with a small papilla in the center. Column about 1 mm. long, ebrachiate. [Fig. 6.]

*Acoridium Serratoi* resembles in habit *A. Curranii* Ames, from which it differs in the mid-lobe of the labellum and in the form of the petals.

PHILIPPINES, Luzon, Laguna Province, *Juan S. Serrato* s. n., September 1912. Flower white, nearly yellow. On tree in dense forest. (TYPE in Herb. Ames No. 26728.)

***Dendrochilum pangasinanense* Ames sp. nov.** Rhizoma validum, breve ut videtur. Pseudobulbi congesti, elongati, semifusiformes, longitudinaliter sulcati, in sicco flavescens, monophylli. Folia petiolata, elliptico-oblonga, utrinque angustata, coriacea. Racemi folio juvenili synanthi, pedunculatos nudos terminantes. Bracteae inflorescentiae glumaceae, subtruncatae, plus minusve erectae, paleaceae, multinervosae, ovarium bene pedicellatum subaequantes. Sepala lateralibus quinquenerviis, lanceolata, patentia, acuta. Sepalum dorsale subsimile, quinquenerviis, acutum. Petala anguste elliptica, subobtusata, trinerviis. Labellum trilobatum, carnosum; lobis lateralibus erectis, obtusis; lobo medio late ovato, acuto, per medium leviter et late sulcato. Discus tricarinatus carina media abbreviata. Columna valde arcuata, apice obscure crenulato; alae laterales terminales nonnihil ad apicem inaequaliter bilobulatae, lobulo inferiore elongato triangulo.

Rhizome stout, abbreviated, with the pseudobulbs more or less crowded. Roots whitish, fibrous, branched. Pseudobulbs about 4.5 cm. long, erect, slenderly semifusiform, deeply wrinkled longitudinally when dry, yellowish, when mature subtended by the fibrous remains of elongated sheaths, monophyllous. Leaf petiolate; lamina of mature leaf about 10 cm. long, 21 mm. wide at the middle, elliptic-oblong, nervose; petiole 2 cm. long, terete below the middle, when immature the leaf embraces the erect peduncle and is subtended by four tubular sheaths. Peduncle with the raceme up to 25 cm. long, naked below. Raceme about 1 dm. long, slender, bearing about fifteen flowers. Bracts of the raceme about 5 mm. long, glumaceous, nervose, subtruncate, equaling the ovary. Lateral sepals 8 mm. long, 3.5 mm. wide, lanceolate, acute, 5-nerved. Dorsal sepal

9 mm. long, 3 mm. wide, lanceolate, acute, 5-nerved. Petals 8 mm. long, 3 mm. wide, narrowly elliptical, 3-nerved, sub-obtuse. Labellum 6.5 mm. long, panduriform, 3-lobed, rather fleshy; lateral lobes much abbreviated, about 1 mm. long to the sinus formed with the middle lobe, obtuse; middle lobe 4 mm. long, 3 mm. wide below the middle, ovate, acute, somewhat sulcate along the middle. Disc tricarinate, with the middle carina much shorter than the laterals. Column 4.75 mm. long, strongly curved forward, dilated upward, terminating in a broad inconspicuously crenulate dorsal wing; stelia terminal, one on each side of the column, bilobulate or obscurely bilobulate at the tip, when bilobulate the lower lobule is triangular and longer than the upper one.

Closely allied to *Dendrochilum Clemensiae* Ames, from which it is readily distinguished by the terminal stelia of the column, by the 5-nerved sepals, obtuse lateral lobes of the labellum and slightly larger flowers.

PHILIPPINES, Luzon, Pangasinan Province, *Maximo Ramos, Bureau of Science 8286*, May 1909. (TYPE in Herb. Ames No. 11252.)

**Malaxis atosanguinea** Ames sp. nov. Herba terrestis, valida, plus minusve bifoliata, infra folia vaginis amplis approximatis vestita. Folia elliptica, utrinque attenuata, acuminata, acuta, membranacea, conspicue nervosa, basi in petiolum canaliculatum contracta. Pedunculus elongatus, folio multo excedens. Racemus gracilis, multiflorus, erectus ut videtur, floribus atropurpureis instructus. Bractee flores subtendentes lineari-lanceolatae, ovarium aequantes vel excedentes. Pedicellus cum ovario distincte quadrialatus. Sepala lateralia elliptica, obtusa, plus minusve convexa, patentia, membranacea. Sepalum dorsale oblongo-ellipticum, obtusum, margine leviter revoluta. Petala linearia, margine valde revoluta. Labellum antice sexad septemlobulatum; lobulis lateralibus antice triangularibus, post columnam in auriculas obtuse triangulares pro-





ductis. Discus prope columnam excavatus, prope medium labelli callo crescentiformi ornatus. Columna abbreviata superne utrinque obtuse alata.

A terrestrial herb up to 50 cm. tall when measured to the tip of the slender raceme. Roots coarsely fibrous, conspicuously villose. Stems erect, 11-14 cm. long to the base of the lowermost leaf, concealed by four or more loosely appressed subimbricating scarious sheaths 1-4 cm. long. Leaves two to three or probably more, contracted at base, the chartaceous lamina 12-15 cm. long, up to 6.7 cm. wide, elliptical, acuminate, acute, conspicuously nervose when dry; petiole more or less canaliculate, the basal portion sheathing the stem. Peduncle with the slender raceme up to 30 cm. or more long, slender, erect, provided with a few scattered linear scarious spreading or dependent bracts. Raceme about 12 cm. long, scarcely 5 mm. in diameter, many-flowered. Bracts of the raceme about 4 mm. long, linear, spreading or dependent, scarious, equaling or exceeding the ovary. Pedicel with the ovary 3-4 mm. long, 4-winged, smooth. Flowers purplish. Lateral sepals 2.5-2.75 mm. long, 1.5 mm. wide, elliptical, obtuse, margin slightly rolled back. Dorsal sepal about 3 mm. long, 1 mm. wide, oblong-elliptical, obtuse, lightly convex. Petals 2.5 mm. long, about .5 mm. wide, linear, obtuse, margin strongly revolute. Labellum including the auricles about 4 mm. long, 6-7-lobulate in front; lateral lobules porrect, including the auriculate base 2.5 mm. long, the frontal free portion very short, triangular; the auriculate base 1.25 mm. long, obtusely triangular, continued backward behind the column; central lobules up to 1 mm. long. Disc strongly concave in front of the column, the depression margined in front with a fleshy crescent-shaped callus. Column 1 mm. long, with a blunt erect wing at the summit on each side. [Fig. 7.]

Allied to *Malaxis Wenzelii* Ames, from which it differs in the segments of the mid-lobe of the labellum, in the dimensions of the petals and in the leaves.

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, A. D. E. Elmer 13815, September 1912. (TYPE in Herb. Ames No. 13439.)

**Malaxis bulusanensis** Ames *sp. nov.* Caulis foliis radicalibus brevior, di- vel triphyllus, basi plus minusve tumidus. Folia elliptico-lanceolata vel elliptica, acuta, gradatim in petiolum contracta, membranacea, in sicco valde chartacea, multinervia. Petiolus caulem vaginans, amplus. Pedunculus elongatus, folia multo excedens, infra racemum paucibracteatus. Racemus elongatus bracteis flores subtendentibus valde deflexis, triangulari-linearibus. Sepala lateralia elliptica, apice cucullata, valde obtusa, quadrinervia. Sepalum dorsale oblongum, obtusum, trinervium, margine revoluta. Petala lineari-oblonga, obtusa, uninervia, margine valde revoluta. Labellum antice octo- vel decemdentatum, post columnam in auriculas permagnas longe triangulas productum. Discus ante foveam callo transverso instructus. Columna generis.

Roots fibrous, villose. Stems about 4.5 cm. tall, 2-3-leaved, more or less tumid at the base, concealed by sheathing petioles. Lamina of the leaves 9-13.5 cm. long, up to 5.5 cm. wide, elliptic-lanceolate or elliptical, acute, membranaceous, many-nerved, gradually contracted into wide petioles which become sheathing at the base. Peduncles up to 35 cm. long, much exceeding the leaves, with a few linear bracts below the raceme, longitudinally and shallowly sulcate. Racemes up to 21 cm. long, very slender, about 1 cm. in diameter, many-flowered, flowers opening in succession. Bracts of the raceme about 5 mm. long, narrowly triangular-lanceolate, acute, sharply deflexed. Ovary 6-winged, curved. Lateral sepals 5 mm. long, elliptical, cucullate at the tip, 4-nerved. Dorsal sepal 6 mm. long, about 2 mm. wide near the middle, oblong, obtuse, 3-nerved, margin revolute. Petals 5 mm. long, 1 mm. wide, linear-oblong, obtuse, 1-nerved, margin revolute. Labellum including the auricles 9 mm. long, 5.5 mm. wide in front of the column, coarsely 8-10-toothed or lobulate in front, cordate-sagittate in outline; auricles 4 mm. long, 2 mm. wide, triangular, subacute, prolonged behind the column. Disc with a small transverse thickening or callus in front of the shallow fovea. Column 2 mm. long.

Allied to *Malaxis Taylorii* Ames, from which it differs in the structure of the labellum.

PHILIPPINES, Luzon, Sorsogon Province, Irosin, Mount Bulusan, A. D. E. Elmer 14702, October 1915. (TYPE in Herb. Ames No. 26317): Elmer 14830, November 1915.

**Malaxis epiphytica** Ames sp. nov. Herba epiphytica, glabra. Radices incrassatae, lanuginosae. Folia conferta subrosulata, ascendencia, elliptico-lanceolata, acuminata, acuta, basi in petiolum sulcatum contracta, subtu purpurea, omnia tenuia. Pedunculus demum folia superans, infra racemum paucibracteatus, bracteis linearibus acutis nonnihil dependentibus. Racemus multiflorus, elongatus. Bractee inflorescentiae lineares, acutae. Flores extus purpurei, glabri. Sepala lateralialia elliptica, obtusa, concava, trinervia. Sepalum dorsale oblongo-ellipticum, utrinque leviter attenuatum, trinervium. Petala anguste oblonga, obtusa, uninervia. Labellum trilobatum; lobis lateralibus antice longe tridentatis; lobo medio bi-vel tridentato. Auriculae labelli post columnam extensae, obtuse triangulares. Columna generis.

Epiphytic herb 26 cm. tall to the tip of the raceme. Roots up to 10 cm. long, fleshy, covered with matted, woolly hairs. Stems concealed by the sheathing leaves, stout, erect. Leaves crowded at the base of the plant, about eight in number, increasing in size upwards, 9-20 cm. long, 2-5.2 cm. wide, smooth, elliptic-lanceolate, acuminate, acute, in living specimens bronzy green above and purplish beneath, delicate in texture, ascending, contracted at base in sheathing petioles. Peduncle about 20 cm. long, with several linear acute bracts below the raceme. Raceme 6 cm. or more long, the flowers opening in succession, the flowering period being a long one. Bracts of the raceme up to 1 cm. long, linear, acute, exceeding the slender ovary. Pedicel with the 6-winged ovary 5.5 mm. long. Lateral sepals 4-4.5 mm. long, about 3 mm. wide, elliptical, obtuse, strongly concave, 3-nerved. Dorsal sepal 4.5 mm. long, 2.5 mm. wide, oblong-elliptical, obtuse, 3-nerved. Petals 4 mm. long, 1 mm. wide, narrowly oblong, obtuse, 1-nerved. Labellum 6 mm. long

including the auricles, 3-lobed, with the lateral lobes tridentate; lateral lobes including the auricles up to 5 mm. long, divided in front into three teeth of which the middle one is the longest and up to 2.5 mm. long, linear, acute; middle lobe 2.5 mm. long, about 2 mm. wide, bilobulate in front or sometimes trilobulate, the lobules more or less obtuse. Auricles 2 mm. long. Column 1 mm. long.

In the details of the labellum *M. epiphytica* is very similar to **Malaxis micrantha** (*Hook. f.*) *Ames comb. nov.* (*Microstylis micrantha Hook. f.* in *Hook. Icon. Pl.* (1889) t. 1834), but is clearly distinguished by the larger flowers, somewhat different habit and larger vegetative parts. Among Philippine species it is most closely related to *Malaxis dentata* Ames, from which it differs in its larger flowers and longer lip-segments. Another closely allied species is *M. McGregorii* Ames, from which *M. epiphytica* differs in having a narrower labellum with shorter auricles and longer lip-segments.

PHILIPPINES, Mindanao, Cotabato District, *C. M. Weber* 223, August 24, 1911. Epiphyte on tree trunk. Flowers with purple exterior and yellow interior. 2700 feet altitude. (TYPE in Herb. Ames No. 12491.)

**Malaxis lilacina** *Ames sp. nov.* Herba epiphytica, glabra, radicibus elongatis, lanuginosis. Caules abbreviati, tumidi, petiolis vaginantibus foliorum obtecti. Folia plus minusve radicalia, verisimiliter succulenta, lanceolata vel anguste elliptica, utrinque attenuata, acuminata, acuta, in petiolum contracta. Petioli caulem abbreviatum vaginantes. Pedunculus folia superans, bracteis lineari-triangularibus demum valde deflexis obtectus, paene usque ad basim florifer. Flores in racemo denso dispositi. Sepala lateralia elliptica, obtusa, uninervia vel obscure trinervia. Sepalum dorsale anguste ellipticum, obtusum. Petala lineari-oblonga, obtusa, uninervia, margine valde revoluta. Labellum cordatum, auriculis valde elongatis post columnam extensis triangularibus obtusis, antice bilobulatum, obtusum, ante foveam callo transverso instructum. Columna generis.

Epiphytic herb 18 cm. tall to the tip of the raceme. Roots fibrous, lanuginose, spreading. Stems abbreviated, tumid at the base, about 2 cm. long, covered by the sheathing petioles. Leaves three to five, more or less radical, approximate; lamina 4-12 cm. long, 1.7-5 cm. wide, elliptic lanceolate, acuminate, acute, gradually narrowed toward the base. Petioles about 2 cm. long, dilated at the base. Peduncle with the raceme 10-15 cm. long, floriferous almost to the base, only slightly exceeding the leaves, the floral bracts becoming strongly deflexed as the flowers mature and fall off. Bracts about 5 mm. long, narrowly triangular, acute. Lateral sepals 2 mm. long, 1.5 mm. wide, elliptical, obtuse, 3-nerved, the lateral nerves sometimes obscure. Dorsal sepal 3 mm. long, 1.5 mm. wide at the middle, elliptic-oblong, obtuse. Petals 2.5 mm. long, hardly 1 mm. wide, linear-oblong, obtuse, with the margin strongly revolute, 1-nerved. Labellum including the auricles 3.5 mm. long, 2.5 mm. wide near the base of the column, cordate with the apex obtusely bilobulate; auricles 1.24 mm. long, about 1 mm. wide, narrowly triangular, obtuse. Disc with a transverse callus in front of the fovea near the base of the column. Column 1.25 mm. long, auricles thickened.

The nearest ally of this species is *Malaxis negrosiana* Ames, which has larger flowers, with the auricles of the labellum 3 mm. long.

PHILIPPINES, Leyte, C. A. Wenzel 0641, November 12, 1914. Epiphyte. Flowers lilac. 600 meters altitude. (TYPE in Herb. Ames No. 16681): Wenzel 0667, November 15, 1914. Epiphyte in forest. Flowers purple. 600 meters altitude. Panay, Antique Province, Richard C. McGregor 6205, June 20, 1918. Mossy forest on ridge east of Culasi. 900 meters altitude.

**Malaxis Maxonii** Ames sp. nov. Radices fibratae, villosae. Rhizoma repens, validum. Caules pseudobulbosi demum valde incrassati, obpyriformes, vaginis arcte appressis obtecti. Folia duo, elliptico-ovata vel ovata, acuta, membranacea, in petiolos elongatos producta. Pedunculus erectus, foliis longior, conspicue alatus. Inflorescentia

elongata, floribus succedaneis. Pedicellus cum ovario gracilis, elongatus. Flores virides. Sepala lateralia oblongo-elliptica, obtusa, apice incrassata, trinervia, basi cohaerentia. Sepalum dorsale simile. Petala linearia, usque ad apicem attenuata. Labellum sagittatum, apice tridentatum; auriculae labelli semicrescentiformes, acutae. Discus conspicue et profunde bicameratus. Columna generis.

Roots spreading, fibrous, densely villous. Rhizome about 5 mm. thick, creeping. Stems at length pseudobulbous; 2-leaved. Pseudobulbs up to 4 cm. long, about 2 cm. thick at the base, obpyriform, clothed with scarios sheaths which persist. Leaves approximate, produced at base into elongated petioles; lamina 9-13 cm. long, 4.5-8 cm. wide, elliptic-ovate or ovate, acute, rounded at the base, membranaceous. Petioles 5-11 cm. long, that of the upper leaf clasping the petiole of the lower leaf. Peduncle with the raceme 14-20 cm. long conspicuously winged, naked below the raceme, clasped by the base of the upper leaf. Raceme 3-5 cm. long, with a thickened rachis. Flowers greenish, opening in succession. Bracts of the raceme spreading, at length somewhat deflexed, 2.5 mm. long, triangular-lanceolate, greenish. Pedicel with the ovary 1.5-2 cm. long, slender, obliquely spreading. Lateral sepals about 7 mm. long, 2.5 mm. wide at the middle, coherent at the base, oblong-elliptic, obtuse, with the margin deflexed, 3-nerved, somewhat thickened at the tip. Dorsal sepal 7 mm. long, 3.5-4 mm. wide, similar to the laterals. Petals 4 mm. long, linear, narrowed gradually toward the tip, less than 1 mm. wide. Labellum including the basal auricles 5 mm. long, 3.5-4 mm. wide below the middle, broadly sagittate with a conspicuously tridentate apex; teeth unequal, the middle tooth much exceeding the lateral ones, 1 mm. long; auricles 2 mm. long, semicrescentiform, acute, incurved. Disc fleshy, with two deep depressions near the middle which are rounded at the bottom and separated by a heavily thickened longitudinal partition. Column abbreviated.

*Malaxis Maxonii* is a close ally of *M. hastilabia* (Reichb. f.) Ktze., from which it differs conspicuously in having

flowers which are about three times larger. Flowers preserved in alcohol indicate that the labellum is orange-yellow in living material.

NICARAGUA, Mombacho Volcano, *Maxon, Harvey & Valentine 7770*, July 5, 1923. Terrestrial. Flowers greenish. 960 meters altitude. (TYPE in U. S. Nat. Herb. No. 1180026.)

***Liparis bontocensis* Ames sp. nov.** Radices fibratae, in sicco longitudinaliter sulcatae. Pseudobulbi verisimiliter aggregati, erecti vel ascendentes, semifusiformes, e basi usque ad apicem leviter angustati, bifoliati. Folia approximata, anguste lanceolata, acuta, articulata, in sicco valde nervosa, vix petiolata, pedunculo cum racemo breviora. Pedunculus e spatha conduplicata oriens, infra racemum paucibracteatus, bracteis anguste lanceolatis, in sicco scariosis. Racemus terminalis, laxis, elongatus, multiflorus floribus quaquaversis. Bracteae racemi anguste lineares, quam ovarium pedicellatum paulum breviores, acutae. Sepala lateralibus oblonga, obtusa, basi et apice leviter angustata, trinervia. Sepalum dorsale simile sed angustius. Petala linearia, sepalis lateralibus vix breviora. Labellum e basi cuneata et obscure cordata oblique ascendens, prope medium valde deflexum, supra medium profunde bilobatum; lobis truncato-obtusis margine inaequaliter denticulata. Discus prope basim labelli bicarinatus. Columna gracilis.

Roots whitish. Pseudobulbs 3.5-4 cm. long, about 1 cm. in diameter at the base, tapering upwards, terminated by two alternate or subopposite leaves, much wrinkled longitudinally when dry. Leaves about 5 mm. apart, articulated, 17-18.5 cm. long, 18-21 mm. wide, narrowly lanceolate, broadest above the middle, acute, tapering gradually from about the middle to the articulated base, nervose when dry, ascending, slightly spreading, shorter than the inflorescence. Peduncle with the raceme terminal 23 cm. long, arising from a spathe, provided below the raceme with several lanceolate scarios bracts which are about 8 mm. long. Raceme about 15 cm. long, 2 cm. in diameter, many-flowered, lax. Bracts of the raceme about



6 mm. long, narrowly triangular-lanceolate, acute, slightly shorter than the pedicellate ovary, spreading. Pedicel with the ovary 7 mm. long. Lateral sepals 5-6 mm. long, 2 mm. wide, oblong, obtuse, 3-nerved, rounded at the base, recurved. Dorsal sepal about 5 mm. long, 1.25 mm. wide, similar to the lateral sepals. Petals up to 5.5 mm. long, .75 mm. wide, linear. Labellum 7 mm. long, obliquely ascending from a cuneate obscurely cordate base, 4.5 mm. wide near the tip, sharply deflexed above the middle, margin minutely glandular, deeply bilobulate at the tip, sometimes with an apicule between the lobules, margin of the lobules unequally denticulate. Disc with a keel on each side near the base. Column 3 mm. long, slender, arching forward, dilated at the base and at the apex.

Closely allied to *Liparis trichoglottis* (Ames) Schltr., from which it differs in the diphyllous pseudobulbs and in the margin of the labellum being inconspicuously glandular. The texture of the flowers recalls *Liparis latifolia* Lindl.

PHILIPPINES, LUZON, Bontoc Subprovince, Bauco, *Father M. Vanoverbergh 3947a*, November 17, 1914. 1700 meters altitude. (TYPE in Herb. Ames No. 26311): *Vanoverbergh 1245*, May-June 1911. Epiphyte. Flowers greenish, labellum brown. 1650 meters altitude.

***Liparis palawanensis* Ames sp. nov.** Radices fibratae, plus minusve elongatae. Pseudobulbi caespitiosi, e basi lata angustati, foliis infrabulbosis usque ad medium pedunculi attingentibus, anguste ellipticis, foliis duobus ex apice pseudobulbi anguste ellipticis vel lanceolatis. Folia in sicco chartacea, nervosa, valde acuta, utrinque angustata, in petiolum conduplicatum brevem contracta. Pedunculus folia terminalia superans, infra racemum paucibracteatus. Racemus laxus, plus minusve quindecimflorus. Bractee racemi ovario breviores, triangulares, acutae, in sicco scariosae. Sepala lateralia oblonga, a medio usque ad apicem acutum leviter attenuata. Sepalum dorsale simile sed minus. Petala linearia, sepalo dorsali vix longiora, obtusa. Labellum cuneatum, apice profunde bilobatum; lobis di-

varicatis, subquadratis, margine apicali dentatis. Discus prope basim labelli callo bilobato instructus. Columna generis.

Roots fibrous, elongated. Pseudobulbs about 2 cm. long, narrowed upward from a broad base, caespitose. Leaves basal and terminal, the basal ones subtending the pseudobulbs, 8 cm. long more or less, 1.9 cm. wide, contracted at base into a broad sheathing petiole, narrowly elliptical, acute; terminal leaves up to 13.5 cm. long, 3.3 cm. wide, borne in pairs at the summit of the pseudobulbs, narrowed from above the middle to form an abbreviated petiole, narrowly elliptical or lanceolate, acuminate, acute, chartaceous and nervose when dry. Peduncle terminal, together with the raceme 14 cm. long, with an abbreviated spathaceous bract at the base. Raceme 6-8 cm. long, about 2 cm. in diameter, about 15-flowered, with the flowers 5-7 mm. apart. Bracts of the raceme about 4 mm. long, triangular, acute. Pedicel with the ovary 6 mm. long, slender. Lateral sepals 5 mm. long, 2 mm. wide, oblong, tapering gradually to an acute or subobtuse tip. Dorsal sepal 4 mm. long, 1.5 mm. wide, oblong, subacute. Petals 4.75 mm. long, .75 mm. wide, linear, obtuse. Labellum 7 mm. long, 4 mm. wide above the middle, cuneate from a somewhat concave base, deeply bilobed above the middle; lobes terminal, divaricate, subquadrate, with the anterior margin unequally and obtusely dentate. Disc provided with an erect bilobed callus near the base of the column, smooth. Column 3 mm. long, curved forward, dilated and winged at the summit.

PHILIPPINES, Palawan, Alfonzo XIII, *C. M. Weber* 612, October 14, 1912. Found in forest. Flowers yellow. Sea-level. (TYPE in Herb. Ames No. 26303.)

**Oberonia Reilloi** *Añes* sp. nov. Radices fibratae, in sicco albescentes. Caules caespitosi, basibus foliorum omnino obtecti. Folia ensiformia, oblique ascendentia, disticha, plus minusve incurvata, apicem racemi aequantia vel excedentia, a latere visa linearia, acuta. Pedunculus terminalis, usque ad basim florifer, valde alatus. Racemus

cylindræus, densiflorus. Bracteae flores subtendentes lanceolatae, margine minute denticulatae vel obscure crenulatae. Flores parvuli. Sepala lateralia ovata, acuta. Sepalum dorsale ellipticum, obtusum. Petala late spatulata, margine erosa glandulosa, apice obtusa vel rotundata. Labellum trilobatum; lobis lateralibus rotundatis, valde obtusis, margine plus minusve erosis; lobo medio late cuneato, antice bilobulato-apiculo interjecto, margine plus minusve glanduloso et eroso. Discus glaber. Columna valde abbreviata.

Roots fibrous, copious, whitish in dried specimens. Stems caespitose, 3-4 cm. long to the base of the peduncle, entirely concealed by the sheathing bases of the leaves, more or less flattened. Leaves about six, the lower ones about 1.5 cm. long, the upper ones up to 6 cm. long, ensiform, 4 mm. wide, obliquely ascending, curved inward, equaling or exceeding the tip of the raceme. Peduncle with the raceme up to 6 cm. long, prominently several-winged longitudinally, floriferous almost to the base, with several ascending imbricating basal bracts. Raceme up to 5 cm. long, cylindrical, many-flowered. Bracts of the raceme lanceolate, acute, with the margin obscurely and minutely crenulate. Pedicel with the ovary obliquely ascending. Lateral sepals hardly 1 mm. long, .75 mm. wide, ovate, acute. Dorsal sepal 1 mm. long, elliptical, obtuse. Petals 1 mm. long, .5 mm. wide, broadly spatulate, obtuse, with the margin unequally glandular or erose. Labellum 3-lobed, .75 mm. long, hardly 1 mm. wide between the tips of the expanded lateral lobes, smooth; lateral lobes rounded, .5 mm. long and broad, margin irregularly erose; middle lobe hardly .5 mm. long and broad, cuneate or subquadrate, bilobulate and more or less apiculate in front. Column .5 mm. long.

Plant similar in habit to *Oberonia cylindrica* Lindl., but smaller, with much smaller flowers and a different labellum.

PHILIPPINES, Luzon, Laguna Province, Dahikan, *Juan Reillo* 20, June 19, 1912. Epiphyte on tree. (TYPE in Herb. Ames No. 13275.)

**Podochilus hystericinus** *Ames sp. nov.* Herba epiphytica, dense caespitosa. Caules omnino foliosi, simplices, leviter curvati. Folia disticha, oblique ascendente, basi mucronata. Inflorescentia terminalis vel subterminalis, pauciflora. Sepala lateraliter triangularia, acuta, mentum ventricosum formantia, extus leviter carinata. Sepalum dorsale ovatum, valde concavum. Petala oblongo-lanceolata, acuta, membranacea, extus nervo medio prominenti. Labellum basi breviter sagittatum, auriculis incrassatis supra basin in laminam elliptico-lanceolatam obtusam expansum. Discus prope basin labelli dense glandulosus, prope medium callo lateraliter complanato erecto quadrato instructus. Columna abbreviata, rostello elongato demum bipartito. Ovarium conspicue muricatum.

Epiphytic herb up to 13 cm. tall. Stems slender, caespitose, leafy to the base. Leaves distichous, 1.5-2 mm. apart, 6-10 mm. long, 2.5-3 mm. wide, oblong-elliptic, mucronate, clasping the stem at base, jointed to cylindrical persistent sheaths, obliquely ascending. Inflorescence terminal or sometimes produced from the axils of the upper leaves, few-flowered, rachis about 4 mm. long. Bracts of the raceme up to 2 mm. long, lanceolate, acute, concave. Ovary conspicuously muricate, ellipsoidal when mature. Lateral sepals 4.5 mm. long, 1.5 mm. wide, forming a conspicuous ventricose mentum which is 2.5 mm. long, triangular-lanceolate, acute, with the mid-nerve prominent on the outer surface. Dorsal sepal about 4 mm. long, ovate, concave. Petals 3 mm. long, about 1.5 mm. wide, oblong-lanceolate. Labellum 4.5 mm. long, sagittate at the base; auricles retrorse, .75 mm. long, and conspicuously thickened along the inner margin; above the base expanded into an elliptic-lanceolate, obtuse lamina which bears near the middle of the upper surface an erect conspicuous laterally flattened subquadrate callus which is thickened posteriorly and minutely glandulose. Disc between the median callus and the sagittate base conspicuously glandular-pubescent.

*PODOCHILUS hystericinus* Ames



Fig. 8

Flower, one sepal and petal removed

Column terminated by a membranaceous, bipartite rostellum. Capsule about 4 mm. long, provided with numerous blunt excrescences. [Fig. 8.]

PHILIPPINES, Leyte, C. A. Wenzel 0262, February 11, 1914. Epiphyte in forest. 750 meters altitude. (TYPE in Herb. Ames No. 26300): Wenzel 0870, February 15, 1915. 700 meters altitude.

**Appendicula cuneata** Ames sp. nov. Radices elongatae, villosae. Caules breves vel elongati, valde variabiles, a basi usque ad apicem foliosi, vaginis foliorum omnino obiecti. Folia disticha, oblique ascendentia, inter se satis distantia, oblongo-elliptica, apice bilobulata apiculo interjecto, margine apicali obscure erosa, nervo medio prominenti. Pedunculus terminalis, raro lateralis, gracilis, raro ramosus, usque ad basim floriger, plus minusve vigintiflorus, floribus in racemo elongato gracili dispositis, illis *A. xytriphorae* vix majoribus. Racemus per longum tempus apice alabastro bractea arcte incluso terminatus videtur. Bractee racemi demum oblique patentes, valde concavae, acutae. Rachis racemi leviter fractiflexa. Ovarium bractea subtendenti vix longius. Sepala lateralia mentum formantia, late triangularia, subacuta, trinervia. Mentum obtusum, ovarium aequans. Sepalum dorsale elliptico-ovatum, obtusum, valde concavum, trinervium. Petala oblongo-spathulata vel oblongo-cuneata, apice valde obtuso vel obtuse trilobulato. Labellum obscure oblongo-panduratum, apice truncatum, supra basim callo hippocrepiformi ornatum. Columna in pedem elongatum producta, rostello breviter exciso.

Epiphytic herb 14–28 cm. tall. Roots fibrous, spreading, at least the upper portion villose. Stems unbranched, caespitose, 1–2 mm. in diameter, entirely concealed by the sheathing bases of the leaves, leafy to the summit. Leaves distichous, 1.5–3.5 cm. long, 5–9 mm. wide at the middle, decreasing in size very gradually toward the summit and base of the stem, oblong-elliptical, bilobed at the apex with a bristle-like apicule projecting between the lobes and with the apical margin somewhat erose or denticulate, narrowed



APPENDICULA

*cuneata*

Ames



*A. leytensis*  
Ames



Fig. 9

at the base and abruptly contracted, jointed to more or less complanate sheaths which are 5-10 mm. long. Peduncle commonly terminal, rarely terminal and lateral, simple or sometimes branched at the base, including the raceme up to 8 cm. long, elongating during the flowering period, the sterile or flowerless part shorter than the subtending leaf. Raceme many-flowered, slender, with a slightly zig-zag rachis. Bracts of the raceme 3-4 mm. long, with the margin more or less hyaline, strongly concave, ovate, acute, widely spreading, equaling the ovary during anthesis. Flowers white with a white and purple labellum. Lateral sepals 3 mm. long, forming a blunt mentum, 3 mm. wide to the tip of the mentum, broadly triangular, obtuse or subacute, 3-nerved, with the mid-nerve slightly prominent. Dorsal sepal 3 mm. long, strongly concave, elliptic-ovate, obtuse. Petals about 3 mm. long, 2 mm. wide across the tip, gradually narrowed toward the base, oblong-spatulate or cuneate-spatulate, truncate at the tip or obscurely and bluntly 3-lobed. Labellum 4 mm. long, about 3 mm. wide across the tip, subpandurate, truncate, 7-nerved. Disc provided near the base with a conspicuous U-shaped callus which is 1 mm. high at the base, its sides intramarginal and about 2 mm. long. Column 2 mm. long, prolonged into a conspicuous foot which is 2.5 mm. long; rostellum with a U-shaped incisure at the tip.

Closely allied to *Appendicula xytriophora* Reichb. f. from which it differs conspicuously in the shape of the petals and labellum, and in the tendency to produce simple stems. In *A. xytriophora* the petals tend to be oblong rather than cuneate-spatulate, and are about as broad at the tip as at the base, while the labellum is not conspicuously wider at the tip than at the base. [*Fig. 9, habit and flower.*]

PHILIPPINES, Leyte, C. A. Wenzel 0635, November 11, 1914. Epiphyte in forest. 600 meters altitude. (TYPE in Herb. Ames No. 26651): Wenzel 0702, November 23, 1914. 600 meters altitude: Wenzel 0685, November 20, 1914: Wenzel 0668, November 15, 1914. 600 meters altitude. On the evidence of other specimens examined this species would seem to be a native of Luzon, Mindanao and Samar.



**Appendicula leytensis** Ames sp. nov. Herba epiphytica. Radices villosae, fibratae. Caules simplices, caespitiosi, foliosi, vaginis foliorum omnino obiecti. Folia elliptico-oblonga, disticha, apice bilobata apiculo interjecto, margine apicali vix erosa, basi leviter angustata, in sicco olivacea. Pedunculus terminalis, simplex, raro lateralis, paene usque ad basim floriger. Racemus per longum tempus alabastro bractea arcte incluso apice terminatus videtur, multiflorus, floribus illis *A. xytriphorae* vix minoribus. Sepala purpurea, lateralibus mentum obtusum formantibus, triangularibus, obtusis, trinerviis, nervo medio plus minusve prominenti. Sepalum dorsale valde concavum, ellipticum, subacutum. Petala elliptico-oblonga, apice rotundato-obtusata, trinervia. Labellum simplex, subrhombicum, valde obtusum vel truncatum, prope apicem callo minuto papilliformi ornatum, prope basim callo hippocrepiformi vel U-formi ornatum. Columna abbreviata.

Epiphytic herb. Roots fibrous, at least the upper portion villose. Stems caespitose, simple, leafy from base to summit, 14-26 cm. long, completely concealed by the sheathing bases of the leaves. Leaves 1.5-2.5 cm. long, 8 mm. wide, elliptic-oblong, bilobulate at the summit with an apicule between the lobules, olivaceous when dry, hardly decreasing in size from the middle of the stem toward the base and summit, distichous. Peduncle with the raceme about 8 cm. long, floriferous almost to the base, the flowerless portion equaling the subtending leaf. Raceme elongating as the flowers expand (ripe capsules being present simultaneously with opening buds), bearing twenty or more purple and yellow flowers. Bracts of the raceme 1-3 mm. long, lanceolate, soon strongly deflexed, about equaling the pedicellate ovary during anthesis, bracts below the raceme up to 8 mm. long, several, linear-lanceolate, ascending. Lateral sepals 3-3.5 mm. long, forming a blunt mentum, about 3 mm. wide, broadly triangular, obtuse or subacute, 3-nerved, with the mid-nerve more or less prominent on the outer surface. Mentum 2 mm. long. Dorsal sepal 3 mm. long, elliptic, concave. Petals about 3 mm. long, 1.5 mm. wide at the middle, elliptic-oblong, round-obtuse at the tip, 3-nerved. Labellum

3.5-4 mm. long, 3 mm. wide across the middle, more or less rhombic in outline from a broad base, 2 mm. wide near the blunt or truncate apex, with a small papilliform callus on the upper surface near the tip, 7-nerved. Disc ornamented near the base with a large U-shaped callus, the arms or sides of the callus extending to the middle of the labellum and more or less convergent. Column produced into a distinct, elongated foot.

The closest allies of *Appendicula leytensis* are *A. cuneata* Ames and *A. xytriophora* Reichb. f. From the former it is readily separated by the elliptic-oblong petals and rhombic labellum. From *A. xytriophora* it differs in the simple stems, purplish rather than yellowish flowers, and in the tendency of the leaves to dry olivaceous green. Another difference between *A. leytensis* and *A. xytriophora* which is constant in the specimens examined is the erose margin of the tips of the leaves in the latter species, the margin of the leaf in *A. leytensis* being entire or nearly so. [Fig. 9, flower.]

PHILIPPINES, Leyte, C. A. Wenzel 0359, March 15, 1914. Epiphyte in forest. Sepals purple, petals purple and yellow, lip yellow. 500 meters altitude. (TYPE in Herb. Ames No. 26662): Wenzel 0364, March 17, 1914. Sepals flesh color, petals flesh color and purple, lip purple. 500 meters altitude: Wenzel 0283, February 23, 1914. Sepals purple, petals flesh color, lip yellow.

**Agrostophyllum Elmeri** Ames sp. nov. Caules elongati, foliosi, complanati, vaginis foliorum omnino obtecti. Folia oblongo-ligulata, utrinque angustata, coriacea. Inflorescentia capitata, bracteosa. Pedicellus valde triangularis. Ovarium plus minusve trigonum. Sepala lateralia cymbiformia, lanceolata, extus per medium carinata, apice valde incrassata et lateraliter compressa. Sepalum dorsale lanceolatum, apice leviter incrassatum, ecarinatum. Petala anguste lanceolata, acuta, sepalis vix breviora. Labellum panduratum, basi valde concavum, carnosum, margine hypochilii erecta; epichilio orbiculari, septemnervio. Discus prope basim epichilii septo transverso calloso instructus. Columna apice tridentata.

A tall leafy herb of which only the upper part of a stem has been examined. Stem complanate above, entirely concealed by the sheathing petioles of the leaves. Petioles about 9 cm. long, equitant, conduplicate, about 2 cm. wide when spread out, ascending, persistent, longitudinally nerveose, rigid. Leaves 18 cm. long, up to 1.8 cm. wide, jointed to the sheathing petioles, deciduous, ligulate, attenuated at the ends, obliquely ascending. Inflorescence terminal, capitate, sessile in the axil of the uppermost leaf, about 3 cm. long, and 3 cm. in diameter, densely bracteose, many-flowered. Pedicellate ovary about 8 mm. long, triangular in cross-section, 3-winged, tapering gradually upward. Lateral sepals 4 mm. long, 2 mm. wide when spread out, lanceolate, cymbiform, externally carinate along the middle nerve, thickened and laterally compressed at the apex. Dorsal sepal 3 mm. long, 2 mm. wide, lanceolate, acute, concave, ecarinate, hardly thickened at the tip. Petals 3 mm. long, 1 mm. wide below the middle, narrowly lanceolate, acute, membranaceous. Labellum 4 mm. long, 2 mm. wide across the orbicular obtuse epichile; hypochile 1.5 mm. long, about 2 mm. wide, fleshy, ventricose, rounded beneath, closed in front by a transverse erect septum. Column 2.5 mm. long, 1 mm. wide, tridentate at the summit.

In habit resembling *Agrostophyllum philippinense* Ames, from which it differs in the form of the epichile and in having broader petals. From the closely related *Agrostophyllum longifolium* Reichb. f. it differs chiefly in the details of the epichile.

PHILIPPINES, LUZON, Laguna Province, Los Baños, Mount Maquiling, A. D. E. Elmer 18047, June-July, 1917. (TYPE in Herb. Ames No. 16333.)

**Ceratostylis Elmeri** Ames sp. nov. Herba epiphytica, caespitosa, caulibus pendulis. Radices graciles, albido-villosae. Rhizoma valde curvatum, vaginis retinerviis obtectum. Vaginae amplae, rufae, elongatae, persistentes, usque ad basim folii attingentes. Folium rigidum, ascendens, atroviride, lineare, semiteres, apice inaequaliter bilobatum. Pedunculus elongatus, bracteatus, uniflorus. Sepala lateralia

semilanceolata, acuta, usque ad medium cohaerentia, prope basim quadrinervia, prope medium sexnervia, mentum ventricosum formantia. Sepalum dorsale lanceolatum, acutum, septemnervium. Petala oblanceolata, obtusa vel late spatulata. Labellum petalis multo minus, breviter unguiculatum, supra unguem in laminam anguste ovatam obtusam subcordatam expansum, intus prope basim longe glanduloso-villosum, conspicue trinervium. Pes columnae longe glandulosus.

Epiphytic herb, caespitose, pendulous, with slender villose roots. Rhizome curved, ascending, 12-20 cm. long, with the slender pseudobulbs arising for the most part from the outer side of the curve, concealed by rufous retinerved ample sheaths. Pseudobulbs about 2 cm. long, very slender, obliquely ascending, cylindrical, concealed by retinerved rufous sheaths, monophyllous. Leaf up to 6 cm. long, linear, flat on the upper surface, somewhat rounded on the under side, unequally bilobed at the tip, obtuse. Peduncles subequal to the pseudobulbs, provided with a large bract below the ovary, clothed with elongated branching hairs which are easily detachable. Bract subtending the flower 9 mm. long, smooth. Pedicellate ovary conspicuously winged, about 1.5 cm. long, provided with weakly attached branching trichomes. Lateral sepals 12 mm. long, 3.75 mm. wide near the middle, asymmetrically lanceolate, united to about the middle, 6-nerved, smooth, forming a conspicuous obtuse mentum which is 3 mm. long. Dorsal sepal 13 mm. long, 4.75 mm. wide, lanceolate, acute, 7-nerved. Petals 12 mm. long, 5 mm. wide, oblanceolate or broadly spatulate, obtuse, 7-nerved. Labellum 3 mm. long, about 2 mm. wide just above the short claw, narrowly ovate-cordate, obtuse, 3-nerved, each lateral nerve with a short obliquely ascending branch. Claw of the labellum glandular-hairy within, forming a shallow depression at the base of the lamina. Column including the foot 3.5 mm. long; foot glandular-hairy.

In habit *Ceratostylis Elmeri* is somewhat similar to *C. philippinensis* Rolfe, from which it differs conspicuously in the larger flowers and in the oblanceolate or broadly spatulate petals.

PHILIPPINES, Mindanao, Davao District, Mount Apo, A. D. E. Elmer 11358, August 1909. Small loose tufts upon moss-covered tree trunk on Mount Calelan at 7750 feet: stems hanging, curved ascendingly, terete, covered with reddish brown strongly nerved sheaths, giving rise to leafy branchlets; leaves rigidly coriaceous, ascending, dark green, flat on the upper side, flattish convex beneath, the base covered with sheaths; flower ascending from the basal portion of the uppermost leaf axil, white. "Sumalipan." (TYPE in Herb. Ames No. 26936.)

**Ceratostylis mindanaensis** Ames *sp. nov.* Herba epiphytica, parvula, pauciramosa, ramis patentibus. Pseudobulbi abbreviati, teretes. Folia semiteretia vel triquetra, superne sulcata, apice acuta. Caules infra folia vaginis imbricatis rufis obtecti. Flores singuli, pilis albidis obtecti. Sepala lateralia elliptico-oblonga, mentum obtusum formantia, apice subacuta, minute cucullata, extus pilosa. Sepalum dorsale simile sed minus, extus longe pilosum. Petala anguste lanceolata, acuta, membranacea, trinervia. Labellum unguiculatum, lanceolatum, subtus valde carinatum, apice triquetrum. Discus infra medium labelli valde bicarinatus, inter carinas glandulosus. Columna generis.

Epiphytic herb 6-11 cm. tall, caespitose, branching; branches 5-15 mm. long, concealed when young by closely imbricating rufous sheaths. Pseudobulb about 5 mm. long, cylindrical, terminated by a fleshy rigid leaf. Leaves about 3 cm. long, about 5 mm. thick in greatest diameter, subterete or triquetrous, grooved along the upper surface, when immature partly concealed by rufous bracts. Peduncle about 1 cm. long, ascending from among rufous bracts, densely clothed with soft whitish hairs. Flower white, with the much abbreviated pedicel subtended by an ample bract which is 3-4 mm. long. Ovary 3.5 mm. long, clothed with intertwining whitish hairs. Lateral sepals 4.5 mm. long, 2 mm. wide near the middle, forming a distinct obtuse mentum, elliptic-oblong, acute, with a minutely cucullate tip. Dorsal sepal 4 mm. long, hardly 2 mm. wide at the middle, similar to the lateral sepals and like them glandular-hairy

on the outer surface. Petals 4 mm. long, about 1 mm. wide near the middle, narrowly lanceolate, acute, 3-nerved, membranaceous. Labellum 4 mm. long, 2 mm. wide above the base, shortly unguiculate, with the claw ascending from the foot of the column; lamina simple, lanceolate, heavily carinate along the middle beneath, with the apex thickened and triquetrous. Disc bicarinate below the middle of the labellum, with the surface between the keels glandulose. Column 2 mm. long, dilated upwards, produced into a distinct foot.

Closely allied to *Ceratostylis pendula* Hook. f., but with larger flowers.

PHILIPPINES, Mindanao, Bukidnon Subprovince, Mount Dumalucpihan, *M. Ramos & G. Edaño, Bureau of Science 39015*, July 28, 1920. 5000 feet altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26330.)

**Stelis cucullata** *Ames sp. nov.* Radices graciles, fibratae. Caules secundarii elongati, graciles, erecti, vaginis tubulatis instructi, monophylli. Folium lineare, usque ad basim leviter angustatum, apice apiculatum, vix in petiolum contractum. Pedunculi cum racemo elongati, folium aequantes vel excedentes. Bracteae racemi oblique infundibuliformes, scariosae. Sepala lateralia ovata, acuta, carnea, extus per medium aliquando leviter carinata, trinervia. Sepalum dorsale simile. Petala cucullata, anguste flabellata, apice valde incrassata, trans apicem triangularia, trinervia. Labellum concavum, cucullatum, in circuitu rhombicum, trans medium callo instructum. Columna generis.

Roots finely fibrous, elongated, at length branching, whitish. Rhizome very much abbreviated. Secondary stems 3-7 cm. long, very slender, clothed with several elongated tubular scarios sheaths, monophyllous. Sheaths up to 3 cm. long, rather loosely appressed, acute. Leaf 6-8.5 cm. long, up to 5 mm. wide above the middle, linear-ob-lanceolate, tapering gradually toward the base, obtuse, apiculate. Peduncle up to 11 cm. long, subtended by a scarios spathaceous bract, for the most part floriferous, very slender. Flowers numerous, pale yellowish, in a slender

raceme. Bracts of the raceme approximate, 1.5 mm. long, obliquely infundibuliform, scarious, with the points of insertion about 2 mm. apart. Pedicels about 3 mm. long. Lateral sepals 1.75 mm. long, 1.75 mm. wide, ovate, acute, very fleshy, sometimes lightly carinate along the middle on the outer surface, 3-nerved. Dorsal sepal similar. Petals hardly 1 mm. long, .75 mm. wide at the tip, narrowly flabelliform, triangular across the thickened apex, very fleshy, strongly cucullate, 3-nerved. Labellum scarcely 1 mm. long, about 1 mm. wide across the middle, cucullate, obtuse at the apex, with the margin more or less erect, rhombic in outline, with a transverse thickening across the middle. Column dilated upward, with the posterior part of the clinandrium obscurely 3-lobed.

*Stelis cucullata* is a close ally of *S. perplexa* Ames, from which it differs in part in having differently shaped, smooth sepals.

COSTA RICA, Hills south of Cartago, C. H. Lankester 475. (TYPE in Herb. Ames No. 26975): Peralta, Lankester 487, July 13, 1923. Flower greenish yellow.

***Stelis distantiflora* Ames sp. nov.** Caules secundarii verisimiliter elongati. Folium anguste elliptico-oblongum, utriusque attenuatum, apice obscure bidenticulatum. Pedunculus cum racemo valde elongatus, gracilis, ex axilla folii oriens. Flores in sicco atrobrunnei, inter se distantes, alterni, bracteis subtendentibus infundibuliformibus. Sepala lateralia suborbicularia vel transverse elliptica, trinervia, carnosa. Sepalum dorsale late ovatum, trinervium. Petala a basi cuneata flabelliformia, apice valde incrassata et rotundato-obtusa, intus infra medium plus minusve excavata. Labellum petalis multo minus, infra medium plus minusve membranaceum, supra medium valde incrassatum, antice rotundatum, excavatum, trans medium callo instructum. Columna supra medium valde dilatata.

Secondary stems probably elongated, incomplete in the type specimen, monophyllous. Leaf 4.8 cm. long, 1 cm. wide near the middle, narrowly elliptic-oblong, narrowed toward the ends, obscurely bidenticulate at the tip, obtuse,

coriaceous, about thrice shorter than the inflorescence. Peduncle with the raceme 15–18 cm. long, slender. Raceme 10–12 cm. long, loosely twenty or more flowered with a somewhat flexuose rachis. Flowers dark brown when dry, 5–9 mm. apart, distichous. Bracts of the raceme hardly 2 mm. long, infundibuliform. Lateral sepals about 2 mm. long, 3 mm. wide, suborbicular or transversely elliptical, minutely glandulose within, fleshy, 3-nerved. Dorsal sepal 3 mm. long, 3 mm. wide, broadly ovate, minutely glandulose within, 3-nerved, with the nerves slightly prominent. Petals about 1 mm. long, 1 mm. wide, flabelliform from a cuneate base, much thickened above the middle, below the middle concave or excavated, 3-nerved. Labellum much smaller than the petals, .75 mm. long, membranaceous below the middle, with the upper half conspicuously thickened, rounded and obtuse at the apex, with a prominent transverse callus at the middle. Callus triangular with a posterior prominence. Column dilated toward the summit.

Undoubtedly a close ally of *Stelis effusa* Schltr., from which it differs chiefly in having larger flowers and broader leaves. In *S. distantiflora* the rachis of the raceme is apparently stouter and the flowers farther apart than in *S. effusa*. When dry the flowers are deep reddish brown, but in living specimens they are probably purplish.

COSTA RICA. *C. H. Lankester s. n.* Received at the Royal Gardens, Kew, in 1923. (TYPE in Herb. Ames No. 26977. Duplicate from the type plant in Herb. Kew.)

***Stelis eximia* Ames sp. nov.** Radices valde fibratae, glabrae. Caules secundarii caespitiosi, vaginati, elongati. Folium anguste ellipticum, obtusum, apice inconspicue bilobulatum, coriaceum, in petiolum brevem contractum. Pedunculus cum racemo folio multo longior, multiflorus, bractea spathacea subtendenti. Bracteae racemi oblique infundibuliformes, pedicello breviores. Pedicellus cum ovario ascendens. Sepala lateralia ovata, obtusa, quin-  
quenervia. Sepalum dorsale simile. Petala cuneata, apice



truncata et valde incrassata, trinervia. Labellum quadratum, valde incrassatum, subtus rotundatum, apice minute apiculatum, apiculo erecto. Discus concavus, callo T-formi instructus. Columna supra medium dilatata.

Roots coarsely fibrous, whitish, smooth. Secondary stems densely caespitose, up to 12 cm. long, clothed to about the middle with several tubular sheaths, monophyllous. Leaf 16.5 cm. long, 3.5 cm. wide at the middle, narrowly elliptical, obtuse, with the apex minutely bidentate, narrowed toward the base into a short petiole which is about 2 cm. long. Peduncle with the raceme 23 cm. long, subtended by a closely appressed spathaceous bract which is 1.9 cm. long. Raceme many-flowered. Bracts of the raceme about 3 mm. long, infundibuliform, much shorter than the pedicellate ovary, about 7 mm. apart between the points of insertion. Pedicel with the ovary about 6 mm. long. Lateral sepals about 6 mm. long, 5-5.5 mm. wide, broadly ovate, obtuse, 5-nerved, fleshy. Dorsal sepal 6 mm. long, 5 mm. wide, 5-nerved. Petals 1 mm. long, 1.25 mm. wide at the summit, cuneate, much thickened and truncate at the apex. Labellum 1 mm. long, 1 mm. wide, quadrate, truncate at the apex, rounded beneath, with a minute erect apiculate process on the anterior margin. Disc concave, with a T-form slightly raised callus. Column equaling the petals, dilated above the middle.

A close ally of *Stelis cascajalensis* Ames, from which it differs in the differently proportioned sepals and in the smaller flowers.

PANAMA, Province of Chiriqui, "Caramilla," C. W. Powell 312. Grows in moderate sunlight on fallen tree-trunks. Flowers greenish white, darker green at the margin. Petals and labellum shining chocolate brown. Flowers in July. (TYPE in Herb. Ames No. 26979.)

***Stelis propinqua* Ames sp. nov.** Caules secundarii verisimiliter caespitosi, elongati, vaginati, monophylli. Folium pedunculo multo brevius, anguste oblongo-ellipticum, obtusum, coriaceum. Pedunculus singulus, e bractea spathacea oriens. Racemus elongatus, gracilis, laxiflorus. Flores

sicci atropurpurei. Sepala lateralia late ovata, tri-vel quad-rinervia, intus minute glandulosa. Sepalum dorsale simile, quinquenervium. Petala cuneata, trans apicem truncatum valde incrassata, trinervia. Labellum rhombicum, obtusum, valde incrassatum. Columna generis.

Secondary stems 3 cm. or more long, partly concealed by an elongated loosely appressed sheath, monophyllous. Leaf including the short petiole 8-10 cm. long, 1.6 cm. wide, elliptic-oblong, obtuse, coriaceous, much shorter than the raceme. Peduncle solitary in the axil of the leaf, emerging from a spathaceous bract, with the raceme 17-21 cm. long, slender. Raceme 11-13.5 cm. long, up to 18-flowered. Bracts of the raceme 1.5-2 mm. long, infundibuliform, with a wide mouth. Pedicels slender, with the ovary about 3 mm. long. Flowers about 7 mm. across, dark purple when dry, fleshy. Lateral sepals 3 mm. long, 4 mm. wide, broadly ovate, asymmetrical, 3-4-nerved, minutely glandular on the inner surface. Dorsal sepal 4.5 mm. long, 5 mm. wide below the middle, broadly ovate, 5-nerved, minutely glandular on the inner surface. Petals about 1 mm. long, 2 mm. wide across the truncate apex, cuneate, thickened across the tip, 3-nerved. Labellum .5-.75 mm. long, about 1 mm. wide, rhombic, obtuse, very fleshy, with the margins more or less thickened and erect. Column dilated upward.

*Stelis propinqua* is closely allied to *S. curvata* Schltr., from which it differs in the larger flowers, and in the shape of the petals and labellum. *S. leucopogon* Reichb. f. is also closely allied, but has larger flowers in which the lateral sepals are distinctly 5-nerved, and the labellum different. In *Stelis propinqua* the lateral sepals are sometimes 3-nerved and 4-nerved in the same flower.

COSTA RICA, probably near Cachi, C. H. Lankester 468. (TYPE in Herb. Ames No. 26957.)

**Stelis vestita** Ames sp. nov. Radices crasse fibratae, elongatae, glabrae, albiae. Rhizoma valde abbreviatum. Caules secundarii caespitosi, erecti, vaginis elongatis tubulatis laxe appressis omnino obtecti, monophylli. Vaginae in sicco plurisulcatae, brunneae, apice plus minusve truncatae.

## NEW OR NOTEWORTHY ORCHIDS

Folium valde coriaceum, anguste oblongo-ellipticum, apice inaequaliter bilobatum, basi in petiolum gracilem contractum, pedunculo cum racemo multo brevius. Pedunculus singulus, valde elongatus, gracilis, e bractea spathacea oriens. Flores in racemo laxo dispositi. Bracteae racemi inaequaliter infundibuliformes, in sicco scariosae. Pedicelli graciles, bracteas subtendentes multo superantes. Sepala lateralalia late ovata, subacuta, trinervia, carnosae, intus conspicue glanduloso-pubescentia. Sepalum dorsale simile. Petala cuneato-flabellata, valde carnosae, trinervia. Labellum rhombicum, obtusum, valde incrassatum, infra medium glanduloso-pubescent, callo transverso in medio disci. Columna dilatata, apice trilobata.

Roots very coarsely fibrous, spreading, copious, whitish and smooth. Rhizome abbreviated. Secondary stems caespitose, erect, 4-6 cm. long, entirely concealed by ample tubular loosely appressed sheaths. Sheaths two, the upper one 3-4 cm. long, brownish when dry, reaching to the base of the petiole of the leaf, prominently nerved. Leaf with the petiole 6-9 cm. long, up to 2 cm. wide, narrowly oblong-elliptic, obtusely bilobulate at the tip, very coriaceous, much shorter than the inflorescence. Peduncle with the raceme 16-20 cm. long, emerging from a brownish spathaceous bract in the axil of the leaf. Raceme 8-12 cm. long, with a slender flexuose rachis. Flowers dull purple, about 5 mm. apart. Bracts of the raceme about 1.75 mm. long, unequally infundibuliform, shorter than the slender pedicels of the flowers. Lateral sepals about 2 mm. long, 2 mm. wide, broadly ovate, acute or subacute, densely glandular-pubescent on the inner surface, 3-nerved, very fleshy. Dorsal sepal 2 mm. long, similar to the laterals, densely glandular-pubescent within. Petals 1 mm. long, 1.5 mm. wide across the tip, very fleshy, cuneate-flabelliform, 3-nerved. Labellum 1 mm. long, 1 mm. wide, rhombic in outline, conspicuously thickened through the middle with the margins more or less hyaline. Disc glandular-pubescent on the basal half behind the transverse callus which extends forward almost to the apex of the labellum. Column fleshy, dilated upward, 3-lobed at the summit.

*Stelis vestita* is closely allied to *S. Endresii* Reichb. L. from which it differs conspicuously in having much smaller flowers. From *S. glandulosa* Ames it differs in the shape of labellum, which is conspicuously glandular-pubescent on the basal half and in having much smaller flowers.

COSTA RICA, Zarcero, C. H. Lankester & Oton Jiménez 460, April 1923. Sepals dull purple, with a narrow hyaline margin. Leaves very thick and succulent. 6500 feet altitude. (TYPE in Herb. Ames No. 26959.)

**Pleurothallis dichotoma** Ames sp. nov. Radices fibratae, albae, glabrae. Rhizoma abbreviatum. Caules secundarii dense caespitosi, valde abbreviati, vaginis paucis scariosis vestiti. Folium oblanceolatum, bene marginatum, apice bidenticulatum apiculo interjecto, in petiolum angustatum contractum. Pedunculus cum racemo folia multo excedens, valde gracilis. Inflorescentia laxe dichotoma, plus minusve quinqueflora. Bractee inflorescentiae infundibuliformes, acutae, scariosae, pedicellis breviores. Sepala lateralia vix usque ad medium cohaerentia, purpurea, lanceolata, in caudam filiformem flavidam producta, binervia, extus per medium carinata. Sepalum dorsale simile, purpureo-striatum, trinervium nervis extus prominentibus, basi valde concavum. Petala lanceolata, bene purpureo-fimbriata, in apicem filiformem producta, uninervia. Labellum subsagittatum, valde obtusum, supra medium glandulosum, margine glanduloso-fimbriatum, subtus prope basim valde carinatum, ecallosum. Columna brevis.

Roots fibrous, whitish, smooth. Rhizome abbreviated. Secondary stems densely caespitose, about 4 mm. long, concealed by about two scarios tubular sheaths. Leaf oblanceolate, 1.3-2.4 cm. long, up to 4 mm. wide above the middle, marginate, bidentulate at the apex with an apicule between the teeth, contracted below into a slender petiole. Peduncle with the raceme up to 6 cm. long, slender, thread-like. Inflorescence about 2.5 cm. long, dichotomous, loose, about 5-flowered. Lateral sepals coherent hardly to the middle, 8 mm. long, 1 mm. wide below the middle, lanceolate, with the apex slenderly caudate and about 4 mm.

long, 2-nerved, with the central nerve externally thickened, maroon-purple with the tails yellowish. Dorsal sepal 8 mm. long, lanceolate, tricarinate on the outer surface, produced at the apex into an elongated slender tail which is 4 mm. long, 3-nerved, with the nerves purplish. Petals 3 mm. long, about 1 mm. wide, with the margin conspicuously and irregularly fimbriate, — the segments of the fringe commonly bifurcate and purplish, — 1-nerved with the nerve thickened. Labellum about 2 mm. long, subsagittate, very obtuse, deep maroon-purple, densely and shortly glandulose above the middle with the margin glandular-fimbriate, strongly and deeply keeled beneath the base with the keel shortly fringed. Disc ecallose. Column fleshy.

Allied to *Pleurothallis hastata* Ames, but with the sepals long-caudate and the labellum quite different.

COSTA RICA, Peralta, C. H. *Lankester* 464, July 13, 1923. 1200 feet altitude. (TYPE in Herb. Ames No. 27014.)

***Pleurothallis geminicaulina* Ames sp. nov.** Rhizoma elongatum. Caules secundarii inter se satis distantes, elongati, prope basim vaginati, monophylli. Folium valde coriaceum, oblongo-ellipticum, apice bidentatum, petiolatum, in sicco valde rugosum. Pedunculi fasciculati, pauciflori, basi vaginati, folio multo breviores. Flores purpurei. Sepala lateralibus paene usque ad apicem cohaerentia, laminam ellipticam formantia, extus bicarinata, dense glandulosa. Sepalum dorsale anguste oblongum, acutum, extus dense glandulosum. Petala lanceolata, acuta, margine bene fimbriata, nervo incrassato per medium. Labellum oblongum, carnosum, abrupte acutum, bicarinatum. Columna utrinque apice minute dentata.

