

COMPLEMENTARY AND EMENDATORY DESCRIPTIONS
OF ORCHID SPECIES

by

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(Oegstgeest).

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Neuwiedia (sect. *Euneuwiedia*) *Griffithii* Rehb.f. *Xenia* Orch. II (1874), 215; Rolfe in Journ. Linn. Soc. XXV (1890), 235, 241, t. XLVIII, fig. 2—9; in Orch. Rev. II (1894), 276; IV (1896), 329; Hook. f. Fl. Br. Ind. VI (1890), 176; in Bot. Mag. CXXI (1895), t. 7425; Krzl. Orch. I (1897), 4; Pfitz. in Pflanzenr. IV. 50 (1903), 5; Ridl. in Journ. Linn. Soc. XXXII (1896), 416; Mat. Fl. Mal. Penins. I (1907), 231; Fl. Mal. Penins. IV (1924), 296.

Planta in genere parva. Caulis erectus, rigidus, teres, dilute viridis, c. 14 cm longus, 0.63 cm diam., c. 10-folius. Folia erecto-patentia, recurva, lanceolata, sensim longe et acutissime acuminata, basi acuta sensim in petiolum contracta, plicata, nervis c. 7 subtus prominentibus, nervis tenuioribus alternantibus, papyracea, utrinque nitidule viridia, c. 18.5—22 cm longa, 4—5 cm lata, summa minora; petiolus latus, canaliculatus, 3-costatus, cum vagina tubulosa antice basi excepta rumpente c. 5.5—6.5 cm longus. Inflorescentia erecta, foliis multo brevior, subdense multiflora, cylindrica, pedunculo hirtello, atroviridi, c. 4 cm longo, nonnullis vaginulis in bracteas vergentibus donato, rachide angulato-cylindrica, patentissime hirtella, atroviridi, c. 6.5 cm longa. Bracteae patentees, incurvulae, e basi ovata sensim longe subulato-acuminatae, anguste obtusae, basi rachidem semiamplectentes, praesertim basi concavae, dorso et margine hirtellae, 3-nerviae, virides, ad c. 1.4 cm longae, superiores minores. Flores quaquaversi, parvuli, patentees, nutantes, sepalis dorso patentissime superne patenter strigillosis petalisque conniventibus, concavis, tenuibus, albis, pallide flavescenti-apiculatis. Sepalum dorsale ellipticum, apiculo tereti strigilloso, valde concavum, totum c. 0.83 cm longum, apiculo 0.05 cm, 0.4 cm latum. Sepala lateralia oblique ovato-elliptica, apice cucullato-obtusa cum apiculo recto tereti-subulato strigilloso 0.08 cm longo, concava, costa media dorso convexo-incrassata, tota c. 0.87 cm longa, 0.375 cm lata. Petala late elliptico-obovata, obtusa, apice vix cucullata, basi margine antico vix unguiculato-contracta, concava, costa media dorso valde incrassata strigosaque apice in apiculum brevem producta in praefloratione inter sepala prominente, c. 0.8 cm longa, 0.525 cm lata. Labellum a gynostemio subrectangule patens et recurvulum, supra basin obtusangule incurvum, stigma paululum superans, valde concavum, explanatum cuneato-angulato-obovatum, apice cucullato-obtusissimum, ungue

cuneato excepto leviter crispulum et erosulum, basi intus valde convexo-incrassatum, costa media dorso valde prominente et strigosa apice in apiculum incurvulum teretem hirtellum producta, fere 0.8 cm longum, mucrone 0.05 cm longo, 0.6 cm latum. Gynostemium totum c. 0.62 cm, usque ad apicem antherarum 0.4 cm longum. Stamina 3, glabra, inferne cum stylo in columnam rotundato-trigonam supra subtusque 2-sulcatam, c. 0.13 cm longam connata, superne divergentia, filamenti dorsalis pars libera a dorso compressa, oblonga, vix flavescenti-alba, c. 0.1 cm longa; filamentorum lateralium pars libera dorsali similis; 0.13 cm longa; antherae conniventes, fere basifixae, introrsae, praesertim dorsalis valde incurvae, cordatae, apicem versus paululum angustatae, late obtusae, lobis basilaribus obtusis, dorso valde convexae cum sulco levi longitudinali, crassae, vix flavescenti-albae, dorsalis fere c. 2 cm longa, 0.14 cm lata, laterales bene 0.2 cm longae, 0.175 cm latae. Stylus undatus, teres, leviter clavatus, apice (stigmati) obtusus et papillosus, albus, basi dilute sulphureus, totus c. 0.6 cm, parte libera 0.525 cm longus. Ovarium pedicellatum curvulum, rotundato-trigonum, patentissime strigillosum, pedicello apicem versus incrassato, pallide viridi, c. 0.33 cm longo, ovario trigono-ellipsoideo, viridi, c. 0.4 cm longo, fere 0.3 cm diam., apice in rostrum apice obliquum pallide viride dorso c. 0.275 cm longum contractum.

Sumatra: East coast, Deli, Habako estate, c. 150 m, in forest (*W. M. Docters van Leeuwen n. 3268*, fr., February 1919; also liv. pl. cult. in *Hort. Bog. XII B, II, 36*).

This agrees fairly well with the plate in *Bot. Mag. l.c.*, only the details appear to be kept somewhat schematic. The anthers of the few flowers I have seen were very much curved.

Description from a cultivated plant in Buitenzorg.

Galeola (sect. *Cyrtosia*) *Lindleyana* Rehb.f. *Xenia* Orch. II (1862), 78; Hook.f. *Fl. Br. Ind.* VI (1894), 88; King and Pantl. in *Ann. Calc.* VIII (1898), 204, t. 352; Ridl. in *Journ. Mal. Br. R. As. Soc.* LXXXVII (1923), 97. — *Cyrtosia Lindleyana* Hook.f. et Thoms. in *Ill. Himal. pl.* t. 22. — *Erythrorchis Lindleyana* Rehb.f. in *Bonpl.* V (1857), 37.

Rhizoma validum, lignosum, c. 0.8—1.8 cm diam., brevinode, vaginis magnis triangulis sicco crasse coriaceis c. 1—4 cm longis, radicibus crassiusculis. Inflorescentiae (caules) sine radicibus, erectae, validae, pedunculo stricto, simplici, tomentoso, c. 1.3 m alto, inferne 1.5 cm diam., vaginulis c. 10 mox fatiscensibus donato, rachide stricta, lanato-tomentosa, ad c. 36 cm longa, ramos brevissimos ad c. 3.5 cm longos c. 10-floros basi bractea conspicua suborbiculari acuminata tomentosa valde concava ad c. 2 cm longa suffultis emittente. Bractee adpressae, valde concavae, apice cucullatae, acutae, dorso subtomentosae, ad c. 2.5 cm longae, 1.85 cm latae. Flores mediocres, quaquaversi, asymmetrivi, c. 2.5 cm diam., sepalis carnosulis dorso lanato-tomentosis. Sepalum dorsale ellipticum, apice marginibus incurvis breviter obtuse contractum, concavum, 5-nerviium, intus inter nervos convexum, nervis intus canaliculatis dorso valde costato-incrassatis, costis basin non attingentibus intermedia excepta basi costula transversa geminato-conjunctis, c. 1.6 cm longum, fere 0.9 cm latum. Sepala lateralia intermedio subsimilia sed obliqua, dextrum magis concavum, nervis intus magis insculptis costa media dorso valde carnosiformi basi costis 2 posticis et 3 anticis conjunctis, c. 1.75 cm longum,

0.97 cm latum, laevum, nervis intus valde minus insculptis, bene 1 cm latum. Petala oblique ovata, apice marginibus incurvis breviter obtuse contracta, basi angusta, eroso-denticulata, glabra, 7-nervia, costa media dorso sulcata; c. 1.7 cm longa, 1.13 cm lata. Labellum porrectum, valde cucullato-concavum, gynostemium amplectens, undulatum, dorso sulco longitudinali conspicuo instructum, explanatum semiovale, rotundatum, basi truncatum medio tantum affixum, angulis basilaribus angulato-rotundatis, apice excepto eroso-lacinulatum, basi excepta intus papillis muriciformibus dense vestitum, papillis in medio labelli et apicem versus tenuioribus densioribusque, versus marginem laxioribus, squama reversa brevi aequilateraliter trapeziformi truncata supra basin, c. 1.8 cm longum, 1.65 cm latum. Gynostemium parvum, curvatum, clavatum, apice valde dilatatum, dorso ad apicem 3-costatum verrucosumque, appendicibus 2 porrectis carnosis muricibus subulatis donatis antice ad basin, cum anthera c. 0.7 cm longum, clinandrio transverso lato. Anthera cucullata, valde curvata, basi ultra locum insertionis producta et quadrilobulata, supra visa quadrangula, apice excisa, dorso muricibus conico-subulatis erectis vestita, c. 0.37 cm lata. Rostellum late rotundatum. Stigma clinandrio simile sed latius, margine inferiore producto late rotundato retuso. Ovarium curvatum, crassum, dense longe subadpresse villosum, c. 1.7 cm longum. Capsula conspicua, reflexa, fusiformis, apice rostrato-contracta, basi breviter petiolato-contracta, dehiscens, lanato-tomentosa, intus fuscescenti-argenteo-nitida et tenuiter transverse striolata, c. 1.3 cm longa, 2—2.2 cm diam. Semina alata, globosa, nitide fusco-nigra, ala irregulari elliptica praesertim apice lacinulata basi stipitato-contracta plus minusve spatulata dilute fuscescente c. 0.35—0.4 cm longa.

India: Sikkim Himalaya, 1300—2300 m. † Khassia Hills, 1300 m. Naga Hills. Sumatra: Atjeh, Gajolanden, from Sanger, bivouac 2, to bivouac 3 on the confluence of K. Kapi and K. Aoenan, 1100 m, humid primeval forest. (C. G. G. J. van Steenis n. 9881, March 1937). East coast, Karolanden, Berastagi. (H. N. Bidley 1921). Petani valley, c. 1300 m, moist grassy grounds, rare. (J. A. Lörzing n. 8509, September 1921). Deli, above Bandarbaroe, c. 1300 m. (W. M. Docters van Leeuwen n. 7790, February 1924). Sibajak road, 1000 m. (A. Frey-Wyssling n. 194).

Description from Sumatran specimens, the flowers of which were partly preserved in alcohol.

Hetaeria abbreviata Lndl. Gen. et Sp. Orch. (1840), 491 (*Etaeria*). — *Etaeria lanceolata* Rehb.f. in Transact. Linn. Soc. XXX, 142. — *Dossinia lanceolata* Lndl. in Journ. Linn. Soc. III (1859), 186. — *Zeuxine abbreviata* Hook.f. Fl. Br. Ind. VI (1890), 109; Ic. plant. XXII (1894), t. 2178.

Caulis e basi decumbente radicante erectus, c. 10—17 cm longus, c. 4-folius. Folia oblique oblongo-ovata, acuta, apiculata, 3-nervia, nervo medio supra albo, c. 3.2—6.5 cm longa, 1.3—2.3 cm lata; petiolus cum vagina tubulosa c. 1.2—2.7 cm longus. Inflorescentia erecta, laxe pluriflora, quaquaversa, pedunculo puberulo, c. 9.5 longo, nonnullis vaginulis tubulosis acuminatis pubescentibus donato, rachide pubescenti, c. 6 cm longa. Bractee adpressae, ovatae, acute acuminatae, concavae, dorso laxe pubescentes, ciliatae, 1-nerviae, c. 0.7 cm longae, 0.37 cm latae. Sepalum dorsale ovatum, acuminatum, obtusum, concavum, 1-nervium, c. 0.43 cm longum, 0.3 cm latum. Sepala lateralia oblique ovata, acuminata, obtusiuscula, concava, dorso carinata, 1-nervia, c. 0.47 cm longa, 0.3 cm lata.

Petalae, sepalo dorsali agglutinata, late valde oblique elliptica, inaequilatera, acuta, basi angusta, 1-nervia, c. 0.45 cm longa, 0.3 cm lata. Labellum basi saccata sepalis lateralibus amplexum marginibusque gynostemio adpressum, 3-lobum, totum explanatum c. 0.625 cm longum, ad lobos laterales 0.35 cm latum, hypochilio valde concavo, costis 2 longitudinalibus valde approximatis cohaerentibus e basi tenui superne altissimis rotundatisque et utrinque supra basin appendice corniculata clavata obtusa curvula donato, lobis lateralibus erectis brevibus rotundatis concavis, lobo intermedio bifido, basi marginibus abrupte inflexis contiguisque breviuscule unguiculato, c. 0.36 cm longo, laciniis divergentibus anguste triangulis anguste obtusiusculis. Gynostemium breve, crassum, dorso valde convexum, subtus lamellis 2 longitudinalibus parallelis brevibus rotundato-obtusangulotriangulis munitum, c. 0.23 cm longum. Anthera cucullata, brevis, cordata, acuta, apiculata, bene 0.2 cm longa. Ovarium c. 1 cm longum.

Sumatra: Gajo Loeës, Boerni Agoetan. (Exp. G. C. E. van Daalen, *B. Pringgo Atmodjo* n. 361, June 1904). Bataklanden, Dolok Singgalang, north of Toba lake, 700 m, rather rare. (*J. A. Lörzing* n. 8876, May 1922).

India: Nepal. (*Wallich*). Khasia Hills, 1300—1700 m. (*J. D. Hooker* and *Th. Thomson*).

I have cited this plant in my Enumeration of the Orchidaceae of Sumatra and neighbouring islands (in Fedde Rep. XXXII (1933), 149) under the above name. Comparison with the type specimen should decide whether the identification is correct. The callosities of the lip show some differences with Hooker's figure cited above.

H. bantaengensis J. J. S. from South Celebes much resembles this species.

Description from herbarium.

Hetaeria grandiflora Ridl. in Journ. Mal. Br. R. As. Soc. LXXXVII (1923), 98; J. J. S. Ic. Orch. Mal. I (1930), t. 10, I.

Caulis e basi decumbente erectus, c. 5.5 cm altus, 4—5-folius. Folia tempore florescentiae fatiscentia, oblique lanceolata, vix acuminata, acuta, basi brevissime acuminata, nervis majoribus 4 subtus prominentibus, reticulato-venosa, c. 7 cm longa, 1.9 cm lata; petiolus canaliculatus, c. 1.4 cm longus, vagina tubulosa, c. 1.8 cm longa. Inflorescentia erecta, laxa multiflora, pedunculo longe piloso, c. 13.5 cm longo, vaginulis 2 tubulosis acuminatis inferiore glabra 1.45 cm longa, superiore parce pubescenti minore donato, rachide longe pilosa, 10 cm longa. Bractee laxae adpressae, e basi lata concava dorso pubescenti ciliata acute triangulo-acuminatae, c. 0.7 cm longae, 0.45 cm latae. Flores non resupinati, c. 0.6 cm longi, sepalis petalisque conniventibus. Sepalum dorsale cum ovario angulum acutum faciens, oblongo-triangulum, obtusum, concavum, basi dorso longe pilosum, c. 0.55 cm longum, 0.275 cm latum. Sepala lateralia parallela, oblique ovalia, obtusa, concava, dorso longe pubescentia, 3-nervia, tota c. 0.67 cm longa, 0.325 cm lata. Petala sepalo dorsali agglutinata, leviter oblique linearia, recta, apice oblique rotundata, 1-nervia, c. 0.57 cm longa, apice 0.1 cm lata. Labellum superum, inexplanatum 0.575 cm longum, parte inferiore valde concavum, ambitu oblongo-ovatum, marginibus inferne gynostemio adnatis medio dentem rectangulum formantibus ante gynostemium incurvis contiguisque, antice utroque latere longitudinaliter papilloso-pulvinatum, subtus longitudinaliter sulcatum,

intus longitudinaliter costatum et basi utrinque lamellis 2 erectis parallelis longitudinalibus subquadratis apice minute irregulariter dentatis instructum, lamina conspicua, valde transverse dilatata, divaricato-biloba, apice obtusangule excisa, explanata c. 0.625 cm lata, lobis valde reflexis, oblique subobovato-ovalibus, rotundatis, basi canalicula longitudinali separatis, valde convexis, c. 0.32 cm longis, 0.225—0.25 cm latis. Gynostemium cum ovario angulum acutum faciens, superne utrinque alato-dilatatum, alis in dentem exeuntibus, subtus costis 2 longitudinalibus antice altioribus et infra stigmata in dentem triangulum terminantibus instructum, c. 0.475 cm longum, clinandrio alte excavato tenuiter membranaceo. Anthera basi in clinandrium immersa, e basi ambitu suborbiculari postice 4-lobulata in rostrum conspicuum oblongo-triangulum praesertim apice recurvulum producta, c. 0.3 cm longa. Rostellum porrectum, antheram subaequans, in lacinas lanceolatas subtortas medio obtusangule recurvas partitum. Stigmata 2, ad basin rostellii, transversa, plus minusve confluentia. Ovarium patens, recurvum, 6-sulcatum, longe reverse pilosum, c. 0.87 cm longum.

Sumatra: Karo-landen, Deleng Koetoe near Raja, 1425 m, in forest, rather rare. (*J. A. Lörzing n. 7102*, January 1920; "sepals and petals green with white tips, tinged with brown, lip white"; *n. 4928*, March 1917; "flowers dirty white with a little brown"). Berastagi, way to Sebak, hill woods. (*H. N. Ridley*; "sepals dull red, petals pink, lip white"; 1800 m, *W. M. Dooters van Leeuwen n. 7781*, February 1924; "flowers brown and white"). Gajo-landen, from bivouac Halfweg to bivouac Aer Poetih falls, 1000 m, forest ridge. (*C. G. G. J. van Steenis n. 9198*, February 1937).

Geographical distribution: Endemic.

This species resembles *Zeuxine* in the very broad lamina of the lip. For the rest it is a typical *Hetaeria*, allied to *H. lamellata* Bl.

H. rotundiloba J. J. S. from North Celebes is very similar and more material should be compared.

Description from herbarium (*J. A. Lörzing n. 7102*).

Vrydagzynea bractescens Ridl. in *Kew Bull.* 1926, 87; J. J. S. *l.c.* *Orch. Mal. inedit.* t. 147, III.

Caulis e basi decumbente radicante adscendens, parte erecta c. 3.75—7 cm longa, 6—7-folia. Folia patentia, oblique subovata, acutata, acuta vel subacuminata vel obtusiuscula, apiculata, basi brevissime in petiolum contracta vel leviter cuneata, 3-nervia, costa media dorso prominente, sicco membranacea, c. 1.7—3.8 cm longa, 0.9—1.9 cm lata; petiolus canaliculatus cum vagina tubulosa 0.5—1.3 cm longus. Inflorescentia erecta, dense pluriflora, pedunculo c. 4.2—6 cm longo, vaginulis 2 foliaceis in bracteis vergentibus donato, rachide brevi, pubescenti, c. 0.8—1.1 cm longa. Bracteae lanceolatae, acutatae, leviter acuminatae, acutae, 1-nerviae, ovarium superantes, c. 0.7 cm longae, 0.2 cm latae. Flores c. 7—8, macerati c. 0.65 cm longi, sepalis conniventibus. Sepalum dorsale oblongum, dimidio superiore leviter contractum, obtusum, apice incrassatum, 1-nervium, c. 0.43 cm longum, 0.14 cm latum. Sepala lateralia oblique oblonga, apicem versus angustata, apice incrassata, obtusa, basi oblique dilatata et calcari adpressa, concava, 1-nervia, c. 0.4 cm, margine antico 0.475 cm longa, 0.16—0.17 cm lata. Petala sepalo dorsali agglutinata, oblique oblongo-linearia, obtusa, subtruncata, concava, 1-nervia, c. 0.35 cm longa, 0.1 cm lata. Labellum calcaratum, lamina inexplana ovata, apicem versus

angustata, marginibus praesertim antice incurvis, ut videtur fascia mediana incrassata papillosaque, c. 0.26 cm longa, 0.14 cm lata, calcari deorsum spectante ovario parallelo, verosimiliter lateraliter compresso, oblongo, dorso recto, antice leviter retundato-ventricosus, obtusus, antice fere 0.4 cm, dorso bene 0.3 cm longo, glandulis stipitatis obovoideis in c. $\frac{1}{3}$ supra basin calcaris liberis, $\frac{2}{3}$ supra basin attingentibus. Gynostemium breve, maceratum cuneatum, c. 0.18 cm longum, clinandrio excavato. Stigmata brevia, obtusa, rostello conspicue breviora. Ovarium fecundatum inferne tortum, cum pedicello 0.55 cm longum.

Mentawai Islands: Isle of Siberoet. (C. Boden Kloss n. 11443, 1924; "flowers white"). Environs of Siberoet, forest. (Iboet n. 39, September 1924).

Geographical distribution: Endemic.

Description from herbarium (Iboet n. 39), the flowers of which were already withered.

Liparis (sect. *Rhachidibulbon*) *geophila* Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 14; J. J. S. Ic. Orch. Mal. I (1930), t. 24, IV.

Rhizoma elongatum, repens, subteres, verrucosum, vaginis paucis longe tubulosis acutis angulatis donatum, internodiis longis. Pseudobulbi c. 5.25 cm dissiti, cum rhizomate angulum acutum facientes, basi eo adpressi, lateraliter compressi, ovato-oblongi, c. 1.35 cm longi, 0.6 cm lati, vagina 1 oblongo-quianguula acuta concava c. 2.3 cm longa et folia 2 ad basin. Folia erecta; laminae oppositae, divergentes, ovatae, breviter acuminatae, acutae, apiculatae, basi late rotundatae, undulatae, costa media supra sulcata subtus carinata, nervis pluribus curvatis utrinque, reticulato-venosae, tenues, c. 3.3—4 cm longae, 2.6—2.7 cm latae; petioli erecti, canaliculati, basi in vaginam dilatati, cum vagina c. 2.5 cm longi, vagina superiore pseudobulbum arcte includente. Inflorescentia ex apice pseudobulborum novellorum, erecta, apice dense multiflora, pedunculo angulato, c. 4 cm longo, rachide costata, c. 2 cm longa. Bractee patentes, subulatae, c. 0.5 cm longae. Flores mediocres, quaquaversi, patentes. Sepalum dorsale erectum, cum ovario angulum obtusum faciens, oblongo-ovatum, apicem versus sensim angustatum, satis acutum, convexum, 3-nerviium, c. 0.65 cm longum, 0.25 cm latum. Sepala lateralia sub labello porrecta, oblique oblongo-ovata, apicem versus sensim angustata, anguste obtusa, 3-nervia, costa media dorso prominula, c. 0.6 cm longa, 0.225 cm lata. Petala patentissima, apice recurva, oblique linearia, subacuta, basi paulo dilatata, convexa 1-nervia, c. 0.53 cm longa, basi 0.075 cm, medio vix 0.05 cm lata. Labellum porrectum, cum gynostemio angulum acutum faciens, late canaliculatum cum lateribus convexis, subtus convexum cum lateribus concavis, apice recurvum, callo convexo antice breviter ovato-triangulo-producto obtuso ad basin, fascia longitudinali lineari vix elevatula in $\frac{1}{3}$ infra apicem furcata et infra apicem terminante, explanatum rotundato-subquadratum, apice late rotundatum et apice in lobulum triangulum obtusum abrupte contractum, acumine excepto breviter ciliolatum, basi trinerviium, nervis exterioribus basi furcatis, c. 0.58 cm longum, 0.54 cm latum. Gynostemium arcuatum, a dorso compressum, oblongum, sectione transversa ambitu aequalateraliter trapeziforme, dorso ad basin planum, superne marginibus angulatis elevatis superne paulo dilatatis late canaliculatum cum costula inconspicua in canalicula, subtus concavum, basi

quadrangulo-dilatatum et ovario latius, c. 0.225 cm longum, clinandrio concavo cum costula longitudinali, auriculis brevibus, obtusangulis. Anthera cucullata, ambitu quinquangulari-ovata, apice triangula, acuta, basi truncata, thecis orbicularibus, 0.07 cm lata. Pollinia lateraliter compressa, triangula, extus convexa, c. 0.04 cm longa. Rostellum truncatum. Stigma parvum, transverse oblongum. Ovarium valde 6-costatum, c. 0.15 cm longum; pedicellus paulo tenuior, 6-costatus, c. 0.47 cm longus.

Sumatra: Padangache Bovenlanden, Goenoeng Marapi, 2500 m. (*E. Schlechter* n. 15953, January 1907). Goenoeng Singgalang, c. 1700 m. (*E. Jacobson*, cult. sub n. 1227).

Geographical distribution: Endemic.

This plant is most nearly allied to *L. montana* Lndl., and in fact only distinguished from the latter by its more slender rhizome and quadrate lip. As well in my specimens as in Schlechter's authentic in Buitenzorg the lip is shortly ciliate, quite the same as in *L. montana* Lndl.

Dr E. Jacobson states that the sepals and petals are transparently amethyst-coloured, the former with a green base and apex. The lip is darker in colour with a polished greenish amethyst-coloured callus at the base. The column is transparently light green, the anther greenish white with an amethyst coloured spot at the apex.

Description from specimens preserved in alcohol.

Liparis (sect. *Platystylis*) *Lepanthes* Schltr.! in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 15; in Fedde Rep. Beih. LXXIV (1934), t. 20, Nr. 77; J. J. S. Ic. Orch. Mal. I (1930), t. 26, II.

