

The Orchidaceae of the Celebes

Rudolf Schlechter

Book 1 of 2

A translation into English of

Zur Kenntnis der Orchidaceen von Celebes

as published in

Fedde's *Repertorium specierum novarum regni vegetabilis*
Vol X (1911), pp 1-40, 66-96 & 177-213

with genera index, locality listing and map.

H J Katz & J T Simmons



Rudolf Schlechter
(1872-1925)



Celebes [Sulawesi, Indonesia]



The Australian Orchid Foundation

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Editors and Translators:

H.J. Katz, B.Sc., Dr. rer. nat. & J. T. Simmons

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SCHLECHTER : THE ORCHIDACEAE OF CELEBES (1911)

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THE ORCHIDACEAE OF CELEBES

There are now not many readily accessible areas in the tropics whose flora we are ignorant about, but the island of Celebes is one of these. This is all the more surprising, since the geographical location of the island, situated between two floral areas, makes it especially interesting.

Only two of the larger collections from this region are worthy of mention, viz. those of Dr. Koorders and of the Sarrasins [P. & F. Sarrasin]. A comprehensive report has appeared only for the former, whilst the splendid collection by the Sarrasins, with the exception of a few groups, is still awaiting publication.

Certain interesting forms from the Celebes which I got to know, together with the location of the island, convinced me that its flora should be considered as a transition between the plant-geographic regions of the Philippines and Papuasia. Hence, when I left New Guinea, and before my return to Europe, I decided to spend several months in the botanical exploration of the northern tip of the island of Celebes, closest to the Philippines.

I stayed there from the middle of November 1909 until February 1910, but restricted myself almost completely to the families which interested me particularly, so as to obtain as complete a knowledge as possible of the representatives of these groups.

The results in regard to the Orchidaceae quite surprised me, since it showed that the majority of the collected specimens had a noticeable similarity to typical Papuasian species. Certain connections to Philippine species could not be denied, but were so scattered that the character of the flora led [one] to the conclusion that this part of the island could be considered, in the broader sense, as a province of Papuasia and that, in my opinion, a separation between Papuasia and the Moluccas is neither applicable nor possible. Unfortunately, I did not have the opportunity of investigating the southern part of the island closer, to enable me to establish whether the predominant Moluccan-Papuasian types were present there in the same manner as in the northern part.

If we consider the nature of the orchid flora of the northern part, in particular that of the Minahassa, we observe, as was to be expected, that there is a certain blending with western Malayan types, but predominantly only with those which have penetrated the Papuasian flora : viz. Gastrodia, Galeola (\S Cyrtosia), Epipogon, Aphyllorchis, Goodyera, Corymbis, Pholidota imbricata Lindl., several Dendrobium and Bulbophyllum, Cymbidium, Grammangis, Acropis javanica Reinw. and several others.

Conversely, several genera which I would consider as Moluccan-Papuasian, viz. Glossorhyncha, Epiblastus and Mediocalcar. (Only one species of Microtatorchis is known in the Philippines). Furthermore, within the larger genera are

representatives of sections so far known only from Papuasia, e.g. the sections *Diplocaulodium* and *Oxyglossum* in *Dendrobium* and in *Bulbophyllum* the sections *Codonosepalum*, *Polyblepharon* and *Thyridiosepalum*. We meet only one previously purely western Malayan genus, viz. *Sarcostoma*. *Doritis* is known from Ceylon, western Malaya and the Philippines. Apart from those two, of the 64 genera listed here, no others occur that are not familiar to me already from the island of New Guinea. Furthermore, it must be considered that Papuasia up to now has been explored very incompletely, but western Malaya relatively well, at least in the most important areas. In the remaining genera the individual species are related usually to the Moluccan-Papuasia ones, seldom to those from the Philippines.

In general I should like to add that the area I traversed consisted of the northern tip of the island, designated as Minahassa, and south of there, the small region of Toli-Toli on the west coast, where thanks to the co-operation of the Dutch civil servant Loogeman, I had the opportunity of entering otherwise completely unknown country.

It still remains for me to express my gratitude to the German consuls, H.F. Steffens in Menado and C. Becker in Macassar for their help during my stay in the Celebes.