Rhizome rigid, elongated, about 4 mm. in diameter. Secondary stems 3–8 cm. long, 1–2 cm. apart, sometimes in pairs, when immature clothed with several tubular scarious sheaths, monophyllous. Leaf 5–6 cm. long, up to 2 cm. wide, oblong-elliptic, bidentate at the apex, conspicuously rugose when dry, thickly coriaceous, sessile. Peduncles fasciculate, few, in the axils of the leaves, 2.5–3 cm. long, subtended by a spathaceous bract which is about 1 cm. long.

Raceme about 1.5 cm. long, about 4-flowered, hardly reaching to the middle of the leaf. Bracts of the raceme obliquely infundibuliform. Ovary densely glandulose. Lateral sepals 9 mm. long, narrowly lanceolate, acute, with the tip carinate-thickened, densely and shortly glandulose on the outer surface, coherent almost to the apex, forming an elliptical lamina, lightly carinate on the outer surface along the middle. Dorsal sepal 9-10 mm. long, about 2 mm. wide, narrowly oblong, acute, densely and shortly glandulose on the outer surface, margin somewhat involute. Petals about 6 mm. long, 2 mm. wide, lanceolate, acuminate, drawn out into a slender, acute point, margin irregularly fimbriate, 1-nerved, with the nerve somewhat thickened. Labellum 3 mm. long, 1 mm. wide, broadly unguiculate, oblong, abruptly acute, somewhat constricted near the base when in natural position, strongly bicarinate on the upper surface, 3-nerved. Column 3 mm. long, with a minute tooth on each side at the summit.

In general habit suggesting *Pleurothallis Pantasmi* Reichb. f., which is a much stouter plant with winged secondary stems.

COSTA RICA, La Union, Turrialba, C. H. Lankester 454, May 12, 1923. Leaves dull purplish. Flowers purplish. Upper sepal striate. A widely distributed, but not common species. About 3500 feet altitude. (TYPE in Herb. Ames No. 27013.)

***Pleurothallis glandulosa* Ames sp. nov.** Herba epiphytica, pusilla, radicibus fibratis. Caules secundarii caespitiosi, abbreviati, monophylli. Folium lineari-oblongum, obtusum, in sicco nervo medio subtus valde prominenti. Pedunculus folio longior, gracilis, uniflorus, dense glanduloso-pubescens. Flos subrubens. Sepala lateralia infra medium cohaerentia, lineari-lanceolata, acuta, extus per medium carinata, glandulosa. Sepalum dorsale simile. Petala a basi cuneata dilatata, apice acuta. Labellum unguiculatum, supra basim leviter cordatum; lamina supra basim pandurata, obtusa, margine minute glandulosa. Columna elongata, apice in stelia duo producta.

NEW OR NOTEWORTHY ORCHIDS

An epiphytic caespitose herb with slender fibrous roots. Secondary stems crowded, about 5 mm. long, slender, sulcate when dry, monophyllous. Leaf 1.8-2.1 cm. long, 1.5-2 mm. wide, linear-oblong, obtuse, with the mid-nerve very prominent in dried specimens. Peduncle 1-flowered, about 3.5 cm. long, copiously glandular-pubescent, with a closely appressed tubular sheath near the middle. Pedicel and ovary glandular, about 4 mm. long, subtended by an infundibuliform, glandular sheath. Flower Pompeian red (*Ridgway*), 7 mm. long. Lateral sepals 8 mm. long, about 1 mm. wide near the middle, united below the middle, linear-lanceolate, with the margin glandular, acute, strongly carinate on the outer surface along the mid-nerve with the carinae distinctly glandular on the edge. Dorsal sepal about 8 mm. long, 1.5 mm. wide near the middle, narrowly lanceolate, acute, strongly concave near the base, glandular on the outer surface and along the margin. Petals 3 mm. long, 1.5 mm. wide above the middle, dilated upward from an oblong-cuneate base, rounded in front below the apex and abruptly contracted into the acute tip (subdolabriform), 2-nerved. Labellum 3.5 mm. long, about 1 mm. wide, unguiculate; lamina subpandurate from a cordate or somewhat sagittate base, obtuse, slightly glandular on the margin and upper surface, ecallose, 3-nerved. Column 2 mm. long, rather slender, bicuspidate in front at the summit.

*Pleurothallis glandulosa* is closely allied with *P. pyrsoides* Reichb. f., from which it differs conspicuously in the shape of the leaves and in the densely pubescent peduncle and ovary. *P. Dussii* Cogn. is similar in habit, but quite different in having the peduncle subequal to the leaves and in its very different petals.

PANAMA, Juna Grande range, *C. W. Powell 306*. Flowers in June. Grows on limbs of trees. Sea-level. (TYPE in Herb. Ames No. 26881.)

***Pleurothallis gnomonifera* Ames sp. nov.** Herba epiphytica, caespitosa. Caules secundarii vaginis foliorum omnino obtecti. Vaginae foliorum prope apicem valde dilatatae, in laminam ovatam expansae, margine hispidulae,

infra laminam arcte appressae et ciliatae. Folium anguste ellipticum, subacutum, coriaceum. Pedunculi fasciculati, folio multo breviores, plus minusve quadriflori, paucibracteati. Flores in racemo abbreviato approximati, minute glandulosi. Bracteae flores subtendentes scariosae, infundibuliformes. Sepala lateralia usque ad medium cohaerentia, elliptico-oblonga, obtusa, extus glandulosa, carinosa, leviter concava. Sepalum dorsale oblongo-ovatum, acutum, uninervium, extus minute glandulosum. Petala oblonga, supra medium bene ciliata, sepalis multo breviora, membranacea. Labellum breviter unguiculatum, oblongum, basi subsagittatum, margine supra medium labelli valde deflexa, breviter ciliata. Discus glaber, carina gnomoniformi ornatus. Columna elongata, apice bicuspidata.

Epiphytic herb about 12 cm. tall. Secondary stems up to 8 cm. long, wholly concealed by closely appressed hispid sheaths which become dilated into ovate acute marginate hispid spreading laminae, monophyllous. Leaf narrowly elliptical, about 4.5 cm. long, 1.7 cm. wide, narrowed at both ends, subacute. Peduncles including the few-flowered raceme up to 2 cm. long, fasciculate in the axil of the leaf. Flowers minutely glandular, with olive green sepals and red petals, approximate. Bracts of the inflorescence infundibuliform, scariosus. Lateral sepals 3 mm. long, hardly 1 mm. wide, united up to the middle, elliptic-oblong, obtuse; densely glandular on the outer surface, rather fleshy above the middle, slightly concave. Dorsal sepal 2 mm. long, 1 mm. wide near the middle, ovate-oblong, acute, glandular on the margin and outer surface, 1-nerved, membranaceous. Petals about 1.25 mm. long, oblong, ciliate-fringed above the middle, without conspicuous neuration. Labellum 1.5 mm. long, less than 1 mm. wide, shortly unguiculate; lamina narrowly oblong, obtuse, with the margin of the apical half sharply deflexed and minutely glandular, basal portion subsagittate. Disc smooth, with a gnomon-like keel extending from the base to about the middle, where it becomes dilated. Column 1.5 mm. long, with a stolidium on each side at the summit in front.



Closely allied to *Pleurothallis Purpusii* Schltr., from which it differs conspicuously in the broader leaves and hispid cauline sheaths. It is a member of the *Lepanthiformes* section of the genus.

PANAMA, Province of Chiriqui, "Cerro Norquita," C. W. Powell 311. Grows in damp, shady places. Flowers in June. 5000-6000 feet altitude. (TYPE in Herb. Ames No. 26928.)

***Pleurothallis monstrabilis* Ames sp. nov.** Rhizoma longe repens, vaginis scariosis tubulatis instructum. Radices elongatae, fibratae, glabrae, patentes. Caules secundarii valde abbreviati, bractea vaginanti obtecti, monophylli. Folium anguste lanceolatum, apice bidentatum, apiculatum, valde carnosum, subtus rotundatum, supra late sulcatum. Pedunculus folio longior, gracilis, uniflorus, ex axilla folii oriens, bractea spathacea arcte appressa subtentus, supra basim bractea infundibuliformi. Sepala lateralia anguste lanceolata, acuminata, apice subcaudata et valde incrassata, plus minusve cohaerentia, trinervia. Sepalum dorsale simile sed angustius, apice subcaudatum et incrassatum, basi concavum. Petala lineari-lanceolata, supra medium incrassata, margine obscure cellulari-glandulosa, uninervia. Labellum oblongo-lanceolatum, acutum, a latere visum leviter sigmoideum, trinervium, prope basim bicarinatum, callo obtuse triangulari prope medium instructum. Columna carnosae, clinandrio integro.

Roots up to 17 cm. long, fibrous, whitish, smooth, spreading. Rhizome elongated, creeping, 1 mm. thick, green, clothed with rather closely appressed scarios bracts. Secondary stems much abbreviated, 4 mm. long, about 1.5 mm. in diameter, approximate, arising in succession from the upper side of the rhizome, monophyllous, concealed by an ample scarios sheath. Leaf 2-2.5 cm. long, 3-4 mm. wide, narrowly lanceolate, bidentate at the tip, conspicuously apiculate, rounded beneath, widely sulcate above, very fleshy. Peduncle up to 3.5 cm. long, with a closely appressed sheath at the base and with an infundibuliform bract above the base. Pedicel with the ovary about 4 mm.

long, subtended by a cucullate acute bract which is 4 mm. long and tubular at the base. Flowers stramineous, conspicuous. Lateral sepals 1.2 cm. long, 2 mm. wide above the base, narrowly triangular-lanceolate, terminating in a thickened subcaudate tip, 3-nerved, coherent, becoming free almost to the base. Dorsal sepal 1.2 cm. long, 1.5 mm. wide, narrowly lanceolate, 3-nerved, thickened toward the tip, subcaudate. Petals 6 mm. long, about 1 mm. wide near the base, linear-lanceolate, 1-nerved, thickened toward the apex, margin inconspicuously cellular-glandulose. Labellum 2.5 mm. long, 1 mm. wide, oblong-lanceolate, acute, somewhat sigmoid when seen from the side, 3-nerved. Disc bicarinate near the base, the keels prominent and converging above; near the middle of the disc there is a thickened callus, obtusely triangular in outline, with its apex pointing toward the tip of the labellum. Column 2 mm. long, very fleshy, with a cucullate entire clinandrium.

In habit this species suggests *Pleurothallis repens* Ames, but is quite distinct from it in the structure of the flower.

COSTA RICA, Vicinity of La Palma, on the road to La Hondura; *William R. Maxon & Alfred D. Harvey 8096*, July 17-18, 1923. 1500-1700 meters altitude. (TYPE in U. S. Nat. Herb. No. 1180040. DUPLICATE TYPE in Herb. Ames No. 26989.)

***Pleurothallis peperomioides* Ames sp. nov.** Rhizoma repens. Caules secundarii valde abbreviati, alterni, monophylli. Folium carnosum, orbiculare. Pedunculus abbreviatus, glandulosus, folio multo brevior. Flos glandulosus. Sepala lateralia anguste elliptica, paene usque ad apicem cohaerentia, concava, extus glandulosa. Sepalum dorsale sepalis lateralibus breviter connatum, elliptico-ovatum, valde concavum, extus glandulosum. Petala oblonga, acuta, trinervia, intus minute glandulosa. Labellum oblongum, subacutum, intus glandulosum. Columna gracilis, apice denticulata.

Roots abbreviated, up to 5 mm. long, smooth. Rhizome elongated, creeping, sometimes branched, densely glandular-pubescent. Secondary stems about 2 mm. long, glandular-

pubescent, borne alternately on the rhizome, monophyllous. Leaf very fleshy, 6 mm. long more or less, 4-5 mm. wide, elliptical or orbicular, rugulose, approximate. Flowers solitary. Peduncle about 3 mm. long, densely glandular-pubescent, apparently arising from the rhizome at the base of a secondary stem. Lateral sepals about 6 mm. long, 2 mm. wide, narrowly elliptical, cohering almost to the apex, strongly concave, glandular-pubescent on the outer surface, obtuse. Dorsal sepal 5 mm. long, about 3 mm. wide near the middle, elliptic-ovate, subacute, 3-nerved, densely glandular-pubescent on the outer surface. Petals 4 mm. long, 1 mm. wide, oblong, acute, 3-nerved, somewhat glandular on the inner surface of the upper half. Labellum simple, 4 mm. long, 1.25 mm. wide above the middle, oblong, slightly dilated near the tip, rounded at the apex into a blunt point, smooth beneath, densely glandular above and on the margin, with the glandular excrescences directed forward. Column 3.5 mm. long, slender, toothed at the summit.

A close ally of the Cuban *Pleurothallis nummularia* Reichb. f., which is in part distinguished by the longer, more slender peduncles.

COSTA RICA, Peralta, *C. H. Lankester* 465. Sepals villose, hyaline, pale yellowish stained with purple; petals pale yellowish; lateral sepals and labellum interiorly blotched with deep maroon. Column pale green-yellow. Leaves dull yellow-green. (TYPE in Herb. Ames No. 26929.)

***Pleurothallis peraltensis* Ames sp. nov.** Rhizoma valde abbreviatum. Caules secundarii caespitiosi, erecti, vaginis hispidulis omnino obtecti. Vaginae elongatae, tubulatae, in apicem dilatatum ovato-lanceolatum hispidulum productae. Folium elliptico-lanceolatum, apice bidentatum, racemo multo longius. Pedunculi fasciculati, ex axilla foliorum orientes. Racemus pauciflorus. Sepala lateralia vix usque ad medium cohaerentia, ligulata, carnosae, obtusae vel subacutae, extus per medium carinata, margine bene ciliata, trinervia. Sepalum dorsale lanceolatum, valde concavum, margine ciliata. Petala oblonga, usque ad basim leviter attenuata, valde membranacea, margine inaequaliter

fimbriata. Labellum oblongo-panduratum, trinervi-um, supra medium spathulatum, prope apicem glandulosum, basi cordata auriculis incurvis, margine ciliata. Discus calli transverso prope basim labelli ornatus. Columna superne dilatata, apice fimbriata.

Roots coarsely fibrous, whitish. Rhizome abbreviated. Secondary stems 5-10 cm. long, 1-2 mm. in diameter, erect, entirely concealed by tubular closely appressed sheaths. Sheaths 1.3-2.5 cm. long, hispidulous along the nerves, dilated above, forming a lamina which is 7-11 mm. long, ovate-lanceolate in outline, with the margin hispidulous. Leaf 4-6 cm. long, 1.2-1.5 cm. wide, elliptic-lanceolate, attenuated toward the ends, bidentate at the apex, coriaceous, marginate. Peduncles fasciculate in the axil of the leaf, enclosed at base by a spathaceous bract which is 1-1.5 cm. long. Raceme with the peduncle 1.5-3 cm. long, much shorter than the leaf, few-flowered. Bracts of the inflorescence about 1 mm. long, infundibuliform. Lateral sepals 4.5 mm. long, about 1 mm. wide near the middle, ligulate, somewhat narrowed toward the obtuse or subacute apex, united almost to the middle, lightly carinate on the outer surface along the mid-nerve, margin ciliate. Dorsal sepal 4.5-5 mm. long, narrowly lanceolate, acute, strongly concave, margin ciliate. Petals 2 mm. long, about .75 mm. wide, oblong, slightly dilated upward, unequally and deeply fringed on the margin, especially so above the middle. Labellum 3 mm. long, 1 mm. wide near the tip, 3-nerved, margin ciliate, oblong-pandurate, the apical half more or less spatulate in outline, minutely glandulose, obtuse, the base cordate with the minute obtuse auricles incurved. Disc with a transverse callus which is prominently thickened at the middle near the base of the labellum. Column 2 mm. long, dilated upward, deeply and unequally fringed.

*Pleurothallis peraltensis* is a close ally of *P. Purpusii* Schltr., from which it differs in the broader leaves, larger flowers and in the structure of the labellum. *P. gnomonifera* Ames is also a close ally, but is quite different in having smaller flowers and a differently shaped labellum.

COSTA RICA, Peralta, C. *H. Lankester* 484, July 13, 1923. Leaves dull purplish beneath. Sepals and labellum dark maroon, the upper sepal paler than the laterals. Petals hyaline faintly tipped with purple. 2500 feet altitude. (TYPE in Herb. Ames No. 26973.)

**Pleurothallis peregrina** Ames *sp. nov.* Radices fibratae, glabrae. Caules secundarii caespitosi, elongati, vaginis tubulatis arcte appressis vestiti. Folium elliptico-oblongum, apice valde obtusum. Pedunculi fasciculati, folium superantes, racemo multifloro. Sepala lateralia usque ad basim libera, anguste lanceolata, intus glandulosa, apice incrassata. Sepalum dorsale simile, apice triquetrum. Petala oblonga, obtusa, leviter concava, nervo medio extus per medium prominenti. Labellum breviter unguiculatum, infra medium valde incrassatum, supra medium in laminam suborbicularem expansum, trinervium, nervis lateralibus in carinas elevatas productis, nervo medio leviter prominenti. Columna gracilis, apice minute dentata.

Roots elongated, branching, smooth, whitish. Rhizome abbreviated. Secondary stems densely caespitose, 10-17 cm. long, slender, at the base about 2 mm. in diameter, erect, provided with several elongated tubular closely appressed brownish sheaths, monophyllous. Leaf petiolate; petiole 1.5-2 cm. long, slender, sulcate above; lamina 6-8 cm. long, 2-3 cm. wide, elliptic-oblong, rounded at the tip, inconspicuously apiculate, rigid. Peduncles fasciculate in the axil of the leaf, arising from a short spathaceous bract which is 1 cm. long, floriferous almost to the base. Raceme including the peduncle 10-14 cm. long, about twice longer than the leaf. Bracts of the raceme tubular, scarious, 3-4 mm. long. Pedicels with the ovary 5 mm. long, smooth. Lateral sepals 1.1-1.5 cm. long, about 3 mm. wide below the middle, narrowly lanceolate, acuminate, acute, 3-nerved, free to the base, glandular on the inner surface. Dorsal sepal similar to the laterals, triquetrously thickened near the tip, 3-nerved. Petals 4-4.5 mm. long, 2 mm. wide, oblong or slightly dilated upward, rounded at the tip, with the mid-nerve prominent on the outer surface. Labellum 5 mm. long, 1 mm.

wide above the base, 2.25 mm. wide above the middle, shortly unguiculate, conspicuously 3-nerved, basal half much thickened, oblong, with a deep keel on each lateral nerve, upper half of the labellum suborbicular, with three raised nerves which converge toward the tip. Column 3 mm. long, rather slender, with the clinandrium inconspicuously dentate.

*Pleurothallis peregrina* is closely allied to *P. dolichopus* Schltr., from which it differs chiefly in the form of the labellum.

COSTA RICA, Jucosal (?) Purchased in Cartago from a native, C. H. Lankester 469, June 30, 1923. Flowers oil-green, semitranslucent, sepals lightly hairy, petals and column with a central purple line; base of lip with three purple striae. (TYPE in Herb. Ames No. 26956): along the cart-road from Vara Blanca (between Poás and Barba volcanoes) to La Concordia, William R. Maxon & Alfred L. Harvey 8492, July 23, 1923. Mossy tree trunk. Basal half of labellum purplish. 1600-1950 meters altitude.

***Pleurothallis propinqua* Ames sp. nov.** Caules dense caespitiosi, abbreviati, monophylli. Folium oblanceolatum vel spathulatum, apice bilobatum apiculo brevi interjecto. Pedunculus cum racemo folium aequans vel breviter superans, pauciflorus. Sepala lateralia lanceolata, acuminata, acutissima, uninervia, extus per medium carinata. Sepalum dorsale simile. Petala lanceolata, sepalis lateralibus angustiora, acuminata, acutissima, uninervia. Labellum lanceolatum, plus minusve incrassatum, acuminatum, acutissimum, trinervium, callo transverso prope basim ornatum. Columna brevis.

Roots fibrous, smooth. Secondary stems densely caespitose, 4-5 mm. long, concealed at the base by a tubular scarious sheath, monophyllous. Leaf with the petiole 1.3-2 cm. long; lamina 2.5-5 mm. wide above the middle, oblanceolate or spatulate, bilobulate at the apex with a short apicule between the lobes, coriaceous. Peduncle with the raceme up to 3.5 cm. long, slender, with a closely appressed tubular bract near the middle. Raceme 3-6-flowered.

rachis 5 mm. long. Bracts of the raceme shorter than the pedicels. Flowers dark purplish magenta. Pedicel with the ovary about 1.5 mm. long. Lateral sepals 4.75–5 mm. long, 2 mm. wide, lanceolate, acuminate, drawn out into a slender acute tip, free almost to the base, 1-nerved, carinate along the middle of the dorsal surface. Dorsal sepal similar, 5 mm. long. Petals about 4.5 mm. long, 1 mm. wide, lanceolate, acuminate, drawn out into a slender acute tip, 1-nerved. Labellum 4 mm. long, about 2 mm. wide below the middle, rather fleshy, lanceolate, acuminate, drawn out into a slender acute tip, 3-nerved, with the lateral nerves hardly reaching to the middle of the disc, the middle nerve about twice longer. Disc with a slightly thickened transverse callus which is 1 mm. from the base of the labellum. Column 1 mm. long, abbreviated, entire at the summit.

A close ally of *Pleurothallis Schulzeana* Schltr., from which it differs in the larger flowers with broader floral segments. In *P. Schulzeana* the petals are linear rather than lanceolate, and only 2.75 mm. long. *P. lancilabris* (Reichb. f.) Schltr. is another close ally of *P. propinqua*, but differs from it in having much smaller flowers.

COSTA RICA, Vara Blanca, between Poás and Barba volcanoes, William R. Maxon & Alfred D. Harvey 8268, July 22, 1923. Flower dark purplish-magenta. On mossy tree trunk. (TYPE in U. S. Nat. Herb. No. 1180073. DUPLICATE TYPE in Herb. Ames No. 27012.)

***Pleurothallis vinacea* Ames sp. nov.** Caules secundarii verisimiliter elongati, monophylli. Folium anguste oblanccolatum, obtusum, pedunculo cum racemo brevius. Pedunculus gracilis, infra racemum vaginis tubulatis vestitus. Racemus secundiflorus, leviter flexuosus, bracteis flores subtendentibus oblique infundibuliformibus acutis. Pedicellus cum ovario glaber. Sepala lateralialia usque ad medium cohaerentia, anguste lanceolata, extus per medium valde carinata, acuta, intus prope marginem exteriorem longe pilosa, prope marginem interiorem minute glandulosa. Sepalum dorsale anguste lanceolatum, infra medium plus minusve concavum, extus per medium valde carinatum,

intus sparse et longe pilosum. Petala oblonga, usque ad apicem acutum attenuata, carnosae, glabra, atropurpureae. Labellum trilobatum; lobi laterales falcati, porrecti, acuti, basi rotundati, dense glandulosi, vinacei; lobus medius spathulatus, obtusus, infra medium tricarinatus, carinis lateralibus valde prominentibus, margine minute fimbriata. Discus prope basim labelli bicallosus. Columna petalis brevior, apice inaequaliter fimbriata.

Roots and secondary stems wanting. Leaf 8.2 cm. long, 9 mm. wide near the middle, narrowly oblanceolate, obtuse, coriaceous, mid-nerve prominent. Peduncle with the raceme 14 cm. long, slender, arising from the axil of the leaf, provided with several closely appressed tubular sheaths. Raceme 4-6 cm. long, exceeding the leaf, seven to fourteen or more flowered, secund, with the rachis slender and slightly flexuose. Bracts of the raceme 5 mm. apart between the points of insertion, about 5 mm. long, obliquely infundibuliform, drawn out into an acute tip. Pedicel and ovary 6 mm. long, smooth, green. Lateral sepals 9 mm. long, 1.75 mm. wide near the middle, narrowly lanceolate, coherent for about one half their length, acute, conspicuously and sharply carinate along the middle on the outer surface, the keels continued at the apex into a rostrate point, upper surface on and near the outer margin sparsely pilose, inner margin more or less minutely glandulose. Dorsal sepal about 9 mm. long, narrowly lanceolate, distinctly carinate along the middle of the outer surface, acute, strongly concave, with the margin sparsely pilose. Petals 5 mm. long, 1.5 mm. wide, oblong, acuminate, acute, smooth, vinaceous, with the middle nerve conspicuous. Labellum 5 mm. long, 3-lobed, vinaceous; lateral lobes 2 mm. long, narrowly falcate from a broad, rounded base, acute, minutely glandulose; middle lobe 3 mm. long, 1.5 mm. wide above the middle, spatulate, very shortly fimbriate on the margin, shorter and more prominent than the middle one. Disc conspicuously bicallose near the base of the labellum. Column 3 mm. long, vinaceous, shortly ragged-fringed at the summit.



Closely allied to *Pleurothallis Wercklei* Schltr., from which it differs in having a tricarinate labellum with different lobes, and in the lateral sepals being long-acuminate. In dried specimens the lateral sepals are yellowish-green tinged with purple. The dorsal sepal, petals, lip and column are of a deep port wine color.

COSTA RICA, C. H. Lankester s. n. Received at the Royal Gardens, Kew, in 1923. (TYPE in Herb. Ames No. 26976. Duplicate from the type plant in Herb. Kew.)

**Epidendrum exasperatum** Reichb. f. Beitr. Orch. Centr. Am. (1866) 85.

This remarkable species, which is characterized by lateral and terminal racemes, is usually represented in herbaria by specimens that fail to give an idea of the plant as it occurs under natural and favorable conditions. From Mr. C. H. Lankester I have recently received specimens accompanied by the following note: "One of the commonest species at moist, high elevations, on nearly every fence post. Nom, vern, Estrella de Mar. Petals and sepals Hay's brown (Ridgway Pl. XXXIX), usually with a yellowish margin, especially the tip of the petals. Column, side and front lobes of lip, white, base of column, interior of side lobes at base, and basal half of the center of the lip light Perilla purple (Pl. XXXVI). As the flowers age, all white segments turn mustard yellow (Pl. XVI). In favorable situations the plant attains heroic dimensions, with a central stem up to ten feet in height, and three quarters of an inch in diameter, possibly much branched."

Specimens prepared for the herbarium rarely exceed three or four decimeters in height. It is such species as *E. exasperatum* which indicate the necessity for full field notes.

COSTA RICA, La Estrella de Cartago, C. H. Lankester 405, January 12, 1923.

**Epidendrum pudicum** Ames sp. nov. Herba tenera, plus minusve stricta, radicibus fibratis glabris instructa. Caules graciles, vaginis foliorum omnino obtecti. Folia

disticha, oblique ascendente, anguste oblonga, plus minusve decem, supra profunde concava vel late sulcata, subtus rotunda, apice obtusa, valde carnosae, vaginis complanatis elongatis arcte appressis articulata, in sicco valde conduplicata ut videtur. Flores subumbellati, in speciminibus nostris duo, longipedicellati, albi, pedicellis cum ovario folium subtendens superantibus. Bracteae flores subtendentes valde abbreviatae, in sicco albae, membranaceae, concavae, ovatae. Pedicellus valde gracilis, elongatus. Sepala lateralia oblanceolata, acuta, apice leviter incrassata et bene triquetra, trinervia, nervo medio in sicco subtus prominenti. Sepalum dorsale anguste oblanceolatum, acutum, trinervium, apice incrassatum. Petala linearispathulata, acuta, uninervia nervo subtus prominenti. Labellum reniforme vel subaequaliter trilobatum, basi cordatum; lobis lateralibus suborbicularibus; lobo medio rotundato-triangulari, apice breviter apiculato. Discus prope basim labelli bicallosus, callis papilliformibus obtusis. Columna gracilis, usque ad apicem labello adnata, apice inaequaliter fimbriata. Anthera minute et dense glandulosa.

Roots fibrous, smooth. Stems up to 16 cm. long, approximate, erect, slender, terete at base, somewhat complanate above, wholly concealed by the leaf sheaths, about 10-leaved in flowering specimens. Leaves distichous, about 2.5 cm. long, 3 mm. wide, narrowly oblong, obtuse, sometimes obscurely bilobed at the tip, rounded beneath, deeply concave above, obliquely ascending, rigid, jointed to complanate sheaths which are about 1.5 cm. long, and nigroannulate at the base. Inflorescence terminal, subumbellate, few-flowered (2-flowered in the type). Floral bracts minute, about 3 mm. long, scarious, concave, acute. Pedicel with the ovary about 2 cm. long, very slender, ascending, hardly 1 mm. in diameter, smooth. Lateral sepals 1 cm. long, 3 mm. wide above the middle, oblanceolate, acute, fleshy, triquetrously thickened at the apex, mid-nerve somewhat prominent beneath in dried specimens. Dorsal sepal 1 cm. long, similar to the laterals, triquetrously thickened at the apex. Petals 9 mm. long, 1 mm. wide above the middle, linear-spatulate, acute, 1-nerved. Labellum adnate to the column.

Fig. 10

Cross-section  
of leaf



x4



Column & lip



Flower x2½

EPIDENDRUM

*pudicum* Ames



free portion about 5 mm. long, 7 mm. wide, rather fleshy, subequally 3-lobed, with a cordate or reniform base; lateral lobes suborbicular, about 3 mm. wide, obliquely ascending; middle lobe 3 mm. wide at the base, somewhat triangular, acute, with the apex triquetrously thickened and apiculate; mid-nerve slightly thickened and prominent on the upper surface of the disc. Disc bicallose at the base near the apex of the column, the calli divergent and more or less papilliform, obtuse. Column 7.5 mm. long, produced posteriorly into a fimbriate-dentate membrane which covers the anther. Anther minutely and densely glandular. [Fig. 10.]

*Epidendrum pudicum* is closely allied with *E. firmum* Reichb. f., from which it differs in having smaller flowers and a very different labellum. It is a member of the group to which *E. difforme* Jacq. belongs.

PANAMA, Province of Chiriqui, "Palo alto," C. W. Powell 319. Flowered under cultivation at Balboa in August 1923. Flowers waxy white with a faint tinge of green. Bright green where the labellum joins the column. Grows in medium sun in open places. (TYPE in Herb. Ames No. 26876.)

***Epidendrum rugosum*** Ames sp. nov. Herba epiphytica, ramosa. Caules vaginis tubulatis pustulose-rugosis obtecti. Folia valde coriacea, oblonga, apice bilobulata. Flores albidii, usque ad tres. Sepala lateralia triangulari-lanceolata, acuta, carinata, carina ultra apicem extensa. Sepalum dorsale oblongum, usque ad apicem attenuatum, leviter carinatum. Petala anguste triangulari-lanceolata, acuta, trinervia. Labellum triangulare, acuminatum, acutum, basi concavum, columnae adhaerens, valde carnosum, quinquenervium. Columna carnosae, truncata.

Stems much branched, with the branches 1-3 cm. long, concealed by tubular sheaths which are rigid and pustulose-wrinkled. Leaves about 2 cm. long, 4-7 mm. wide, oblong-bilobulate at the tip, very coriaceous, jointed with the rugulose sheaths. Flowers terminal, several, whitish. Lateral sepals 7 mm. long, 2.25 mm. wide below the middle, triangular-lanceolate, somewhat rounded at the base, acumi-

nate, acute, carinate along the middle on the outside, with the keel prominent, decurrent on the ovary and continued above beyond the apex of the sepal. Dorsal sepal 7 mm. long, 2 mm. wide, oblong, gradually tapering to an acute tip, carinate. Petals 6 mm. long, about 1 mm. wide, narrowly triangular-lanceolate, acute, 3-nerved. Labellum including the adherent base 6 mm. long, free portion 4 mm. long, about 2.5 mm. wide, triangular, acuminate, acute, very fleshy, rounded at the basal angles, 5-nerved. Column 3 mm. long, very stout, truncate at the tip, adherent almost to its tip with the base of the labellum.

Closely allied to *Epidendrum trachythece* Schltr., which has a very different labellum.

COSTA RICA, *C. H. Lankester* s. n. Received at the Royal Gardens, Kew, in 1923. (TYPE in Herb. Ames No. 26978. Duplicate from type plant in Herb. Kew.)

***Epidendrum simulacrum*** Ames sp. nov. Caules erecti, vaginis foliorum omnino obtecti. Folia disticha, inter se satis distantia, oblonga, utrinque leviter angustata, apice inaequaliter bilobata, coriacea, patentia. Inflorescentia terminalis, subumbellata, plus minusve quadriflora. Pedunculus abbreviatus. Bracteae inflorescentiae in siccis scariosae, pedicellis multo breviores. Sepala lateralibus plus minusve oblanceolata, acuta, apice valde incrassata, subtriquetra. Sepalum dorsale simile, apice valde incrassatum, subteres. Petala lineari-spathulata. Labellum simplex vel obscure et sparse crenulatum, cordatum, prope basim laminae bicallosum. Columna labello adnata, clinandrio minute dentato.

Stems 19-24 cm. tall, concealed by the sheaths of the distichous leaves, somewhat dilated upward. Leaves 2-2.5 cm. apart, 4 cm. long, 1 cm. wide, oblong, narrowed toward the ends, obtusely and unequally bilobed at the tip, spreading. Inflorescence terminal, subumbellate, few-flowered. Peduncle hardly 1 cm. long, with the rachis 6 mm. long. Flowers green, long-pedicellate, borne in umbel-like clusters. Pedicel with the ovary about 2 cm. long, slender. Lateral sepals 1 cm. long, 2.5 mm. wide above the middle, ob-

lanceolate, acute, with the apex thickened and more or less triquetrous. Dorsal sepal 1 cm. long, similar to the lateral sepals, strongly convex, with the apex thickened and somewhat semiterete. Petals 9 mm. long, about 1 mm. wide above the middle, linear-spatulate, 1-nerved. Labellum about 9 mm. long to the base of the column, free portion about 6 mm. long, 6 mm. wide, simple or widely and obscurely crenulate on the margin, cordate, apiculate, bicarlose at the base. Column 6 mm. long, arcuate, wholly adnate to the labellum, minutely denticulate at the summit behind the anther.

Closely allied to *Epidendrum difforme* Jacq., from which it differs in the smaller flowers and different labellum. From *E. firmum* Reichb. f. it is clearly distinguished by the outline of the labellum.

PANAMA, Province of Chiriqui, "Lino hill," C. W. Powell 298. Flowering in May and June. Growing in exposed place. 4000-4500 feet altitude. (TYPE in Herb. Ames No. 26882.)

***Epidendrum vagans* Ames sp. nov.** Rhizoma longe repens, lignosum, validum, radicibus fibratis ramosis glabris. Pseudobulbi inter se distantes, tri-vel quadrifoliati. Folia coriacea, ligulata, apice inaequaliter bilobata. Pedunculus terminalis, foliis brevior, plus minusve quadriflorus. Flores in racemo laxo dispositi. Sepala lateralia anguste lanceolata, acuta, extus per medium conspicue et alte carinata. Sepalum dorsale simile, ecarinatum. Petala lanceolata, acuminata, acutissima. Labellum simplex, elliptico-ovatum, acuminatum, purpureo-striatum, callo velutino in basi. Columna apice dilatata, antice bidentata dentibus triangularibus, postice in ligulam producta. Ligula columnae anguste oblonga, apice obscure paucidenticulata.

Rhizome elongated, creeping, 5-6 mm. in diameter, provided between the distant pseudobulbs with two or three loosely appressed tubular sheaths, which soon disappear as the plants mature. Pseudobulbs 5-6 cm. apart, about 5 cm. long, fusiform, concealed when young by several rather closely appressed imbricating sheaths, 3-4-leaved. Leaves

8-10 cm. long, up to 1.6 cm. wide, oblong, abruptly narrowed at both ends, obtusely bilobulate at the tip, erect. Peduncle 4-5 cm. long, much exceeded by the leaves, about 4-flowered. Flowers in a loose raceme, white or cream color, the sepals and petals with a short median band of purple and the labellum with about twelve purple stripes. Bracts of the raceme about 4 mm. long. Pedicel with the ovary 1.7 cm. long, ascending. Lateral sepals 2 cm. long, 4 mm. wide, narrowly lanceolate, acute, with a deep keel along the middle on the outer surface. Dorsal sepal similar, ecarinate. Petals 1.7 cm. long, up to 5 mm. wide, lanceolate, acuminate, acute. Labellum 1.5 cm. long, about 7 mm. wide below the middle, elliptic-ovate, acuminate, acute, lightly and shortly carinate on the under side near the tip. Callus velutinous, situated at the base of the lamina, obscurely 3-lobulate in front. Column 5.5 mm. long, adherent for about one half its length to the labellum, dilated upward, with a fleshy, triangular tooth on each side in front at the summit, and with an oblong obscurely tridentate ligule behind the anther.

*Epidendrum vagans* is closely allied to *E. radiatum* Lindl. and *E. ionophlebium* Reichb. f. From *E. radiatum* it differs conspicuously in the outline of the labellum and in the well-developed keels of the lateral sepals. From *E. ionophlebium* it differs in habit, the leaves being much smaller and the pseudobulbs widely separated on the elongated, creeping rhizome.

COSTA RICA, southern flanks of Irazú, *C. H. Lankester* 461. 5000-7000 feet altitude. Sepals and petals white to cream, a violet purple median stripe on basal half. Lip white to cream with a white callus and about twelve purple stripes. Column green at the base with a purple stripe. (TYPE in Herb. Ames No. 26948.)

***Tetramicra simplex* Ames sp. nov.** Radices numerosae, valde incrassatae, plus minusve fasciculatae. (Folia verisimiliter subteretia, acuta.) Scapus strictus, erectus, plus minusve quindecimflorus. Flores in racemo laxo dispositi. Sepala lateralia elliptico-lanceolata, acuta, leviter

apiculata, septemnervia. Sepalum dorsale ellipticum, acutum, septemnervium. Petala anguste spathulata, valde obtusa vel nonnihil truncata, trinervia vel nonnihil binervia. Labellum subsimplex vel obscure trilobatum; lobis lateralibus minutis obtusis; lobo medio transverse elliptico, leviter emarginato, septemnervio. Discus prope basim columnae bicarinatus vel bicallosus. Columna crassa, superne dilatata.

Roots fleshy up to 6 cm. or more long, fasciculate, whitish in dried specimens. (Leaves wanting in the type. In specimen collected by *Palmer & Riley* 187, up to 17 cm. long, terete, 2.5 mm. in diameter, rigid, obliquely ascending, acute.) Plant about 5 dm. tall, above the leaf (at intervals of 3-4 cm.) provided with closely appressed nervose acute tubular sheaths which are about 1.5 cm. long. Raceme 16-25 cm. long, bearing fifteen or more flowers. Bracts of the inflorescence 3-6 mm. long, lanceolate, acuminate, acute, spreading. Pedicel with the ovary about 1 cm. long, slender, obliquely ascending, smooth. Lateral sepals 7 mm. long, 3 mm. wide, elliptic-lanceolate, acute, obscurely apiculate, 7-nerved. Dorsal sepal about 7 mm. long, elliptical, acute, 7-nerved. Petals 7 mm. long, 1 mm. wide above the middle, narrowly spatulate, subacute obtuse or sometimes truncate, 2-3-nerved, rather fleshy. Labellum subsimple, the lateral lobes being much reduced, 9.75 mm. long; lateral lobes .75 mm. long, 1 mm. wide, obtuse; middle lobe including the cuneate isthmus 7 mm. long, 1 cm. wide, transversely elliptical or reniform, shallowly emarginate, 7-nerved, with the outer nerves branched. Disc shortly bicarinate near the base of the column. Column 4 mm. long, dilated upward.

*Tetramicra simplex* is most closely related to *T. tenera* (A. Rich.) Rolfe, from which it differs in the reniform mid-lobe and in the much reduced obtuse lateral lobes of the labellum.

CUBA, Isle of Pines, near Los Indios, *Otto E. Jennings* 644, May 19, 1910. (TYPE): Pinar del Rio Province, near El Gauma in mountains, *William Palmer & J. H. Riley* 187.



March 9, 1900. Exposed hilltops under pines. (TYPE in Herb. N. Y. Bot. Gard. Flower, photograph of type and sketches in Herb. Ames No. 22113.)

*Ascotainia Elmeri* Ames Orch. 5 (1915) 99.

*Tainia inamoena* Kränzl. in Fedde Repert. 17 (1921)

387.

A careful comparison of the types of *Ascotainia Elmeri* and *Tainia inamoena* has convinced me that they represent a single species.

***Dendrobium agusanense*** Ames sp. nov. Caules valde elongati, dependentes, foliosi. Folia disticha, lanceolata, apice inaequaliter bilobata, coriacea, inter se satis distantia. Racemi e vagina foliorum orientes, brevissimi, biflori, floribus approximatis. Sepala lateralia valde curvata, falcato-lanceolata, subacuta, carnosa, usque ad apicem sensim angustata, mentum breve formantia. Sepalum dorsale valde elongatum, lineari-oblongum, obtusum, apice incrassatum, prope basim sensim angustatum. Petala lineari-spathulata, basi valde attenuata, obtusa. Labellum trilobatum; lobis lateralibus quam lobo medio multo minoribus, antice subquadratis; lobo medio, late ovato, acuminato, subacuto, carnoso. Discus verruculosus, ungui per medium tricarinato. Columna abbreviata in pedem producta.

An epiphytic caespitose herb 1-4 meters or more long, pendent, leafy. Leaves distichous, about 3.5 cm. apart, 1 dm. or more long, 2-2.5 cm. wide, lanceolate, unevenly bilobed at the tip, with the lobes more or less acute or obtuse. Sheaths of the leaves closely appressed, concealing the stem, minutely verruculose, about 3 cm. long. Peduncle 2-flowered, 5 mm. long, breaking through the leaf sheath, opposite the leaves, subtended by two rigid opposed erect bracts which conceal the peduncle and reach to the base of the flower-stalks. Lateral sepals 11 mm. long, 3.5 mm. wide above the base, strongly curved, falcate-lanceolate, subacute, rather fleshy, forming a distinct mentum which is 3 mm. long. Dorsal sepal 16.5 mm. long, about 3 mm. wide, linear-

oblong, obtuse, thickened at the tip, fleshy. Petals 13.5 mm. long, 2 mm. wide above the middle, linear-spatulate from a very slender and elongated base, 7-nerved, rather fleshy. Labellum 3-lobed, 7 mm. long; lateral lobes smaller than the middle one, the anterior free portion subquadrate, 1.5 mm. wide and 1.5 mm. long; middle lobe ovate acuminate, acute, much exceeding the lateral lobes about 4 mm. long, 3 mm. wide across the base. Disc minutely verruculose and papillose. Unguis tricarinate, the middle keel very much thickened, the laterals verrucose. Column short, produced into a distinct foot.

In habit similar to *D. luzonense* Lindl., but with broader leaves and a very different labellum.

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, A. D. E. Elmer 12462, August 1912. Small tufts hanging from moss-covered limbs extending over the Catangan creek-bed at 1000 feet altitude in very humid and densely shaded places. Roots fibrous, ample, greenish brown, closely attached, and thereby somewhat flattened. Stems few and quite rigid at base, 5-15 feet long, unbranched, the leaf-bearing portion subterete. Leaves thickly coriaceous, paler beneath than above, flat. Flowers in pairs from brown bracts. Floral segments green, slightly curved toward each other, petals and labellum spotted minutely with purple. (TYPE in Herb. Ames No. 13433.)

**Dendrobium pterocarpum** Ames sp. nov. Radices fibratae, albae, glabrae. Caules caespitiosi, elongati, basi tumidi vel pseudobulbosi, uni-ad quadrifoliati (pars tumida caulis semifusiformis, in sicco flavida, valde sulcata), juniores vaginis acutis demum in fibras solutis inclusi. Folia alterna, inter se satis distantia, valde recurvata, lineari-lanceolata vel anguste oblonga, utrinque attenuata, apice breviter apiculata, vix in petiolum contracta, ascendunt, coriacea. Inflorescentia terminalis, pauciflora, ex axilla folii terminalis oriens. Racemus folio multo brevior, bractea infundibuliformi subtendenti. Bracteae flores subtendentes permagnae, ovato-lanceolatae, acutae, apice breviter conduplicatae. Ovarium pedicellatum sexalatum, pedicello gracili. Sepala

lateralia triangularia, acuta, apice conduplicata, mentum extincoriiforme elongatum formantia. Mentum ovario longius, antice medium usque clausum. Sepalum dorsale lanceolatum, valde concavum, petalis longius, acutum, breviter carinatum, apice breviter conduplicatum. Petala elliptico-lanceolata, acuminata, valde acuta, quinquenervia. Labellum simplex, a basi anguste cuneata mox dilatatum, triangulari-acutum, infra apicem triangularem rotundatum, basi mento cohaerens. Discus ecarinatus. Columna abbreviata, in pedem longum producta. Anthera minute glandulosa.

Epiphytic herb, up to 15 cm. tall. Roots fibrous, spreading, white, smooth. Stems erect, about 5 mm. thick near the base in dried specimens, attenuated upwards, concealed below when young by ample acute nervose sheaths which soon break down into straggling fibres. Leaves more or less terminal, one to four on each stem, 3.5-10 cm. long, up to 7 mm. wide, alternate, about 2 cm. apart, linear-lanceolate, acute, narrowed at the base, shortly petioled, coriaceous, strongly recurved. Inflorescence terminal in the axil of the uppermost leaf, about 3 cm. long, few-flowered. Raceme much shorter than the subtending leaf, conspicuously bracteose, subtended by an infundibuliform bract which is 8 mm. long. Bracts of the raceme up to 1.5 cm. long, ovate-lanceolate, heavily nerved, acute, with the apex shortly conduplicate. Ovary long-pedicellate, dilated upward, conspicuously 6-winged, including the pedicel 1.6 cm. long. Lateral sepals forming a mentum, — which is 1.3 cm. long and 2.5 mm. in diameter, — 9 mm. long, 4 mm. wide near the base of the column, triangular, acute, with the apex shortly conduplicate-carinate. Dorsal sepal 9 mm. long, lanceolate, acute, strongly concave, with the apex shortly carinate. Petals 7.5 mm. long, 3 mm. wide, elliptic-lanceolate or somewhat rhombic-lanceolate, acute, somewhat thickened at the tip, minutely glandular on the margin and outer surface, 5-nerved. Labellum about 1.5 cm. long to the point of attachment, 2 mm. wide near the base, 5 mm. wide near the tip, gradually widened upward from a narrowly cuneate base, rounded near the tip, where it is abruptly narrowed into

a triangular acute termination, which is 3 mm. long and 2 mm. wide. Column 3.5 mm. long, produced into a slender, elongated foot. Anther papillose in front.

There are no near allies of this species in the Philippines.

PHILIPPINES, Mindanao, Davao District, Todaya, Mount Apo, A. D. E. Elmer 11528, August 1909. Erect tuft upon moss-covered limbs of trees in dense woods of low moist soil at 6250 feet on Mount Apo; roots whitish; pseudobulbs not hard, green, covered with shredded sheaths; stem erect, green, terete; leaves thickly coriaceous, shiny, dark green above, much lighter green beneath, flat, but strongly recurved; inflorescence from the uppermost leaf-axil, 3-flowered, the subtending bracts green, the suberect, odorless flowers very pale white throughout. "Salamiog." (TYPE in Herb. Ames No. 26743.)

**Bulbophyllum arrectum** Kränzl. in Fedde Repert. 17 (1921) 384.

The type of this species consists of a single inflorescence. In the dried condition it is blackish and brittle. The general aspect of the subumbellate flowers suggests very closely *B. stellatum* Ames.

**Bulbophyllum colubrimodum** Ames sp. nov. Rhizoma longe repens, vaginis abbreviatis albidis vestitum. Pseudobulbi plus minusve approximati, obpyriformes, in sicco valde rugosi, erecti vel oblique ascendentes, monophylli. Folium variabile, plerumque elliptico-lanceolatum interdum oblongo-lanceolatum, apiculatum, valde coriaceum, in petiolum brevem contractum. Scapus gracilis, folium superans, uniflorus. Ovarium breviter pedicellatum, bractea infundibuliformi infra pedicellum. Sepala lateralia longe triangularia, acutissima, trinervia, mentum breve formantia. Sepalum dorsale simile, basi concaviusculum, trinervium. Petala oblonga, utrinque angustata, uninervia, acuta, membranacea, sepalis multo breviora. Labellum complicatum, supra medium valde deflexum, usque ad medium tricarinatum, carinis lateralibus prope basim labelli divergentibus, carina media prope basim labelli protuberanti; pars apicalis

labelli valde deflexa, elliptica, conduplicata, subtus carina  
carnosa instructa, apice conspicue apiculata. Columna  
brevis, bicuspidata.

Rhizome elongated, clothed with abbreviated whitish  
sheaths, rooting beneath the pseudobulbs. Roots spreading,  
smooth. Pseudobulbs about 7 mm. long, about 3 mm. in  
diameter near the base, obpyriform, yellowish and much  
wrinkled when dry, erect or ascending, about 5 mm. apart  
on the rhizome, monophyllous. Leaf 22-32 mm. long,  
5-10 mm. wide near the middle, apparently very variable,  
elliptic-lanceolate or oblong-lanceolate, coriaceous, apiculate,  
shortly petiolate. Petiole 2 mm. long, slender. Scapes arising  
from the base of the pseudobulbs or from the rhizome  
between the pseudobulbs, 4-5 cm. long, with a tubular  
bract at the base, ascending, exceeding the leaf, bearing a  
single green and purple flower and provided beneath the  
pedicellate ovary with a short, infundibuliform bract.  
Pedicel and ovary 4 mm. long. Lateral sepals 12.5-15 mm.  
long, about 2 mm. wide near the base, tapering gradually to  
the acute tip, 3-nerved, narrowly triangular-lanceolate,  
united at base where they form a short obtuse mentum.  
Mentum 2 mm. long. Dorsal sepal 11.5-15 mm. long,  
similar to the laterals, somewhat concave at base, very  
slender above the middle, 3-nerved. Petals about 5 mm.  
long, 1 mm. wide, oblong, acute, slightly narrowed toward  
the base, 1-nerved, membranaceous, smooth. Labellum  
4 mm. long, shortly and narrowly unguiculate, sharply de-  
flected at about the middle, basal half narrowed, tricarinate  
on the upper surface, apical half elliptical-apiculate when  
spread out, thickened along the middle on the under sur-  
face, cucullate at the apex. Keels more or less fleshy, the  
laterals intramarginal, divergent at the base of the la-  
bellum, the central keel shorter and broader than the  
lateral ones, somewhat cleft at the protuberant base, very  
minutely glandulose. Column abbreviated, prolonged at  
base into a distinct foot, produced at the apex into two tri-  
angular stelidia. Foot of the column dilated at the point  
where the labellum is inserted.

The labellum in its sharply deflexed apical half suggests the lip of *Bulbophyllum lipense* Ames. In the dried material examined the petals are purplish, the sepals yellowish or yellow-green. The labellum appears to have been purplish and yellow. The specific name alludes to the peculiar apical portion of the labellum which, — in certain positions, — resembles the head of a snake about to strike. [Fig. 12.]

PHILIPPINES, Leyte, C. A. Wenzel 0698, November 22, 1914. Epiphyte in forest. Sepals green and purple: petals green and purple: lip green and purple. 600 meters altitude. (TYPE in Herb. Ames No. 26731.)

***Bulbophyllum echinophilum*** Kränzl. in Fedde Repert. 17 (1921) 385.

Through the kindness of Dr. Kränzlin I have been able to examine the type specimen of this species which in the structure of the labellum suggests the West African *B. Calamaria* Lindl. In the original description prepared from a specimen cultivated in the botanic garden at München-Nymphenburg the native country of *B. echinophilum* is said to be the Philippine Islands. As the affinities of the plant are distinctly African, it would seem wise to await confirmation of the ascribed habitat before including *B. echinophilum* in the Philippine flora. The frequency with which labels become transferred from one plant to another in botanic gardens stimulates skepticism when species are referred to a geographical area in which they lack affinities or close allies.

***Bulbophyllum exquisitum*** Ames nom. nov.

*Bulbophyllum MacGregorii* Ames in Phil. Journ. Sci. C. Bot. 7 (1912) 137, non Schltr. in Fedde Repert. 10 (1911) 252.

***Bulbophyllum filicoides*** Ames sp. nov. Herba epiphytica, pendula. Rhizoma gracile elongatum. Pseudobulbi parvuli, in rhizomate seriati, juniores vaginis marcescentibus mox in fragmenta fibrosa solutis tecti, inter se

satis distantes, monophylli. Folia lanceolata, acuminata, acuta, apice obscure mucronulata, oblique descendente, coriacea. Pedunculus ascendens, cum racemo folium superans, e basi pseudobulbi oriens, infra racemum bi- vel tribracteatus, bracteis in sicco, diaphanis, infundibuliformibus. Bracteae racemi flores subtendentes anguste lanceolatae, ovarium excedentes. Racemus laxis, plus minusve quindecimflorus. Sepala lateralibus basi valde concava, triangularia, in caudam spongiosam terminantia, mentum obtusum formantia. Sepalum dorsale anguste lanceolatum, basi concavum, in caudam spongiosam productum. Petala sepalis multo breviora, lanceolata, apice leviter spongiosa. Labellum simplex, e pede columnae oriens, demum valde deflexum, ligulato-lanceolatum, obtusum, supra per medium leviter sulcatum, subtus carinatum. Columna valde abbreviata, in pedem elongatum producta.

Roots filiform, elongated, branching. Rhizome pendent, 26 cm. long more or less, slender, covered with yellowish marcescent sheaths which (as they mature) break up into coarse fibres. Pseudobulbs about 1.5 mm. long, hardly attenuated upward, monophyllous, about 1 cm. apart, at first entirely concealed by the marcescent sheaths. Leaf 3.5-4 cm. long, up to 11 mm. wide below the middle, lanceolate, acuminate, acute, obscurely mucronulate at the apex, coriaceous, contracted at base into a short, obscure, sulcate petiole. Peduncle with the raceme 4-5 cm. long, bearing from two to three infundibuliform bracts below the raceme, slender, ascending. Raceme about 2.5 cm. long, loosely flowered. Flowers about fifteen, 6 mm. long, yellowish, subtended by lanceolate scarious bracts which exceed the shortly pedicellate ovaries. Lateral sepals 6 mm. long, including the obtuse mentum 2.5 mm. wide at the base, abruptly contracted to form a spongy tail-like tip, concave at the wide base, porrect. Dorsal sepal 6 mm. long, narrowly lanceolate, terminating in a spongy tail. Mentum 2 mm. long. Petals hardly 2 mm. long, 1 mm. wide, lanceolate, apex somewhat spongy, acute. Labellum 3.5 mm. long, simple, narrowly lanceolate, about 1 mm. wide, strongly curved or arcuate, grooved along the middle

Fig. 11

BULBOPHYLLUM

*filicoides*  
Ames



Flower x 6

Lip x 10



on the upper side, lightly carinate beneath, ecallose. Column 1 mm. long, bibrachiate at the summit, produced into an elongated foot which is 2 mm. long with a swelling near the base.

Vegetatively similar to *B. perpendiculare* Schltr., from which it differs in having longer racemes with more numerous flowers and different petals. In general habit similar to the Bornean *Bulbophyllum rhizomatosum* Ames & Schweinf., but with different flowers. [Fig. 11.]

PHILIPPINES, Mindanao, Agusan Province, Cabadbaran, Mount Urdaneta, A. D. E. Elmer 14200, October 1912. Hanging from the nether side of large tree trunks covered with mosses in humid forests some 500 feet above the lagoon region or at 5500 feet altitude; stem very thread-like, especially toward the base, covered with yellowish marcescent sheaths; leaves alternating, descending or pendent, coriaceous, flat, paler green beneath, at the base with a small green pseudobulb; peduncle arising from the base of the pseudobulb, ascending, fibrous, pale green; flowers odorless, descending, the segmented portion yellow, the other basal portion watery white; "Gomacazgay" in Manabo. (TYPE in Herb. Ames No. 13443.)

***Bulbophyllum glandulosum* Ames sp. nov.** Rhizoma valde elongatum, repens, gracile. Pseudobulbi inter se distantes, obpyriformes, in sicco valde rugosi, monophylli. Folium ellipticum, subacutum, coriaceum, breviter petiolatum, scapo multo brevius. Scapus uniflorus, e basi pseudobulbi vel e rhizomate in medio inter pseudobulbos ortus, filiformis. Flores verisimiliter atropurpurei. Sepala lanceolata, acuta, trinervia. Petala infra medium oblonga, supra medium abrupte angustata, in caudam brevem glandulosam producta, uninervia. Labellum trilobatum; lobis lateralibus antice rotundatis, usque ad medium labelli attingentibus; lobo medio oblongo, obtuso, incrassato, valde glanduloso. Discus carina complanata gnomoniformi ornatus. Columna brevis, antice bicuspidata.

Rhizome elongated, 28 cm. or more long, slender, about 1 mm. thick in dried specimens, bearing pseudobulbs

at intervals of about 1 cm. Pseudobulbs 5 mm. long, obpyriform, about 3 mm. thick at the base, much wrinkled when dry, yellowish or greenish, monophyllous. Leaf 1-2.5 cm. long, 4-7 mm. wide, elliptical or elliptic-lanceolate, rounded at the base and passing into a short petiole, acute, coriaceous. Petiole 2 mm. long, slender. Scapes up to 4.5 cm. long, arising from the base of the pseudobulbs or from the rhizome between the pseudobulbs, filiform, weak, 1-flowered. Flowers dark purple when dry, described as being black by the collectors. Pedicel and ovary about 2.5 mm. long, subtended by an abbreviated tubular bract. Lateral sepals 4.5-5 mm. long, about 1.5 mm. wide near the base, triangular-lanceolate, acuminate, acute, 3-nerved, the nerves closed. Dorsal sepal 5 mm. long, lanceolate, similar to the laterals, 3-nerved, minutely glandular on the upper surface near the tip. Petals about 3 mm. long, scarcely 1 mm. wide below the middle, above the middle suddenly contracted into a caudate glandular termination, 1-nerved. Labellum 3-lobed, about 2 mm. long, 1 mm. wide across the expanded lateral lobes, obscurely cordate at the base; lateral lobes extending to about the middle of the labellum, rounded in front, erect or nearly so when in natural position, diaphanous, 1 mm. long; middle lobe about 1 mm. long, hardly .5 mm. wide, rather fleshy, copiously glandulose. Disc with a gnomon-like keel along the middle which extends from near the base of the labellum to about the centre of the mid-lobe. Column short, produced into a distinct foot, with a stolidium on each side in front at the summit.

From *Bulbophyllum peramoenum* Ames, which is a closely allied species, *B. glandulosum* differs conspicuously in having dissimilar petals which are distinctly and profusely glandulose above the middle. From *B. Toppingii* Ames, another closely allied species, it is separable by its conspicuously glandular petals and labellum and in its dark purple flowers. [Fig. 12.]

PHILIPPINES, LUZON, Tayabas Province, Mount Binuang. M. Ramos & G. Edaño, Bureau of Science 28787, May 9, 1917. Epiphyte. 1000 meters. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26730.)

**Bulbophyllum Levanae** Ames Orch. 5 (1915) 178.

In recent studies of Philippine orchids it has become apparent that *B. nymphopolitanum* Kränzl. and *B. trigonosepalum* Kränzl. are near allies of *B. Levanae*, and sufficiently close to it to arouse suspicion that they represent the same species. Dr. Kränzlin kindly loaned to me the types of *B. nymphopolitanum* and *B. trigonosepalum*. These consist of specimens obtained in the Philippine Islands by A. Loher. *B. nymphopolitanum* is referred doubtfully to the Philippines in the original description published in 1916, but I think there can be only slight doubt as to its origin, as it is a close match for *B. Levanae* from Leyte, differing from it chiefly in having somewhat larger flowers. *B. trigonosepalum* is characterized by having larger flowers than either *B. Levanae* or *B. nymphopolitanum*, but structurally is very similar to them. In all of the specimens examined the labellum possesses the peculiar oblong, lobe-like appendages which are not found in any other species of the genus heretofore reported from the Philippines. These appendages of the labellum are basally situated near the point of insertion on the foot of the column. *B. nymphopolitanum*, — if my conclusions are justified, — should be referred to *B. Levanae*. As for *B. trigonosepalum*, it may prove to deserve a similar fate, but until more material than I have been able to secure has been examined it may be well to regard it as a close ally of *B. Levanae*, perhaps as a variety of that species.

**Bulbophyllum luzonense** Ames in Philip. Journ. Sci. C. Bot. 7 (1912) 141.

*Bulbophyllum syllectum* Kränzl. in Fedde Repert. 17 (1921) 383.

In habit and flower-structure *B. luzonense* and *B. syllectum* are so similar that I have been unable to find satisfactory distinguishing characters that will separate them clearly. *B. syllectum* was described from specimens collected in the Philippines by A. Loher. The type consists of specimens that were cultivated in the botanic garden at München-Nymphenburg.

**Bulbophyllum marcidum** *Ames sp. nov.* Radices glabrae. Rhizoma repens. Pseudobulbi dense congesti, in catenam aggregati, monophylli. Folium ellipticum vel longo-ellipticum, acutum vel obtusum, coriaceum, in petiolum brevem contractum, scapo filiformi multo brevius. Scapus erectus, uniflorus. Flos flavidus. Sepala lateralia obtuse triangularia, trinervia, mentum obtusum formantia. Sepalum dorsale oblongo-ligulatum, obtusum, trinervium. Petala sepalis multo breviora, oblonga, uninervia, apice rotundata. Labellum obscure trilobatum, lamina labelli expansa in circuitu subsagittata; lobis lateralibus erectis, obtusis; lobo medio oblongo, convexo, obtuso, dense et breviter glanduloso, margine valde deflexo vel revoluta. Columna brevis, in pedem elongatum producta, apice bicuspidata.