Caespitosa. Pseudobulbi approximati, valde lateraliter compressi, ovati ad oblongo-ovati, acutanguli, carnosi, pallide virides, c. 1.4—2.5 cm longi, 1.2—1.4 cm lati, c. 5—6-folii. Folia articulata, patentia, anguste lanceolata, acuta, basin versus angustata, lateribus in utraque canaliculae parte supra convexa, subtus acute carinata, herbacea, tenuia, pallide viridia, interdum leviter aurantiaco-suffusa, supra vix nitidula, subtus opaca, summum maximum, ad c. 11—18 cm longum, 0.55—1.2 cm latum; vaginae pseudobulbo adnatae, summa marginibus exceptis fere tota longitudine adnata, infima sublibera, erecto-patentes, subconduplicatae, margine recurvae, apice basi folii aequilatae, pallide virides, ad c. 1.5—2.8 cm longae. Inflorescentia terminalis, laxe multiflora, subsecunda, pedunculo compresso, ancipiti, pallide viridi, c. 3.2—4.8 cm longo, vaginulis c. 3—4 bracteiformibus patentibus donato, rachide compressa, interrupte trialata, pallide viridi, c. 4.5—16 cm longa. Bracteeae patentees, persistentes, sessiles, rachidem semiamplectentes, ovatae, acutae, costa media supra canaliculata subtus carinata, margine papillosae, dorso c. 0.35—0.37 cm longae. Flores ad c. 28, subpatentissimi, valde aperti, convexi, aurantiaco-brunnei, opaci, c. 1.3 cm longi, ad petala c. 0.67 cm, ad sepala lateralia 0.6 cm lati. Sepalum dorsale erectum, late ovatum, obtusum, convexum, dorso concavum et carinatum, 3-nervium, c. 0.65 cm longum, 0.6 cm latum. Sepala lateralia deorsum spectantia, parallela, sepalum dorsale continua, parallela, marginibus proximis contigua, oblique ovata, obtusa, convexa, dorso concava et carinata, 1-nervia, c. 0.73 cm longa, 0.4 cm lata, una late ovata. Petala patentissima, divaricata, apice revoluta, e basi oblongo-

triangula lineari-subulato-acuminata, acuta, 1-nervia, c. 0.5 cm longa, basi 0.14 cm lata. Labellum parvum, sepalis lateralibus adpressum, supra basin insertum, 3-lobum, ambitu quinquangulare, basi valde transverse postice declivi-incrassatum truncatum medio tantum obtusangulatum et faciei inferiori gynostemii adpressum, callo orbiculari perforato supra basin, c. 0.4 cm, usque ad apicem loborum lateralium bene 0.2 cm longum, 0.27 cm latum, hypochylio transversae quadrangulo, incrassationibus 2 basin versus divergentibus donato, medio concavo; lobi laterales antice brevissime liberi, rotundati; lobus intermedius porrectus, triangulus, vix acuminatus, acutus, costis 2 superne V-formiter approximatis sulco separatis et ante apicem evanescentibus, basi divergentibus breviter in hypochyllum decurrentibus et abrupte terminantibus, in c. $\frac{1}{3}$ supra basin lobi intermedia dente subulato falcato-recurvo instructis, c. 0.2 cm longus, 0.15 cm latus. Gynostemium brevissimum, latius quam longum, valde a dorso compressum, ambitu transverse quinquangulare, dorso obtusangule convexum, margine alato-dilatatum, in utraque stigmatis parte dente triangulo acuto patentissimo et inferius lobulo rotundato aequilongo instructum, ala falcato-triangula obtusa recurva apice transversa subtus in utraque stigmatis parte, absque anthera c. 0.15 cm longum, 0.225 cm latum, apice in clinandrium truncatum transverse quadrangulo-ovale concavum contractum. Anthera cucullata, transverse quadrangulo-ovalis, apice recurvulo late truncata, c. 0.07 cm lata. Rostellum obtusum. Stigma alte excavatum, transverse quadrangulum, margine inferiore elevato curvato tenui. Ovarium pedicellatum 6-costatum, c. 0.4—0.45 cm longum.

Sumatra: Padangsche Bovenlanden, Goenoeng Marapi, c. 1300 m. (*E. Schlechter* n. 159761, January 1907). Goenoeng Singgalang, c. 1900 m. (*W. Groeneveldt*, cult. in Hort. *E. Jacobson* sub nrs. 1283 and 1284).

Geographical distribution: Endemic.

This is a very characteristic species. The inflorescences of plants cultivated in Buitenzorg develop very slowly and the flowers last for a long time.

Description from living plants and specimens preserved in alcohol.

Glomera (sect. *Giulianettia*) **tenuis** (Rolfe) J. J. S. in Nova Guinea VIII (1911), 541. — *Giulianettia tenuis* Rolfe in Hook. Ic. Plant. XXVII (1899), t. 2616; in Kew Bull. 1899, 111; Schltr. Orch. D. N. Guinea (1912), 316.

Caules elongati, partibus adsunt ad 37 cm longis, laxe ramosi, hic illic radicantes, tenues, leviter flexuosi, internodiis caulis primarii 1.5—2.1 cm longis, cum vagina sicco 0.1—0.13 cm diam., ramulis patentissimis ad patentibus, majoribus inferne pauciramosis, 2.25—15 cm longis, 4—14-foliis. Folia patentia, plerumque curvula, arcuata vel leviter sigmoidea, anguste linearia, supra sulcata, subtus convexa, apice paululum attenuata, obtusa, basi paululum petiolato-attenuata, carnosula, 1.8—3.7 cm longa; vaginae tubulosae, sicco angulatae, prominenter nervosae, praesertim superne verrucosae, apice dente laminae opposito adpresso triangulo donatae, margine longiuscule fimbriatae, fimbriis ad c. 15, adpressis, subrectis, usque 0.3 cm longis. Inflorescentiae terminales, sessiles, 1-florae, plerumque cum caule angulum obtusum ad rectum facientes. Spatha tubulosa, superne unilateraliter fissa, subacuta, obtuse apiculata, bracteam

ovarium et calcar arete includens, sicco brunnea, firmula, 1.45 cm longa. Bractea similis, tubulosa, subacuta, membranacea, 1.3 cm longa. Flos mediocris, carnosulus, sepalis petalisque leviter recurvulis. Sepalum dorsale lineare, canaliculatum, acutum, longius conico-apiculatum, 1.3 cm longum, 0.25 cm latum. Sepala lateralia oblique linearia, versus apicem angustata, acuta, longe subulato-apiculata, basi membranacea dilatata inter calcar et ovarium in lobum obtuse 2-lobulum connata, 4-nervia, 1.4 cm longa, basi 0.5 cm, supra basin bene 0.3 cm lata, apiculo 0.2 cm longo. Petala linearia, subacuta, 3-nervia, 1.1 cm longa, 0.17—0.175 cm lata. Labellum longe calcaratum; lamina gynostemio magnam partem tubuloso-adnata, eum vix superans, carnosula, leviter 3-loba subtus sulcata, expansa late transverse rhombea, 0.35 cm longa, 0.44 cm lata, lobis lateralibus erectis brevibus rotundatis, lobo intermedio late obtuse triangulo; calcar elongatum, bractea spathaue arete inclusum cum ovario angulum acutum faciens, tenue, lineare, obtusum, rectum, 1 cm longum. Gynostemium cum ovario angulum obtusum faciens, dorso convexum, absque anthera vix 0.3 cm longum, clinandrio concavo, apice porrecto bidentato. Anthera cucullata, connectivo gibboso. Stigma prominens, suborbiculare, margine inferiore producto, reflexo, bilobulato. Ovarium pedicellatum 1.25 cm longum.

British New Guinea: Mt. Scratchley, 4000 m. (*A. Giulianetti*). Mt. Albert Edward, 3680 m, common, tangled in large masses on trees in forest; "fl. green, labellum paler green with brown point." (*L. J. Brass n. 4250*, May—July 1933).

Geographical distribution: Endemic.

The figure in Hooker's *Icones Plantarum*, t. 2616, shows the spur of the lip freely projecting forward, whereas in the specimen collected by L. J. Brass on Mt. Albert Edward it is wholly enwrapped in the bract and spathe. In the other species of the section *Giulianettia* as well as in *Glossorhyncha* the spur is always enclosed so far I know. I suppose that in Giulianetti's plant it was accidentally disengaged.

Description from herbarium (*L. J. Brass n. 4250*).

Agrostophyllum (sect. *Appendiculopsis*) **trifidum** Schltr. in *Engl. Bot. Jahrb.* XLV, Beibl. No. 104 (1911), 22; in Fedde *Rep. Beih.* LXXIV (1934), Nr. 107; *J. J. S. Ic. Orch. Mal.* (1930), t. 31, III.

Caules numerosi, approximati, patentes vel decurvi, simplices, teretes, dilute virides, dense foliati, ad c. 45 cm longi, 0.17 cm crassi, internodiis c. 0.35—0.4 cm longis. Folia alternatim bifaria, rectangule patentissima, parva, remota, basi abrupte contracta semitorta, oblonga, apicem versus leviter angustata, apice lata satis profunde rotundato-biloba, mucrone minimo inter lobos, plana, coriacea, impressionibus foliorum inferiorum notata, viridia, ad c. 1.1 cm longa, 0.5 cm lata; vaginae internodia multo superantes, inferne tubulosae, superne antice fissae, margine mox exarescentes, utrinque lacinulam subulatam c. 0.15 cm longam gerentes. Inflorescentiae terminales, capituliformes, e racemulis paucis unifloris compositae, basi squamis siccis suffultae. Bracteae oblongae, concavae, pellucidae. Flores parvi, c. 0.9 cm lati, sepalis petalisque flavescenti-albis. Sepalum dorsale erectum, oblongum, obtusum, apiculatum, valde concavum, basi convexum, margine et apice recurvum, c. 0.5 cm longum, 0.25 cm latum. Sepala lateralia ad pedem gynostemii brevissimum decurrentia,

mentum saccatum obtusissimum formantia, basi concava, superne recurva, oblique ovato-triangulari, acute acuminata, costa media dorso prominente, usque ad apicem ovarii c. 0.45 cm, tota c. 0.6 cm longa. Petala oblique erecta, sublinearia, subfalcatula, acuta, convexa, c. 0.4 cm longa, basi 0.1 cm lata. Labellum saccato-calcaratum, 3-lobum, album, totum c. 0.5 cm longum, inter lobos callo maximo, lobo medio parallelo porrecto, recto, cymbiformi, obtuso, postice in lobos laterales decurrente, lobos bene aequante, c. 0.27 cm longo donatum; saccus cum ovario angulum acutum formans, rotundatus, albus, c. 0.2 cm longus; lobi laterales aliformes, elongati, oblique erecti, lineares, obtusi, convexi, albi, apice et margine atropurpurei; lobe intermedius erectus, haud recurvus, ovato-cordatus, lobulis basilaribus rotundatis, apice obtusus subtrilobulatus, convexus, Gynostemium cum ovario angulum obtusum faciens, clavatum, subtus sulco longitudinali costis limitato, album, c. 0.25 cm longum, auriculis obtusis, concavis, tenuiter purpureo-marginatis. Anthera cucullata, breviter cordata, obtusa, alba. Pollinia 8, clavata, flava, glandula oblonga. Rostellum elongatum, incurvum, lineare, integrum, obtusum, antheram multo superans. Stigma transverse obtriangulum. Ovarium 6-sulcatum, dilute viride, c. 0.6—0.7 cm longum:

Sumatra: Lampong. (Cult. in *Hort. Bog. II M, d 118*). Bengkoelen, Kroei. (*A. Bowman—Houtman n. 20*). Padangsehe Bovenlanden, Padang Pandjang, c. 800 m. (*R. Schlechter n. 15964*, January 1907; *n. 16029*, February 1907). Agam, Boekit Batee Balah. (*E. Jacobson n. 846*).

Borneo: Sarawak, Quop. (*J. Hewitt*, October 1908). Dutch Borneo, G. Labang. (Expedition for rectification of the frontiers in North Borneo, *Amdjah nrs. 269* and *279*, July 1912; also liv. pl. cult. in *Hort. Bog. sub n. 43*). Loembis. (As quoted, *Amdjah n. 228*, July 1912). G. Agisan. (As quoted, *Amdjah*, liv. pl. cult. in *Hort. Bog. sub n. 96*).

In the shape of the rostellum and pollinia this species agrees with *A. bicuspidatum* J. J. S.

Schlechter described the sidelobes of the lip as belonging to the callus uniting them.

Description from cultivated specimens.

Cerastostylis (sect. *Pleuranthemum*) *scariosa* Ridl. in Journ. Mal. Br. R. As. Soc. I (1923), 96.

Rhizoma elongatum, dependens, ramosum, serpentinum, tenue, basi radicans, c. 40 cm longum, vaginis longis sese amplectentibus tubulosis longe acuminatis rumpentibus et irregulariter membranaceo-marginatis omnino obtectum. Caules (pseudobulbi) c. 2—3.25 cm dissiti, brevissimi, c. 0.4—0.6 cm longi, 1-folii. Folium lineari-lanceolatum, vix ovatum, apicem versus sensim angustatum, apice valde oblique obtusum vel anguste obtusum, basi breviter canaliculato-petiolato-contractum, costa media sicco dorso prominula, totum c. 7.5—11.5 cm longum, sicco 0.9—0.5 cm latum, petiolo 0.45—0.4 cm longo; vagina caulem continua, canaliculata, basi tubulosa, c. 1 cm longa. Inflorescentia fasciculata, pedunculis filiformibus, erecto-patenter pubescentibus, c. 1.6 cm longis, 1-floris. Bractea adpressa, oblongo-triangulari, leviter acuminata, acuta, concava, bene 0.3 cm longa. Flos maceratus c. 1.15 cm longus, sepalis dorso pubescentibus petalisque leviter divergentibus. Sepalum dorsale lineari-lanceolatum, apicem versus angustatum, obtusum, 3-nerviium, nervis exterioribus basi

furcatis, c. 0.975 cm longum, 0.23 cm latum. Sepala lateralia lacinia brevi valde concava ad pedem gynostemii decurrentia, mentum breve reversum ovario adpressum inflatum subglobosum c. 0.2 cm longum formantia, oblique triangulo-lanceolata, subfalcatula, apice incurvulo (an semper?), subacuta 5-nervia, c. 0.9 cm, usque ad apicem ovarii 1.2 cm longa. Petala oblique sublinearia, apicem versus angustata, anguste obtusa, 3-nervia, c. 875 cm longa, 0.16 cm lata. Labellum unguiculatum, 3-nervium, nervis exterioribus inferne verosimiliter elevatis, leviter 3-lobum, c. 0.975 cm, explanatum fere 1.1 cm longum, ungue cum pede gynostemii fenestram faciente, subrectangule patente, supra medium subrectangule incurvo, cum lamina angulos obtusos faciente, oblongo, apice dilatato, c. 0.2 cm longo, lamina porrecta, gynostemio parallela, concava, lobis lateralibus brevibus latis rotundato-obtusangule triangulis mesochilium rhombeum minute ciliolatum c. 0.475 cm longum 0.38 cm latum formantibus, epichilio (lobo intermedio) oblongo-triangulo, anguste obtuso, c. 0.38 cm longo, 0.16 cm lato. Gynostemium breve, bifidum, c. 0.24 cm longum, brachiis latis, incurvulis, oblongo-subtriangulis, obtusis. Pes gynostemii reversus, cum ovario angulum acutum faciens, incurvus, linearis, c. 0.2 cm longus. Ovarium sessile, lanatum, c. 0.5 cm longum.

Sumatra: East coast, Berastagi, 1400 m. (*H. N. Ridley*, 1921; *Mrs. E. H. Burkill nrs. 16319 and 16320*, 13 November 1924; "flowers cream coloured").

Geographical distribution: Endemic.

Description from herbarium.

Ceratostylis (Sect. *Euceratostylis*) *leucantha* Schltr.! in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 21; in Fedde Rep. Beih. LXXIV (1934), t. 25, Nr. 99; J. J. S. Ic. Orchid. Mal. I (1930), t. 36, I.

Rhizoma breve, valde ramosum. Caules fasciculati, teretes, c. 15—22 cm longi, 0.14—0.2 cm diam., 1-folii, nonnullis vaginis tubulosis mox exarescentibus et membranaceis reticulato-venosis ad c. 0.4 cm longis ad basin. Folium erectum, subteres, supra a basi usque ad apicem sulcatum, in utraque sulci parte convexum, apice planum, acutum, c. 3.2—3.9 cm longum, 0.175—0.225 cm latum; vagina brevissima et paulum contracta. Inflorescentiae fasciculares, paucos flores simultanee gignentis, pedunculis brevibus, 1-floris, c. 0.2 cm longis, pluribus vaginulis imbricatis inferioribus ovatis ad ovato-rotundis superioribus accrescentibus plerumque breviter acuminatis ad c. 0.5 cm longis donatis. Bractea conspicua, vaginulis similis, rotundato-ovata, rotundata, acute subulato-acuminata, concava, membranacea, c. 0.46 cm longa. Flores in sectione majusculi. Sepalum dorsale subobovato-oblongum, satis acutum, leviter concavum, glabrum, 3-nervium, c. 0.675 cm longum, 0.27 cm latum. Sepala lateralia lacinia brevi oblique triangula concava ad pedem gynostemii decurrentia, mentum breve reversum ovario adpressum a dorso compressum rotundato-quadrangulum vix retusum c. 0.13 cm longum, 0.17 cm latum formantia, marginibus anticis inferne contigua, parte superiore divergentia, oblique oblonga, obtusa, inferne levissime contracta, glabra, 3-nervia, c. 0.725 cm, tota 0.9 cm longa, 0.25 cm lata. Petala suboblique oblonga, obtusa, leviter concava, 3-nervia, c. 0.65 cm longa, 0.26 cm lata. Labellum elongatum, undatum, angustum, inexplanatum ambitu lineare, 2/3 partibus inferioribus marginibus tenuibus ciliolatisque erectis canaliculatum, 3-nervium, minutis-

sime papillosum, costis 2 usque in 1/3 supra basin papillosis, infra apicem sensim convexo-incrassatum, incrassatione inferne in formam costae convexae papillosae decurrente, subtus convexum cum sulco longitudinali, explanatum e basi brevissime unguiculata eciliata oblongo-subovale, infra medium longe lineari-contractum, obtusum, c. 0.8 cm longum, inferne 0.2 cm, superne bene 0.1 cm latum. Gynostemium brevissimum, supra visum quadrangulum, usque ad medium in brachia 2 late ovalia rotundata extus convexa cum costa obliqua intus concava partitum, c. 0.1 cm longum. Anthera cucullata, brachia subaequans, suborbicularis, basi paululum dilatata et 4-lobulata, apice rotundata, c. 0.075 cm lata. Pes gynostemii ovario adpressus, gynostemio multo angustior, rectus, apicem versus angustatus, c. 0.1 cm longus. Ovarium pedicellatum leviter 6-sulcatum, parcissime pilosum, c. 0.3 cm longum.

Sumatra: Palembang, Goenoeng Dempoe, 2000 m. (Exp. E. Jacobson, *Ajoeb* n. 453, August 1916). Padangsche Bovenlanden, Kerintji, Pintoe Rimbo, 1400 m. (E. Jacobson n. 2562, September 1915). Goenoeng Singgalang, 1700 m. (E. Jacobson, cult. sub n. 1200). Goenoeng Merapi, 2700 m. (E. Schlechter n. 159541, January 1907). As quoted, 1800—2000 m, forest on trees. (H. A. B. Bünne Meyer nrs. 4552, 4608, 4659 and 4724, September 1918). Goenoeng Sago, 1900—2000 m, forest and copse, terrestrial. (H. A. B. Bünne Meyer nrs. 3959 and 4359, July—August 1918). Goenoeng Malintang, 2200 m, in copse. (H. A. B. Bünne Meyer n. 4052, July 1918). Goenoeng Talang, Laras Talang, 1800 m and 2200 m, forest. (H. A. B. Bünne Meyer nrs. 5222 and 5331, October and November 1918).

Geographical distribution: Endemic.

A very distinct species, the flowers of which, however, vary considerably in size. Amongst the plants collected by Dr Jacobson, there were none with so long leaves as in Schlechter's specimens. Schlechter's type in Buitenzorg is flowerless, but the description is good.

Description from herbarium and specimens preserved in alcohol.

Podochilus (sect. *Apista*) *muricatus* (T. et B.) Schltr. in Mém. Herb. Boiss. No. 21 (1900), 64; Ridl. Mat. Fl. Mal. Penins. I (1907), 196. — *Appendicula muricata* T. et B. in Nat. Tijdschr. Ned. Ind. XXIV (1862), 322; Ridl. in Journ. Linn. Soc. Bot. XXXII (1896), 392; Fl. Mal. Penins. IV (1924), 197; J. J. S. in Fl. Buit. VI, Orch. (1905), 516. — *A. echinocarpa* Hook. f. Fl. Br. Ind. VI (1890), 85; Ic. pl. XXII (1894), t. 2152.

Caules approximati, simplices vel deinde interdum pauciramosi, teretes, tenues, c. 7.5—14 cm longi, 0.125—0.14 cm diam., foliati, internodiis c. 0.25—0.45 cm longis. Folia plus minusve patentissima, basi semitorta, ovalia, ovato-ovalia vel suborbicularia, apice plus minusve oblique breviter et obtuse bilobula cum mucrone subulato interposito, basi rotundata semi-amplexicaulia, costa intermedia dorso versus apicem prominente, carnosula, sicco incrassato-marginata, c. 0.8—1 cm longa, 0.45—0.93 cm lata; vaginae tubulosae. Inflorescentiae terminales et (vel) e nodis superioribus abbreviatis efoliatis, brevissimae, c. 1—3-florae, pedunculo vaginulato cum rachide flexuosa c. 0.4—0.5 cm longa. Bracteae conspicuae, patentissimae, suborbiculares vel ovato-orbiculares, apiculatae, concavae, carinatae, 1-nerviae, c. 0.24—0.3 cm longae. Flores in genere majusculi, vix aperti, c. 0.7 cm longi, sepalis dorso valde patenter conico-muriculatis petalisque parallelis. Sepalum dorsale horizontale, ovatum, obtusum, muriculato-apiculatum, valde concavum, 3-nervium, c. 0.6 cm longum, 0.28 cm latum. Sepala lateralia lacinia oblique suborbiculari valde

excavato-concava ad pedem gynostemii decurrentia, mentum subglobosum cum ovario angulum acutum faciens c. 0.2 cm longum formantia; oblique triangula, acuta cum mucrone longiusculo muriculato, concava, 3-nervia, c. 0.5 cm, tota c. 0.7 cm longa, basi obliqua c. 0.4 cm, supra basin 0.25 cm lata. Petala subovato-oblonga, apice leviter contracta, anguste obtusa, subapiculata, plana, glabra, 1-nervia, c. 0.4 cm longa, 0.15 cm lata. Labellum porrectum, supra basin et in 2/3 partibus supra basin obtusangule recurvum, apice incurvulum, pedi gynostemii et gynostemio parallelum, concavum, subtus convexum cum sulco inconspicuo, 3-nervium, ungue breviusculo, valde concavo, subtus longitudinaliter canaliculato, lamina oblonga, apicem versus sensim leviter dilatata, breviter acute conico-acuminata, callo reverso conico obtuso intus ad apicem, appendice reversa quadrangula apicem versus subrecta apice leviter dilatata recurva et brevissime late obtuse bilobula sulcis 2 longitudinalibus convexo-tricostulata, 3-nervia carnosula ungue aequilata sed brevior ad basin, lobulo parvo marginali rotundato incurvo utrinque ad basin appendicis, glabrum, intus ad basin appendicis villosulum, fascia mediana longitudinali carnosula, explanatum totum bene 0.6 cm longum, ad lobulos laterales 0.175 cm latum, lamina 0.475 cm longa, basi 0.16 cm, superne 0.26 cm lata, appendice ad apicem c. 0.15 cm lata. Gynostemium breve, usque ad apicem rostellii c. 0.37 cm longum, in utraque stigmatis parte brachio conspicuo sed gynostemio multo brevior porrecto oblique triangulo apice recurvo subfalcato subacuto extus concavulo intus convexo instructum, clinandrium magno, elongato-ovato, marginibus incurvis valde canaliculato, in rostellum canaliculatum subtus convexum longe acute bidentatum productum. Anthera in clinandrium immersa, cucullata, e basi oblique subglobosa longe angustata et in dentes 2 acutissimos exeuns, leviter a latere compressa, basi minute 2-lobulata, connectivo carinata, c. 0.28 cm longa. Pollinia 4, inaequalia, valde a latere compressa, 2 minora late obovata, apice rotundata, extus convexa, intus concava, c. 0.07 cm longa, majora falcato-pyriformia, apice rotundata, costula obliqua instructa, c. 0.08 cm longa; stipites 2, lateraliter compressi, lineares, superne late spathulato-dilatati et infundibuliformi-convoluti, glandula oblongo-elliptica; pollinarium totum c. 0.3 cm longum. Pes gynostemii cum ovario angulum acutum faciens, linearis, inferne rectus canaliculatus et intus villosulus, apice incurvus, a sepalis lateralibus liber, glaber, inexplanatus c. 0.2 cm longus. Ovarium sessile, brevissimum, dense et longe muriculatum, c. 0.2 cm longum. Capsula sessilis, floris reliquis coronata, ellipsoidea, 6-costata, in costis longa et ramoso-muriculata, c. 0.8 cm longa.

Sumatra: Padangsche Bovenlanden, Boekit Djarat, c. 1500 m. (*R. Schlechter* n. 16010, February 1907). Tanang Taloe, 1100 m, in forest. (*H. A. B. Binnemeijer* n. 1160, June 1917).

Geographical distribution: Malacca, Java.

In habit this interesting species deceptively resembles an *Appendicula*, in the flowers it is however a true *Podochilus*.

The leaves of the plants I examined are much larger than those described by Teysmann and Binnendijk.

In Java the species has not been recovered since Teysmann and Binnendijk.

Description from herbarium and flowering branches preserved in alcohol.

Appendicula (sect. *Euappendicula*) **rubens** Schltr. Orch. D. Neu-Guinea (1912), 336; in Fedde Rep. Beih. LXXIV (1934), t. 53, Nr. 210; J. J. S. Ic. Orch. Mal. (1930), t. 28, I. — *Podochilus rubens* Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 18.