Rudolf Schlechter
(circa 1911)

I. Habenaria Willd.1. Habenaria staminodiata Schltr., sp. nov.

Terrestris, erecta, gracilis, c. 35 cm alta; tubere oblongoideo, radicibus elongatis, puberulis; caule basi vaginato, medio 3—4-foliato, supra medium vaginulus paucis, bracteiformibus, dissitis ornato, tereti, glabro: foliis patentibus, lanceolato-ellipticis, acuminatis, basin versus angustatis, glabris, 6—8 cm longis, medio fere 2—2,6 cm latis; racemo laxe 10—15-floro, elongato, usque ad 14 cm longo, erecto; bracteis erecto-patentibus, ovato-lanceolatis, acuminatis, inferioribus ovario subaequilongis, superioribus sensim paulo brevioribus; floribus erectis, viridibus, illis *H. bambusetorum* Krzl. (*Peristylus gracilis* Bl.) similibus, glabris; sepalو intermedio ovato, obtuso, extus apiculato, c. 0,2 cm longo, lateralibus deflexis, falcato-oblongis, obtusis, extus apiculatis, 2,2 mm longis; petalis oblique rhomboeo-oblongis, obtusis, margine anteriore medio dilatatis, tertia parte basilari cum labelli basi connatis, sepalо intermedio aequilongis; labello usque supra basin tripartito, partitione intermedia decurva, lanceolato-ligulata, obtusa, petalis uequilonga, basi callo lanceolato, obtuso ornata, partitionibus lateralibus recurvis, corniformi-adscendentibus, filiformi-subulatis, intermediae subduplo longioribus, calcare patulo, leviter curvato, subclavato-cylindraceo, obtusiusculo, vix 0,4 cm longo; anthera brevi, connectivo leviter emarginato, canalibus perbrevibus; rostello parvulo triangulo; processibus stigmatiferis apice clavatis, antherae canales duplo superantibus, porrectis; staminodiis magnis, falcatis, loculis antherae subaequilongis; ovario fusiformi, glabro, 0,6—0,7 cm longo.

Celebes : In humus of the primary forests on the upper Lampasie [River], near the old goldmines on [Mount] Djangdjang, in the Toli-Toli district, alt. c. 180m — R. Schlechter no. 20674, flowering in Jan. 1910.

One of the species of section *Peristylus*, which is closely related to *H. bambusetorum* Krzl. (*Peristylus gracilis* Bl.) and to *H. papuana* Krzl. It is reminiscent of the latter in the size of the staminodes, but is readily distinguished from it by the retrorse lateral segments of the labellum which reach up beside the dorsal sepal in the shape of horns. Like all species of this affinity, the flowers are grass-green. Unfortunately, I found only a solitary specimen of this species

II. Corysanthes R.Br.1. Corysanthes muscicola Schltr., sp. nov.

Epiphytica, pusilla, usque ad 4 cm alta; tubere pisiformi, globoso; radicibus filiformibus, elongatis, flexuosis, villosulis; folio ovato-elliptico, acuminato, basi subcordato, 2,5—3,5 cm longo, medio vel infra medium 1,2—1,8 cm lato; bractea lanceolato-lineari, elongata, acuminata, ovario duplo longiore, erecta; flore sessili, glabro, illo *C. fornicate* (Bl.) Ldl. simili, erecto, in genere mediocri; sepalо intermedio e basi subunguiculato-angustata obovato-fornicato, obtusissimo, extus nervis 5 medianis incrassatis, 1,4 cm longo, sepalis lateralibus, lineari-subulatis, acutis, adscendentibus, vix 0,5 cm longis; petalis sepalis lateralibus simillimus aequimagnisque, porrecto-adscendentibus; labello erecto, e basi cucullata, antice ventricoso-inflata superne in limbum suborbicularem, apiculatum, margine subintegrum, sauce antice sparsim verruculos-papillosum dilatato, sepalо intermedio distincte breviore, calcaribus 2 parvulis, oblique conicis, obtusis, c. 1,5 mm longis; columna brevi generis; anthera subquadrato-ovata, obtusissima, glabra; ovario cylindraceo, glabro, c. 0,5 cm longo.

Celebes : Between moss on tree-trunks of Mount Mahawo (Minahassa), alt. c.

1200m — R. Schlechter no. 20508, flowering in Dec. 1909; between moss on tree-

trunks in the forests of Mount Sopoetan (Minahassa), alt. c. 1400m - R.Schlechter, no. 20620, flowering in Dec. 1909.

The plant belongs to my section *Gastrosiphon* and is to be placed there next to *C. fornicata* (Bl.) Lindl. It is well distinguished by the labellum. The flowers are red on the outside, whitish towards the base, the labellum being white and with dark red markings.

III. *Stigmatodactylus* Maxim.

1. *Stigmatodactylus celebicus* Schltr., sp. nov.