Roots smooth, coarse, whitish when dry. Rhizome creeping, elongated. Pseudobulbs 3 mm. long, about 1 mm. in diameter in dried specimens, procumbent on the slender rhizome, contiguous, with the ascending apex bearing a single leaf, the mature pseudobulbs subtended by the fibrous remains of loosely appressed sheaths. Leaf 5-10 mm. long, 3.5 mm. wide, elliptical or oblong-elliptical, obtuse or acute, coriaceous, contracted into a short petiole. Scape arising from the base of the pseudobulbs, 2-3 cm. long, filiform, erect, exceeding the leaf, 1-flowered. Flower yellow. Ovary with the pedicel 7 mm. long to the subtending tubular bract, smooth. Lateral sepals 3.5 mm. long, 1 mm. wide near the middle, tapering very gradually to a subobtuse tip, 3-nerved, smooth on the margin, forming a mentum 1.5 mm. long. Dorsal sepal 4 mm. long, about 1 mm. wide near the middle, oblong-ligulate, obtuse or subacute, 3-nerved, smooth. Petals 1.5 mm. long, hardly 1 mm. wide, oblong, obtuse, 1-nerved. Labellum 2.75 mm. long, obscurely 3-lobed, with the lateral lobes erect, obtuse, 1 mm. long and with the terminal lobe narrowly oblong, obtuse, 1.5 mm. long, its margin strongly revolute, its upper surface rounded, minutely and densely glandulose; when the lateral lobes are spread out the outline of the labellum is obtusely subsagittate. Column about 1 mm. long, continued at the

**BULBOPHYLLUM** *glandulosum* Ames



**B. marcidum** Ames



Fig 12

**B. colubrimodum** Ames

base into a distinct foot to which the labellum is loosely attached. Stelidia of the column, one on each side at the summit, exceeding the anther.

The habit of *Bulbophyllum marcidum* suggests such species as *B. mindorense* Ames, *B. pleurothalloides* Ames and *B. exquisitum* Ames. From *B. pleurothalloides* it differs in having a glandulose labellum, obtuse petals, and in having the ovary far distant from the subtending bract. From *B. mindorense* it is separable in having smooth sepals that are not at all glandular on the margin. From *B. exquisitum* it is very distinct in the size of the flowers and in the very different labellum and smooth ovary. The apical portion or mid-lobe of the labellum is characterized by a strongly deflexed slightly revolute margin; seen from the side it has the appearance of being fleshy. The upper surface is strongly convex and closely studded with minute gland-like prismatic cells. The apex is blunt with the margin turned sharply downward. [Fig. 12.]

PHILIPPINES, Mindanao, Bukidnon Subprovince, Mount Lipa, *M. Ramos & G. Edaña*, Bureau of Science 38573, July 8, 1920. On roots of trees in forest. Flowers yellow. 4900 feet altitude. (TYPE in Herb. Ames No. 26737.)

***Bulbophyllum pampangense* Ames sp. nov.** Rhizoma longe repens, plus minusve flexuosum, infra pseudobulbos radicans. Pseudobulbi inter se satis distantes, obpyriformes, in sicco profunde sulcati, monophylli. Folia elliptica, breviter petiolata, coriacea. Scapi e basi pseudobulbi vel e rhizomate in medio inter pseudobulbos orti, folium aequantes vel superantes, filiformes, paucibracteati. Bractea infra florem infundibuliformis. Sepala lateralia longe triangulari-lanceolata, valde acuta, verisimiliter pententia, trinervia. Sepalum dorsale simile. Petala lanceolata, acuminata, acuta, uninervia, membranacea. Labellum quam sepala lateralia multo brevius, infra apicem valde constrictum, obtusum, in circuitu anguste obovatum, breviter unguiculatum, per medium labelli carina longitudinali gnomoni solari simili antice explanata ornatum. Columna brevis.

Rhizome elongated, somewhat flexuose, hardly 1 mm. thick in dried specimens, smooth. Roots fibrous, produced from the rhizome beneath the distant pseudobulbs, smooth. Pseudobulbs about 5 mm. tall, 5 mm. thick at the base in dried specimens, tapering gradually toward the summit, 1-1.2 cm. apart, plurisulcate when dry, monophyllous. Leaves shortly petiolate, 1.5-1.9 cm. long, 5-8 mm. wide, elliptical, acute, shorter than the slender scapes, mid-nerve somewhat prominent. Scapes filiform, erect, up to 3 cm. long, produced from beneath the pseudobulbs and from the rhizome midway between the pseudobulbs, paucibracteate, with an infundibuliform sheath subtending the solitary flower. Lateral sepals 7 mm. long, 1.75 mm. wide near the middle, narrowly triangular-lanceolate, acute, 3-nerved, membranaceous. Dorsal sepal 6 mm. long, about 2 mm. wide, similar to the laterals. Petals about 3 mm. long, 1 mm. wide below the middle, lanceolate, acute, 1-nerved. Labellum nearly 2 mm. long, 1 mm. wide above the middle, narrowly obovate in outline, conspicuously constricted .75 mm. from the blunt apex, contracted at base into a wide claw, concave-sulcate below the middle with a gnomon-like keel near the base which becomes dorso-ventrally flattened in front and as a thickened lamella extends to the apex of the labellum. Column short with an elongated stolidium on each side in front at the summit.

The vegetative parts resemble *Bulbophyllum alagense* Ames, but the slender scapes are much longer than in that species, and the structure of the flower is very different. *B. peramoenum* Ames and *B. Toppingii* Ames are allied species which differ from *B. pampangense* in the narrower leaves, shorter sepals and dissimilar petals.

PHILIPPINES, Luzon, Pampanga Province, Mount Pinatubo, E. D. Merrill 11214, December 1918. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26301.)

***Bulbophyllum subaequale* Ames sp. nov.** Radices copiosae, fibratae. Pseudobulbi plus minusve caespitosi, subobsoleti, breviter cylindranei, monophylli. Folium valde coriaceum, longipetiolatum, anguste oblongo-ellipticum, ob-

tusum, scapo subaequale, nervo medio subtus prominente. Scapus prope basim pseudobulbi oriens, erectus, plus minusve decemflorus, folium aequans vel nonnihil longior. Racemus elongatus, bracteis triangulari-lanceolatis, persistentibus, acutis. Flores subalbi, inter se satis distantes. Pedicellus cum ovario racemi bracteas subaequans. Sepala lateralia mentum obtusum formantia, triangulari-ovata, apice leviter incrassata, acuta, trinervia. Sepalum dorsale oblongum, trinervium, apice leviter incrassatum, acutum. Petala spathulata, acuta, incrassata, binervia, supra medium minute papillosa. Labellum simplex, ecallosum, linguiforme, valde obtusum, conspicue trinervium, glabrum. Columna valida, antice breviter triangulari-bidentata, postice in lobum rotundatum terminans.

Epiphytic herb. Roots numerous, fibrous, smooth. Pseudobulbs subobsolete, approximate, shortly cylindrical, hardly 2 mm. tall, about 2.5 mm. in diameter, yellowish when dry, monophyllous. Leaf with the petiole 10-16 cm. long, 14-21 mm. wide, very coriaceous, narrowly elliptic-oblong, obtuse, with the lamina 7.5-11 cm. long, brownish when dry. Petiole 3-5 cm. long, slender. Scape arising from the base of a pseudobulb, equaling or slightly exceeding the leaf, including the raceme about 12 cm. long, sheathed below by several approximate, tubular, loosely appressed bracts. Raceme 4-6 cm. long, about 10-flowered, slender. Bracts of the raceme triangular-lanceolate, 2-5 mm. apart, acute, scarious when dry, 3.5 mm. long, spreading. Pedicel with the ovary 3.75 mm. long. Flowers whitish tinged with yellow, rather fleshy. Lateral sepals 6 mm. long, 3 mm. wide near the middle, triangular-ovate, acute, thickened at the tip, 3-nerved, forming a distinct mentum. Mentum about 3 mm. long. Dorsal sepal 6 mm. long, 2.5 mm. wide near the middle, oblong, very slightly narrowed toward the base, acute, with the apex somewhat thickened, 3-nerved. Petals 3.5 mm. long, 1.5 mm. wide above the middle, spatulate, subacute, much thickened, densely but inconspicuously papillose from the tip to about the middle, otherwise smooth, mid-nerve conspicuous, with a supplementary nerve between it and the posterior margin of the petal. La-



bellum 4 mm. long, 2 mm. wide, simple, but with the basal margin more or less erect, linguiform, very obtuse, conspicuously 3-nerved, smooth, ecallose. Column (above the foot) 2.5 mm. long, stout, with a triangular tooth on each side in front at the summit, and with a rounded terminal membrane behind the anther.

*Bulbophyllum subaequale* is a close ally of *B. dasypetalum* Rolfe, from which species it differs chiefly in the foliage and in the shape of the petals.

PHILIPPINES, Luzon, Rizal Province, Mount Susongdalaga, M. Ramos & G. Edaña, Bureau of Science 29296, August 5, 1917. 300 meters altitude. (TYPE in Herb. Bur. Sci. DUPLICATE TYPE in Herb. Ames No. 26727.)

**Robiquetia pantherina** (Kränzl.) Ames comb. nov.

*Saccolabium pantherinum* Kränzl. in Fedde Repert. 17

(1921) 391.

*Cleisostoma spatulatum* Bl. apud Naves Novis. App.

(1882) 238.

*Saccolabium densiflorum* Lindl. in Bot. Reg. (1838)

Misc. 56, quoad Philip., non Lindl. in Wall. Cat.; Reichb.

f. in Walp. Ann. 6 (1864) 885, quoad Philip.; Naves Novis.

App. (1882) 241.

*Robiquetia spathulata* Ames Orch. 5 (1915) 237, non

J. J. Sm.

In the brief note appended to the description of *Saccolabium pantherinum*, Kränzlin described the species as being without any trace of a scale or special structure in the throat of the labellum. In my studies of a flower of the type, I found a well-developed scale ascending obliquely from the anterior wall of the sac and a forcipate scale on the posterior wall. If for separation of *Saccolabium pantherinum* from *Robiquetia spathulata*, Kränzlin relied on the absence of the scales above mentioned, it would seem that he was deceived by the flower, which he examined, being imperfect.

*Robiquetia pantherina* is closely related to *Robiquetia spathulata* J. J. Sm. It differs from that species in having the scale on the anterior wall of the sac obliquely ascending and hardly thickened, and in the sepals and petals having

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conspicuous maculations. Other differences are found in the contour of the labellum and in the somewhat differently shaped lateral lobes.

PHILIPPINES, rare.

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ADDITIONS TO THE ORCHID FLORA  
OF TROPICAL AMERICA

WITH ILLUSTRATIONS OF  
PLEUROTHALLIS AND OBSERVATIONS  
ON NOTEWORTHY SPECIES

By OAKES AMES



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## Additions to the Orchid Flora of Tropical America

With Illustrations of Pleurothallis and Observations  
on Noteworthy Species

BY  
OAKES AMES

IN the following pages new species of tropical American orchids receive attention. The genera are arranged in alphabetical sequence.

**Basiphyllaea corallicola** (*Small*) *Ames comb. nov.*

*Carteria corallicola* *Small* in *Torreyia* 10 (1910) 188.

As the generic name *Carteria* is valid for a genus of the Algae I have referred *Carteria corallicola* to *Basiphyllaea*, a genus proposed by Schlechter (in *Fedde Repert.* 17 (1921) 76) for the reception of a Cuban species formerly placed in *Tetramicra*.

**Cranichis Viereckii** *Ames sp. nov.* Radices carnosae, villosae. Caules abbreviati, diphylli, foliis valde inaequalibus, ad basim approximatis. Folia petiolata, ovata vel elliptica, basi rotundata, apice acuta. Scapus elongatus, superne albido-glandulosus, bracteatus, bracteis arcte appressis. Racemus plus minusve cylindraceus, dense vel sublaxe multiflorus. Bractee inflorescentiae bene lanceolatae, acuminatae, acutae, glabrae, uninerviae. Sepala lateralialia elliptico-lanceolata, acuta, membranacea, glabra, per medium conspicue uninervia. Sepalum dorsale simile. Petala lineari-oblonga, obtusa, margine longe villosa, villis



## TROPICAL AMERICAN ORCHIDS

valde flexibilibus, albidis. Labellum late ovatum, acuminatum, subacutum, valde concavum, longitudinaliter trinervium nervis lateralibus e latere nervigeris, glabrum. Columna generis.

Terrestrial herb, 13-30 cm. tall to the summit of the raceme. Roots coarsely fibrous, fleshy, villous. Stems much abbreviated, concealed by scarious tubular sheaths. Leaves two, basilar, very dissimilar in size, petiolate, with the petioles 1-3 cm. long, slender; smaller leaf-blade 1.5-4 cm. long, 7-16 mm. wide, narrowly ovate-lanceolate, acuminate, acute; larger leaf-blade 6.5-8 cm. long, 3.5-4.5 cm. wide, ovate or elliptical, acuminate, acute, membranaceous, reticulate-nerved. Scape slender or rather stout, including the raceme up to 28.5 cm. long, with about six closely appressed acute tubular bracts below the inflorescence, shortly glandular-pubescent above. Raceme 3-4.5 cm. long, about 2 cm. in diameter, cylindrical, many-flowered, with the rachis smooth. Bracts of the inflorescence 5-7 mm. long, lanceolate, acute, smooth. Ovary smooth. Lateral sepals about 4 mm. long, 1.5 mm. wide, elliptic-lanceolate, acute, conspicuously 1-nerved through the middle, with an indistinct shorter nerve on each side, smooth. Dorsal sepal 4 mm. long, 1.75 mm. wide, elliptic-lanceolate, acute. Petals 4 mm. long, about .5 mm. wide, linear-oblong, obtuse, somewhat curved at the base, mid-nerve conspicuous, margin provided with numerous elongated flattish whitish hairs which are often 1.5-2 mm. long. Labellum 2.5 mm. long, broadly ovate, narrowed above the middle into a subacute tip, concave, smooth, heavily and conspicuously 3-nerved, with each lateral nerve giving off at right angles four to five supplementary nerves. Column about 1 mm. long. Capsules sessile, 9 mm. long.

Allied to *Cranichis atrata* Schltr., from which it differs conspicuously in the foliage, in the elongated hairs on the margin of the linear rather than narrowly elliptical petals, and in having quite a different labellum.

COLOMBIA, Vista Nieve, Santa Marta, *H. L. Viereck* s. n., December 18, 1922. (TYPE in Herb. Ames No. 27181. DUPLICATE TYPE in U. S. Nat. Herb. No. 1185519.)

**Epidendrum bilobatum** Ames sp. nov. Rhizoma validum, radicans, repens. Caules inter se distantes, oblique erecti, juniores vaginis laxis vestiti. Folia disticha, ligulata, apice obscure bilobata. Inflorescentia terminalis, pauciflora. Bractee inflorescentiae conduplicatae, explanatae ovatae. Flores flavescens. Sepala inaequaliter elliptica, concava, extus prope medium valde carinata, carina prope apicem sepalorum denticulata. Sepalum dorsale anguste ellipticum, acutum, concavum, nervis prominentibus integris. Petala late spathulata. Labellum valde cochleatum, basi cordatum, apice profunde bilobatum. Discus nervis plus minusve prominentibus, nervo medio infra apicem columnae incrassato. Columna brevis labello adnata.

Rhizome stout, creeping, with coarse whitish roots. Stems 20-30 cm. long to the base of the terminal peduncle, 4-4.5 cm. apart on the rhizome, erect, about 4 mm. in diameter near the base, terete below, somewhat complanate above, leafy. Leaves 11-12.5 cm. long, 1.4-2 cm. wide, ligulate, bilobed at the obtuse tip, jointed to elongated sheaths, distichous. Peduncle with the raceme about 1 dm. long, few-flowered. Rachis of the raceme 8 cm. long, somewhat zigzag. Bracts of the raceme 1.5-1.9 cm. long, distichous, 1-2.5 cm. apart, rigid, conduplicate, ovate when spread out. Pedicel with the ovary somewhat rugose. Lateral sepals about 12 mm. long, elliptical, acute, strongly concave, deeply keeled on the outer surface near the middle, the keel denticulate near the apex. Dorsal sepal about 1.4 cm. long, hardly 6 mm. wide, narrowly elliptical, acute, prominently nerved. Petals 11 mm. long, 4 mm. wide above the middle, broadly spatulate, obtuse, prominently nerved. Labellum including the adnate column 1.5 cm. long, 1.5 cm. wide, deeply concave, cochleate, deeply bilobed in front, strongly cordate at the base. Nerves of the disc prominent, the middle one thickened near the base beneath the column. Column 7 mm. long, stout, dilated upward.

A close ally of *Epidendrum coriifolium* Lindl., from which it is easily separable by means of its very dissimilar labellum. In the distant flowers similar to *E. santaclarensis* Ames.

COSTA RICA, Cachi, C. H. Lankester 509, August 5, 1923. Flowers pale apple green (yellowish). 4000 feet altitude. (TYPE in Herb. Ames No. 27247.)

**Epidendrum chinense** (Lindl.) Ames comb. nov.

*Broughtonia chinensis* Lindl. in Hook. Lond. Journ. 1 (1842) 492.

*Epidendrum nonchinense* Reichb. f. in Walp. Ann. 6 (1862) 324.

*Laeliopsis chinensis* Lindl. ex Reichb. f. in Saunders Refug. Bot. 2 (1882) sub. t. 139, in synon.

A Central American species which was originally ascribed to China by error. Although it is unfortunate that a species of the American flora should have been given a misleading name, it is not permissible to adopt the change proposed by Reichenbach.

GUATEMALA TO SAN SALVADOR.

**Epidendrum circinatum** Ames sp. nov. Rhizoma validum. Caules abbreviati, inter se distantes, basi teretes, superne complanati, di- vel trifoliati, juniores vaginis amplis vestiti. Folia ligulata vel elliptico-oblonga, valde coriacea, apice bilobata, oblique ascendunt. Pedunculus terminalis, e spatha oriens, paene usque ad basim florifer. Racemus plus minusve decemflorus, rigidus, bracteis magnis flores subtendentibus. Pedicellus cum ovario bracteam subtendentem vix excedens. Sepala lateralia oblongo-ovata, valde circinata, acuta, subtus prope apicem breviter carinata, carina inaequaliter denticulata. Sepalum dorsale simile, apice ecarinatum. Petala oblonga, circinata, subobtusata, sepalis angustiora. Labellum permagnum, basi cordatum, obovatum, apice leviter emarginatum. Discus per medium carina angustata nunc sulcata ornatus. Columna basi labelli adhaerens, utrinque in callum producta, callis disco labelli adhaerentibus.

Rhizome about 8 mm. in diameter, rooting. Stems about 9 cm. long, 1.5-2 cm. apart, terete at the base, compressed above, when immature concealed by ample loosely appressed sheaths, 2-3-leaved. Leaves approximate, jointed.

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14-20 cm. long, 3-4 cm. wide, oblong or elliptic-oblong, coriaceous, bilobed at the rounded apex, obliquely ascending. Inflorescence terminal, up to 13-flowered. Peduncle with the raceme 23 cm. long, complanate, winged by the decurrent keels of the bracts, subtended at base by a conspicuous conduplicate spathe. Bracts of the raceme about 2-2.5 cm. long, strongly conduplicate, obliquely ascending, distichous, carinate along the middle with the keels decurrent on the rachis. Pedicel with the ovary up to 2.5 cm. long, stout, hardly exceeding the floral bracts. Lateral sepals circinate, 1.4-1.5 cm. long, about 9 mm. wide, ovate-oblong, acute, with a short keel beneath at the tip, nerves somewhat prominent. Dorsal sepal 1.5 cm. long, about 7 mm. wide, oblong-lanceolate, ecarinate beneath at the acute tip. Petals 1.4 cm. long, about 4 mm. wide, circinate, oblong, subobtusate, more membranaceous than the sepals. Labellum 3.1 cm. long to the base of the adherent column, 1.7-2 cm. wide above the middle, free portion 2-2.5 cm. long, obovate, emarginate, with a central keel which is sometimes grooved along the upper surface. Column stout, about 1 cm. long, produced on each side in front into a conical callus which is adherent to the disc of the labellum.

*Epidendrum circinatum* is closely allied to *E. palmense* Ames and *E. coriifolium* Lindl., but is clearly separable from them by the strongly revolute or circinate sepals and petals, and by the very different labellum.

COSTA RICA, Peralta, *C. H. Lankester* 477, July 13, 1923. Recurved sepals and petals dull yellowish green. Labellum pale yellowish green. Column green. 1000 feet altitude. (TYPE in Herb. Ames No. 27205.)

***Epidendrum glandulosum* Ames sp. nov.** Rhizoma gracile, longe repens, radicans. Radices ramosae, glabrae. Caules anguste fusiformes, juniores vaginati, monophylli. Folium lineare, obtusum, inflorescentia multo longius. Pedunculus cum racemo terminalis, pauciflorus. Ovarium glandulosum. Sepala lateralia a basi lata inaequaliter oblongo-lanceolata, valde acuminata, extus praecipue in nervis prominentibus sparse et breviter glandulosa. Sepalum dor-

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sale lanceolatum, acuminatum, acutissimum, trinervium nervis prominentibus, extus sparse glandulosum. Petala lineari-lanceolata, leviter falcata, utrinque attenuata, acuta, trinervia. Labellum columnae adnatum, simplex; lamina transverse elliptica parte terminali triangulari, acuta. Discus per medium nervis incrassatis approximatis instructus. Columna carnosa, apice edenticulata.

Rhizome creeping, rooting, elongated, slender, 1-2 mm. in thickness. Stems 2.5-4 cm. long, slenderly fusiform, 8-11 mm. apart on the rhizome, 2-3 mm. in diameter when dry, clothed (when immature) with several loosely appressed sheathing bracts, the uppermost one leaf-like, monophyllous or subdiphyllous. Leaf 6-8 cm. long, 2-2.5 mm. wide, linear, obtuse, margin more or less revolute in dried specimens. Peduncle terminal, including the raceme about 2 cm. long, few-flowered. Raceme about 1 cm. long, loosely flowered. Pedicel with the ovary about 3 mm. long, densely glandular, with the glands abbreviated and rufous. Floral bracts shorter than the ovary, linear-lanceolate. Lateral sepals 5.5 mm. long, about 2 mm. wide, asymmetrically lanceolate or lightly falcate, acuminate, acute, prominently nerved, sparsely and shortly glandular on the outer surface, especially on the nerves. Dorsal sepal about 6 mm. long, 1.25 mm. wide, lanceolate, acuminate, acute, sparsely glandular on the outer surface. Petals 5 mm. long, .5-.75 mm. wide, linear-lanceolate, lightly falcate, acute, 3-nerved. Labellum with the base adnate to the column, 5 mm. long; lamina 3.5 mm. long, about 3 mm. wide, somewhat concave, lower two-thirds transversely elliptic, upper third narrowly triangular and acute. Disc prominently 3-nerved along the middle with the nerves approximate. Column hardly 3 mm. long, stout, with the fleshy clinandrium entire.

*Epidendrum glandulosum* is without close allies in the Central American flora. It suggests the Cuban *E. vestitum* Ames, but it differs from that species in the normally monophyllous stems, glandular ovary and sepals, and in the absence of calli at the base of the labellum. [Plate 20: 1, lip and column  $\times 5$ . 2, dorsal sepal  $\times 3\frac{1}{2}$ . 3, flower  $\times 3\frac{1}{2}$ . 4, petal  $\times 4$ . 5, lateral sepal  $\times 3\frac{1}{2}$ .]

PANAMA, On trail from Colon, C. W. Powell 338, 1923. Sepals and petals olive green, labellum white. Flowering in September. Sea level. (TYPE in Herb. Ames No. 27041.)

**Epidendrum lacustre** Lindl. Fol. Orch. Epidendrum (1853) 50; Reichb. f. in Walp. Ann. 6 (1862) 369.  
**Epidendrum leucochilum** Lindl. Orch. Linden. (1846) 8, non Klotzsch.

A specimen collected by Maxon in Nicaragua appears to represent this rare species which was originally discovered in Venezuela by Linden. Unless there are subtle differences between them which are evanescent in dried material, I do not doubt that the Venezuelan and Nicaraguan plants are identical. Lindley's type consists simply of the inflorescence and the spathaceous bracts which subtend it, but the structure of the flowers is well exhibited in the dried specimen, and the outline of the labellum is clear in a sketch prepared by Lindley for an herbarium record. *Epidendrum lacustre* has not been reported heretofore as a native of Central America. The extension of range represented by Maxon's Nicaraguan specimens is highly interesting, as the species up to the present time was known only from Venezuela, and is not one of those common species which range widely through the American tropics. That it should not have been reported from the country intervening between Nicaragua and Venezuela is probably the result of insufficient exploration rather than a peculiarity of distribution.

NICARAGUA, Mombacho Volcano, W. R. Maxon, Alfred D. Harvey & A. T. Valentine 7807, July 5, 1923. 3 meters up on branch of forest tree. Stems ascending, 60 cm. long. Flowers white. 750-900 meters altitude.

**Epidendrum linifolium** Ames sp. nov. Radices ramosissimae, valde fibratae, patentes, glabrae. Rhizoma gracile, radicans, vaginis scariosis arcte appressis instructum. Caules elongati, graciles, verisimiliter decumbentes. Folia disticha, inter se satis distantia, linearia, in sicco subulata, oblique ascendunt. Inflorescentia terminalis. Rachis pe-

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dunculi leviter fractiflexa, plus minusve septemflora. Bractea racemi infundibuliformes, acutae. Pedicellus cum ovario bracteis longior. Sepala oblongo-lanceolata, acuta, apicibus incrassata. Petala linearia, plus minusve incrassata. Labellum trilobatum; lobis lateralibus rotundatis; lobo medio lineari. Discus lamella denticulata ornatus. Columna brevis, lamellae disci adhaerens.

Rhizome very slender, copiously rooted. Roots very much branched, finely fibrous, spreading, elongated, whitish, smooth. Stems 9-15 cm. long, probably decumbent, less than 1 mm. in diameter, flexuous. Leaves six to eight, distichous, 1.5-3 cm. long, hardly .5 mm. wide when dry, subulate, acute, 9-14 mm. apart, obliquely ascending. Inflorescence terminal. Peduncle with the raceme 3.5-5 cm. long, slender. Rachis of the raceme slightly zigzag, bearing about seven small flowers. Bracts of the raceme 2.5-3.5 mm. long, infundibuliform below the middle, narrowed above into a triangular acute tip. Pedicel with the ovary longer than the subtending bract. Lateral sepals 4.25 mm. long, 1.5 mm. wide, sharply reflexed, lanceolate, acute, carinate-thickened near the tip, convex. Dorsal sepal 4 mm. long, 1.5 mm. wide, oblong-lanceolate, acute, carinate-thickened beneath the tip. Petals 3.5-4 mm. long, .5 mm. wide, linear, subacute, triquetrously thickened from about the middle to the apex, spreading or obliquely porrect. Labellum about 4 mm. long, adherent to the column, 3-lobed, fleshy, about 3 mm. wide across the lateral lobes; lateral lobes 1.5 mm. long, rounded in front, ascending, together forming an orbicular lamina; middle lobe 2 mm. long, .5 mm. wide near the base, porrect, linear, gradually narrowed to the subacute tip, semiterete. Disc of the labellum smooth, but with a conspicuous horizontally placed plate at the base which is adherent to the column, and denticulate or crenulate in front. Column stout, 1.25 mm. long.

A close ally of *Epidendrum paranthicum* Reichb. f., from which it differs in having larger flowers and a very different lamella on the disc beneath the apex of the column. From *E. musicolum* Schltr., — a species which I have not seen and know only from the description, — it differs in having nar-

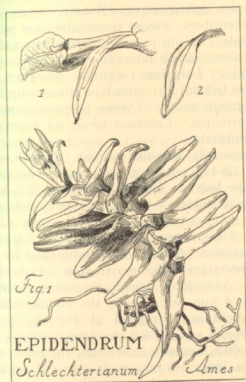
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flower leaves and a very dissimilar callus at the base of the labellum. [Plate 20: 1, lip and column  $\times 5\frac{3}{4}$ . 2, flower  $\times 4$ . 3, petal  $\times 3\frac{3}{4}$ . 4, dorsal sepal  $\times 4\frac{1}{2}$ . 5, lateral sepal  $\times 4\frac{1}{2}$ .]

COSTA RICA, La Palma, H. E. Stork 417, July 8, 1923.  
On old stump in pasture. (TYPE in Herb. Ames No. 27168.)

**Epidendrum Schlechterianum** Ames nom. nov.

*Epidendrum brevicaule* Schltr. in Fedde Repert. Beihefte 17 (1922) 30, non Schltr. in Fedde Repert. Beihefte 9 (1921) 81.



In his review of the flora of Peru, Schlechter proposed a new species under the name *Epidendrum brevicaule*. Later he used this name again for a species collected by C. W. Powell



in Panama. As the more recently described species cannot bear the name under which it was published, a new name is necessary. [Fig. 1.]

PANAMA, Hills east of the city, C. W. Powell 18, November 1915. Flowers greenish purple. 1200 feet altitude: San Juan, Powell 3465, November 1923. Epiphyte. Sea level.

**Epidendrum Storkii** Ames sp. nov. Habitus *Epidendri difformis* sed in labello differt. Radices fibratae, glabrae. Caules approximati, erecti, leviter flexuosi, complanati. Folia usque ad octo, disticha, oblongo-elliptica, valde coriacea, apice inaequaliter bilobata, vaginis foliorum caulem obtegentibus. Flores terminales, duo ad quattuor, longipedicellati. Sepala patentia, lateralibus oblanceolatis, acutis. Sepalum dorsale lateralibus subsimile. Petala linearispathulata. Labellum columnae adnatum, basi cordatum, antice trilobatum; lobis lateralibus rotundatis; lobo medio triangulari, acuto. Discus prope apicem columnae breviter bicarinatus. Columna usque ad apicem dilatata, clinandrio fimbriato.

Roots coarsely fibrous, whitish, smooth, spreading. Stems erect, 12-17.5 cm. long, complanate, concealed by the sheaths of the leaves. Leaves distichous, 2-5.5 cm. long, 7-18 mm. wide, oblong-elliptic, unequally bilobed at the obtuse apex, obliquely ascending, coriaceous. Sheaths of the leaves 2-3 cm. long, complanate, dilated upward. Inflorescence terminal, subumbellate, subtended by a leaf-like spathe. Flowers greenish, two to four. Pedicel with the ovary about 3.5 cm. long, slender, ascending. Lateral sepals 2.2 cm. long, 4 mm. wide above the middle, oblanceolate, acute or subobtuse, thickened at the tip, prominently 5-nerved. Dorsal sepal 2-2.2 cm. long, up to 5 mm. wide above the middle, acute or subobtuse, thickened at the tip. Petals 2.1 cm. long, 2-3 mm. wide above the middle, slenderly spatulate, subacute, prominently several-nerved. Labellum adnate to the column, 2 cm. long, free portion 1.3 cm. long including the auricles of the cordate base, 1.4 cm. wide, 3-lobed in front; lateral lobes rounded, entire; middle lobe 3.5 mm. long, 3.25 mm. wide at the base, much exceeding

the lateral lobes, quadrate below the middle, narrowed toward the apex into an acute thickened tip. Disc shortly bicarinate near the apex of the adherent column, with the keels 2 mm. long and strongly flattened laterally; between the keels the central nerve of the disc is much thickened, and as a fleshy ridge extends to the base of the middle lobe. Column 1.3 cm. long, dilated upward, with the clinandrium finely fimbriate.

*Epidendrum Storkii* is allied to *E. difforme* Jacq., from which it differs in the outline of the labellum. In the structure of the labellum it shows close affinity to *E. pudicum* Ames and *E. simulacrum* Ames, but is clearly distinguished from them by the much larger flowers.

COSTA RICA, Mountains south of Cartago, *H. E. Stork* 160, June 20, 1923. (TYPE in Herb. Ames No. 27294); Vicinity of La Palma, on the road to La Hondura, *W. R. Maxon & Alfred D. Harvey* 8116, July 17-18, 1923. Flower greenish. On mossy tree trunk. 1500-1700 meters altitude.

**Maxillaria Lankesteri** Ames *sp. nov.* Herba epiphytica. Caules elongati, pseudobulbis inter se satis distantibus instructi. Folia elliptico-oblonga, apice bilobata. Pars caulis florifera bracteis arcte imbricantibus oblecta. Pedunculus uniflorus, bibracteatus. Sepala lateralibus oblongo-lanceolata, acuta, quinquenervia. Sepalum dorsale simile. Petala oblongo-lanceolata, obtusa, quadrinervia. Labellum trilobatum; lobis lateralibus minutis, semiovatis; lobo medio elliptico, emarginato, margine valde deflexo, prope basim callo transverso instructo. Columna arcuata, in pedem producta.

Epiphytic herb with slender ascending or drooping stems which bear slender pseudobulbs at intervals and are invested between the pseudobulbs with closely imbricating bracts from among which the flowers are produced. Stems, — with a few distichous leaves at the growing point, — slender, about 3 mm. thick, arising from a mass of whitish-fibrous roots, concealed at base by the persistent sheaths of fallen leaves, sometimes subtended by the remains of pseudobulbs. Pseudobulbs 2.5-3 cm. long, 3-4 mm. thick, monophyllous

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at the summit, with a subtending leaf on a sheathing base, 6-8 cm. apart, produced in succession as the stems elongate. Above each newly formed pseudobulb the stem is concealed by the closely appressed bracts from among which the flowers are produced. Leaves of the pseudobulbs 2-4.5 cm. long, about 1 cm. wide, elliptic-oblong, obtuse, bilobed at the tip, with an apicule between the lobes, the lamina of the subtending leaf equaling or exceeding the pseudobulb, the immature leaves of the growing tip of the stem smaller and distichous, crowded. Peduncle 1-flowered, 7 mm. long, slender, the upper bract subtending the pedicel. Bracts about 8 mm. long, conduplicate, shortly tubular at the base, ovate-lanceolate, prominently nerved. Pedicel 7 mm. long, almost concealed by the subtending bract. Lateral sepals 11 mm. long, up to 4 mm. wide, oblong-lanceolate, acute, 5-nerved, forming a distinct mentum with the foot of the column. Dorsal sepal 12 mm. long, about 3 mm. wide below the middle, oblong-lanceolate, acute, somewhat carinate at the tip on the outer surface. Petals 11 mm. long, 3 mm. wide, oblong-lanceolate, obtuse, 4-nerved (the fourth nerve sometimes indistinct). Labellum 9.5 mm. long, 3-lobed; lateral lobes minute, about 2 mm. long, semiovate, subacute, obliquely erect, porrect; middle lobe 8 mm. long, about 4.5 mm. wide when spread out, strongly convex, with the margin deflexed or almost revolute, sulcate along the middle, 5-nerved, with a heavy callus at the base in front of the lateral lobes. Column slender, arched, produced into a conspicuous foot.

From the material which constitutes the type, it is evident that after a pseudobulb is formed the stem grows on, and from among imbricating bracts produces a number of flowers borne singly on short peduncles. After the flowering season the growing tip of the stem, which always bears several distichous leaves, elongates, and at length gives rise to a new pseudobulb, when the vegetative history of the plant repeats itself.

Allied to *Maxillaria microphyton* Schltr., but with broader leaves, larger flowers, and a different labellum. *Ornithidium parvulum* Schltr. is also closely allied. *O. par-*

*rum* appears to be the same as *Maxillaria microphyton*, and from the original description it is quite impossible to find substantial differentiating characters between them. Both of the species were collected by Tonduz under the same field number (9670), and it is probable that Schlechter described the same species twice under different genera, and that his *Ornithidium parvulum* is a synonym of *Maxillaria microphyton*.

COSTA RICA, Cachi, C. H. Lankester 508, 1923. Sepals and petals hyaline, striped with maroon. Column pale green. (TYPE in Herb. Ames No. 27219.)

***Oncidium floridanum* Ames sp. nov.**

*Oncidium sphacelatum* Ames Contrib. Orch. Fl. So. Fla. (1904) 22 (exclude t.), non Lindl.

Herba terrestris, caulibus foliatis pseudobulbo bifoliato terminatis. Folia sub pseudobulbo pauca, plana, coriacea. Pseudobulbi elongati, valde complanati, ancipites, in sicco canaliculati. Folia ligulata, acuta. Pedunculus elongatus, laxe ramosus vel subsimplex. Bractee inflorescentiae squamiformes, pedicello multo breviores. Sepala lateralia libera, elliptico-oblonga, subtus prope apicem valde sed breviter carinata. Sepalum dorsale simile, subtus inconspicue carinatum. Petala ovato-lanceolata, subtus prope apicem breviter carinata, margine plus minusve undulata. Labellum toto ambitu panduriforme; lobi laterales parvi, rotundati; lobus intermedius transverse oblongus vel obscure reniformis, leviter emarginatus. Crista in basi disci septemdentata, dentibus basilaribus lobulatis. Columna prope apicem utrinque alata.

Terrestrial herb. Roots coarsely fibrous, whitish, spreading. Pseudobulbs congested, subtended by several elongated leaves which are sheathing at the base, 8-12 cm. long, about 2 cm. thick in greatest diameter, strongly flattened, ancipitous, bifoliate at the apex. Leaves ligulate, 4 dm. or more long, 1.5-2 cm. wide, acute, coriaceous in texture. Peduncle stout, about 6 dm. long, terminating in a compound raceme, or rarely in a simple raceme. Bracts of the peduncle below the inflorescence closely appressed,

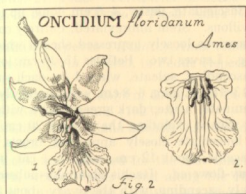
tubular; bracts of the raceme scale-like, about 5 mm. long, much shorter than the pedicels. Pedicel with the ovary 1.5-2.5 cm. long. Flowers yellowish, with brownish stains and markings. Lateral sepals about 1 cm. long, 4 mm. wide, elliptic-oblong, free at the base, obtuse, shortly and prominently carinate beneath near the apex. Dorsal sepal about 1 cm. long, weakly carinate near the tip, otherwise similar to the lateral sepals. Petals about 1 cm. long, 4.5-5 mm. wide, ovate-lanceolate, acute, slightly reflexed at the tip, shortly carinate beneath, undulate on the margin. Labellum about 11 mm. long, broadly pandurate, with the basal lobes much reduced, rounded, more or less spreading, and with the terminal lobe 9 mm. wide and 6 mm. long, transversely oblong or somewhat reniform in outline, emarginate; isthmus between the basal and terminal lobes 2 mm. long, 6.5 mm. wide. Crest at the base of the disc conspicuous, 7-dentate or -lobed, with the anterior pair of teeth obliquely spreading, complanate, obtuse, the basal pair lobulate, the middle pair complanate, obtuse, with a fleshy more or less porrect tooth interposed. Column 5 mm. long, stout, with a conspicuous wing on each side near the summit.

*Oncidium floridanum* is closely related to *O. Baueri* Lindl. and *O. sphacelatum* Lindl., from both of which it differs most conspicuously in the lobing of the crest at the base of the lip.

The history of this species is rather interesting. The original specimens were collected by A. A. Eaton on November 13, 1903, near Brown's Homestead, in Dade County, Florida. The plants were in fruit, with a few withered flowers still adhering to the branches of the compound raceme. From this very unsatisfactory material I confused the species with *Oncidium sphacelatum* Lindl. In May 1904, Eaton collected the species again, this time near Black Point Creek, and in March 1905, he discovered another station at Coot Bay, east of Whitewater Bay, in Monroe County (no. 1372). Several of the plants flowered in my greenhouse, from which specimens were sent to R. A. Rolfe for confirmation of the belief that the species was undescribed.

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Mr. Rolfe was unable to identify the specimens and suggested that proposals regarding them be delayed until the Reichenbachian Herbarium should be unsealed. He feared that some of the ambiguous species described by Reichenbach might be conspecific with the Floridian species. In the preparation of an enumeration of the orchids of the United States and Canada it has been necessary to take up again the identity of the species. As I have been unable to ascribe it to any described species, I have proposed for it the name given above. [Fig. 2,  $\times 2$ .]



FLORIDA, Black Point Creek, A. A. Eaton 957, May 22, 1904. Edge pine woods in damp, rocky soil. (TYPE in Herb. Ames No. 5375.)

*Pelexia callosa* Ames *sp. nov.* Radices fasciculatae, carnosae, breviter villosae. Caulis valde abbreviatus, vagina scariosa abbreviata ampla laxè appressa obtectus. Folia duo, longe petiolata, petiolis oblique ascendentibus sulcatis utrinque alatis; lamina folii anguste vel late ovata, basi rotundata, apice acuminata, acuta, membranacea, in vivo atroviridis. Scapus erectus, folia aequans vel foliis subbrevior, superne pubescens, paucibracteatus, bracteis arcuè appressis acutis. Racemus elongatus, sublaxus, multiflorus. Bracteae inflorescentiae anguste lanceolatae, acutae, margine sparse pubescenti. Flores oblique ascendentes.

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Sepala lateralia extus glanduloso-pubescentia, mentum elongatum saccatum formantia, basi cohaerentia, lanceolata. Sepalum dorsale erectum cum petalis in galeam elongatam connatum, extus glanduloso-pubescentia. Petala inaequaliter spathulata, margine anteriore sparse glanduloso-pubescentia infra medium. Labellum elongatum, columnae adhaerens, explanatum subpanduriforme, basi sagittatum, supra medium valde dilatatum, prope apicem valde constrictum, rotundatum, obtusum. Discus glanduloso-pubescentia, callo forcipato ornatus. Columna elongata; rostellum in membranam oblongo-linearem productum.

Roots fasciculate, fleshy, 4-8 cm. long, up to 7 mm. in diameter, villous. Stem abbreviated, entirely concealed by an ample scarious loosely appressed sheath which is about 1.5 cm. long. Leaves two. Petioles 15-16 cm. long, slender, obliquely ascending, sulcate, winged on each side; lamina of the leaf 13-18 cm. long, 6-8 cm. wide, narrowly to broadly ovate, acuminate, acute, dark green above with a distinct mid-nerve. Scape excluding the raceme 20 cm. long, with about six lanceolate closely appressed bracts, pubescent above. Raceme about 12 cm. long, 3-4 cm. in diameter, loosely many-flowered. Rachis glandular-pubescent. Pedicels obliquely ascending, with the ovary about 1 cm. long, subtended by linear-lanceolate ascending bracts. Lateral sepals including the mentum 2.4 cm. long, about 3 mm. wide above the middle, glandular-pubescent on the outer surface, above the base narrowly oblong, upper half lanceolate, acute. Mentum glandular-pubescent, the free portion 4 mm. long, obtuse. Dorsal sepal 1.7-1.8 cm. long, 4.5 mm. wide, somewhat spatulate, obtuse, adherent to the petals and with them forming a slender hood. Petals up to 1.8 cm. long, about 3 mm. wide above the middle, spatulate from a slender base, obtuse, sparsely glandular on the anterior margin below the middle. Labellum adnate to the column, 2.1-2.2 cm. long, 6 mm. wide above the middle, when detached and spread out narrowly panduriform from a sagittate base, dilated above the middle, strongly constricted 3 mm. below the rounded obtuse apical lamina, scurfy on the outer surface, pubescent within below the middle. Auricles

of the sagittate base extending into the mentum and concealed within it, thickened, dorso-ventrally flattened, 2 mm. long. Disc of the labellum glandular, with a forcipate glandulose thickening at the opening to the throat of the sac. Column about 1.1 cm. long, slender; rostellum linear.

Closely allied to *Pelexia hondurensis* Ames, from which it differs in having larger flowers, much less pronounced glandulosity in the throat of the labellum, and longer auricles at the flat not geniculate base of the labellum.

SPANISH HONDURAS, Dakota (Jilamo Arriba), Ames II. 259, March 21, 1923. Terrestrial in dense herbaceous undergrowth in forest. (TYPE in Herb. Ames No. 27280.)

***Pleurothallis aperta* (Kränzl.) Ames comb. nov.**

*Masdevallia aperta* Kränzl. in Fedde Repert. 17 (1921) 430.

*Pleurothallis hamata* Rolfe in Orch. Rev. 24 (1916) 187, *nomen*; Ames Sched. Orch. 3 (1923) 8.

*Pleurothallis Hunteriana* Schltr. in Fedde Repert. Beihefte 17 (1922) 20.

This species was collected for the first time by Endres in Costa Rica, where it was found along the Rio Paquita above the San Marcos bridge. Until 1921 Endres' material lay in the Reichenbachian Herbarium at Vienna as an unidentified species. In 1921, Kränzlin described it under the name *Masdevallia aperta*. Unfortunately, in his description, Dr. Kränzlin misinterpreted the floral structure. He mistook the outer half of each deeply keeled lateral sepal for a keel and described the inner surface as carinate, ("Die 3 Sepalen haben die Kiele nicht aussen, sondern innen,"). In December 1922, Schlechter, working on material submitted to him by C. W. Powell, described a new species of *Pleurothallis* as *P. Hunteriana*. The Powell specimens are inseparable from *Masdevallia aperta*. In January 1923, before Schlechter's description of his new species reached me, I supplied a description for the *Pleurothallis hamata* of Rolfe, a species which was found by C. H. Lankester in Costa Rica, and successfully cultivated in the Royal Gardens at Kew.

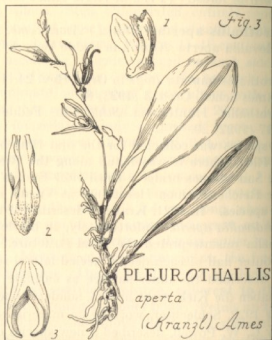


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After an examination of the type specimens of the species proposed by Rolfe, Kranzlin and Schlechter, it became very evident that they belonged to a single species.

The flowers of *Pleurothallis aperta* are somewhat variable, but the chief discrepancies between descriptions are accounted for by the readiness with which the lateral sepals become free almost to the base, and in the petals being either 2- or 3-nerved.

I am unable to agree with Dr. Kränzlin's treatment of the generic position of this species. Its affinities are surely with *Pleurothallis*, not with *Masdevallia*. [Fig. 3.]



COSTA RICA, C. H. Lankester 350. Flowering in Hort. Bot. Reg. Kew, July 3, 1916. (TYPE of *Pleurothallis hamata* Rolfe.): Rio Paquita above the San Marcos bridge, Endres, November-December. Flowers yellow striped with purple. (TYPE of *Masdevallia aperta* Kranzl.)

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PANAMA, Province of Chiriqui, C. W. Powell 277. Flowering in February 1923. Flowers orange with longitudinal rows of brown dots. 4500 feet altitude: Powell 245, October. Flowers yellow with brown dots in stripes. 4000 feet altitude. (TYPE of *Pleurothallis Hunteriana* Schltr.): Powell 109, July 6, 1919. Spotted with rosy brown in longitudinal lines. (Specimen in Herb. Hort. Bot. Reg. Kew.)

***Pleurothallis Brighamii*** S. Wats. in Proc. Am. Acad. 23 (1888) 285; Ames Sched. Orch. 2 (1923) 18.

This species has remained obscure since it was published by Watson in 1888. Recent explorations indicate that it is widely distributed in Central America and fairly common. In Honduras I have found it in large, dense masses on the limbs of trees. Although common, it is not often found in flower. A single plant will sometimes bear one or two flowers while all others will be sterile. From our present knowledge of its distribution, it ranges from Guatemala to Panama.

The specimens from Panama differ slightly in the size of the labellum from Guatemalan and Honduran specimens, but structurally they are so similar to them that even attempts at varietal distinction seem superfluous. From field notes, the flowers of specimens from Panama appear to be different from the type in the markings of the sepals, but variation in color is hardly reliable as a guide for differentiation. [Plate 7.]

SPANISH HONDURAS, near Tela (Jilamo Arriba), Ames II. 245, March 21, 1923. 200 feet altitude: Guaimas, Ames II. 147, March 9, 1923. Growing on a woody vine. Sepals yellow with purple-brown stripes. 400 feet altitude: near Tela (Lancetilla Farm), along the Tela River on trees overhanging the water, Ames II. 205, March 16, 1923. 300 feet altitude.

PANAMA, Frijoles, banks of Gatun Lake, C. W. Powell 275: foothills east of Panama, Powell 274.

**Pleurothallis divexa** *Ames nom. nov.*

*Pleurothallis dichotoma* Ames Sched. Orch. 6 (1923) 58, non Schltr. in Fedde Repert. Beihefte 9 (1921) 140. [Plate 5.]

**Pleurothallis hondurensis** *Ames sp. nov.* Rhizoma repens. Caules secundarii approximati vel inter se distantes, elongati, ascendentes, paucivaginati, monophylli. Folium valde coriaceum, anguste lanceolatum, utrinque attenuatum, apice acutum, pedunculis fasciculatis multo longius. Pedunculi fasciculati ex axilla folii orientes, plus minusve octoflori. Bracteae inflorescentiae hyalinae, infundibuliformes. Sepala lateralialia in laminam lanceolatam valde concavam cohaerentia, apice laminae divisa. Sepalum dorsale lineari-oblongum, conspicue elongatum, trinervium. Petala oblonga, acuta, supra medium plus minusve dilatata, margine paucidentata, apice valde acuta, late purpureo-striata per medium. Labellum carnosum, utrinque prope basim unguis lobulatum, supra unguem valde truncatum, in laminam oblongam acutam trinerviam expansum, nervis subtus prominentibus. Columna elongata, apice obscure fimbriata.

Roots coarsely fibrous, whitish, spreading. Rhizome elongated. Secondary stems 5-12 cm. long, 1-1.5 mm. thick, partly concealed by several tubular sheaths, the uppermost one very much elongated. Leaf coriaceous, 7.5-10 cm. or more long, 1.3-1.5 cm. wide above the middle, narrowly lanceolate, acute, longer than the racemes. Peduncles fasciculate in the axil of the leaf, enclosed at the base by a closely appressed sheath, with the raceme 4-5 cm. long, rather stout, bearing about eight fleshy flowers. Bracts of the raceme 1.5-2 mm. long, scarious, infundibuliform, acute. Pedicel with the ovary about 3 mm. long. Lateral sepals yellowish striped with purple, 9 mm. long, coherent almost to the apex, forming a lanceolate 6-nerved lamina; nerves prominent on the outer surface, the central one of each sepal produced at the tip into a distinct keel. Dorsal sepal 1 cm. long, 1 mm. wide near the middle, oblong, acute, 3-nerved, with the nerves purplish and prominent. Petals 3 mm. long.

hardly 1 mm. wide, oblong, somewhat dilated above the middle, with the margin inconspicuously paucidentate, acute, with a broad median band of rose-purple. Labellum yellowish, 5 mm. long, 2 mm. wide near the middle, unguiculate, with a small retrorse lobule on each side of the base of the claw; above the claw expanded into an oblong acute lamina which is truncate at the base; lamina fleshy, conspicuously 3-nerved, with the nerves prominent on the under surface. Column 2.5 mm. long, produced into a conspicuous foot.

*Pleurothallis hondurensis* is apparently a heliophyte, and when exposed to strong sunlight the leaves become suffused with a bronzy purple hue. The flowers vary in coloration, but are normally yellowish, with distinct purplish stripes along the veins of the sepals. The petals are more or less hyaline, with a broad central band of carmine or rose-purple. Although this species was found in several localities it was uncommon.

In habit *P. hondurensis* suggests *P. polystachya* A. Rich. & Gal. *Pleurothallis verecunda* Schltr. is also closely allied, being very similar in habit, but different in the lateral sepals being less coherent and in the fleshier labellum being conspicuously denticulate on each side at base in front of the claw. [Plate 15.]

SPANISH HONDURAS, Lancetilla Farm near Tela, *Ames II.* 204, March 16, 1923. On trees along the Tela River. 350 feet altitude. (TYPE in Herb. Ames No. 27250.); *Ames II.* 180, March 11, 1923. On tree overhanging rocky bed of Tela River. 300 feet altitude: Cordillera de Mico Quemada near Progresso, on trees overhanging the Rio Pelo, *Ames II.* 233, March 19, 1923. Flowers yellowish with purple stripes. 450 feet altitude: Truxillo, Copete Farm, *Ames II.* 197, March 14, 1923. On branch of small tree in sun, leaves bronzy; *Ames II.* 200, March 14, 1923. Flowers yellow with purple stripe. 150 feet altitude.

*Pleurothallis periodica* *Ames sp. nov.* Rhizoma valde abbreviatum. Caules secundarii dense caespitiosi, valde abbreviati, monophylli, vaginis nervosis obtecti. Folium an-

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guste oblanceolatum, satis coriaceum, in petiolum sulcatum contractum, apice obscure bilobatum apiculo interjecto. Pedunculus elongatus folium superans, gracilis. Pedicelli fasciculati, bracteis nervosis imbricantibus subtenti. Flores periodici, succedanei, eodem tempore singuli aperti. Sepala lateralibus usque ad medium cohaerentia, in laminam ovatam bifidam leviter concavam extus bicarinatam expansa. Sepalum dorsale oblongo-lanceolatum, acutum, apice leviter incrassatum, extus per medium carinatum, trinervium. Petala dolabriformia vel subrhomboidea, apice valde incrassata et teretia, extus minute glandulosa, binervia. Labellum breviter unguiculatum, oblongum, apice rotundatum, margine obscure denticulatum, supra dense et breviter glandulosum praecipue per medium disci, utrinque prope marginem leviter carinatum carinis glanduloso-fimbriatis. Columna usque ad apicem leviter dilatata, apice trilobulata, lobo posteriore breviter eroso.

Rhizome abbreviated. Roots whitish, fibrous, spreading. Secondary stems caespitose, about 4 mm. long, concealed by closely appressed tubular sheaths which soon break down into spreading fibres, monophyllous. Leaf with the sulcate petiole 2.5-3.5 cm. long, 3.5-5 mm. wide, oblanceolate, with the apex minutely bilobed and apiculate. Peduncle 4-5.5 cm. long, with a closely appressed tubular bract near the middle, terminated by several closely imbricating nervose bracts which subtend the fasciculate pedicels of the successional flowers. Pedicels up to ten or more, up to 5 mm. long, slender, persistent. Ovary about 1 mm. long. Lateral sepals 8 mm. long, 3-nerved, cohering to about the middle, forming a bifid ovate lamina which is about 3 mm. wide at the middle; free portion of each sepal triangular, acute, 4 mm. long, lightly carinate on the outer surface along the middle. Dorsal sepal 7.5 mm. long, about 2 mm. wide near the middle, oblong-lanceolate, acute, 3-nerved, with the central nerve prominent and shortly decurrent on the ovary. Petals 3.5 mm. long, 1.5 mm. wide near the middle, dolabriform or subrhomboidal in outline, the anterior margin protuberant, apex terete, outer surface minutely glandulose. Labellum about 4 mm. long, 1.25 mm.

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wide, shortly unguiculate, oblong, rounded at the tip, 3-nerved, with the nerves prominent beneath, margin sparsely serrate-dentate, upper surface densely and minutely glandulose especially along the middle of the disc, with the glands near the centre in well-defined transverse rows. Disc lightly bicarinate, with the keels intramarginal and shortly denticulate. Column hardly 4 mm. long, produced at base into a short foot, apex trilobulate, with the posterior lobule obscurely erose-denticulate.

*Pleurothallis periodica* is closely allied to *P. Brighamii* S. Wats., from which it differs in the more glandulose denticulate labellum with shortly denticulate carinae and in the absence of an angular marginal projection on each side near the base. [Plate 4.]

COSTA RICA, Peralta, *C. H. Lankester* 463, July 13, 1923. Flowers hyaline, yellowish, deeply tinged and striped with maroon purple. Labellum and petals very dark maroon. (TYPE in Herb. Ames No. 27021.)

***Pleurothallis pompalis*** Ames *sp. nov.* Radices fibratae, albidae, glabrae. Rhizoma valde abbreviatum. Caules secundarii caespitiosi, elongati, paucivaginati, monophylli. Vaginae nervosae, tubulatae. Folium oblanceolatum, in petiolum sulcatum contractum, apice bilobulatum apiculo interjecto. Pedunculus gracilis, cum racemo folium multo superans. Racemus laxis, verisimiliter secundus, plus minusve decemflorus. Bractee racemi infundibuliformes, acutae. Pedicellus cum ovario gracilis. Sepala lateralibus paene usque ad apicem cohaerentia, laminam anguste lanceolatam purpureo-villosam formantia, atropurpurea. Sepalum dorsale lineari-lanceolatum, acutum, intus dense purpureo-villosum, extus per medium alte carinatum. Petala late ovata, acuta, antice prope basim protuberantia. Labellum trilobatum, anguste unguiculatum; lobo medio oblongo, obtuso, margine deflexo; lobis lateralibus abbreviatis, antice in lobulum attenuatum contractis. Columna usque ad apicem dilatata.

Roots fibrous, whitish, smooth. Rhizome abbreviated. Secondary stems crowded, erect or ascending, 5-7 cm. long,

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about 2 mm. in diameter, slender, rigid, partly concealed by tubular sheaths, monophyllous. Sheaths three; the uppermost one 2.7-3.4 cm. long, slightly dilated upward, nervose, brownish; the lowermost one abbreviated and soon breaking down into spreading fibres. Leaf 11-12 cm. long, up to 1.5 cm. wide, oblanceolate, contracted into a slender petiole, bilobulate at the tip with a short apiculate projection between the lobules. Peduncle solitary, including the raceme up to 3 dm. long, closely appressed to the petiole, with a short spathaceous bract at the base, below the raceme provided with several closely appressed tubular bracts. Raceme about 15 cm. long, bearing from ten to fifteen dull maroon secund flowers. Bracts of the raceme about 5 mm. long, tubular, acute. Pedicellate ovary 4-8 mm. long, ascending or at length deflexed. Lateral sepals 14 mm. long, coherent almost to the apex, forming a narrowly lanceolate lamina which is minutely and densely glandular in the middle and densely hairy on each side on the upper surface and conspicuously bicarinate beneath. Dorsal sepal about 14 mm. long, 3 mm. wide near the middle, narrowly lanceolate, acute, sparsely hairy near the margin on the upper surface, strongly carinate along the middle on the outer surface with the keel extending to the apex. Petals 2 mm. long, 1.5 mm. wide below the middle, broadly asymmetrically ovate, acute, produced anteriorly at base into a triangular protuberance which is decurrent along the foot of the column, 1-nerved. Labellum 5 mm. long, about 2 mm. wide, unguiculate, 3-lobed in front of the narrow claw; lateral lobes abbreviated, about 1 mm. long, produced anteriorly into a small obtuse porrect lobule; middle lobe 4 mm. long, oblong, obtuse, 3-nerved, with the nerves prominent beneath near the base. Disc tricarinate; median keel about 2 mm. long, much thickened, sulcate on the top and forcipate in front; lateral keels membranaceous, 2 mm. long, inclined, with the inner margins contiguous or overlapping each other in front. Column 3.5 mm. long, dilated upward, with a conspicuous wing on each side at the summit, the wings finely denticulate on the upper margin.

A close ally of *P. Wercklei* Schltr. and *P. vinacea* Ames, from both of which species it differs conspicuously in the structure of the labellum and in the more robust habit of the plant. [Plate 4.]

COSTA RICA, Carpintera, C. H. Lankester 512, September 4, 1923. Flowers dull maroon. 5500 feet altitude. (TYPE in Herb. Ames No. 27217.)

### Illustrations of Central American Species of *Pleurothallis*

*Pleurothallis abjecta* Ames Sched. Orch. 2 (1923) 17.

Plate 5: 1, lateral sepals  $\times 5$ . 2, petal  $\times 6$ . 3, dorsal sepal  $\times 5$ . 4, labellum from the side  $\times 7$ . 5, labellum from above  $\times 7$ . 6, column  $\times 6$ .

*Pleurothallis amethystina* Ames Sched. Orch. 4 (1923) 14.

Plate 13: 1, labellum with lateral lobes in natural position  $\times 5\frac{1}{2}$ . 2, labellum with lateral lobes spread out  $\times 5\frac{1}{2}$ . 3, column  $\times 5$ . 4, flower  $\times 2\frac{1}{2}$ . 5, lateral sepals  $\times 2\frac{1}{2}$ . 6, petal  $\times 3$ .

*Pleurothallis arietina* Ames Sched. Orch. 4 (1923) 16.

Plate 16: 1, labellum with the basal lobes spread out  $\times 8$ . 2, labellum from above, basal lobes in natural position  $\times 8$ . 3, column  $\times 5\frac{1}{2}$ . 4, petal  $\times 2\frac{3}{4}$ . 5, lateral sepals  $\times 2\frac{3}{4}$ . 6, dorsal sepal  $\times 2\frac{3}{4}$ .

*Pleurothallis Brighamii* S. Wats. in Proc. Am. Acad. 23 (1888) 285.

Plate 7: 1, column  $\times 5$ . 2, labellum  $\times 8$ . 3, lateral sepals  $\times 2$ . 4, petal  $\times 4$ .

*Pleurothallis cachensis* Ames Sched. Orch. 4 (1923) 17.

Plate 8: 1, labellum from the side  $\times 8$ . 2, petal  $\times 8$ . 3, lateral sepals  $\times 3$ . 4, labellum  $\times 8$ . 5, column  $\times 6$ .