Caules approximati, simplices, teretes, c. 15 cm vel plus longi, 0.14 cm diam., cum foliis c. 1.9—2 cm lati, internodiis c. 0.35—0.4 cm longis. Folia patentissima vel subpatentissima, basi semitorta, semiamplexicaulia, oblique ovata ad oblongo-ovata, breviter bidentata vel bilobulata cum mucrone longiore interposito, convexa, rigidiuscula, c. 0.95—1.15 cm longa, 0.5—0.7 cm lata; vaginae tubulosae, internodia superantes. Inflorescentiae terminales et axillares, brevissimae, subsessiles, nutantes, densissime multiflorae, rachide c. 0.6—1.3 cm longa. Bractee quaquaversae, reflexae: ovato-oblongae, concavae, ad c. 0.3 cm longae, superiores minores. Flores parvi, patentissimi, c. 0.6 cm lati, sepalis dorso sparse furfuraceo-punctatis. Sepalum dorsale cum ovario angulum acutum faciens, ovatum, obtusum, concavum, 3-nerviium, c. 0.34 cm longum, fere 0.25 cm latum. Sepala lateralia cum pede gynostemii mentum breve latum cum ovario angulum subrectum faciens leviter a dorso compressum apice rotundatum c. 0.17 cm longum formantia, basi antice breviter connata, recurva, oblique triangula, subacuta, basi concava, ceterum convexa, 3-nervia, bene 0.325 cm longa, basi 0.3 cm lata. Petala oblique rhombea, obtusa, basi subcontracta, concavula, 1-nervia, fere 0.3 cm longa, 0.2 cm lata. Labellum basi pedi gynostemii brevissime saccato-adnatum, erectum, concavum, inferne marginibus pedi gynostemii adpressum, apice valde recurvo convexum, basi antice leviter inflatum et sulco longitudinali didymum, appendice basilari hippocrepidiformi, quam partem basilarem labelli paulo breviora et angustiore, concava, marginibus usque ante medium labelli decurrente, 3-nerviium, nervis exterioribus ramosis, explanatum late ellipticum, simplex, obtusum, c. 0.375 cm longum, 0.275 cm latum. Gynostemium cum ovario angulum obtusum faciens, dorso convexum, c. 0.175 cm longum, clinandrium concavo, ovato, dorso obtuso, marginibus utrinque dentifero. Anthera cucullata, cordata, lobulis basilaribus obtusis in clinandrium immersa, apice elongata, minute 3-denticulata, basi gibbosa, c. 0.125 cm longa. Pollinia 6, inaequalia, oblique anguste clavata, apice obtusa, basi acutissima, maxima c. 0.08 cm longa, stipitibus 2 basi connatis linearibus canaliculatis, cum glandula parva lanceolata c. 0.08 cm longis. Rostellum porrectum, conspicuum, triangulum, acute 2-dentatum, concavum, subtus convexum. Stigma transversum, margine inferiore in dentem triangulum productum. Pes gynostemii cum ovario angulum rectum faciens, rectus, rectangule oblongus, medio leviter canaliculatus, c. 0.15 cm longus. Ovarium rectum, etortum, 6-sulcatum, c. 0.3 cm longum. Fructus immaturus sessilis, patentissimus, alte 6-sulcatus.

Sumatra: Padangsche Bovenlanden, Boekit Djarat, c. 1500 m. (liv. pl. cult. in Hort. Wichers, E. Schlechter n. 160061). Tanang Taloe, 1100 m. (H. A. B. Bünne-meijer n. 1160a, June 1917). Palembang, Goenoeng Dempoe, 1700 m. (Exp. E. Jacobson, Ajoeb n. 496, August 1916).

Geographical distribution: Endemic.

I found some differences with Schlechter's description, hence I have given a fresh one.

Description from specimens preserved in alcohol.

Appendicula (sect. *Pododesme*) *effusa* Schltr. Orch. D. N. Guinea (1912), 336; in Fedde Rep. Beih. LXXIV (1934), t. 52, Nr. 206; J. J. S. Ic. Orch. Mal. I (1930, t. 29, III. — *Podochilus effusus* Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. Nr. 104, 19.

Caules approximati, elongati, simplices, compressi, pallide virides, c. 10—36 cm longi, internodiis 0.35—0.5 cm longis. Folia patentia, basi semitorta, inferiora plerumque suborbicularia, sequentia ovalia ad oblonga, obtusa ad rotundata, plerumque emarginata cum mucrone, costa media supra sulcata, nitidule viridia, subtus opaca, interdum purpureo-suffusa, c. 0.65—1.8 cm longa, 0.3—0.6 cm lata; vaginae tubulosae, valde compressae, apice antice excisae, internodia superantes. Inflorescentiae terminales et axillares, vaginas 2 perforantes, elongatae, inferne raro apice plerumque ramosae, pedunculo tenui, serpentino, c. 2.5—11 cm longo, internodiis longis, vaginulis tubulosis acutis, rachide brevissima, dense multiflora, verruculosa, c. 0.5—1.25 cm longa. Bractee reflexae, ovatae, concavae, c. 0.2—0.3 cm longae, superiores minores. Flores parvi, pallide virescentes, purpureo-suffusi, bene 0.3 cm lati, toti 0.4 cm longi, sepalis petalis conniventibus. Sepalum dorsale ovarium subcontinuum, ovatum, obtusum, concavum, costa media dorso prominente, c. 0.26 cm longum, 0.18 cm latum. Sepala lateralia cum pede gynostemii mentum breve reversum obtusissimum a latere visum rotundatum c. 0.13 cm longum formantia, divergentia, angulum acutum facientia, oblique triangula, obtusa, 3-nervia, costa media dorso prominente, c. 0.27 cm longa margine antico 0.325 cm, basi 0.25 cm metientia. Petala basi leviter concava, apice recurvula, suboblique oblonga, obtusa, 1-nervia, bene 0.2 cm longa, 0.08 cm lata. Labellum apici pedis gynostemii insertum, valde concavum, apice recurvulum porrectumque, leviter 3-lobum, 5-nervium, appendice anguste alteque hippocrepidiformi basin labelli attingente carnosula antice in margines labelli decurrente, explanatum c. 0.3 cm longum et latum, lobis lateralibus erectis rotundatis, lobo intermedio lato transverse oblongo, leviter retuso cum callo parvo breviter obtuse producto in sinu, antice utrinque rotundato, c. 0.08 cm longo, fere 0.2 cm lato. Gynostemium breve, latum, in utraque stigmatis parte rotundato-dilatatum, c. 0.14 cm longum, clinandrio concavo cum costula longitudinali, dorso obtuse trigono. Anthera cucullata, rotundato-trigona, longe et anguste rostrata, basi bilobula, connectivo basi gibbosa, fere 0.1 cm lata. Pollinia 6, oblique obovata, angulata, cum stipite tenui apice bivalvate et glandula parva 0.1 cm longa. Rostellum porrectum, acute bidentatum. Stigma triangulum. Pes gynostemii reversus, cum ovario angulum acutum faciens, apice incurvus, sigmoideus, oblongus, concavus, c. 0.15 cm longus. Ovarium 6-sulcatum, leviter verruculosum, cum pedicello brevi c. 0.225 cm longum. Capsula breviter pedicellata, flore sicco coronata, oblonga, subobovoidea, trigona, obtusa, basi acuta, costa applanata in lateribus, c. 0.5 cm longa, 0.23—0.25 cm diam.

Sumatra: West coast, Goenoeng Marapi, c. 1200 m, in forest. (*B. Schlechter* n. 160351, January 1907). Kerintji Peak, 1200—1700 m, in forest. (*H. A. B. Bunne-*

meijer nrs. 8383, 8439, 8534, 8618, 8785, 8894, 8953, 8982, 9050, 9067, fl. and fr. in March 1920).

Geographical distribution: Endemic.

The nearest ally of this plant is *A. infundibuliformis* J. J. S., not *A. elegans* Rehb.f. as Schlechter suggests.

Description from *Bünnemeijer n. 8618*.

Phreatia, (sect. *Bulbophreatia*) *sumatrana* Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 54; Krztl. in Pflanzenr. IV. 50. II. B. 23 (1911), 21.

Planta caespitifica, dense radicans. Pseudobulbi approximati, parvi, omnino vaginis inclusi, 2—3-folii. Folia linearia, oblique obtusa, leviter rotundato-biloba cum mucrone lateraliter compresso, basin versus angustata conduplicataque, costa media dorso carinata, sicco rigidula, infima parva, c. 5.75—12.5 cm longa, sicco 0.6—0.85 cm lata; vaginae sese amplectentes, tubulosae, c. 1.5—2.2 cm longae. Inflorescentiae erectae, folia superantes, sublaxe multiflorae, pedunculo c. 7.5—12 cm longo, vaginulis c. 6 tubulosis acuminatis acutis carinatis ad c. 1.2—1.4 cm longis donato, rachide interrupte 5-costata, c. 4.5—10 cm longa. Bractee e basi oblongo-triangulo-dilatata longe filiformi-subulato-acuminatae, concavae, marginibus inferne recurvulis, 1-nerviae, ad c. 0.65 cm longae, 0.125 cm latae. Flores parvi, patentissimi, c. 0.3 cm lati, 0.27 cm longi. Sepalum dorsale erectum, cum ovario angulum obtusum faciens, incurvum, concavum, ovato-triangulum, leviter obtuse acuminatum, 1-nervium, c. 0.15 cm longum, bene 0.1 cm latum. Sepala lateralia ad pedem gynostemii decurrentia, patentissima, late oblique ovata, subacute acuminata, praesertim latere antico ad basin concava, apicem versus canaliculato-conduplicata, 1-nervia, nervo dorso prominulo, c. 0.175 cm longa, 0.15 cm lata, margine antico 0.225 cm metientia. Petala oblique porrecta, divergentia, subplana, apicem versus canaliculata, oblique subovato-ovalia, obtusa, basi brevissime unguiculata, 1-nervia, c. 0.125 cm longa, 0.075 cm lata. Labellum parvum, pedem gynostemii subaequans, unguiculatum, lamina rectangule recurvum, glabrum, 3-nervium, inexplanatum c. 0.125 cm, explanatum 0.15 cm longum, ungue inexplanato oblongo, dimidio inferiore utrinque conspicue subrotundato-dilatato, marginibus erectis sacculato, c. 0.08 cm longo, basi 0.075 cm, superne fere 0.05 cm lato, abrupte in laminam dilatato, lamina ungue bene latiore, subsemiorbiculari, basi subtruncata cum ungue angulos subrectos faciente, angulis lateralibus obtusa, antica rotundata et crasse obtuse apiculata, c. 0.06 cm longa, 0.125 cm lata. Gynostemium cum ovario angulum obtusum faciens, breve, dorso convexum, cum anthera fere 0.1 cm longum, clinandrio alte excavato. Anthera cucullata, supra visa transverse quinquangularis, apice obtusangula, basi 4-lobulata, c. 0.06 cm lata. Pollinia 8. Rostellum alte acute bidentatum. Stigma transversum, margine inferiore rotundatum, margine superiore truncatum. Pes gynostemii reversus, ovario adpressus, apice incurvulus, e basi dilatata convexa contractus, fere 0.1 cm longus. Ovarium oblique fusiforme, obtuse 6-costatum, c. 0.25 cm longum, cum pedicello tenuiore 0.3 cm longo clavatum.

Sumatra: West coast, Pariaman, Padang Pandjang, 1000 m. (*R. Schlechter n. 15968 type*, January 1907). Laras Talang, Boekit Gombak, 1600 m, epiphytical in forest. (*H. A. B. Bünnemeijer n. 5442*, November 1918; "flowers white, bracts light green").

Geographical distribution: Endemic.

Though I have not seen the type specimen I think that this specimen belongs to *Phr. sumatrana* Schltr. It differs from Schlechter's description in the fewer and longer leaves, and I would not describe the blade of the lip as reniform.

Description from *Bünnemeijer n. 5442*.

Plocoglottis (sect. *Phyllocaulos*) *moluccana* Bl. Mus. Bot. Lugd. Bat I (1849—'51), 47; Flora Jav. n. ser. I (1858), 53, t. 16; J. J. S. Ic. Orch Mal. I (1930), t. 39, II.

Caulis pars praesens 6-folia. Folia erecto-patentia, lanceolata, sensim acuminata, acuta, nervis 5 dorso prominentibus, ad c. 26 cm longa, 4.6 cm lata, summum angustissimum, basi angustata canaliculata et sensim in vaginam longe tubulosam c. 7 cm longam vergentia. Inflorescentia laxa multiflora, pedunculi parte praesente c. 7.2 cm longa, pubescenti, vaginulis c. 5 tubulosis et 2 bracteiformibus donata, rachide pubescenti, 28 cm et plus longa. Bractee ovato-lanceolatae, longe acuminatae, pubescentes, ad c. 1.5 cm longae. Flores c. 3 cm longi, sepalis dorso patentissime pubescentibus. Sepalum dorsale erectum, cum ovario angulum obtusum faciens, apice recurvulum, lanceolato-triangulum, apice angustato conduplicatum, subacutum, concavum, intus parce puberulum, basi 3-nervium, nervis exterioribus ramosis, c. 1.6 cm longum, 0.57 cm latum. Sepala lateralia deflexa, oblique lanceolata, subsigmoidea, apice conduplicata, acute conico-apiculata, apiculo lateraliter compresso, concava, intus parce puberula, basi 3-nervia, nervis exterioribus ramosis, c. 1.7 cm longa, fere 0.6 cm lata. Petala erecta, oblique sublinearia, apice contracto-acuminata, convexa, utrinque parce pubescentia, basi 3-nervia, nervis exterioribus ramosis, c. 1.4—1.5 cm longa, 0.325—0.3 cm lata. Labellum ungue brevi cuneato concavo c. 0.17 cm longo pedi gynostemii in forma calcaris brevissimi reversi lateraliter compressi obtusi in faciem inferiorem laminae cariniformi-decurrentis adnatum, inferne membranis 2 intramarginalibus triangulis gynostemio elastice affixum, supra convexum cum canalicula longitudinali, incrassationibus 2 convexis basi rotundatis intus supra basin, subtus valde concavum, basi 3-nervium, nervis exterioribus valde ramosis, lamina explanata quadrata, angulis rotundata, apice paulo dilatata, truncata, medio in acumen revolutum anguste triangulum acutum c. 0.17 cm longum abrupte acuminata, absque acumine c. 0.66 cm longa, basi 0.64 cm; apice 0.74 cm lata. Gynostemium erectum, cum ovario angulum obtusum faciens, crassum, lateraliter compressum, dorso curvulum, obtusum, parce puberulum, subtus infra stigma longitudinaliter canaliculatum, absque anthera c. 0.6 cm longum, clinandrio triangulo, concavo. Rostellum bidentatum. Stigma subquadrangulum. Pes gynostemii cum ovario angulum rectum faciens, c. 0.1 cm longus. Ovarium pubescens, c. 1.5 cm longum.

Ambon. (*A. Zippelius, Herb. Lugd. Bat. n. 903, 16—2507*).

Geographical distribution: Endemic.

Blume's description is not quite adequate; hence I give a fresh one. Zippelius' material at Leiden consists in the upper portion of a stem and a single inflorescence.

The species has not been collected again.

Description from herbarium.

Calanthe (sect. *Eucalanthe*) *crumenata* Ridl. in Journ. Fed. Mal. St. Mus. VIII (1917), 107; J. J. S. Ic. Orch. Mal. I (1930), t. 41, I.

Pseudobulbi approximati, paucifolii. Folia petiolata, lanceolata, acute acuminata, basi sensim in petiolum angustata, utrinque glabra, nervis c. 7 quorum 3 intermediis validissimis, omnibus in sicco supra subtusque prominentibus, c. 10—30 cm longa, 3.2—9 cm lata; petiolus canaliculatus, costatus, cum vagina c. 3—17 cm longus. Inflorescentiae erectae, dense multiflorae, deinde laxiores, pedunculo parce et brevissime puberulo, c. 17—62 cm longo, vaginulis c. 3 tubulosis ad c. 2.5—3.5 cm longis donato, rachide brevissime puberula, c. 2—9.25 cm longa. Bractee e basi concava recurvae, ovato-lanceolatae, acutae, c. 1.1—3.5 cm longae, 0.675 cm latae. Flores mediocres. Sepalum dorsale ellipticum ad oblongo-ellipticum, obtusum vel obtusiusculum, convexum, dorso parce furfuraceo-puberulum, 3-nerviium, c. 0.95—1.7 cm longum, 0.5—0.675 cm latum. Sepala lateralia oblique elliptica ad elliptico-oblonga, subobtusa et conduplicato-apiculata, dorso furfuraceo-puberula, 3-nervia, c. 1—1.75 cm longa, 0.5—0.7 cm lata. Petala oblique elliptico-oblonga ad lanceolata, interdum subspathulata, acutiuscula, basi parvissime ciliolata, 3-nervia, nervo medio dorso sulcato, c. 1—1.75 cm longa, 0.45—0.65 cm lata. Labellum inferne longitudine c. 0.3—0.4 cm gynostemio adnatum, calcaratum, lamina triloba, basi seriebus 3 longitudinalibus verrucarum inferne in costas connataram ima basi in costas 2 confluentibus, seriebus exterioribus brevibus, serie intermedia longe producta, explanata ambitu obovata, 3-nervia, plus minusve puberula vel subglabra, ad c. 1.7 cm, usque ad apicem loborum lateralium 1.25 cm longa, ad lobos laterales ad c. 1.15 cm lata; lobi laterales porrecti, longe adnati, antice tantum liberi, basin lobi intermedii tegentes, parte libera oblique orbiculari-ovati, rotundati, plerumque plus minusve ciliolati, parte libera ad c. 0.45 cm longi; lobus intermedius transversus, plus minusve obreniformis, breviuscule rotundato-bilobulus, repandulus ad crenulatus, ad c. 0.8 cm longus, 1 cm latus; calcar breve, reversum, clavatum, obtusum, interdum parce puberulum, ad c. 0.8 cm longum. Gynostemium breve, tota longitudine basi labelli adnatum, oblique clavatum, apice valde incrassatum, subtus canaliculatum, utrinque costula longitudinali instructum, parce pilosum, c. 0.4 cm longum, 0.37 cm latum, lobis stigmaticis oblique quadrangulis, truncatis. Anthera cucullata, a dorso compressa, subsemiorbicularis, subreniformis, apice in rostrum breve valde recurvum producta, c. 0.2 cm lata. Pollinia 8, valde inaequalia, pyriformia. Ovarium 6-sulcatum, c. 1 cm longum, cum pedicello c. 1 cm longo furfuraceo-pilosum.

Sumatra: West coast, Kerintji Peak, 2100—2500 m, in forest, common. (*H. C. Robinson* and *C. Boden Kloss*; *H. A. B. Bunnemeijer* nrs. 7403, 9661, 9732, 9780 pp., 9901 pp., 9942, 10034, 10360, 10413, April—May 1920). Padangsche Bovenlanden, Goenoeng Talamau, north-western slope, 1700 m, in forest. (*H. A. B. Bunnemeijer* n. 726, May 1917; nat. name Katari boelan). Goenoeng Talang, 2100 m, in forest; 1 plant. (*H. A. B. Bunnemeijer* n. 5220, October 1918). Palembang, Goenoeng Dempoe, 2200 m. (Expedition *E. Jacobson*, *Ajoeb* n. 553, August 1916).

Geographical distribution: Endemic.

This plant is most nearly allied to *C. abbreviata* Lndl. and it is a question whether it would not be better regarded as a variety. It differs

properly in the lip blade not being unguiculate and in the short broad midlobe.

In the specimen collected on Mt. Dempoe the hairiness of the lip is quite the same as in *C. abbreviata* Lndl., in those from Kerintji Peak it is less conspicuous or nearly wanting.

In n. 9661 the lip is provided with ridges produced to the apex of the midlobe.

The flowers are white changing to pale yellow or orange.

Description from herbarium and flowers preserved in alcohol.

Calanthe (sect. *Eucalanthe*) *longibracteata* Ridl. in Journ. Fed. Mal. St. Mus. VIII (1917), 107; J. J. S. Ic. Orch. Mal. I (1930), t. 41, II.

Planta valida, elata. Folia longe petiolata, lanceolata, acute acuminata, basi sensim in petiolum angustata, glabra, nervis c. 7 majoribus subtus prominentibus, sicco membranacea, c. 23—64 cm longa, 7.5—12.75 cm lata; petiolus canaliculatus, costatus, cum vagina c. 10—34 cm longus; vaginae ad basin innovationum ad c. 38 cm longae. Inflorescentiae validae, erectae, laxius multiflorae, pedunculo dense sicco atrofusce puberulo, c. 57—110 cm longo, vaginulis c. 4 acuminatis puberulis ad c. 3—5.5 cm longis donato, rachide dense sicco atrofusce velutino-puberula, ad c. 9—20 cm longa. Bractee conspicuae, arcuato-recurvae, e basi ovato-lanceolata sensim longe angustatae, acutae, canaliculato-concavae, leviter undulatae, puberulae, ad c. 2.75—5 cm longae, basi 1 cm latae. Flores majusculi, sepalis dorso dense intus ad basin parce puberulis. Sepalum dorsale oblongo- ad obovato-ellipticum, breviter acuminatum, 3- supra basin 5-nerviium, c. 1.6 ad fere 2 cm longum, 0.64—1.1 cm latum. Sepala lateralia oblique oblongo-elliptica ad obovata, apice obtuse canaliculato-apiculata, 3- supra basin 5-nervia, c. 1.7—2 cm longa, 0.7—1.1 cm lata. Petala oblique rhombeo-lanceolata vel plus minusve rhombeo-spathulata, apice angustata vel plus minusve contracta, apiculata, intus extusque parce puberula, 3-nervia, costa media dorso sulcata, c. 1.5—1.75 cm longa, 0.7—0.8 cm lata. Labellum basi gynostemio tota longitudine adnatum, calcaratum, subtus sulcatum, parte gynostemio adnata canaliculata, puberula, intus hirtella, c. 0.75—1.1 cm longa, lamina alte tripartita, callo conspicuo antice bipartito introrsum verrucoso postice parce puberulo cum serie aequilonga verrucarum interposita ad basin inter lobos laterales, explanata c. 1.65—1.95 cm longa, ad lobos laterales c. 2.1—2.8 cm lata, lobis lateralibus basilaribus, patentissimis, oblique oblongis, obtusis, c. 0.95—1.2 cm longis, 0.4—0.45 cm latis, lobo intermedio cuneato, ad medium vel ad 1/3 partem infra apicem bifido, basi minute transverse ruguloso et parce puberulo, c. 1.4—1.65 cm longo, basi 0.4 cm, apice 1.1—1.25 cm lato, lobulis sinu acutangulo sejunctis, oblique oblongis, rotundato-truncatis crenulatisque, 0.4—0.5 cm latis, calcari ovario parallelo, arcuato, tereti, obtuso, basi non ampliato, puberulo, c. 2.5—3.2 cm longo. Gynostemium tota longitudine labello adnatum, oblique obconicum, marginibus inferioribus leviter curvulum, dorso lateribusque convexum, subtus alte canaliculatum, 3-lobulum, puberulum, c. 0.75—1 cm longum, lobulo apicali rotundato, clinandrio alte excavato, suborbiculari cum costula longitudinali, lobulis stigmaticis antheram bene superantibus, obliquis, margine antico obtusangulis, carnosus, stigmaticis alte excavatis,

orbicularibus. Anthera alte cucullata, late ovata cum costula longitudinali, late membranaceo-marginata, acuta, c. 0.23 cm lata. Pollinia 8, clavata. Rostellum alte excisum, sinu obovato-oblongo, lobis margine interiore apiculatis. Ovarium trigono-teres, 6-sulcatum, dense puberulum, c. 1.2—1.6 cm longum; pedicellus teres, dense puberulus, 3—4.1 cm longus.

Sumatra: Westcoast, Kerintji Peak, 2300—2400 m, in forest, common. (H. C. Robinson and C. Boden Kloss; H. A. B. Bünnemeijer nrs. 9895 pp. and 10469 pp., May 1920). Pondok Boenga, 3000 m. (A. Frey—Wysling, July 1931).

Geographical distribution: Endemic.

Though Mr Ridley says that there is no callus on the lip, I think this is *C. longibracteata* Ridl. In the material quoted above there is a conspicuous callus at the base of the lip blade between the side lobes, exactly as in the allied species, only the rows of warts are not produced on the base of the midlobe. The specimen described by Ridley was apparently a small one.

I am in doubt with regard to the colour of the flowers, different species being mixed together under the same number.

In *C. crumenata* Ridl. and *C. transiens* J. J. S. the bracts are too much elongated.

Description from herbarium and flowers preserved in alcohol.

Acanthophippium eburneum Krzl. in Gard. Chron. 1896, II, 266; J. J. S. Ic. Orch. Mal. I (1930), t. 44, I.