Terrestris, erectus, pusillus, gracillimus, 6-9 cm altus; tubere oblongideo, puberulo; caule tenui, stricto vel plus minus flexuoso, tereti, glabro, basi vaginulis paucis arcte appressis, breviter acuminatis donato, medio sero folio depauperato praedito, apice 2-3-floro; folio ovato, acuminato, vulgo squamiformi-depauperato, erecto-patento, usque ad 2,5 mm longo, glabro; floribus approximatis, illis *S. paradoxae* (Prain) Schltr. similibus, erectis vel suberectis; bracteis folio similibus, ovario vulgo paulo brevioribus; sepalo intermedio erecto, ligulato, acuto, concavo, glabro, 0,5 cm longo, lateralibus suberectis, linearis-subulatis, acutissimis, intermedio duplo brevioribus, glabris; petalis erectis, subfalcato-linearibus, acutis, glabris, nervo medio extus incrassato, sepalo intermedio fere aequilongis; labello suborbiculari, obtuso, margine subirregulari, glabro, basi callo triangulo, in nervum medium usque infra medium cuspidato-decurrente ornato, 0,5 cm longo, infra medium 0,5 cm lato; columna erecta, gracili, leviter arcuata, 3,5 mm longa, glabra, supra basin ligula linearis, porrecta, apice breviter excisa, carnosula ornata, ad basin stigmatis appendice subulata, dactyloformi, apice subincrassata praedita, rostello brevi; stigmate generis; ovario cylindraceo, glabro, c. 0,4 cm longo.

Celebes : At completely dark, very humid places in the forests of Mount Klabat (Minahassa), alt. c. 800m - R.Schlechter no. 20530, flowering in Dec. 1909.

The genus *Stigmatodactylus* now comprises four species, inclusive of the one described here, viz. *S. javanicus* Schltr. et J.J.Sm., *S. paradoxus* (Prain) Schltr. (*Pantlingia paradoxa* Prain), *S. sikokianus* Maxim. and *S. celebicus* Schltr. The last two differ from the other two in the presence of a dactylose plug on the lower margin of the stigma. Between themselves, they are separated by the character of the lip and column. *S. celebicus* Schltr. has greenish flowers, becoming violet towards the base.

IV. *Epipogum* Sw.

1. *Epipogum nutans* Rchb.f. var. *celebicus* Schltr., var. nov.

Diffrerit a forma typica calcare tenuiore leviter arcuato.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 700m - R.Schlechter no. 20545, flowering in Dec. 1909.

This variety has pure white flowers without any spots at all on the lip. I consider it possible that it will prove to be a separate species, and that the species as such will have to be split up into several. Thus, for example, *E. berorum* Duthie and *E. japonicum* Makino, which I previously considered as varieties of *E. nutans* Rchb.f., are thoroughly separate species. Thereby the genus

comprises five species, to which a sixth, E. Rolfei (Hayata) Schltr. (Galera Rolfei Hayata) should be added.

V. Nervilia Comm.

1. Nervilia sciaphila Schltr., sp. nov.

Terrestris, erecta, 6—10 cm alta; rhizomate globoso, c. 1,5 cm diametente; radicibus filiformibus, elongatis, puberulis; folio erecto, petiolato, lamina reniformi, plus minus obscure 5—7-angulata; obtusiuscula vel breviter apiculata, basi profundius cordata, utrinque glabra, 1,5—4,5 cm longa, 2—5,5 cm lata, petiolo subtereti, facie sulcato, glabro, 3,5—6 cm longo; scapo erecto, stricto vel substricto, vaginis 3—4 alte amplectentibus arce obtecto, tereti, glabro, unifloro; bractea erecta ovata, subacuta, pedicellum amplectente, ovario paulo breviore vel subaequilongo; flore illo N. punctatae (Bl.) Schltr. simili, sed paulo majore, suberecto; sepalis lanceolato-ligulatis, subacutis, glabris, c. 1,6 cm longis, lateralibus paulo obliquis; petalis sepalis similibus, obtusiusculis, glabris, 1,6 cm longis; labello e basi oblongo-cuneata e medio trilobo, lobis lateribus parvulis, triangulis, acutis, margine irregulariter paucidentatis, intermedio multo majore, elliptico, obtuso, apice breviter exciso, margine leviter undulato, carinis 2 e basi puberulis supra basin lobi intermedii conjunctis, glabris, usque ad apicem labelli decurrentibus, labello toto 1,6 cm longo, inter apices loborum lateralium 0,4 cm lato, lobo intermedio medio 0,4 cm lato; columna semitereti, quam apices loborum lateralium distincte breviore, facie puberula, clinandrium versus dilatata; ovario cum pedicello clavato, glabro, pedicello inclusu c. 1,3 cm longo.