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**Pleurothallis canae** Ames Sched. Orch. 2 (1923) 18.

Plate 13: 1, petal  $\times 4$ . 2, labellum with the lateral lobes spread out  $\times 5\frac{1}{2}$ . 3, labellum with the lateral lobes in natural position  $\times 5\frac{1}{2}$ . 4, column  $\times 5\frac{1}{2}$ . 5, lateral sepals  $\times 2\frac{1}{2}$ .

**Pleurothallis cedralensis** Ames Sched. Orch. 4 (1923) 18.

Plate 6: 1, column  $\times 5$ . 2, labellum from the side  $\times 5$ . 3, petal  $\times 3$ . 4, dorsal sepal  $\times 3$ . 5, labellum from above  $\times 5$ . 6, lateral sepals  $\times 3$ .



**Pleurothallis cerea** Ames Sched. Orch. 4 (1923) 19.

Plate 8: habit reduced  $\frac{1}{2}$ . 1, petal  $\times 3$ . 2, lateral sepals  $\times 3$ . 3, dorsal sepal  $\times 3$ . 4, flower  $\times 2$ . 5, labellum and column  $\times 5\frac{1}{2}$ .

Fig. 4: drawn from alcoholic material.

**Pleurothallis costaricensis** Rolfe in Kew Bull. (1917) 80.

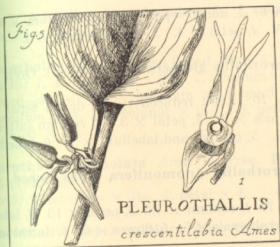
Plate 14: 1, labellum  $\times 10$ . 2, column with petal  $\times 6\frac{1}{2}$ . 3, dorsal sepal  $\times 3\frac{1}{2}$ . 4, lateral sepals  $\times 3\frac{1}{2}$ .

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**Pleurothallis crescentilabia** Ames Sched. Orch. 4 (1923) 20.

Plate 10: 1, dorsal sepal  $\times 2$ . 2, lateral sepals  $\times 2$ . 3, petal  $\times 2$ . 4, labellum  $\times 5$ . 5, labellum from the side  $\times 4$ . 6, column  $\times 4$ .

Fig. 5: drawn from alcoholic material.



**Pleurothallis cucullata** Ames Sched. Orch. 3 (1923) 5.

Plate 17: 1, labellum  $\times 10$ . 2, flower  $\times 2\frac{5}{7}$ . 3, column  $\times 8$ .

**Pleurothallis dentipetala** Rolfe ex Ames Sched. Orch. 3 (1923) 7.

Plate 11: 1, flower  $\times 4$ . 2, labellum and column  $\times 5$ . 3, labellum outspread  $\times 7$ . 4, petal  $\times 4$ .

**Pleurothallis diuturna** Schltr. in Fedde Repert. Beihefte 17 (1922) 19.

Plate 19: 1, labellum  $\times 4$ . 2, dorsal sepal  $\times 2\frac{1}{2}$ . 3, labellum with column, sepal and petal  $\times 2$ .

**Pleurothallis divexa** Ames Sched. Orch. 7 (1924) 20.

Plate 5: 1, flower  $\times 2$ . 2, petal  $\times 5$ . 3, labellum  $\times 12$ .

**Pleurothallis geminicaulina** Ames Sched. Orch. 6 (1923) 59.

*Plate 14:* 1, lateral sepals  $\times 2$ . 2, dorsal sepal  $\times 2\frac{1}{2}$ . 3, petal  $\times 2\frac{3}{8}$ . 4, column  $\times 5\frac{3}{8}$ . 5, labellum  $\times 8$ .

**Pleurothallis glandulosa** Ames Sched. Orch. 6 (1923) 60.

*Plate 6:* 1, dorsal sepal  $\times 2$ . 2, labellum  $\times 6$ . 3, column  $\times 6$ . 4, petal  $\times 4$ . 5, lateral sepals  $\times 3$ .

**Pleurothallis glomerata** Ames Sched. Orch. 4 (1923) 21.

*Plate 10:* habit reduced  $\frac{1}{2}$ . 1, dorsal sepal  $\times 3$ . 2, lateral sepals  $\times 3$ . 3, petal  $\times 3$ . 4, column (after pollination)  $\times 9$ . 5, column and labellum  $\times 7$ . 6, labellum  $\times 8$ .

**Pleurothallis gnomonifera** Ames Sched. Orch. 6 (1923) 60.

*Plate 7:* 1, column  $\times 10$ . 2, petal  $\times 13$ . 3, labellum  $\times 10$ . 4, lateral sepals  $\times 5$ . 5, flower  $\times 6$ . 6, dorsal sepal  $\times 6$ .

**Pleurothallis hastata** Ames Orch. 2 (1908) 268, fig.

*Plate 5:* 1, column  $\times 7$ . 2, labellum  $\times 6$ . 3, lateral sepals  $\times 3$ . 4, labellum from the side  $\times 6$ . 5, petal  $\times 6$ . 6, dorsal sepal  $\times 3$ .

**Pleurothallis hondurensis** Ames Sched. Orch. 7 (1924) 20.

*Plate 15:* 1, column and petal  $\times 7$ . 2, anther with pollinia *in situ* much enlarged. 3, pollinia much enlarged. 4, labellum outspread  $\times 6$ . 5, lateral sepals  $\times 3$ . 6, petal  $\times 7$ . 7, flower  $\times 3$ .

**Pleurothallis jocolensis** Ames Sched. Orch. 2 (1923) 19.

*Plate 6:* 1, column  $\times 11$ . 2, labellum  $\times 10$ . 3, dorsal sepal  $\times 4$ . 4, petal  $\times 5$ . 5, lateral sepals  $\times 3\frac{1}{2}$ .

**Pleurothallis Johnsonii** Ames Sched. Orch. 2 (1923)

21. *Plate 11: 1, labellum outspread*  $\times 4$ . 2, petal  $\times 2\frac{3}{8}$ .  
3, lateral sepals  $\times 1\frac{3}{8}$ .

**Pleurothallis monstrabilis** Ames Sched. Orch. 6

(1923) 63.

- Plate 7: 1, labellum from the side*  $\times 8$ . 2, column  $\times 7$ .  
3, petal  $\times 8$ . 4, labellum  $\times 8$ .

**Pleurothallis Nelsonii** Ames Sched. Orch. 4 (1923) 22.

- Plate 16: 1, lateral sepals*  $\times 2\frac{3}{8}$ . 2, labellum with basal lobes spread out  $\times 8$ . 3, labellum with basal lobes in natural position  $\times 8$ . 4, column  $\times 5\frac{3}{8}$ . 5, petal  $\times 2\frac{3}{8}$ .  
6, dorsal sepal  $\times 2\frac{3}{8}$ .

**Pleurothallis palliolata** Ames in Proc. Biol. Soc.

Wash. 35 (1922) 86.

*Plate 9: 1, labellum*  $\times 3\frac{1}{2}$ . 2, petal  $\times 4$ .

**Pleurothallis peperomioides** Ames Sched. Orch. 6

(1923) 64.

- Plate 4: 1, flower (one half removed)*  $\times 4$ . 2, labellum  $\times 5$ .

**Pleurothallis peraltensis** Ames Sched. Orch. 6 (1923)

65.

- Plate 11: 1, labellum*  $\times 8$ . 2, petal  $\times 6$ . 3, lateral sepals  $\times 4$ . 4, column  $\times 8$ .

**Pleurothallis peregrina** Ames Sched. Orch. 6 (1923)

67.

- Plate 18: 1, petal*  $\times 5$ . 2, column and labellum  $\times 3$ .  
3, labellum  $\times 4\frac{1}{2}$ . 4, flower  $\times 2$ .

**Pleurothallis pergrata** Ames Sched. Orch. 4 (1923)

24.

- Plate 6: 1, petal*  $\times 3$ . 2, column  $\times 8$ . 3, lateral sepals  $\times 2$ . 4, dorsal sepal  $\times 2$ . 5, labellum  $\times 5$ .

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**Pleurothallis periodica** Ames Sched. Orch. 7 (1924)  
21.

*Plate 4: 1, labellum* × 6. 2, column and petal × 6.  
3, flower × 3.

**Pleurothallis poasensis** Ames Sched. Orch. 1 (1922)  
10.

*Plate 12: 1, petal* × 5. 2, column × 8. 3, labellum  
outspread × 6. 4, dorsal sepal × 3. 5, lateral sepals × 2½.

**Pleurothallis pompalis** Ames Sched. Orch. 7 (1924)  
23.

*Plate 4: 1, flower* × 2. 2, labellum × 5. 3, labellum  
from above × 5. 4, column and petal × 5.

**Pleurothallis praegrandis** Ames Sched. Orch. 5  
(1923) 17.

*Plate 17: plant* ½ natural size. 1, column and labellum  
× 10. 2, petal × 6½. 3, lateral sepals × 6½. 4, dorsal  
sepal × 6½. 5, labellum outspread × 10.

**Pleurothallis propinqua** Ames Sched. Orch. 6 (1923)  
68.

*Plate 7: 1, column* (after pollination) × 9. 2, flower  
× 3. 3, labellum × 6.

**Pleurothallis Rowleei** Ames Sched. Orch. 1 (1922) 11.

*Plate 18: 1, petal* × 3. 2, column and labellum × 5.  
3, labellum outspread × 5. 4, flower × 2.

**Pleurothallis saccata** Ames Sched. Orch. 4 (1923) 25.

*Plate 17: 1, lateral sepals* × 3. 2, petal × 5½. 3,  
dorsal sepal × 3. 4, labellum × 3. 5, labellum from the  
side × 3.

**Pleurothallis samacensis** Ames Sched. Orch. 2 (1923)  
22.

*Plate 5: 1, flower* × 4. 2, labellum × 8. 3, column × 8.

**Pleurothallis Sanchoi** Ames Sched. Orch. 4 (1923) 26.

*Plate 12:* 1, column  $\times$  5. 2, lateral sepals  $\times$  3. 3, petal  $\times$  5. 4, dorsal sepal  $\times$  3. 5, labellum  $\times$  8. 6, leaf from Lankester 482, about natural size.

**Pleurothallis stenostachya** Reichb. f. var. **Lankesteri** (Rolfe) Ames var. nov.

*Pleurothallis Lankesteri* Rolfe in Kew Bull. (1914) 210.

The variety differs from the species in having a deep crimson labellum. From available evidence it would seem that this variety is confined to Costa Rica.

*Plate 15:* 1, flower  $\times$  11. 2, petal  $\times$  13. 3, labellum  $\times$  16. 4, lateral sepals  $\times$   $9\frac{3}{4}$ .

**Pleurothallis trachychlamys** Schltr. in Fedde Repert. Beihefte 17 (1922) 23.

*Plate 19:* 1, flower (one half removed)  $\times$   $5\frac{3}{4}$ . 2, labellum  $\times$   $10\frac{3}{4}$ . 3, column  $\times$   $7\frac{1}{4}$ .

**Pleurothallis vinacea** Ames Sched. Orch. 6 (1923) 69.

*Plate 13:* 1, labellum with the lateral lobes in natural position  $\times$   $5\frac{3}{4}$ . 2, labellum outspread  $\times$   $5\frac{3}{4}$ . 3, lateral sepals  $\times$   $2\frac{3}{4}$ . 4, column  $\times$   $5\frac{3}{4}$ . 5, petal  $\times$  3. 6, dorsal sepal  $\times$   $2\frac{3}{4}$ .

**Pleurothallis Williamsii** Ames Orch. 7 (1922) 120.

*Plate 15:* 1, flower  $\times$   $5\frac{3}{4}$ . 2, labellum outspread  $\times$  9. 3, petal  $\times$  8.

**Polystachya Powellii** Ames sp. nov. Caules plus minusve elongati, vaginis foliorum omnino obtecti. Folia ligulata, utrinque angustata, apice obtuse bilobulata. Pedunculus folia excedens, vaginis tubulatis obtectus. Racemi plures, breves, secus rachin communem dissiti, paniculam angustam laxam formantes. Sepala lateralia mentum formantia, ovata, acuta, concaviuscula. Sepalum dorsale oblongum, acutum. Petala lineari-spathulata, uninervia. Labellum e basi cuneata dilatatum, supra medium trilobatum; lobis lateralibus obtusis; lobo medio abrupte in apicem

acuminatum valde deflexum contracto. Discus prope basim callo permagno ceroso ornatus. Columna abbreviata.

Roots coarsely fibrous. Stems up to 8 cm. long, slender, entirely concealed by tubular bracts and the sheaths of the leaves. Leaves 10–14.5 cm. long, up to 2.2 cm. wide, usually three, approximate, crowded near the summit of the stem, ligulate, gradually narrowed toward the obtuse bilobulate apex, coriaceous, ascending. Peduncle up to 18 cm. long, clothed with elongated ancipitous closely appressed sheathing bracts, loosely paniculate, with the divisions of the panicle 2.5–3.5 cm. long. Flowers olive green with purple markings. Pedicel with the ovary about 3 mm. long. Lateral sepals about 4 mm. long, forming a blunt mentum which is 2 mm. long, broadly ovate, acute, reticulate-nerved, with the middle nerve more or less prominent on the outer surface. Dorsal sepal 4 mm. long, narrower than the laterals, oblong, acute. Petals 3 mm. long, narrowly spatulate, emarginate at the apex or unequally bidentate. Labellum 3.5 mm. long, about 3 mm. wide across the lateral lobes, dilated to about the middle from a cuneate base, trilobed in front, with the lateral lobes much smaller than the terminal lobe; lateral lobes obtuse; middle lobe rounded, abruptly contracted into an acuminate tip. Disc with a large conical waxy callus at the base. Column about 3 mm. long.

*Polystachya Powellii*, in habit, resembles *P. luteola* Hook., but is quite different from it in the structure of the labellum. It differs from *P. lineata* Reichb. f. in having smaller flowers and in having the middle lobe of the labellum subequal to the lateral lobes and abruptly contracted into a slenderly acuminate tip.

PANAMA, Province of Chiriqui, west side of Caldera River, in gulch opposite Lino, C. W. Powell 343. Flowering at Balboa under cultivation in September 1923. Lip very fuzzy, as if it were frosted. 4000 feet altitude. (TYPE in Herb. Ames No. 27177.)

*Rolfea Powellii* Ames sp. nov. Herba terrestris, elata, foliosa. Radices valde fibratae, amplae. Caules erecti, graciles. Folia papyracea, prominenter nervosa, in petiolos

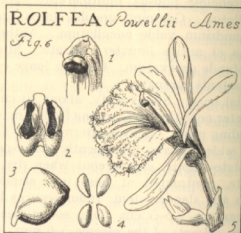
## TROPICAL AMERICAN ORCHIDS

vaginantes contracta, patentia, anguste lanceolato-elliptica, oblique ascendente, acuminata, acutissima. Inflorescentiae laterales vel terminales, pauciflorae. Bractee inflorescentiae ovatae, acutae, nervosae. Pedicellus cum ovario gracilis, elongatus. Sepala lateralia spathulata, subacuta, extus nervo medio prominenti. Sepalum dorsale spathulatum, obtusum, anguste unguiculatum. Petala oblongo-spathulata, obtusa, margine aliquando obscure crenulata, leviter curvata. Labellum basi cum columna per medium cohaerens, abrupte dilatatum, late flabelliforme, antice trilobatum; lobis lateralibus obtusis, rotundatis; lobo medio profunde bilobulato. Discus praecipue prope apicem et basim labelli copiose pilosus, multinervius, supra medium quinquelamellatus. Columna gracilis, intus prope basim pilosa. Clinandrium valde cucullatum. Anthera postice valde carnosae et antice breviter rostratae. Stigma ut in *Arethusa* profunde excavatum. Capsula longe cylindracea, columna persistenti coronata.

Terrestrial herb. Stems leafy, about 30 cm. tall, 2-3 mm. in diameter near the base, arising from a mass of coarse fibrous spreading roots. Leaves alternate, 10-32 cm. long, up to 5 cm. wide, plicate, prominently many-nerved, narrowly lanceolate-elliptic, chartaceous when dry, long acuminate, acute, contracted at base into slender petioles which sheath the slender stem. Inflorescences lateral and terminal, racemose, 3.5-5 cm. long, sometimes branched, rachis smooth. Bracts of the raceme 5-6 mm. long, ovate, acute, prominently nerved. Flowers about eight, opening in succession, of brief duration, creamy white. Lateral sepals hardly 1.5 cm. long, 3 mm. wide above the middle, asymmetrically spatulate, subacute or obtuse, membranaceous, middle nerve prominent on the outer surface. Dorsal sepal 1.5 cm. long, 3 mm. wide, spatulate, obtuse, subtruncate at the apex. Petals 1.5 cm. long, about 3 mm. wide near the rounded tip, spatulate, somewhat curved, margin sometimes obscurely crenulate above the middle. Labellum embracing the column, 1.7 cm. long, 1.5-1.6 cm. wide at the middle when spread out, abruptly dilated above the base, rotundate-flabelliform, 3-lobed in front, with the lateral lobes



rounded and the middle lobe deeply bilobulate. Disc pilose, especially near the apex and at the base, with five lamellae, of which the middle one extends almost to the apex of the middle lobe. Column about 1.2 cm. long, slender, for about one-third of its length adnate to the labellum, densely pilose on the ventral surface near the base, hardly dilated above. Clinandrium strongly cucullate, entire. Anther fleshy posteriorly, produced at the apex into a rostrate appendage between the cells. Pollinia four, ovate, strongly flattened, becoming pulveraceous. Stigma deeply concave, declinate, similar to the stigma of *Arethusa bulbosa*. Capsule terete, about 3 cm. long, with the column persistent at its summit.



Mr. Powell reports that the flowers fall very shortly after expanding and that one must be alert to secure them in good condition.

Readily distinguished from *Rolfea elata* Zahlbr. by its smaller flowers and 5-lamellate labellum. [Fig. 6, fl.  $\times 2$ .]

PANAMA, "Juan Diaz," near Panama City, C. W. Powell 325, August-September, 1923. Found in damp places in dense shade. (TYPE in Herb. Ames No. 27036.)

*Sobralia corazoi* Lankester & Ames sp. nov. Caules rigidi, bi- vel tri-foliati. Folia valde coriacea, anguste elliptica, acuminata. Vaginae foliorum arcte appressae, ob-

## TROPICAL AMERICAN ORCHIDS

scure verrucosae, inter se distantes. Flores in genere minores, e bracteis imbricantibus orientes. Sepala lateralibus elliptico-lanceolata, acuta, subcoriacea, purpureo-tincta, apice reflexa. Sepalum dorsale quam sepala lateralibus angustius, oblongum, acutum. Petala albida, oblonga, acuta, membranacea, reticulato-nervosa. Labellum albidum, antice profunde retusum, margine valde crenulato-denticulatum, circuitu late ovatum, obtusum; discus glaber. Columna arcuata, antice conspicue canaliculata.

Stems about 4 dm. long, with closely appressed tubular lightly verrucose sheaths. Leaves distantly alternate, two to three, 5-16 cm. long, up to 6 cm. wide, coriaceous, sessile on a clasping vaginate base, elliptic or elliptic-lanceolate, acuminate, acute, obliquely ascending, the uppermost one often much reduced and closely subtending the inflorescence. Flowers arising from an abbreviated cluster of closely imbricating bracts. Lateral sepals tinged with purple, hardly 2 cm. long, 8 mm. wide, fleshy, elliptic-lanceolate, acute, with the apex sharply reflexed, somewhat carinate on the dorsal surface. Dorsal sepal narrower than the laterals, 2.2 cm. long, about 6 mm. wide, oblong, acute. Petals white, membranaceous, 1.7 cm. long, 4.5 mm. wide, oblong, acute, reticulate-nerved. Labellum about 1.3 cm. long, 1.6 cm. wide near the base, embracing the column, ovate in outline, deeply retuse at the apex, margin crenulate-dentate with blunt coarse teeth. Disc smooth. Column about 1.2 cm. long, arching, dilated upward, widely sulcate in front.

COSTA RICA, Peralta, C. H. *Lankester* 538. Sepals faintly purplish, semi-hyaline; petals and labellum white. 4000 feet altitude. (TYPE in Herb. Ames No. 27750.)

***Triphora cubensis*** (*Reichb. f.*) *Ames comb. nov.*

*Pogonia cubensis* *Reichb. f.* in *Nederl. Kruidk. Arch.* 4 (1858) 322 (by typographical error as *rubensis*).

This rare and sparsely distributed species is now known to be a native of Florida.

**Vanilla fragrans** (Salisb.) Ames comb. nov.

*Myrobroma fragrans* Salisb. Parad. Lond. (1807) t. 82.

*Vanilla planifolia* Andrews Bot. Repos. 8 (1808) t. 538.

R. A. Rolfe, in his revision of the genus *Vanilla* (in Journ. Linn. Soc. 32 (1896) 440), directed attention to the fact that the specimens figured by Salisbury in 1807 and by Andrews in 1808 were taken from the same plant. It has been customary to use, for the vanilla of commerce, the name proposed by Andrews, but priority of publication belongs to Salisbury, and the specific name *fragrans* should be adopted.

*P peperomoides* Ames



*P pompalis* Ames



*P periodica* Ames



PLEUROTHALLIS Pl. 4

*P. hastata* Ames



*P. samacensis* Ames



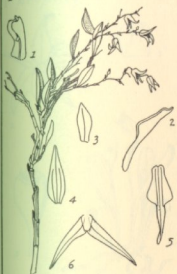
*P. divexa* Ames



*P. abjecta* Ames



*P. cedralensis* Ames



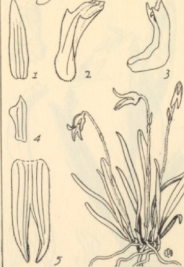
*P. jolocensis* Ames



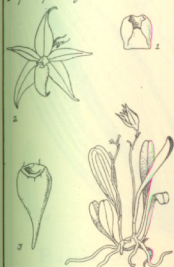
*P. pergrata* Ames



*P. glandulosa* Ames



*P. propinqua* Ames



*P. gnomonifera* Ames



*P. monstrabilis* Ames



*P. Brighamii* S Wats.



PLEUROTHALLIS

Pl. 7

*P. cachensis* Ames



*P. cerea* Ames

PLEUROTHALLIS

Pl. 8

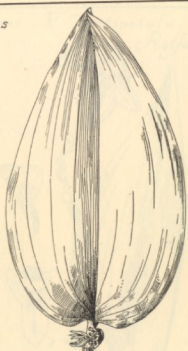


PLEUROTHALLIS

*palliolata*  
Ames



*P. glomerata*, Ames



*P. crescentilabia*, Ames

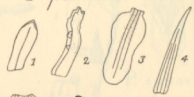


Pl. 20

PLEUROTHALLIS



*P. poasensis* Ames



*P. Sanchoi*  
Ames



Pl. 12

PLEUROTHALLIS

PLEUROTHALLIS

*vinacea*  
Ames

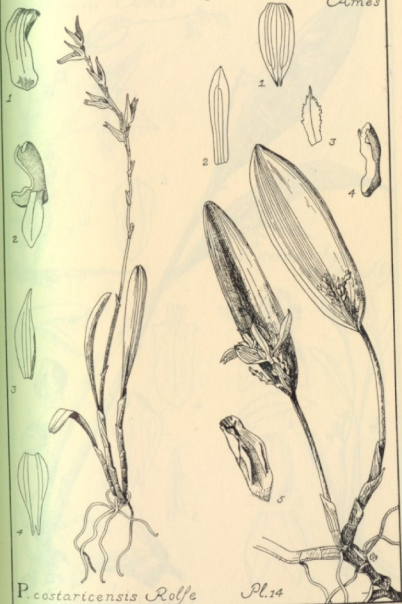


*P. canae*  
Ames

*P. amethystina* Ames

Pl. 13

PLEUROTHALLIS *geminicaulina* Ames



*P. costaricensis* Rolfe

Pl. 14

PLEUROTHALLIS

Pl. 15

*Williamsii* Ames



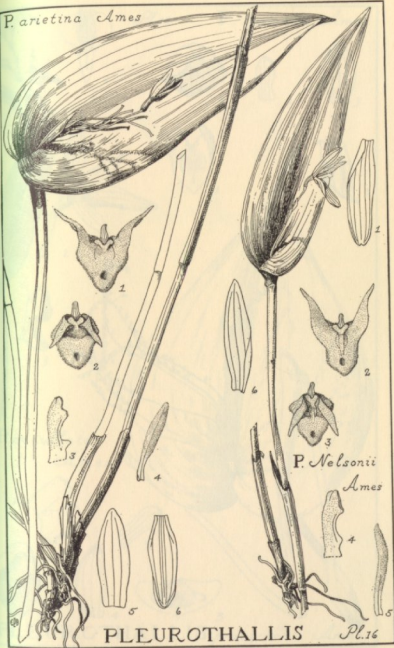
*P. stenostachya*

Reichb.f.  
var.



*P. hondurensis* Ames

*P. arietina* Ames



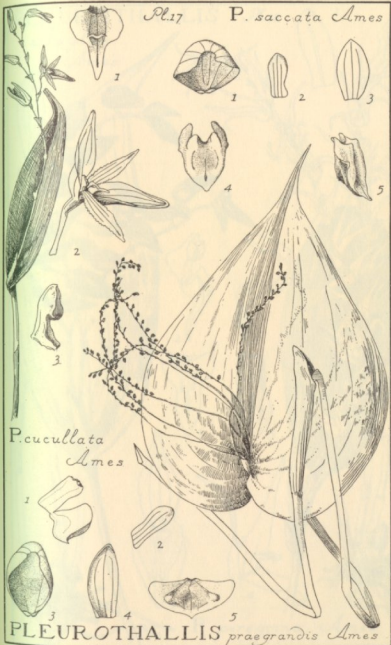
PLEUROTHALLIS

Pl. 16



Pl. 17

*P. saccata* Ames



*P. cucullata*  
Ames

PLEUROTHALLIS *praegrans* Ames

PLEUROTHALLIS *Pl. 18*

*Rowleei*  
*Ames*



*P. peregrina* Ames

PLEUROTHALLIS *trachychlamys*  
Schlechter



*P. diuturna* Schlechter Pl. 19

EPIDENDRUM *linifolium* Ames



Pl. 20

*E. glandulosum* Ames

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SCHEDULAE ORCHIDIANAE

No. 8

---

NEW OR NOTEWORTHY SPECIES  
OF ORCHIDS FROM THE  
AMERICAN TROPICS

By

OAKES AMES and CHARLES SCHWEINFURTH



BOSTON  
LAWRENCE PRESS, INCORPORATED  
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## New or Noteworthy Species of Orchids from the American Tropics

BY

OAKES AMES and CHARLES SCHWEINFURTH

NEW species of orchids from tropical America receive attention in this paper. The sequence of the genera follows closely the system proposed by Pfitzer in Engler and Prantl's "Die natürlichen Pflanzenfamilien." Unless indicated otherwise, the types of the new species have been deposited in the herbarium of the senior author.

*Habenaria caldensis* Kränzl. in Engl. Bot. Jahrb. 16 (1892) 128.

*Habenaria paludosa* Rodr. Gen. et Sp. Orch. Nov. 1 (1877) 153.

Several specimens of a tall *Habenaria*, from British Guiana mostly in fruit, are undoubtedly referable to this Brazilian species. They differ, however, from the type in the following particulars.

Stems up to 10.78 dm. tall, instead of a maximum of 6 dm. Leaves about ten in number, instead of two to four. Raceme about 14 cm. long, instead of 3-10 cm. Anterior lobe of the petals a little shorter than the posterior. The reverse is true of typical *Habenaria caldensis*, but the degree of relative length apparently is a variable factor. The labellum is a little smaller than typical; lateral lobes about 7.4 mm. long, instead of 9-11 mm.; middle lobe about 5.8 mm. long, instead of 7-8 mm.

BRITISH GUIANA, Rockstone, dense upland forest, along the railroad track, *H. A. Gleason 594, 673, and 738*, July 15 to August 1, 1921. (Herb. N. Y. Bot. Gard.)

***Vanilla latisegmenta*** A. & S. *sp. nov.* Herba scandens. Caulis in sicco striato-angulatus. Folia elliptico-ovata, acuminata, sessilia. Radix singula oppositifolia. Inflorescentiae axillares, pauciflorae. Flores pro genere mediocres. Sepala lanceolata, acuminata. Petala similia. Labellum basi columnae breviter adnatum, leviter trilobatum, margine valde plicato. Discus lineis crassis internerviis atque lamella lata per medium ornatus. Columna gracilis, glaberrima.

Stem scandent, flexuous or arcuate, striate-angulate, smooth, 2.4 mm. in diameter, internodes 4–6.5 cm. long (a single terminal internode only 1 cm. long), opposite each leaf a short stout fibrous root which is longitudinally sulcate when dry. Leaves elliptic-ovate, about 13–20 cm. long, 6.3–8.7 cm. wide, rather abruptly acuminate, sessile, many-nerved with cross reticulations, shining. Inflorescences axillary, short, about 5-flowered. Rachis stout, strongly fractiflex, 4–5 cm. long. Floral bracts triangular-lanceolate, concave, amplexicaul, 1.5 cm. or less long. Flowers medium-sized for the genus. Pedicellate ovary of mature flowers 4–4.6 cm. long. Lateral sepals broadly lanceolate, 4.6–5.2 cm. long, 1.75–2.1 cm. wide, narrowed to the acute apex which is very oblique, 13-nerved. Dorsal sepal similar, about 1.55 cm. or more wide below, sometimes thicker in texture through the longitudinal middle of the lower three-fourths, 11-nerved. Petals elliptic-lanceolate, lightly oblique, about 4.6–4.9 cm. long, 1.5–1.8 cm. wide, acute and very obliquely bilobed at the apex, thickened through the centre with a longitudinally central groove on the outer surface, 11-nerved. Labellum at base adnate to the column for about 6 mm., when expanded roughly hexagonal in outline, about 4.4 cm. long and as wide above the middle, free portion rounded below then flabellate-dilated to a lightly 3-lobed apex with its anterior margins strongly plicate, apex abruptly mucronate. Disc marked by a conspicuous broad central fleshy band which is some-

times 3-ridged at the base and indistinctly 5-ridged below the middle, the ridges coalescing into a central fleshy fascia that narrows into three broad fleshy approximate keels extending nearly to the apex, on each side of the central band closely lined in the lower and middle portions with numerous fleshy interneural ridges. Column slender, glabrous, about 2.6 cm. long, arcuate.

Dried (but matted) flowers show even larger measurements, the sepals being about 5.5 cm. long and 2 cm. wide.

*Vanilla latisegmenta* is allied to *V. inodora* Schiede, but has broader perianth segments. *V. guianensis* Splitg. has narrower leaves, many-flowered racemes, narrower flower parts, and a distinctly 3-lobed lip.

BRITISH GUIANA, Upper Rupununi River, near Dadanawa, Lat. 2° 45' N., *J. S. de la Cruz 1404*, May 29, 1922. "Flowers white." (TYPE in Herb. Ames No. 22973); *J. S. de la Cruz 1424*, May 31, 1922. "Flowers white and yellow.": Rockstone, lowland forest, *H. A. Gleason 526*, July 13-30, 1921.

*Pelexia Funckiana* (A. Rich. & Gal.) Schltr. in Fedde Repert. 15 (1918) 197 (as *Funkiana*).

*Spiranthes Funckiana* A. Rich. & Gal. in Ann. Sci. Nat. ser. 3, 3 (1845) 32.

*Pelexia Pringlei* Fernald in Proc. Am. Acad. 35 (1900) 562.

*Pelexia guatemalensis* Schltr. in Fedde Repert. 15 (1918) 197.

Duplicate material of the type collection of *Pelexia Pringlei* Fernald preserved in Herb. Ames proves, both in general appearance and in all measurements, to be identical with *Spiranthes Funckiana* A. Rich. & Gal.,—a true *Pelexia*,—as shown by records from the Herbarium of the Museum of Paris. The types of both plants, moreover, were collected near Jalapa, Mexico, at approximately the same altitude.

Furthermore, the typical *Pelexia Pringlei* shows almost exact identity with a drawing of *P. guatemalensis* Schltr., as well as with the description of that plant. Schlechter, in his

treatment of the latter species, says: "Die Art ist nahe verwandt mit *P. Funkiana* (A. Rich. & Gal.) Schltr. (*Spiranthes Funkiana* A. Rich. & Gal.), hat aber grossere Blüten in dichter Traube, gewimperte Petalen und ein spitzeres Mentum." Regarding the first and last discrepancies, photographic evidence refutes the statements, while the "dichter Traube" and "gewimperte Petalen" are evident in *Pelexia Pringlei*. A distance of a little over one hundred miles separates the stations of these Mexican and Guatemalan plants.

From all available records, therefore, it appears that *Pelexia Pringlei* Fernald and *P. guatemalensis* Schltr. are conspecific with *P. Funkiana* (A. Rich. & Gal.) Schltr.

***Spiranthes subpandurata* A. & S. sp. nov.** Herba terestris, aphylla. Radices fasciculatae, magnae, tomentosae. Caulis vaginis numerosis imbricantibus obtectus. Spica terminalis, superne densa. Flores albidii. Sepala ligulata, acuta, basi ipsa connata. Petala linearia, apice valde obliquo. Labellum anguste pandurato-lanceolatum, acutum, margine basali bicallosum. Columna generis.

Plant slender, leafless, about 17.5 cm. tall (the upper part of the erect spike very immature and hence contracted). Roots large, fleshy, fasciculate, 3.5-6 cm. long, up to 5.5 mm. in diameter, tomentose. Peduncle below the inflorescence about 10.7 cm. long, invested and mostly concealed by eight imbricating loose sheaths the lower portion of which is tubular and scarious and the free portion acuminate, the lowermost and largest sheath 2.5 cm. long. Inflorescence 6.4 cm. long, about 1.3 cm. in diameter, very loosely flowered below, dense above. Rachis glandular-pubescent. Floral bracts, lowermost exceeding the flower; upper ones subequaling the flower or shorter. Ovary nearly sessile, very shortly glandular-pubescent. Perianth segments strongly recurved above like those of *Spiranthes lucayana* (Britton) Cogn. Lateral sepals obliquely ligulate, abruptly acute, lightly connate at the oblique base and connate with the dorsal sepal; free portion 4.2 mm. long on the posterior margin and a little longer on the anterior, 1.2 mm. wide at the base.

SPIRANTHES

*subpandurata* A. & S.

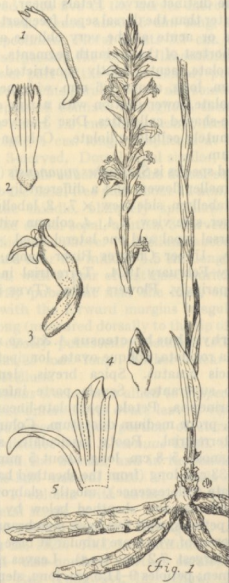


Fig. 1

with but one distinct nerve. Dorsal sepal 4.8 mm. long inclusive of the connate basal portion; free part about 4.2 mm. long, about 1.1 mm. wide above the middle, abruptly acute, with but one distinct nerve. Petals linear, adherent to and slightly shorter than the dorsal sepal, free part about 3.4 mm. long, obtuse or acute at the very oblique apex, 1-nerved. Labellum shortest of the perianth segments, narrowly pandurate-lanceolate, acute, lightly constricted just below the apex, 4.2 mm. long, about 1.6 mm. wide near the middle, base unguiculate, lower portion with a pair of conspicuous fleshy nipple-shaped callosities. Disc 3-nerved, the anterior margins minutely cellular-ciliolate. Column short, with a bifid rostellum.

An allied species is *Spiranthes guyanensis* (Lindl.) Cogn., which has smaller flowers and a different lip. [Fig. 1: habit life size. 1, labellum, side view  $\times 7$ . 2, labellum, front view  $\times 7$ . 3, flower, side view  $\times 4$ . 4, column with anther  $\times 7$ . 5, petals, dorsal sepal and one lateral sepal  $\times 6$ .]

PANAMA, Upper Chagres River Range, C. W. Powell 377, January-February 1924. Terrestrial in woods where sun shines sparingly. Flowers white. (TYPE in Herb. Ames No. 27954.)

**Stenorrhynchus bracteosus** A. & S. *sp. nov.* Herba terrestri. Folia rosulata, oblique ovata, longipetiolata. Caulis vaginis paucis ornatus. Spica brevis, densa. Bracteae flores multo superantes. Sepala parte inferiore connata, lanceolata, trinervia. Petala spathulato-lineararia. Labellum lanceolatum, prope medium dilatatum. Columna generis.

Plant terrestrial. Roots fasciculate, stout, densely villous-lanuginose, 5-8 cm. long, about 5 mm. in diameter. Stem about 33 cm. long (from the sheathed base to the apex of the arcuate inflorescence), mostly glabrous, lanuginose below the inflorescence, sheathed below by the imbricate bases of the petioles, with five loose membranaceous sheaths above, the lower of which are tubular at base and lanceolate above (the largest 7.2 cm. long). Leaves rosulate, seven in our specimen; petioles 9-11.5 cm. long, slender and channelled above, gradually dilated below into a membranaceous

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clasping base; blades ovate to elliptic-ovate, 8.5–9.5 cm. long, 4.2–5 cm. wide (the uppermost 6.15 cm. long, 2.6 cm. wide), oblique, abruptly acute, rounded at base, membranaceous, 11-nerved with five of the nerves more conspicuous. Inflorescence short, dense, about 5 cm. long, 4 cm. across in the dried specimen. Floral bracts 3.7 cm. or less long, the lower far surpassing the flowers, lanceolate, acuminate. Ovary and lower part of the flower densely pubescent outside. Perianth segments parallel below and somewhat spreading above. Sepals all connate throughout their lower half. Lateral sepals about 1.9 cm. long, fleshy; free portion triangular-lanceolate, 1 cm. long, complicate at the tip, dorsally carinate, 3-nerved. Dorsal sepal similar, thinner, with an obtuse tip. Petals adherent to the dorsal sepal and connate with it at the base; free part about 12 mm. long, 2 mm. wide above the middle, obliquely spatulate-linear, little shorter than the dorsal sepal, acutish, 3-nerved, membranaceous below, thickened above. Labellum lanceolate, simple, gradually dilated near the middle, 1.5 cm. long, 5 mm. wide where broadest, with a pair of flattened auriculate calli at the base, shortly pubescent near the base, obtusely acute at the apex, with the forward margins irregular. Column about 9 mm. long (measured dorsally to the tip of the anther), anterior face closely pubescent; rostellum stiff, the apex linear-triangular, 3 mm. long. Anther linear-oblong, surpassing the rostellum.

*Stenorrhynchus bracteosus* is allied to *S. speciosus* (Jacq.) L. C. Rich., but differs in its ovate leaves, very long floral bracts, and pubescent upper portion of stem rachis and ovaries. It is distinct from *S. cernuus* Lindl. in its bracts, which far exceed the flowers, and in its sessile lip. [Plate 21: habit one-half natural size. 1, petals with dorsal sepal  $\times 1 \frac{2}{3}$ . 2, column with anther  $\times 2 \frac{1}{3}$ . 3, labellum  $\times 1 \frac{1}{2}$ . 4, lateral sepals  $\times 2$ .]

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 572, December 23, 1923. 7000 feet altitude. "A fairly common terrestrial—also north of Cartago on slopes of Irazu." Flowers Coral Red [Ridgway], lip yellow. Bracts brick red. (TYPE in Herb. Ames No. 28122.)

**Cranichis grandiflora** A. & S. *sp. nov.* Herba medicis sed floribus grandibus. Folium singulum ut videtur, basale, cordatum, obliquum. Scapus vaginis nonnullis or-



natus, apice cernuus et pubescens. Sepala lateralia oblique lanceolata, acuminata. Sepalum dorsale anguste lanceolatum, acuminatum, acutum. Petala sepalo dorsali adhaerentia et quam illud breviora, elliptico-lineararia. Labellum



cordatum, valde acuminatum; discus callo crasso V-formi excavato ornatus. Columna generis.

Plant small, but with very large flowers for the genus, about 18 cm. tall. Roots stout, fibrous, tomentose. Leaf (in our specimen) solitary, basal; petiole about 1.5 cm. long; blade cordate, 3 cm. long through the middle, about 2.2 cm. wide, oblique, abruptly acute, membranaceous when dry. Scape suberect, nodding above, provided with six tubular membranaceous sheaths, glabrous below, upper portion pubescent. Raceme rather congested, about 6-flowered. Rachis and ovaries glandular-pubescent. Floral bracts broadly ovate, acuminate, concave below, scarious. Sepals very sparsely long-hairy on the outer surface. Lateral sepals very obliquely lanceolate, 6.3-7 mm. long, about 2.3 mm. wide, acuminate, 3-nerved. Dorsal sepal narrowly lanceolate, about 8.1 mm. long, 2 mm. wide near the base, acuminate with a complicate apex, 3-nerved. Petals adherent to the dorsal sepal and slightly shorter, elliptic-linear, oblique, acute or acuminate, 2-nerved. Labellum cordate, about 5.6 mm. long in the middle, nearly as broad at the base when expanded, sharply acuminate, margins complicate at the apex, concave in the middle by reason of a large excavated V-shaped fleshy callus which is densely cellular-pubescent and terminates near the apex of the labellum. Column short and inconspicuous.

*Cranichis grandiflora* is extraordinary on account of its very large flowers. It is vegetatively similar to *C. diphylla* Sw. and to *C. pilosa* Fawc. & Rendle. [Fig. 2: habit life size. 1, labellum with column and anther  $\times 5$ . 2, flower, front view  $\times 3 \frac{1}{2}$ .]

CUBA, Sur de Oriente y Pico Turquino, Sierra Maestra, Hno. Leon 10761, July 1922. (TYPE in Herb. N. Y. Bot. Gard.)

***Ponthieva unguiculata*** A. & S. *sp. nov.* Herba gracilis. Folia basalia, rosulata, petiolata, aliquando folium singulum in caulis parte inferiore; lamina ovato-elliptica, acuta. Scapus pubescens. Racemus laxe pluriflorus. Flores parvi, in sicco membranacei. Sepala oblongo-ovata vel

lanceolato-elliptica. Petala longe unguiculata, oblique triangularia. Labellum longissime unguiculatum; lamina reniformis trilobata, lobo medio minore. Columna generis.

Plant slender, about 17.5 cm. tall to the tip of the apical flower. Roots fasciculate, lanuginose. Leaves basal, rosulate, two to three, 3.1–5.2 cm. long, 1.6–2.3 cm. wide, elliptic-ovate, acute, membranaceous, cuneate-narrowed to a sulcate petiole. Petiole sheathing the stem at base, the free part 1.5 cm. or less long. Scape far exceeding the leaves, gently arcuate, pubescent, especially so above, with three distant tubular sheaths of which the lowest is foliaceous. Peduncle below the raceme 8–12 cm. long. Inflorescence loose; rachis pubescent, 3.7 cm. long, 11-flowered. Pedicellate ovary spreading, pubescent. Flower very small, membranaceous. Sepals 3-nerved, sparsely villous on the outside. Lateral sepals oblong-ovate, oblique, 5 mm. long, 2.1–2.5 mm. wide, acute to obtuse. Dorsal sepal a little smaller, lanceolate-elliptic, acute. Petals with long and slender claws, obliquely triangular, about 5 mm. long (including the claw), about 2.1 mm. wide across the dilated portion, the apex truncate, the exterior angle dilated. Labellum long-clawed; claw inserted on the column, channelled, about 2 mm. long; lamina reniform in outline, 3-lobed, cordate at base, about 2 mm. long, 2.2 mm. wide when spread out; lateral lobes rounded-dolabriform, spreading; middle lobe one third smaller, ligulate, rounded, and slightly dilated above. Column about 2.9 mm. long.

The nearest allies of *Ponthieva unguiculata* are *P. montana* Lindl. and *P. Weberbaueri* Schltr. *P. montana* is differentiated by shorter clawed petals, ciliate sepals, and dissimilar lip. *P. Weberbaueri* has much larger flowers and a differently shaped labellum.

BOLIVIA, Yungas, *H. H. Rusby* 2767, 1885. 6000 feet altitude. (TYPE in Herb. Acad. Nat. Sci. Phila.)

**Malaxis pusilla** A. & S. *sp. nov.* Herba pusilla. Caulis basi bulbosus, monophyllus. Folium elliptico-ovatum, patens. Scapus gracilis, quadrialatus. Racemus brevis, laxus. Sepala lateralia obliquissime elliptico-ovata, apice

rotundata. Sepalum dorsale lanceolato-ovatum, acutum. Petala linearia, sepalis breviora. Labellum hastato-cordatum, basi conspicue auriculatum, prope apicem utrinque leviter constrictum. Gynostemium minutum.

Plant very small, 7.7 cm. tall including the swollen ovoid base about 8 mm. long, bearing a single leaf and an enveloping sheath. Leaf sheathing the stem by a long petiole which is scarious, about 2.2 cm. long; blade elliptic-ovate, spreading, about 3.2 cm. long, 1.5 cm. wide, obtuse or acutish at the apex, narrowed at the base, many-nerved with seven more conspicuous nerves, the mid-nerve sulcate above and prominently carinate beneath. Scape slender, glabrous, 4-winged. Raceme short, erect, terminal, 2 cm. long, about 12-flowered. Floral bracts lanceolate-triangular, acuminate, apparently hyaline, concave near the base. Lateral sepals very obliquely elliptic-ovate, about 3.3 mm. long, about 2 mm. wide, rounded at the apex, narrowed below to a base which is very shortly connate with the paired sepal, 3-nerved. Dorsal sepal lanceolate-ovate, 3.5 mm. long, 2 mm. wide below, acutish, 3-nerved. Petals narrowly linear, gradually broader toward base, about 3 mm. long, 1-nerved. Labellum hastate-cordate, conspicuously retrorse-auriculate; auricles triangular-rounded, about 1.8 mm. long; lamina triangular, 3.5 mm. long, acute or obtuse, with a slight constriction near the apex on each side, 5-nerved. Column minute, apparently bilobed.

*Malaxis pusilla* seems to be without near allies. [Plate 23: habit slightly enlarged. 1, petal  $\times$  6. 2, flower, front view  $\times$  about 4.]

CUBA, Sur de Oriente y Pico Turquino, Sierra Maestra, Hno. Leon 10762, July 1922. (TYPE in Herb. N. Y. Bot. Gard.)

**Physosiphon minutiflorus** A. & S. *sp. nov.* Herba epiphytica. Caules vaginis scariosis omnino obiecti, monophylli. Folium erectum, oblongum, obtusum, coriaceum. Inflorescentia densiflora, secunda. Flores minutissimi. Sepala parte inferiore connata, partibus liberis ovato-lanceolata. Petala multo minora, lanceolata. Labellum in circuitu

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suborbiculare, apice trilobatum; lobis lateralibus semi-orbicularibus, sublobatis; lobo medio minore.

Plant caespitose, 19 cm. tall. Roots numerous, fibrous, glabrous, very slender. Stems 3-8.5 cm. long, entirely concealed by three sheaths, monophyllous. Sheaths tubular, loose, membranaceous when dry. Leaf erect, oblong; lamina 6.25-9 cm. long, 8-11 mm. wide, obtuse to broadly rounded at the apex, coriaceous, the mid-nerve conspicuously carinate beneath, cuneate-narrowed to a sulcate petiole about 1 cm. long. Inflorescence solitary, about 12 cm. long, arcuate, subequaling the leaf, secund, densely many-flowered, especially above, base of the peduncle clasped by a rugose sheath 1.4 cm. long. Floral bracts infundibuliform, exceeding the ovary. Flowers minute, tubular-campanulate, as usual in the genus, about 2.4 mm. long. Sepals all connate for 1 mm. or less; free portion ovate-lanceolate, erect and parallel, 3-nerved. Petals very minute, lanceolate, obtuse, 1-nerved, about .9 mm. long. Labellum suborbicular in outline, about 1 mm. long, sharply 3-lobed at the apex; lateral lobes relatively large, semi-orbicular, irregularly lobulate above the middle; middle lobe relatively small, triangular-ovate, broadly rounded at the tip. Disc 3-nerved, a pronounced transverse thickening with a posterior depression at the base. Column minute, provided with a broad dentate wing at the apex.

There appears to be no near ally of this minute-flowered species. [Plate 22: habit  $\times$  about 2. 1, flower, side view  $\times$  6. 2, dorsal sepal  $\times$  9. 3, column and labellum, side view  $\times$  12. 4, labellum  $\times$  18. 5, lateral sepals  $\times$  9. 6, column  $\times$  18. 7, petal  $\times$  12.]

PANAMA, Province of Chiriqui, Caramillo, C. W. Powell 345, October 1923. 5000 feet altitude. "Grows on fallen trees and stumps. Medium sunlight. Flowers pale greenish white." (TYPE in Herb. Ames No. 27298.)

**Physosiphon obliquipetalus** A. & S. *sp. nov.* Herba gracilis, caespitosa. Caulis vaginis inconspicuis arcte ornatus, unifolius. Folium erectum, lanceolato-oblongum, coriaceum, crassum in vivo, medio acute sulcatum. Inflo-

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rescentiae singulae vel binae, folium superantes. Racemi breves, secundiflori. Sepala in tubum connata, omnia uncarinata. Petala minuta, obliquissime obtriangularia. Labellum minutissimum, triangulari-ovatum, concavum, basi callo transverso ornatum.

Plant slender, caespitose. Roots numerous, fibrous, flexuous, minutely puberulent, longitudinally sulcate in the dried specimen. Stems slender, monophyllous, entirely concealed by sheaths, 2-8 cm. long, about .9 mm. in diameter. Sheaths two to six (usually five to six), long, tubular, tightly clasping, with about six prominent longitudinal nerves forming angles, terminating in an infundibuliform spreading margined fimbriate apex, the uppermost sheath having a looser upper portion with more prominent lamina. Leaf solitary, erect, lanceolate-oblong, sometimes oblique or falcate, 2.2-4.3 cm. long, 3.7-7.7 mm. wide, fleshy in the alcoholized specimen, coriaceous in dried material, acute, dorsally mucronate, cuneate-narrowed to a short channelled petiole, mid-nerve sulcate above and carinate beneath. Inflorescences one or two, exceeding the leaf. Peduncle below the inflorescence filiform, 3-4 cm. long, with about four inconspicuous infundibuliform sheaths. Racemes short, secund, erect or slightly arcuate, the mature ones 2-2.8 cm. long, 7-11-flowered. Sepals all connate into a tube which is about 4 mm. long. Lateral sepals concave-saccate at the base, bidentate above, acutish at the apex, each 1-nerved and sharply keeled on the dorsal surface. Dorsal sepal a little shorter and broader than each lateral sepal, about 3.45 mm. long (from the base), obtuse, with a broadly ovate free tip about 1 mm. long, 3-nerved with the mid-nerve carinate, especially at the base. Petals minute, very obliquely obtriangular, about 1.3 mm. long, 1-nerved, very narrow at the base. Labellum very minute, broadly triangular-ovate, .9 mm. long (including the short claw), subequally wide below, concave, obtuse, 3-nerved, with a fleshy transverse keel at the base. Column minute, with a fleshy erect lobe in the rear and with a thinner but prominent triangular extension of the rear wall of the clinandrium. [*Plate 22*: habit life size. 1, labellum  $\times$  14. 2, petals with column and labellum

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× 7. 3, petal, spread, with column and labellum × 7. 4, flower, side view × 6. 5, flower, torn open to show parts × 6.]

*Physosiphon obliquipetalus* is allied to *P. Cooperi* Ames, but it has far different petals and lip.

COSTA RICA, Cartago, Santa Clara, C. H. Lankester 680. 6500 feet altitude. (TYPE in Herb. Ames No. 28178.)

**Stelis Alfaroii** A. & S. *sp. nov.* Caules secundarii conspicui, monophylli. Folium oblique lanceolatum, coriaceum. Inflorescentiae binae, dense multiflorae. Flores parvi. Sepala perlate ovata, quinquenervia, lateralia obliqua. Petala cuneato-obovata, apice incrassata. Labellum semi-orbiculare, antice truncatum.

Plant tall and stout for the genus. Secondary stems conspicuous, over 15 cm. tall (incomplete below), about 3 mm. in diameter, monophyllous, striate-sulcate in the dried specimen, in anthesis with the fibres of long tubular sheaths. Leaf obliquely lanceolate, 15 cm. long, 3.2 cm. wide, narrowed to a more or less rounded apex (tip broken off), shortly cuneate-narrowed into a short channelled petiole which is about 2 cm. long, thickly coriaceous, with the mid-nerve sulcate above and bluntly carinate beneath. Inflorescences (of a single flowering season) two, 16-21 cm. long, arising from a prominent conduplicate lanceolate sheath which is 2.2-2.5 cm. long. Peduncle below the raceme short, about 3.5 cm. long, with a single tubular bract. Racemes suberect to arcuate-spreading, many-flowered, very dense above but loose at the base, secund-flowered. Floral bracts hyaline, subequaling the pedicellate ovary. Flowers very small, spreading, glabrous. Sepals connate at the base for nearly half their length. Lateral sepals very broadly ovate, oblique; free portion 1.6 mm. long, acute, 4-5-nerved with the nerves carinate on the outside. Dorsal sepal similar but a little larger, distinctly 5-nerved with the lateral nerves short. Petals much smaller, cuneate-obovate, about .9 mm. long, apex fleshy-thickened, especially in the centre, with three approximate nerves. Labellum similar to the petals, semiorbicular, broadly truncate in front but with a slight

median protuberance. Disc 3-nerved, provided near the apex with a semilunar lamella. Column typical of the genus.

*Stelis Alfaro* is remarkable in having very small flowers with 5-nerved sepals and peculiar labellum. It differs from its closest allies *S. Bourgeavii* Schltr. and *S. curvata* Schltr. in the form of the labellum.

COSTA RICA, La Fuente, *Anastasio Alfaro s. n.*, October 7, 1924. 1200 metres altitude. Flowers purplish green. (TYPE in Herb. Ames No. 29011.)

***Stelis carnosiflora* A. & S. sp. nov.** Herba omnino crassa. Caulis subteres, unifolius. Folium carnosum, ellipticum, apice basique rotundatum, superne obliquissime bilobatum. Inflorescentia singula, folium multo superans. Racemus multiflorus, superne densiflorus. Flores carnosi. Sepala reniformi-ovata, quinque-vel sex-nervia, sub medio connata. Petala minuta, cuneato-semiorbicularia, superne multo incrassata. Labellum et columna generis.

Plant remarkable for its dense fleshy flowers and large floral bracts. Stem stout, monophyllous, subterete, over 14.5 cm. long, about 4 mm. in diameter (lower portion missing in our specimen), with several distant close tubular sheaths. Leaf fleshy, elliptic, petioled, erect; petiole about 1.5 cm. long, stout, channelled, clasping the peduncle; lamina about 9.2 cm. long, 4.1 cm. wide, rounded both at base and apex, very unequally bilobed above. Inflorescence solitary, more than twice as long as the leaf, 21.5 cm. long. Peduncle below the inflorescence short, stout, with a basal fleshy conduplicate sheath which is about 1.75 cm. long, and above this one smaller infundibuliform sheath. Rachis about 17 cm. long, the greater portion very densely many-flowered (very loosely flowered near the base). Floral bracts conspicuous, surpassing the pedicellate ovary, distichous, ovate-triangular, amplexicaul, the lowest one 9 mm. long. Flowers secund. Sepals very fleshy, connate below the middle, entirely glabrous, nearly regular, 5-6-nerved, thicker near the anterior margins. Lateral sepals reniform-ovate, about 3.5 mm. long, 4-4.2 mm. wide, subobtuse, 6-nerved. Dorsal sepal

similar, slightly larger, 5-nerved. Petals minute, cuneate-semiorbicular, concave, 1.5 mm. long, 2 mm. wide, much thickened above, 5-nerved. Labellum typical of the genus, 1.1–1.5 mm. long, about 1.8 mm. wide, semiorbicular in outline, very fleshy, appearing hemispherical in natural position, with a flattened excavated anterior face, sides erect, a fleshy subbilobed thickening across the middle. Column minute, abruptly dilated and 3-lobed above.

The nearest allies of *Stelis carnosiflora* appear to be *S. curvata* Schltr., *S. Bourgeavii* Schltr., and *S. Purpusii* Schltr.; from all three it differs in its fleshy flowers, very broad sepals, large floral bracts, and 5-nerved petals.

COSTA RICA, Navarrito, *C. H. Lankester s. n.*, December 1923. "Sepals green at margin, rest dull purplish." (TYPE in Herb. Ames No. 28775.)

***Stelis elliptica* A. & S. sp. nov.** Herba foliis latis insignis, parva. Radices numerosae, filiformes. Caules breves, graciles, vaginis tubulatis omnino obtecti. Folia elliptica, acuta, petiolata, submembranacea. Inflorescentiae folia superantes; racemi laxi. Flores perparvi. Sepala late ovata, intus pubescentia. Petala minuta, flabellato-reniformia. Labellum quadrato-ovatum, medio callo permagno completo.

Plant small, 14–15 cm. tall. Rhizome creeping (short and broken off in our specimen). Roots numerous, fibrous, filiform, flexuous, glabrous. Secondary stems approximate, monophyllous, slender, entirely concealed by two or three loose tubular scarious sheaths, 2.4–5.3 cm. long, 1-jointed below the middle. Leaf narrowly elliptic, 3.5–6 cm. long, 1.15–2 cm. wide across the middle, sharply acute at the apex, gradually narrowed into an indistinct petiole which is up to 2 cm. long, submembranaceous in the dried specimen, many-nerved, with the mid-nerve carinate beneath. Inflorescences one or two, commonly exceeding the erect petioled leaf, 8.9–9.8 cm. or less long, very slender, more or less arcuate, clothed at the base with several minute imbricating tubular sheaths and above with two distant infundibuliform sheaths. Raceme very loose, 6–8-flowered. Floral bracts



infundibuliform, acuminate. Flowers minute. Sepals very broadly ovate to rhombic-ovate, connate at their base, acute, 3-nerved, finely pubescent within near the anterior margins. Lateral sepals about 2.6 mm. long. Dorsal sepal 2.8–3 mm. long. Petals minute, rhombic-reniform, with the upper part fleshy-thickened, 3-nerved, about .8 mm. long. Labellum smaller (much narrower), ovate-quadrangle, with the entire centre of the disc occupied by a large fleshy callus, minutely apiculate, with the apicule often inflexed, about .7 mm. long and a little narrower. Column minute, dilated above.

Vegetatively *Stelis elliptica* resembles a large *S. Cooperi* Schltr., while the labellum recalls that of *S. Johnsonii* Ames. *S. leptophylla* Schltr., which is apparently similar vegetatively, has smooth flowers and a different lip.

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 565, December 23, 1923. "A very common sp. of the locality." Flowers greenish. (TYPE in Herb. Ames No. 28125.)

***Stelis fractiflexa* A. & S. sp. nov.** Herba parvula, rhizomate brevi. Radices fibratae, numerosae, filiformes. Caules secundarii vaginis tubulatis omnino vestiti, monophylli. Folium oblongum vel elliptico-oblongum, prominenter petiolatum. Racemi plerumque singuli, folio duplo superantes, fractiflexi. Sepala orbiculari-ovata. Petala perlate rhombica, dimidio superiore incrassata. Labellum ovatum, prope basim transverse incrassatum, antice excavatum. Columna generis.

Plant small, 12.5–14.5 cm. tall. Roots numerous, fibrous, filiform, glabrous. Rhizome short, creeping, concealed by several closely imbricating scarious fibrous sheaths, producing numerous slender roots. Secondary stems slender, approximate, 1–3.5 cm. long (usually 2.8 cm. or less), monophyllous, enveloped by two or three long tubular scarious nervose sheaths. Leaf erect-spreading, long-petioled; petiole 6–16 mm. long, slender, channelled, merging into the leaf-blade; lamina oblong or elliptic-oblong, 1.7–4.5 cm. long, 4–9.5 mm. wide, acute or obtuse, apex minutely tridenticulate, cuneately narrowed at the base,

coriaceous, many-nerved, the mid-nerve sharply carinate beneath. Inflorescence usually solitary (often with remnants of one or two old racemes), axillary, when mature twice as long as the leaf, flexuous or arcuate. Peduncle filiform, 3-5.3 cm. long, with four remote small infundibuliform scarious sheaths, a larger enveloping sheath at base. Raceme fractiflex, loosely many-flowered (twenty-six or less), 2.8-7.5 cm. long. Floral bracts scarious, the lower ones equaling the pedicellate ovaries, infundibuliform, acuminate. Flowers small, glabrous. Sepals deeply connate at the base. Lateral sepals suborbicular, narrowed to a subacute apex, about 2.8 mm. long, 2.9 mm. wide, 3-nerved, with the nerves closed. Dorsal sepal similar, very slightly larger. Petals minute, broadly rhombic, about 1 mm. long, 1.75 mm. wide, the fleshy-thickened upper half broadly rounded, 3-nerved. Labellum simple, rhombic-ovate in outline, concave, about 1.1 mm. long, subequally wide, with a fleshy transverse thickening across the lower portion, margins fleshy, obtuse, 3-nerved. Column minute, dilated above, apex 3-lobed, the middle lobe largest and bluntly triangular.

*Stelis fractiflexa* is allied to *S. distantiflora* Ames, but has a very different lip. The foliage recalls that of *S. petiolata* Ames, while the labellum structure suggests *S. coiloglossa* Schltr. *S. praesepta* Schltr. apparently is similar, but has broader leaves and a different labellum.

COSTA RICA, Estrella, Cartago, C. H. Lankester 791, March 27, 1924. "Flowers purple in strong light, growing in shady places may be hyaline purplish, or greenish, a very common species on the hills south of Cartago." (TYPE in Herb. Ames No. 28293.)