Pseudobulbi approximati, erecti, elongato-conici, angulati, c. 4-nodi, atrovirides, c. 6 cm longi, pluribus vaginis tubulosis valde angulatis acutis sordide viridibus sursum accrescentibus ad c. 14 cm longis tecti, apice 2-folii. Folia erecta, recurva, oblongo-elliptica, sensim acuminata, acutissima, basi sensim in petiolum angustata, longitudinaliter plicata, nervis 5 supra sulcatis subtus acute carinatis, membranacea, nitide viridia, c. 32—40 cm longa, 10—12 cm lata; petiolus brevis, latus, canaliculatus, 3-carinatus, cum vagina tubulosa valde quadriquetra opaca sordide viridi c. 11—16.5 cm longus. Inflorescentia ex axilla vaginae intermediae, erecta, brevis, c. 4-flora, pedunculo pseudobulbo adpresso, subtereti, olivaceo, c. 1.25 cm longo, rachide flexuosa, angulata, olivacea, c. 1.5 cm longa. Bractee magnae, adpressae, rachidem semiamplectentes, triangulae, subacuminatae, apice incurvulae, acutae, valde concavae, pallidae, purpureo-suffusae, c. 3.2 cm longae, 2.3 cm latae, superiores minores. Flores quaquaversi, mediocres, anguste et oblique urceolati sepalis sulcis separatis a latere visi parallelogrammiformes, eburnei, apicem versus flavescentes, subsemipellucidi, carnosuli, sepalis lateralibus dimidiis proximis pallide flavis, c. 4.5 cm longi, 2.7 cm lati. Sepalum dorsale longitudine c. 2 cm sepalis lateralibus agglutinatum, oblongum, apice rotundatum, subrectum, concavum, praesertim intus nitidum, basi intus parce purpureo-punctatum, c. 3.3 cm longum, 1.2 cm latum. Sepala lateralia lacinia oblique triangula concava ad pedem gynostemii decurrentia, mentum reversum cum ovario angulum acutum faciens angustum calcariforme oblongum apice breviter incurvulum obtusum c. 1.45 cm longum formantia, oblongo-parallelogrammiformia, apice oblique recurva, obtusa, concava, extus obtusangule convexa, 5-nervia, utrinque nitidula, dimidio inferiore intus purpureo-punctata, usque ad apicem ovarii c. 3.2 cm, tota 4.5 cm longa, 1.6 cm lata, parte pedi gynostemii adnata c. 1.7 cm longa. Petala parallela,

oblique spathulata, basi obliqua, intus fascia longitudinali angulato-convexa, dorso sulcata, 3-nervia, carnosae, utrinque nitidae eburneae, basi intus purpureo-puncticulatae, tota c. 3.1 cm longa, ungue oblique oblongo, apice in laminam dilatato, c. 0.9 cm longo, medio 0.45 cm lato, lamina oblique oblongo-triangulari, apicem versus sensim angustata, obtusa, angulis basilariibus obtusangule rotundata, c. 2.2 cm longa, 0.95 cm lata. Labellum parvum, pedi gynostemii subelastice insertum, curvatum, canaliculatum, subtrilobum, subtus longitudinaliter sulcatum, costis 3 longitudinalibus obtusangulis, costa intermedia e basi usque ad apicem, 2 exterioribus in 1/3—2/5 partibus supra basin evanescentibus, costula valde obsoleta utrinque addita, extus nitidum, fascia lata mediana praesertim basin versus crasse carnosae citrinae basin versus albidae, parte antica rugulosa, inexplanatum c. 1.6 cm longum, subexplanatum 1.8 cm longum, 1.4 cm latum, ambitu triangulum, ungue brevi, transverse quadrangulo, c. 0.73 cm lato, lobis lateralibus erectis, oblique subtriangulis, postice obtusis, margine antico leviter rotundatis, tenuibus, lobo intermedio sinibus subobsoletis a lobis lateralibus sejuncto, semiovali, obtuso, citrino, fere 0.8 cm longo, 0.9 cm lato. Gynostemium rectum, basi contractum, ceraceo-album, nitidum, c. 1.3 cm longum, superne bene 0.7 cm latum, clinandrio alte excavato cum dente conico, 3-lobo, apice aequilateraliter trapeziformi, truncato, auriculis late triangulis, subrotundato-obtusis. Anthera cucullata, oblique conica, basi in gibbum contracta, apice in rostrum triangulum acutum producta, margine utrinque medio recurvo, alba, c. 0.35 cm lata. Pollinia 8, valde inaequimagna, lateraliter compressa, extus convexa, flava, opaca, 4 minora breviter quadrangula, 4 majora minora multo superantia, lanceolata, c. 0.5 cm longa. Rostellum breve, latum, truncatum. Stigma magnum, obovatum. Pes gynostemii maximus, reversus, cum ovario angulum acutum faciens, ante medium abrupte acutangule incurvus, parte inferiore sepalis lateralibus adnata, recta, apice incurva, lineari apicem versus leviter angustata, dorso apicem versus canaliculata, intus ad basin alba, superne aurea, dorso ad basin purpurea, apicem versus pallide flava, c. 1.5 cm longa, parte antica gynostemio parallela, leviter undata, lineari, superne leviter subspathulato-dilatata, canaliculata, superne subplana, subtus convexa cum sulco longitudinali, apice truncata, nitidula, aurea, c. 2.3 cm longa, 0.5 cm lata. Ovarium pedicellatum validum, tortum, teres, 6-sulcatum, apice obliquum, violaceo-purpureum, basin versus pallidius et submarmoratum, c. 2.8 cm longum.

Sumatra: Deli, Habako. (*W. M. Docters van Leeuwen*, March 1919, liv. pl. cult. in *Hort. Bog.* sub n. 91).

Geographical distribution: Endemic.

I have no doubt that this is the plant intended by Prof. Kränzlin, though I have not seen the 3 elevated lines on the apex of the column foot mentioned by Kränzlin.

In the note l. c. Kränzlin says that there is a single sharp triangular line between the side lobes of the lip; in the description, however, he mentions 2 more inconspicuous ribs. In the material I studied there is one distinct central ridge, 2 far less distinct and much shorter ribs, and traces of a fourth and fifth elevated line.

Description from a few living specimens.

Eria (sect. *Bryobium*) *lasiorhiza* Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 46; in Fedde Rep. Beih. LXXIV (1934), t. 43, Nr. 171; Krzl. in Pflanzenr. IV. 50. II. B. 21 (1911), 166.

var. *unifolia* J. J. S. n. var.

Pusilla. Rhizoma repens, breve, radicibus hic illic longe pilosis. Pseudobulbi approximati, depresso subglobosi, uno latere excisi, carnosi, c. 0.3 cm alti, 0.7 cm diam., 1-folii, nonnullis vaginulis basi tubulosis apice recurvis triangulis acutis minute crenulatis superioribus accrescentibus ad c. 0.8 cm longis ad basin. Folium erectum, elliptico-spathulatum, apice breviter abrupte acute acuminatum minuteque crenulatum ad denticulatum, basin versus sensim conduplicato-angustatum, costa media supra sulcata subtus carinata, c. 7-nerviium, tenue, c. 2.4—3.1 cm longum, 0.775—1.2 cm latum; vagina tubulosa, compressa, basi laminae angustior, supra pseudobulbum c. 0.5 cm longa. Inflorescentia singula, folium superans, laxe pauciflora, pedunculo tenui, angulato, celluloso-papillosa, c. 3—5 cm longo, rachide quaquaverse flexuosa, angulata, asperulo-papillosa fere muriculata, c. 0.7—1.5 cm longa. Bractee persistentes, patentes, ovatae, acuminatae, concavae, carinatae, dorso margineque papilloso-verruculosae, 1-nerviae, c. 0.325 cm longae, 0.23 cm latae. Flores quaquaversi, c. 3—5, parvi, c. 0.375 cm longi, sepalis petalisque conniventibus. Sepalum dorsale ovarium continuum, horizontale, incurvulum, valde concavum, ovali-oblongum, apice subrotundatum, abrupte apiculatum, 3-nerviium, costa media dorso prominula minuteque papillosa, c. 0.375 cm longum, 0.2 cm latum. Sepala lateralia cum pede gynostemii mentum conicum cum ovario angulum obtusum faciens incurvulum obtusum fere 0.2 cm longum formantia, margine antico supra basin satis conspicue incurvo, supra basin leviter oblique dilatatum oblique subovato-triangula, acute subulato-acuminata, concava, 3-nervia, costa media dorso conspicue prominente minuteque erosula, c. 0.37 cm longa, fere 0.25 cm lata. Petala porrecta, parallela, gynostemio adpressa, verticalia, oblique oblonga, obtuse acutata, glabra, 3-nervia, c. 0.25 cm longa, 0.1 cm lata. Labellum mobile, membrana parva pedi gynostemii insertum, simplex, curvatum, canaliculatum, subtus longitudinaliter sulcatum, inexplanatum oblongum, apice acute acutatum, basi truncatum, intus margineque minutissime papillosum, fere 0.2 cm longum. Gynostemium breve, apice conspicue producto dorso convexo subtus concavo rotundato-quadrangulo cum apiculo triangulo, cum anthera bene 0.1 cm longum, auriculis brevissime dentiformibus. Anthera alte cucullata, apice in lobulos 2 obtusos sinu lato separatos producta, 0.06 cm lata. Pollinia 8, 4 oblique cuneato-triangula, 4 anguste oblonga. Stigma suborbiculare. Pes gynostemii cum ovario angulum obtusum faciens, incurvulus, linearis, truncatus, vix canaliculatus, fere 0.2 cm longus. Ovarium crasse obconicum, subtus planum, lateribus convexis, c. 0.2 cm longum; pedicellus tenuior, c. 0.06 cm longus. Capsula immatura flore marcido coronata, obovoidea, breviter pedicellata.

Sumatra: Bataklanden, Saddle of the Asahan-breach, c. 1100 m, ravines in forest, epiphytical on stumps, not rare. (*J. A. Lörzing n. 10044*, May 1923; "flowers red-brown").

Geographical distribution: Endemic; the type (*R. Schlechter n. 15933*) also in Sumatra.

This differs from Schlechter's description and figure of the type by

the denser, one-leaved pseudobulbs and the acute, in front not widened lip.

Description from herbarium and material preserved in alcohol.

Eria (sect. *Mycaranthes*) **rhinoceros** Ridl. in Journ. Fed. Mal. States Mus. VIII (1917), 99; J. J. S. Ic. Orch. Mal. I (1934), t. 53, IV.

Caules elongati, foliati, partes adsunt ad 49 cm longae, internodiis c. 3—4 cm longis. Folia patentia, linearia, apicem versus sensim angustata, valde oblique acuta vel obtusiuscula vel plus minusve bidentata, basi canaliculata, costa medio sicco dorso prominente, ad c. 21 cm longa, sicco 1.4 cm lata; vaginae tubulosae, internodium multo superantes. Inflorescentiae ad nodos caulium in excavationibus sitae, patentes, laxae multiflorae, pedunculo dense incano-lanato-villosulo, ad c. 4 cm longo, nonnullis vaginulis conspicuis latis base utrinque sublanatis ceterum plus minusve puberulis ad c. 1.5 cm longis donato, rachide dense incano-lanata, ad c. 20 cm longa. Bracteae conspicuae, reflexae, oblongo-ovatae, acutae, concavae, utrinque parce hirtello-puberulae, c. 1.4 cm longae, 0.5 cm latae, superiores decrescentes. Flores quaquaversi, in sectione majusculi, valde aperti, c. 1.25 cm lati, sepalis dorso incano-stellato-sublanatis. Sepalum dorsale recurvum, ovatum, obtusum, valde concavum, 3-nerviium, c. 0.6 cm longum, 0.375 cm latum. Sepala lateralia subcurva, late oblique triangula, obtusa, concava, 5-nervia, c. 0.6 cm longa, basi 0.5 cm lata. Petala oblique ovato-rhombea, obtusa, leviter convexa, subirregulariter marginata, glabra, 3-nervia, tenuia, c. 0.57 cm longa, 0.325 cm lata. Labellum porrectum, leviter adscendens, superne obtusangule recurvum, 3-lobum, breviter unguiculatum, callis 3 farinosis ad basin callis exterioribus subglobosis, intermedio multo altiore, erecto, anguste oblongo-conico, 3-costatum, costa intermedia convexa, farinosa, inter lobos laterales sensim constricta, deinde dilatata, in medio lobi intermedii in callum magnum erectum oblongum trigonum obtusum lobos lateralibus aequalitum acuta, costis exterioribus superne leviter divergentibus et altioribus, ad basin lobi intermedii abrupte obtuse terminantibus et brevissime liberis, labellum explanatum c. 0.625 cm longum, ad lobos laterales fere 0.8 cm latum, ungue cuneato-quadrangulo, c. 0.16 cm longo; lobi laterales adscendentes, patentissimi, oblique subtrianguli-oblongi, obtusi, convexi, c. 0.22 cm longi, 0.16 cm lati; lobus intermedius conspicuus, recurvus, convexus, undulatus, e basi satis angusta valde dilatata, subsessilis, transverse quadrangulo-oblongus, apice lato subtruncato repandus, retusus, convexus, c. 0.3 cm longus, 0.65 cm latus. Gynostemium brevissimum, cum ovario angulum obtusum fere rectum faciens, latius quam longum, paulum a dorso compressum, dorso convexus, apice truncatum, usque ad rostellum apicem c. 0.16 cm longum, clinandrio transverse ovali, concavo cum costula longitudinali. Anthera cucullata, reniformis, lobis oblique rotundatis, connectivo obtuse gibboso, c. 0.17 cm lata. Pollinia 8, breviter pyriformia. Rostellum breve, transverse subquadrangulum, obtusum. Stigma transverse subquinquangulare. Pes gynostemii cum ovario angulum rectum faciens, rectus, linearis, truncatus, leviter convexus, basi canaliculatus, c. 0.3 cm longus. Ovarium pedicellatum subclavatum, incano-sublanatum, c. 0.7 cm longum.

Sumatra: Peak of Kerintji, 2300 m. (*H. C. Robinson* and *C. Boden Kloss*). Ophir districts, Goenoeng-Talamau (Ophir), northwestern slope, 1850 m. (*H. A. B. Bunnemeijer* n. 716, May 1917). Goenoeng Talang, Laras Talang, 2200 m, forest. (*H. A. B. Bunnemeijer* n. 5382, November 1918, sterile).

Geographical distribution: Endemic.

A most remarkable species of the section *Mycaranthes*. The flowers are typical *Mycaranthes*-flowers with very large calli on the lip, but the inflorescences are not pseudoterminal but lateral as in *Cylindrolobus* and *Trichotosia*. The bracts are uncommonly large in the section. Unfortunately the tips of the stems were only collected; according to the informations of the collector they should, however, attain a considerable length.

In some respects the plant recalls to mind *E. Forbesiana* Kränzl., which is, however, described from very incomplete materials and seems to have 3 pseudoterminal inflorescences.

The flowers are said to be yellow and violet inside.

Description from herbarium and part of an inflorescence preserved in alcohol.

My description was drawn up before I had seen the publication cited above. Accidentally I had chosen the same specific name.

Eria (sect. *Cylindrolobus*) *graminea* Ridl. in Journ. Fed. Mal. St. Mus. VIII (1917), 103.

Caules approximati, elongati, tenues, c. 30—65 cm longi, internodiis c. 2—2.5 cm longis. Folia patentia, linearia, apicem versus angustata et saepissime valde inaequaliter bidentata, sicco coriacea, c. 6.5—11 cm longa, sicco 0.5—1 cm lata, dente longissimo c. 2—3 cm longo; vaginae tubulosae, internodia subaequantur. Inflorescentiae in excavationibus caulis sitae, vaginam dorso ad basin perforantes, patentissimae, brevissimae, 1-florae, pedunculo cum rachide c. 0.6 cm longo. Bractee c. 4, sessiles, ovatae, sensim acuminatae, c. 0.75 cm longae, 0.3 cm latae et majores. Flos medioeris, sepalis dorso parce furfuraceo-punctatis petalisque conniventibus curvatis. Sepalum dorsale incurvum, anguste oblongum, apicem versus angustatum, obtusum, concavum, c. 7(—9)-nervium, c. 1.75 cm longum, 0.6 cm latum. Sepala lateralia cum pede gynostemii mentum breve obtusum formantia, oblique triangula, obtusangule falcata, acutiuscula, concava, c. 7(—9)-nervia, 1.43 cm longa, 0.65 cm lata. Petala oblique oblonga, falcata, obtusa, leviter concava, basi 3-nervia, nervis exterioribus ramosis, c. 0.4 cm longa, 0.5 cm lata. Labellum cum pede gynostemii angulum acutum faciens, recurvum, concavum, subsimplex, in 3/5 partibus supra basin constrictum, costis 3 longitudinalibus inferne inconspicuis et praesertim intermedia papillois, costa intermedia usque ad medium lobi intermedii producta, in lobo medio crassiore, costis exterioribus, ad basin lobi intermedii terminantibus, apice altioribus et oblique bidentatis, explanatum oblongum, fere 1.1 cm longum, hypochylio quadrangulo, basi truncato et utrinque rotundato-lobulato, c. 0.65 cm longo, 0.6 cm lato, epichylio (lobo intermedio) transverse ovali, apice late rotundato cum lobulo rotundato in medio, basi utrinque paucicrenato, c. 0.4 cm longo, 0.625 cm lato. Gynostemium subrectum, a dorso compressum, dorso convexum, c. 0.5 cm longum, clinandrio transverse ovali, excavato, auriculis tenuibus, late rotundatis concavis. Anthera cucullata, ambitu bene semiorbicularis, apice incurvo rotundata, connectivo conspicuo convexo ovato-orbiculari, c. 0.175 cm lata. Pollinia 8, compressa, orbiculari-obovata ad obovata, 0.08 cm longa. Stigma transverse ovale, subreniforme. Pes gynostemii cum ovario angulum subrectum faciens, late oblongo-

quadrangulus, leviter convexus, c. 0.4 cm longus. Ovarium 6-sulcatum, c. 1.3 cm longum. Capsula elongata, c. 2.5—6 cm longa.

Sumatra: Westcoast, west side of Barisan Range, Barong Baroe, 1300 m. (*H. C. Robinson* and *C. Boden Kloss*, without number and date). Peak of Kerintji, 1400—2200 m, epiphytical in forest. (*H. A. B. Bunnemeijer nrs. 8443, 8538, 9343, 9375, 9411, 9523, 9575*, March—April 1920).

Geographical distribution: Endemic.

This species is very closely allied to *E. cyrtosepala* Schltr. It differs in the thinner stems, narrower leaves, and the keels of the lip being very inconspicuous on the basal half.

The flowers are said to be white or white with a yellow or a yellowish green lip.

Description from herbarium and flowers preserved in alcohol.

Eria (sect. *Cylindrolobus*)? *erythrosticta* Ridl. in Journ. Fed. Mal. St. Mus. VIII (1917), 102; J. J. S. Ic. Orch. Mal. I (1934), t. 56, IV.

Habitus omnino *E. compressae* Lndl. Caules validi, elongati, parte adest ad c. 48 cm longa, internodiis c. 3.5—4 cm longis. Folia patentia, anguste lanceolata, inaequilatera, sensim valde oblique et anguste acuminata, nervis c. 7—9 sicco prominentibus, sicco tuberculata, ad c. 20—21 cm longa, 1.6—2.1 cm lata; vaginae tubulosae, internodia superantes, apice truncatae. Inflorescentiae in excavationibus caulium, 2 vaginas perforantes, racemosae, c. 3—7-florae, pedunculo c. 1.7—2 cm longo, cum rachide c. 0.4—1.2 cm longa stellato-furfuraceo. Bractee patentissimae vel reflexae, convexae, ovatae, sensim acuminatae, carnosulae. Flores erecti, majusculi, sepalis dorso sparse minute stellato-furfuraceis. Sepalum dorsale incurvum, lineare, apice vix contractum, obtusum, concavum, supra basin 5-nervium, c. 1.675 cm longum, 0.425 cm latum. Sepala lateralialia cum pede gynostemii mentum breve rectum obtusum facientia, oblique oblonga, falcata, obtusa, basi leviter dilatata, valde concava, c. 1.25 cm longa, basi 0.6 cm lata. Petala lanceolato-linearialia, falcata, apicem versus leviter dilatata, apice breviter contracta, anguste obtusa, concava, dorso ad basin parce minute stellato-furfuracea, 3-nervia, costa media dorso sulcata, c. 1.45 cm longa, 0.34 cm lata. Labellum recurvum, 3-lobum, 3-costatum, costa media e basi fere usque ad apicem producta, recta, in lobo intermedio valde incrassata et elevata, omnino dense patentissime villosa, a costis lateralibus non obtecta, costis exterioribus latioribus, inter lobos laterales obsolete marginatis, glabris, ad basin lobi intermedii in callum obtusum abrupte terminantibus, fasciculo pilorum rotundo parvo ad basin in utraque parte costae mediae, 3-nervium, nervis exterioribus valde ramosis, costa media subtus sulcata, inexplanatum c. 0.75 cm longum, explanatum 0.86 cm, usque ad apicem loborum lateralium 0.73 cm longum, 0.83 cm latum; lobi laterales porrecti, incurvi, gynostemium amplectentes, oblique oblongi, falcatuli, obtusi, c. 0.27 cm longi, basi 0.22 cm lati; lobus intermedius recurvus, praesertim parte mediana concavus, explanatus ambitu semiorbiculari-quinquangularis, apice obtuse contractus, apice excepto repandulo-crenulatus, c. 0.35 cm longus, 0.55 cm latus. Gynostemium curvulum, dorso convexum, sectione transversa triangulum, subtus concavum, apice (clinandrio) contractum, c. 0.6 cm longum, clinandrio parvo, angusto, excavato, auriculis parallelis, quadrangulis, apicem versus angustatis,

subtruncatis, concavis. Anthera cucullata, subovata vel potius subsemi-oblonga, apice rotundata, basi truncate-bilobula, a latere visa triangula, connectivo crasse carinata, c. 0.175 cm longa. Pollinia oblonga, a latere compressa, c. 0.15 cm longa. Stigma cordatum. Pes gynostemii cum ovario angulum acutum faciens, rectus, apice tantum incurvulus, quadrangulus, infra apicem callo reverso anguste conico papilloso instructus, c. 0.3 cm longus. Ovarium 6-sulcatum, praesertim in sulcis stellato-furfuraceum, c. 2.3 cm longum.

Sumatra: Westcoast, Soengei Koembang, 1300—1700 m. (*H. C. Robinson* and *C. Boden Kloss*, without number and date). Kerintji Peak, 1600 m, in forest. (*H. A. B. Bünnemeijer* n. 8454, March 1920; "flowers tawny orange-yellow, with bloodred dots").

Geographical distribution: Endemic.

Though *Ridley's* descriptions of *E. erythrosticta* *Ridl.* and *E. pinguis* *Ridl.* are inadequate to get a clear idea of what he meant and I have seen no specimens, I suppose that my identifications are correct.

Both plants are most nearly allied to *E. compressa* *Bl.* from Java. They agree in habit and the colour and general shape of the flowers. They may be distinguished at the first sight from the Javanese species by the much larger flowers. Both Sumatran species as well as *E. compressa* *Bl.* var. *sumatrana* *J. J. S.* differ from the Javanese one in the midlobe of the lip being larger and not bilobed.

In *E. compressa*, *E. c.* var. *sumatrana* and *E. erythrosticta* the central keel of the lip is shortly and densely hairy but in *E. pinguis* the hairs are much longer in the basal part. The outer keels are very conspicuous in *E. pinguis* and touch each other partly, thus concealing part of the middle one. In *E. compressa* var. *sumatrana* and *E. erythrosticta* there are to be found small cushions of hairs at the base of the outer keels, which are lacking in the other species.

In *E. pinguis* the lip and especially the midlobe are much broader than in the other forms and the margin of the midlobe is coarse-crenate except in the centre. In this species the column is really winged towards the base. Moreover the side lobes are here densely puberulous on the back side.

The column foot has a low blunt callus in *E. compressa* and *E. pinguis* and a subulate one in *E. compressa* var. *sumatrana* and *E. erythrosticta*.

Description from a dried specimen and an inflorescence preserved in alcohol.

Eria (sect. *Cylindrolobus*)? *pinguis* *Ridl.* in Journ. Fed. Mal. St. Mus. VIII (1917), 103; *J. J. S. Ic. Orch. Mal.* I (1934), t. 57, I.

Habitus omnino *E. compressae* *Lndl.* Caules validi, parte adest ad c. 4.7 cm longa, internodiis c. 2.5—3 cm longis. Folia patentia, lineari-lanceolata, inaequilatera, apicem versus angustata, valde inaequaliter et anguste bidentata, sicco coriacea, tuberculata, c. 12—17 cm longa, 2.3—3.2 cm lata; vaginae tubulosae, internodia superantes, apice truncatae. Inflorescentiae in excavationibus caulium sitae, vaginas 2 perforantes, c. 3—6-florae, pedunculo cum rachide c. 6.5—8 cm longo, parce adpresse furfuraceae stellato-piloso. Bractee oblongo-ovatae, acuminatae, convexae, ad c. 1.3 cm longae, 0.53 cm latae. Flores majusculi, sepalis intus dense papillois, dorso sparse adpresse stellato-furfuraceis. Sepalum dorsale

oblongum, antice vix dilatatum, apice angustatum, anguste obtusum, praesertim superne concavum, 3-nerviium, fere 1.6 cm longum, basi 0.5 cm, superne 0.64 cm latum. Sepala lateralia basi excavata basin labelli amplectentia, oblique ovali-ovata, falcata, obtusa, minute obtuse apiculata, concava, 3-nervia, c. 1.25 cm longa, medio 0.8 cm lata. Petala anguste oblonga, obtusangule falcata, obtusa, utrinque dense papillosa et dorso parce adpresse stellato-furfuracea, 3-nervia, costa media dorso sulcata, c. 1.4 cm longa, 0.5 cm lata. Labellum supra basin valde recurvum, 3-lobum, 3-costatum, costa intermedia e basi fere usque ad apicem producta, inferne longe pilosa ceterum dense velutina, in flexu costis lateralibus obtecta, in lobo intermedio maxima et crenato-repanda, costis lateralibus basi angustis superne valde incrassatis dorso latis subplanis leviter concavis, apice divergentibus et ad basin lobi intermedii abrupte terminantibus, glabris, 3-nerviium, nervis exterioribus valde ramosis, explanatum ambitu transverse sexangulato-ellipticum, basi truncatum, c. 0.9 cm longum, 1.4 cm latum; lobi laterales erecti, oblique oblongi, falcatulii, obtusi, dorso dense puberuli, c. 0.425 cm longi, medio 0.26 cm lati; lobus intermedius magnus, explanatus transversus, aequilateraliter trapeziformis, subtrilobulus, c. 0.46 cm longus, 0.775 cm latus, parte mediana valde cucullata, antice rotundata, partibus lateralibus undulatis irregulariter lacerato-crenatis. Gynostemium majusculum, curvulum, oblique conicum, dorso convexum, marginibus basin versus alato-dilatatis parallelisque subtus excavato-concavum, apice (clinandrio) longitudine c. 0.2 cm contractum, c. 0.8 cm longum, clinandrio concavo, auriculis parallelis, oblongis, rotundatis, erosulis, concavis, extus convexis. Anthera cucullata, auriculas paulum superans, oblonga, obtusa, basi bilobo-truncata, connectivo carinata, c. 0.23 cm longa. Stigma obverse triangulum. Pes gynostemii cum ovario angulum subrectum faciens, rectus, oblongus, truncatus, inferne marginibus gynostemii decurrentibus alatus, intus papillosus et infra apicem callo breviter conico papilloso instructus, c. 0.4 cm longus. Ovarium 6-sulcatum, praesertim in sulcis stellato-puberulum, c. 1.9 cm longum.

Sumatra: Westcoast, west side of Barisan Range, Barong Baroe, 1300 m. (H. C. Robinson and C. Boden Kloss n. 136). Kerintji Peak 1700—2100 m, in forest. (H. A. B. Bünnemeijer nrs. 9099, 9374, 9417, 9494, March—April 1920; "flowers dotted red inside, labellum white").

Geographical distribution: Endemic.

Under *E. erythrosticta* Ridl. I have given the differences with the allied species.

Description from herbarium and flowers preserved in alcohol.

The section *Aporodes* Schltr. of *Eria* Lndl.

The section *Aporodes* Schltr. of *Eria* was in 1911 based by R. Schlechter (in Fedde Rep. X (1911), 85) on a few nearly related species, which in habit and the equitant laterally compressed leaves closely resemble the section *Aporum* of *Dendrobium* Sw. but in the inflorescences and flowers possess all the characters of the section *Cylindrolobus* of *Eria* Lndl. The likeness of the species, the apparently often incomplete material in the collections and the inadequate descriptions, partly due to the tender ephemeral flowers have led to much confusion in the nomenclature.

The number of species for the present amounts to four. Schlechter notes (Orch. D. N. Guinea (1912), 671) that the plants grow in the mangrove-formation which fact admonishes to prudence, but Oakes Ames says (in Merrill, Enumeration Phil. pl. (1925), 345) that *Eria aporoides* Lndl. occurs in the Philippine Islands at sea level up to 1000 m altitude.

Although it is not possible for the time being to give a definite survey over the group, I intend to make some remarks.

1. *Eria incrassata* (Brongn.) Schltr. in Fedde Rep. XXI (1925), 165. — *Aporum incrassatum* Brongn. in Duperrey Voy. Coquille (1834), 204; Atlas (1826), t. 42 B. — *Dendrobium Brongniartii* Krzl. (pp. ?) in Pflanzenr. IV. 50. II. B. 21 (1910), 210 (excl. syn. *Eria aporoides* Lndl.); Ames (pp. ?) in Phil. Journ. Sc. VII (1912), Bot. 15; Orch. V (1915), 116.

This was the first species of the group which became known to science. It was described and figured by A. Brongniart, who, probably misled by the shape of the leaves, placed it in Blume's genus *Aporum* (now *Dendrobium*), and overlooked the fact that Blume had already created a species *incrassatum*. The description of the species is missing in the copies of the book both in the library of the Rijksherbarium at Leiden and in the University Library; according to Oakes Ames' enumeration of the Philippine *Orchidaceae* it was published in 1834, p. 204. From the title page of the Atlas it is proved that this appeared in 1826. In the case t. 428 is correct *E. incrassata* differs from the allied species in the dorsal sepal being much shorter than (nearly half so long as) the lateral ones. Moreover the lip is depicted with a long linear claw, which no doubt actually is the column foot; it is 3-lobed, the lobes being separated by shallow bights. The sidelobes are semi-orbicular, not produced in front into a distinct lobe, and the midlobe is more or less triangular and blunt. I find no annotations from which it appears whether the lip is wholly glabrous or not.

In the supposition that it was a *Dendrobium* Kränzlin, when transferring it to that genus, named it *D. Brongniartii* Krzl.; he could not apply the specific name *incrassatum* on account of *Aporum incrassatum* Bl., which is a true *Dendrobium*. Finally Schlechter placed it correctly in *Eria* under the name *E. incrassata* (Brongn.) Schltr.

For the present there is no reason to accept that *E. incrassata* (Brongn.) Schltr. should be considered conspecific with *E. aporoides* Lndl.

2. *Eria aporoides* Lndl. in Journ. Linn. Soc. III (1859), 60; Miq. Fl. Ind. Bat. III (1859), 657; Naves Nov. App. (1882), 236; Merr. in Govt. Lab. Publ. Phil. XXVII (1905), 84. — *Epidendrum equitans* Blanco Fl. Philipp. (1837), 645; ed. 2 (1845), 449; ed. 3, III (1879), 44. — *Dendrobium aporoides* (Lndl.) Merr. Sp. Blancoanae (1918), 113; Ames in Merr. Enum. Phil. pl. (1925), 345. — *Pinalia aporodes* O. K. Rev. gen. pl. II (1891), 678.

Philippine Islands: Luzon, Leyte, Basilan, Mindanao.

Geographical distribution: Endemic.

Lindley's original description runs as follows:

"*Eria aporoides*: foliis brevibus obtusis acinaciformibus equitantibus, pedunculis unifloris bracteis linearibus obtusis carnosis, floribus glabris, sepalis petalisque ovatis obtusis, labello acute 3-lobo, lobo intermedio majore carnosio. Philippine Islands, Cuming.

This has much the appearance of the plant figured by A. Brongniart as *Aporum incrassatum* (Duperrey, t. 42 B), but the lip is 3-lobed not entire."

It is to be remarked that Lindley simply states that the flowers are glabrous, but not manifestly says that this is also the case with the lip, which he describes as "acute trilobum".

At my request Prof. Ames most kindly sent me good material of *Eria aporoides* Lndl. from the Philippine Islands. A fresh description I insert here.

Eria aporoides Lndl.

Rhizoma elongatum, repens, radicans, teres, sicco c. 0.3 cm diam. Caules c. 4 cm dissiti, simplices, compressi, omnino foliati, 24—35 cm longi, cum foliis 2.5—3 cm lati, internodiis 0.7—1.2 cm longis. Folia alternatim bifaria, articulata, equitancia, valde a latere compressa, oblongo-triangulara, acutiuscula vel obtusiuscula, basi subrotundata, supra inferne $\frac{3}{5}$ ad $\frac{1}{2}$ longitudinis vaginato-fissa, carnosae, margine superiore 1.5—2.4 cm, dorso 1.5—2.65 cm longa, basi 0.65—1.1 cm lata; vaginae caulem omnino obtegentes, tubulosae, valde a latere compressae, apice angulatae, internodia superantes. Inflorescentiae axillares, vaginam basi perforantes, brevissimae, 1-florae, bracteis c. 4 ovato-triangulo-lanceolatis acutis donatae. Flos mediocris. Sepalum dorsale anguste oblongum, obtusum, 3—5-nerviis, 1.3 cm longum, 0.375 cm latum. Sepala lateralia ad pedem gynostemii decurrentia, mentum breve obtusum formantia, oblique oblonga, anguste obtusa, margine anteriore fere $\frac{1}{2}$ inferiore paulum dilatata, 3—5-nervia, c. 1.2 cm longa, basi rotundata fere 0.5 cm, medio 0.35 cm lata. Petala oblique oblonga, basi subspathulato-contracta, apice obtusa, 3-nervia, 1.16 cm longa, 0.37 cm lata. Labellum 3-lobum, inter lobos laterales 3-costatum, costis ut videtur minutissime papillois, intermedia superne dense puberula, expansum totum 0.95 cm, usque ad apicem loborum lateralium 0.7 cm longum, 0.6 cm latum; lobi laterales erecti, antice producti, porrecti, trianguli, obtusi, 0.16 cm longi, 0.18 cm lati; lobus intermedius cum lobis lateralibus angulos acutos faciens, porrectus, subsexangulato-ovalis, apice obtusus, subtruncatus, basi leviter contractus, omnino dense puberulus, bene 0.3 cm longus, 0.26 cm latus. Gynostemium latum, dorso convexum, absque anthera 0.4 cm longum, clinandrio excavato, apice breviter late triangulodentiformi, auriculis bene majoribus rotundatis concavis membranaceis, pede cum gynostemio angulum obtusum, cum ovario angulum acutum faciens, lineari-oblongo truncato 0.3 cm longo. Anthera cucullata, ambitu semiorbicularis, connectivo convexo-incrassato, apice incurvo rotundato, 0.2 cm lata. Pollinia 8, valde inaequalia, 4 majora suboblonga, apice angustata, 4 minora suborbicularia. Stigma conspicuum, alte excavatum. Ovarium 6-sulcatum.

Philippine Islands: Island Leyte, Tacloban, 0 m, epiphyte in forest at sea level. (C. A. Wenzel n. 956, February 6, 1916: "sepals and petals white, lip white and yellow, 4 orange bracts").

The plant collected by Wenzel differs from Lindley's short diagnosis, so far as the latter goes, in the petals being not ovate but narrowed at the base, the manifestly blunt lobes of the lip, which, especially the mid-lobe, is hairy inside. Oakes Ames notes in his enumeration of Philippine

Orchidaceae (1924), p. 345, that the species is fairly common and widely distributed in the Philippines at sea level to 1000 m altitude. It is not impossible that more species or forms should be distinguished. At any rate a careful study in loco is very desirable.

Dr S. H. Koorders brought along from his expedition to North Celebes in 1895 living plants of an *Eria* which since then are in cultivation in the Botanic Gardens at Buitenzorg. I have always taken this to be *E. aporoides* Lndl. but since I have studied Philippine material I prefer to consider the Celebes plants a separate variety, of which the description follows underneath:

Eria aporoides Lndl. var. *celebica* J. J. S. nov. var. — *E. aporoides* Lndl.; Schltr. in Fedde Rep. XXI (1925), 165.

Rhizoma elongatum, ramosum, repens, radicans, teres, c. 0.25—0.3 cm diam. Caulis c. 2—3 cm dissiti, erecti, simplices, sectione transversa elliptici, omnino foliati et vaginis foliorum obtecti, c. 14 cm longi, cum foliis c. 3 cm lati. Folia alternatim bifaria, valde a latere compressa, equitantia, triangulara, subacuta, basi supra vaginato-fissa, carnosae, dilutius viridia, margine superiore c. 2.3 cm, margine inferiore 2.5 cm longa, basi curvata 1 cm lata; vaginae tubulosae, a latere compressae, internodia superantes. Inflorescentiae axillares, vaginam dorso ad basin perforantes, brevissimae, 1-florae, rachide virescenti-alba, c. 1 cm longa. Bracteeae c. 4, quaquaversae, patentissimae, lineari-lanceolatae ad ovato-oblongae, acutae, carnosulae, rigidae, dilute aureae, c. 1 cm longae, 0.2—0.475 cm latae. Flos mediocris, ephemerus, leviter suaveolens, c. 2 cm latus, sepalis petalisque subpatentissimis niveis. Sepalum dorsale anguste oblongum, obtusiusculum, leviter concavum, c. 1.3 cm longum, 0.45 cm latum. Sepala lateralia ad pedem gynostemii decurrentia, mentum breve formantia, oblique anguste oblongo-triangulara, subfalcata, acutiuscula, leviter obtusangule concava, c. 1.3 cm longa, basi 0.45 cm lata. Petala suboblique anguste oblonga, obtusiuscula, vix obtusangule concava, c. 1.15 cm longa, 0.4 cm lata. Labellum elasticè insertum, gynostemio parallelum, 3-lobum, 3-costatum, costa intermedia a basi usque ad lobum intermedium decurrente angusta dense subfarinaceo-papillosa citrina, costis exterioribus approximatis humilibus latioribus glabris albis usque in basin lobi intermedii productis, explanatum fere 0.9 cm longum, fere 0.5 cm latum; lobi laterales erecti, gynostemium superantes, nivei, parte libera porrecta triangulara acuta; lobus intermedium recurvus, oblongus, obtusus, vix retusus, convexus, dense subfarinaceo-papillosus, citrinus, c. 0.37 cm longus, 0.23 cm latus. Gynostemium subgracile, dorso convexum, subtus concavum, album, c. 0.5 cm longum, clinandrio excavato, apice brevi triangulo, auriculis bene longioribus rotundatis tenuibus valde concavis. Anthera cucullata, rotundata, flavescens-alba. Pollinia 8, inaequalia, dilute flava, 4 majora compressa. Stigma alte excavatum, triangulo-orbiculare. Pes gynostemii cum ovario angulum acutum, cum gynostemio angulum obtusum faciens, rectus, obtusus, albus, apice macula aurantiaca ornatus, c. 0.275 cm longus. Ovarium 6-sulcatum, virescenti-album, c. 1.3 cm longum.

North Celebes: Manado. (S. H. Koorders, 1895, liv. pl. cult. in *Hort. Bog.* sub nrs. 14c and 78c, type). South Celebes. (Expedition L. van Vuuren, Mantri Noerkas n. 253, cult. in *Hort. Bog.*).

The variety differs from *Wenzel n. 956* especially in the acute side

lobes of the lip. The plant collected by the expedition L. van Vuuren differs according to my notes slightly in the lip being more hairy and the midlobe more ovate in outline and paler towards the top.

3. *Eria decipiens* Schltr. in Fedde Rep. X (1911), 85; XXI (1925), 165; Beih. LXXIV (1934), t. 41, Nr. 161.

North Celebes: Near Toli-Toli, on trees in mangrove swamps. (*E. Schlechter* n. 20692, January 1910).

According to Schlechter's description and figures this differs in the somewhat shorter and broader bracts (in the specimen in Herb. Lugd. Bat. they resemble more closely those of *E. aporoides* Lndl. and the var. *celebica*), the somewhat smaller flowers (sepals 1 cm long, whereas those of *E. aporoides* and the var. *celebica* measure 1.3 cm), the glabrous lip with an indistinct median band and very short, truncate side lobes not produced in front into a distinct free lobe.

Schlechter expresses l. c. the opinion that the species collected by Koorders in North Celebes might be *E. decipiens*. Supposing Schlechter's description and figure are correct this is certainly not the case.

The more or less powdery hairiness of the lip in *E. aporoides* and the var. *celebica* calls to mind the mealy covering on the callosities of the lip in the section *Mycaranthes* of *Eria*. As I have repeatedly stated this powdery covering is easily washed away by rain. Whether or not this is also the case in the section *Aporodes* is still to be examined. In the cultivated specimens of *E. aporoides* Lndl. var. *celebica* in Buitenzorg I did not notice this but nevertheless it may happen.

4. *Eria soronensis* Schltr. in Fedde Rep. IX (1911), 286. — *Dendrobium suaveolens* Krzl. (non Schltr.) in Pflanzenr. IV. 50. II. B. 21 (1910), 191.

New Guinea: Sorong. (*O. Beccari* n. 241).

According to Schlechter this species differs from *E. aporoides* Lndl. in the longer, more deeply 3-lobed, in front papillate labellum. In the material of *E. aporoides* Lndl. (*Dendrobium Brongniartii* Krzl.) sent by Prof. Ames the lobes of the lip are obtuse and especially the midlobe is puberulous. In his description of *D. suaveolens* Kränzlin says that the side lobes of the lip are acute, just as in *E. aporoides* Lndl. var. *celebica*, the hairiness, however, he does not mention. The sepals are said to measure 1 cm.

In the Rijksherbarium still another (?) species is represented, collected by Zippelius n. 25 in New Guinea. The leaves of this plant are somewhat narrower (and slightly recurved) than in the allied species; there are a few withered, much damaged flowers not good enough for study.

Eria (sect. *Trichotosia*) *mollis* Schltr. in Bull. Herb. Boissier, 2e ser. VI (1906), 460; in Fedde Rep. Beih. LXXIV (1934), t. 44, Nr. 175; J. J. S. Ic. Orch. Mal. I (1934), t. 57, II. — *Trichotosia mollis* Krzl. in Pflanzenr. IV. 50. II. B. 21 (1911), 147.

Caules approximati, dependentes, tenues, teretes, pallide virides, praesertim apicem internodiorum versus longe adpresse pilosi, c. 27 cm longi, 0.1 cm diam., internodiis c. 0.9—1 cm longis. Folia minuscula, erectopatentia, lanceolata, oblique subacuminata, acuta vel anguste obtusa, basi

angustata, convexa, utrinque subadpresse pallide fusce villosa, dilute viridia, c. 2.5—3.7 cm longa, 0.3—0.75 cm lata; vaginae tubulosae, apice erecto-patente oblongo canaliculato internodium superantes, patenter pallide fusce villosae, dilute virides, c. 0.3 cm diam. Inflorescentiae vaginam dorso ad basin perforantes, patentes vel subpatentissimae, laxae c. 5—8-florae, patentissime inaequaliter villosae, pedunculo brevi, tenui, rachide flexuosa, tenui. Bractae rachidem semiamplectentes, late ovato-triangulo-subquingulares, acutiusculae, concavae, dorso et margine villosulae, 3-nerviae, c. 0.3 cm longae et latae. Flores parvi, c. 0.37 cm lati, 0.525 cm longi (absque pilis), sepalis dorso villosulis. Sepalum dorsale ovatum, obtusum, dorso ad apicem obtuse gibbosum, 3-nervium, c. 0.275 cm longum, 0.15 cm latum. Sepala lateralia lacinia longa oblique oblonga concava ad pedem gynostemii decurrentia, mentum conspicuum cum ovario angulum acutum faciens oblongo-subcylindricum vix incurvulum obtusum bene 0.2 cm longum supra basin c. 0.15 cm latum formantia, divergentia, oblique triangula, marginibus curvata, obtusa, subapiculata, dorso ad apicem obtuse gibboso-incrassata, concava, 3-nervia, c. 0.26 cm longa, basi 0.33 cm, margine antico 0.475 cm metientia. Petala divergentia, oblique lanceolata, vix falcata, obtusa vel subobtusata, glabra, 1-nervia, bene 0.25 cm longa, 0.075 cm lata. Labellum erectum, apice recurvum, concavum, spathulatum, 3-lobum, subtus convexum et $\frac{3}{5}$ partibus inferioribus adpresse pilosum, incrassationibus 2 obliquis convexis e sinibus inter lobos decurrentibus, incrassatione tertia convexa papillosa paulo decurrente ad apicem, 3-nervium, explanatum c. 0.44 cm, usque ad apicem loborum lateraliū 0.35 cm longum, ad lobos laterales 0.2 cm latum, ungue lineari-oblongo, superne cuneato-dilatato; lobi laterales erecti, concavi, semiorbiculares, antice non producti, subcrenulati; lobus intermedius apice recurvus et canaliculatus, transverse quadrangulo-ovalis, subsexangulatus, apice truncatus et inconspicue subtrilobulus, minute crenulatus et inferne parce ciliatus, papillosus, fere 0.1 cm longus, 0.15 cm latus. Gynostemium breve, latum, cum ovario angulum obtusum faciens, dorso convexum, infra stigma convexum et longe barbatum, ceterum parcissime pilosum, cum anthera c. 0.1 cm longum, clinandrio transverso, excavato, apice late triangulo, apice contracto obtuso, auriculis obtusis. Anthera cucullata, margine tenui recurva, apice leviter 3-lobula, connectivo incrassato, c. 0.07 cm lata. Pollinia 8, lateraliter compressa, inaequalia, triangulo-pyriformia basi contracta. Stigma transverse quadrangulum, margine inferiore truncatum. Pes gynostemii cum ovario angulum acutum faciens, leviter incurvulum, linearis, intus glaber, c. 0.27 cm longus. Ovarium sessile, obconicum, longe subadpresse pilosum, fere 0.2 cm longum. Fructus sessilis, obovoideus, longe pilosus.

Sumatra: Indragiri, Soengei Lalah. (*R. Schlechter n. 13284*, May 1901). Padangche Bovenlanden, Agam, Batang Paloeboeh. (*W. Groeneveldt*, cult. sub n. 77). Matoer, Poentjak Boekit. (*E. Jacobson*, cult. sub n. 827).

Geographical distribution: Endemic.

I have but little doubt that this plant is *E. mollis* Schltr. The puberulous callus at the base of the column foot of this author is evidently the bearded underside of the column.

Dr E. Jacobson describes the colour of the flowers as follows. Sepals transparently light green, petals greenish white bordered red, lip white, column dark purple, anther blackish purple.

Description from a living sterile plant and specimens preserved in alcohol.

Dendrobium (sect. *Desmotrichum*) **schistoglossum** Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. Nr. 104, 31; in Fedde Rep. Beih. LXXIV (1934), t. 35, Nr. 139; J. J. S. Ic. Orch. Mal. I (1934), t. 62, III.

Rhizoma repens, elongatum, valde ramosum, radicans, teres, dilute flavo-viride, c. 0.525—0.55 cm diam., initio vaginis tubulosis mox fatiscentibus tectum. Caules c. 5—8.5 cm distantes, adscendentes, ramosi, dilute viridiflavi, toti ad c. 16 cm longi; caulis primarius c. 5.5—13.5 cm longus, 3—6-nodus, sectione transversa ellipticus, c. 0.3 cm latus, initio vaginis tubulosis tectus, internodiis c. 1.25—2.2 cm longis, internodio ultimo in pseudobulbum valde compressum ovale ad oblongo-ovale apice truncatum basi brevissime contractum c. 3.7—4.5 cm longum 1.5—2.3 cm latum 1-folium incrassato. Folium erectum, lanceolatum, obtusum vel rotundatum et brevissime 2-lobum cum apiculo interposito, concavum, basi plus minusve conduplicatum, costa media supra sulcata subtus obtuse prominente, coriaceum, supra nitidule viride, subtus opacum, c. 14—16 cm longum, 3.3—3.7 cm latum. Inflorescentiae ante folium, fasciculatae, breves, squamis cinctae, pedunculis teretibus, nitidis, albis, 1-floris, basi vaginulatis, c. 0.7 cm longis. Bractea brevissima adpressa, pedicellum fere amplectens. Flores intervallis florentes, bene aperti, ephemeri, pallide flavescentes, c. 1.6 cm diam., sepalis dorso furfuraceis. Sepalum dorsale oblongo-triangulum, acutum, concavum, basi convexum, c. 0.95 cm longum, c. 0.4 cm latum. Sepala lateralia cum pede gynostemii mentum breve cum ovario angulum obtusum faciens dorso sigmoideo-curvedum dorso ad apicem bene convexum rotundatum c. 0.375 cm longum formantia, supra basin concavam recurva, divaricata, oblique triangula, acuta, margine antico basi oblique triangulo-dilatata, costa media dorso vix prominula, c. 1 cm, margine antico 1.3 cm longa, basi 0.7 cm lata. Petala oblique porrecta, oblique oblongo-elliptica, basi apiceque leviter contracta, apice acuta, concava, c. 0.95 cm longa, 0.34 cm lata. Labellum parallelum pedi gynostemii erectum, recurvum, 3-lobum, 3-costatum, costis exterioribus inter lobos laterales rectis parallelis dorso dilatatis et canaliculatis, in ungue lobi intermediis tenuioribus curvato-disjunctis valde undulatis pallide viridi-marginatis ad basin lobi intermediis abrupte terminantibus, costa mediana humili recta, costis omnibus in lamina lobi medii in costulam humilem verruculoso-rugulosam apicem attingentem productis, basi dilute viride, explanatum e basi leviter contracta cuneatum, c. 1.2 cm, usque ad apicem loborum lateraliu 0.8 cm longum, ad lobos laterales 0.84 cm latum; lobi laterales erecti, incurvi, concavi, gynostemium longe superantes, oblique ovato-trianguli, obtusi, margine antico erosi; lobus intermedius ex ungue quadrangulo irregulariter crenato c. 0.2 cm longo 0.3 cm lato in laminam ambitu transverse suboblongam alte laceratam plicatam antice subtruncatam leviter excisam cum dente triangulo in sinu vix ochrascentem c. 0.3 cm longam 0.9 cm latam dilatatus. Gynostemium cum ovario angulum obtusum faciens, album, c. 0.3 cm longum, clinandrio alte excavato, transverse ovali, apice (filamento) dentiformi triangulo, auriculis aequilongis, quadrangulis, truncatis, denticulatis. Anthera cucullata, transverse subquadrangula, apice medio triangulo-producta truncata et apice puberula cum lobulo multo brevior utrinque, alba, bene

0.15 cm lata. Pollinia 4, lateraliter compressa, oblonga, supra convexa, subtus concava, exteriora extus convexa, interiora angustiora, nitida, flava. Stigma alte excavatum, ovatum. Pes gynostemii cum ovario angulum obtusum faciens, apice dorso bene convexo dorso subsigmoideus, albus, apice intus bene excavatus nitide viridis et longitudinaliter crasse 3-costatus, c. 0.375 cm longus. Ovarium trigono-cylindricum, 6-sulcatum, nitidum, flavescens, apice obliquum, cum pedicello brevi c. 0.7 cm longum. Capsula oblique oblongo-ovalis, apice oblique breviter et crasse contracta, cylindrico-trigona, dorso subrecta, antice ventricoso-convexa, 6-sulcata, dilute viridis, c. 2.2 cm longa, 1 cm diam., rimis 6 in valvas 3 angustiores dilute flavas et 3 latiores pallide flavo-virides omnes basi apiceque connexas dehiscens.

Sumatra: Padangsche Bovenlanden, Padang Pandjang, 800 m. (*E. Schlechter* n. 159231, January 1907). Fort de Kock. (*E. Jacobson*, cult. sub nrs. 969 and 1146). Mentawai Islands. (*H. P. Verschuur*, cult. in Hort. *E. Jacobson*).

Geographical distribution: Endemic.

The species is not allied with *D. comatum* Lndl., as Schlechter suggests, but much nearer to *D. padangense* Schltr. and *D. xantholeucum* Rehb. f. Description from a living plant send by Dr E. Jacobson from Fort de Kock, which flowered in my garden.

Dendrobium (sect. *Rhopalanthe*) **hypopogon** Krzl. in Pflanzenr. IV. 50. II. B. 21 (1910), 232.