***Stelis minutiflora* A. & S. sp. nov.** Herba parvula. Radices numerosae, fibratae. Caules secundarii perbreves, monophylli. Folium erectum, ellipticum vel ovale, crassissimum. Inflorescentiae plerumque tres, quam folium multo breviores, dense distichiflorae. Flores minutissimi. Sepala lateralia ovalia, dorso carinata. Sepalum dorsale simile. Petala multo minora, quadrato-flabellata. Labellum ovato-

quadratum, apice rotundatum, medio callo bilobato ornatum.

Plant small, caespitose, 4-6 cm. tall. Roots numerous, fibrous, flexuous, glabrous. Secondary stems very short, 1-17 mm. long, monophyllous, concealed by one to three loose imbricating infundibuliform sheaths which waste away in anthesis. Leaves erect (the young leaves much smaller than normal), elliptic to oval, distinctly short-petioled; petiole 2-4 mm. long, channelled; blade (of mature leaves) 21-39 mm. long, 14.5-18 mm. wide, very thick and fleshy in the alcoholized specimens, acute or obtuse at the minutely bilobed apiculate tip, rounded or subcuneate at base, sharply sulcate down the middle of the upper surface, somewhat carinate beneath, especially near the tip. Inflorescences one to four (usually three), much shorter than the leaf, only one of the clusters of racemes flowering at a time, 1.5-2.5 cm. long, very densely distichous-flowered. Floral bracts minute, infundibuliform. Flowers minute. Sepals minutely papillose within, 3-nerved. Lateral sepals oval or suborbicular-ovate, about 1.7 mm. long, abruptly acute, conspicuously carinate without. Dorsal sepal very similar. Petals very minute, quadrate-flabellate, about .8 mm. long, 1 mm. wide, broadly truncate, lightly retuse and somewhat thickened at the apex, 1-nerved. Labellum about .9 mm. long, ovate-quadrate in outline with erect sides, a fleshy bilobed transverse thickening in the middle, broadly rounded or subtruncate at the apex, 3-nerved. Column stout.

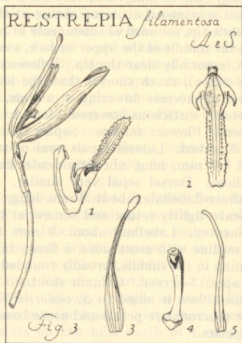
*Stelis minutiflora* is allied to *S. costaricensis* Reichb.f., but lacks the mucronulate petals and acute basally bicallose lip of that species.

COSTA RICA, Cartago, Raventado, C. H. Lankester 522. 5500 feet altitude. Flowers pale greenish yellow. (TYPE in Herb. Ames No. 28774.)

***Restrepia filamentosa* A. & S. sp. nov.** Herba gracilis. Caules monophylli, vaginis scariosis omnino obtecti. Foliolum anguste ellipticum, coriaceum, in sicco erectum. Flos flavidus, rubro-striatus. Pedicellus tuberculo filiformi conspicuo praeditus. Sepala lateralia dimidio basali connata,

lanceolata. Sepalum dorsale peranguste lanceolatum, parte superiore filiformi, apice crasso dilatato. Petala multo minora. Labellum circuitu lanceolatum, parte inferiore sub-orbiculari, utrinque lobulo triangulari ornata; parte anteriore ligulata, retusa et eroso-dentata. Columna gracilis.

Plant slender, 8.2-12 cm. tall to the tip of the erect leaf. Roots fibrous, flexuous, very slender, inconspicuously pulverulent. Stems caespitose, monophyllous, 4.4-6 cm. long, entirely concealed by five to seven imbricating loose tubular



scarious sheaths or the fibrous remains of sheaths. Leaf narrowly elliptic, shortly petioled; lamina 3.9-4.8 cm. long, 1.15-1.8 cm. wide across the middle, acute and minutely bilobed and apiculate at the apex, cuneate at the base, coriaceous, the mid-nerve conspicuous. Peduncle filiform, 3.4-4.4 cm. long, shorter than the petioled leaf. Pedicel (including the ovary) 5-8 mm. long, on its lower half a tubular bract which is mucronate at the tip, below the jointed ovary

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on the anterior face of the pedicel a prominent filamentous process 2 mm. long. Perianth segments spreading. Lateral sepals 1.5 cm. long, their basal half connate, 4.5 mm. wide near the base; free portion lanceolate, 6-nerved, acutish, tips cucullate on account of the involute apical margins. Dorsal sepal about 1.5 cm. long, 2 mm. wide near the base, narrowly lanceolate above, gradually extended into a filiform channelled isthmus which is dilated into a fleshy tip, 5-nerved near the lightly concave base. Petals about 1.1 cm. long, narrowly linear, contracted into a filiform fleshy portion which is slightly dilated at the apex, 3-nerved (only the mid-nerve is prominent, as the lateral ones are very near the margins). Labellum narrowly lanceolate in outline, about 6.9 mm. long from the base of the short narrow claw to the porrect teeth at either side of the retuse apex; lamina, basal part suborbicular, with a small erect porrect falcate-triangular lobule and with two low thickened keels—one on each side—which converge slightly; anterior portion ligulate, retuse, erose-dentate, 4-nerved, with a more or less distinct pair of parallel lines of papillae on the inner surface. Column about 4 mm. long, slender, dilated above, and broadened below into a very short fleshy curved foot.

*Restrepia filamentosa* is noteworthy for having the slender filament on the pedicel (observable in some species) unusually prominent. *R. Powellii* Schltr. is somewhat allied to this plant, but differs in the floral proportions. *R. subserrata* Schltr. is apparently another ally, but is a lower plant with larger, differently proportioned flowers. [Fig. 3: flower, side view  $\times 2$ . 1, column and labellum, side view  $\times 3\frac{1}{2}$ . 2, labellum, front view  $\times 4$ . 3, dorsal sepal  $\times 2\frac{1}{2}$ . 4, column  $\times 4$ . 5, petal  $\times 3$ .]

PANAMA, Province of Chiriqui, Cerro Horquita, C. W. Powell 344, October 1923. "Grows in shade on fallen trees and on logs. Flowers, ground color light yellow. Dorsal sepal has a red stripe down the centre for one half, apical yellow. Other sepals have red at base, with red stripe. Petals striped red. Column green with white cap." (TYPE in Herb. Ames No. 27297.)

**Pleurothallis acrisepala** A. & S. *sp. nov.* Herba parva. Caulis minutus, unifolius. Folium oblanceolatum, apice minute tridenticulatum, inferne sensim longe angustatum. Pedunculus quam folium longior, filiformis. Pedicelli fasciculi, ex axillis bractearum orientes. Sepala lateralia in laminam ovato-lanceolatam connata. Sepalum dorsale oblongo-lanceolatum. Petala multo minora, obliquissime triangulari-spathulata. Labellum oblongo-lanceolatum, utrinque minute retrorso-lobulatum.

Plant small, allied to *P. Brighamii* S. Wats. Roots fibrous, flexuous, glabrous. Stem minute, monophyllous, surrounded by fibres of sheaths. Leaf oblanceolate, 5.1-6.9 cm. long, 9.5-12 mm. wide above the middle, acutish or rounded with a minutely bilobed and apiculate tip, very gradually narrowed toward the base to an indistinct slender channelled petiole, spreading, coriaceous in the formalin material, with the mid-nerve prominently sulcate above and carinate beneath. Peduncle below the inflorescence about 8.5-9.55 cm. long, filiform, glabrous, with three remote tightly clasping tubular sheaths. Pedicels two to three, springing from the axils of closely imbricating infundibuliform sheaths which are at the summit of the peduncle. Flowers one at a time, apparently purplish. Sepals very shortly connate into a shallow cup at the base but with spreading upper portions. Lateral sepals connate into an ovate-lanceolate lamina 8.15-9.1 mm. long (inclusive of the portion adnate to the column-foot), about 4 mm. wide, sharply bidentate for about one-third of their length, with narrow acuminate teeth, bicarinate on the outer surface, 6-nerved. Dorsal sepal oblong-lanceolate, 8.5-9 mm. long, about 2.2 mm. wide, shortly but sharply acuminate, 3-nerved, unicarinate on the lower half of the outer side. Petals much smaller than the sepals, about 3.5 mm. long, very obliquely spatulate, the forward margin round-dilated in the middle then narrowed to an acuminate thickened tip, the posterior margin straight, 2-nerved. Labellum oblong-lanceolate, 4 mm. long, about 1.2 mm. wide where broadest; claw minutely auricled on each side at the base. Disc retrorsely hastate-auricled on each side below the middle and

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bicarinate there, 3-nerved, minutely and densely papillose, especially the lower third, rounded at the apex, anterior margins minutely fimbriate, the nerves keeled on the under surface especially at the tip. Column 2.5–2.9 mm. long, with a broad petaloid wing which is sharply 3-toothed at the summit.

*Pleurothallis acrisepala* is allied to *P. Brighamii* S. Wats., but is a larger plant with different sepals and lip. It also differs from *P. pyrsoles* Reichb. f. in having dissimilar sepals and lip.

PANAMA, without exact locality, C. W. Powell 420. (TYPE in Herb. Ames No. 29014.)

***Pleurothallis angusta*** A. & S. *sp. nov.* Herba mediocris. Caulis monophyllus. Folium oblongum, acutum, basi late rotundatum, erectum, coriaceum. Pedunculi plures, uniflori. Sepala lateralia in synsepalum ovatum omnino connata. Sepalum dorsale late oblongum, acutum. Petala falcato-lineararia, apiculata, marginibus inferioribus conspicue erosis. Labellum oblongo-ovatum, crassum.

Stem more than 10.7 cm. tall (incomplete in our specimen), monophyllous, about 1.4 mm. in diameter. Leaf erect, oblong, 12.5 cm. long, 1.65 cm. wide, shortly acute with an obtuse tip, broadly rounded at the clasping base, coriaceous, the mid-nerve sulcate above and conspicuously carinate beneath. Peduncles several (about six), short, 1-flowered, filiform, arcuate. Flowers medium-sized, perianth segments spreading. Lateral sepals connate into an ovate lamina 8.6–9.9 mm. long, about 5.1–6 mm. wide, acute, but with a rounded cucullate tip, dorsally bicarinate, very shortly connate at base with the dorsal sepal, prominently 4-nerved with two faint nerves in the centre. Dorsal sepal broadly oblong-lanceolate or oblong, 9–10.5 mm. long, 3.9–4.2 mm. wide, acute, 3-nerved, dorsally carinate. Petals linear-falcate, 6.1–6.6 mm. long, about 1.9 mm. wide below, acute, apiculate, margins erose-denticulate, the lower margins conspicuously so, posteriorly round-auricled at the base, 1-nerved, subcarinate especially at the apex. Labellum oblong-ovate or lingulate, cordate at the thickened base, 4–4.2

mm. long in the middle, about 2.7 mm. wide, broadly rounded at the apex, fleshy, margins minutely denticulate-erose (most markedly so in the middle of each side), 3-nerved, thinner in the centre, with a more or less conspicuous small lingulate concavity at the base. Column very short and stout with a minute broad foot adnate to the lateral sepals.

*Pleurothallis angusta* appears to be allied to *P. Tonduzii* Schltr., but has smaller flowers with a markedly different lip.

COSTA RICA, in cultivation at Las Concavas, probably native of Cachi, C. H. Lankester 850. "Leaf Dark Cress Green [Ridgway], glabrous, thick." Pedicels pale green. Flower Indian Red [Ridgway] with lip and column the same but darker. All sepals green at base without. Dorsal sepal centrally sulcate within, "exteriorly 3 keeled." Lip with a "recessed area nearly hyaline, at the base of which a small central depression of black purple." Column short, square; rostellum projects as a tongue, dusky rose purple. (TYPE in Herb. Ames No. 28688.)

*Pleurothallis canae* Ames Sched. Orch. 2 (1923) 18; 7 (1924) 26, t. 13.

Material from Costa Rica differs from the typical plant in several features. Vegetatively the stems are much longer (some of them 5 cm. long), and the leaves much longer and narrower (up to 10.2 cm. long and not more than 1.33 cm. wide). Florally the perianth is a little smaller, the petals are shorter and broader (2.5 mm. long, up to 1.8 mm. wide), the keels on the lip are shallowly bilobed, and the lateral terminations of the wings at the apex of the column are lanceolate or oblong instead of short broad and truncate.

In view of the wide variation noted in certain members of this perplexing group of *Pleurothallis*, it seems inadvisable to segregate the following collection, which consists of a single specimen, from *P. canae* Ames, a Panamanian species.

COSTA RICA, Orosi, C. H. Lankester 919, June 19, 1924. (Flowered in cultivation at Cartago.) 4000 feet altitude. Flower "deep purple on hyaline base." (Herb. Ames No. 28687.)



**Pleurothallis crassilabia** A. & S. *sp. nov.* Rhizoma repens. Caules secundarii monophylli, triquetri. Folium ovatum vel oblongo-ovatum, basi cordatum. Inflorescentia singula, folii dimidium aequans. Flores paullo aperti. Sepala lateralia in laminam latam bifidam connata, mentum formantia. Sepalum dorsale oblongo-lanceolatum, superne paullo latius. Petala minuta, spathulata, superne lacerato-serrata. Labellum in positu naturali oblongo-cuneatum, apice rotundatum. Columna minor, crassa.

Plant medium-sized, 11.5 to about 23 cm. tall. Rhizome creeping, 2.5–3 mm. in diameter, concealed by castaneous membranaceous imbricating sheaths which wither away in anthesis. Roots fibrous, glabrous, longitudinally sulcate in the dried plant, for the most part issuing from the rhizome at the base of the secondary stems. Secondary stems stout, monophyllous, triquetrous, 6–17 cm. long, gradually broadened and flattened (i.e. with broader wings) toward the apex, with several imbricating membranaceous sheaths or remains of sheaths at base. Leaf sessile, ovate to oblong-ovate, shortly cordate, 6–9 cm. long (from the base of the short auricles to the apex of the blade), 2.6–4.6 cm. wide below the middle, coriaceous, acute or acutish, inserted diagonally on the stem. Inflorescence solitary, about half the length of the leaf, about 3 cm. long; rachis floriferous nearly to its base, with a small conduplicate coriaceous sheath at the base. Flower fleshy in texture; perianth campanulate. Lateral sepals connate into an ovate lamina which is 9.5 mm. long, about 6 mm. wide, sharply bidentate from the apex to above the middle, 7-nerved, bicarinate on the outer surface (sharply so above). Dorsal sepal oblong-lanceolate, slightly broader above, 9–10 mm. long, about 3.2 mm. wide above the middle, acute, strongly concave below, 3-nerved. Petals much smaller, spatulate, with the upper margins deeply lacerate-serrate on each side, about 3 mm. long and 1.6 mm. wide above, obliquely inserted on the lateral sepals at the base, obtuse at the apex, 1-nerved. Labellum very fleshy, oblong-cuneate in natural position because of the erect tubular involute basal margins; lamina 5–5.4 mm. long, 2.3 mm. wide above the middle, oblong when forcibly spread

out, anterior margin rounded and denticulate, 3-nerved, with the apices of the nerves pyriform-dilated, centre of the lip and margins at the middle much thickened. Column very small, 3 mm. long, narrowly margined with a lightly trilobulate wing, extending into a stout subequally long foot which forms a mentum with the lateral sepals.

*Pleurothallis crassilabia* seems to be allied to *P. Cogniauxiana* Schltr., but differs markedly in the shape of the petals and lip. It is very similar to the Brazilian *P. bicarinata* Lindl., but has a creeping rhizome, inflorescence about half as long as the leaf, and deeply lacerate-serrate petals.

The description of the flower was mostly taken from an alcoholized flower, numbered 526, and sent to complete the numbers cited below.

COSTA RICA, Alto de La Estrella, Cartago, C. H. Lankester 807, March 26, 1924. Flowers half open, orange yellow, plants frequently occur in large colonies, on moss-covered trees, common south of Cartago. (TYPE in Herb. Ames No. 28722.): Tobosi, C. H. Lankester 535. 5000 feet altitude. "Fl. orange chrome."

***Pleurothallis decipiens* A. & S. sp. nov.** Herba medio-cris, rhizomate repenti. Caules secundarii elongati, graciles, monophylli. Folium lineari-vel lanceolato-oblongum, rigide coriaceum. Racemi fasciculati, perbreves, pauciflori. Flores parvi. Sepala lateralia in laminam bidentatam connata, extus alte carinata. Sepalum dorsale oblongo-lanceolatum, tertia parte apicali valde incrassata. Petala minuta, cuneato-spathulata. Labellum simplex, expansum subpandurato-quadratum.

Plant medium-sized, about 22.5 cm. tall. Rhizome creeping, slender, entirely concealed by closely wrapped sheaths, somewhat branched. Roots fibrous, filiform, flexuous, glabrous, long, somewhat branched. Secondary stems slender, elongate, 6.5-12.1 cm. tall, approximate to 2.2 cm. apart, about 1 mm. in diameter, sulcate-angulate in the dried state, enveloped below by about two close tubular evanescent sheaths. Leaf solitary at the summit of each stem, erect, linear-oblong or lanceolate-oblong, about 10-11 cm.

long, up to 1.35 cm. wide, sessile, gradually narrowed at both ends, rigidly coriaceous, finely striate-rugose with revolute margins when dry, the mid-nerve conspicuously carinate beneath. Inflorescence a cluster of short few-flowered racemes, 1.5–2 cm. long, subtended by a scarious evanescent sheath. Floral bracts minute, infundibuliform. Flowers small, 5.9 mm. long; perianth segments subconnivent. Lateral sepals obliquely ovate-lanceolate, acute, connate into a lamina which is bidentate at the apex; lamina 5 mm. long, 5.5 mm. wide when expanded, each sepal 3-nerved and deeply carinate in the middle, forming a prominent mentum with the column-foot, anterior free half of each sepal somewhat fleshy-thickened. Dorsal sepal oblong-lanceolate, very concave, about 6 mm. long, 2.1 mm. wide when expanded, acute, the apical third strongly fleshy-thickened, 3-nerved, bluntly 1-keeled on the outer surface. Petals minute, cuneate-spatulate, about 2.4 mm. long, about 1.6 mm. wide above, acutish, the apex broadly rounded and erose-denticulate, 1-nerved, membranaceous. Labellum short, in natural position recurved and subconduplicate, simple with a short quadrate claw which is .9 mm. long; lamina when expanded pandurate-subquadrate, about 2.9 mm. long, 1.9 mm. wide above the middle, apex truncate and irregularly denticulate, 3-nerved, the sides indistinctly carinate-thickened, a fleshy callus at the base. Column short, stout, dorsally about 2.3 mm. long, apex truncate and lobulate-erose. Column-foot very broad.

*Pleurothallis decipiens* very strongly suggests *P. ca-chensis* Ames and *P. hondurensis* Ames in vegetative characters, but the flowers are very different.

COSTA RICA, Arenal, *Juvenal Valerio* 68, July 13, 1923. 600 metres altitude. (TYPE in U. S. Nat. Herb. No. 1169274.)

***Pleurothallis longipedicellata*** A. & S. *sp. nov.* Caules graciles, unifoliati. Folium lanceolato-ovatum, basi leviter cordatum, acuminatum, subcoriaceum. Racemi singuli vel bini, flaccidi. Flores parvi, longe pedicellati, pedicello filiformi. Sepala valde concava, bilabiata. Sepala lateralia omnino coalita, lamina late ovata, extus bicarinata. Sepalum

dorsale simile. Petala lanceolata, acuminata. Labellum lanceolato-ovatum, obtusum. Columna brevis, basi crasse dilatata.

Plant large, lower portion missing. Stem up to 9.5 cm. tall, 2 mm. in diameter, monophyllous, glabrous. Leaf lanceolate-ovate, lightly cordate-clasping at the sessile base, 16.2-18 cm. long, 6.65-7 cm. wide below the middle, above long-acuminate to a more or less oblique tip, erect-spreading, many-nerved, subcoriaceous. Inflorescence one or two flaccid racemes which slightly surpass the leaf in length. Peduncle below the raceme about 5.5 cm. long, clasped at the base by an elongate conduplicate lanceolate sheath. Raceme very loosely flowered, 9.4 to about 15.2 cm. long, flowers 6-13 mm. apart. Floral bracts very small, infundibuliform, membranaceous. Pedicels including the ovary elongate, about 6-22.5 mm. long, filiform, flaccid, flexuous, arcuate or reflexed. Flowers small, bilabiate. Sepals deeply concave, membranaceous. Lateral sepals connate into a lamina which is broadly ovate, about 6.2 mm. long, 4-5 mm. wide when expanded, obtuse, 4-nerved, the inner pair of nerves carinate beneath. Dorsal sepal similar, ovate, 6.3 mm. long, about 4.2 mm. wide when expanded, acute, 3-nerved. Petals lanceolate, somewhat sigmoid in outline, 5.45 mm. long, about 1.2 mm. wide near the base, long-acuminate, 2-nerved, with one nerve much dilated at the apex, margins erose-denticulate. Labellum lanceolate-ovate, about 3.9 mm. long, 2.5-3 mm. wide near the base, obtuse, 3-nerved, the terminations of the nerves dilated and thickened, a large fleshy thickening near the base. Column minute, stout, dorsally about 2.4 mm. long; anterior lower portion dilated, fleshy, and papillose.

The nearest ally of *Pleurothallis longipedicellata* is *P. dentipetala* Ames, which has smaller leaves and broader petals. In habit it resembles *P. Rowleii* Ames, while the form of the petals is similar to that of the much smaller *P. cucullata* Ames.

COSTA RICA, Estrella, C. H. Lankester 792, March 27, 1924. "Semi translucent purplish—densely leaved plant,

common on moss covered trunks at locality." (TYPE in Herb. Ames No. 28294.)

**Pleurothallis melicoides** Schltr. in Fedde Rept. Beihefte 19 (1923) 24.

The Pejivalle specimens of C. H. Lankester differ from the type description in the following particulars. The stems are more slender and are usually less than 2 cm. in height instead of 2-3 cm. tall. The peduncle usually exceeds the leaf rather than almost equaling it. The pedicels appear much longer than their subtending bracts rather than almost equally long. The sepals and petals are slightly larger and the lateral sepals form a bidentate rather than an entire lamina. The ovary also appears to be shorter.

*Pleurothallis melicoides* belongs to an extremely variable group of *Pleurothallis*, and the differences mentioned above, while noticeable, are scarcely specific.

COSTA RICA, Pejivalle, C. H. Lankester 869, May 15, 1924. 2300 feet altitude. Common. Sepals yellowish green. Petals and lip (?) dark purplish. (Herb. Ames No. 28697.)

**Pleurothallis nana** A. & S. *sp. nov.* Herba nana, lepanthiformis, gracilis, caespitosa. Caules filiformes, multiarticulati, vaginis margine ciliatis. Inflorescentiae terminales et laterales, laxe distichiflorae, fractiflexae. Flores membranacei. Sepala lateralia anguste lanceolata. Sepalum dorsale majus, cucullatum. Petala oblique elliptico-oblonga. Labellum lingulato-lanceolatum, apice rotundatum.

Plant very small, 5-7.5 cm. tall, caespitose. Roots very slender, glabrous, flexuous. Stems scarcely stouter than the roots, spreading or arcuate, often branching and rooting at the nodes, many-jointed, apparently tightly enclosed in long tubular sheaths which are many-sulcate and inconspicuously muricate on the angles. Sheaths with infundibuliform spreading apices, long-ciliate on the margin. Leaves one to three to each stem, usually distant, always one at the summit; blades very small, oval, shortly petioled, 5.5-10 mm. long, 3-6 mm. wide, margined, obtuse with a deciduous

apicule, coriaceous, apparently fleshy when alive. Inflorescence solitary, short but conspicuously surpassing the leaf, terminal and also often lateral, loose, the rachis fractiflex. Peduncle below the raceme filiform, 5-13 mm. long, with one to four remote inconspicuous infundibuliform sheaths. Raceme 1-2.5 cm. long. Pedicels spreading, up to 6 mm. long. Flowers very small, membranaceous in the dried condition. Lateral sepals narrowly triangular-lanceolate, long-acuminate, about 3 mm. long, with a prominent dorsal fleshy keel, 1-nerved. Dorsal sepal longer and broader, ovate-lanceolate, 3.5 mm. long, long-acuminate, strongly cucullate, unicarinate on the back, 1-3-nerved. Petals very obliquely elliptic-oblong, about 1.55 mm. long, 1-nerved, obtuse. Labellum simple, lingulate-lanceolate, about 1.9 mm. long, broadly rounded at the apex, shallowly rounded-dilated below the middle with the swollen portion erect in natural position, 3-nerved, pubescent above on the upper surface. Column minute, about 1 mm. long.

*Pleurothallis nana* is closely allied to *P. guadalupensis* Cogn., but its stems have many more joints, its petals are dissimilar, and its flowers are differently colored. It is also related to *P. Williamsii* Ames, but has much smaller leaves as well as different petals and lip.

COSTA RICA, Pejivalle, C. H. Lankester 865, May 16, 1924. "Flowers snow white, 3 purple veins on obverse of leaves, these disappear at complete maturity." (TYPE in Herb. Ames No. 28677.)

***Pleurothallis parvula* A. & S. sp. nov.** Herba pusilla, caespitosa, radicibus fibratis numerosis. Caulis pergracilis, inferne vaginis tubulatis obtectus. Folium oblongo-ellipticum, margine revolutu erosum. Inflorescentiae folium superantes, laxissime pauciflorae, internodiis angulatis. Flos pro planta grandis. Sepala lateralilia lanceolata, profunde carinata. Sepalum dorsale lanceolato-oblongum. Petala multo minora, anguste lanceolata. Labellum longe unguiculatum, circuitu obovatum; discus late ovatus, margine eroso, basi utrinque constrictus. Columna apice late alata.

Plant very small, 7-8 cm. tall. Roots numerous, fibrous, flexuous, glabrous, slender. Secondary stems monophyllous, up to 3 cm. long, very slender, somewhat flattened above, the basal half with two approximate imbricating scarios sheaths. Leaf erect, oblong-elliptic, 2.25-3.1 cm. long, 6-7.5 mm. wide, obtuse, coriaceous, with minutely erose margins which are strongly revolute in the dried state, the mid-nerve prominently carinate beneath. Inflorescences one to three, much exceeding the leaf, up to 5.8 cm. long. Peduncle filiform, clasped at the base by a small membranaceous sheath and above by about two remote inconspicuous infundibuliform sheaths. Raceme more or less arcuate, 2-6-flowered; floral internodes 4-5 mm. long. Floral bracts minute, infundibuliform. Flowers relatively large. Lateral sepals either connate nearly to the apex or apparently free almost to the base, narrowly lanceolate, about 8.9 mm. long, 1.9 mm. wide below, gibbous at the base, dorsally carinate with the keel produced into an apical mucro, 3-nerved. Dorsal sepal lanceolate-oblong, 9 mm. long, 2 mm. wide, acute and dorsally mucronate at the tip, prominently keeled below the middle, concave, 3-nerved. Petals much smaller, narrowly lanceolate, about 4 mm. long, 1 mm. wide, acuminate, 1-nerved. Labellum obovate in outline, about 3 mm. long including the claw; claw narrow, 1.15 mm. long, gradually dilated from a very narrow base, a minute rounded-triangular auricle in the middle of each side; lamina broadly ovate, about 1.7 mm. wide, rounded at the apex, with erose margins, constricted near the cordate base to form small suborbicular lobules. Disc 3-nerved, indistinctly thickened on each lateral nerve in the middle. Column short, broadly winged above, 2.7 mm. long including the wing, which is 3-lobed with the apical lobe quadrate and dentate. Column-foot short and stout.

*Pleurothallis parvula* is allied to *P. alpestris* (Sw.) Lindl., but differs in the smaller slightly erose leaves and more ovate, not ligulate, lip. *P. trichophora* Lindl. has much smaller flowers and longer racemes. [Plate 23: habit life size. 1, column  $\times$  4  $\frac{1}{2}$ . 2, labellum, three-quarter view  $\times$

7. 3, petal  $\times$  4. 4, flower, side view  $\times$  3  $\frac{1}{3}$ . 5, labellum, front view  $\times$  7.]

CUBA, Sur de Oriente y Pico Turquino, *Hno. Leon* 10790, July 1922. (TYPE in Herb. N. Y. Bot. Gard.)

***Pleurothallis rectipetala*** A. & S. *sp. nov.* Herba mediocris. Caules monophylli, inferne univaginati. Folium patens vel deflexum, lanceolato-ovatum, valde cordatum, acuminatum. Pedunculi perbreves, uniflori, vagina cylindracea omnino inclusi. Flores pro sectione parvi. Sepala similia, rotundato-ovata, lateralia in synsepalum connata. Petala oblongo-lanceolata, minute denticulata. Labellum ovatum, crassissimum.

Plant medium-sized. Stem over 21.4 cm. long (base not present), with a long tubular close sheath below. Leaf solitary, horizontally spreading or reflexed in the dried specimen, lanceolate-ovate, deeply cordate at base, 8.4–11 cm. long (including the basal auricles), 3.55–4.6 cm. wide below, long-acuminate, coriaceous, many-nerved. Inflorescences several, 1-flowered; peduncles entirely concealed by the surrounding tubular sheath, which is about 1.6 cm. long. Flowers exerted beyond the sheath. Lateral sepals connate into a round-ovate lamina which is shortly bidentate in anthesis, about 8 mm. long, 6.2–7.2 mm. wide, obtuse or splitting into two subacute points, prominently 4-nerved with two or four secondary nerves. Dorsal sepal round-ovate, about 8 mm. long, about 6 mm. wide, 3-nerved, acute. Petals oblong-lanceolate, almost straight, 5 mm. long, 2.1–2.5 mm. wide below, abruptly acute or minutely mucronate, the margin minutely denticulate. Labellum ovate, small, very thick and fleshy, densely papillose, about 3 mm. long and 2 mm. wide, obtuse or rounded at the apex. Column short and stout, with a very short foot.

*Pleurothallis rectipetala* is allied to *P. cardiothallis* Reichb. f. and *P. phyllocardia* Reichb. f., but differs from both in the almost straight petals and in other floral details. It has much larger leaves than *P. homalanthoides* Schltr., 3-nerved dorsal sepal and not falcate petals. Florally it resembles a gigantic form of *P. rhodoglossa* Schltr.



COSTA RICA, Cachi, *C. H. Lankester 915*. (Cultivated at Cartago and flowered in June 1924.) Flower dusky vinous purple, upper sepal "hyalinaceous," especially the margins. Lip deep vinous purple. Column white, anther cream color. (TYPE in Herb. Ames No. 28690.)

***Pleurothallis segregatifolia* A. & S. sp. nov.** Herba nana. Caules minuti, caespitosi, monophylli. Folia suborbicularia vel obovata, apice rotundata, inferne plus minusve cuneato-angustata. Inflorescentiae folia erecta multo superantes, sub folia orientes. Racemi laxe pauciflori. Sepala lateralia oblique semiovata, per dimidium basalem connata, apice cucullato-obtusa. Sepalum dorsale elliptico-oblongum, cornu obtuso terminans. Petala falcato-lineararia, breviora. Labellum expansum cuneato-obovatum, trilobatum.

Plant dwarf, 4-7.5 cm. tall. Roots stout for the plant, fibrous, flexuous, glabrous. Stem minute, caespitose, 4-6 mm. (rarely up to 9 mm.) long, monophyllous, invested below with tubular scarious sheaths. Leaf suborbicular to obovate or cuneate-spatulate, 6 mm. (rarely 12 mm.) long, commonly 4-5 mm. wide, rounded and minutely 3-denticulate at the apex, more or less cuneate-narrowed below, margined, fleshy in the formalin material, coriaceous when dry, the mid-nerve prominently sulcate above and carinate beneath; petiole 1-6 mm. long, channelled, gradually merging into the cuneate leaf-base. Inflorescences much surpassing the leaf, inserted 2-4 mm. below the leaf, one to several to a stem. Peduncles filiform, 1.9-4.4 cm. (usually about 3 cm.) long below the raceme. Raceme suberect or flaccid, 1-3.2 cm. long at maturity, loosely flowered. Rachis fractiflex. Floral bracts minute, infundibuliform. Flowers up to eleven (usually less), membranaceous. Lateral sepals obliquely semiovate, connate about to their middle, forming a distinct mentum with the column-foot, about 3.8 mm. long, free part 1.6 mm. wide below, obtuse at the cucullate tip, carinate without, 2-nerved. Dorsal sepal elliptic-oblong, terminating in a hollow obtuse horn, 3.8-4.2 mm. long, 1.5 mm. wide, 3-nerved, dorsally carinate. Petals linear-falcate, about 3 mm.

long, .8-.9 mm. wide, obtuse or subacute, very slightly broader above the middle, 1-nerved. Labellum ligulate and recurved in natural position, 3-lobed near the apex with the lateral lobes erect, when expanded lanceolate-obovate in outline, about 2.8 mm. long (excluding the minute claw), 1.2 mm. wide above the middle, 3-nerved; lateral lobes semicuneate with a rounded apex; middle lobe orbicular, recurved. Column about 2.1 mm. long, arcuate, terminating in a petaloid 3-lobulate wing.

The nearest allies of *Pleurothallis segregatifolia* are the West Indian *P. elegantula* Cogn. and *P. trilobata* Fawc. & Rendle, the former differing markedly in flower structure, the latter in vegetative and floral characters.

The sepals and lip appear purple in the flower preserved in formalin.

COSTA RICA, La Fuente, Peralta, C. H. Lankester 914, June 24, 1924. "Flower hyaline & vinous purple." On trunks of tree ferns. (TYPE in Herb. Ames No. 28691.)

***Pleurothallis spectabilis* A. & S. sp. nov.** Herba caespitosa. Radices numerosae, fibrosae. Caules abbreviati, monophylli. Folia oblanceolata, inferne sensim angustata, acuta. Inflorescentiae folia multo superantes. Pedunculus complanatus. Racemi densi, distichiflori. Flores magni. Sepala lanceolata, intus dense papillosa. Petala minuta, falcato-ligulata. Labellum bis deflexum, expansum ligulatum, late truncatum, bicarinatum. Gynostemium curvatum, late alatum.

Rhizome abbreviated. Roots numerous, fibrous, somewhat flexuous, glabrous, slender. Stems abbreviated, 1-2 (usually about 1.5) cm. long, monophyllous, entirely concealed by loose tubular sheaths or the fibrous remains of sheaths, 1-jointed near or above the middle. Leaves cuneate-spatulate or oblanceolate, very gradually narrowed into the sulcate petiole; blade 6.35-10.3 cm. long, 1.15-1.6 cm. wide above the middle, acute, coriaceous, with five to seven more conspicuous nerves and the mid-nerve sulcate above and strongly carinate beneath. Peduncle up to the raceme 15.3-21 cm. long, ancipitous, narrowly winged, with two or

three inconspicuous distant infundibuliform sheaths. Rachis 1.5–8 cm. long, suberect to arcuate, densely four to many-flowered, gently fractiflex, glabrous. Floral bracts distichous, infundibuliform, deeply keeled on the back. Flowers large for the genus. Sepals spreading, densely papillose on the inner surface except near the base, fleshy, with the margins somewhat revolute. Lateral sepals lanceolate, lightly falcate, very oblique at the base, connate below the middle, the basal part membranaceous and saccate, 1.6–1.9 cm. long, 4.2–4.6 mm. wide above the connate portion, 3-nerved, with the median nerve strongly carinate on the outside and extended into a mucro. Dorsal sepal similar, lanceolate, dorsally carinate, 1.6–1.9 cm. long, 5.5–6 mm. wide below the middle, 5-nerved, concave at base. Petals minute, ligulate-falcate, slightly broader near the apex, 3.5–4 mm. long, 1 mm. or less wide, rounded and papillose-thickened at the apex on the outer surface and concave inside, obliquely 1-nerved, mucronate. Labellum very small, in natural position twice deflected (once very abruptly near the base, and again, less abruptly, above the middle), when expanded ligulate-oblong, truncate and lightly retuse at the apex, narrowed in the middle and broadest at the base, about 5.1 mm. long when expanded, 2 mm. wide at base; a pair of keels leave the margin about 2 mm. from the base and gently converge, terminating near the apex. Column curved, slender, about 5 mm. long to the apex, with a broad membranaceous wing which is denticulate on the upper margin and sharply lacerate-dentate at the apex; column-foot short, stout, fleshy, incurved, mostly free.

*Pleurothallis spectabilis* is closely allied to *P. platyrachis* Rolfe, but differs in the more numerous scarlet flowers, truncate-retuse lip, and dentate column-wing. In habit it resembles *P. diuturna* Schltr., but has larger and different flowers. It is apparently a near ally of *P. Pfavii* Reichb. f., but is distinguished by its smaller leaves, 5-nerved dorsal sepal, carinate floral bracts, retuse labellum, and by the color of the flowers.

PANAMA, Province of Veraguas, Santa Fé, C. W. Powell 382, February 1924. 1500 feet altitude. "Grows in medium sun. Flowers scarlet." (TYPE in Herb. Ames No. 28139.)

**Lepanthes exasperata** A. & S. *sp. nov.* Herba nana, caespitosa. Radices fibratae, numerosae. Caules unifoliati, filiformes, plurivaginati. Folium anguste lanceolatum, in vivo valde carnosum, margine revoluta, apice tridentato. Inflorescentiae breves. Flores membranacei. Sepala margine et nervis dorso minute ciliolata. Sepala lateralibus obliquissime ovata. Sepalum dorsale majus, ovato-oblongum. Petala inverse reniformia, lobis ovatis, subaequalibus. Labellum trilobatum.

Plant dwarf, caespitose, 4.5–5.4 cm. tall. Roots numerous, fibrous, flexuous, filiform, finely pubescent. Stems filiform, monophyllous, about 1–2.5 cm. long, 3–5-jointed, entirely concealed by tightly clasping tubular sheaths. Sheaths longitudinally nerved and pubescent on the angles, abruptly dilated into an ovate aristate nervose lamina which is ciliate on the margin. Leaf erect or erect-spreading, narrowly lanceolate, very fleshy with revolute margins (in material preserved in formalin), 2.15–2.7 cm. long, 4.6–5.6 mm. wide below the middle, long-narrowed above to a broad tridentate apex, rounded or cuneate below to a short-petioled base which is tightly enclosed by the uppermost sheath of the stem, the longitudinal centre of the blade deeply sulcate on the upper surface and bluntly carinate beneath. Inflorescences one to three with apparently only one fertile raceme at a time, very short, about 5–9.5 mm. long, rarely up to 9-flowered. Flowers approximate, distichous, on the upper part of the peduncle, minute, apparently membranaceous. Sepals cellular-ciliolate on the margins and on the nerves of the outer surface. Lateral sepals connate to the middle, broadly and very obliquely ovate, 2 mm. long, 1.6 mm. wide at the base of the free portion, acute, 2-nerved, the lobes porrect with the outer margins prominently ciliolate and the inner margins very obscurely so. Dorsal sepal larger, oblong-ovate, 3 mm. long, about 1.65 mm. wide, acute, 3-nerved. Petals inversely reniform, bilobed, with the lobes set at an obtuse angle, about 2.2 mm. wide from tip to tip, entire margin densely and finely long cellular-fimbriate; posterior and anterior lobes subequal, ovate, obtuse. Labellum 3-lobed; lateral lobes broadly dolabriform, about 1.7 mm.

wide, expanded into a broad transversely oblong pubescent apex; middle lobe much smaller, deltoid in outline with a retuse-truncate apex, finely long-hairy at the base, short-hairy above. Column characteristic of the genus, dilated above into a retuse and apiculate tip.

*Lepanthes exasperata* closely resembles *L. micrantha* Ames, but differs strikingly in the shape and size of the leaves (even in fresh specimens) and in the relative width of the petal lobes.

COSTA RICA, Navarro, C. H. Lankester 689, 1923. (TYPE in Herb. Ames No. 28791.)

***Lepanthes ovata*** A. & S. *sp. nov.* Herba caespitosa. Radices fibratae, minute papillosae. Caules gracillimi, multivaginati. Folia ovato-lanceolata, acuminata, margine minute cartilagineo-denticulata. Racemi foliis breviores. Flos in sicco membranaceus. Sepala lateralia oblique semi-ovata, partim connata. Sepalum dorsale ovatum, paullo majus. Petala transverse bilobata, lobo posteriore majore. Labellum trilobatum; lobi laterales dolabriformes, carinati; lobus medius minutus.

Plant caespitose, 14.5 cm. tall to the apex of the erect leaf. Stems monophyllous, 11–11.5 cm. long, very slender, with ten sheaths, inconspicuously angulate and very shortly pubescent on the angles. Sheaths infundibuliform, abruptly dilated into ovate mucronate ciliate laminae. Leaf ovate-lanceolate; petiole very short, 2 mm. long; blade about 3 cm. long, 1 cm. wide, acuminate and minutely 3-dentate at the tip, rounded at base, conspicuously marginate and finely cartilaginous-denticulate on the entire margin except near the base. Inflorescences two, filiform, shorter than the leaf (one very short). Raceme long-pedunculate, densely 2–11-flowered. Flowers membranaceous in the dried specimen. Lateral sepals obliquely semiovate, connate for nearly half their length, about 3.5 mm. long, 3.5 mm. wide across the cuneate lower portion, acute, 2-nerved. Dorsal sepal ovate, acuminate, acute, about 3.8 mm. long, 2.8 mm. wide below, 3-nerved. Petals transversely ligulate-oblong, very oblique; posterior lobes larger than the anterior lobes, obliquely

oblong, about 1.85 mm. long, 1 mm. wide; anterior lobes oblong-lanceolate, 1.3 mm. long, about 1 mm. wide near the base. Labellum 3-lobed; lateral lobes porrect, relatively large, dolabriform, with a conspicuous keel parallel with the apex which is about 1.9 mm. wide; middle lobe minute. Column slightly shorter than the lateral lobes of the lip, abruptly mucronate at the summit.

*Lepanthes ovata* differs from the closely allied *L. Ekmanii* Schltr. in having 2-3-nerved sepals, dissimilar petals, and a sessile labellum. [Plate 23: habit life size. 1, flower, spread out  $\times$  about 4. 2, labellum with column turned back  $\times$  7. 3, petal  $\times$  4  $\frac{2}{3}$ .]

CUBA, Sur de Oriente y Pico Turquino, Sierra Maestra, Hno. Leon 10709, July 1922. 1000-2000 metres altitude. (TYPE in Herb. N. Y. Bot. Gard.)

*Lepanthes subdimidiata* A. & S. *sp. nov.* Herba parva. Caules graciles, monophylli, multiarticulati, vaginis omnino arcte inclusi. Folium ovatum, basi rotundatum, apice tridentatum. Inflorescentiae quam folia plerumque breviores. Racemi dense distichiflori. Flores perparvi. Sepala ovata vel lanceolato-ovata, lateralia pro parte connata. Petala subdimidiata, lanceolata. Labellum trilobatum; lobi laterales dolabriformes; lobus medius minutus.

Plant small, 7.5-8.3 cm. tall including the erect leaf. Roots filiform, fibrous, flexuous, minutely pubescent or papillose. Stems very slender, 4-5 cm. long, 8-10-jointed, concealed by tightly clasping sheaths. Sheaths sulcate by reason of elevated veins, minutely pubescent on the angles, terminating in an ovate flaring margined lamina which is minutely ciliate on the edge. Leaf ovate, shortly and abruptly petioled; petiole about 2 mm. long; lamina, 2.4-2.9 cm. long, 1.6 cm. more or less wide, rather abruptly narrowed above to a tridentate apex, many-nerved with three more prominent veins, membranaceous, apparently purplish-tinted on the under surface. Inflorescences one to three in the axil of the terminal leaf, usually much shorter than the leaf (rarely equalling the leaf). Peduncles below the inflorescence filiform, about 1 cm. long, with one inconspicuous tubular

sheath. Raceme short, dense, distichously many-flowered, usually less than 1 cm. long (rarely up to 1.8 cm. long). Floral bracts sheathing the slightly longer pedicels, exteriorly cellular-pubescent, shallowly infundibuliform at base. Flower minute, membranaceous, about 5 mm. across from the tip of the dorsal sepal to the tips of the laterals. Lateral sepals lanceolate-ovate, connate for about one-third of their length, 3 mm. long, 2-nerved, cellular-ciliolate especially on the outer margins, the acute tips more or less recurved. Dorsal sepal broadly ovate, 2.5 mm. long, sharply acute, 3-nerved, somewhat cellular-ciliolate on the margin. Petals lanceolate, almost dimidiate, with the anterior division abbreviated, about 1.9 mm. long, obtuse. Labellum 3-lobed; lateral lobes dolabriform, dilated at the apex into the transverse flattened lanceolate surfaces usual in the genus, about .5 mm. long, wider at the apex; middle lobe minute. Column characteristic of the genus, clinandrium abruptly mucronate at the summit.

*Lepanthes subdimidiata* resembles *L. Turialvae* Reichb. f. in habit, but the almost dimidiate petals are distinctive.

COSTA RICA, Pejivalle, C. H. Lankester 839, May 29, 1924. 3000 feet altitude. "Sepals hyaline pinkish, petals dull reddish purple marginally centrally dull orange, leaves deep velvet green, upper surface like shagreen." (TYPE in Herb. Ames No. 28693.)

***Hexisea sigmoidea*** A. & S. *sp. nov.* Herba insignis. Caules ex internodiis gracilibus constant, in nodis ramosi. Folia bina in nodis, anguste oblonga. Flores singuli, in apice internodii summi. Sepala ovato-lanceolata. Petala angustiora. Labellum sigmoideum; basis anguste concava; deinde lamina latere utrinque auriculata, parte anteriore abrupte reflexa cuneata late truncata. Columna crassa, antice in medio tumefacta.

Stems branching at the nodes; internodes successively shorter from base upward, .6 (uppermost)–21.3 (lowermost) cm. long (perhaps more), 2–2.5 mm. in diameter (the lowermost), smooth, terete, the upper one longitudinally sulcate in the dried specimen clothed at base with tubular sheaths or

the fibrous remains of sheaths, the uppermost internodes more or less completely enveloped by a few rigid tubular imbricating sheaths; nodes with a pair of subopposite leaves, the lower nodes producing a tuft of fibrous verrucose grayish roots. Leaves oblong-linear or oblong, up to 9 cm. long and 9.5 mm. broad (the uppermost sometimes 1.5 cm. long and about 4 mm. wide), rounded and bilobed at apex, a minute apicule between the lobules, subsessile at base, coriaceous, the median nerve sulcate on the upper surface and carinate beneath. Flower apparently solitary at the summit of the uppermost internode. Pedicellate ovary slender, often 2 cm. long, concealed by a few imbricating sheaths. Lateral sepals ovate-lanceolate, 1.5 cm. long, 7.1 mm. wide below the middle, obtuse or acute, strongly concave below the middle, 13-nerved, five of which are conspicuous. Dorsal sepal similar, about 1.4 cm. long, 7.75 mm. wide below the middle. Petals similar, narrower, lanceolate, 1.35 cm. long, 5-6 mm. wide below the middle, obtuse, 5-7-nerved. Labellum in natural position strongly sigmoid; basal portion fleshy, narrowly and deeply concave, about 4 mm. long, subparallel with the column; central portion abruptly dilated into the lateral lobes between which are two approximate very fleshy keels; forward portion sharply reflexed and produced into a lamina; lateral lobes membranaceous, erect, 3-4 mm. long, embracing the summit of the column; anterior portion about 8 mm. long, very broadly truncate and lightly retuse when spread out, in natural position oblong toward the base and cuneate-flabellate above, margins strongly plicate and crenate-erose. Column short, stout, about 7 mm. long, the concave anterior face continuous with the fleshy base of the labellum, a conspicuous conical boss in the middle, margin slightly dilated in the middle on each side; clinandrium irregularly crenate.

There are no near relatives of *Hexisea sigmoidea*, but its habit recalls *H. oppositifolia* Reichb. f.

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 570, December 23, 1923. "Whole flower Flame Scarlet, Pl. 2 [Ridgway], semitranslucent or gelatinous, . . . —rare." (TYPE in Herb. Ames No. 28120.)



**Epidendrum adnatum** A. & S. *sp. nov.* Planta *Epidendrum Lankesteri* valde revocans. Caulis in parte basali nudus, complanatus, vaginis distichis omnino inclusus. Folia pauca, lineari-lanceolata, longe acuminata. Pedunculus bialatus. Inflorescentiae breves, interdum trifurcatae. Sepala lateralia oblique oblanceolata. Sepalum dorsale oblanceolatum. Petala filiformia. Labellum apici columnae gracilis affixum, ovatum.

Plant 36 cm. or less tall, the stem apparently rising from a creeping rhizome. Roots few, scattered, fibrous, flexuous, glabrous, longitudinally sulcate when dry. Stem complanate, leafless below, entirely invested with imbricating sheaths of which the middle and upper ones are longitudinally striate in the dried specimen. Leaves few, distichous, linear-lanceolate or linear-elliptic, 11-21.5 cm. long, 9.5-14 mm. wide (the lowermost and uppermost blades have the smaller dimensions), very long-acuminate above, gradually cuneate-narrowed below, many-nerved, chartaceous, up to 3.7 cm. apart in the middle of the stem (closer above), ascending. Peduncle below the inflorescence reaching 9.3 cm. long, strongly complanate, bialate especially below, 2-3 mm. wide across the lower portion. Inflorescences 4 cm. or less long, consisting at maturity of a short very strict 3-branched panicle at the summit of a long naked peduncle or of a long-peduncled panicle supplemented by an abbreviated short-peduncled 2-branched panicle—the two terminal, but enclosed at base by the sheath of the uppermost leaf. Bracts approximate or imbricate, conduplicate, scarious and striate-nervose when dry; the lowermost bract of the long-peduncled inflorescence narrow and elongated (1.75-2.15 cm. long). Flowers medium-sized. Lateral sepals narrowly oblanceolate, very oblique, 1.22 cm. long, about 2.85 mm. wide above the middle, acute, mucronate on account of an apical keel, 5-nerved. Dorsal sepal oblanceolate, 1.2 cm. long, about 3 mm. wide above the middle, acute, 5-nerved. Petals filiform, 1.22 cm. long, 1-nerved. Labellum simple, base adnate up to the apex of the column; lamina relatively small, ovate, about 5.4 mm. long, about 4.2 mm. wide below the middle, abruptly apiculate. Disc with a pair

of fleshy semiellipsoid basal calli, with a lower fleshy median ridge and with two less conspicuous ridges which continue the lateral calli. Column about 8.9 mm. long, slender, abruptly dilated at the apex, obscurely crenulate at the tip.

*Epidendrum adnatum* is closely allied to *E. Lankesteri* Ames, but differs in the narrower leaves, the narrower floral parts, and unlobed apiculate lip.

COSTA RICA, Pejivalle, C. H. Lankester 838, May 30, 1924. Hyaline sepals and ovary striately speckled purple; the long filiform petals pale crystalline green; the lip whitish green with two white arcuately projecting protuberances at base; column very pale green; anther-cap tinged purplish. (TYPE in Herb. Ames No. 28696.)

***Epidendrum dentiferum* A. & S. sp. nov.** Herba parva sed cum floribus mediocribus. Caules breves, distichifolii. Folia oblongo-linearia. Flores probabiliter plures. Sepala lateralialia falcato-lanceolata, obliqua, acuminata. Sepalum dorsale lanceolatum, acuminatum. Petala linearia, falcata, acuta. Labellum suborbiculare, abrupte mucronatum, basi bicallosum. Columna brevis, apice dentata.

Plant low, 10-11 cm. tall to the summit of the inflorescence. Roots numerous, filiform, fibrous, flexuous, intertwining, glabrous. Stems branched at the base, sometimes apparently rising from a creeping rootstock, 2.7-8 cm. long, complanate, mostly concealed by striate leaf-sheaths. Leaves distichous, oblong-linear, 2-6.75 cm. long, 5-5.5 mm. wide, inconspicuously bilobed and apiculate at the rounded apex, slightly narrowed near the base, subcoriaceous, about 1-1.5 cm. between the alternate leaves. Flowers at the summit of the stems, probably several in the living plant (mostly deciduous), relatively large. Sepals and labellum with recurved apices. Lateral sepals falcate-lanceolate, about 9.6 mm. long, about 2.9 mm. wide, long-acuminate, unicarinate on the outer surface with the keel extending into a mucro, 5-nerved at the base. Dorsal sepal lanceolate, 8.9 mm. long, 2.15 mm. wide, acuminate, carinate near the tip, 5-nerved below the middle. Petals narrowly linear, falcate, about 8.7 mm. long, acute, 1-nerved (indistinctly 3-nerved below). Labellum suborbicular,

simple, very abruptly mucronate; lamina 8 mm. long from the middle of the base to the apex, including the apicule, and about as wide above the middle, cordately affixed to the apex of the column, with two small basal fleshy calli. Column short, stout, about 3.7 mm. long including the terminal lacerate petaloid wing.

*Epidendrum dentiferum* is a small plant with a comparatively large flower. It is closely allied to *E. porpax* Reichb. f., but has taller stems, longer thinner leaves, and apparently smaller flowers with a lacerate-dentate column-wing.

COSTA RICA, Pejivalle, C. H. Lankester 843, May 30, 1924. Flowers pale translucent olivaceous green. Growing on stems of a tree in association with *Polypodium bifrons*. (TYPE in Herb. Ames No. 28695.)

***Epidendrum dolabriforme* A. & S. sp. nov.** Herba epiphytica. Caules foliosi, omnino vaginis inclusi. Folia lorata, obtusa, disticha. Inflorescentiae paniculatae, ramis brevibus. Flores pro sectione parvi. Sepala lateralia obliquissime lanceolato-obovata, concava, complicato-mucronata. Sepalum dorsale oblongo-obovatum, concavum. Petala cuneato-spathulata, marginibus superioribus erosis. Labellum trilobatum; lobis lateralibus dolabriformibus, dentatis; lobo medio cuneato-quadrato, bilobato.

Plant epiphytic, myrmecophilous, up to 60.4 cm. tall (lower portion missing). Stems somewhat swollen below, entirely concealed by striate-nervose leaf-sheaths, plurisulcate when dry, up to 7.5 mm. in diameter below. Leaves lorate, 10.1–15.3 cm. long, about 1.25 cm. wide, obtuse at the apex, abruptly narrowed at the base, distichous, 2.2–4.3 cm. apart, thinly coriaceous, many-nerved with the mid-nerve sulcate above and prominently carinate beneath. Peduncle below the raceme conspicuous, up to 28.1 cm. long, entirely concealed by closely imbricating scarious nervose sheaths or in part by the fibrous remains of sheaths. Inflorescence paniculate, about 11.1–12.5 cm. long; the branches short, densely flowered, ascending, 1.5–3 cm. long, 1.5–3 cm. apart, distichously arranged, often bifurcate near the base.

Flowers small for the section. Pedicellate ovaries 1.6-3 cm. long, finely short-pubescent; ovaries 4-angled. Sepals densely and inconspicuously short-pubescent on the outer surface. Lateral sepals lanceolate-obovate, very oblique, about 7.1 mm. long, 3 mm. wide across the expanded upper part, abruptly complicate-mucronate, with a high conspicuous dorsal keel, obliquely inserted at the base, concave, 4-nerved. Dorsal sepal oblong-obovate, slightly shorter and narrower than the laterals, obtuse or acutish, provided with a low keel, 3-nerved, concave. Petals cuneate-spatulate, 6.1 mm. long, about 2 mm. wide above, acute, 3-nerved, the upper margins irregularly erose-denticulate. Labellum adnate to the column to its apex, sharply 3-lobed; lamina reniform in outline, about 1.1 cm. wide, 3 mm. long to the deeply retuse centre of the middle lobe, bicallose at base with an intermediate keel which is broad at its base, gradually narrowed and extended nearly to the apex of the middle lobe; lateral lobes spreading, dolabriform, irregularly dentate at the broadly rounded apex; middle lobe smaller, cuneate-quadrate, bilobed, apiculate, the lobules irregularly lacerate-dentate at the apex. Column stout, dilated above, about 4.2 mm. long, characteristic of the genus; clinandrium entire.

*Epidendrum dolabrilobum* is related to *E. radicans* Lindl., but the flowers are much smaller. The leaves are like those of *E. imatophyllum* Lindl.

COSTA RICA, Las Conchas, C. H. Lankester 769, February 27, 1924. "A common sp. of the region, growing chiefly on Inga, strongly myrmecophilous, bulbs swollen at base—flowers cream fading yellow." (TYPE in Herb. Ames No. 28295.)

***Epidendrum erosum* A. & S. sp. nov.** Pars herbae inferior non visa. Caulis maxima pro parte vaginis tubulatis obtectus. Folia disticha, elliptico-lanceolata, submembranacea. Inflorescentiae nutantes, breviter pedunculatae. Flores crassi. Sepala lateralia anguste obovata, acuta. Sepalum dorsale simile, cuneatum, angustius. Petala anguste cuneato-spathulata, minute erosa. Labellum columnae longe

adhaerens, reniformi-cordatum, basi bicallosum. Gynostemium generis.

Stems somewhat branched, mostly concealed by the leaf-sheaths. Sheaths tubular, striate-nervose, loose, the upper ones rugulose and subcoriaceous. Leaves distichous, elliptic-lanceolate, 3.5–6.2 cm. long, 8.5–14 mm. wide, about 2 cm. apart, obtuse or acutish, cuneate-narrowed to the sessile base, submembranaceous, margins revolute when dry, many-nerved, the mid-nerve conspicuously carinate beneath. Inflorescence nodding, loosely 10-flowered (more or less). Rachis apparently 6 cm. long (usually broken off). Peduncle to the lowest flower about 1.6 cm. long, 1-bracted. Floral bracts triangular, scarious, concave, the mid-nerve conspicuous, much shorter than the pedicellate ovary. Flower medium-sized, rather fleshy. Lateral sepals narrowly obovate, about 1.15 cm. long, 4.5 mm. wide above the middle, acute with a strongly thickened dorsal median portion above, oblique at base, 5-nerved. Dorsal sepal similar, cuneate, 1.16 cm. long, about 4.1 mm. wide above, obtusish, thickened near the apex, 5-nerved (the lateral pair indistinct). Petals much narrower, cuneate-spatulate, about 1.15 cm. long, 2.5–3 mm. wide near the apex, rounded above, near the apex fleshy-thickened in the centre, 1-nerved with several branches, margin inconspicuously erose cellular-ciliolate. Labellum long-adherent to the column; lamina reniform-cordate, semiorbicular, entire, but the irregular margins cellular-erose, 4.5–5.1 mm. long in the middle, 7 mm. wide, with a blunt point. Disc with a pair of approximate fleshy calli at base beneath the apex of the column. Column stout, dilated above, about 8 mm. long dorsally and shorter in front.

*Epidendrum erosum* is very close to *E. jamaicense* Lindl., but the flower is much more fleshy, the petals cuneate-spatulate and minutely erose. *E. quadratum* Lindl. has broader leaves of thicker texture and a different labellum. *E. suborbiculare* Schltr. has shorter leaves, linear petals, and a dissimilar lip. [Plate 24: habit life size. 1, labellum, front view  $\times$  about 2. 2, flower  $\times$  1  $\frac{1}{2}$ .]

COLOMBIA, Paramo de Guasca, Bro. Aristide-Joseph A464, January 1920. (TYPE in Herb. Ames No. 28128.)

***Epidendrum integrilabium*** A. & S. *sp. nov.* Herba mediocris. Pars caulis inferior non visa. Caules graciles, vaginis foliorum striatis verruculosus omnino obtecti. Folia disticha, lanceolato-linearia, patentia. Inflorescentiae terminales, dense distichiflorae. Flores perparvi. Sepala crassa, oblonga, trinervia. Petala linearia, uninervia. Labellum gynostemio adnatum, ovatum, acutum, trinervium, basi bicallosum. Gynostemium generis.

Stems slender, little branched, 1.5-2 mm. in diameter, entirely concealed by the striate verruculose leaf-sheaths. Leaves lanceolate-linear, distichous, spreading, 2.2 (rarely) -5.85 cm. long, 2.9-4.6 mm. wide below the middle, obtuse or acutish, margins inconspicuously erose, mid-nerve conspicuously carinate beneath. Inflorescence a dense raceme which is more or less arcuate, 2.8-5 cm. long. Floral bracts distichous, triangular-lanceolate, exceeding the ovary. Flowers very small, subsessile, the perianth parts spreading above the middle, 6.5 mm. long in natural position. Sepals 3-nerved, fleshy. Lateral sepals oblong, oblique, 7 mm. long, 2.1-2.5 mm. wide when the involute margins are flattened, rounded above, abruptly acute, a pronounced dorsal keel at the tip produced into an apicule. Dorsal sepal similar, with a more pronounced mucro. Petals linear, obtuse, about 6 mm. long, 1.5 mm. wide, 1-nerved or indistinctly 3-nerved, concave near the tip. Labellum long-adherent to the column; lamina ovate, sessile, 5 mm. long, 3.1 mm. wide near the base, acute, the apex thickened by a dorsal keel. Disc 3-nerved, a pair of inconspicuous calli at base. Column short, stout, almost 3 mm. long.

*Epidendrum integrilabium* in vegetative appearance closely suggests *E. fimbriatum* HBK., but the labellum has entire margins.

BOLIVIA, Yungas, *H. H. Rusby* 2817, 1885. 6000 feet altitude. (TYPE in Herb. Acad. Nat. Sci. Phila.)