Rhizoma abbreviatum, ramosum, radicans. Caules approximati, elongati, ad c. 40 cm longi, supra basin tenuem teretem c. 1—1.5 cm longam in pseudobulbum sicco fusiformem vel ovoideo-fusiformem valde rugosum plerumque ex internodio singulo compositum c. 1.7—2.4 cm longum 0.5—0.9 cm diam. incrassati, deinde tenues, teretes, foliati, internodiis c. 1.5—2.6 cm longis. Folia patentia, curvata, filiformi-subulata, tenuissima, c. 4—5.75 cm longa; vaginae tubulosae, apice truncatae. Inflorescentiae fasciculares, paucae, e nodis caulium partis ultimae c. 2—2.5 cm longae ex internodiis brevibus compositae, vaginulis siccis cinctae. Flores parvuli. Sepalum dorsale sublineare, apicem versus sensim angustatum, acutum, concavum, superne marginibus incurvis, 5-nerviium, c. 1.4 cm longum, 0.28 cm latum. Sepala lateralia ad pedem gynostemii decurrentia, mentum satis breve cum ovario angulum obtusum fere rectum faciens conicum incurvum dorso convexum apice contractum obtusum c. 0.55 cm longum formantia, oblique triangula, falcata, apicem versus sensim angustata, apice marginibus incurvis subulato-acuminata, 5-nervia, c. 1.3 cm longa, basi rotundata 0.66 cm lata. Petala oblique linearia, falcata, apicem versus sensim angustata, acuta, concava, 3-nervia, c. 1 cm longa, 0.15—0.175 cm lata. Labellum ungue brevi pedi gynostemii brevissime adnatum, erectum, medio fere rotundato-acutangule recurvum, conduplicato-canaliculatum, 3-lobum, 5-nerviium, callo 3-(vel 5-?) costato intus in flexu, inexplanatum e basi usque ad apicem loborum lateralium c. 0.56 cm metiens, explanatum c. 0.56 cm longum; 0.775 cm latum, ambitu transverse rhombeum; lobi laterales conspicui, erecti, margine antico marginem lobi intermedii continui, oblique trianguli, subfalcatulo-incurvi, margine postico rotundati, obtusi; lobus intermedius concavus, marginibus incurvis, dorso medio excepto grossius papillosus, explanatus latus, semiorbicularis, rotundato-truncatus, erosulus, c. 0.15 cm longus, 0.325 cm latus. Gynostemium

brevissimum, crassum, clinandrio excavato, filamento subulato, auriculis latis, bidentatis(?). Pes gynostemii cum ovario angulum obtusum faciens, incurvus, late linearis, $\frac{1}{3}$ parte superiore valde excavatus intus glandula longitudinali instructus et dorso rotundato-convexus, c. 0.55 cm longus. Ovarium obconicum, c. 0.2 cm longum; pedicellus tenuior, fere 0.5 cm longus.

Sumatrá: Westcoast, Goenoeng Singgalang, 130 m (f). (*O. Beccari s.n.*, 1878), 2600 m, epiphytical in forest. (*H. A. B. Bunnemeijer n. #866*, June 1918; "flowers greenish yellow").

Geographical distribution: Endemic.

The description of *D. hypopogon* Krzl. in many respects matches this plant, which, however, has shorter leaves, a rather large, erose, not emarginate midlobe of the lip provided with short papillae at the underside.

Description from a dried specimen with a single flower.

Dendrobium (sect. *Strongyle*) *hymenopetalum* Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 102, 33; J. J. S. Ic. Orch. Mal. I (1934), t. 66, IV. — *D. subulatum* Lndl. var. *majus* J. J. S. in Bull. Dép. Agric. Ind. Néerl. No. XV (1908), 10.

Caulis approximati, simplices, flexuosi, sectione transversa rhombi, nitide virides, nodis initio flavi deinde nigrescentes, ad c. 22 cm longi, parte inferiore ima basi excepta foliata, c. 8.5—12 cm longa, parte superiore tenuiore, folia rudimentaria parva caduca gerente et flores gignente, internodiis e basi apicem versus dilatatis, c. 0.75—1.6 cm longis, apice ad c. 0.2 cm latis. Folia patentia, recta vel saepe leviter falcato-recurvula, acuta vel subacuta, basi obliqua, carnosa, rigida, opaco-viridia, c. 2.3—3.5 cm longa, 0.27—0.3 cm diam.; vaginae tubulosae, virides, internodiis aequilongae vel paulo breviores. Inflorescentiae e nodis caulium partis superioris, fasciculatae. Flores teneri, c. 1—1.3 cm longi, 0.75—0.9 cm lati, sepalis petalisque albidis, praesertim dorso plus minusve conspicue purpureo-striatis. Sepalum dorsale erectum, ovatum, obtusum, convexum, striis c. 3—5, c. 0.37 cm longum, 0.27 cm latum. Sepala lateralia cum pede gynostemii mentum conspicuum incurvum conicum obtusum c. 0.8—0.85 cm longum formantia, antice patentissima, oblique subovato-triangularia, obtusa, subapiculata, lacinia elongata oblique oblonga falcata ad pedem gynostemii decurrentia, basi concava, superne convexa, striis c. 5, c. 0.37 cm longa, basi c. 1.5 cm lata. Petala erecta, paululum inclinata, oblique subobovato-oblonga ad lanceolata, obtusa vel obtusiuscula, convexa, plerumque 1—3-striata, c. 0.33—0.375 cm longa, 0.16—0.125 cm lata. Labellum pedi gynostemii parallelum erectum, recurvum, concavum, cuneatum, apice dilatato obscure trilobulatum et undulatum, fascia longitudinali leviter incrassata lineari tricostulata inter lobos laterales macula flava notata apice obsoleta, nonnullis nervis radiantibus intus prominulis utrinque, album, nervis interdum purpurascens, explanatum c. 0.99—1.225 cm longum, 0.67—0.9 cm latum, lobis lateralibus rotundatis, recurvis convexusque, interdum incurvis, lobo intermedio brevi, lato, brevissime rotundato-2-lobulo, convexo, interdum concavo, c. 0.4 cm lato. Gynostemium cum ovario angulum obtusum faciens, brevissimum, latum, a dorso compressum, c. 0.15 cm longum, clinandrio excavato, auriculis brevissimis, obtusis. Anthera cucullata, a dorso compressa, aequilateraliter trapezi-

formis, apice lata truncata, glabra, c. 0.16 cm lata. Pollinia 4, lateraliter compressa, semiobovata, pallide flava. Stigma suborbiculare. Pseudogynostemii cum ovario angulum fere rectum faciens, incurvus, linearis, tenuis, leviter 2-canaliculatus, nectario longitudinali oblongo leviter incrassato viride ad apicem, c. 0.8—0.85 cm longus. Ovarium 6-sulcatum, alternatim viridi- et purpureo-striatum, c. 0.2—0.25 cm longum; pedicellus tenuis, viridis, c. 0.35—0.45 cm longus. Fructus oblique obovoideus, obtusus, basi breviter acutus, rotundato-tri- vel subsexangulatus, 6-sulcatus. pallide viridis, c. 0.9 cm longus, 0.4 cm diam.

Sumatra: Padangsche Bovenlanden, Padang Pandjang. (Fr. L. K. Storm van 's Gravesande, liv. pl. cult. in *Hort. Bog.*). Fort de Kock. (R. Schlechter n. 159311, January 1907; E. Jacobson, liv. pl. cult. sub n. 984 pp.). Loeboek Sikaping. (W. Groeneveldt, liv. pl. cult. in *Hort. E. Jacobson* sub n. 156). Benkoelen, Boekit Kaba, Soeban Ajam, c. 1200 m. (Exp. E. Jacobson 1916, *Ajoeb*, liv. pl. cult. in *Hort. Bog.*).

Geographical distribution: Endemic.

This is much nearer to *D. subulatum* Lndl. than to *D. teloense* J. J. S., with which Schlechter compares it.

Description from living specimens.

var. *luisiifolium* J. J. S. nov. var.

Caulis c. 25 cm longi, inferne laxe 4—5-folii. Folia patentia, sicco falcato-recurva, teretia, acuta, c. 4.2—5.5 cm longa, 0.23—0.3 cm diam. Flores eis typi similes.

Sumatra: Benkoelen, Boekit Parisan, Rimbo Pengadang, 1000 m. (Exp. E. Jacobson, *Ajoeb* n. 206, June 1916, type).

Geographical distribution: Endemic.

This looks at first sight very different from the type, as the leaves are longer.

I have seen only a small portion of a plant partly dried, partly preserved in alcohol.

Bulbophyllum membranifolium Hook. f. Fl. Br. Ind. V (1890), 756; Ic. pl. XXI (1892), t. 2034; Ridl. Mat. Fl. Mal. Penins. I (1907), 65; Fl. Mal. Penins. IV (1924), 60. — *B. sanguineo-maculatum* Ridl. in Journ. Linn. Soc. XXXII (1896), 265; Mat. Fl. Mal. Penins. I (1907), 66. — *Phyllorchis membranifolia* O. K. Rev. gen. pl. II (1891), 677.

Rhizoma repens, flexuosum, teres, c. 0.4 cm diam. Pseudobulbi c. 0.7—1.5 cm inter se distantes, erecti, oblongo-ovoidei ad oblongi, obtuse subtrigoni, obtusi, opace virides, c. 3—4 cm longi, 1.6—1.2 cm diam., 1-folii. Foliolum petiolatum, lanceolatum, acute acuminatum, basi acutum, costa media supra canaliculata subtus carinata, subcoriaceum, flexibile, opacum, dilute viride, subtus pallidius, c. 11—14 cm longum, 4.1 cm latum; petiolus conduplicato-canaliculatus, c. 1.5—2.4 cm longus. Inflorescentiae e rhizomate, breves, uniflorae, pedunculo furfuraceo-punctato, c. 0.8 cm longo, vaginula basi arete tubulosa, superne ampliata, carinata, pallide viridi, furfuraceo-punctata. Bractea ampla, conduplicata, acuta, pallide viridis, furfuraceo-punctata, bene 1 cm longa. Flos majusculus, c. 3.9 cm latus et (inexplanatus) longus vel minor, ingratus, sepalis petalisque aurantiaco-ochraceis, violaceo-atropuree striatis vel punctatis, oleosis, utrinque nitidis, carnosulis. Sepalum dorsale ovarium fere continuum, ovatum, apicem versus angustatum, obtusum, supra basin utrinque angu-

latum, concavum, 11-striatum, dorso obtuse carinatum, c. 2.5 cm longum, 1.3 cm latum. Sepala lateralia a sepalo dorsali remote inserta, ad pedem gynostemii decurrentia, porrecta, cum sepalo dorsali angulum subrectum facientia, margine antico excepto conglutinata, oblique oblonga, obtusa, subapiculata, basi valde obliqua, margine exteriore supra basin angulata, concavula, costa media dorso obtuse incrassata, 11-striata, c. 2.9 cm longa, fere 1.1 cm lata. Petala patentissima, ad pedem gynostemii decurrentia, oblique ovata, acuta, vix convexa, 9-striata, dorso ad basin tantum nitida, c. 1.95 cm longa, 0.975 cm lata. Labellum valde mobile, carnosum, valde curvatum, basi lobis 2 erectis reversisque postice rotundatis bene supra basin angulatis instructum, inter lobos subrectangule canaliculatum, ceterum convexum, supra longitudinaliter sulcatum, sulco costis 2 basi latis planisque c. 2/3 lorum lateralium occupantibus apicem versus angustatis elevatis convexis infra apicem fere evanescentibus in 3/5 partibus inferioribus echinulato-papillosis limitato, apice arcte recurvum, obtusissimum, retuso-bilobulum, valde conico-verrucosum, subtus longitudinaliter sulcatum et supra basin crassiuscule papilloso-puberulum, magnam partem violaceo-atropurpureum vel inferne dilute flavum et dense atropurpureo-violaceo-punctatum, apice atropurpureo-violaceum, marginibus tantum ochraceum violaceo-maculatum, macula armeniaca subtus ad basin, c. 0.625 cm longum, 0.57 cm latum. Gynostemium breve, ceraceum, nitide flavescens, dorso excepto obscure purpurascenti-punctatum, c. 0.4 cm longum, clinandrio declivi, concavo, auriculis triangulis, steldiis 2 in medio gynostemii, deorsum spectantibus, parallelis, subulatis, semipellucidis, ochrascentibus, leviter purpureo-punctatis, c. 0.25 cm longis. Anthera cucullata, antice triangula, apice truncata, atroviolacea, c. 0.2 cm lata. Stigma quadratum. Pes gynostemii cum ovario angulum rectum faciens, leviter obtusangule incurvus, apice libero incurvus, linearis, apicem versus angustatus, convexus, dorso 2-costulatus, magnam partem nitide purpureus, basi ochrascens purpureo-punctatus, apice ochraceus, c. 1 cm longus, apice libero 0.33 cm longo. Ovarium pedicellatum subclavatum, apicem versus sensim incrassatum, manifeste alato-6-costatum, basi flavescens, superne viride, furfuraceo-puncticulatum, ovarium c. 0.65 cm, pedicellus 2.5 cm longus.

Sumatra: Westcoast, L. Kota, G. Malintang, 1700 m. (*H. A. B. Bunnemeijer* n. 4217, August 1918). Djambi, G. Kerintji, 2200—2300 m. (*H. A. B. Bunnemeijer* nrs. 9741, 9868 and 10174, May 1920). Benkoelen, Boekit Barisan, Rimbo Pengadang, 1000 m. (Exp. E. Jacobson 1916, *Ajoeb* n. 224, June 1916; cult. in *Hort. Bog.* sub n. 799 and 873). Boekit Kaba, Soeban Ajam, 1200 m. (Exp. E. Jacobson 1916, *Ajoeb*, liv. pl. cult. in *Hort. Bog.* sub n. 4, XII B, IX, 152). Palembang, Tjoeroep, 800—1000 m. (*F. H. Endert*, cult. in *Hort. Bog.*).

Malay Peninsula: Selangor, Kwala Lumpur. (*Curtis*). Perak, G. Batu Putih. (*Wray*).

I have no doubt as to the identity of the species. The few differences between Hooker's description and figure and mine may be due to the fact that Hooker's description was drawn up from a dried specimen.

The flowers are punctate or striped red on a yellow ground.

Description from living specimens.

Bulbophyllum (sect. *Desmosanthes*) *croceum* Lndl. Gen. et sp. Orch. (1830), 57; Miq. Fl. Ind. Bat. III (1859), 649; J. J. S. in Fl. Buit. (1905),

433; Atl. fig. CCCXXVIII; in Fedde Rep. XXXII (1933), 308. — *B. Medusella* Ridl. in Journ. Fed. Mal. St. Mus. VIII (1917), 97. — *Diphyes crocea* Bl. Bijdr. (1825), 313. — *Phyllorchis crocea* O. K. Rev. gen. pl. II (1891), 677.

Rhizoma valde elongatum, repens, ramosum, praesertim prope pseudobulbos radicans, teres, sicco ad c. 0.2 cm diam., vaginis tubulosis, radicibus tenuibus. Pseudobulbi c. 5—8 cm dissiti; erecti, anguste oblongi ad lineares, verisimiliter compressi, truncati, sicco c. 2.3—3.5 cm longi, 0.3—0.77 cm lati, 1-folii. Folium erectum, petiolatum, oblongum, apice recurvulo-conductum angustatumque, obtusum, basi breviter cuneata in petiolum contractum, margine recurvulo, costa media supra sulcata subtus carinata, multinervium, supra subtusque minute reticulato-venosum, sicco papyraceum, c. 4—7 cm longum, 1.45—2.5 cm latum; petiolus conducto-canaliculatus, c. 0.75—1.5 cm longus. Inflorescentiae 1—2 e basi pseudobulborum, raro etiam e nodis rhizomatis, erectae, pseudocapitatae, pluriflorae, pedunculo tereti, c. 4.5—9 cm longo, vaginulis c. 4—5 tubulosis ad c. 1.1 cm longis donato, rachide brevi, c. 0.45 cm longa. Bractee anguste lanceolatae, apicem versus angustatae, acutae, concavae, 5-nerviae, nervis exterioribus minutis, costa media dorso prominente, c. 1 cm longae, 0.26 cm latae. Flores ad c. 11, congesti, quaquaversi. Sepalum dorsale horizontale apice plus minusve recurvulum, e basi suboblonga concava longe filiformi-subulato-acuminatum, 3-nervium, c. 0.9 cm longum, bene 0.2 cm latum, parte attenuata c. 0.5 cm longa. Sepala lateralia intermedio multo longiora, basi verticalia, divergentia, e basi oblique oblongo-triangulara longissime filiformi-producta, 3-nervia, tota c. 2.6 cm longa, fere 0.2 cm lata, parte filiformi c. 2.1 cm longa. Petala multo minora, oblique oblonga, apice angustata, obtusiuscula, leviter concava, 1-nervia, c. 0.3 cm longa, 0.125 cm lata. Labelium parvum, mobile, simplex, curvulum, oblongo-ligulatum, apicem versus angustatum, obtusum, supra convexum eum canalicula longitudinali basi dilatata infra apicem evanescente costis obtusis limitata, parte mediana subtus longitudinaliter incrassata cum sulco longitudinali, marginibus tenuibus recurvis, glabrum, c. 0.23 cm longum, 0.12 cm latum. Gynostemium breve, crassum, dorso convexum, dorso et utroque latere costa longitudinali leviter convexa instructum, marginibus alato-dilatatis ad stigmatis marginem superiorem in dentem parvum obtusum productis, c. 0.16 cm longum, clinandrio excavato, transverse ovali, pariete postico lato breviter late bilobulo cum apiculo minimo interposito, auriculis porrectis, elongatis, antheram bene superantibus, subulatis, falcatis. Anthera cucullata, suborbiculari-quadrangula, basi retusa, apice brevissime obtusangule producta, connectivo convexo-incrassato, bene 0.05 cm lata. Stigma alte excavatum, rotundato-quadrangulum, apice leviter contractum. Pes gynostemii cum ovario angulum obtusum faciens, lineari-oblongus, $\frac{3}{5}$ partibus inferioribus sepalis lateralibus adnatus, parte superiore incurvus, truncatus, c. 0.13 cm longus. Ovarium breve, obconicum, 6-sulcatum, c. 0.125 cm longum; pedicellus subaequicrassus, 0.075 cm longus.

Sumatra: Atjeh, Gajolanden, from bivouac 9, on the Lau Alas via the Agoesan ridge to Blang Kedjeren, 1800—2000 m, abundant in coppice on mountain ridge. (C. G. J. van Steenis n. 8764, February 1937). Very strong specimens.

West coast, Goenoeng Kerintji, Soengai Penoh, 900 m. (*H. C. Robinson and C. Boden Closs*). Laras Talang, Boekit Gombak, (*H. A. B. Bünnemeijer n. 5683*, November 1918, 1350 m; "flowers cream-colour, filiform parts orange, bracts green"; *n. 5708*, November 1918, 2330 m, "flowers yellow", only in bud). [In *n. 5708* the pseudobulbs are longer and thinner (4.75—5.75 cm long) and the leaves narrower (7.7—9.4 cm long, 1.25—1.6 cm broad).]

Java: G. Salak, Tjiapoos. (*C. L. Blume*). G. Boerangrang. (*C. L. Blume*). Bandoeng, Tjinjiroean. (*A. Kant*, December 1911).

Bulbophyllum blepharosepalum Schltr. in Bull. Herb. Boiss. 2e sér. VI (1906), 462; in Fedde Rep. Beih. LXXIV (1934), t. 57, Nr. 225; J. J. S. Ic. Orch. Mal. II (1938), t. 101, I.

Rhizoma elongatum, repens, ramosum, teres, c. 0.25—0.3 cm diam. Pseudobulbi c. 7—10 cm dissiti, e basi valde depressa suborbiculari oblique conico-contracti, minute rugulosi, olivacei, c. 1.6 cm alti, 2.4 cm diam., 1-folii. Folium oblongum ad lanceolatum, acutum, basi petiolato-contractum, costa media supra sulcata subtus carinata, molliter coriaceum, supra nitide viride, subtus opacum, pallide viride, c. 16.5—18 cm longum, 4.4—3 cm latum, petiolo canaliculato, c. 2.1—2.3 cm longo. Inflorescentiae e basi pseudobulborum, solitariae, erectae, parte florifera nutante, laxe pluriflorae, pedunculo filum ferreum simulante, tereti, nitide fusco-violaceo, c. 17 cm longo, nonnullis vaginulis parvis tubulosis acutis donato, rachide angulata, colore pedunculi, c. 6 cm longa. Bracteae minimae, triangulae, acutae, atroviolaceae, c. 0.1 cm longae. Flores c. 13, parvi, leviter ingrati, c. 0.8 cm lati. Sepalum dorsale horizontale, subovato-oblongum, obtusum, concavum, apice vix recurvulum, crispule albido-ciliatum, flavescenti-albidum, striis 5 cum 2 brevissimis longitudinalibus atroviolaceis, c. 0.6 cm longum, 0.3 cm latum. Sepala lateralia divergentia, oblique ovato-triangula, obtusiuscula, marginibus proximis crispule albido-ciliata, margine sepalum dorsale versus spectante subglabra, colore sepali dorsalis, c. 0.7 cm longa, basi 0.4 cm lata. Petala parva, porrecta, subrectangule oblonga, rotundata, dimidio superiore ciliatum, hyalina, dimidio superiore atroviolaceo-marginata et stria 1 notata, puncto atroviolaceo ad basin, c. 0.37 cm longa, 0.17 cm lata. Labellum mobile, linguiforme, subellipticum, acutiusculum, basi incrassata truncatum, glabrum, costulis 2 longitudinalibus curvatis margini parallelis infra apicem in incrassationem paulo elevatam nitidam confluentibus, carnosum, opacum, hepaticum, macula triangula albida subtus ad basin, c. 0.65 cm longum, 0.35 cm latum. Gynostemium cum ovario angulum obtusum faciens, breve, flavescens, c. 0.25 cm longum, 0.17 cm latum, auriculis triangularibus, acutis. Anthera cucullata, papillosa, connectivo alte incrassato, flavescens. Pollinia flava. Stigma altius excavatum, observe triangulum. Pes gynostemii cum ovario angulum obtusum faciens, obtusangule incurvus, tota longitudine cum sepalis lateralibus connatus, apicem versus dilatatus, sulco levi longitudinali instructus, albus, c. 0.3 cm longus, basi 0.1 cm, apice 0.15 cm latus. Ovarium anguste obconicum, 6 sulcatum, nitide purpureo-fuscum, c. 0.3 cm longum; pedicellus supra basin articulatus, colore ovarii, c. 0.25 cm longus.

Sumatra: Indragiri, Soengei Lalah. (*B. Schlechter n. 13241*, April 1901). Bangka. (*Schuurman*, liv. pl. cult. in *Hort. Bog.*).

I presume that this plant is *B. blepharosepalum* Schltr., though

Schlechter's description is not a full one and he says, that the petals are only a little shorter than the sepals.

The species is certainly very nearly allied to *B. limbatum* Lndl. if not identical.

It is a remarkable fact that the cultivated plant grows always straight downward on the small *Plumeria* tree on which it has been planted. In a rather short time the rhizome reaches the ground where the tip dies off.

Description from cultivated specimens.

Bulbophyllum (sect. *Aphanobulbon*) *odoratum* Lndl. Gen. et sp. Orch. (1830), 54; etc.

This is a widely distributed and polymorphous species in Malesia and a number of well defined forms is to be distinguished. To do so a careful study of numerous living plants is indispensable. For the present I propose the following varieties.

var. *obtusisepalum* J. J. S. nov. var.

Rhizoma validum, repens, ramosum, teres, c. 0.6 cm, sub pseudobulbis 0.95 cm diam., initio vaginatum, vagina ultima maxima pseudobulbum et petiolum amplectente c. 7—8 cm longa. Pseudobulbi parvi, c. 1.5—2 cm dissiti, disciformes, olivacei, c. 0.4 cm alti, 0.7—0.9 cm diam. Folium validum, erectum, petiolatum, lanceolatum, obtusum vel subobtusum, basi sensim in petiolum angustatum, margine recurvum, costa media supra canaliculata subtus obtuse prominente, firmiter crasse coriaceum, utrinque nitide viride, c. 25—30 cm longum, 5.5—6.25 cm latum; petiolus usque ad basin canaliculatus, c. 7—9 cm longus. Inflorescentiae e basi pseudobulborum, erectae, subdense multiflorae, pedunculo subtereti, pallide virescenti, atrofusce furfuraceo-punctato, c. 15.5—19 cm longo, bene 0.4 cm diam., pluribus vaginulis tubulosis superne lateraliter compressis et paulo inflatis apiculatis pallidis atrofusce furfuraceo-punctatis superioribus maximis ad c. 3—5 cm longis donato, rachide elongata, multicostata, papillosa, colore pedunculi, 28 cm superante, cum floribus c. 1.4—1.65 cm diam. Bractee ovario subadpressae, lanceolatae, acutae, concavae, albiae, medio vix virescentes, dorso furfuraceae, ad c. 0.525 cm longae. Flores parvi, patentissimi, carnosi, minute papilloso, albi, in alabastro pallide virides, odore insuavi, c. 0.55—0.625 cm lati, sepalis dorso fusce furfuraceo-punctatis. Sepalum dorsale ellipticum, subacutum, dorso apicem versus valde gibboso-incrassatum, basi latiusculum, c. 0.3—0.36 cm longum, 0.2 cm latum. Sepala lateralia oblique subovali-triangula, obtusa, dorso praesertim versus apicem valde obtuse incrassata, dorso convexa, intus subplana, c. 0.34—0.36 cm longa, 0.2—0.22 cm lata. Petala minuta, subacuta vel apiculata, c. 0.1 cm longa, 0.075 cm lata. Labellum parvum, mobile, obtusangule recurvum, obsolete trilobum, lobis lateralibus erectis latis plus minusve rotundatis, lobo intermedio recurvulo, paulo angustato, subtus convexo, parte mediana inter lobos laterales bene incrassata sed non elevata, costa longitudinali valida lateraliter compressa papillosa apice libera lobum aequante in lobo intermedio, flavescenti-album, inexplatum c. 0.1 cm longum. Gynostemium breve, album, c. 0.1—0.125 cm longum: apice obtusissimo, auriculis antheram superantibus, subulatis, rectis vel falcato-decurvis, margine superiore dente parvo donatis, margine inferiore basi obtusangule vel rotundato-dilatatis. Anthera cucullata, lateraliter

compressa, in rostrum triangulum obtusum recurvulum producta, connectivo costato-incrassata, alba, c. 0.05 cm longa. Pollinia lateraliter compressa, oblique triangulo-orbicularia, flava. Stigma alte excavatum, rotundato-quadrangulum vel rotundato-subtriangulum. Pes gynostemii cum ovario angulum obtusum faciens, rectus, lineari-oblongus, apice truncatus, infra stigma leviter convexo-incrassatus, pallide flavescens, c. 0.08 cm longus. Ovarium 6-sulcatum, cum pedicello rectum, teres, albidum, fusce furfuraceo-punctatum, c. 0.26—0.4 cm longum.

Sumatra: Benkoelen, Boekit Barisan, Rimbo Pengadang, 1000 m. (Exp. E. Jacobson 1916, *Ajoeb*, liv. pl. cult. in *Hort. Bog.* sub n. 692, type).

This variety differs from *B. odoratum* Lndl. in the more robust inflorescences, the colour and the odour (which recalls a pigsty to mind) of the flowers and especially the broad blunt lateral sepals.

In the Botanic Gardens at Buitenzorg there are in cultivation some other specimens (e.g. *E. Jacobson* cult. sub n. 167, n. 231, n. 1772, all from Sumatra, and also some from Borneo), which more or less resemble this but differ in some respects. I did not include them for keeping the variety pure. Among these similar looking plants there are some the flowers of which exhale only a weak odour, whereas others have the usual sweet scent.

The description of *B. elatius* Ridl. is somewhat suggestive of the plant described here. Ridley's species has, however, much larger and globose pseudobulbs, and a lanceolate brown lip.

Description from a living plant.

var. *polyarachne* (Ridl.) J. J. S. nov. var. — *B. polyarachne* Ridl. in Journ. of the Fed. Mal. St. Mus. VIII, Bot. (1917), 77.

Rhizoma repens, ramosum, teres, radicans, siccum ad 0.6 cm diam., vaginis amplis tubulosis siccis nigrescentibus summis ad 3—4.5 cm longis. Pseudobulbi 1—3.5 cm dissiti, parvi, disciformes, siccum ad 0.45 cm diam. Folium petiolatum, oblongum vel subobovato-oblongum, obtusum ad rotundatum cum apiculo parvo obtuso, basi sensim in petiolum angustatum, costa media supra canaliculata, dorso obtuse prominente, coriaceum, 12.5—21.5 cm longum, 3.2—5.2 cm latum; petiolus canaliculatus, 5—9 cm longus. Inflorescentiae 1—2 e basi pseudobulborum, erectae, sublaxe multiflorae; pedunculus 13—17 cm longus, vaginulis 6—7 tubulosis basi adpressis superne paululum ampliatis breviter acuminatis ad 3—3.5 cm longis, superioribus saepe bracteiformibus; rachis costata, fufuracea, 16—34 cm longa. Bractee lineari-subulatae, acutae, dorso furfuraceae, concavae, c. 0.6 cm longae, 0.125 cm latae. Flores numerosi, 0.85—0.9 cm diam., sepalis carnosulis, praesertim dorso ad basin furfuraceo-punctatis. Sepalum dorsale horizontale, ovarium circiter continuum, incurvulum, e basi concava subovali-oblonga longe subulato-contracto-acuminatum, subacutum vel subobtusum, 3-nervi, 0.6 cm longum, parte contracta 0.3 cm longa, 0.2 cm latum. Sepala lateralia divergentia, angulum subrectum facientia, e basi oblique triangula longe subulato-acuminata, 3-nervia, costa media dorso leviter convexo-incrassata, 0.7 cm longa, parte angustata 0.4 cm longa, 0.225 cm lata. Petala minima, patentia, ovata vel plus minusve triangula, obtusa vel subacuta, 1-nervia, 0.14 cm longa, 0.075 cm lata. Labellum mobile, membrana parva tenui affixum, minutum, simplex,

supra basin et infra apicem obtusangule recurvum, marginibus incurvis late canaliculatum, plus minusve costulato-trinervium, apice grosse glanduloso-papillosum, expansum ovatum, apice triangulo-acutatum, 0.17 cm longum, 0.125 cm latum. Gynostemium brevissimum, crassum, 0.125 cm longum, clinandrio excavato, suborbiculari, pariete postico paulo producto obtusangule exciso cum filamento minimo tenui, auriculis porrectis anthera paulo longioribus breviter subulato-acuminatis. margine postico dente incurvo donatis, pede cum ovario angulum obtusum faciente vix incurvulo e basi dilatata quadrangulo-contracto truncato 0.125 cm longo. Anthera cucullata, lateraliter compressa; a latere visa suborbicularis, rostro brevi triangulo, connectivo costiformi, bene 0.05 cm longa. Stigma alte excavatum, suborbiculare, margine inferiore convexo-incrassatum. Ovarium obconicum, 6-sulcatum, furfuraceum, fere 0.2 cm longum, pedicello tenuiore 0.2 cm longo.

Sumatra: West coast, Soengai Koembang, 1500 m. (H. C. Robinson and C. Boden Kloss, "flowers white"). G. Kerintji, 1500—1600 m, forest on tree. (H. A. B. Binnemeijer nrs. 8959, type, 8981 and 9023, March 1920, "flowers white to greenish"). Lake of Manindjau. (W. M. Docters van Leeuwen, 1920, cult. in Hort. Bog. sub n. 641).

I think it better to consider this plant a variety of *B. odoratum* Lndl.

The sepals of the plant collected by Prof. Docters van Leeuwen near the Lake of Manindjau are somewhat shorter than in those of Kerintji Peak.

Description from herbarium and flowers preserved in alcohol (*Binnemeijer n. 8959*).

Porphyroglottis Maxwelliae Ridl. in Journ. Linn. Soc. XXXI (1894), 290, t. 15.

Habitus *Grammatophylli speciosi* Bl. Caules approximati, obtuse angulato-cylindrici, nitide cinereo-virides, multifolii, c. 1—1.1 m longi, 3 cm diam., superne attenuati, internodiis c. 2.3—2.5 cm longis, superioribus paulo brevioribus, radicibus *Grammatophylli speciosi* Bl. Folia patentia, linearia, apicem versus sensim angustata, acuta, costa media supra sulcata subtus obtuse prominente, nervis 3 majoribus et nonnullis tenuibus utrinque, omnibus semipellucidis pallide flavescens, coriacea, supra nitidula, subtus opaca, sordide atroviridia, c. 40—47 cm longa, ad c. 2.3 cm lata, superiora angustiora; vaginae verisimiliter initio tubulosae, antice tota longitudine mox rumpentes et sicco membranaceo-marginatae, apice utrinque dente instructae, internodia plus quam duplo superantes, sordide flavo-virides. Inflorescentiae e basi caulium, ascendentes, arcuati, elongati, caules multo superantes, superne pauciramosae, laxae multiflorae, pedunculo subtereti, subolivaceo, lenticellis pallide viridibus punctato, pruinoso, ad c. 1.5 cm longo, inferne 0.9 cm diam., vaginulis c. 7 brevibus adpressis basi tubulosis obtusissimis dilute sordide flavo-viridibus fusciscenti-suffusis ad c. 1.8 cm longis superne laxioribus donato, rachide flexuosa, angulato-tereti, sordide fusco-violacea, pallide viridi-punctata, pruinosa, ad c. 1.4 m longa, internodiis ad c. 8 cm longis, superioribus brevioribus, ramis c. 1—2, patentibus, ad c. 1 m longis, pedunculo partiali compresso. Bractee adpressae, subovales, cucullato-concavae, rotundatae, basi lata rachidem partim amplectentes, sordide fusciscentes, superne obscuriores, basi nectarifluae, ad c. 0.9 cm longae. Flores in alabastro patentibus, sursum curvi, deinde patentissimi, horizontales, reversi, labello supero, simul pauci

expansi, mediocres, c. 4 cm longi, sepalis petalisque arete reflexis, opacis, ayellaneis, intus praesertim margine leviter pallide purpurascenti-suffusis, sepalis dorso purpureo-suffusis, petalis intus inconspicue et minutissime purpureo-punctatis. Sepalum dorsale subelliptico-oblongum, obtusum, convexum, marginibus recurvum, medio concavum, apice papilloso-ciliatum, c. 2.6 cm longum, 1.6 cm latum. Sepala lateralia haud ad pedem gynostemii decurrentia, oblique oblonga, obtusa, convexa, parte mediana concava, marginibus recurva, c. 2.5 cm longa, 1.7 cm lata. Petala oblique oblonga, obtusa, basi breviter contracta, convexa, c. 2.5 cm longa, 0.9 cm lata. Labellum unguiculatum, ungue angusto lineari-oblongo, basi paulo dilatato et satis rigido, quam pedem gynostemii tenuiore, apice dilatato tenuiore concavo et flexili, plano leviter, 5-costulato, nitidulo, albido, magnam partem purpuree maculato-suffuso, c. 0.5 cm longo, lamina valde mobili, simplici, cum ungue excavationem formante, supra basin abrupte recurva, subselliformi, in $\frac{3}{5}$ partibus supra basin obtusangule recurva, subtus valde concava, supra visum subsexangulato-obovato, $\frac{1}{3}$ inferiore valde convexa longitudinaliter 5-costata albida dense longitudinaliter atropurpuree maculato-striata et longe atropurpuree velutino-pilosa, in $\frac{1}{3}$ supra basin excavatione transversa breviter pilosa instructa, $\frac{2}{3}$ partibus superioribus marginibus leviter incurvis concavis inferne atropurpureis superne flavis dense atropurpureo-pilosis exceptis convexa, infra flexum macula quadrata glabra nitidula atropurpurea donata, $\frac{1}{3}$ parte apicali citrina parce pilosa, explanata ovali, subpandurata, apice late rotundata, c. 1.65 cm longa, 1 cm lata. Gynostemium conspicuum, cum ovario angulum obtusum faciens, supra medium valde incurvum, dorso convexum, subtus leviter concavum, vix virescenti-albidum, apice purpurascens, omnino purpuree marmorato-punctatum et striolatum, c. 1.6 cm longum, steldiis 2 patentissimis porrectis divergentibus lateraliter compressis oblique oblongis obtusis c. 0.5 cm longis in $\frac{2}{5}$ partibus supra basin, clinandrio parvo cum carina longitudinali, apice producto triangulo obtuso atropurpureo. Anthera cucullata, late ovato-cordata, apice recurva rotundata et nitida, gibbo triangulo ad basin, pallide flavescens, minute purpureo-punctata, purpureo-marginata, basi flavescens, c. 0.27 cm lata. Pollinia 2, superne divergentia, lateraliter oblique compressa, a latere visa bene semirotonda (semiovalia), dorso longitudinaliter alte et anguste excavata, flava, caudiculis 2 tenuibus concavis flavis marginibus proximis conglutinatis pollinia paulo superantibus glandula magna orbiculari-quinquangulata convexa nitida alba vix purpurascenti-suffusa in utraque parte canaliculae longitudinalis inserta, tota c. 0.25 cm longa. Rostellum 3-partitum, laciniis subulatis, intermedia longissima cum carina clinandrii decurrente, lateralibus subfalcatulis. Stigma magnum, transverse rhombeum, suboctangulatum, marginibus dilatatis gynostemio latius, margine inferiore incrassatum recurvumque. Pes gynostemii brevis, ovarium continuus, cum gynostemio angulum rectum faciens, subquadrangulus, rotundatus, subtus convexus, colore gynostemii, c. 0.6 cm longus. Ovarium 6-sulcatum, c. 1.8 cm longum, cum pedicello 2.5 cm longo nitide atropurpureum. Fructus magnus, pendulus, reliquiis floris coronatus, obovoideo-ellipsoideus, obtuse trigonus, lateribus medio leviter depressus, lateribus et angulis costa latiuscula convexa instructus, parte superiore alternatim trigonus cum

costa laterum inferiorum in canalicula marginibus costato-elevatis applicatisque abscondita, apice obtusus, basi in pedicellum contractus, pallide virescens, dense sordide subfusco-violaceo-suffusus, c. 8.25 cm longus, 3.9 cm diam., superne rimis 3 dehiscens, valvis apice connatis, pedicello curvato, sordido, c. 3 cm longo.

Borneo: Sarawak (Mrs. Maxwell). Pontianak ? (Native collector, cult. in Hort. Bog.).

Geographical distribution: Endemic.

Mr. D. van Mullem, Batavia, bought the plant, from which the above description was taken, from a native, who brought it from Pontianak, and kindly presented the Buitenzorg Botanic Gardens with it.

Mr. Ridley's description is really good, but I thought it desirable to give a more detailed one. The figure cited gives a clear idea of the species.

The plant flowers freely at Buitenzorg, each stem emitting as much as three scapes from its base. These surpass the leafy stems and attain a length of more than 3 meters. The colour of the flowers is best compared with young hazelnut suffused with purple, the lip being blackish purple for the greater part with a lemon-coloured blotch at the apex. The lip has a narrow claw, broader and flexile upwards, so that the body of the lip is movable. It is, however, not at all inserted elastically like in *Plocoglottis*, as suggested by Dr R. Schlechter. The flowers last a few days.

Though very interesting from a botanical point of view the species is of no value in respect to beauty.

Adenoccos celebicus Schltr. in Fedde Rep. X (1911), 192; Beih. LXXIV (1934), Nr. 289; J. J. S. Ic. Orch. Mal. II (1938), t. 122, III.

Caulis dependens, radicans, basi bene ramosus, apicibus adscendens, sectione transversa ovalis, dilute viridis, ad c. 20 cm longus, 0.23—0.25 cm latus, internodiis c. 0.6—0.65 cm longis. Folia basi plus minusve torta, patentia, recurva, lanceolata, apice valde inaequalia, plus minusve biloba, latere longiore obtusa, latere breviorae saepe dentiformia et acuta vel obtusa, supra longitudinaliter sulcata et utroque latere convexa, transverse rugosa, subtus obtusangula convexa, crasse carnosae, rigidae, nitidae, atroviridia, c. 0.27—3.8 cm longa, 0.85—1 cm lata; vaginae tubulosae, internodia multo superantes, rugulosae, nitide virides, 0.35—0.37 cm latae. Inflorescentiae 2 vaginae perforantes, brevissimae, patentes, 1-florae, pedunculo nonnullis vaginulis brevissimis tubulosis carinatis viridibus donato, c. 0.15 cm longo. Flos in genere magnus, sepalis petalisque incurvis subcupuliformis, dilute viridis, c. 1.1 cm latus. Sepalum dorsale oblongum, breviter acutatum, apice dorso subcarinatum et lateraliter compresso-apiculatum, minute erosulum, concavum, carnosum, nitidum, bene 0.6 cm longum, 0.375 cm latum. Sepala lateralia oblique oblonga, obtusiuscula, dorso conico-apiculatum, minutissime erosula, concavula, dorso convexa, carnosae, c. 0.75 cm longa, fere 0.4 cm lata. Petala oblique oblonga, apice recurvula, obtusa, recta vel subfalcata, erosa, praesertim inferne incrassata et intus convexa, dorso convexa, dilute viridia, margine pallidiora, c. 0.525 cm longa, 0.225 cm lata. Labellum pedi gynostemii adnatum, crasse carnosum, 3-lobum, subtus convexum, c. 0.75 cm longum, hypochylio concavo, pulvino longitudinali oblongo obtuso farinaceo niveo

et inferius e pariete postico seta longitudinali horizontali pulvino adpressa et multo brevior alba instructo, inexplanato c. 0.46 cm lato, post 4 dies castaneo-rubro et flavescenti-marginato, lobis lateralibus erectis triangulis obtusis, lobo intermedio hypochylis bene majore crassissimo, late triangulo, obtusangule acutato, supra convexo, basi semilunato-excavato et utrinque in lobulum triangulum producto, nitido, deinde viridi-fusco, c. 0.46 cm longo, 0.575 cm lato. Gynostemium brevissimum, latum, usque ad apicem rostellis c. 0.17 cm longum, apice truncatum, clinandrio concavulo antice gibboso, auriculis obtusis. Anthera cucullata, transverse ovalis, in rostrum breve leviter retusum producta, flavescens, fere 0.2 cm lata. Pollinia 4, inter se libera, ovali-obovoidea, flava, stipite mediocri lineari antice convexo albo, glandula oblonga, tota fere 0.2 cm longa. Rostellum breve, 2-dentatum. Stigma quadrangulum, basi dilatatum, margine inferiore flexuosum. Ovarium abbreviatum, pallide viride.

Celebes: Toli-toli. (R. Schlechter n. 20693!; January 1910).

Soela Islands: Tandjoeng Wanabahi. (Exp. P. van Hulstijn, Mantri Atje, cult. in Hort. Bog. n. 79).

The keel of the callus of the lip described by Schlechter is a free bristle-like appendage.

Description from a specimen from the Soela Islands cultivated in the Buitenzorg Gardens.

Phalaenopsis pulcherrima J. J. S. in Fedde Rep. XXXII (1933), 366. — *Ph. Esmeralda* Rehb.f. in Gard. Chr. (1874), II, 582; in Otia bot. hamb. I (1878), 35; Revue Hort. (1877), 106—107, f. 17—19; Floral Mag. (1879), t. 358; Orchidoph. (1881), 9 eum ic.; Warner and Williams Orch. Alb. VII, t. 321; Rolfe in Gard. Chr. (1886), II, 276; Bot. Mag. CXVI (1890), t. 7196; Hook.f. Fl. Br. Ind. VI (1894), 31; Veitch Man. Orch. p. VII, 27; Ridl. Mat. Fl. Mal. Pen. I (1907), 152. — *Ph. antennifera* Rehb.f. in Gard. Chr. (1879), I, 398; (1882), II, 520; Rolfe l.c. (1886), II, 176. — *Ph. Regnieriana* Rehb.f. l.c. (1887), II, 740. — *Ph. Buyssoniana* Rehb.f. l.c. (1888), II, 295. — *Doritis pulcherrima* Lndl. Gen. et Sp. Orch. (1883), 178; Rolfe in Orch. Rev. XXV (1917), 195; Ridley Fl. Mal. Pen. IV (1924), 158.

Caulis abbreviatus ramosus, radicibus densis crassis teretibus cinereis. Folia pauca, patentissima ad patentia, oblique obtusa vel subacuta, plerumque brevissime bidentata cum mucrone brevi interposito, basin versus angustata, costa media supra sulcata subtus obtuse prominente, carnosa, utrinque nitida, supra cinereo-viridia, cinereo-punctata, margine et tota, facie inferiore violaceo-suffusa, subtus dense pallide viridi-punctata, c. 6.25—8.5 cm longa, 2.5—2.75 cm lata; vaginae breves, a latere compressae, basi tubulosae, carnosae, violaceo-vides. Inflorescentiae erectae vel adscendentes, elongatae, simplices vel parum ramosae, laxae multiflorae, diu flores gignentis, pedunculo sordide pallide viridi et violaceo-suffuso c. 12.5—20 cm longo, vaginulis 3—4 brevibus tubulosis donato, rachide 33 cm superante, colore pedunculi. Bractee quaquaversae, pedicello adpressae, persistentes, triangulae, concavae, colore rachidis, ad c. 0.4 cm longae. Flores quaquaversi, c. 2.4 cm lati, 2.7 cm longi. Sepalum dorsale basi recurvulum convexumque, ceterum concavum, ellipticum, obtusum, minute incurvo-apiculatum, purpurascens-roseum, apice intus inconspicue purpureo-puncticulatum, c. 1.325 cm longum,

0.74 cm basi 0.36 cm latum. Sepala lateralia ad pedem gynostemii decurrentia, reflexa, oblique triangula, margine postico valde rotundato fere oblique quadrangula, margine antico subrecta, apice obtusa, basi antice in laciniam brevem angustam dilatata, dilute purpurascenti-rosea, marginibus proximis albida, apice vix ochrascenti-suffusa et parcissime purpureo-punctata; usque ad apicem ovarii c. 1.15 cm longa, margine antico 1.35 cm metientia, basi 1.1 cm lata. Petala suboblique subspathulata, e basi cuneata obovato-rhombea, obtusissima, dilute purpurascenti-rosea, c. 1.34 cm longa, 0.8 cm basi 0.3 cm lata. Labellum apici pedis gynostemii insertum, erectum, cum eo angulum acutum faciens, vix supra medium abrupte recurvum, unguiculatum, 3- vel potius 5-lobum, lamella conspicua carnosula horizontali utroque latere adnata cuneato-triangula convexa antice plus minusve quadrilobulata alba purpureo-puncticulata ad basin lobi intermedius inter lobos laterales, inexplanatum c. 1.4 cm, arte explanatum cruciatum c. 1.65 cm longum, ad lobos laterales 0.85 cm latum, ungue lineari concavo subtus convexo albo dilute purpureo-puncticulato, c. 0.4 cm longo, 0.2 cm lato; lobi laterales erecti, paralleli, cum ungue angulum obtusum facientes, apice basin gynostemii versus spectantes, subulato-trianguli obtusi, carnosuli, canaliculati, subtus convexi, colore unguis, c. 0.33 cm longi; lobus intermedius conspicuus, erectus, supra basin abrupte recurvus, breviter unguiculatus, trilobulus, explanatus c. 1.125 cm longus, ad lobulos laterales 1.65 cm latus, ungue obverse aequilateraliter trapeziformi, fere 0.2 cm longo, apice 0.6 cm, basi 0.34 cm lato, lamina costis 5 parallelis convexis in lobulo intermedio ramosis et flabellato-recurvis albis ornata, lobulo intermedio et disco costis exceptis pulchre purpureo, lobulis lateralibus remotis adscendentibus erectis arte explanatis divaricatis oblique oblongis rotundatis basi convexis apice leviter concavis intus prominenter nervosis pallide ochrascentibus longitudinaliter apice et margine postico confluentem cinnamomee venosis superne purpureo-suffusis c. 0.5 cm longis 0.37 cm latis, lobulo intermedio deflexo lato subquingulari-semielliptico obtuso brevissime apiculato-acuminato convexo verrucoso carnosulo subtus concavo c. 0.64 cm longo 0.775 cm lato. Gynostemium crassiusculum, supra basin parum constrictum, dorso convexum, basi antice utrinque in lobulum brevem obtusum carnosum productum, apice producto late triangulo obtuso convexo subtus concavo, purpureum, margine pallidius, basi antice purpureo-puncticulatum, c. 0.77 cm longum. Anthera cucullata, transverse ovalis, in rostrum conspicuum triangulum acutum acuminata, membranacea, flavescens-alba, rostro vix purpurascenti-suffusa, c. 0.27 cm lata. Pollinia 4, a dorso compressa, saturate aurea, 2 antica suborbicularia, 2 postica vix minora magis triangula, cum stipite elongato spathulato apice rotundato recurvoque albo et glandula conspicua ovali hyalina c. 0.525 cm longa. Rostellum longissimum, deorsum spectans, undatum, lineare, apice in lacinias 2 oblongas obtusas partitum, subtus ad basin carinatum. Stigma maximum, alte excavatum, obverse triangulum. Pes gynostemii cum ovario angulum subrectum cum gynostemio angulum obtusum faciens, rectus, linearis, basi gynostemii multo angustior, antice medio paululum incrassatus, albus, dimidio inferiore purpureo-punctatus, c. 0.95 cm longus. Ovarium tenue, 6-sulcatum, dilute purpureum, c. 0.6 cm longum; pedicellus aequierassus, virescens, c. 0.9 cm longus.

Sumatra: Gajoelanden, Takengon, near Isak, c. 800 m, in forests of *Pinus Merkusii* Jungh. et de Vr., terrestrial on rocky and somewhat sandy ground. (L. Snell, cult. in Hort. E. Jacobson and in Hort. J. J. Smith sub n. 1963). Near Djamat, 500—600 m. (L. Snell). Paparek. (B. Pringgo Atmodjo n. 196, March 1904).

Malay Peninsula: Kedah Peak, 650 m. (Mohamad Haniff). Setul Heath. (Dr. Ellis). Patani. (Annandale). Tringgannu. (Yapp).

Langkawi Islands. (C. Curtis).

Cochin China.

Cambodia.

Burma.

The genus *Doritis* Lndl. of which Lindley knew one species only has, on account of the very insufficient description and the want of good herbarium material, been uncertain for a long time. But also after Rolfe (in *Orchid Review* XXV (1917), 195) had made clear that Lindley's plant is nothing but the well-known *Phalaenopsis Esmeralda* Rehb.f., some authors have persisted in classing with it such species as do strictly spoken not belong to it, notwithstanding the fact that Rolfe when establishing the limits of *Doritis*, proposed a new genus, *Kingiella* Rolfe, for those other species. This confusion has, in my opinion, to be ascribed to the fact that the characteristics are, indeed, not so sharp as might be desired. I am convinced that it is very difficult to keep these two genera apart from *Phalaenopsis* without being compelled to a continued division of this genus on the base of what are, in my opinion, only subordinate characters.

As the principal difference of *Doritis* with *Phalaenopsis* is cited the long lip-claw provided with a couple of appendages. It is true that the claw of the lip is long, but since also in other species a claw is present (*Ph. amabilis* Bl., *Ph. Denevei* J. J. S. etc.) the difference is only gradual. As to the pair of appendages, these are, in my opinion, the real sidelobes, whereas the midlobe is trilobate. One should admit that from this point of view the sidelobes are, indeed, very similar to those of *Ph. sumatrana* Korth. et Rehb.f. and allied species.

As to *Kingiella* I think that its separation is still less founded. Rolfe's description "characterized by the union of the lateral sepals with the base of the lip, forming a spurlike mentum, from which the lobes are borne directly, etc.", lacks in my opinion exactitude. Ridley's definition "base of lip adnate to foot of column and forming a mentum" is surely better, although properly saying the whole affair settles down to a slight saccate projection at the base of the lip between the lateral lobes, which, however, is also more or less the case with *Ph. javanica* J. J. S., *Ph. fimbriata* J. J. S., *Ph. Denevei* J. J. S., etc. And the sidelobes tally, as to their structure, well with those of *Ph. sumatrana* Korth. et Rehb.f. and related species, only they are wider in proportion.

The presence of *Ph. pulcherrima* in Sumatra is another proof of the affinity between the floras of Sumatra and Farther India.