***Epidendrum lockhartioides*** *Schltr.* in Fedde Repert. Beihefte 19 (1923) 39.

This striking species has appeared in a recent collection made by C. H. Lankester in Costa Rica. The floral parts of

Lankester's specimen appear to be slightly smaller than typical. [Plate 24: habit life size. 1, lateral sepal  $\times 2 \frac{1}{3}$ . 2, petal  $\times 2 \frac{1}{2}$ . 3, dorsal sepal  $\times 2 \frac{1}{3}$ . 4, flower, side view  $\times$  about 2. 5, labellum and column  $\times 3$ .]

COSTA RICA, Peralta, C. H. Lankester 683. 200 feet altitude.

**Epidendrum nervosiflorum** A. & S. *sp. nov.* Herba mediocris, nervis crassis florum parvorum insignis. Radices numerosae. Caules prope basim teretes et ramosi, superne ancipites. Folia in parte superiore, rara, elliptico-oblonga vel ligulata. Inflorescentiae plerumque paniculatae, ramis brevibus. Sepala lateralibus oblique ovata, complicato-acuta. Sepalum dorsale lanceolato-ovatum. Petala linearia. Labellum simplex, triangulari-lanceolatum, basi bicallosum. Columna brevis.

Plant 12.2-42 cm. or more tall, freely branching below. Roots very numerous, filiform, fibrous, flexuous, glabrous, sometimes adventitious at the lower nodes. Stems terete near the base, strongly ancipitous above, the lower portion naked in anthesis, the upper portion nearly or entirely concealed by leaf-sheaths. Leaves elliptic-oblong to ligulate, one to four on the upper part of the branches, distichous, usually 1-2.5 cm. apart, 2.85-6 cm. long, 3.2-13 mm. wide, amplexicaul, obtuse, the apex minutely bilobed and apiculate, spreading, membranaceous or somewhat coriaceous when dry, the mid-nerve conspicuously carinate beneath. Peduncle below the inflorescence 2.7-6.5 cm. long, ancipitous, bialate, provided with one to two remote tightly clasping tubular conduplicate sheaths. Inflorescence usually paniculate, sometimes simply racemose on the young growths, 1.2-10.7 cm. long; branches short, ascending, 1.5-2.5 cm. long, distichous; rachis gently fractiflex. Floral bracts very small, infundibuliform, very conspicuously wing-carinate on each side. Flowers minute for the genus, rigid. Sepals and petals green with stout and conspicuous nerves. Pedicellate ovary about 1 cm. long in anthesis, glabrous. Lateral sepals obliquely ovate, about 4 mm. long, about 2.1-2.5 mm. wide when expanded, strongly complicate-acute, concave,

4-nerved, the mid-nerve bluntly carinate on the outer surface. Dorsal sepal about 3.85 mm. long, 2 mm. wide, lanceolate-ovate, acute, 3-nerved, the mid-nerve bluntly carinate, concave. Petals linear, slightly broader above, 3-3.3 mm. long, about .8 mm. wide above the middle, conspicuously 1-nerved, obtuse or acutish. Labellum adnate to the column to the apex; lamina triangular-lanceolate, simple, concave, rather fleshy, about 3.7 mm. long, about 2.6 mm. wide at the base when expanded, acute, rounded at the base, provided at the base with a pair of short thick complanate rounded calli which are adnate to the column. Column very stout and thick, about 1.6 mm. long. Pollinia pyriform-ovoid, somewhat complanate.

*Epidendrum nervosiflorum* is apparently allied to *E. serriocardium* Schltr.

COSTA RICA, Cartago, Estrella, C. H. Lankester 790, March 27, 1924. 5500 feet altitude. "Sepals and petals green, lip white, anther purplish, lower lobes of column orange, two raised orange spots on white portion of lip, near centre" [probably the two basal calli]. (TYPE in Herb. Ames No. 28296.): A fragmentary specimen preserved in formalin is the same species, C. H. Lankester 688, March 26, 1924.

***Epidendrum ramosissimum*** A. & S. *sp. nov.* Herba ramosissima. Caules leviter flexuosi vel fractiflexi. Vaginae foliorum valde verrucosae. Folia teretia, canaliculata. Inflorescentiae perbreves, laxae pauciflorae. Sepala lateralia oblique lanceolata. Sepalum dorsale simile sed angustius. Petala linearia. Labellum triangulare, carina tridentata ornatum. Columna brevis, crassa.

Plant 37-55 cm. or more tall (summit of stem missing). Roots fibrous, numerous, 1.8 mm. in diameter at the stout base, gray, glabrous. Stem distichously branched at every node, the lateral branches usually forking several times, 2.5-3.5 mm. in diameter below, partially concealed by verrucose leaf-sheaths, sulcate-rugose and shining in the dried specimen; branches commonly incline in one direction as though wind-blown. Leaves terete, deeply channelled,



striate-rugose in the dried specimen, obtuse or acutish, the lower and larger 7-14 cm. long, the average 2-3 cm. long, the smallest 8 mm. long, all 1-1.5 mm. wide. Inflorescences very short, racemes at the tips of lateral branches (lateral branchlets sometimes minute and consequently the inflorescence appears to be lateral), laxly 1-3-flowered; rachis slender, fractiflex, with the peduncle about 1.5 cm. long, 1-sheathed at base. Floral bracts about 5 mm. long, scarious, spreading, striate-nervose, dorsally carinate. Flower small, 6.8 mm. long, perianth parts rigid-nervose. Lateral sepals obliquely lanceolate, about 6.8 mm. long, 2 mm. wide below the middle, acuminate, apical margins complicate, 5-nerved. Dorsal sepal similar, narrowly lanceolate, slightly narrower. Petals linear, 6 mm. long, .75 mm. wide near the base, obtusish. Labellum sessile, tubular-involute in natural position, when expanded triangular, lightly constricted above the middle, 4 mm. long, 3 mm. wide at the subcordate base, a 3-toothed keel in the middle, the central tooth extending nearly to the acute apex of the labellum. Column short and stout, 3 mm. long.

*Epidendrum ramosissimum* is allied to *E. lancilabium* Schltr., but is distinct in its smaller flowers, 3-nerved petals, and 3-carinate lip. [Plate 24: habit life size. 1, labellum and column, side view  $\times 3$ . 2, dorsal sepal  $\times 2 \frac{1}{8}$ . 3, lateral sepal  $\times 2 \frac{1}{8}$ . 4, petal  $\times 2 \frac{1}{8}$ . 5, labellum, front view  $\times 3 \frac{1}{8}$ .]

COSTA RICA, El Calvario, Ujarrás, C. H. Lankester 581, January 12, 1924. 3600 feet altitude. "Very common at this wind swept locality." (TYPE in Herb. Ames No. 28129.)

***Epidendrum reflexum*** A. & S. *sp. nov.* Herba caespitosa. Caules vaginis omnino inclusi, prope basim aphylli. Folia disticha, lanceolata vel oblongo-lanceolata, prominenter acuminata, quam inflorescentia paulo longiora. Pedunculus trivaginat. Flores pro sectione parvi. Sepala lateralia oblanceolato-oblonga, acuta, valde carinata. Sepalum dorsale anguste ellipticum. Petala filiformia. Labellum trilobatum; lobi laterales transverse oblongi; lobus medius in lobulos lineares transverse divergens.

Plant caespitose, about 27 cm. tall, the stems strongly arcuate (in our specimen). Roots numerous, fibrous, flexuous, glabrous, longitudinally sulcate when dry. Stems entirely invested by sheaths, leafless below, slender near the base and apex, apparently enlarged in the middle, 2-5 mm. in diameter in the dried state. Leaves about six, lanceolate or oblong-lanceolate, 7.5-11 cm. long, 1.35-1.85 cm. wide (the lower leaves much smaller), distichous, 2-2.8 cm. apart, the uppermost internode much shorter, long-acuminate above, cuneate-narrowed below, rather membranaceous, many-nerved with seven prominent nerves on the under surface. Inflorescence shorter than the leaves, racemose, arcuate. Peduncle below the raceme 5.1 cm. long, provided with three sheaths. Sheaths narrowly lanceolate, membranaceous, conduplicate in the dried specimen, the lowest 2.85 cm. long, the upper ones shorter. Raceme 3.5 cm. long (perhaps longer in anthesis), densely flowered. Floral bracts lanceolate, membranaceous. Flowers small for the section. Sepals and petals apparently strongly reflexed in anthesis. Lateral sepals oblong-ob lanceolate, 8.6-9 mm. long, 2.8 mm. wide above the middle when expanded, concave or navicular, acute, the apex thickened, three prominent nerves and a lesser nerve on each side; a conspicuous median keel extends from the base to beyond the apex where it becomes more prominent. Dorsal sepal very narrowly elliptic, about 9 mm. long, about 2 mm. wide, navicular, acute, apex thickened, 3-nerved, with an inconspicuous nerve on each side toward the base, on the outer surface keeled toward the apex. Petals filiform, 8.7 mm. long, 1-nerved. Labellum adnate to the tip of the column; lamina deeply 3-lobed, with the lateral lobes folded into reduplicate halves, about 4.5 mm. long, about 6 mm. wide between the apices of the terminal lobules when they are expanded; lateral lobes transversely oblong or shallowly dolabriform, the lateral margins irregular, the free tips triangular falcate; middle lobe narrow, transversely spreading into divaricate linear-lanceolate obtuse lobules, with a broad blunt apicule in the shallow sinus. Disc with two fleshy calli at the base and three long approximate fleshy calli extending from the basal calli to the

base of the middle lobe. Column slender, dilated above, 6.5 mm. long; clinandrium entire. Pollinia irregularly complanate-cylindrical or complanate-pyriform.

Vegetatively *Epidendrum reflexum* resembles *E. piesto-caulos* Schltr.; in floral structure it is allied to *E. Turalvae* Reichb. f.

The name "reflexum" is in allusion to the perianth segments.

COSTA RICA, Arenal, *Juvenal Valerio* 61, September 28, 1923. 600 metres altitude. Vernacular name "Torito." (TYPE in U. S. Nat. Herb. No. 1169273.)

**Elleanthus tricallosus** A. & S. *sp. nov.* Herba epiphytica, caulibus simplicibus. Folia disticha, ascendentia, anguste lanceolata, longe acuminata. Racemi terminales, breves, pauciflori. Sepala ovato-oblonga, acuta, lateralia obliqua, apice carinata. Petala subspathulato-lineararia, apice rotundata. Labellum basi saccatum, sacco bicalloso; pars anterior major, suborbicularis, margine lacero emarginata, basi callo transverso bidentato finita.

Plant epiphytic, 29-32 cm. or more tall including the erect-spreading leaves (stem often broken off below). Roots fibrous, flexuous, glabrous. Stems caespitose, slender, 1-1.5 mm. in diameter, mostly concealed by close striate-nervose sheaths. Leaves narrowly lanceolate, 4.4-13 cm. long, 7-13 mm. wide below the middle (the uppermost and lower leaves shorter), long-acuminate to the sharp unequally 3-toothed apex, the central tooth long-extended, cuneate-narrowed to a sessile base, rigid, plicate, many-nerved with about five more conspicuous. Inflorescence terminal, a distichous few-flowered rather dense raceme. Floral bracts 1.8 cm. long or less (the upper successively smaller), strongly concave, embracing and surpassing the pedicellate ovary, broadly ovate when spread out, striate-nervose, rather abruptly acuminate with a rigid point, somewhat erose a little above the middle; the lowermost bract empty and abruptly terminated by a reduced leaf-blade. Rachis and ovaries black-pubescent. Lateral sepals obliquely ovate-oblong, about 8.5 mm. long, about 4 mm. wide, acute, complicate-mucronate and dorsally car-

inate at the apex, 5-nerved. Dorsal sepal similar, not oblique, abruptly acute and thickened, concave near the apex. Petals linear-subspatulate, about 8.2 mm. long, 2.4 mm. wide above the middle, rounded or subtruncate at the apex, gently curved at the oblique base, 3-nerved. Labellum cucullate-involute in natural position, subequaling the sepals, constricted below the middle; lower portion saccate, hemispherical, furnished with a pair of large subspherical approxi-



mate calli, bounded in front by a transverse thickened bidentate wall; anterior portion larger, when expanded suborbicular, emarginate, with irregularly lacerate margins. Column stout, about 6.8 mm. long, curved, dorsally rounded in cross section, anterior face concave with a median elevated ridge.

*Elleanthus tricallosus* is allied to *E. Brenesii* Schltr., but differs in its erect few-flowered racemes and bidentate calyx in front of the saccate base of the labellum. Its unbranched stems differentiate it from *E. Tonduzii* Schltr.; its flowers are apparently very like those of *E. Albertii* Schltr.

[Fig. 4: 1, dorsal sepal  $\times$  about 3. 2, petal  $\times$  3. 3, tip of inflorescence  $\times$  about 2. 4, lateral sepal  $\times$  3. 5, labellum, front view  $\times$  2. 6, column  $\times$  3. 7, labellum, side view  $\times$  about 2.]

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 562, December 23, 1923. "Flower between Purple (true) & Rhodamine. [Ridgway] Column white, on mossy tree trunks 10' to 15' up as a rule." (TYPE in Herb. Ames No. 28121.)

**Elleanthus trilobatus** A. & S. *sp. nov.* Herba gracilis, alta. Caulis vaginis foliorum pro parte obtectus. Folia disticha, lanceolata, rigida. Inflorescentiae singulae, terminales. Racemi arcuati, densiflori. Bracteae longe acuminatae, conspicuae. Sepala oblonga, complicato-acuta, concava. Petala linearia, acuta vel obtusa. Labellum flabellatum, parte anteriore trilobatum, margine eroso-lacerato. Discus basi saccata callis binis approximatis et antice carinis geminis triangulatis ornatus.

Plant slender, 70–80 cm. tall to the summit of the raceme (broken off at the decumbent base). Stem slender, about 1.5 mm. in diameter, subterete, partially concealed by the leaf-sheaths (lower portion of stem leafless and sheathed only). Sheaths close, tubular, striate-nervose, lower ones terminated by a black band. Leaves distichous, narrowly lanceolate to narrowly elliptic-lanceolate, 3.9–18.7 cm. long, 5–30 mm. wide below the middle, acuminate above to a sharply and obliquely 3-toothed apex, cuneate-narrowed to a sessile base, spreading-ascending, 3.4–7 cm. apart, plicate, many-nerved with five nerves prominently raised beneath. Inflorescences terminal, arcuate, very dense, many-flowered; raceme 6.5–8 cm. long, 3.5–4 cm. across in the dried specimen. Floral bracts ovate-lanceolate, abruptly long-acuminate, the larger lowermost up to 3 cm. long, far exceeding the flowers, nervose, concave. Rachis strongly rugose, more or less pubescent. Ovary densely tomentose. Flowers small. Sepals sparingly pubescent on the outer surface. Lateral sepals obliquely oblong, strongly concave at base, 7.3 mm. long, 3.5 mm. or more wide below the middle, acute and complicate-mucronate, about 10-nerved. Dorsal sepal obo-

vate-oblong, about 6.9 mm. long, 3 mm. wide across the slightly broader upper part, complicate-mucronate, concave, 7-nerved with two lateral indistinct nerves. Petals linear, 6.5 mm. long, 1.5 mm. wide, acute or obtuse, 3-nerved. Labellum deeply saccate in natural position; lamina when expanded broadly flabellate, about 6-7 mm. long, more than 7 mm. wide across the forward portion, apex lightly but distinctly 3-lobed, anterior margins (except the centre of the middle lobe) lacerate-erose; lateral lobes broadly semiorbicular; middle lobe similar in shape but much smaller, thickened and entire at the apex; saccate base filled with a pair of approximate ovoid-pyriform complanate calli; in front of these calli there is a pair of transverse low triangular keels. Column straight, slender, broadly winged above, about 4.5 mm. long dorsally, longer in front. Pollinia ovoid-pyriform with a groove ending in a deep pit on one side.

COSTA RICA, from San Ramon to Esparta, A. M. Brenes 14281, May 14, 1901. 1000-1200 metres altitude. (U. S. Nat. Herb. No. 579491.)

PANAMA, San Juan, C. W. Powell 3267 (*Hort. Powell* 97), April 1923. Epiphyte at sea level. (TYPE in Herb. Ames No. 28126.): Canal Zone, around Culebra, H. Pittier 3443, May 6, 1911. 50-159 metres altitude: Province of Colon, near Porto Bello, William R. Maxon 5808, May 27, 1912. On tree trunks, near sea level.

**Sobralia mucronata** A. & S. *sp. nov.* Herba alta ut videtur. Caulis teres, vaginis tubulatis pro parte inclusus, parte superiore paucifoliata. Folia lanceolato-elliptica, acuminata, basi cuneata, plicata. Flos pro genere parvus. Sepala lateralia elliptico-oblonga, conspicue mucronata. Sepalum dorsale lineari-oblongum, conspicue mucronatum. Petala oblanceolato-oblonga, mucronata. Labellum quadrato-oblongum, carinis nonnullis undulatis percursum. Columna gracilis, apice trilobata.

Plant apparently tall (lower portion missing). Stem terete, over 31.7 cm. tall, 2.5-3 mm. in diameter, distichously 2-3-leaved near the summit, partially concealed by tightly

clasping leaf-sheaths which are elongate tubular and striate in the dried specimen. Leaves lanceolate-elliptic, 12.25–17.9 cm. or more long, 2.05–3.45 cm. wide, acuminate above, cuneate-narrowed to a sessile base, nervose, coriaceous, many-nerved with seven nerves conspicuous on the under surface, plicate with revolute margins in the dried state. Flower apparently solitary, small for the genus, the pedicellate ovary invested by several imbricating sheaths. Sepals rather fleshy in texture. Lateral sepals elliptic-oblong, about 2.5 cm. long, 6.9 mm. wide, acute, prominently mucronate, lightly oblique, 7–9-nerved. Dorsal sepal linear-oblong, abruptly and prominently mucronate, 2.6 cm. long, 5.3 mm. wide, with seven prominent nerves. Petals oblanceolate-oblong, 2.35 cm. long, 5.5 mm. wide above the middle, acute, apex mucronate, 5-nerved, the lateral nerves branching below. Labellum in natural position tubular-involute near the base, when expanded broadly elliptic-oblong or quadrate-oblong, about 2.3 cm. long, 1.15 cm. wide above the middle, entire, retuse, apiculate at the broadly rounded apex, anterior margins strongly crisped; lamina with two prominent keels, which are much thickened at their very base, extending from the base nearly to the apex of the lamina, supplemented near its longitudinal middle by two short keels on each side of the central pair and between the central pair by three keels which extend nearly to the apex,—all of the keels abruptly increasing in altitude toward their fleshy crisped and wavy anterior portion. Column slender, about 1.35 cm. long, apex 3-lobed, with the lateral lobes linear-falcate and incurved, the middle lobe suborbicular and strongly galeate.

There are two species allied to *Sobralia mucronata*, namely, *S. luteola* Rolfe, which differs in having larger flowers and fimbriate-pilose nerves on the labellum, and *S. corazoi* Ames, which has much broader leaves and a different labellum.

COSTA RICA, San Carlos, *C. H. Lankester* 764, March 1923. "Flowered in cult. Cartago, March 1924. Flower greenish white, frilled edge of lip white, lines of pleated crest brown red." (TYPE in Herb. Ames No. 28297.) Alcohol material of this species from which the description of the flower was drawn bears the number 685.

**Maxillaria albiflora** A. & S. *sp. nov.* Herba caespitosa. Pseudobulbi monophylli, anguste pyriformes, curvati, vaginis imbricantibus inclusi. Folia longe petiolata; lamina oblonga, acuta, basi cuneata. Pedunculus uniflorus, vaginis laxis obtectus. Flos grandis. Sepala lateralia longe lanceolato-triangularia, acuminata, obliqua. Sepalum dorsale lanceolatum, concavum. Petala sepalo dorsali similia, minora. Labellum ovatum, unicallosum, medio incrassatum.

Plant caespitose. Roots fibrous, flexuous, smooth and shining in the dried state. Pseudobulbs monophyllous, about 4 cm. or less tall, narrowly arcuate-pyriform, complanate in the dried state, apparently finely rugose-striate, invested by distichous imbricating sheaths, the uppermost often leaf-bearing. Leaves very long petioled; petiole of the leaf on the pseudobulb about 8–11.5 cm. long (the petiole of the leaf borne on the sheath much shorter), conduplicate, channelled; blade oblong, about 16.7 (sheath-leaf)–28.4 cm. long, 2.85–4.1 cm. wide, acute, cuneate-narrowed below, many-nerved, the mid-nerve carinate beneath. Peduncle 1-flowered, approximate to the base of the pseudobulb, about 5.6–7.5 cm. long, concealed by loose scariosus sheaths which are short and closely imbricating at the base and are longer and slightly imbricating above. Pedicellate ovary about 1.5 cm. long, exceeded by a concave scariosus sheathing bract which is about 2.7 cm. long. Flower large, white, with spreading many-nerved perianth segments. Lateral sepals lanceolate-triangular, 3.05 cm. long, about 1 cm. wide at the base, long-acuminate, acute, with a short mucro from a dorsal subapical keel, oblique at the base. Dorsal sepal lanceolate, about 2.9 cm. long, 8.5 mm. wide near the base, long-acuminate, with a minute dorsal mucro, concave or navicular. Petals similar to the dorsal sepal, about 2.55 cm. long, about 7 mm. wide in the middle. Labellum shorter than the other segments, simple or subsimple, in natural position recurved, its sides contracted by a fleshy trilobulate median callus, about 1.65 cm. long; lamina ovate, 1.05 cm. wide near the base when expanded, rounded at the apex, which is minutely retuse, anterior margin denticulate-erose, entire



centre of lip from base to apex fleshy-thickened, the thickening in the apical portion especially prominent beneath and terminating in a subapical mucro. Column stout, short, 1 cm. long, the margin of the clinandrium lobulate and minutely ciliate, anterior face concave; foot about 7 mm. long, sulcate.

*Maxillaria albiflora* is allied to *M. pulla* Linden & Reichb. f., but has shorter scapes, larger flowers of different color, and a distinctive labellum. *M. trinitatis* Ames is a stouter plant with larger leaves, smaller flowers, and different labellum.

TRINIDAD, Tucuche, W. G. Freeman & R. O. Williams 10086, January 10, 1922. Flowers white, fragrant. (TYPE in Herb. N. Y. Bot. Gard.)

**Maxillaria confusa** A. & S. sp. nov. Herba *Maxillariae pachyacro* Schltr. similis. Planta nana, caespitosa. Pseudobulbi parvi, monophylli. Folium elliptico-oblongum. Pedunculi uniflori, pluribracteati. Flos magnus. Sepala similia, anguste triangulari-lanceolata, elongata, lateralia obliqua. Petala sepalis lateralibus similia sed minora. Labellum trilobatum, expansum obovato-oblongum, medio callo ornatum. Mentum conspicuum.

Plant vegetatively small for the genus, about 13 cm. tall, apparently caespitose. Roots numerous, fibrous, flexuous, branched. Pseudobulbs monophyllous, mostly concealed by a pair of basally imbricating distichous leaf-bearing sheaths, complanate-cylindric, about 1.6 cm. long, finely rugose when dry. Leaf elliptic-oblong, stoutly petioled; petiole laterally flattened, channelled, 1-2.2 cm. long; blade 10 cm. long, 2.2 cm. wide in the middle (leaves on the sheaths much smaller), rounded or perhaps acute at the apex (tip split and broken in our specimens), cuneate-narrowed below, coriaceous, the mid-nerve sulcate above and conspicuously carinate beneath. Inflorescence much shorter than the leaves. Peduncles 1-flowered, about 4.5 cm. long (including the ovary), filiform, with four tubular sheaths, the uppermost clasping and exceeding the ovary. Flower large for the plant, erect, perianth segments parallel, and but very

slightly spreading. Lateral sepals narrowly triangular-lanceolate, 2.04 cm. long, about 7.2 mm. wide at the oblique base (measured along the column-foot), abruptly acute at the very apex, many-nerved, forming with the column-foot a prominent mentum which is about 7 mm. long. Dorsal sepal similar, triangular-ligulate, about 2 cm. long, 4.9 mm. wide near the base, acutish, concave below. Petals similar to the lateral sepals but smaller, lanceolate, about 1.8 cm. long, 3.7 mm. wide below, obliquely inserted on the column. Labellum relatively small, in natural position erect with its sides upcurving, when expanded obovate-oblong in outline, sharply 3-lobed near the apex, 1.21 cm. long, 6 mm. wide near the apex, in the middle a fleshy lingulate sulcate callus which extends in two lines toward the base; lateral lobes semiobovate, broadly rounded with irregular margins above; terminal lobe suborbicular-quadrate, about 2.6 mm. long and a little broader, with a large fleshy thickening in the centre of the under surface. Column extended into a long foot; free part very short and stout, about 4 mm. long, a short narrow fimbriate-lacerate wing at the summit.

*Maxillaria confusa* has several very close allies. It has considerably smaller flowers than and somewhat different lip characters from *M. pachyacron* Schltr., which appears doubtfully separable (differing apparently only in absence of papillae on the lip) from *M. Reichenheimiana* Endres & Reichb. f. It also has flowers which are different in color from those of *M. Reichenheimiana*. From *M. ringens* Reichb. f. (in which species the flowers are similar in size to those of *M. pachyacron* and *M. Reichenheimiana*) *M. confusa* is distinguishable by its smaller flowers, long mentum, shorter callus on the lip, and by its lacerate-margined androclinium.

COSTA RICA, Peralta, C. H. Lankester 908, June 25, 1924. Flower white. Common in forest zone of the Atlantic slope. (TYPE in Herb. Ames No. 28689.)

*Maxillaria diuturna* A. & S. sp. nov. Herba caulescens, cauli vaginis distichis imbricantibus dense oblecto. Pseudobulbi monophylli, in sicco ancipites. Folia oblongo-elliptica.

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Inflorescentiae singulae, uniflorae, e bractearum axillis. Flos parvulus. Sepala lateralalia ovato-lanceolata, acuta, mentum distinctum formantia. Sepalum dorsale simile. Petala ovato-oblonga, acuta. Labellum expansum panduratum, parte inferiore anguste elliptica medio callosa, parte terminali cuneata leviter retusa. Columna in pedem latum extensa.

Plant caulescent. Stem entirely concealed by densely imbricating sheaths and leaf-bases which are distichous with a membranaceous border. Pseudobulbs monophyllous, ovate-oblong in outline, strongly complanate and rugose-striate in the dried state, about 2.5 cm. long, about 4 cm. apart, base concealed by sheaths and leaf-bases. Leaf oblong-elliptic, with a short petioled conduplicate base; blades 5.8-9.7 cm. long, 1.3-2.2 cm. wide, apex rounded and minutely bilobulate, coriaceous, with the mid-nerve sulcate above and carinate beneath. Sheaths sometimes leaf-bearing. Flowers small, campanulate, solitary in the axils of the sheaths. Lateral sepals ovate-lanceolate, about 1.22 cm. long, 5.6 mm. wide near the concave oblique base, acute, 9-nerved, forming a distinct short mentum with the column-foot. Dorsal sepal similar, concave. Petals ovate-oblong, 1.05 cm. long, 5.9 mm. wide below, acute, oblique, 3-5-nerved with the lateral nerves branching. Labellum sessile, the sides erect and more or less conduplicate in natural position, lamina when expanded oblong-pandurate, about 1 cm. long; basal portion narrowly elliptic, 4-4.9 mm. wide, with the centre occupied by a broad elevated oblong callus; anterior portion somewhat cuneate, lightly retuse, about as wide across the rounded apex as at the base of the labellum; entire disc minutely cellular-papillose. Column arcuate, triquetrous in cross section, about 6 mm. long dorsally, extended into a short broad foot.

*Maxillaria diuturna* is an ally of *M. chiriquensis* Schltr., but has broader leaves, broad flattened pseudobulbs, and a differently shaped lip.

PANAMA, Cativa-Porto Bello Trail, C. W. Powell 376, February 1924. Sea level. Grows in considerable sunlight. ". . . from seed capsules must have been in flower for a

long time." Flowers yellow inside, reddish yellow outside. (TYPE in Herb. Ames No. 28136.)

**Maxillaria foliosa** A. & S. *sp. nov.* Herba caespitosa. Caules ramosi, vaginis foliorum omnino obtecti. Pseudobulbi rari, elliptico-complanati, vulgo bifoliati. Folia numerosissima, disticha, oblonga. Flores axillares, rari. Sepala oblonga, acuta, lateralia obliqua. Petala falcato-oblonga, minora. Labellum supra medium obscure trilobatum, truncato-rotundatum. Columna generis.

Plant 15-18 cm. tall. Roots numerous, slender, fibrous, longitudinally sulcate, glabrous. Stems caespitose, branching, entirely concealed by striate-rugose leaf-sheaths. Pseudobulbs ellipsoid, strongly flattened when dry, about 1.5 cm. long, erect-ascending, usually diphyllous, commonly about 2 cm. apart on the branches (some branches have none), dull, rugose. Leaves small, distichous, dense, spreading, caducous on the lower parts of the stem and branches, oblong to lanceolate-oblong with abruptly clasping bases, commonly 2-3 cm. long (rarely up to 4.8 cm. long), about 5 mm. wide, rounded above with an obliquely bilobed apex, subcoriaceous, the mid-nerve conspicuously sulcate above and carinate beneath. Flowers growing singly in the axils of the upper leaves, very sparse, pale yellow-green. Lateral sepals oblong, about 9 mm. long, 4 mm. wide, lightly falcate-oblique, acute at the rounded apex by reason of a dorsal mucro, 9-nerved with five nerves more prominent. Dorsal sepal similar. Petals oblong, lightly falcate, 8 mm. long, about 3 mm. wide, rounded above, with a minute dorsal mucro, 3-nerved with a weaker nerve on each side. Labellum oblong, dilated above the middle and consequently very obscurely 3-lobed, the dilated margins involute, about 8.8 mm. long, about 3.6 mm. wide across the dilated portion when spread out; apical lobe subquadrate, subtruncate, about 2.8 mm. long, about 3.2 mm. wide near its base; disc with a low callus in the middle, minutely papillose near the margins of the lateral lobules and near the apex of the labellum. Column stout, about 5.2 mm. long, anterior face concave, curving into a foot.

*Maxillaria foliosa* appears to be without close allies, but somewhat resembles *M. microphyton* Schltr. in habit.

COSTA RICA, Peralta, La Union, C. H. Lankester 478. 3000 feet altitude. Flower pale yellow-green. (TYPE in Herb. Ames No. 27204.)

***Maxillaria longipetiolata* A. & S. sp. nov.** Herba acaulis. Rhizoma verisimiliter abbreviatum. Pseudobulbus ovoideus, monophyllus. Folium lineari-lanceolatum, longe petiolatum. Flos singulus, ruber. Sepala oblonga. Petala linearia. Labellum trilobatum, quam sepala brevius, medio callo ornatum. Columna generis.

Rhizome apparently abbreviated. Pseudobulb about 2.5 cm. long, ovoid, monophyllous. Leaf linear-lanceolate, long-petioled; petiole about 3.8 cm. long, slender, channelled; blade 16 cm. long, 1.9 cm. wide across the middle, acuminate toward the apex, cuneate-narrowed at base, subcoriaceous. Flower solitary; perianth segments rigid-nervose. Lateral sepals 1.8 cm. long, about 5.8 mm. wide near the base, lanceolate-oblong, acute, apical margin involute. Dorsal sepal similar, slightly shorter and narrower. Petals about 1.5 cm. long, 3.1 mm. wide above the middle, linear, oblique near the apex, acute. Labellum distinctly 3-lobed above the middle with the lateral lobes erect in natural position, 1.41 cm. long, about 8 mm. wide across the middle of the basal elliptical portion when spread out, traversed by a longitudinal thickened band ending in a callus; lateral lobes (free portion) small, about 1 mm. long, 1.5 mm. wide, rounded, thickened below the apex; middle lobe lingulate from a broad base, about 5.9 mm. long, 3.5 mm. wide across the middle, thickened, but with a membranaceous margin above, apparently lightly retuse. Column rather small, 7 mm. long, flattened in front with a short but conspicuous foot. Anther yellow.

*Maxillaria longipetiolata* is allied to *M. curtipes* Hook. f., but the sepals appear narrower, the lip sharply 3-lobed, and the flower different in color.

PANAMA, Hill east of Corozal, C. W. Powell 307. Flowers in June. Sea level. Flowers Indian Red [Ridgway],

labellum blackish red like dried blood. (TYPE in Herb. Ames No. 26908.)

**Maxillaria maleolens** Schltr. in Fedde Repert. Beih. hefte 19 (1923) 233.

Two plants from widely separated localities are referred to this species. Both plants show sepals which are ovate-oblong rather than narrowly oblong, and in this respect seem to resemble *Maxillaria elatior* Reichb. f. Both plants, moreover, have slightly smaller flowers (sepals about 2.1 instead of 2.4 cm. long, labellum 1.85–1.90 cm. long instead of 2.3 cm. long) than those of the type.

The Honduranian plant, which is said to be very common where it was collected, appears to be a good match for the type of *M. maleolens*.

The Panamanian plant shows considerable variation from the Honduranian plant, although vegetatively similar. It is apparently a lower plant with somewhat more fleshy leaves. The leaves are lanceolate-oblong rather than lorate, and are shorter and broader than in the typical plant (up to 32.5 cm. long and 6.4 cm. wide). The chief difference is in the labellum, which is only lightly trilobed and is bright deep purple rather than yellow.

SPANISH HONDURAS, Vicinity of Porto Castilla, ex hort., Oakes Ames s.n., March 1923. Said to be terrestrial. Flowers yellow.

PANAMA, Gatun Lake, C. W. Powell 276, January 1923. Sea level. "Found on a floating and decayed log in Gatun Lake. It may have floated down the Chagres River." Sepals and petals yellow, lip bright deep purple.

**Maxillaria parvilabia** A. & S. sp. nov. Herba epiphytica, caulescens, foliosa. Caulis vaginis distichis imbricantibus obtectus. Folia lanceolato-linearata, patentia. Inflorescentiae numerosae, saepius plures ex axillis foliorum exorientes. Pedunculi uniflori. Sepala lateralata oblongo-lanceolata, acuta. Sepalum dorsale oblongum, acutum. Petala cuneato-oblonga, acuta vel acuminata. Labellum

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multo minus, obovato-ellipticum, obscure trilobatum. Gynostemium perparvum.

Plant caulescent, epiphytic. Stem 4 ft. tall, straight or more or less curved, usually with several short lateral branches, 6 mm. in diameter (at the base of our specimens), entirely concealed by distichous imbricating leaf-sheaths, woody. Leaves lanceolate-linear, 5.6–13.5 cm. long, 9–14 mm. wide below (those at the summit of the branches or on the stems of the branches often much smaller, rarely 9 mm. long, 4.5 mm. wide), spreading, obliquely bilobed at the rounded apex, clasping at the base, chartaceous, the mid-nerve sulcate above and conspicuously carinate beneath. Inflorescences solitary to several, rising from the leaf-axils. Peduncles 1-flowered, about 3.5 cm. long, mostly concealed by loose scarious tubular sheaths. Flower medium-sized. Lateral sepals oblong-lanceolate, 1.63–1.85 cm. long, 4.1–5 mm. wide below, acute and dorsally keeled at the apex, lightly falcate, with five more conspicuous nerves. Dorsal sepal similar, oblong, 1.75–2.12 cm. long, 3.95–4.9 mm. wide, acute, dorsally carinate at the apex. Petals cuneate-oblong, 1.31–1.54 cm. long, 3.9–4.5 mm. wide above the middle, acute or acuminate, with a dorsally subcarinate apex, lightly oblique, 5-nerved. Labellum relatively very small, erect, and clasping the column in natural position, gently recurved with tubular-erect sides, 5.5–6.1 mm. long, 3.2–3.5 mm. across when expanded, obovate-elliptic in outline, lightly 3-lobed above the middle; lateral lobes distinct only at their broadly rounded apex; terminal portion rounded-triangular, fleshy in texture, with a recurved obtuse apex. Disc prominently 5-nerved with a small fleshy rounded callus a little below the middle. Column very short, about 2.8 mm. long at the back, with a shorter but prominent foot.

*Maxillaria parvilabia* resembles *Camaridium costaricense* Schltr. and *C. simile* Schltr. in habit, but the lip is very distinctive.

COSTA RICA, Province of San José, La Palma, *Paul C. Standley* 32939, February 3, 1924. About 1600 metres altitude. "On mossy tree trunk; stems 4 ft. high; segments canary yellow; lip dark red; common." (TYPE in Herb. Ames

No. 29016.); *Standley 32983* (a small specimen): Province of Cartago, Alto de La Estrella, *Standley 39584*, March 26, 27, 1924. On trees. (Flowers passé.)

**Maxillaria semiorbicularis** A. & S. *sp. nov.* Herba caulescens, valida. Caulis vaginis distichis arcte imbricantibus obtectus. Pseudobulbus complanato-ovoideus, monophyllus. Folia oblonga, apice ipso rotundata. Sepala lateralia lanceolata, acuminata. Sepalum dorsale oblongo-lanceolatum. Petala oblique lanceolato-elliptica. Labellum semiorbiculare, antice trilobatum; lobi laterales falcato-triangulares, patentes; lobus intermedius ovato-triangularis; discus in basi tuberculorum fasciculo et in medio lamella semilunata dentata ornatus.

Plant caulescent, very stout. Stem woody, entirely invested by distichous closely imbricating leaf-bearing sheaths. Pseudobulbs (but one present) apparently remote, monophyllous, ellipsoid, strongly complanate in the dried state, nearly 4 cm. long, conspicuously rugose, yellowish and shining. Leaves (the larger blades near and on the pseudobulb) oblong, 12.9–32.3 cm. long, 2.75–3.6 cm. wide, subacute with an abruptly rounded minutely apiculate apex, gradually narrowed below (the leaf on the pseudobulb with a distinct slender laterally compressed channelled petiole which is about 6 cm. long), chartaceous, the mid-nerve somewhat sulcate above and conspicuously carinate beneath; the blades on the stem smaller, conduplicate, arcuate, sometimes 2 cm. long, 1.6 cm. wide when unfolded. Inflorescences numerous, 1-flowered, solitary in the axils of the sheaths. Peduncles strict, 7–8 cm. long, subflexuous, mostly concealed by scarious tubular sheaths which waste into fibres. Flower medium-sized for the genus. Lateral sepals lanceolate, about 2.25 cm. long and 7.9 mm. wide below the middle, acuminate, complicate-acute, 7–15-nerved. Dorsal sepal similar, oblong-lanceolate, 2.5 cm. long, 7 mm. wide near the middle, sharply complicate-acute. Petals obliquely oblong-elliptic, about 2.2 cm. long, 6.5–6.9 mm. wide near the middle, acuminate, dorsally carinate at the apex, with seven prominent nerves. Labellum much smaller than the sepals and petals,



semiorbicular in outline, sharply 3-lobed in front, 8 mm. long, 11.1 mm. wide across the spreading side lobes; claw minute; lateral lobes relatively large, broadly falcate-triangular with the outer margins rounded, the tips acute and the anterior margins undulate-truncate; middle lobe much smaller, ovate-triangular, scarcely surpassing the side lobes, acutish, concave by reason of folds of the disc at each sinus. Disc with a cluster of digitiform tubercles near the base in front of which there is a semilunate lamella which is tridentate in front and irregularly dentate on the sides. Column short, stout, about 7.5 mm. long.

*Maxillaria semiorbicularis* appears to be allied to *Camaridium Bradeorum* Schltr., but has smaller leaves, monophyllous pseudobulbs, and different mid-lobe of lip.

The name is in allusion to the shape of the labellum. COSTA RICA, Province of San José, La Hondura, *Paul C. Standley* 36247, March 2-4, 1924. 1300-1700 metres altitude. "On tree; flowers faded." (TYPE in Herb. Ames No. 29017.)

*Maxillaria vagans* A. & S. *sp. nov.* Herba caulescens, paullo ramosa. Caulis basibus foliorum arcte imbricantibus omnino obtectus. Pseudobulbi rari, valde complanati, monophylli. Folia oblonga, apice abrupte rotundata. Flores singuli, ex axillis orientes. Perianthium patens. Sepala lateralia oblanceolato-oblonga, acuta. Sepalum dorsale elliptico-oblongum, valde acutum. Petala oblongo-oblanceolata, acuta. Labellum distincte trilobatum, expansum panduratum; lobi laterales parvi, auriculiformes; lobus medius major, subtus carinatus. Columna parva, crassa.

Plant caulescent. Stem stout, entirely invested by distichous closely imbricating sheaths and leaf-bases, with several short branches which are about 7 cm. or less long; the lower portion of the stem (in our specimen) with numerous fibrous, flexuous, glabrous roots. Pseudobulbs of the main stem 6-7 cm. apart, monophyllous, more or less ellipsoid, strongly complanate and coarsely rugose in the dried state, about 3 cm. long. Leaves oblong, spreading; the larger ones 4.6-13.5 cm. long, 1.15-2.6 cm. wide, abruptly rounded

to an obliquely bilobed apex with a minute apicule between the lobes, mid-nerve sulcate above and markedly carinate beneath, slightly narrowed below to a complicate base in the dried specimen; the younger leaves (on the branches) small to minute, 2-26 mm. long, 4-8.5 mm. wide. Inflorescences single, 1-flowered, in the axils of sheaths. Peduncles about 3.5 cm. long, with two loose inflated tubular sheaths. Pedicellate ovary concealed and surpassed by a loose conduplicate sheath which is 12.5 mm. long. Perianth segments apparently spreading. Lateral sepals oblanceolate-oblong, acute on account of a dorsal mucro, 1.7 cm. long, 6 mm. wide, lightly oblique, very slightly narrowed toward the base, 11-nerved (five nerves being more prominent). Dorsal sepal elliptic-oblong, about 1.7 cm. long and 5.8 mm. wide, acute with a very conspicuous dorsal mucro which terminates an apical keel, 7-nerved with several additional inconspicuous nerves. Petals oblong-oblanceolate, about 1.46 cm. long, 5 mm. wide above the middle, acute, 5-nerved. Labellum distinctly shorter than the sepals, 1.2 cm. long, 3-lobed, with the sides erect and apparently conduplicate in natural position; lamina (when expanded) pandurate in outline, about 8 mm. wide across the lateral lobes; lateral lobes small, suborbicular, gradually narrowed toward the base, contracted between them by a fleshy subbilobed transverse callus; middle lobe suborbicular, about 7.1 mm. wide, abruptly dilated from a short broad isthmus, a deep keel beneath especially conspicuous near the apex, margin irregularly crenulate. Column short, stout, arcuate, about 4 mm. long dorsally.

Other imperfect flowers have smaller floral dimensions.

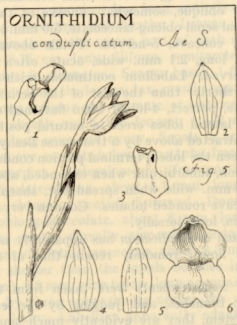
*Maxillaria vagans* has the habit of *M. alba* Lindl.

PANAMA, Province of Chiriqui, "Palo Alto," C. W. Powell 348, November 1923. 4500-5000 feet altitude. "Grows in straggling bunches in considerable sunlight. Flowers white, labellum edged with pink, side lobe pink." (TYPE in Herb. Ames No. 27460.)

***Ornithidium conduplicatum*** A. & S. *sp. nov.* Herba crassa. Pseudobulbi magni, ovoidei, monophylli, rugosi.

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Caulis crassus, vaginis foliorum distichis imbricantibus ob-  
 tectus. Folia ligulata, conduplicata. Flores numerosi, in  
 axillis foliorum fasciculati. Perianthium campanulatum.  
 Sepala lateralia lanceolata, acuta. Sepalum dorsale ob-  
 longo-lanceolatum. Petala obovato-oblonga. Labellum con-  
 duplicatum, lobis rotundatis, lobo intermedio majore  
 bilobato. Columna brevis, crassa.



Plant stout, apparently with a creeping rhizome (broken  
 off below). Roots glabrous, fibrous, stout. Pseudobulbs  
 (only one in our specimen) ovoid, about 5.5 cm. long, deeply  
 striate-rugose and shining when dry, monophyllous (the  
 leaf missing), base sheathed with distichous leaf-bases.  
 Stem stout, about 1 cm. in diameter, with a few ascending  
 branches above, mostly concealed by the distichous imbricating  
 leaf-bases. Leaves apparently numerous, ligulate,  
 10-13.5 cm. or more long, 18-20 mm. wide above when ex-  
 panded, strongly conduplicate in the dried specimen,

abruptly rounded, minutely bilobed and mucronate at the apex (only two leaves terminating two branches are present). Flowers on slender 1-flowered peduncles which are thickly clustered in the upper leaf-axils. Peduncles 2.3 cm. or more long, entirely concealed by loose imbricating sheaths that are tubular below. Ovary slightly scabrous. Flower small. Sepals and petals slightly fleshy at the tip. Lateral sepals lanceolate, 5.9 mm. long, about 2.5 mm. wide near the base, acute, lightly oblique, somewhat concave at the base, 5-nerved. Dorsal sepal oblong-lanceolate, 5.9 mm. long, about 2 mm. wide, concave, 5-nerved. Petals obovate-oblong, about 5 mm. long, 2.1 mm. wide, acute, often somewhat oblique, 4-nerved. Labellum continuous with the stout column-foot, shorter than the rest of the perianth, quadrate in outline, porrect, 4-lobed when flattened out, about 4 mm. long; lateral lobes erect in natural position, semi-orbicular, contracted above by a transverse fleshy callus extending between the lobes; terminal portion conduplicate in natural position, suborbicular when expanded, about 2 mm. long and 2.6 mm. wide when spread out, sharply divided into two concave rounded lobules. Column very short and stout, 1.75 mm. long dorsally.

*Ornithidium conduplicatum* has apparently no near allies, but the flower remotely recalls that of *O. fulgens* Reichb. f.

The leaf measurements were taken from the apical leaves on the branches, and, judging by the leaf-sheaths on the main stem, they are evidently much smaller than typical. [Fig. 5: flower and pedicel  $\times 12$ . 1, column and labellum, in natural position  $\times 4$ . 2, petal  $\times$  about 4. 3, column  $\times 7$ . 4, lateral sepal  $\times 3 \frac{1}{2}$ . 5, dorsal sepal  $\times 3 \frac{1}{8}$ . 6, labellum, front view  $\times 6$ .]

PANAMA, Province of Chiriqui, Palo Alto Hill, C. W. Powell 341, September–October 1923. 4000–5000 feet altitude. "Grows in much sunlight. . . . The bulbs are bronze when they are mature." (TYPE in Herb. Ames No. 28138.)

**Cryptocentrum gracillimum** A. & S. *sp. nov.* Herba pusilla, caespitosa. Caules breves, vaginis foliorum omnino

obtecti. Folia filiformia, semiteretia ut videtur. Scapi uniflori. Flores pro genere parvi. Sepala similia, lateralia basi in calcar longum connata, parte libera patenti oblonga vel lanceolata. Petala lanceolata, sepalis superata. Labellum columnae adnatum, lanceolatum. Calcar longum, gracillimum.

Plant very small for the genus, 9–10 cm. tall. Roots numerous, fibrous, flexuous, glabrous. Stems caespitose, very short, 1 cm. more or less long, entirely concealed by distichous imbricating leaf-sheaths. Leaves about five to six, approximate on the upper part of each stem; mature blades 2.7–8.75 cm. long, filiform, semiterete, channelled, about 1 mm. in diameter. Scapes basal, 1-flowered, generally shorter than the leaves, lax, mostly concealed by five to seven long tubular approximate or imbricating sheaths; uppermost sheath much the longest, 1.8–2 cm. long, enclosing the long spur and ovary. Sepals in anthesis widely spreading above, connate below into a tube, free portions with revolute margins. Lateral sepals (free portion when expanded) ligulate-oblong, about 8.1 mm. long, about 2.15 mm. wide, obtuse or acutish, 5-nerved. Dorsal sepal (free portion) oblong-lanceolate, about 8 mm. long, about 2.6 mm. wide, acute, dorsally somewhat carinate near the apex, 5-nerved. Petals lanceolate, about 8.3 mm. long (but appearing shorter than the sepals because inserted much lower down), 1.9 mm. wide below, long-acuminate, the centre traversed by three approximate nerves, the upper portion somewhat fleshy. Labellum apparently adnate to the column; lamina lanceolate, about 7.9 mm. long, 3 mm. wide below the middle, acute, its centre traversed longitudinally by three approximate nerves. Spur formed by the sepals long, slender, 1.4 cm. long, subclavate, parallel with the slightly longer ovary. Column short, stout, about 2.4 mm. long.

*Cryptocentrum gracillimum* is related to *C. flavum* Schltr., from Colombia, but usually has longer leaves, approximate sheaths on the peduncle, and somewhat larger flowers of different color. The very narrow leaves appear to have been terete or subterete in the living plant. There are no near Central American allies.

COSTA RICA, Pejivalle, C. H. Lankester 866, May 16, 1924. 2300 feet altitude. Flowers dull olivaceous. (TYPE in Herb. Ames No. 28694.)

**Stellilabium distantiflorum** A. & S. *sp. nov.* Herba gracillima, aphylla ut videtur. Caules aliquid ramosi. Flores perparvi, distantes, virides. Sepala suborbicularia, cucullata, uninervia, acuta. Petala oblongo-lanceolata, trinervia, ciliolata. Labellum hastatum, trilobatum, pubescens; lobi laterales basales, minuti, retrorsi; lobus medius ovatus, multo major. Columna quadrilobata.

Plant slender, leafless. Roots fibrous, flexuous, in dried condition stout, flattened and longitudinally sulcate (resembling those of *Taeniophyllum*). Stems long and slender, the tallest exceeding 46 cm. in height (incomplete in our specimens), flexuous-arcuate, with several long simple branches, basal portion terete, entire upper part flattened in the dried specimen, about 1 mm. in diameter. Flowers in a very loose raceme on the upper part of the branches, apparently about 11 or 12 mm. apart, about 6 mm. across from tip to tip of the lateral sepals when spread out. Lateral sepals suborbicular, oblique, concave, about 3 mm. long, 2.7 mm. wide, prominently 1-nerved, obliquely acute. Dorsal sepal similar, more strongly cucullate. Petals oblong-lanceolate, 3-nerved below the middle, about 4 mm. long, 1.7 mm. wide, acute, margins finely ciliate. Labellum hastate-ovate, 3-lobed, 3-nerved, finely hairy throughout, margins finely ciliate; lateral lobes small, basal, retrorse, triangular-oblong, obtuse, about 1.1 mm. long and .8 mm. wide at the base; middle lobe ovate, abruptly acute, about 2.5 mm. long, 2 mm. wide across the middle, convex and thickened in the middle, with three clusters of longer hairs in the very middle. Column low, 4-lobed; anterior lobe protruding onto and deeply connate with the labellum, concave within, finely hairy without; side lobes lingulate in outline, obliquely fleshy-thickened, closely adorned with long forking hairs; dorsal lobe lingulate in outline, triquetrous in transverse section by reason of a high fleshy boss, hairy. Pollinia four, complanate-pyriform.

This remarkable plant is probably the species that Schlechter refers tentatively to *Dipterosteles minutiflora* (Kränzl.) Schltr. in Fedde Repert. Beihefte 19 (1923) 70. However, it is apparently not the *Telipogon minutiflorus* Kränzl. as described in Ann. Naturhist. Hofmus. Wien 33 (1919) 14. Moreover, Kränzl's description was prepared from poor material, so there is some doubt regarding the exact status of his species. The Costa Rican material differs in several points from the genus *Dipterosteles* as erected by Schlechter on an Ecuadorean plant (Fedde Repert. Beihefte 8 (1921) 106), as is indicated in Fedde Repert. Beihefte 19, p. 70.

In floral structure at least *Stellilabium distantiflorum* appears to agree fairly well with *S. astroglossum* (Reichb. f.) Schltr. (Orchideen (1914) 530) based on *Telipogon astroglossus* Reichb. f., which is illustrated in Xenia Orchidacea 1 (1854) t. 7. [Plate 21: habit life size. 1, flower  $\times$  4. 2, column and labellum  $\times$  4.]

COSTA RICA, Alto de La Estrella, Cartago, C. H. Lankester 582, January 23, 1924. 6000 feet altitude. Flowers "dull oily green." (TYPE in Herb. Ames No. 28119.)

**Notylia latilabia** A. & S. *sp. nov.* Herba epiphytica. Pseudobulbi parvi, monophylli, vaginis inclusi. Folia lanceolata vel ligulata, apice rotundata, valde coriacea. Inflorescentiae nutantes. Racemi densiflori. Sepala valde concavo-involuta. Sepala lateralia connata, bidentata, apicibus revolutis. Sepalum dorsale valde fornicatum, angustum. Labellum late trulliforme, acuminatum, basi cum ungue carinatum. Columna generis.

Plant epiphytic, large and stout for the genus. Roots numerous, fibrous, glabrous. Pseudobulbs concealed by large sheaths, monophyllous, about 1.29 cm. long, striate-rugose when dry. Sheaths ovate-lanceolate, about 4.5 cm. long, concave, wasting into fibres in age. Leaf elliptic to lanceolate or oblong; petiole short, stout, conduplicate, about 2 cm. long; blade 11.5-20.5 cm. long, 4-5 cm. wide, spreading, rounded below, apparently acute above but with a rounded obliquely bilobed apex, rigidly and thickly coriaceous, many-nerved, with the mid-nerve more or less sul-

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cate above and conspicuously carinate beneath. Inflorescences nodding, densely many-flowered, about 13–21.5 cm. long. Peduncle stout below, with ovate-triangular cucullate amplexicaul sheaths which are two to five in number. Raceme about 10–15 cm. long, 2–2.5 cm. in diameter in the dried state. Floral bracts very narrowly triangular-lanceolate, nervose, the lower ones subequaling the pedicellate ovaries which are 7 mm. or less long and are reflexed. Perianth widely spreading. Sepals strongly cucullate with involute margins. Lateral sepals connate into a lamina which is bidentate or bifid with strongly reflexed apices; blade when expanded about 8–9 mm. long, about 4 mm. wide in the middle. Dorsal sepal fornicate, when flattened about 9.2–10 mm. long, 2.3–3 mm. wide when unrolled, oblong-lanceolate, acute, with very slightly recurved tip. Petals entirely white, obliquely linear-oblong, 7.6–8.4 mm. long, about 1.6 mm. wide, lightly falcate, complicate-mucronate at the apex. Labellum broadly trulliform, 6.3–7.1 mm. long (including the short claw), 4–4.9 mm. wide near the base, abruptly acuminate, with complicate margins; claw short, about 1 mm. long, with a callose keel above which extends through the lower portion of the lamina, obliquely inserted on the column. Column characteristic of the genus, glabrous, tapering from a stout base, about 4.9 mm. long.

*Notylia latilabia* is allied to *N. tamaulipensis* Reichb. f., but the flowers are of markedly different color and are apparently larger and have a dissimilar lip. *N. multiflora* Hook. differs from *N. latilabia* in having flowers of a different color, broader petals similar to the sepals, and a narrower lip.

PANAMA, Frijoles, C. W. Powell 406, April 1924. Sea level. Grows in full sunlight, usually on Calabash trees. Flowers: Sepals Orange. Petals white without the orange dot on them characteristic of *N. pentachne* Reichb. f. (TYPE in Herb. Ames No. 28220.)

*Notylia linearis* A. & S. *sp. nov.* Herba pro genere perparva sed floribus grandibus. Folia in basi congesta, equitantia. Pedunculus folia paululo superans. Inflores-



centia subumbelliformis, contracta. Sepala lateralia lanceolato-linearia, longe acuminata. Sepalum dorsale et petala anguste lanceolata, caudata. Labellum simplex, lineare, breviter acuminatum, sub medio papillarum fasciculo ornatum. Columna gracilis.

Plant vegetatively very small for the genus, 6.1 cm. tall to the tip of the inflorescence. Roots fibrous, flexuous, glabrous. Leaves five, congested at the base of the plant, equitant, spreading, semielliptic to linear-oblong, 9.5–29 mm. long, 2.5–4.5 mm. wide, more or less oblique, sharply acute, densely rugose when dry, and apparently fleshy in the living condition, articulated to imbricating sheaths with broad scarious margins. Scape about 4 cm. long, emerging from the axil of a sheath, slender, flexuose-suberect, with three remote sheaths which have infundibuliform bases and acuminate apices. Inflorescence an umbelliform raceme, 2.3 cm. long, 3.4 cm. across in the dried plant, apparently semiglobose. Rachis 5 mm. long, densely 13-flowered. Floral bracts narrowly lanceolate, acuminate, concave, horizontally spreading. Pedicels filiform, widely spreading, with the ovary 7–7.5 mm. long. Flowers large for the plant, membranaceous in the dried specimen. Lateral sepals lanceolate-linear, long-acuminate with conduplicate apices, mostly free but very slightly connate at the saccate base, 12.2–13 mm. long, 1 mm. wide below, 1-nerved or indistinctly 2-nerved. Dorsal sepal narrowly lanceolate, caudate-acuminate, strongly conduplicate in natural position, 9.7–10.1 mm. long, 1.8–2 mm. wide below, 3-nerved, conspicuously uncarinate on the back. Petals similar to the dorsal sepal but smaller, 9–10 mm. long, about 1.5 mm. wide below, caudate, 3-nerved in the lower part. Labellum linear, somewhat contracted near the base, 5.5 mm. long, about .9 mm. wide above the middle, short-acuminate, tapering to the carinate tip, 1-nerved, a clump of low approximate papillae near the base. Column slender, about 3.3 mm. long, characteristic of the genus. Anther deeply saccate, complanate-lanceolate-ovoid. Stipe of the pollinia strongly triangular-dilated above.

*Notylia linearis* is closely allied to *N. bicolor* Lindl., *N. ramonensis* Schltr., and *N. coffeicolor* Schltr., but differs from all in its entire linear lip.

COSTA RICA, La Fuente, East Turrialba, Anastasio Alfaro s. n., September 2, 1924. 1150-1200 metres altitude. "Sepal green, silver inside; petals purplish with red spots." (TYPE in U. S. Nat. Herb. No. 1205899.)

***Brassia parviflora* A. & S. sp. nov.** Herba mediocris sed floribus parvis. Radices crassae. Folia in basi congesta, imbricantia, disticha, vaginis conduplicatis articulata; lamina lanceolato-oblonga, breviter acuminata. Scapus quam folia multo brevior. Bractee racemi pauciflori ovaria pedicellata superantes. Sepala lateralibus lanceolato-linearibus. Sepalum dorsale anguste lanceolatum. Petala oblique lanceolato-oblonga. Labellum elliptico-lanceolatum, dimidio inferiore carinis binis conspicuis ornatum.

Plant caespitose, medium-sized but with very small flowers, about 35 cm. tall to the apex of the erect leaf. Roots very stout, fibrous, 2-2.5 mm. in diameter. Pseudobulbs apparently lacking. Leaves crowded at the base, densely imbricated, distichous, articulated to membranaceous conduplicate striate-nervose sheaths; blade lanceolate-oblong, 8-27.6 cm. long, 14-29.5 mm. wide (the outer blades successively smaller with the outermost very small), short-acuminate above, slightly narrowed to a conduplicate base or very gradually narrowed to a channelled petiole. Inflorescence half the length of the larger leaves. Peduncle below the raceme 13-14 cm. long, lower half concealed by the leaf-sheaths, exposed upper half with one or two loose tubular scarious sheaths. Rachis 5.2 cm. or less long, 3- to 5-flowered. Floral bracts conspicuous, lanceolate, the lowermost 1.9-2.1 cm. long, much surpassing the pedicellate ovary, acuminate, conduplicate, scarious, nervose. Flowers very small for the genus. Lateral sepals lanceolate-linear, with recurved apices, 1.76 cm. long when extended, 2.1 mm. wide near the base, gently falcate, 1- to 3-nerved, fleshy in the longitudinal middle, and subcarinate dorsally. Dorsal sepal narrowly lanceolate, 1.41 cm. or more long, 2.8-3 mm. wide.

acuminate, rather fleshy, 3-nerved. Petals obliquely lanceolate-oblong, 1.15–1.32 cm. long, 2.6 mm. wide, acuminate, 3-nerved. Labellum elliptic-lanceolate with the upper portion recurved, 1–1.1 cm. long, about 4.5 mm. wide across the middle, complicate-acute at the apex, dorsally carinate at the tip. Disc,—on its lower half,—with a pair of approximate high fleshy pubescent keels which are about 5 mm. long; near the apex of each keel there is an outwardly-leaning tooth. Column short, stout, about 5 mm. high at the back, toward its base with a pair of broad porrect semiovate wings which surround the base of the lip-keels.

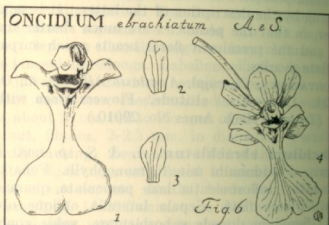
*Brassia parviflora* is a close ally of *B. chlorops* Reichb. f., judging by the description of the latter. It is separable, however, in that the peduncles are much shorter than the leaves and the prominent floral bracts much surpass the pedicellate ovaries.

COSTA RICA, Cascajal, *Anastasio Alfaro s. n.*, October 24, 1924. 1700 metres altitude. Flowers green with dark spots. (TYPE in Herb. Ames No. 29010.)