Description from cultivated Sumatran specimens.

Vanda sumatrana Schltr. in Engl. Bot. Jahrb. XLV (1911), Beibl. No. 104, 57; in Fedde Rep. Beih. LXXIV (1934), t. 74, Nr. 296; J. J. S. Ic. Orch. Mal. II (1938), t. 124, I.

Planta valida. Caulis teres, c. 75 cm altus, c. 1.5 cm diam., dense foliatus, radicibus teretibus, c. 1.1 cm diam. Folia erecto-patentia, supra basin recurva, patentissima, loriformia, obtusangule canaliculata, lateribus

leviter convexa, basi conduplicato-canaliculata, apice oblique obtusa, oblique biloba vel oblique truncata, irregulariter dentata, dentibus exterioribus et intermedio saepe productis, costa media supra sulcata subtus carinata, firmiter coriacea, opaca, dilutius viridia, c. 30—34.5 cm longa, 4—5 cm lata; vaginae tubulosae, apice antice rumpentes, internodia bene superantes. Inflorescentiae validae, laxae pauci-pluriflorae, pedunculo subtereti, 3.5 cm superante, bene 0.6 cm diam., rachide quaquaverse flexuosa, angulata, c. 9.5 cm longa. Bractee adpressae, triangulae, obtusae, concavae, dorso c. 0.7 cm longae. Flores c. 6 vel plures, magni, carnosi, sepalis petalisque reflexis. Sepalum dorsale ex ungue quadrato convexo in laminam ovato-orbicularem concavam marginé et fascia longitudinali mediana convexam dilatatum, explanatum c. 3.15 cm longum, ungue 0.75 cm longo, 0.8 cm lato, lamina 2.4 cm longa, 2.5 cm lata. Sepala lateralia obliqua, ex ungue subquadrato in laminam oblique abbreviato-ovato-rhombeam rotundatam dilatata, convexa, explanata tota c. 3.15 cm longa, ungue c. 0.6 cm longo, medio 0.8 cm lato, lamina 2.35 cm longa, 2.7 cm lata. Petala subfalcata, ex ungue oblongo-lineari convexo in laminam oblique subovato-orbicularem rotundatam magnam partem concavam dilatata, tota c. 3.3 cm longa, ungue c. 1.1 cm longo, medio 0.5 cm lato, lamina c. 2.2 cm longa et lata. Labellum porrectum, 3-lobum, calcaratum, pulvinis 2 convexis papillosis basi in pariete postico in fauce calcaris, callo transverso bilobulo inter lobos laterales infra basin lobi intermedii, totum c. 3.3 cm longum; lobi laterales parvi, sub gynostemio porrecti, inferne subverticales, margine inferiore incurvi et angulo inferiore antico contigui, rotundato-quadrati, extus convexi, intus leviter concavi, c. 0.6 cm longi; lobus intermedius magnus, mobilis, porrectus, hastatus, convexus, costis 3 parallelis longitudinalibus subconspicuis inter lobulos basilares, explanatus c. 2.6 cm longus, ad lobulos basilares bene 2 cm, ad constrictionem 1.2 cm latus, lobulis basilaribus subreversis, patentibus, basi convexi, apice incurvulis, oblique triangulis vel potius subquadrangulis, satis acutis, c. 0.5 cm longis, lobulo intermedio sinibus rotundatis a lobulis basilaribus separato, abbreviato-ovato, apice late emarginato breviter rotundato-bilobo, convexo vel marginibus lateralibus revolutis subtubuloso, explanato c. 1.6 cm longo, 2.1 cm lato; calcar reversum, valde lateraliter compressum, oblique oblongum, obtusum, c. 0.8 cm longum, 0.44 cm altum. Gynostemium breve, basi utrinque valde dilatatum, supra visum trilobum, apice truncatum, absque anthera c. 0.9 cm longum, 1.6 cm latum, clinandrio reniformi, vix concavo cum costa longitudinali. Anthera cucullata, ambitu quinquangularis, basi truncata cum gibbero parvo, apice in rostrum latum rotundatum convexum contracta, c. 0.55 cm lata. Pollinia 2, a dorso compressa, oblique subovato-quadrangula, apice rotundata, dorso alte fissa, cum stipite lato apice breviter acuminato et convexo et glandula magna ovato-orbiculari c. 0.625 cm longa. Rostellum brevissimum, emarginatum. Stigma parvum, transverse fissuriforme. Ovarium valde 6-costatum et obtusangule 6-canaliculatum, c. 0.9 cm longum; pedicellus 6-angulatus, 6-costatus, c. 6 cm longus.

Sumatra: Agam, near Fort de Kock, 900 m. (*R. Schlechter* n. 159621, January 1907; *W. Groeneveldt*, cult. in Hort. *E. Jacobson* sub n. 1765). Lampong. (Cult. in Hort. *J. G. H. de Voegt*, Batavia, 1918).

Geographical distribution: Endemic.

The affinity of this species is with *V. helvola* Bl., and, in less degree, with *V. Dearei* Rehb.f., not with *V. limbata* Bl., as Schlechter suggests.

There are 3 ridges on the midlobe of the lip and a transverse callus near the base of the midlobe.

From a fresh specimen, native of the Padang Highlands, sent by Dr Jacobson, I made the following annotations: Sepals and petals on the innerside slightly glittering, light chocolate or liverbrown, on the lamina with dark brown reticulations, on the claw with ditto dots, in the central portion with light dirty-yellow specks, the brown, especially on the petals, confluent to a broad margin, all of them bordered with a narrow light yellow edge, at the back dead light yellow, on the margin and midrib marked brown. Lip at the base between the sidelobes white with two small lemon-yellow spots, the sidelobes white, midlobe lemon-yellow tinged with light brown, especially on the frontlobe, towards the base with four longitudinal interrupted purplish brown stripelets, spur white, column pure white, lemon-yellow at the top, at the base separated from the lip by a transverse dark purple line. Ovary and pedicel white.

On a raceme received from Mrs. Scheffer at Mr. Cornelis the sepals and petals showed auburn reticulations on a yellow ground, whereas the lip was yellow.

The flowers exhale at daytime a strong rather disagreeable odour, subject, however, to variation. In a specimen hailing from the Padang Highlands it may be pretty well compared with a mixture of sweet and carbolic, in another specimen cinnamon was more suggestive, in a third carbolic.

From fresh flowers from a plant originating from Southern Sumatra, for which I am indebted to Mr J. G. H. de Voogt, I noted that the odour seemed to be a mixture of lemon, cinnamon and some cimicide. After the flower was left some time in a glass box the odour was purely that of a lemon, but it changed again when the flower was taken out of the box.

Description from a cultivated specimen and materials preserved in alcohol.

Vanda (sect. *Deltalobos*) *hastifera* Rehb. f. in *Linnaea* (1876), 30; *J. J. S. Ic. Orch. Mal. II* (1938), t. 124, III; *F. J. Paath in de Orchidee IV* (1935), 209, with photo.

Caulis elongatus, parce ramosus, radicans, teres, avellaneus, c. 80 cm longus, 0.75—0.85 cm diam., internodiis c. 1.5 cm longis. Folia patentia, recurva, loriformia, praesertim inferne canaliculata, superne utroque latere supra leviter convexa, apice valde oblique bilobulata, lobulis triangulis plerumque acutis pungentibus plus minusve irregulariter marginatis, mucrone valde brevior lobulo majori adnato interposito, costa media supra sulcata subtus leviter prominente, firmiter coriacea, vix nitidula, viridia, parte soli exposita plus minusve sordide violaceo-punctata, c. 17—26 cm longa, 2.2—2.6 cm lata; vaginae tubulosae, deinde antice rumpentes, virides, internodia superantes. Inflorescentiae axillares, foliis multo breviores, 3—5-floratae, pedunculo c. 1.5—2.5 cm longo, diluta viridi, rachide flexuosa, angulata, dilute viridi, c. 2.5—4 cm longa. Bractee adpressae, rotundato-triangulae, pallide virides, c. 0.5 cm longae. Flores patentes, mediocres, odorem corticis cinnamomi exhalantes, diu viriditatem conservantes, carnosii,

c. 3.5 cm lati, 4.75 cm longi, sepalis petalisque semireflexis, undulatis, pallide flavescensibus dorso margine excepto confluentem castaneo-maculatis, intus inferne parce superne confluentem cinnamomee maculatis, sepalis lateralibus copiose maculatis. Sepalum dorsale oblongum, obtusum, basi unguiculato-contractum, totum c. 2.2—2.8 cm longum, 0.9—1 cm latum, ungue convexo 0.5—0.65 cm longo. Sepala lateralia oblique spathulato-oblonga, costa media dorso obtuse prominente, c. 2.1—2.4 cm longa, lamina plus minusve ovata, obtusa, c. 1.6—1.9 cm longa, 1.25—1.3 cm lata, ungue convexo, c. 0.5 cm longo, 0.55 cm lato. Petala oblique spathulata, c. 2.1—2.5 cm longa, lamina oblique subovata, obtusa, c. 1.2 cm lata, ungue convexo, 0.75—1 cm longo. Labellum horizontale, 3-lobum, calcaratum, c. 1.9 cm longum; lobi laterales sub gynostemio porrecti, paralleli, conspicui, oblique ovati, apice recurvuli, obtusi, concavi, albi, intus striis c. 5 longitudinalibus punctorum flavorum ad flavo-brunneorum notati, c. 0.7—0.85 cm longi, 0.45—0.5 cm lati; lobus intermedius porrectus, crasse carnosus, inferne subtus triangulo-concavus, hastatus, medio vel paulum supra medium obtusangule incurvus, lobulis basilariibus divaricatis triangulis acutis, apice angulato-rotundato-dilatatus, rotundato-bilobulus, lobulis intus in callum conspicuum trigono-conicum obtusum nitidum flavescens-album incrassatis, 3-costatus, costis exterioribus e callis decurrentibus inferne evanescentibus, costa media e basi usque ad apicem producta, glabra, apice dilatato et costa media exceptis supra villosus, supra albus, apicem versus inter costas brunnescens, inferne striis 2 castaneis, subtus basi excepta nitide castaneus, c. 1.2 cm longus, basi 0.95 cm, medio 0.4 cm, apice 0.6—0.7 cm latus; calcar reversum, ovario parallelum, cum labello angulum obtusum faciens, rectum, conicum, a latere compressum, cinnamomeum, c. 5 cm longum, incrassationibus 2 convexis sulco alto separatis albis pubescentibus in fauceis pariete postico. Gynostemium rectum, longiusculum, tenuiusculum, leviter clavatum, basi conspicue 6-angulato-disciformi-dilatatum, flavescens-album, basi dilute brunneo-maculatum, parte dilatata castaneum, c. 0.85 cm longum, basi 0.75 cm latum, clinandrio ovali concavo cum costa longitudinali. Anthera cucullata, angulato-orbicularis, apice late obtuse triangulo-producta, flavescens-alba, interdum striis 2 longitudinalibus castaneis notata, c. 2.7—0.325 cm lata, connectivo longitudinaliter costulata. Pollinia 2, a latere fissa, ovalia, a dorso compressa, flava, cum stipite lato albo et glandula magna suborbiculari alba bene 0.3 cm longa. Rostellum late obtuse bilobulum. Stigma alte excavatum, transverse quadrangulum. Ovarium trigonum, 6-sulcatum, sulcis in lateribus geminatis, flavescens-album, cum pedicello c. 5.5—6 cm longum.

Borneo: Western part, Pontianak. (Cult. in *Hort. Bog.*). Tajan, along S. Tjempede. (*J. P. Schuytemaker*, May 1931). Melia, along S. Boeajan. (*J. P. Schuytemaker*).

Sarawak: Bagan Ayer. (*I. F. Förstermann*, cult. in *Hort. J. and L. Linden*, Brussels).

Geographical distribution: Endemic.

The nearest allies of this species are *V. Lindeni* Rehb.f., *V. celebica* Rolfe, *V. crassiloba* T. et B., *V. Gibbsiae* Rolfe and *V. saxatilis* J. J. S., on which R. Schlechter based his section *Deltalobos*. In the form of the lip it much resembles *V. celebica*, but the lateral sepals are not deflexed, the apical tumors of the lip much larger, the colour of the flowers very different, the leaves narrower, and the racemes few-flowered. From

V. Gibbsiae, which is also a native of Borneo, it differs according to the description considerably in the form of the lip.

Description from cultivated specimens.

Arachnis celebica J. J. S. in Nat. Tijdschr. Ned. Ind. LXXII (1912), 74. — *Vandopsis celebica* Schltr. in Fedde Rep. X (1911), 195; Beih. LXXIV (1934), t. 75, Nr. 297.

Caulis rigidus, compressus, subflexuosus, nitide viridis, omnino vaginis foliorum tectus, internodiis sectione transversa ovalibus, ad nodos incrassatis, ad c. 3 cm longis, 0.7 cm diam., radicibus rigidis, crassis, teretibus, c. 0.63 cm longis. Folia alternatim bifaria, patentissima, oblonga, apice lato breviter et paulo inaequaliter rotundato-biloba, laxe subundulata, margine acuta recurvaque, costa media supra tenuiter sulcata subtus ad basin sulcata apice prominula, firmiter coriacea, nitide viridia, c. 12—13 cm longa, 4.2—3.6 cm lata; vaginae tubulosae, internodia superantes, c. 1.1 cm diam. Inflorescentiae vaginam dorso ad basin perforantes, vaginam inferiorem apice rumpentes, laxe c. 3-florae, pedunculo brevi, valido, compresso, c. 3.5 cm longo, vaginulis brevibus, tubulosis, rachide flexuosa, c. 3.8 cm longa, viridi, internodiis ad c. 2.2 cm longis. Bractee breviter tubulosae, rotundatae, membranaceae, ad c. 0.6 cm longae. Flores patentis, medioeres, carnosus, 5 cm lati, sepalis petalisque patentissimis, spathulatis, ungue excepto bene undulatis, flavescentibus, castanea pantherino-maculatis, dorso flavescenti-albis minute castanee maculatis. Sepalum dorsale 2.75 cm longum, ungue oblongo, superne paulo dilatato, intus plano, dorso convexo, c. 1 cm longo, 0.65 cm lato, lamina ovata, truncato-rotundata, c. 1.75 cm longa, 1.55 cm lata. Sepala lateralialia inter se angulum rectum facientia, falcato-obliqua, dorso bene obtuse carinata, c. 2.5 cm longa, ungue concavo, superne paulo dilatato, c. 0.7 cm longo, bene 0.6 cm lato, lamina late ovata, rotundata, c. 1.9 cm longa, 1.6 cm lata. Petala falcato-obliqua, c. 2.6 cm longa, ungue lineari-oblongo, superne paulo dilatato, dorso obtuse carinato, c. 1.25 cm longo, superne 0.5 cm lato, lamina breviter oblique ovata, rotundata, marginibus valde incurvis, dorso medio incrassata, c. 1.35 cm longa, 1.4 cm lata. Labellum minutum, ungue tenui valde elastice affixum, porrectum, a latere compressum, saccatum, 3-lobum, carnosum, subtus rotundatum, gynostemium vix superans, totum 0.95 cm longum, ad lobos laterales 0.8 cm altum; lobi laterales erecti, margine antico divergentes, breves, lati, angulati, albi, intus longitudinaliter purpureo-striati, superne pallidiores et aurantiaco-suffusi; discus inter lobos laterales convexo-incrassatus, purpureo-punctatus, inferne maculis 2 flavo-aurantiacis ornatus, ad basin carinae puberulus; lobus intermedius erectus, incurvulus, lineari-subulatus, purpurascens-albus, purpurascens-punctatus, c. 0.65 cm longus, dimidio inferiore fere carina valida in saccum decurrente a latere compressa lobulum rotundatum formante, postice irregulariter crenata purpurascens marginem versus albida instructus. Gynostemium crassum, curvatum, a dorso compressum, dorso convexum, albidum, dorso purpureo-punctatum, subtus flavo-suffusum longitudinaliter purpureo-striolatum, c. 1 cm longum, apice truncatum, clinandrio transverso, concavo, pede abbreviato subexciso-truncato. Anthera cucullata, ambitu transverse elliptica vel melius late triangula apice in rostrum breve obtuse triangulum producta, basi bilobula, alba, c. 0.45 cm lata, thecis incrassatis rugulosis verruculosis basin versus papil-

lois medio excavatione oblique oblongo-elliptica instructis. Pollinia 4, geminata, a dorso compressa, extus convexa, intus concava, dilutius flava, 2 antica majora et late pyriformia, 2 postica minora rotundato-quadrangula, cum stipite lato hyalino superne postice conduplicato-contracto apice libero obtuso et glandula lata transverse subelliptica utrinque in denticulum acutum producta c. 0.3 cm longa. Rostellum latum, obtuse bilobulum. Stigma quadrangulum, basin versus dilatatum et bilobulum. Ovarium sessile, 6-sulcatum, virescenti-album, c. 2.1 cm longum.

Central Celebes: Rante Pau, c. 800 m. (Cult. in Hort. J. van Brero, Bandoeng).

North Celebes: Minahassa, near Lansot, c. 700 m. (B. Schlechter n. 20653, December 1909).

Geographical distribution: Endemic.

This plant is, as I have pointed out before, no *Vandopsis* but a true *Arachnis*. My description differs slightly from that given by Dr Schlechter. I have given a fresh one because many details are omitted in his description.

The species is a very near ally of *A. breviscapa* J. J. S. from Borneo and fresh flowers of the latter should be compared with it.

Description from fresh material.

Trichoglottis cochlearis Rehb. f. in Gard. Chr. n. s. XIX (1883), I, 142.

Caulis subteres, c. 12.5 cm longus. Folia subpatentissima, recurvula, lineari-loriformia, apice angustata, inaequaliter acute bidentata, obtusangule canaliculata, costa media supra sulcata subtus obtuse prominente, leviter transverse rugosa, crasse carnosae, rigidae, nitidule viridia, subtus paulo pallidiora, c. 5.5—12 cm longa, inexplanata 0.95—1 cm lata; vaginae breviter tubulosae, sectione transversa ellipticae, valde transverse rugosae, c. 0.6 cm latae. Inflorescentiae axillares, vaginam dorso ad basin perforantes, laxae c. 3-florae, pedunculo pallide viridi, purpureo-suffuso, c. 2.1 cm longo, basi nonnullis vaginulis majusculis late tubulosis lateraliter compressis obtusis donato, rachide flexuosa, facie florem versus spectante applanata, colore pedunculi, c. 1.8 cm longa, internodiis ad c. 0.9 cm longis. Bractae parvae, adpressae, triangulae, acutae. Flores majusculi, carnosae, valde dulces sed ingrato-odorati, c. 2.3 cm lati, sepalis petalisque albis, intus striis paucis transversis angustis violaceo-purpureis notatis. Sepalum dorsale incurvum ex ungue quadrangulo c. 0.325 cm longo 0.3 cm lato in laminam ovatam obtusam c. 1.1 cm longum 0.8 cm latam dilatatum, marginibus recurvis valde convexum. Sepala lateralia supra basin incurva, ex ungue c. 0.2 cm longo 0.275 cm lato in laminam oblique ovatam obtusam apice purpureo-maculatam c. 1.4 cm longam fere 1 cm latam dilatata, convexa, dorso crasse carinata. Petala oblique anguste spathulata, basi incurvula, obtusa, valde convexa, c. 1.25 cm longa, ungue c. 0.15 cm, lamina fere 0.4 cm lata. Labelium 3-lobum, calcaratum, basi pedi gynostemii breviter adnatum, album, usque ad apicem ovarii c. 1.15 cm, cum calcaribus c. 1.4 cm longum; lobi laterales erecti, infra gynostemium porrecti, parte libera trianguli, obtusi, margina antico incurvi et basi contigui, intus convexo-incrassati, violaceo-purpureo-marginati, margine antico basi flavo, gynostemium superantes; lobus intermedius porrectus, crassissime carnosus, concavus, dorso convexus, transverse ovalis, apice subtruncatus, utroque latere angulatus, callo transverso carnosio postice rotundato-bilobo papilloso excavationem

limitante ad basin, medio flavescenti-albus, maculis transversis purpurascens notatus, inexplanatus c. 0.675 cm longus, 0.9 cm latus; calcar reversum, rectum, conicum, anguste obtusum, leviter a latere compressum, basi utrinque leviter convexo-inflatum, intus pubescens, c. 0.6 cm longum, lamella horizontali ovato-triangulari obtusa subtus pilosa e pariete postico inter lobos laterales faucem obtegente. Gynostemium breve, latum, dorso excavatum, papillosum, album, late purpureo-marginatum, c. 0.3 cm longum, 0.37 cm latum, clinandrio leviter concavo, apice truncato, auriculis angulatis penicillatis. Anthera cucullata, supra visa transverse ovalis, basi late retusa, apice in rostrum recurvum triangulum acutum supra carinatum producta, crista transversa truncata retusa vel vix tridentata in dorso medium thecarum attingente, c. 0.3 cm lata. Pollinia 4, corpuscula 2 globosa formantia, postica quam antica multo minora, cum stipite sigmoideo rhombeo utrinque obtuso et glandula anguste oblonga supra carinata postice 2-dentata c. 0.3 cm longa. Rostellum antice et postice bidentatum. Stigma magnum, alte excavatum, suborbiculare. Ovarium trigonum, 6-sulcatum, album, inferne virescens, cum pedicello tortum, c. 1.25 cm longum.

Sumatra. (W. Micholitz). Padangsche Bovenlanden, Laras Talang, G. Talang, 1800 m, forest. (H. A. B. Bunnemeijer n. 5318, October 1918). Boekit Gombak, 1600 m, forest. (H. A. B. Bunnemeijer n. 5438, November 1918). Goenoeng Singalang, 1800—2000 m. (E. Jacobson cult. sub n. 1279—1282).

Geographical distribution: Endemic.

The species was first described by Reichenbach from plants introduced in the nurseries of James Veitch and Sons in London, probably by W. Micholitz. The description of Reichenbach suits Dr Jacobson's plant rather good, only the lamella covering the mouth of the spur is not 2—3-dentate.

It is a pretty species allied to *T. pusilla* Rehb.f. from Java but larger. The odour of the flowers is very strong and sweet, but not agreeable.

Description from a living specimen sent by Dr Jacobson. The plant was kept in Buitenzorg for a considerable time, but as it did not flower, it was removed to the mountain gardens in Tjibodas, from where I soon received a flowering stem.

Malleola batakensis Schltr. Orch. D. N. Guinea (1913), 981; in Fedde Rep. Beih. LXXIV (1934), t. 76, Nr. 302. — *Saccolabium batakense* Schltr. in Fedde Rep. XI (1912), 144.

Planta pusilla, caule interdum ramosa, tenui, flexuoso, basi radicante, c. 4—6.5 cm longo, internodiis c. 0.45—0.5 cm longis. Folia subpatentissima, oblique lineari-lanceolata, saepe plus minusve falcata, apicem versus angustata, bene inaequaliter obtuse bilobula, basi angustata breviter conduplicata, costa media subtus prominente, c. 2.4—5 cm longa, 0.4—0.7 cm lata; vaginae tubulosae, internodia aequantes, postice anticeque carinatae, nervis sicco prominentibus, apice antice excisae. Inflorescentiae vaginam dorso ad basin perforantes, simplices, laxae pluriflorae, pedunculo tenui, c. 0.15—1.8 cm longo, nonnullis vaginulis tubulosis donato, rachide angulata, c. 3—3.5 cm longa. Bractee parvae, incurvae, subulatae, concavae. Flores quaquaversi, parvi, macerati c. 0.36 cm longi. Sepalum dorsale erectum, incurvum, valde concavum, explanatum oblongo-ovale, rotundato-obtusum, c. 0.2 cm longum, fere 0.1 cm latum. Sepala lateralia incurvula, oblique subspathulato-oblonga, obtusa, c. 0.18 cm longa, 0.075—0.08 cm lata. Petala incurvula, oblique

oblonga, subfalcatula, obtusa, c. 0.15 cm longa, 0.075 cm lata. Labellum basi gynostemio (pedi gynostemii) breviter adnatum, 3-lobum, calcaratum, totum c. 0.26 cm longum; lobi laterales ad faucem calcaris erecti, humiles, brevissime obtusangule trianguli, basi lati; lobus intermedius parvus, porrectus, revolutus, e basi breviter dilatata subulatus, acutissimus, ecallosus, fere 0.05 cm longus; calcar conspicuum, reversum, dorso subrectum, dimidio inferiore fere oblique infundibuliforme, medio leviter constrictum, parte superiore a dorso compressum, obtuso-rotundatum, c. 0.225 cm longum, basi 0.125 cm, superne 0.1 cm latum. Gynostemium brevissimum, supra basin obtusangule recurvum, breviter malleiforme, dorso convexum, c. 0.075 cm longum, clinandrio transverse ovali, non excavato, callis 2 oblique obtuse conicis donato, auriculis porrectis, triangulo-dentiformibus, acutis. Anthera cucullata, e basi transverse aequilateraliter trapeziformi basi retuso-bilobula in rostrum conspicuum late triangulum subtruncato-obtusum producta, ambitu quinquangularis, 0.08 cm lata. Pollinia 2, divaricata, ovalia, stipite spathulato, convexo, parte dilatata apice bibrachiato-dilatato, brachiis recurvis convexis explanatis divaricatis triangulis obtusis, glandula parva, oblonga, pollinarium totum fere 0.1 cm longum. Rostellum breve. Stigma altius excavatum, subtrilobulum. Ovarium 6-sulcatum, cum pedicello brevi 0.2 cm longum, calcaris brevius.

Sumatra: Deli, Batak mountains above Lau Boentoe, c. 400 m. (*R. Schlechter* n. 20726, April 1910). Betimoes valley, west of Sibolangit, 500 m, in forest on thin branches of *Stelechocarpus*, rather common on the spot. (*J. A. Lörzing* n. 5589, March 1918: "flowers yellow, spur and ovary very light green").

Geographical distribution: Endemic.

A species in the way of *M. sphingoides* J. J. S., *M. insectifera* J. J. S. from Java etc.

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