***Oncidium ebrachiatum*** A. & S. *sp. nov.* Planta mediocris. Pseudobulbi minuti, monophylli. Folia teretia, canaliculata. Inflorescentia laxa paniculata, quam folium brevior. Flores flavi. Sepala lateralia oblique obovata, obtusa. Sepalum dorsale suborbiculare, valde concavum, apice rotundatum. Petala oblonga vel obovato-oblonga, apice valde truncata. Labellum trilobatum, lobi laterales oblongi, apice falcato in isthmum sensim angustatum; lobus medius flabellato-reniformis, profunde bilobatus; discus basi quadricarlosus. Columna ebrachiata.

Roots fibrous, numerous, longitudinally sulcate when dry, minutely puberulent. Pseudobulbs minute, monophyllous, concealed by sheaths, about 5 mm. long and 6.5 mm. in diameter. Leaf terete and longitudinally grooved, 4.1 dm. or more long, 8–10 mm. wide in the dried state, base (together with the peduncle) clasped by several imbricating fibrous sheaths. Inflorescence flexuose-erect, loosely paniculate, shorter than the leaf, about 34 cm. long. Peduncle glabrous, with five small scarious tubular sheaths which ter-

minate at base in a narrow black band. Panicle with approximately seven short ascending branches which are 1.8 (rarely .6) -3.7 cm. long. Floral bracts minute, triangular, concave. Flowers very small. Lateral sepals free, obliquely obovate, about 4.1 mm. long, 2-2.2 mm. wide, subunguiculate-narrowed below, obtuse above, and dorsally carinate near the apex. Dorsal sepal suborbicular, 3.1-3.5 mm. long, about 2.5 mm. wide, strongly concave, rounded at the apex, with an indistinct dorsal apicule, slightly narrowed toward the base. Petals oblong to obovate-oblong, oblique, about 4 mm. long, 2-2.15 mm. wide, abruptly and broadly trun-



cate, somewhat narrowed toward the base. Labellum about 8 mm. long, deeply 3-lobed; lateral lobes retrorse, oblong, falcate toward their apex, gradually narrowed to the slender but short isthmus; isthmus about 1.2 mm. wide, flabellate-dilated into the anterior lobe; middle lobe flabellate-reniform, 6-6.8 mm. wide, rather deeply bilobed but the lobes contiguous. Disc minutely papillose throughout, at the base a broad transverse keel in front of which are three small calli, the middle one of which is largest and subtrilobed. Column very short and stout, about 1.1 mm. long dorsally, with only rudimentary processes instead of wings.

*Oncidium ebrachiatum* appears very similar to *O. teres* A. & S., but the lip is differently shaped, the callus very

dissimilar, and the column nearly ebrachiate. [Fig. 6: 1, labellum and column, front view  $\times 4$ . 2, petal  $\times 2 \frac{2}{3}$ . 3, lateral sepal  $\times 3$ . 4, flower, front view  $\times$  about 3.]

PANAMA, Cana and Vicinity, R. S. Williams 975, April 4, 1908. 2000-6500 feet altitude. Flowers yellow. (TYPE in Herb. Ames No. 10748.)

**Oncidium panduriforme** A. & S. *sp. nov.* Herba pro genere mediocris, caespitosa. Radices crassae. Folia in basi congesta, lineari-oblonga, vaginis imbricantibus articulata. Inflorescentia paniculata; rami rari. Flores parvi. Sepala lineari-oblonga, acuta, lateralia valde carinata. Petala latiora, oblongo-lanceolata. Labellum panduriforme; discus in basi callo crasso obscure tricarinato ornatus. Columna ebrachiata.

Plant caespitose, medium-sized for the genus, more than 60 cm. tall to the upper part of the inflorescence (incomplete). Roots fibrous, very stout, larger above the basal part, glabrous. Leaves congested at the base, linear-oblong, 14.8-39.9 cm. long, 1.95-2.7 cm. wide; the outer smaller, articulated to distichous imbricating conduplicate sheaths; the outermost sometimes 4.4 cm. long, 1.5 cm. wide; all the leaves acute or acuminate at the apex, which is inconspicuously and obliquely bilobed, commonly gradually tapering toward the base, chartaceous, many-nerved with seven to nine nerves conspicuous beneath. Inflorescence paniculate, much surpassing the leaves. Peduncle up to the panicle apparently a little shorter than the leaves, somewhat laterally flattened, with about three remote tightly clasping infundibuliform sheaths which are 8-10 mm. long. Panicle 31.8 cm. or more long, with branches (often bi- or tri-furcate) 2.7 (rarely)-8.1 cm. apart. Rachis very loosely flowered, more or less fractiflex. Flowers small, about 2 cm. in diameter; perianth segments spreading, subfleshy (except the labellum), and indistinctly nerved. Lateral sepals linear-oblong, free to the base, about 10.7 mm. long, 2 mm. wide, acute, narrowed below, with a conspicuous fleshy keel on the outer side increasingly prominent toward the apex, slightly oblique. Dorsal sepal similar, linear-oblong, about 11.2 mm. long.

2.5 mm. wide, conspicuously complicate-acute, dorsally carinate (only near the tip), 3-nerved. Petals broader, oblong-lanceolate, 10-11.5 mm. long, 3.4-3.8 mm. wide, conspicuously complicate-acute and dorsally carinate at the apex, 5-nerved. Labellum pandurate in outline, 9.5 mm. long, 5.2-6 mm. wide near the base, about 6.8 mm. wide across the anterior third; basal portion quadrate-triangular, with a rounded subcuneate base, then gradually constricted; anterior portion abruptly dilated, transversely oval, broadly rounded in front with an abrupt apicule from the dorsal keel which is at the apex. Disc with a fleshy indistinctly tricarinate callus at the base, often with a shorter keel on each side. Column short, about 5 mm. long at the back (longer in front), wingless, but with a pair of conspicuous shallowly-triangular dilations on the anterior basal portion.

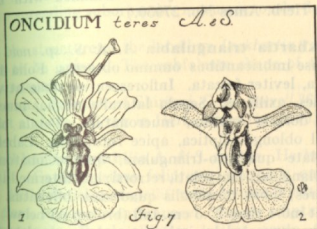
*Oncidium panduriforme* is apparently without any close allies.

COSTA RICA, Cachi, *Anastasio Alfaro s. n.*, August 16, 1924. Lip white. (TYPE in U. S. Nat. Herb. No. 1205933. DUPLICATE TYPE in Herb. Ames No. 29015.)

***Oncidium teres* A. & S. sp. nov.** Herba mediocris. Radices fibratae. Pseudobulbi subnulli, monophylli. Folium longum, teres, canaliculatum. Inflorescentia folio brevior, paniculata. Flores flavidi, brunneo signati. Sepala lateralia oblique obovata, apiculata. Sepalum dorsale obovato-spathulatum, acutum, valde concavum. Petala obovato-oblonga, abrupte et late truncata. Labellum trilobatum; lobi laterales retrorsi, ligulati; lobus medius unguiculatus, abrupte reniformi-dilatatus. Discus basi callo lobato ornatus. Columna brachiis binis, oblongis et incurvis.

Roots fibrous, flexuous, glabrous, numerous. Pseudobulbs minute, monophyllous, 3-3.5 mm. long, 5 mm. or more wide. Leaf fleshy, terete, longitudinally channelled or sulcate, about 35.6 cm. long, 1 cm. across before drying, invested at base (together with the pedicel) by several triangular imbricating scarious sheaths the upper of which are successively larger. Inflorescence shorter than the leaf, paniculate, about 26.5 cm. long (several panicles broken off

below indicate greater length). Peduncle below the inflorescence with about five inconspicuous scarious infundibuliform sheaths terminating at their base in a black-banded joint, about 1.5 mm. in diameter. Panicle with four to seven widely spreading branches which sometimes fork. Floral bracts minute, triangular, concave. Flowers small. Lateral sepals free, very obliquely obovate, about 6.5 mm. long, 3.2-3.6 mm. wide, apex rounded and abruptly apiculate, gradually narrowed to a subunguiculate base, concave. Dorsal sepal obovate-spatulate, about 5.9 mm. long, 3.9 mm. wide above, acute, strongly concave. Petals obovate-



oblong, 5.2-5.9 mm. long, 3.15 mm. wide in the middle, abruptly and obliquely truncate at the apex with a minute apicule, somewhat narrowed toward the base, margins rather undulate. Labellum distinctly 3-lobed, 7-7.5 mm. long; lateral lobes small, ligulate, retrorse, abruptly subfalcate or nearly straight near the acute or obtuse apex, densely and finely pubescent especially above the base; middle lobe very abruptly dilated from an isthmus 2-3 mm. long into a reniform lamina which is 6.8-7.8 mm. wide, inconspicuously bilobed in the middle, and finely and densely pubescent; callus basal, large, fleshy, divided into two equal portions,—the posterior 3-lobed with the lateral lobes largest,—the anterior subquadrate-subtrilobed in outline,

with its strongly and abruptly elevated centre extending to the mucronate obtusish apex and with a porrect-spreading finger-like tubercle on each side of its very base. Column short, finely pubescent above, about 2.8 mm. long, with a pair of oblong fleshy incurved shortly-pubescent wings.

*Oncidium teres* is closely allied to *O. ascendens* Lindl., but has smaller flowers, ligulate side lobes of lip, and truncate petals. [Fig. 7: 1, flower, front view  $\times$  about 3. 2, labellum and column, front view  $\times$  about 4.]

PANAMA, Province of Veraguas, San Francisco, C. W. Powell 383, February 1924. 1000 feet altitude. "Grows in sunny locations. Flowers yellow trimmed with brown." (TYPE in Herb. Ames No. 27950.)

***Lockhartia triangulabia* A. & S. sp. nov.** Caulis foliis dense imbricantibus omnino obtectus. Folia disticha, equitantia, leviter falcata. Inflorescentiae duae ut videtur, subapicales, axillares. Sepala lateralia ovalia, mucronata. Sepalum dorsale ovatum, mucronatum. Petala oblongo-ovata vel oblongo-elliptica, apice rotundata. Labellum in circuitu late quadrato-triangulare, quinquelobatum; lobi basales triangulari-lanceolati, retrorsi; lobi intermedii breves, triangulares; lobus terminalis quadratus, bilobatus.

Plant more than 25.3 cm. tall (broken off below). Stem completely concealed by imbricating leaves and leaf-bases. Leaves distichous, equitant, up to 2.7 cm. long on the lower edge and 6 mm. wide near the base, lightly falcate-incurved, obliquely acute, subcoriaceous; the upper leaves gradually smaller and the ten to twelve uppermost suddenly decreasing in size (about 11 mm. long, 3.5 mm. wide). Inflorescences arising from two of the upper leaf-axils, paniculate. Rachis about 1.5 cm. long. Peduncle and pedicels with small cordate nervose bracts. Flower small membranaceous when dry. Lateral sepals oval, 5.4 mm. long, 3.1 mm. wide, more or less oblique, rounded at the apex, 5-nerved, dorsally mucronate at the tip. Dorsal sepal ovate, 5.4 mm. long, about 3 mm. wide below, dorsally mucronate at the tip, 4-nerved. Petals oblong-ovate, about 5.4 mm. long, 3 mm. wide, narrowed toward the base, broadly rounded at the



apex with a subacute point, 3-nerved. Labellum broadly quadrate-triangular in outline, 5-lobed with the terminal lobe bilobed, about 7.2 mm. long and 1 cm. broad at base when expanded; basal lobes retrorse, triangular-lanceolate, oblique, up to 4 mm. long on the posterior margin, rounded at the apex; intermediate lobes short, triangular, spreading, acute; terminal lobe quadrate, with nearly parallel sides, deeply bilobed, about 3.2 mm. long. Disc provided with a basal linear-oblong callus which is thick at its base, thinner in its central portion, and fleshy much-thickened in its anterior part, and with two callose teeth on each side of and in front of the callus. Column short, extended on each side into two spreading suborbicular inconspicuously denticulate wings.

In the structure of the labellum *Lockhartia triangulabia* appears to be unique. The subfalcate shape of the leaves is also unusual.

PANAMA, Province of Chiriqui, C. W. Powell 362a. 4000-5000 feet altitude. (TYPE in Herb. Ames No. 28193.)

*Lockhartia variabilis* A. & S. *sp. nov.* Herba humilis, variabilis. Caulis basibus foliorum imbricatis omnino obtectus. Folia disticha, scapelliformia, leviter falcata, obtusa. Flores flavi, in sicco membranacei. Sepala elliptico-lanceolata, mucronata. Petala elliptica, latiora, acuta. Labellum in circuitu quadratum, basi rotundatum, medio rhombico-dilatatum, deinde angustatum, apice bilobatum; discus basi callosus. Columna late alata.

Plant low for the genus, 14 cm. tall to the apex of the uppermost leaf. Roots fibrous, glabrous. Stem compressed, entirely concealed by imbricating leaf-bases. Leaves distichous, equitant, scapelliform, slightly spreading-falcate, narrowed to an obtuse apex, up to 3.35 cm. long on the lower margin, 2.6-6.5 mm. wide near the base (the lowest leaves not 2 cm. long, 4.5 mm. wide). Inflorescences apparently single in the axils of the two uppermost leaves. Flowers membranaceous when dry. Lateral sepals elliptic- or oblong-lanceolate, 3.9-4.9 mm. long, about 2 mm. wide below the middle, 1- or 3-nerved, mucronate. Dorsal sepal similar.

Petals slightly larger than the sepals, elliptic to suborbicular, acute, 4.1–5 mm. long, 2.4–3.2 mm. wide, 3-nerved. Labellum quadrate in outline, 7.1–8.1 mm. long, 4.9–6.4 mm. wide across the middle, deeply bilobed at the apex; lamina rounded at base, more or less rhombic-dilated in the middle, then narrowed and more or less dilated into two anterior subquadrate lobes; basal callus conspicuous, oblong to ovate-oblong, margin raised and finely papillose, depressed within and provided in the centre with a rounded boss. Column short and stout, with a pair of spreading rounded-triangular wings, adherent to the basal part of the lamina of the labellum. Pollinia pyriform, somewhat complanate.

One flower from the type specimen, in addition to being markedly smaller, has the sides of the lip not so sharply dilated and narrowed. A second collection (*Powell 361*) is a much narrower leaved plant, the leaves all less than 3 cm. long and 2.6–4 mm. wide near the base. A vegetatively intermediate caespitose plant (*Powell 372*) has a very slightly indented labellum and indistinct (possibly incomplete) column-wings. A caespitose plant (*R. S. Williams 1008*) reaching 19 cm. in height is apparently the same species, but it has no flowers.

*Lockhartia variabilis* is a very variable species allied to *L. Pittieri* Schltr., from which it differs in the lip, which is relatively much longer than the sepals and petals. It is separable from *L. parthenoglossa* Reichb. f. by its narrower sepals, its elliptic petals, and rounded column-wings, as well as by its narrower leaves.

PANAMA, Wooded hills near Frijoles, *C. W. Powell 355*, January–February 1924. Sea level. Grows in medium shade. Flowers yellow with an orange boss at base of lip. (TYPE in Herb. Ames No. 28131.): Cativa-Porto Bello Trail, *C. W. Powell 361*: Ft. Sherman and mouth of Chagres River Trail, *C. W. Powell 372*, January 1924. "Found growing on mossy limbs in medium sun.": Marraganti and Vicinity, *R. S. Williams 1008*, April 3–9, 1908. 10–200 feet altitude. "Fls. yellow, lip with red centre."

## TROPICAL AMERICAN ORCHIDS

*Dichaea verrucosa* A. & S. sp. nov. Caules penduli, dense distichifolii. Folia parva, oblongo-elliptica, patentia. Flores singuli ut videtur, breviter pedicellati, pro herba grandes. Sepala petalaeque similia, lanceolato-ovata, valde concava, dorso subdense muricata. Labellum late rhombicum, ancoraeforme, apiculatum vel acutum, medio utrinque cum lobulo lineari retrorso. Columna brevis, cum ligula infrastigmatica lineari.

Stems exceeding 13.2 cm. in length (incomplete in our specimens, but apparently long and pendulous), densely leaved, entirely concealed by imbricating leaf-sheaths. Leaves very numerous, distichous, not articulated; blades spreading, elliptic or oblong-elliptic, 9 (rarely 8)–12.5 mm. long, 4–6 mm. wide, apically rounded with a caducous apicule. Peduncle short, 1-flowered, subequaling the leaves, axillary, filiform, spreading. Floral bracts minute, two in number; one shallowly infundibuliform, membranaceous and abruptly apiculate; the other within the first, rigid, obliquely ligulate and acuminate. Ovary short, densely papillose-muricate with longer papillae above, enveloped by the outer bract. Flower large for the plant; perianth segments connivent, rather fleshy. Sepals and central part of petals subdensely muricate without, all concave. Lateral sepals lanceolate-ovate, 9.1–10.6 mm. long, 3.9–5.8 mm. wide, acuminate, subcarinate above, 7-nerved (indistinctly 8-nerved), lightly oblique. Dorsal sepal 10–11.9 mm. long, about 5 mm. wide below, 9-nerved, similar to the lateral sepals. Petals similar to the sepals, 8.6–10.9 mm. long, 4.2–4.9 mm. wide, dorsally carinate at the apex, lightly oblique, 7-nerved with a faint short outer nerve on each side. Labellum broadly rhombic in outline, anchor-shaped, concave, 7.1–8 mm. long including the short quadrate claw, basal margins rounded and densely long-ciliate; lamina abruptly dilated into a pair of linear-lanceolate retrorse obtuse lobules which are about 2.5 mm. long, anterior portion in natural position rounded and apiculate (by reason of the incurved sides),—when expanded rounded-triangular and acute,—11–12-nerved. Column very short, with a conspicuous ligulate pubescent infrastigmatic appendage.

TROPICAL AMERICAN ORCHIDS

*Dichaea verrucosa* is unusual on account of its dorsally muricate sepals and petals. The only one of its allies with this characteristic apparently being *D. suaveolens* Kränzl., which, however, has much-branched stems, smaller and much narrower leaves, obovate-oblong petals, and differently colored flowers. *D. muricata* (Sw.) Lindl. is superficially very similar, but has smaller flowers, narrower petals, and apparently lacks the ligulate column-appendage.

COSTA RICA, La Fuente, Peralta, C. H. Lankester 918, September 1923. 3800 feet altitude. Sepals and petals hyaline spotted "dark violet," margin of lip frontally stained violet, rest heavily blotched with violet, sepals exteriorly rugulose. The young leaves are mucronate. A common and beautiful species. (TYPE in Herb. Ames No. 28692.)

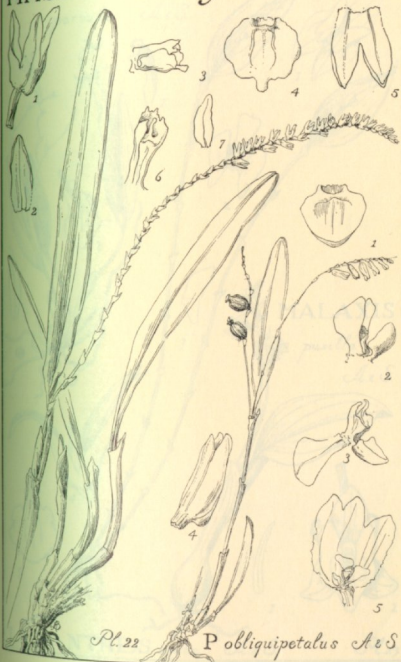
STELLILABIUM

*Distantiflorum* A & S



STENORRHYNCHUS *bracteosus* A & S

PHYSOSIPHON *minutiflorus* A & S

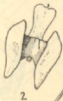


Pl. 22

*P. obliquipetalus* A & S

PLEUROTHALLIS

*parvula* A. & S.



MALAXIS

*pusilla* A. & S.



LEPANTHES *ovata* A. & S.

*E. ramosissimum* A. & S.

Pl. 24



*E. lockhartioides*  
Schltr

EPIDENDRUM *erosum* A. & S.



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SCHEDULAE ORCHIDIANAE  
No. 9

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NEW OR NOTEWORTHY  
ORCHIDS

By OAKES AMES

ILLUSTRATIONS BY BLANCHE AMES



BOSTON  
LAWRENCE PRESS, INCORPORATED  
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## New or Noteworthy Orchids

BY  
OAKES AMES

IN the following pages twenty-two new species are proposed, and the results of recent studies of tropical orchids are set forth. The new species, with the exception of the West Indian *Pleurothallis archidiaconi*, are natives of Costa Rica.

The sequence of genera conforms to the arrangement adopted by Pfitzer in Engler and Prantl's "Die natürlichen Pflanzenfamilien."

The illustrations have been prepared from dried specimens, with the exception of *Vanilla odorata* Presl, of which the flower was drawn from material sent in alcohol from Ecuador and *Epidendrum caligarium* Reichb. f., the flowers of which were sent in alcohol from Panama.

Unless otherwise specified the type specimens have been deposited in the author's herbarium.

*Vanilla odorata* Presl Rel. Haenk. 1 (1830) 101; Klotzsch in Bot. Zeit. 4 (1846) 563; Rolfe in Kew Bull. (1895) 178; Rolfe in Journ. Linn. Soc. 32 (1896) 471.

Presl's original description is as follows:

"V. foliis lineari-lanceolatis acutis nervosis, capsulis lineari-lanceolatis longitudine foliorum.

*Hab. in Guayaquil.*

Scapus teres, repens, foliosus, ad articulationes radicans. Folia brevissime petiolata, erecta, lineari-lanceolata, acutissima, nervosa, carnosa, 5-7 pollices longa, 6-8 lineas lata. Spica brevis, rhachi a floribus delapsis cicatrisata. Flores deperditi.

NEW OR NOTEWORTHY ORCHIDS

Capsula sessilis, lineari-lanceolata, basi et apice attenuata, capitellata, semipedalis vel parum longior. Semina nigra nitida aptera.

A. *V. angustifolia* et *V. planifolia*, quibus affinis videtur, foliis capsulisque differt.

Odorem aromaticum specificum triginta sex post ellapsis annis, quod specimina collecta fuerunt, capsulae nondum perdiderunt."

A straggling, scandent herb with distant, very narrow, alternate leaves and slender stems. Leaves coriaceous, up to 18.5 cm. long, 1.5-2 cm. wide near the base, about 2 mm. thick when fresh, linear-lanceolate, acute, apex sharply deflexed. Lateral sepals somewhat spreading, 5 cm. long, 1.3 cm. wide, lightly concave, fleshy, narrowly lanceolate, subacute. Dorsal sepal 5.2 cm. long, 1.1 cm. wide, narrowly lanceolate. Petals 5 cm. long, 1 cm. wide, narrowly lanceolate, obtuse, lightly carinate along the middle on the outer surface. Labellum 4.5 cm. long, 2.2 cm. wide above the middle, below the middle united with the column to form a tube; expanded portion 2.1 cm. long, flabellate, lightly tricarinate along the middle nerves, the keels rounded and near the distal end giving rise to several retrorse papilliform emergences, coarsely fimbriate on the anterior margin, some of the divisions of the fringe shortly bifurcate. Disc ornamented with a large crest beneath the column, the crest being multilamellate, with the lamellae truncate and minutely fimbriate on the upper edge. Column densely glandulose on the anterior surface.

*Vanilla odorata* Presl was described originally from fruiting material. It has remained among the doubtful species of the genus. R. A. Rolfe, in his monograph of *Vanilla*, was unable to discover a single clue regarding the floral characters of Presl's species, although by means of the foliage he was able to place it in his key, and to differentiate it by folia-characters from its probable allies.

Klotzsch, in 1846, when he published his notes on *Vanilla*, referred to *V. odorata* Presl as follows: "*Vanilla odorata*

VANILLA odorata Presl

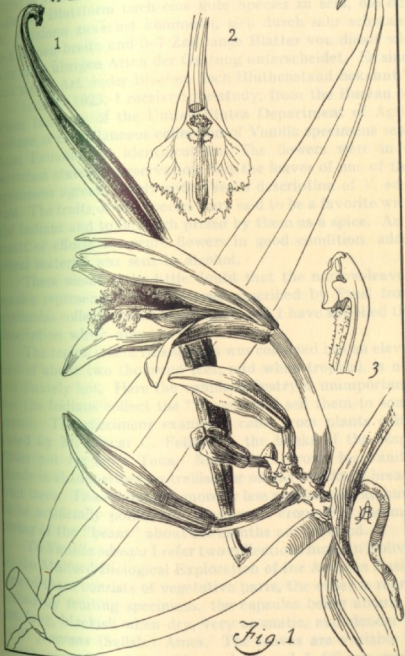


Fig. 1



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Presl in Reliq. Haenk. p. 101. aus Guayaquil, scheint ebenfalls der Blattform nach eine gute Species zu sein, die der *V. Ruiziana* zunächst kommend, sich durch sehr schmale, 5-8 Linien breite und 5-7 Zoll lange Blätter von dieser wie von allen übrigen Arten der Gattung unterscheidet. Es sind von dieser Art weder Blüten noch Blütenstand bekannt."

In July 1923, I received for study, from the Bureau of Plant Industry of the United States Department of Agriculture, a miscellaneous collection of *Vanilla* specimens sent from Ecuador for identification. The flowers were in a wretched state of preservation, but the leaves of one of the specimens agreed closely with Presl's description of *V. odorata*. The fruits of this species were said to be a favorite with the Indians and to be much prized by them as a spice. As a result of efforts to secure flowers in good condition, additional material was sent in alcohol.

There seems to be little doubt that the narrow-leaved species represents the *V. odorata* described by Presl from specimens collected near Guayaquil, and I have supplied the description which appears above.

The region where this species was collected has an elevation of about two thousand feet, and while tropical, is not inordinately hot. Here the vanilla industry is unimportant, but the Indians collect the "beans" and sell them to some extent. The specimens examined came from plants cultivated by Mr. Oscar C. Felton on the banks of the Napo River not far from Tena. Mr. Felton grows his vanilla plants in shade, either on trellises or on the trunks of breadfruit trees. The flowers are more or less ephemeral and have to be artificially pollinated to ensure a crop. For the maturing of the "beans" about six months are required.

To *Vanilla odorata* I refer two collections made in Bolivia by the Mulford-Biological Exploration of the Amazon Basin. One of these consists of vegetative parts, the other is represented by fruiting specimens, the capsules being about 16 cm. long, blackish when dry, very aromatic, and slender as in *V. fragrans* (Salisb.) Ames. The leaves are variable in length, sometimes being 20 cm. long and 1-1.3 cm. wide.

[Fig. 1: 1, mature fruit nearly natural size. 2, labellum with tip of column removed in order to show crest, about natural size. 3, column about natural size.]

ECUADOR, Oriente del Norte, in the district near Tena, Oscar C. Felton, November 9, 1923. (The description was drawn from this material.)

BOLIVIA, Beni, O. E. White 1821, December 3, 1921. Rank growing species in swampy woods. Common. Fruits make good vanilla. 900-1000 feet altitude: Ixiamas, O. E. White 1115, December 13, 1921. Best kind here. Fruits fragrant. Vine common, climbing over small trees in damp forest, often 15-20 feet long. 1000-1500 feet altitude.

*Vanilla pompona* Schiede in Linnaea 4 (1829) 573; Lindl. Gen. & Sp. Orch. (1840) 437; Klotzsch in Bot. Zeit. 4 (1846) 566; Desv. in Ann. Sci. Nat. ser. 3, 6 (1846) 120; Cogn. in Mart. Fl. Bras. 3, pt. 4 (1893) 147; Rolfe in Kew Bull. (1895) 176; Rolfe in Journ. Linn. Soc. 32 (1896) 465.

*Vanilla grandiflora* Lindl. Gen. & Sp. Orch. (1840) 435.

*Vanilla guianensis* Splitg. in Ann. Sci. Nat. ser. 2, 15 (1841) 279 in parte.

*Vanilla surinamensis* Reichb. f. in Nederl. Kruidk. Arch. 4 (1858) 321 in parte.

*Vanilla lutescens* Moq. ex Dupuis in Rev. Hort. ser. 4 (1856) 121, fig. 24; Lem. in Fl. des Serres 21 (1875) 115, t. 2218-19.

In addition to *Vanilla odorata* Presl, *V. pompona* is cultivated in Ecuador for its aromatic properties. Although not now an important source of commercial vanilla, its fruits were at one time, under the name of "vanillons," a well-known tropical product, and may have furnished the "vanilloes" referred to by James Petiver in 1693 as an imperfectly known and "most earnestly desired" article of commerce. From information now at hand, it is very probable that *V. pompona* is feral in Ecuador near Guayaquil. Mr. Felton has introduced it on his hacienda near Tena on the banks of the Napo River, having obtained his plants from the natives. The flowers, which last but a day, are large and showy, creamy

yellow in color, with a delightful fragrance. Under cultivation it is said that the plants will yield two crops a year, six months being required from flower to "bean." Pollination is artificial.

*Vanilla pompona* differs most conspicuously from *V. fragrans* (Salisb.) Ames in its larger flowers and in the anterior portion of the labellum being devoid of verruciform emergences. The capsules are much stouter and shorter than those of *V. fragrans*, and somewhat trigonous in shape. It is a widely distributed species and has been reported from Mexico, Nicaragua, Panama, Colombia, Venezuela, Bolivia, British Guiana, Dutch Guiana, Trinidad, and is now thought to be a native of Honduras, fruiting specimens having been obtained near Tela by Ames.

*Vanilla pompona* differs from *V. odorata* Presl in its broader leaves, larger flowers, and shorter, trigonous fruits.

Unfortunately our knowledge of the genus *Vanilla* is still very imperfect. The flowers are ephemeral and very difficult to press, so that the specimens brought in by collectors are usually sterile or so poorly preserved that the floral characters are difficult to interpret. Throughout the literature devoted to the genus, this situation has been emphasized. With the increasing interest now being taken in the vegetation of the American tropics, it is hoped that efforts will be made to preserve flowers of *Vanilla* in alcohol, so that the difficulties of identification of old species and the proper characterization of new ones will be simplified.

ECUADOR, Oriente del Norte, in the district near Tena, Oscar C. Felton, October 14, 1923. "Palanda Vanilla."

*Spiranthes costaricensis* Reichb. f. in Bonpl. 3 (1855) 214; Reichb. f. Beitr. Orch. Centr. Am. (1866) 46; Reichb. f. Xen. Orch. 2 (1873) 185, t. 179, figs. I, 1-3b.

*Beloglottis costaricensis* Schltr. Beihefte Bot. Centralbl. 37, Abt. 2 (1920) 365; Schltr. in Fedde Repert. Beihefte 19 (1923) 167.

This species, which was first collected by Oersted near Naranjo, in Costa Rica is represented in Reichenbach's

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herbarium by three specimens and a series of clearly suggestive sketches. What I take to be the type consists of a few detached flowers and an outline drawing (apparently made hastily with a pen), which illustrates the habit of the plant. The other specimens are complete plants, but seem to represent collections made at a later date than the type. One of these specimens which is about 15 cm. tall was found in Turialba, March 27, 1857, and the other, without date, is a tall, slender plant (about 30 cm. tall) which was collected by Carl Hoffmann somewhere in Costa Rica.

*Spiranthes costaricensis* appears to be normally epiphytic in Costa Rica, having been so reported by Brenes, in 1922, and by Standley, in 1924; but in Honduras, where I found the species in 1923, it was growing as a terrestrial in rich humus under trees.

**COSTA RICA**, Naranjo, *Oersted* (TYPE in Herb. Reichb. f. in Herb. Mus. Palat. Vindob. No. 35087): Turialba, *Wendland 513*, March 27, 1857: Without locality, *Carl Hoffmann*: San Pedro de Ramon, *A. M. Brenes 230*, January 1922. Sur les vieux troncs. 1075 meters altitude: Province of Limón, Vicinity of Guápiles, *Paul C. Standley 37306*, March 12, 13, 1924. 300-500 meters altitude. On tree trunk; flowers white; *Standley 37136*, March 12, 13, 1924. 300-500 meters altitude. On tree trunk; flowers white; *Standley 37363*, March 12, 13, 1924. 300-500 meters altitude. On mossy trunk in wet forest; flowers white.

**HONDURAS**, Guaimas, *Ames II 139*, March 9, 1923. In humid forest: Rio Pelo, *Ames II 167*, March 8, 1923. 260 feet altitude. In rich humus among rocks near river. Leaves pale green; flowers white.

***Spiranthes Prasophyllum* Reichb. f.** Beitr. Orch. Centr. Am. (1866) 65.

The first time I saw *Spiranthes Prasophyllum* alive, it was clinging to the limb of a large tree, growing with its roots partly imbedded in rotting bark. My second collection of the species was found on a stout liana over fifty feet above the ground. The first impression one gets from a study of

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this orchid in its native home is that it is a terrestrial species accidentally epiphytic. It is only after several plants have been found, always epiphytic, in widely separated localities, and it is realized how completely they are adapted to an epiphytic life, that the conclusion is formed that here is a species which may indicate in its modified vegetative parts what changes took place in terrestrial orchids when, as they struggled to reach the light, they became successfully epiphytic. The leaves are fleshy yet pliable and soft to the touch, the epidermis is as if highly varnished, extraordinarily glossy and adapted to withstand desiccation.

*Spiranthes Prasophyllum* was first found in Guatemala by Wendland, the exact localization being "An Stämmen zwischen der Hacienda de Pantaleon und Sapote in Guatemala." January 20, 1857. In March 1923 I found the species in Honduras near the town of Tela on the Atlantic coast.

Unfortunately the type specimen of *Spiranthes Prasophyllum* is missing from the Reichenbachian Herbarium so that our conception of the species is formed from the original description and by the process of elimination. The nearest ally appears to be *Spiranthes costaricensis* Reichb.f., a species which is also epiphytic. The identity of *S. costaricensis* is quite clear.

HONDURAS, Lancetilla Farm near Tela, banks of a rocky mountain stream on a woody liana, *Ames II 164*, March 11, 1923. Flowers cream color; *Ames II 195*, March 16, 1923, on a hardwood tree, high above ground. 400 feet altitude. Flowers greenish becoming flesh color. Leaves extraordinarily glossy, pale green.

**Eurystyles Standleyi** *Ames sp. nov.* Herba epiphytica, pusilla, foliis rosulatis. Folia elliptico-lanceolata, acuta, margine minute ciliolato. Pedunculus erectus, rufo-pubescentis. Racemus densus, floribus congestis. Bractee inflorescentiae rhombico-lanceolatae, margine glanduloso-fimbriato. Sepala basi connata, oblonga, lateralibus extus glandulosis. Petala oblanceolata, uninervia. Labellum panduratum, basi sagittato-auriculata, ungue calcar omnino

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adnato. Columna in pedem recurvum producta. Rostellum obtusum.

Epiphytic herb up to 7.5 cm. tall to the tip of the densely-flowered raceme. Roots fibrous, coarse, spreading. Leaves 3-4.5 cm. long, up to 1 cm. wide, crowded, rosulate, elliptic-lanceolate, membranaceous, shining, acute, with the margin finely and shortly ciliolate. Scape including the raceme 4-7.5 cm. long, exceeding the leaves, densely clothed with rufous pubescence. Raceme 1.5-3 cm. long, up to 1.5 cm. in diameter, many-flowered, with the flowers ascending, crowded. Bracts of the inflorescence rhombic-lanceolate, 12 mm. long, about 5 mm. wide near the middle, acuminate, acute, margin conspicuously glandular-fimbriate, mid-nerve somewhat prominent on the dorsal surface, conspicuously glandular. Ovary about 6 mm. long, ellipsoidal, smooth, inconspicuously pedicellate. Perianth about 7 mm. long, with the sepals and petals hardly spreading. Lateral sepals coherent with the dorsal sepal for about one half their length, forming an ample tubular base which is shortly decurrent laterally on the ovary and narrowed upward; free portion of the sepals about 4 mm. long, narrowly oblong, the laterals conspicuously glandular along the mid-nerve on the exterior surface, the dorsal smooth. Petals adherent to the dorsal sepal, about 4 mm. long, 1.25 mm. wide above the middle, oblanceolate, rounded at the tip, 1-nerved. Labellum adherent to the lateral sepals, glandular near the tip, free portion about 5 mm. long, with the margins adherent to the column at about the middle, pandurate, obtuse, sagittate at the base near the point of insertion on the lateral sepals with the basal auricles 1 mm. wide and glandular. Column 5 mm. long, produced at base into an upcurved foot. Rostellum obtuse.

*Eurystyles Standleyi* is allied to *E. actinosophila* (Rodr.) Schltr., but differs from it in the shape of the petals and labellum. From *E. auriculata* Schltr., the only Costa Rican ally, it differs chiefly in the details of the labellum. [Fig. 2: 1, flower partly dissected to show the perianth organs, column and tubular base of calyx formed by the coherence of the

# EURYSTYLES

*Standleyi* Ames



Fig. 2

including the raceme, up to 49 cm. long, stout, smooth be-  
glandular-pubescent above, with several closely ap-  
pressed bracts at close intervals below the raceme. Bracts  
1 cm. long, tubular at base. Raceme 11 cm. long, with  
about fifteen nod flowers more or less crowded together.  
Bracts of the raceme about 3 cm. long, 3-4 mm. wide, taper-  
ing gradually to an acute tip, fibrous, equalling or shorter  
than the flowers, obliquely ascending. Flowers including the

lateral sepals with the dorsal sepal  $\times 4$ . 2, column, pollinia removed  $\times 3 \frac{1}{3}$ . 3, labellum partly spread out  $\times 6$ . 4, tip of a floral bract much enlarged. 5, petal  $\times 5 \frac{3}{4}$ . 6, pollinia much enlarged.]

COSTA RICA, Province of Cartago, El Muñeco, south of Navarro, *Paul C. Standley 33747*, February 8, 9, 1924. About 1400 meters altitude. (TYPE in Herb. Ames No. 29718.): Province of San José, La Hondura, *Standley 36349*, March 2-4, 1924. 1300-1700 meters altitude.

***Stenorrhynchus navarrensis*** Ames sp. nov. Herba terrestris, valida. Folia longe petiolata, membranacea, ovato-elliptica, acuminata. Pedunculus erectus, bracteosus, bracteis arcte adpressis. Racemus multiflorus. Bracteae inflorescentiae flores vix aequantes, usque ad apicem attenuatae. Flores rubri. Sepala lateralia anguste triangularia, extus breviter glandulosa. Sepalum dorsale simile, anguste oblongo-lanceolatum. Petala anguste oblanceolata, usque ad basim valde angustata. Labellum prope medium dilatatum, utrinque angustatum, sparse glandulosum, basi cordata, auriculis obtusis. Discus prope medium glandulosus, nervo medio carinato. Columna elongata, antice glandulosa.

A terrestrial herb about 49 cm. tall to the tip of the inflorescence with about six long petiolate leaves clustered at the base of the erect elongated peduncle. Roots coarse, fleshy, densely white-villose. Leaves green, membranaceous, ascending or erect; lamina up to 12.5 cm. long, 4-7 cm. wide, ovate-elliptic, acuminate, glabrous; petioles more or less imbricating at base, 7-10 cm. long, slender, sulcate. Peduncle (including the raceme) up to 49 cm. long, stout, smooth below, glandular-pubescent above, with several closely appressed bracts at close intervals below the raceme. Bracts 5-9 cm. long, tubular at base. Raceme 11 cm. long, with about fifteen red flowers more or less crowded together. Bracts of the raceme about 3 cm. long, 3-4 mm. wide, tapering gradually to an acute tip, glabrous, equaling or shorter than the flowers, obliquely ascending. Flowers including the



ovary about 3.5 cm. long, with the sepals connivent. Ovary minutely glandulose, about 1.5 cm. long. Lateral sepals 22 mm. long (including the blunt mentum), narrowly triangular, free portion about 3 mm. wide below the middle, acute, distinctly glandulose at base and apex on the exterior surface. Dorsal sepal 21 mm. long, 3.5 mm. wide above the middle, narrowly oblong-lanceolate, acute, strongly concave at the base, lightly adherent to the petals, externally inconspicuously glandulose. Petals about 16 mm. long, 2 mm. wide above the middle, narrowly oblanceolate, tapering to the base, obtuse or subacute, minutely glandulose at the apex. Labellum 18 mm. long, 5 mm. wide near the middle, narrowed toward both ends, 3 mm. wide below the tip, 4 mm. wide near the base, sparsely glandulose on the outer surface, shortly unguiculate, cordate at base with the blunt auricles 1.5 mm. wide, thickened on the outer half. Disc minutely glandulose below the middle. Column about 14 mm. long, characteristic of the genus, densely and conspicuously glandulose on the inner surface.

In dried specimens several transverse folds occur on the lower part of the lip. *Stenorrhynchus navarrensensis* is allied to *S. bracteosus* Ames & Schweinf., but is readily distinguishable from it by means of the floral bracts which do not exceed the flowers, by the nearly glabrous ovary, and by the different auricles of the labellum. [Fig. 3: 6, labellum  $\times 1 \frac{1}{3}$ . 7, flower with one lateral sepal and the labellum removed, slightly over natural size. 8, column and anther nearly twice enlarged.]

COSTA RICA, Province of Cartago, El Muñeco, south of Navarro, Paul C. Standley 33957, February 8, 9, 1924. About 1400 meters altitude. Wet bank in forest, leaves green, whole inflorescence red. (TYPE in Herb. Ames No. 29715.)

***Stenorrhynchus Standleyi* Ames sp. nov.** Herba epiphytica, valida, foliosa, foliis ad basim congestis, longe petiolatis. Lamina foliorum elliptica vel ovato-lanceolata, acuminata, acuta. Pedunculus elongatus, validus, bracteatus. Racemus densiflorus. Bractee inflorescentiae elon-

STENORRHYNCHUS

*Standleyi*

Ames

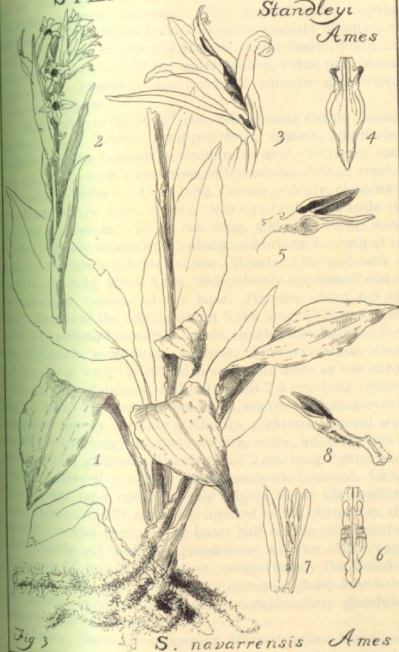


Fig 3

*S. navarrensis*

Ames

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gatae, permagnae, flores excedentes. Flores flavi. Sepala lateralia anguste oblonga, apice cymbiformi. Sepalum dorsale simile. Petala leviter curvata, anguste oblonga, obtusa. Labellum in basi sagittatum, supra basim dilatatum, supra medium contractum, apice obtuso, extus per medium carinatum. Discus prope medium minute glandulosus. Columna generis.

Epiphytic herb, 30-37 cm. tall. Roots fleshy, densely white-villose. Leaves long-petiolate; lamina elliptic-lanceolate or ovate-lanceolate, acuminate, acute, 9-15 cm. long, 3-6 cm. wide, membranaceous, often asymmetrical, erect or recurved; petioles 8-14 cm. long, slender, sulcate, clasping or sheathing at the base, more or less equitant. Peduncle (including the raceme) 28-40 cm. long, glabrous, erect, stout, almost entirely concealed by elongated bracts, bearing at the summit a dense bracteate raceme. Bracts of the peduncle up to 11.5 cm. long, about 1 cm. wide, closely appressed, obtuse or subacute, tubular at the base. Raceme about 6.5 cm. long. Bracts of the raceme about 5 cm. long, 6-12 mm. wide, narrowly oblong-lanceolate, acute, much exceeding the flowers, obliquely ascending, glabrous. Flowers yellow, about 2.5 cm. long, with the perianth segments more or less connivent. Ovary glabrous. Lateral sepals 2.5 cm. long (including the blunt mentum), 5 mm. wide, narrowly oblong-cymbiform and shortly carinate at the tip, glabrous. Dorsal sepal about 2.5 cm. long, narrowly oblong, acute, adhering lightly to the petals, glabrous. Petals about 2 cm. long, 3 mm. wide, obtuse, 1-nerved, narrowly oblong, somewhat curved. Labelum 2.5 cm. long, conspicuously dilated above the sagittate base, then gradually narrowed upward to the obtuse tip, distinctly carinate through the basal half on the outer surface and densely but minutely glandulose; auricles of the sagittate base 1.5 mm. wide, obtuse, conspicuously thickened on the outer half. Disc densely and minutely glandulose below the middle. Column 2 cm. long, conspicuously glandular-hairy on the inner surface.

Among Costa Rican species, *Stenorrhynchus Standleyi* is most closely related to *S. bracteosus* Ames & Schweinf., but

differs from it in having glabrous ovaries, nearly smooth differently colored flowers and different auricles at the base of the labellum. [Fig. 3: 1, base of plant  $\frac{1}{2}$  natural size. 2, raceme  $\frac{1}{2}$  natural size. 3, flower with perianth segments spread apart to show side view of column and labellum, somewhat enlarged. 4, labellum natural size. 5, column and anther  $\times 1 \frac{1}{4}$ .]

COSTA RICA, Province of Cartago, Cerro de La Carpintera, Paul C. Standley 34429, February 1924. 1500-1850 meters altitude. On mossy tree trunk; leaves green; inflorescence pale yellow throughout. (TYPE in Herb. Ames No. 29737.)

**Malaxis boliviana** (Schltr.) Ames comb. nov.

*Microstylis boliviana* Schltr. in Fedde Repert. 10 (1912) 448.

BOLIVIA, Unduavi, H. H. Rusby 2797, October 1885. 8000 feet altitude.

**Stelis Cooperi** Schltr. in Fedde Repert. 3 (1907) 276.

*Stelis elliptica* Ames & Schweinf. in Ames Sched. Orch. 8 (1925) 16.

Recent collections made in Costa Rica by Paul C. Standley indicate that *Stelis Cooperi* Schltr. is an extremely variable species which includes *S. elliptica* Ames & Schweinf.

COSTA RICA, Province of San José, La Palma, Paul C. Standley 33215, 38125, March 17, 1924. About 1600 meters altitude: Province of Cartago, Cerro de La Carpintera, Standley 34488, February 1924. 1500-1850 meters altitude: Province of San José, La Hondura, Standley 36307, March 2-4, 1924. 1300-1700 meters altitude: Province of Cartago, Alto de La Estrella, Standley 39114, 39142, 39582, 39586, 39592, March 26, 27, 1924.

**Stelis nubis** Ames sp. nov. Caules secundarii caespitiosi, vaginati, vaginis laxe adpressis elongatis tubulatis, monophylli. Folia caulibus secundariis breviora, coriacea, anguste elliptica, utrinque attenuata, apice bidentata, nervo

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medio producto. Racemus cum pedunculo vix folium aequans, floribus plus minusve secundis. Pedunculus paucivaginatus. Bracteae racemi oblique infundibuliformes, acutae. Sepala lateralia trinervia, late ovata, subacuta vel obtusa, leviter concava, extus glabra, intus sparse glandulosa. Sepalum dorsale simile. Petala valde carnosae, apice transverse triangulari, glandulosa. Labellum valde carnosum, breviter unguiculatum, triangulare, obtusum, extus minute et dense glandulosum, trans medium valde calloso-incrassatum, callo bilobulato. Columna usque ad apicem dilatata, apice utrinque lobulato.

Epiphytic herb 15-20 cm. tall with spreading, fibrous, whitish roots. Secondary stems densely caespitose, 2-6 cm. long, slender, almost entirely concealed by loosely appressed tubular sheaths, monophyllous. Sheaths up to 3.6 cm. long, dilated upward, truncate or obliquely truncate-acute. Leaf narrowly elliptical, attenuated at both ends, passing into a slender elongated petiole; lamina 3-6 cm. long, 1.5-2.1 cm. wide; petiole about 2.5 cm. long. Inflorescence about 7 cm. long (in the type), sometimes 8 cm. or more long, scarcely equaling the apex of the leaf, partly concealed at base by an elongated tubular bract of the stem. Raceme itself about 4.5 cm. long. Flowers greenish yellow, about 3.5 mm. apart, more or less secund, shortly pedicellate, subtended by hyalescent infundibuliform bracts. Lateral sepals united almost to the middle, 3 mm. long, 3 mm. wide, broadly ovate from a broad base, obtuse, smooth outside, sparsely glandulose within, 3-nerved, somewhat concave, fleshy. Dorsal sepal 4 mm. long, 4 mm. wide, broadly ovate from a wide base, subacute or obtuse, somewhat thickened at the tip, smooth on the outer surface, sparsely glandulose within, 3-nerved. Petals 1 mm. long, 1.25 mm. wide, .75 mm. thick at the truncate summit, rhomboid, triangular in cross-section at the apex, distinctly and densely glandulose above the middle, equaling the column. Labellum 1 mm. long, 1 mm. wide, triangular in outline in front of the abbreviated claw, about 1 mm. thick, with a transverse thickening across the middle, more or less glandulose outside and inside, blunt at

the apex, 3-nerved. Column about as long as the petals, dilated upward, 3-lobed at the summit; clinandrium entire.

From the closely allied *Stelis Alfredii* Schltr. distinguished in part by the form of the labellum and by the racemes being shorter than the leaves. In the shape of the leaves it resembles closely some of the forms of *S. Cooperi* Schltr., but is a much taller and more robust species.

COSTA RICA, Province of San José, Las Nubes, Paul C. Standley 38643 (TYPE in Herb. Ames No. 29331.), 38570, 38595, March 20-22, 1924. 1500-1900 meters altitude.

*Stelis parvula* Lindl. Fol. Orch. Stelis (1858) 7.

*Stelis microstigma* Reichb. f. Beitr. Orch. Centr. Am. (1866) 94, t. 8, figs. IV, 10-13.

*Stelis obscurata* Reichb. f. Beitr. Orch. Centr. Am. (1866) 95, t. 8, figs. I, 1 & 2.

*Stelis microtis* Reichb. f. Beitr. Orch. Centr. Am. (1866) 95, t. 8, figs. III, 6-9.

*Stelis Bradei* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 385.

*Stelis rhodochila* Schltr. in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 392.

*Stelis parvula* Lindl. was described from Nicaraguan material collected by C. Wright in 1853-56. Recently an abundance of material referable to this species has been collected in Central America and is represented in my herbarium by specimens from Costa Rica, Nicaragua, and Guatemala. Critical studies of this material have convinced me that *S. parvula* Lindl. includes *S. microstigma* Reichb. f., *S. obscurata* Reichb. f., *S. microtis* Reichb. f., *S. Bradei* Schltr., and *S. rhodochila* Schltr. The flowers of *S. microtis*, as represented by Wendland's No. 883 from Desengaño, Costa Rica, are similar in every way to flowers of Wright's Nicaraguan plants described by Lindley. From the studies I have made, aided by flowers from the Reichenbachian Herbarium, I am convinced that *S. microstigma* and *S. obscurata* are simply variants of *S. parvula*. *S. rhodochila* Schltr., from sketches of the type accompanied by fragments from Schlechter's type

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specimen, would seem to be inseparable from *S. parvula*. *S. Bradei* Schltr. was originally described as a close ally of *S. rhodochila*. From a sketch of the type, and from studies of flowers taken from the type, I have been unable to discover any reliable character for the differentiation of *S. Bradei* from *S. parvula*.

The prevailing color of the flowers of *Stelis parvula* Lindl. is greenish yellow with the labellum sometimes purplish. Rarely the flowers are suffused with purple throughout. These color differences do not seem to be correlated with structural differences and for purposes of classification may be wisely ignored.

NICARAGUA, *C. Wright* 9, 1853-56: Mombacho Volcano, *Maxon, Harvey & Valentine* 7795, July 5, 1923. 960 meters altitude.

COSTA RICA, Desengaño, *Wendland* 883, May 9, 1857: *Carpintera, C. H. Lankester* 797, April 1924. 5500 feet altitude: Santa Clara de Cartago, *Lankester* 568, December 23, 1923: Vicinity of La Palma, on road to La Hondura, *Maxon & Harvey* 8106, July 17, 18, 1923. 1500-1700 meters altitude: Province of Cartago, El Muñeco, south of Navarro, *Paul C. Standley* 33731, February 8, 9, 1924. 1400 meters altitude: Alto de La Estrella, *Standley* 39310, March 26, 27, 1924: Province of San José, La Palma, *Standley* 38001, 38025, 38030, 38046, 38048, 38056, 38059, 38080, 38100, 38111, 38126, 38329, March 17, 1924. About 1600 meters altitude: Las Nubes, *Standley* 38464, 38490, 38537, 38572, 38596, 38677, 38925, 38929: La Hondura, *Standley* 36342, 36346, 36381, 36386, March 2-4, 1924.

GUATEMALA, Department of Alta Verapaz, Vicinity of Cobán, road to Chamá, *Harry Johnson* 320, June 15, 1920. 3000 feet altitude.

***Stelis Standleyi* Ames sp. nov.** Planta *S. Tonduzianam* Schltr. valde revocans. Caules caespitiosi, elongati, monophylli. Folium anguste elliptico-lanceolatum. Pedunculus cum racemo multifloro folium valde superans. Bractee inflorescentiae hyalescentes, infundibuliformes. Flores atro-

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purpurei. Sepala aequalia, ovata, trinervia. Petala cuneata, prope apicem transverse incrassata, apice retuso. Labellum quadratum, deinde in apicem acutum angustatum. Discus supra medium transverse incrassatus, utrinque obscure lobulatus. Columna generis.

A tall slender plant which closely resembles *Stelis Tonduziana* Schltr. in habit, but is distinguishable from it in having 3- (not 5-) nerved sepals and differently shaped petals. Roots fibrous, whitish, glabrous. Secondary stems crowded, erect, 7-9 cm. long, very slender, wholly concealed by closely appressed nervose sheaths, monophyllous, scarcely 2 mm. in diameter. Sheaths elongated, brownish in dried specimens, becoming gradually dilated upward. Leaf 8-11 cm. long (including the petiole), about 1 cm. wide, narrowly elliptic-lanceolate, tridenticulate at the apex, much exceeded by the raceme; petiole 2.5-3 cm. long, slender, deeply sulcate above. Peduncle 17-20 cm. long, arising near the base of the petiole of the leaf, floriferous almost to the base, sheathed by a lanceolate nervose bract which is about 1 cm. long. Raceme loosely many-flowered, erect, slender. Floral bracts about 2.5 mm. distant between the points of insertion, hyalescent, tinged with purple, infundibuliform or tubular, equaling the flower-stalk. Flowers forty or more, dark purple. Sepals about equal, 3.5 mm. long, 2 mm. wide below the middle, ovate, obtuse or subacute, fleshy, glabrous externally, densely glandulose internally, 3-nerved with the middle nerve prominent on the outer surface. Petals 1 mm. long, 1 mm. wide near the tip, cuneate from a broad base, thickened transversely below the more or less membranaceous shallowly retuse apex, the thickening forming a prominent transverse ridge on the outer surface. Labellum 1 mm. long, about .75 mm. wide, very fleshy, lower two thirds quadrate, the upper third gradually tapering to an acute or subacute tip which is concave on the upper surface; above the middle the disc is heavily transverse-thickened with an obscure erect marginal lobule on each side of the thickening. Column typical of the genus.



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Among the Central American species of the genus *Stelis Standleyi* is most closely allied to the Costa Rican *S. Tonduziana* Schltr. Aside from the 3-nerved sepals which constitute a differentiating character, the flowers of *S. Standleyi* are materially smaller than those of *S. Tonduziana*.

The number of nerves in the sepals of *Stelis* flowers has been regarded as a serviceable differentiating character. I have some doubt about this, as recent studies of a large collection of *Stelis parvula* Lindl. have brought to light a specimen in which the nerves of the sepals varied in number from three to five.

COSTA RICA, Province of Cartago, La Estrella, Paul C. Standley 39483, March 26, 27, 1924. On tree; flowers dark purple. (TYPE in Herb. Ames No. 29144.)

***Stelis triangulabia* Ames sp. nov.** Radices elongatae, valde fibratae. Caules secundarii dense aggregati, caespitiosi. Folium anguste elliptico-lanceolatum, in petiolum elongatum contractum. Pedunculus cum racemo gracilis, folium superans. Sepala usque ad medium connata, trinervia, usque ad apicem sensim rotundata, apice plus minusve acuto. Petala cuneata, supra medium incrassata, carnosae, trinervia. Labellum breviter unguiculatum, supra unguem distincte triangulare. Discus minute glandulosus, prope basim transverse incrassatus. Columna generis.

Roots whitish, smooth, elongated, fibrous, 1 dm. more or less long. Secondary stems densely caespitose, erect, 2-4 cm. long, with several closely appressed tubular sheaths below the middle, monophyllous. Leaf narrowly elliptic-lanceolate, contracted into a slender petiole; lamina 2-3 cm. long, about 4 mm. wide at the middle, tridenticulate at the apex; petiole up to 12 mm. long. Peduncle with the raceme about 6 cm. long, much exceeding the leaf, arising from the axil of the leaf, sheathed at base by a strongly complanate spathaceous bract. Raceme 3-4 cm. long, slender, about 20-flowered, more or less secund. Bracts of the inflorescence shortly tubular at base, 2-3 mm. long, with the free portion subacute or acute, more or less concave, exceeding the pedi-

cellate ovary. Sepals united to about the middle, 1.5 mm. long, free portion .75 mm. long, 1 mm. wide, rounded gradually to the subacute apex, 3-nerved with the nerves prominent on the outer surface, glabrous. Petals hardly 1 mm. long, .75 mm. wide at the tip, dilated upward, truncate, lightly thickened above the middle, 3-nerved. Labellum .75 mm. long, about 1 mm. wide, shortly unguiculate, triangular in outline above the claw, rounded at the angles, minutely papillose-glandular. Disc slightly concave with a transverse ridge at base in front of the claw, 3-nerved. Column dilated upward.

The flowers appear to have been yellowish and cleistogamous. Closely allied to *Stelis parvula* Lindl., but distinct in the triangular labellum and very different petals and in the bracts of the inflorescence.

*Brenes 48* has been referred to *Stelis microtis* Reichb. f. by Dr. Schlechter, but the specimens I have examined are quite distinct from Wendland's material from which Reichenbach described *S. microtis*. (cf. *Stelis parvula* supra.)

COSTA RICA, Los Angeles de San Ramon, A. M. Brenes 48, July 1921. 1050 meters altitude. (TYPE in Herb. Ames No. 28754.)

**Scaphosepalum Standleyi** Ames sp. nov. Herba epiphytica. Rhizoma abbreviatum. Caules secundarii abbreviati, monophylli. Folia anguste elliptica, apice tridenticulata, in petiolum gracilem contracta. Scapus gracilis, paucibracteatus. Racemus gracilis. Flores parvi. Sepala lateralialia usque ad quartam partem apicalem connata, intus bicallosa, extus carinata, carinis demum rostriformibus. Sepalum dorsale oblongum, ad basim concavum, supra medium incrassato-convexum, extus prope basim valde carinatum. Petala semielliptica, apice inconspicue aristato, binervia. Labellum linguiforme, conspicue bicarinatum. Columna apice ampliata.

An epiphytic herb with dark red flowers. Roots fibrous, spreading, whitish, smooth. Rhizome abbreviated. Secondary stems densely caespitose, abbreviated, 5-10 mm. long.

leaves monophyllous. Leaves erect, narrowly elliptic or elliptic-oblong, indented at the tip, gradually narrowed towards the base, slender, venation pinnate, primary veins 5-7 cm long, 2-3 mm wide, cartilaginous; petiole about 1.5 cm long, base slender, spreading together with the leaves 5-9 cm long, with three to four closely appressed tubular bracts.



... of the lateral veins and the reticulation on the inner surface x 1. 2. ... x 7. 3. ... x 5. 4. petal x 5. 5. ...  
... Pinar del Rio, Province of Guantánamo, Cuba, ...  
... Standley 2447, February 1911. 2000-1600  
... flowers pink red. ...  
... Ames No. 2303.

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slender, monophyllous. Leaves erect, narrowly elliptic or elliptic-oblong, tridenticulate at the tip, gradually narrowed downward into a slender sulcate petiole; lamina 5-7 cm. long, 7-10 mm. wide, coriaceous; petiole about 1.5 cm. long. Scape slender, ascending, together with the raceme 5-9 cm. long, with three to four closely appressed tubular bracts. Raceme 2-5 cm. long, slender, the flowers opening in succession. Bracts of the inflorescence about 3 mm. long, obliquely infundibuliform, shorter than the pedicellate ovary. Lateral sepals about 6 mm. long, united almost throughout their length, forming a subelliptical lamina which is strongly concave and is furnished above the middle,— on each mid-nerve,— with a blunt papilliform retrorse emergence; each sepal is strongly carinate exteriorly along the mid-nerve with a keel terminating in a prolonged rostriform appendage. Dorsal sepal 5 mm. long, oblong, obtuse, strongly concave below the middle; apical half thickened, convex, dorsally carinate, with the keel which is nearly 1 mm. deep becoming evanescent above the middle of the sepal. Petals 3 mm. long, about 1.25 mm. wide, semielliptical, 2-nerved, acute, shortly aristate beneath the tip. Labellum 3 mm. long, about 1 mm. wide, linguiform, obtuse, 3-nerved at the base, strongly bicarinate near the middle, the keels more or less crescentiform. Column about 3 mm. long, produced at base into a conspicuous foot, dilated above, tridentate at the tip with the apical margin obscurely denticulate.

In habit and floral structure, *Scaphosepalum Standleyi* resembles *S. Pittieri* Schltr., but differs from it in the lateral sepals with differently situated papilliform emergences, and in the differently shaped aristate petals. [Fig. 4: 1, flower with the perianth segments spread out, showing the external rostrate appendages of the lateral sepals and the retrorse appendages on the inner surface  $\times 4$ . 2, column  $\times 7$ . 3, labellum  $\times 6 \frac{1}{2}$ . 4, petal  $\times 6 \frac{2}{3}$ .]

COSTA RICA, Province of Cartago, Cerro de La Carpintera, Paul C. Standley 34477, February 1924. 1500-1850 meters altitude. On tree; flowers dark red. (TYPE in Herb. Ames No. 29631.)

**Pleurothallis Aguilarii** Ames *sp. nov.* Herba epiphytica, nana. Caules secundarii abbreviati, monophylli. Folium cum petiolo oblanceolatum, coriaceum, rigidum. Pedunculus folium superans, pauciflorus. Flores atropurpurei ut videtur. Sepala lateralia cohaerentia, laminam oblongam glandulosam formantia. Sepalum dorsale anguste lanceolatum, glandulosum. Petala valde abbreviata, glabra, ovata. Labellum trilobatum, bicarinatum; lobis lateralibus falcatis, porrectis, pro parte glandulosis; lobo medio orbiculari. Columna in pedem producta, androclinio breviter fimbriato.

Plant epiphytic, the whitish glabrous roots spreading through a mixture of mosses and lichens. Secondary stems caespitose, abbreviated, monophyllous, rarely attaining 1 cm. in length, sheathed when young, the sheaths soon withering and breaking up into fibers. Leaf with the petiole up to 2.8 cm. long, 8.5 mm. wide, oblanceolate, marginate, very coriaceous, rigid, somewhat notched at the tip with the mid-nerve slightly extended. Peduncle exceeding the leaf, paucibracteate below the inflorescence; the bracts about 3 mm. long, tubular, scarious, closely appressed. Raceme slightly exceeding 1 cm. in length, several-flowered. Flowers apparently opening in succession, only one in perfection at a time. Perianth deep purple in the dried specimen examined. Ovary glabrous, exceeding the tubular abbreviated hyalacent bract which subtends the pedicel. Lateral sepals 1.2 cm. long, coherent through nearly the entire length of their inner margin, forming an oblong lamina (4 mm. wide), which is bifurcate at tip; outer half of each sepal conspicuously glandular-hairy; inner half densely and shortly glandulose, but not hairy. Dorsal sepal fleshy, 1.2 cm. long, about 2.5 mm. wide, narrowly lanceolate; on the inner surface, from the margins almost to the center, ornamented with long purplish glandular hairs. Petals 2.5 mm. long, about 1.5 mm. wide at the middle, ovate, obtuse or subacute, membranaceous. Labellum 4.75 mm. long, fleshy, conspicuously and unequally 3-lobed in front of the abbreviated oblong

claw; lateral lobes about 2 mm. long, falcate, with the sub-acute tip directed forward, minutely glandular below the middle; middle lobe 3.25 mm. long (including the isthmus), 1.5 mm. wide, orbicular. Disc conspicuously bicarinate, the keels arising from a fleshy basal callus which is situated in front of the claw. Column 4.5 mm. long, produced into a distinct foot, summit irregularly and shortly fringed or toothed.

*Pleurothallis Aguilarii* is a member of the perplexing group to which *P. canae* Ames, *P. vinacea* Ames, and *P. Wagneri* Schltr. belong. From *P. bifalcis* Schltr., it differs in the much smaller vegetative structures and in the form of the labellum. From *P. Wagneri* Schltr., it is clearly separable by the glandular-hairy sepals.

COSTA RICA, Volcán de Barba, *Ramiro Aguilar* (No. 33157 of Paul C. Standley's Costa Rican plants), February 3, 1924. (TYPE in Herb. Ames No. 29146.)

***Pleurothallis archidiaconi* Ames sp. nov.** Herba caespitosa. Caules secundarii elongati, graciles, monophylli. Folium coriaceum, ovato-lanceolatum, basi cordato, apice breviter bifurcato. Pedunculi fasciculati, folio breviores. Sepala lateralia cohaerentia, laminam rotundatam formantia, valde concava. Sepalum dorsale cucullatum, anguste ellipticum. Petala oblonga, deflexa, uninervia, margine plus minusve glanduloso. Labellum breviter unguiculatum, ovatum, carnosum, dense glandulosum, leviter unicallosum ante unguem. Columna abbreviata.

Secondary stems elongated, caespitose, 5-17 cm. long, paucivaginate, monophyllous. Sheaths tubular, closely appressed, smoothish. Leaf up to 8.5 cm. long, 1.7-2.5 cm. wide, ovate-lanceolate from a cordate base, acuminate, bifurcate at the apex. Peduncles fasciculate, about 1 cm. long, subtended by a complanate abbreviated spathaceous sheath. Lateral sepals completely coherent, forming an orbicular lamina which is 4 mm. long and 3 mm. wide, 4-nerved, strongly concave. Petals strongly deflexed, 5 mm. long, about 1 mm. wide, oblong, acute, glandular on the margin,

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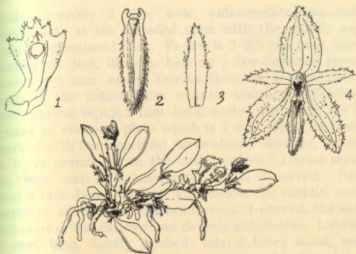
more or less fleshy, 1-nerved. Labellum shortly clawed, 4 mm. long, 3 mm. wide, resting in the concave depression formed by the lateral sepals; lamina very fleshy, ovate from a broad base, obtuse, densely glandulose on the outer surface, concave below the middle with an inconspicuous conical thickening in front of the claw. Column abbreviated, fleshy, about 1 mm. long, apparently entire at the summit.

Allies of this species are *Pleurothallis Cardium* Reichb. f., which has much larger flowers; *P. Smithii* Schltr., from which it is distinct in its differently proportioned flowers; and *P. tridentata* Klotzsch, which is a smaller plant with different perianth segments. In vegetative structure it suggests *P. pansamalae* Schltr.

TRINIDAD, B. W. I., Verdant Valley, *Archdeacon Arthur Hombersley*, December 11, 1924. Growing on cacao tree. Lip and two (inner) petals red; sepals yellowish green, stained chocolate-brown. Leaf stiff. Upper sepal hooded, with three brownish purple lines; lower sepals forming a rounded lamina. (TYPE in Herb. Royal Botanic Gardens, Trinidad and Tobago No. 10910, and alcoholic specimen from the type plant in Herb. Ames No. 29107.)

***Pleurothallis casualis* Ames sp. nov.** Herba epiphytica, dense caespitosa. Caules secundarii valde abbreviati, vaginati, monophylli. Folium cum petiolo oblanceolatum, apice tridentatum, marginatum. Pedunculus cum racemo folium aequans. Flores atrosanguinei, perpauci, inter se distantes. Sepala lateralia cohaerentia, laminam ellipticam sexnerviam formantia. Sepalum dorsale anguste lanceolatum, trinervium. Petala ovato-lanceolata, in caudam glandulosam producta. Labellum trilobatum; lobis laterilibus erectis, rotundatis; lobo medio oblongo, obtuso. Discus glaber, carinis duabus ornatus. Columna in pedem brevem producta, apice quadridentata, dentibus denticulatis.

Epiphytic, densely caespitose plant up to 2.5 cm. tall. Secondary stems much abbreviated, less than 5 mm. long, concealed by scarious loosely appressed tubular sheaths, monophyllous. Leaf about 2 cm. long (including the slender



PLEUROTHALLIS *navarrensensis* Ames



*P. casualis* Ames



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petiole), scarcely 5 mm. wide, oblanceolate, marginate, bidenticulate at the rounded apex with the middle nerve forming a prominent cusp. Peduncle 2-2.5 cm. long, hardly equaling the leaf, filiform, bearing a few-flowered raceme. Flowers 4-5 mm. apart, two to three in a loose raceme. Bracts of the inflorescence minute, scarious, infundibuliform. Lateral sepals 5 mm. long, united almost to the tip, forming an elliptical plate which is 3 mm. wide; each sepal 3-nerved with the innermost nerve almost obsolete, the middle nerve prominent on the outer surface. Dorsal sepal 5 mm. long, narrowly lanceolate, acute, 3-nerved. Petals about 4 mm. long, 1.5 mm. wide below the middle, ovate-lanceolate, acuminate, membranaceous, 1-nerved, the apical third more or less caudate and densely glandulose. Labellum 2.5 mm. long, lightly 3-lobed; lateral lobes basal, erect, forming together (when spread out) an orbicular plate in front of the terminal or middle lobe which is 1.5 mm. long, oblong, obtuse in outline, and lightly convex. Disc eglandulose or sparsely glandulose, traversed by two longitudinal keels which issue from a minute basal callus. Column more or less arcuate, produced into a short foot, quadridentate at the summit, the teeth inconspicuously denticulate.

A near ally of this species is *Pleurothallis abjecta* Ames, from which it differs in the caudate petals and different labellum. [Fig. 5: 1, flower spread out  $\times$  about 3. 2, labellum  $\times$  about 10. 3, column flattened out to show the terminal lobes, much enlarged.]

COSTA RICA, Province of San José, La Hondura, Paul C. Standley 36517, March 2-4, 1924. 1300-1700 meters altitude. On tree; flowers dark red. (TYPE in Herb. Ames No. 29145.)

*Pleurothallis cedralensis* Ames Sched. Orch. 4 (May 1923) 18; 7 (1924) 26, t. 6.

*Pleurothallis myrtilus* Schltr. in Fedde Repert. Beihefte 19 (November 1923) 108.

From the description of the type and from studies of a duplicate of the Brenes collection referred by Dr. Schlechter

to *Pleurothallis myrtillus*, it is clear that *P. myrtillus* is conspecific with *P. cedralensis* Ames and should be reduced to synonymy.

COSTA RICA, près de San Ramon, A. M. Brenes 23, November 1921. 1025 meters altitude: Province of San José, La Hondura, Paul C. Standley 36376, 36402, 36445, March 2-4, 1924. 1300-1700 meters altitude; Standley 37620, 37648, March 16, 1924.

***Pleurothallis costaricensis*** Rolfe in Kew Bull. (1917) 80; Ames Sched. Orch. 7 (1924) 26, t. 14.

*Pleurothallis ehrhartiiflora* Schltr. in Fedde Repert. Beihefte 19 (1923) 187.

Dr. Schlechter compared his *P. ehrhartiiflora* with *P. glumacea* Lindl. and with *P. tricarinata* Poepp. & Endl. Studies of duplicate material of the type of *P. ehrhartiiflora* have convinced me that this species is inseparable from *P. costaricensis*.

COSTA RICA, San Pedro de San Ramon, A. M. Brenes 141, September 1921. 950 meters altitude.

***Pleurothallis navarrensis*** Ames sp. nov. Rhizoma repens. Caules secundarii valde abbreviati, vaginati, vaginis hispidulis. Folium ellipticum, marginatum. Pedunculi valde abbreviati. Sepala lateralia paene usque ad basim libera, mentum formantia, glanduloso-ciliata, ovato-oblonga. Sepalum dorsale simile. Petala anguste lanceolata, uninervia, margine ciliato. Labellum linguiforme, bene glandulosum, utrinque prope unguem lobulatum. Callus in disco prope unguem conformis. Columna in pedem producta, clinandrio fimbriato.

Rhizome creeping, giving off coarse, whitish roots. Secondary stems much abbreviated, monophyllous, more or less decumbent, about 5 mm. long, concealed by infundibuliform rufous sheaths which become dilated and marginate above with hispidulous emergences on the nerves. Leaf elliptical or suborbicular, obscurely marginate, very coriaceous, conspicuously and deeply rugose when dry, purplish

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beneath; lamina up to 12 mm. long, 5.5–6.5 mm. wide, much exceeding the inflorescence. Peduncles fasciculate, abbreviated, about 4 mm. long, partly concealed by sheaths, 1-flowered. Flowers dark red-purple. Lateral sepals free almost to the base, forming a distinct mentum with the blunt foot of the column, 3.25 mm. long, about 1 mm. wide, ovate-oblong, subacute, thickened near the tip, conspicuously 3-nerved, glandular-ciliate on the margin and sparsely glandulose on the inner surface. Dorsal sepal 3.25 mm. long, 1.75 mm. wide, ovate from a broad base. Petals 2.25 mm. long, narrowly lanceolate, 1-nerved, margin distinctly glandular-ciliate. Labellum 2.5 mm. long, about .5 mm. wide, densely glandulose on the upper surface, narrowly linguiform; margin of the upper half deflexed, glandulose-ciliate; margin of the basal half more or less erect, conspicuously glandular-ciliate. Claw abbreviated, equaled (on each side) by an auriculiform introrse lobule formed by the base of the expanded portion of the labellum; in front of the claw there is a conical, glandulose, callus-like thickening which is evanescent into rather inconspicuous ridges which wholly disappear near the middle of the lamina. Column 2 mm. long, produced into a blunt-tipped foot, dilated upward, with the clinandrium 5-toothed, the teeth ragged-fringed.

Allied with *Pleurothallis abjecta* Ames, from which it is clearly separable by its abbreviated peduncle and very different petals. [Fig. 5: 1, column flattened out to show the terminal lobes  $\times$  11. 2, labellum  $\times$  about 10. 3, petal  $\times$  9  $\frac{1}{2}$ . 4, flower with the perianth segments spread out  $\times$  6.]

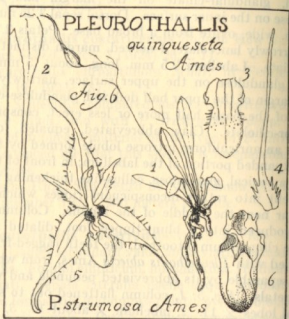
COSTA RICA, Province of Cartago, El Muñeco, south of Navarro, Paul C. Standley 33888, February 8, 9, 1924. About 1400 meters altitude. On tree; creeping; leaves purple-bronze, especially beneath; flowers dark red-purple. (TYPE in Herb. Ames No. 29163.); Standley 33865, from the same locality as the type, appears to be the same species.

***Pleurothallis quinqueseta* Ames sp. nov.** Herba nana, caespitosa. Inflorescentia laxiflora, folium excedens. Sepala petalaeque in caudas perlongas producta. Petala in margine

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sparse fimbriata. Labellum obscure trilobatum; lobo medio obovato, glanduloso; lobis lateralibus minutis, obtusis, erectis, prope basim disci. Columna (?)

Plant densely caespitose from glabrous whitish spreading roots, excluding the inflorescence 2.5-3.5 cm. tall. Secondary stems very much abbreviated, inconspicuous, mono-



phyllous. Leaves coriaceous, about 2 cm. long, 2-2.5 mm. wide, narrowly oblanceolate, narrowed into a slender petiole, conspicuously marginate, bidenticulate at the apex with the mid-nerve produced into a short cusp. Peduncles filiform, with the dichotomously branched inflorescence 4-6 cm. long, much exceeding the leaves. Branches of the inflorescence 4-5 mm. long, subtended by minute hyalescent infundibuliform sheaths. Lateral sepals almost free, 9-12 mm. long (including the slender elongated caudate termination), ex-

panded portion scarcely 4 mm. long, 1.5 mm. wide, oblong-lanceolate, 1-nerved, the nerve prominent and subcarinate on the outer surface. Dorsal sepal similar to the laterals and equal to them, strongly concave. Petals long-caudate, about 1 cm. long (including the caudate termination), expanded portion 2 mm. long, about 1 mm. wide, with about five unequal fringe-like teeth on each side above the middle, conspicuously 1-nerved. Labellum 2.2-2.5 mm. long, bilobulate near the base, with the lobules erect and rounded at the tip; upper two thirds of the lamina obovate, obtuse, with the margin glandular-ciliate, and the surface distinctly glandulose. Column too mature for studies of the structural details.

*Pleurothallis quinqueseta* is closely allied to *P. divexa* Ames, from which it differs most conspicuously in the upper sepal being 1-nerved, in the petals being prolonged into caudate tips, and in having a more membranaceous labellum. From *P. setigera* Lindl., a Peruvian species, which is another close ally, it differs in the structure of the labellum and apparently in having the caudate portion of each sepal longer in proportion to the expanded portion.

The name *quinqueseta* is an allusion to the five tails of the perianth. [Fig. 6: 1, general habit about natural size. 2, lateral sepal  $\times 4 \frac{1}{2}$ . 3, labellum spread out  $\times 8$ .]

COSTA RICA, Province of San José, La Hondura, Paul C. Standley 36283, March 2-4, 1924. 1300-1700 meters altitude. On tree. (TYPE in Herb. Ames No. 29165.): Standley 38368, from the same locality, appears to be the same species.

***Pleurothallis Standleyi* Ames sp. nov.** Herba epiphytica, caespitosa. Caules secundarii monophylli, nervis muricato-hispidulis. Folium ellipticum, marginatum. Pedunculi fasciculati, ex axilla folii orientes. Racemus pauciflorus. Ovarium glabrum. Flores extus glabri. Sepala lateralia usque ad medium cohaerentia, triangularia, margine minute ciliolato. Sepalum dorsale oblongo-lanceolatum. Petala oblongo-lanceolata, prope apicem lacerato-fimbrillata, uninnervia. Labellum oblongum, margine breviter ciliolato,

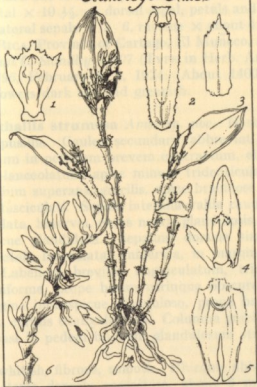
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basi cordata auriculis obtusis incurvis. Columna apice lacerato-dentato.

Roots whitish, glabrous. Secondary stems caespitose, more or less erect, 6 cm. long when mature, concealed by closely appressed sheaths, monophyllous. Sheaths four to seven, brownish when dry, conspicuously nerved, with the nerves prominent and more or less hispidulous, dilated at the tip into a round-ovate marginate hispid lamina which is 3 mm. long on the uppermost sheaths. Leaf 2-3 cm. long, up to 1.4 cm. wide, elliptic or elliptic-oblong, weakly marginate, narrowed into a short sulcate rigid petiole, glabrous. Peduncles several, concealed at the base by an elongated slenderly infundibuliform brownish sheath which is more or less hispid on the nerves, fasciculate, shorter than the leaf, flowering in succession, bearing as many as six dark red and greenish flowers in a slender raceme. Floral bracts hyalescent, glabrous, enclosing the pedicels. Raceme up to 12 mm. long, the terminal flower sometimes reaching to the middle of the leaf. Rachis smooth. Ovary scarcely 1 mm. long, glabrous. Lateral sepals smooth on the outer surface, 3.5 mm. long, united to about the middle, narrowly triangular, obtuse, forming with the foot of the column a distinct mentum which is 1 mm. long, margins finely glandular-ciliate, the free portion of each sepal distinctly 3-nerved. Dorsal sepal 4 mm. long, 1 mm. wide, oblong-lanceolate, obtuse, strongly concave at the base, 3-nerved, margin inconspicuously glandular-ciliolate above the middle. Petals 2 mm. long, scarcely 1 mm. wide, oblong to oblong-lanceolate, narrowed to a very acute tip, irregularly fimbriate on the margin above the middle, 1-nerved. Labellum 2.5 mm. long, about 1 mm. wide, narrowly oblong, obtuse, 3-nerved, with the margin glandular-ciliolate, at the base shortly clawed with an auricle on each side of the claw and a thickening in front of it. Column about 2 mm. long, produced into a conspicuous foot, dilated upward to the finely denticulate or fimbriate apex.

Closely allied to *Pleurothallis peraltensis* Ames, which is distinct in its subpandurate labellum with more conspicuous

**PLEUROTHALLIS** *Fig. 7*  
*Standleyi* Ames



Roots secondary, long slender, partly concealed by an elongated tubular sheath, monophyllous. Leaf shortly petioled, 14 mm. long, 4-5 mm. wide, with the lamina very fleshy, elliptical or elliptic-lanceolate, lightly marginate, tridentulate at the apex. Peduncle slender, elongated, much exceeding the leaves, up to 2.6 cm. long, with a closely appressed tubular bract near the middle

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and longer fringe on the margin. It is also closely allied to *P. brevis* Schltr., another Costa Rican species of the *Lepantheformes* section of the genus, but appears to differ from it in the flowers being entirely glabrous on the outer surface, in the column being conspicuously lacerate on the margin of the clinandrium, and in the ovary being glabrous and not at all hispidulous in any of the flowers examined. [Fig. 7: 1, column flattened out to show apical lobes  $\times 10$ . 2, labellum  $\times 13$ . 3, petal  $\times 10 \frac{1}{2}$ . 4, dorsal sepal, petals and column  $\times 6 \frac{1}{2}$ . 5, lateral sepals  $\times 7$ . 6, raceme  $\times$  about 4.]

COSTA RICA, Province of Cartago, El Muñeco, south of Navarro, Paul C. Standley 33607 (TYPE in Herb. Ames No. 29143.), 33796, February 8, 9, 1924. About 1400 meters altitude. Flowers dark red and greenish.

**Pleurothallis strumosa** Ames sp. nov. Herba dense caespitosa, pusilla. Caules secundarii abbreviati, monophylli. Folium in petiolum brevem contractum, ellipticum vel elliptico-lanceolatum, apice minute tridenticulato. Pedunculus folium superans, gracilis, apice bracteoso. Flores succedanei, fasciculati. Sepala lateralia valde caudata, oblongo-lanceolata, binervia, extus nervis glandulosis, in margine conspicue glandulosa. Sepalum dorsale simile, trinervium. Petala lanceolata, uninervia, in margine sparse fimbriata. Labellum breviter unguiculatum, trinervium, antice linguiforme, prope basim utrinque obscure auriculatum, margine inconspicue glanduloso, prope basim late bicarinatum, carinis triangularibus. Columna gracilis, apice cucullato, basi in pedem bilobum glandulosum strumosum producta.

Roots whitish, fibrous, smooth. Rhizome abbreviated. Secondary stems densely caespitose, about 6 mm. long, slender, partly concealed by an elongated tubular sheath, monophyllous. Leaf shortly petioled, 14 mm. long, 4-5 mm. wide, with the lamina very fleshy, elliptical or elliptic-lanceolate, lightly marginate, tridenticulate at the apex. Peduncle slender, elongated, much exceeding the leaves, up to 2.6 cm. long, with a closely appressed tubular bract near the middle



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and at the summit terminated by several imbricating bracts. Flowers fasciculate, opening in succession, hyaline, spotted with maroon. Pedicel and ovary about 4 mm. long, much exceeding the subtending bract. Lateral sepals 6.5 mm. long, 1.5 mm. wide above the base, oblong-lanceolate, caudate, 2-nerved, the inner nerve forming a distinct external keel, conspicuously glandular along the nerves on the outer surface and on the margin, the marginal glands .25 mm. long. Dorsal sepal 7 mm. long, 1.5 mm. wide near the middle, similar to the lateral sepals, 3-nerved, the nerves carinate on the outer surface and distinctly glandulose. Petals about 3 mm. long, scarcely 1 mm. wide at the middle, narrowly lanceolate, acute, sparsely fimbriate, 1-nerved. Labellum 3 mm. long, about 1 mm. wide above the middle, 3-nerved; apical portion very fleshy, linguiform, strongly convex, shallowly excavated beneath, rounded at the apex; basal portion minutely auriculate on each side in front of the broad abbreviated claw, glandular beneath, raised on either side in a broad triangular keel. Column slender, about 2 mm. long, at base produced into a conspicuous blunt bilobulate glandulose foot, strongly cucullate at the apex, with the apical margin faintly denticulate.

From *Pleurothallis hastata* Ames, its nearest Central American ally, *P. strumosa* is in part separable by its conspicuously 3-nerved fringeless labellum and by its conspicuously glandular sepals. [Fig. 6: 5, flower with perianth segments spread out  $\times 5$ . 6, labellum  $\times 8 \frac{2}{3}$ .]

COSTA RICA, Carpintera, C. H. Lankester 766, February 1924. (TYPE in Herb. Ames No. 28813.)

***Pleurothallis uncinata* Fawc.** in Journ. Bot. 33 (1895) 12; Cogn. in Urb. Symb. Antill. 6 (1909) 416; Fawc. & Rendle Fl. Jam. 1 (1910) 63, t. 10.

*Pleurothallis uncinata* Fawc. has not been noted heretofore as a native of Central America.

COSTA RICA, Province of Cartago, El Muñeco, south of Navarro, Paul C. Standley 33900, 33904, 33911, February

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8, 9, 1924. About 1400 meters altitude: Alto de La Estrella, *Standley 39564*, March 26, 27, 1924.

**Pleurothallis velaticaulis** *Reichb. f.* in *Linnaea* 22 (1849) 824.

*Pleurothallis Pittieri* *Schltr.* in *Fedde Repert.* 3 (1906) 247.

Recent collections made in Costa Rica have included numerous specimens of a very variable species which I believe is inseparable from the West Indian *Pleurothallis velaticaulis* *Reichb. f.* The range of variation includes *P. Pittieri* *Schltr.*, and I now regard this species, which should be reduced to synonymy, as a luxuriant floriferous form of *P. velaticaulis*.

COSTA RICA, Province of San José, La Palma, *Paul C. Standley 32899, 32929*, February 3, 1924. On tree. About 1600 meters altitude; *Standley 38299*, March 17, 1924: La Hondura, *Standley 36604*, March 2-4, 1924. 1300-1700 meters altitude: Las Nubes, *Standley 38894*, March 20-22, 1924. About 1500-1900 meters altitude.

**Lepanthes horrida** *Reichb. f.* *Beitr. Orch. Centr. Am.* (1866) 91.

*Lepanthes rostrata* *Ames* *Sched. Orch.* 5 (1923) 22.

Studies of a large collection of *Lepanthes horrida* *Reichb. f.* obtained in 1924 by Paul C. Standley indicate that *L. rostrata* *Ames* should be reduced to synonymy. In the original description of *L. rostrata* the characters which were relied on for separation from *L. horrida* were set forth in detail. These characters fail to hold when studied throughout an abundance of material.

COSTA RICA, Province of San José, between Las Nubes and San Isidro de Coronado, *Paul C. Standley 3881*, March 22, 1924. 1420-1800 meters altitude: Las Nubes, *Standley 38534, 38597, 38676, 38679, 38687, 38722, 38914, 38926, 39810*, March 20-22, 1924. About 1500-1900 meters altitude: La Palma, *Standley 33191, 33216*, February 3, 1924. About 1600 meters altitude.

**Lepanthes Standleyi** Ames *sp. nov.* Herba caespitosa, nana. Caules secundarii vaginis muricatis obtecti, monophylli. Folium ellipticum, apice tridenticulatum, bene marginatum. Pedunculi folio breviores, distichiflori. Bracteae inflorescentiae cymbiformes, muricatae vel bene glandulosae. Sepala lateralibus usque ad medium cohaerentia, diaphana, ovato-lanceolata, acuta. Sepalum dorsale simile, trinervium. Petala latiora quam longiora, transverse bilobata; lobo posteriore anguste oblongo, subobtusulo, sepalum dorsale vix aequanti; lobo anteriore simili. Labellum bilobatum, lobis aliformibus. Columna usque ad apicem dilatata.

A dwarf caespitose species 2.5–5 cm. tall. Roots fibrous, spreading, whitish. Secondary stems about 2.5 cm. long when mature, monophyllous, concealed by about four blackish or purplish sheaths. Sheaths 4–10 mm. long, gradually dilated upwards, slenderly infundibuliform, hispid along the nerves. Leaf 2–3 cm. long when nearing maturity, about 1 cm. wide, elliptic, contracted at base into a short petiole, tridenticulate at the apex, longer than the inflorescence, often purplish beneath, marginate. Peduncle with the raceme about 1.5 cm. long, bearing a bract near the middle. Raceme abbreviated, distichously flowered. Bracts of the raceme hispidulous, somewhat cymbiform, acute. Lateral sepals united to about the middle, 3 mm. long, 2 mm. wide, ovate-lanceolate, translucent, 2-nerved. Dorsal sepal similar, 3-nerved. Petals about 1 mm. long opposite the point of insertion at the base of the column, 5 mm. wide; posterior portion 2 mm. long, scarcely equaling the dorsal sepal, narrowly oblong, subobtusulo, about .5 mm. wide; anterior portion similar, about 3 mm. long, extending beyond the middle of the lateral sepals, obtuse. Labellum scarcely 2 mm. long, deeply cleft, and forming two aliform or broadly falcate lobes with obtuse tips. Column 1 mm. long, gradually dilated upward.

Allied to *Lepanthes estrellensis* Ames, but very much smaller with different labellum.

COSTA RICA, Province of San José, Las Nubes, Paul C. Standley 38800, March 20–22, 1924. 1500–1900 meters alti-

tude. On tree; flowers red; leaves purple beneath. (TYPE in Herb. Ames No. 29633.); *Standley 38787*. Flowers purple-red.

*Lepanthes Turialvae* Reichb. f. Beitr. Orch. Centr. Am. (1866) 57, t. 10, fig. III, 16; Reichb. f. Xen. Orch. 1 (1856) 151, 156, t. 50, figs. V, 15, 16.

*Lepanthes Tonduziana* Schltr. in Fedde Repert. Beihefte 19 (1923) 180.

An examination of numerous specimens that are chiefly referable to *Lepanthes Turialvae* indicates that this species includes *L. Tonduziana* Schltr.

COSTA RICA, Province of San José, La Hondura, *Paul C. Standley 36374, 38499*, March 2-4, 1924. 1300-1700 meters altitude: Province of Cartago, La Estrella, *Standley 39410*, March 26, 27, 1924: Province of Cartago, Vicinity of Orosi, *Standley 39816*, March 30, 1924: Volcán de Poás, along the road between La Lechería and the Hotel, *Standley 34625*, February 17, 1924. 2100-2600 meters altitude: Upper slopes of Volcán de Poás, between the Hotel and the crater, *Standley 34645, 34918*, February 17, 1924. 2500-2640 meters altitude.

***Pachystele corallorrhiza*** Ames sp. nov. Herba epiphytica. Caules vel pseudobulbi graciles, superpositi, bifoliati. Inflorescentia terminalis ad apicem pseudobulbi singula, spathis vel vaginis scariosis satis magnis usque ad basim capsulae protecta. Sepala lateralia triangularia, septemnervia. Sepalum dorsale simile, apice carinato. Petala ligulata, quinquenervia. Labellum panduratum, obtusum. Columna crassa, supra medium valde dilatata, bialata.

Epiphytic herb about 30 cm. tall, often branching. Roots about 2 mm. in diameter, covered with pustular emergences which give to them a coralline aspect. Stems slender, superposed, bifoliate, about 3 mm. thick, concealed at the base by elongated tubular sheaths which are 2-4 cm. long, joints conspicuously swollen. Leaves subopposite, 6-8 cm. long, up to 8 mm. wide, ligulate, coriaceous, unequally bilobed at the apex with the lobes obtuse. Inflorescence ter-

minal, 1-flowered, much shorter than the leaves, with several closely imbricating sheaths which reach to the base of the ovary. Flower-stalk and ovary about 3 cm. long, slender, glabrous. Lateral sepals about 11 mm. long, 5 mm. wide below the middle, triangular, acute, 7-nerved. Dorsal sepal about 11 mm. long, carinate beneath the acute apex, triangular, 7-nerved. Petals about 11 mm. long, 2.5 mm. wide, narrowly oblong or ligulate, narrowed above the middle into a subacute tip, membranaceous, 5-nerved. Labellum 1 cm. long, 8 mm. wide above the middle, broadly pandurate, entire, obtuse, inserted on the broad foot of the column. Column about 5 mm. long, fleshy at the base, dilated above, conspicuously winged on each side above the middle.

Allied to *Pachystele densa* Schltr., but much larger in all its parts, with different sepals and petals, and with pustular roots.

COSTA RICA, Province of San José, Las Nubes, *Paul C. Standley* 38909, March 20-22, 1924. 1500-1900 meters altitude. On tree. (TYPE in Herb. Ames No. 29711.)

***Ponera striata*** Lindl. in Bot. Reg. 28 (1842) Misc. 18, 19.

Specimens referable to this species have been received from C. H. Lankester. My records do not show that *Ponera striata* has been heretofore reported from Costa Rica.

COSTA RICA, Peralta, *C. H. Lankester* 955. (Material in alcohol: No. 940.) Flowers hyaline, streaked with pink-purple. In cultivation at Las Concavas, November 9, 1924.

***Jacquiella globosa*** (Jacq.) Schltr. in Fedde Repert. Beihefte 7 (1920) 124.

*Epidendrum globosum* Jacq. Enum. Pl. Carib. (1760) 29; Jacq. Sel. Stirp. Am. (1763) 222, t. 133, fig. 1.

This species has not been reported heretofore from Costa Rica. Although the Costa Rican specimens examined are in bud, they are clearly referable to *Jacquiella globosa* (Jacq.) Schltr.

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COSTA RICA, Province of Cartago, Dulce Nombre, *Paul C. Standley* 35805, February 27, 1924. On tree. 1400 meters altitude.

**Hexisea Lankesteri** *Ames sp. nov.* Herba epiphytica, foliis subteretibus instructa. Caules graciles, paucivaginati, vaginis demum in fibras solutis. Sepala triangulari-ovata vel oblongo-lanceolata, acuta. Petala oblonga, nonnihil subpandurata. Labellum membranaceum, saccum ovario adnatum formans, prope basim valde deflexum, superne in laminam subovatum expansum, apice valde retuso. Discus infra medium callosus. Columna gracilis.

Roots fibrous, whitish, smooth, spreading. Stems slender at the point of origin, about 1.5 dm. long, gradually but slightly thickened upward, subdichotomously branched above, jointed, when young concealed by closely appressed imbricating scarious sheaths, when mature barely concealed by the spreading fibrous remains of the withered sheaths. Leaves 6–11.5 cm. long, about 3 mm. in diameter near the base, semiterete, pointed, obliquely spreading, jointed. Inflorescence arising from the axil of a terminal leaf. Flowers white, borne singly, inconspicuous, subtended by scarious imbricating sheaths. Pedicel with the ovary about 5 mm. long. Lateral sepals 6.5–7 mm. long, about 3 mm. wide, oblong-triangular, acute, thickened at the tip, adherent to the lip at base and with it forming a conspicuous sac which is 3 mm. long and adnate to the ovary. Dorsal sepal 6 mm. long, about equal to the laterals, oblong-lanceolate, conspicuously thickened and fleshy at the acute tip. Petals 5–6 mm. long, narrower than the sepals, oblong, lightly pandurate, variable in width, subacute, membranaceous, exceeding the column. Labellum adnate to the column at base, with a conspicuously bent claw; free portion about 5 mm. long, 4.5 mm. wide in front of the claw, broadly ovate, retuse, with an obscurely erose margin, fleshy-thickened on the disc,— the thickening extending forward on the disc, somewhat interrupted in front so that it appears to be made up of crescentiform calli, one on each side. Sac (formed by the labellum and lateral sepals)

3 mm. long, rounded in front, almost completely adherent to the ovary. Column slender, free portion 4 mm. long, simple above the base.

*Hexisea Lankesteri* is a member of the group for which Dr. Rudolf Schlechter has proposed a new generic concept under the name *Fractiunguis*. It is closely allied to *Hexisea cuniculata* (*Schltr.*) *Ames comb. nov.* (*Fractiunguis cuniculatus Schltr.* in *Fedde Repert. Beihefte* 19 (1923) 31), but differs in the more robust habit, in the size of the flowers, and in the outline and calli of the labellum.

COSTA RICA, Pacaya, C. H. Lankester 519, September 6, 1923. Flowers white, marked with purple near the base of the lip. (TYPE in Herb. Ames No. 27259.)

*Epidendrum caligarium* *Reichb. f.* in *Gard. Chron.* (1869) 1110.

Roots very fleshy, whitish. Stems 30 cm. or more long, 3-5 mm. thick, the closely appressed sheaths of the leaf whitish when dry, thickly studded with blackish verruciform emergences. Leaves distichous (the upper ones), 1.5-6 cm. long, about 5 mm. wide, the lower ones early deciduous and wanting during anthesis (not seen). Flowers membranaceous, crowded in a terminal compound or bifurcate raceme, pale rose-purple (pink). Sepals 5-6 mm. long. Petals 5 mm. long, much narrower than the sepals. Labellum 8 mm. long, with the lateral lobes quadripartite and the terminal lobe deeply retuse. Column about 4 mm. long, adnate to the labellum, dilated upward, 4-lobed at the summit, deeply stained with purple-rose. Crest of the labellum yellowish, bilobed, the lobes fleshy, ascending, blunt. Ovary cuniculate.

*Epidendrum caligarium* was originally reported as a native of New Grenada by Wentworth W. Buller, who sent specimens to the Royal Gardens, Kew, with the following note: "This *Epidendrum* has quite the habit of *myrianthum*. The general appearance of the flower also resembles that species, but the side lobes of being so much divided seem to make it a separate species. It came from New Grenada."

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When Reichenbach published the original description in *Gardeners' Chronicle*, he referred to *E. caligarium* as a native of Central America. In 1918, Rudolf Schlechter ascribed the species to Mexico. Specimens recently submitted for identification by C. W. Powell localize *E. caligarium* definitely as a native of Panama and make possible an amplification of the original and incomplete Reichenbachian characterization. As far as I am able to ascertain, Powell's speci-



mens represent the second collection of this rare plant and clarify what has been, since 1869, an obscure and doubtful species.

In Mr. Powell's specimens the closely appressed tubular sheaths of the leaves are whitish and densely covered with black emergences which suggest some fungus disease.

If *E. caligarium* proves to be tractable under cultivation, it would be a welcome addition to what may be termed the "semi-botanical" section of our orchid collections. A clump of it in full flower must be a delightful sight. [Fig. 8: 1, dorsal sepal  $\times 3$ . 2, petal  $\times 2 \frac{3}{4}$ . 3, lateral sepal  $\times 3$ . 4, labellum  $\times$  about  $2 \frac{1}{4}$ . 5, column  $\times 4 \frac{1}{4}$ .]



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PANAMA, Province of Veraguas, San Juan, C. W. Powell  
380, February 1924. 1200 feet altitude.

**Epidendrum fundi** Ames *sp. nov.* Herba epiphytica ramosa. Caules vaginis foliorum valde rugulosi. Folia lineari-oblonga, obtusa. Flos singulus. Sepala lateralia lanceolata, apice cymbiformi, conspicue trinervia. Sepalum dorsale oblongum, usque ad apicem attenuatum, valde trinervium. Petala linearia, usque ad apicem angustata, trinervia. Labellum basi columnae adhaerens; pars labelli libera ovato-cordata, acuminata, acuta. Discus labelli valde nervosus, nervo medio prominenti. Columna carnosa, truncata.

Roots slender, fibrous, glabrous. Stems branching, foliose, whole plant 19-20 cm. tall. Sheathing bases of the leaves 8-11 mm. long, strongly complanate, when dry conspicuously rugulose, transversely wrinkled. Leaves 2-2.5 cm. long, 2-3 mm. wide, linear-oblong, tapering gradually toward both ends, 1-1.5 cm. apart, obtuse, mid-nerve prominent beneath. Peduncle slender, sheathed by a scarious strongly complanate conduplicate bract. Flowers solitary. Lateral sepals 6.5 mm. long, lanceolate, cymbiform at the tip, prominently 3-nerved with a supplementary nerve usually present. Dorsal sepal 8 mm. long, scarcely 2 mm. wide near the base, tapering gradually to the thickened apex, prominently 3-nerved. Petals 7 mm. long, about 1 mm. wide, linear, tapering gradually to the obtuse tip, prominently 3-nerved with the nerves approximate. Labellum adnate to the column, 6 mm. long (including the adherent base); free portion 5 mm. long, about 2.5 mm. wide, ovate-lanceolate from a cordate base, strongly concave in front of the column. Disc nervose, the nerves prominent, with the middle one forming a distinct keel on the upper surface. Column stout, scarcely 2.5 mm. long, entirely adnate to the labellum.

Near allies of this species are *Epidendrum rugosum* Ames and *E. Sanchoi* Ames, which are in part clearly distinct in having pustulose emergences on the leaf-sheaths and several-flowered racemes. *Epidendrum singuliflorum* Schltr., another

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member of the alliance, is a Guatemalan species clearly distinguished from *E. fundi* by its very dissimilar labellum, broader leaves, and larger flowers.

COSTA RICA, Southern slope of Volcán de Turrialba, near the Finca del Volcán de Turrialba, *Paul C. Standley 35080*, February 22, 1924. About 2000–2400 meters altitude. On tree. (TYPE in Herb. Ames No. 29147.); *Standley 35119*, from the same locality, is undoubtedly the same species.

***Epidendrum glandulosum*** Ames Sched. Orch. 7 (1924) 5, t. 20.

This species, which was discovered by C. W. Powell in Panama in 1923 on a trail near Colon, has recently been received from C. H. Lankester, who collected specimens in Costa Rica. The extension of range is remarkable, as the orchids of the Canal Zone rarely occur in Costa Rica unless they are representatives of common species which have the capacity to adjust themselves to varied conditions and are of wide distribution.

The leaves of this species are semi-terete in specimens preserved in alcohol. While the type was characterized by a few-flowered raceme, additional material received from Mr. Powell exhibits plants which have six or more flowers in loose racemes.

COSTA RICA, San Carlos, *C. H. Lankester 937*, April 1923.

***Epidendrum miserrimum*** Reichb. f. in Bonpl. 3 (1855) 220.

*Epidendrum poaeforme* Schltr. in Fedde Repert. Beihefte 19 (1923) 43.

Schlechter, in the notes accompanying the original description of *Epidendrum poaeforme*, compares this species with the West Indian *E. miserrimum* Reichb. f. The differences between Costa Rican specimens referable to *E. poaeforme*

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and typical plants of *E. miserrimum* are so subtle that specific distinction is questionable, and it seems best to relegate *E. poaeforme* to synonymy.

COSTA RICA, *C. Werckle*.

HAITI, GUADELOUPE, DOMINICA, GRENADA.

***Epidendrum Standleyi* Ames sp. nov.** Herba epiphytica. Caules erecti, approximati, paucifoliati. Folia semiteretia, acuta. Flos terminalis. Sepala lateralia anguste oblongo-lanceolata, apice incrassato. Sepalum dorsale simile. Petala anguste lanceolata, apice plus minusve triquetra. Labellum semiliberum, trilobatum; lobis lateralibus erectis; lobo medio supra medium tereti, valde incrassato. Discus trinervius. Columna infra apicem labello adnata.

Epiphytic herb allied to *Epidendrum teretifolium* Sw. and to *E. cobanense* Ames & Schltr. Roots branching, whitish, glabrous. Stems approximate on a creeping rhizome, erect, cylindrical, slender, 8-20 cm. tall, about 2 mm. in diameter when dry, partly concealed by the cinnamon-brown rather closely appressed rugulose sheaths of the leaves. Leaf-sheaths tubular, up to 2.2 cm. long, 3.5-4 mm. in diameter at the truncate summit. Leaves about four, obliquely ascending, 3.5-5.5 cm. long, semiterete, 2.5 mm. in diameter in the dried specimens, acute. Inflorescence arising from the axil of the uppermost leaf, subtended by a scarious sheath which arises opposite the leaf-axil. Pedicel, ovary, and tubular base of the flower about 1.7 cm. long. Flowers purplish-bronze, solitary. Lateral sepals forming with the base of the labellum a tubular sac which is adnate to the lower portion of the elongated column; free portion of each sepal 1.1 cm. long, about 2 mm. wide, narrowly oblong-lanceolate, acute, 5-nerved, complanate-thickened near the apex. Dorsal sepal similar, about 3 mm. wide near the middle, and at the apex simply thickened, subacute. Petals 1 cm. long, 2 mm. wide, narrowly lanceolate, somewhat triquetrous at the tip, subacute, fleshy, 3-nerved. Labellum adnate to the column 4 mm. from the summit; free portion 9 mm. long, distinctly 3-lobed, fleshy, more or less condu-

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plicate; lateral lobes erect, near the middle of the lamina, coarsely bidentate or tridentate on the margin or entire; middle lobe fleshy, acute, about 5 mm. long, very narrow, tapering gradually to the fleshy terete tip. Disc conspicuously 3-nerved, the nerves becoming verrucose where they terminate. Column about 6 mm. long, entire at the summit. Pollinia strongly flattened.

A close ally of *Epidendrum teretifolium* Sw., from which it differs in habit and in the form of the labellum. From *E. cobanense* Ames & Schltr. it differs conspicuously in having more membranaceous, pliable flowers and a very dissimilar labellum.

COSTA RICA, Province of Cartago, Vicinity of Orosi, Paul C. Standley 39684, March 30, 1924. On tree; flowers purplish bronze. (TYPE in Herb. Ames No. 29149.); Standley 39698, March 30, 1924. Flowers purplish green: Province of Cartago, El Muñeco, south of Navarro, Standley 33779, February 8, 9, 1924. About 1400 meters altitude. On tree. Flower faded. Leaves fleshy, semiterete.

**Dendrobium bunuanense** Ames nom. nov.

*Dendrobium appendiculoides*. Ames Orch. 7 (1923) 93, non J. J. Sm.

Owing to an unfortunate oversight, the prior use of the name *Dendrobium appendiculoides* for a species from New Guinea, published by J. J. Smith in Fedde Repert. 12 (1913) 114, was not noted when the Philippine species to which I gave the name was published. The new name, *D. bunuanense*, has reference to Mt. Bunuan in Mindanao.

**Telipogon Standleyi** Ames sp. nov. Herba epiphytica, parvula, foliis basalibus. Folia coriacea, anguste lanceolata. Racemus laxis, pauciflorus. Flores parvi. Sepala triangularia, uninervia. Petala anguste ovata, extus glabra, intus dense glandulosa, margine ciliato-glanduloso. Labellum oblongum, subacutum, dense glandulosum, trinervium. Columna brevis, dense glandulosa, breviter barbata.

NEW OR NOTEWORTHY ORCHIDS

Plant 3-6 cm. tall with several relatively large basal leaves, 5-10 mm. apart on the ascending complanate winged stems. Roots very coarse, whitish, smooth, spreading, somewhat flattened. Basal leaves crowded, sub-rosulate, 5-10 mm. long, up to 2 mm. wide, narrowly lanceolate, acute, fleshy, more or less erect; scale-like leaves 1-3 mm. long, alternate. Raceme up to 2.5 cm. long, loosely-flowered, with the rachis



strongly flattened and conspicuously winged. Floral bracts scale-like, more or less triangular, about 1 mm. long. Flowers yellow, about six, opening in succession, buds and fruits simultaneously present. Pedicellate ovary about 3.5 mm. long. Lateral sepals about 2.5 mm. long, strongly concave, triangular-ovate, acute, 1-nerved. Dorsal sepal similar. Petals 2.5 mm. long, 1.5 mm. wide below the middle, narrowly ovate, acute, glabrous on the outer surface, densely

NEW OR NOTEWORTHY ORCHIDS

glandulose within below the middle, margin conspicuously glandular-ciliate with the glands retrorse. Labellum 3 mm. long, 1 mm. wide, oblong, gradually narrowed to the sub-acute apex, 3-nerved, glandulose on the upper surface, with the margins closely ciliate-glandulose, the glands more or less retrorse. Column densely glandular, the dorsal and lateral glandular hairs being much reduced.

*Telipogon Standleyi* is closely related to *T. Lankesteri* Ames, from which it differs most strikingly in having the glandular hairs of the column much abbreviated and in being a dwarf plant with foliage present at flowering time.

The collector described the flowers as yellow. In dried specimens the flowers are yellow with a purplish or crimson tinged center, the lower half of the petals and labellum being more deeply colored than the upper half; the column is deep purple.

The petals appear to be 1-nerved, but on close scrutiny two supplementary nerves may be detected. [Fig. 9: 1, labellum spread out  $\times 8$ . 2, flower with the perianth segments spread out  $\times$  about  $5 \frac{3}{4}$ . 3, column, from above, anther and pollinia removed, much enlarged. 4, pollinia, much enlarged.]

COSTA RICA, Province of San José, between Aserri and Tarbaca, *Paul C. Standley 34120*, February 12, 1924. On tree, flowers yellow. 1600-1900 meters altitude. (TYPE in Herb. Ames No. 29710.)

***Cryptocentrum Standleyi* Ames sp. nov.** Herba epiphytica, pusilla, plus minusve erecta. Folia aggregata, erecto-patentia, linearia, carnosula, rigida, satis triquetra, valde acuta. Inflorescentia lateralis, uniflora. Pedunculus gracilis, ascendens, paucibracteatus, foliis vix longior. Sepala lateralia oblonga, utrinque attenuata, calcar dependens formantia. Sepalum dorsale oblongum, concaviusculum. Petala lanceolata, trinervia. Labellum concavum, lanceolatum, basi in unguem perlongum calcari sepalorum adnatum angustatum. Columna brevis, apice biauriculato. Pollinia quattuor.

## NEW OR NOTEWORTHY ORCHIDS

Rhizome erect or ascending, about 3.5 cm. long, forming a pseudomonopodium from which the linear triquetrous leaves spread obliquely on all sides. Leaves jointed, deciduous at the joint, becoming tufted near and at the tip of the growing point of the rhizome, up to 1.9 cm. long including the slender persistent base which is about 6 mm. long and at the point of origin expanded into a clasping sheath. Leaf-blade 9–13 mm. long, scarcely .75 mm. wide in dried specimens, linear, curved, very acute, fleshy, more or less triquetrous. Inflorescence lateral, 1-flowered. Peduncle very slender, ascending, about 1.8 cm. long, at least 3-bracteate. Bracts up to 6 mm. long, tubular, more or less translucent, the uppermost one subtending the pedicel of the solitary flower and enclosing the blunt tip of the elongated sepaline spur which is about equal to the ovary and pedicel. Ovary and pedicel 13 mm. long. Flowers dull red, about 8 mm. long not including the slender spur which is 10 mm. long. Lateral sepals 8 mm. long, 1.5 mm. wide, oblong, shortly cuspidate at the tip, united below, free above, contracted into a slender elongated pendent cylindrical spur, 3-nerved. Dorsal sepal oblong, 8 mm. long, about 1.5 mm. wide, concave, tapering toward the base and the navicular acute tip. Petals narrowly lanceolate, 7 mm. long, about 2 mm. wide below the middle, acute, 3-nerved. Labellum 6 mm. long from base of column to tip, prolonged at base into a slender spur which is entirely enclosed in the spur formed by the lateral sepals; free portion strongly concave, lanceolate, acute. Column 2.25–2.5 mm. long, expanded above into two rounded wings. Pollinia four, strongly complanate.

Similar to the Colombian *Cryptocentrum Hoppii* Schltr., but separable from it by the color of the larger flowers and much larger sepaline spur. The nearest Central American ally is undoubtedly *C. gracillimum* Ames & Schweinf., which is a much larger plant.

COSTA RICA, Province of San José, La Palma, *Paul C. Standley* 33028, February 3, 1924. On mossy tree trunk; flowers dull red. About 1600 meters altitude. (TYPE in Herb. Ames No. 29632.)

*Trichocentrum panamense* Rolfe in Kew Bull. (1913) 341; Rolfe in Orch. Rev. 22 (1914) 270.

The type specimen of *Trichocentrum panamense* is characterized in my notes as "too scrappy to be useful." It is, therefore, a great satisfaction to have received from C. W. Powell both pressed and alcoholic material which surely represents Rolfe's species and makes possible a comparison between it and its nearest allies. In the original description, Rolfe emphasized the four-lobed tip of the spur of the labelum. It is this peculiarity which serves best to differentiate *T. panamense* from *T. capistratum* Linden & Reichb. f., a native of Costa Rica, which is in part characterized by a five-lobed spur. In Reichenbach's herbarium, there is a drawing of a species that he identified as being *T. capistratum* (a Liebmann plant) which has a four-lobed spur and in general aspect resembles very closely the Powell specimens which I take to be representative of *T. panamense*. It would seem that the number of lobes of the spur is variable, or that the identification of the Liebmann specimen was carelessly attempted, and that it is in reality conspecific with *T. panamense* Rolfe. As it is impossible to settle definitely at this time the status of *T. capistratum*, it seems best to accept *T. panamense* as a valid species, the four-lobed spur being the salient differentiating character.

PANAMA, On bush-covered hills east of the Panama Canal. (TYPE in Herb. Kew.): Trail from Fort Sherman to mouth of Chagres River, C. W. Powell 371. Sea level.

*Dichaea Standleyi* Ames sp. nov. Caules fasciculati, plus minusve flexuosi, compressi, distanter foliati. Folia decidua, graminea, linearia, acuta, disticha, papyracea. Flores singuli e foliorum axillis orientes. Pedunculi folio breviores. Sepala lateralia patentia, lanceolata, acuta, quinquenervia. Sepalum dorsale simile. Petala patentia, lanceolata, quinquenervia, in apice acuto triquetra. Labellum supra basim cuneatam in laminam crescentiformem expansum, minute glandulosum, septemnervium. Columna valde incrassata.



## NEW OR NOTEWORTHY ORCHIDS

An epiphytic herb up to 15 cm. tall. Roots whitish, spreading, fibrous. Stems concealed by the sheathing bases of the elongated leaves, complanate. Leaves up to 3.5 cm. long, 2-3 mm. wide, gramineous, distichous, linear-oblong, acute, more or less hispidulous on the margin above the middle, jointed with the complanate sheathing base. Leaf-sheaths 7-10 mm. long. Peduncles arising from the stem near the axils of the leaves, lateral, concealed at base by the leaf-sheaths, 7-10 mm. long, 1-flowered. Floral bract 4-5 mm. long, scarious, round-ovate, acute, thickened at the tip. Lateral sepals spreading, 7.5 mm. long, 3 mm. wide, lanceolate, acute, 5-nerved. Dorsal sepal similar and equal to the laterals. Petals lanceolate, acute, 6 mm. long, 2 mm. wide, 5-nerved, thickened and subtriquetrous at the acute tip. Labellum 5 mm. long, 7 mm. wide; basal half cuneate-oblong, 2 mm. wide; apical half crescentiform, apiculate, with the horns of the crescent 2 mm. long, narrowly triangular, retrorse and acute, minutely glandular. Disc 7-nerved. Column stout, 3 mm. long.

From *Dichaea Lankesteri* Ames, this species differs in floral proportions and in the tip of the labellum being apiculate rather than thickened into a more or less triquetrous prolongation. In habit *D. Standleyi* resembles *D. graminoides* (Sw.) Lindl., but is readily distinguished from that species by the outline of the labellum.

COSTA RICA, Province of Limón, Vicinity of Guápiles, Paul C. Standley 37440, March 12, 13, 1924. 300-500 meters altitude. On tree; flowers white and purple-red. (TYPE in Herb. Ames No. 29640.)

**Orchidotypus muscoides** Kränzl. in Engl. Bot. Jahrb. 37 (1906) 383; Kränzl. in Engl. Pflanzenreich IV. 50 (Heft 83) (1923) 59, fig. 3. C. a-e.

This species has appeared in a large collection of orchids found by Paul C. Standley in Costa Rica. Although there are slight differences in the measurements of the floral parts between the Costa Rican plants and the Peruvian type, these differences do not warrant specific separation. Or-

## NEW OR NOTEWORTHY ORCHIDS

chidotypus is an addition to the orchid genera of Central America.

COSTA RICA, Southern slope of the Volcán de Turrialba, near the Finca del Volcán de Turrialba, *Paul C. Standley 35099*, February 20, 1924. Epiphyte. Flowers pale green. 2000-2400 meters altitude.

### GENERA AND SPECIES

<p><i>Chilotypus</i> sp. n. 1</p> <p><i>Chilotypus</i> sp. n. 2</p> <p><i>Chilotypus</i> sp. n. 3</p> <p><i>Chilotypus</i> sp. n. 4</p> <p><i>Chilotypus</i> sp. n. 5</p> <p><i>Chilotypus</i> sp. n. 6</p> <p><i>Chilotypus</i> sp. n. 7</p> <p><i>Chilotypus</i> sp. n. 8</p> <p><i>Chilotypus</i> sp. n. 9</p> <p><i>Chilotypus</i> sp. n. 10</p> <p><i>Chilotypus</i> sp. n. 11</p> <p><i>Chilotypus</i> sp. n. 12</p> <p><i>Chilotypus</i> sp. n. 13</p> <p><i>Chilotypus</i> sp. n. 14</p> <p><i>Chilotypus</i> sp. n. 15</p> <p><i>Chilotypus</i> sp. n. 16</p> <p><i>Chilotypus</i> sp. n. 17</p> <p><i>Chilotypus</i> sp. n. 18</p> <p><i>Chilotypus</i> sp. n. 19</p> <p><i>Chilotypus</i> sp. n. 20</p> <p><i>Chilotypus</i> sp. n. 21</p> <p><i>Chilotypus</i> sp. n. 22</p> <p><i>Chilotypus</i> sp. n. 23</p> <p><i>Chilotypus</i> sp. n. 24</p> <p><i>Chilotypus</i> sp. n. 25</p> <p><i>Chilotypus</i> sp. n. 26</p> <p><i>Chilotypus</i> sp. n. 27</p> <p><i>Chilotypus</i> sp. n. 28</p> <p><i>Chilotypus</i> sp. n. 29</p> <p><i>Chilotypus</i> sp. n. 30</p> <p><i>Chilotypus</i> sp. n. 31</p> <p><i>Chilotypus</i> sp. n. 32</p> <p><i>Chilotypus</i> sp. n. 33</p> <p><i>Chilotypus</i> sp. n. 34</p> <p><i>Chilotypus</i> sp. n. 35</p> <p><i>Chilotypus</i> sp. n. 36</p> <p><i>Chilotypus</i> sp. n. 37</p> <p><i>Chilotypus</i> sp. n. 38</p> <p><i>Chilotypus</i> sp. n. 39</p> <p><i>Chilotypus</i> sp. n. 40</p> <p><i>Chilotypus</i> sp. n. 41</p> <p><i>Chilotypus</i> sp. n. 42</p> <p><i>Chilotypus</i> sp. n. 43</p> <p><i>Chilotypus</i> sp. n. 44</p> <p><i>Chilotypus</i> sp. n. 45</p> <p><i>Chilotypus</i> sp. n. 46</p> <p><i>Chilotypus</i> sp. n. 47</p> <p><i>Chilotypus</i> sp. n. 48</p> <p><i>Chilotypus</i> sp. n. 49</p> <p><i>Chilotypus</i> sp. n. 50</p>	<p><i>Chilotypus</i> sp. n. 51</p> <p><i>Chilotypus</i> sp. n. 52</p> <p><i>Chilotypus</i> sp. n. 53</p> <p><i>Chilotypus</i> sp. n. 54</p> <p><i>Chilotypus</i> sp. n. 55</p> <p><i>Chilotypus</i> sp. n. 56</p> <p><i>Chilotypus</i> sp. n. 57</p> <p><i>Chilotypus</i> sp. n. 58</p> <p><i>Chilotypus</i> sp. n. 59</p> <p><i>Chilotypus</i> sp. n. 60</p> <p><i>Chilotypus</i> sp. n. 61</p> <p><i>Chilotypus</i> sp. n. 62</p> <p><i>Chilotypus</i> sp. n. 63</p> <p><i>Chilotypus</i> sp. n. 64</p> <p><i>Chilotypus</i> sp. n. 65</p> <p><i>Chilotypus</i> sp. n. 66</p> <p><i>Chilotypus</i> sp. n. 67</p> <p><i>Chilotypus</i> sp. n. 68</p> <p><i>Chilotypus</i> sp. n. 69</p> <p><i>Chilotypus</i> sp. n. 70</p> <p><i>Chilotypus</i> sp. n. 71</p> <p><i>Chilotypus</i> sp. n. 72</p> <p><i>Chilotypus</i> sp. n. 73</p> <p><i>Chilotypus</i> sp. n. 74</p> <p><i>Chilotypus</i> sp. n. 75</p> <p><i>Chilotypus</i> sp. n. 76</p> <p><i>Chilotypus</i> sp. n. 77</p> <p><i>Chilotypus</i> sp. n. 78</p> <p><i>Chilotypus</i> sp. n. 79</p> <p><i>Chilotypus</i> sp. n. 80</p> <p><i>Chilotypus</i> sp. n. 81</p> <p><i>Chilotypus</i> sp. n. 82</p> <p><i>Chilotypus</i> sp. n. 83</p> <p><i>Chilotypus</i> sp. n. 84</p> <p><i>Chilotypus</i> sp. n. 85</p> <p><i>Chilotypus</i> sp. n. 86</p> <p><i>Chilotypus</i> sp. n. 87</p> <p><i>Chilotypus</i> sp. n. 88</p> <p><i>Chilotypus</i> sp. n. 89</p> <p><i>Chilotypus</i> sp. n. 90</p> <p><i>Chilotypus</i> sp. n. 91</p> <p><i>Chilotypus</i> sp. n. 92</p> <p><i>Chilotypus</i> sp. n. 93</p> <p><i>Chilotypus</i> sp. n. 94</p> <p><i>Chilotypus</i> sp. n. 95</p> <p><i>Chilotypus</i> sp. n. 96</p> <p><i>Chilotypus</i> sp. n. 97</p> <p><i>Chilotypus</i> sp. n. 98</p> <p><i>Chilotypus</i> sp. n. 99</p> <p><i>Chilotypus</i> sp. n. 100</p>
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SCHEDULAE ORCHIDIANAE

No. 10

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NEW OR NOTEWORTHY  
ORCHIDS

By OAKES AMES  
and  
CHARLES SCHWEINFURTH



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