Celebes : In humus of the forests of Mount Klabat, in dense shade beneath shrubs and ferns (Minahassa), alt. c. 700m — R. Schlechter no. 20543, flowering in Dec. 1909.

According to my compilation of the species of the genus, this one is closely related to N. punctata (Bl.) Schltr. It is distinguished by the lip, the short column and the colouring of the flowers, whose sepals and petals are greenish white. The labellum is white, with red-violet veins and there are yellow ridges at the base.

After I published the list of species of the genus (Footnote : In Engl. Bot. Jahrb. XLV (1911), p. 399 ff.), apart from the species described by me or otherwise mentioned, two further novelties have become known from Formosa which both belong here : viz. N. purpurea (Hayata) Schltr. (Pogonia purpurea Hayata) and N. taitoensis (Hayata) Schltr. (Pogonia taitoensis Hayata). Both clearly belong in my section Vinerlia.

VI. Gastrodia Bl.

1. Gastrodia celebica Schltr., sp. nov.

Terrestris, erecta, saprophytica, 8—30 cm alta; rhizomate cormiformi, incrassato, cylindraceo; caule erecto, plus minus flexuoso, tereti, glabro, vaginulis paucis, distantibus, squamiformibus obsesso, pauci- (2—5-) floro; bracteis erecto-patentibus, oblongis, obtusis, ovario pedicellato plus duplo brevioribus; floribus in genere permagnis, erecto-patentibus, campanulatis, glabris, colore brunneis; sepalis oblongis, obtusis, extus nervo medio carinato-incrassatis, usque ad medium fere connatis, longitudine 2 cm attingentibus, lateralibus obliquis; petalis e ungue linearis tubo

sepalorum adnata in laminam liberam, oblique oblongam, obtusam, 0,5 cm longam expansis, glabris, sepalis bene brevioribus; labello e basi angustata suborbiculari, antice subtrilobato-angustato et in lobum oblongum obtusum producto, superne transverse verruculoso, apice callis 2 reflexis, minute papilloso-punctatis ornato, caeterum nudo, 0,4 cm longo; columna semitereti, glabra, medio subalato-marginata, pede apice callis 2 punctato-verruculosis ornato. 0,4 cm alta; stigma ampio generis; ovario cum pedicello glabro, clavato, c. 1 cm longo.

Celebes : In humus of the forest of Mount Klabat (Minahassa), alt. c. 800m
- R.Schlechter no. 20529, flowering in Dec. 1909.

I found the plant growing in company with other saprophytes, e.g. Sciaphila, Salomonia and the semi-saprophyte Stigmatodactylus. The species is probably best placed next to G. verrucosa Bl., and is characterised by the lip and size of the flowers. The pedicels lengthen, as for the other species, until the fruit is ripe, up to 17cm long as shown by my specimens, whilst the almost clavate fruit forms to a length of c. 3.0cm.

VII. Galeola Lour.

1. Galeola Minahassae Schltr., sp. nov.

Saprophytica, humilis, c. 15 cm alta, simplex vel parum ramosa; radicibus crassis, cylindricis, carnosis; rhizomate brevi, squamis obsesso; caule tereti, carnosulo, squamis ovatis vel suborbicularibus, obtusis, sparsis obsesso, glabro; racemo brevi, plurifloro, sensim paulo elongato, usque ad 10 cm demum longo; bracteis squamis caulinis similibus, ovario vulgo brevioribus; floribus illis G. javanicae (Bl.) Benth. similibus, erecto-patentibus; sepalo intermedio late elliptico, obtuso, dorso carinato-incrassato, extus brunneo-squamuloso, 1,3 cm longo, medio fere 0,8 cm lato, lateribus intermedio similibus, obliquis, paulo majoribus; petalis oblique ovato-oblongis, obtusis, glabris, c. 1,4 cm longis, infra medium 0,6 cm latis, supra medium angustatis; labello cucullato, integro, antice obtusissimo, basin versus marginibus incurvis, 1,4 cm longo, medio fere 1,4 cm lato, basi medio foveato, glabro, dimidio anteriore dense muri-cato-papilloso, margine glabro; columna brevi, facie carinato-incrassata, basi callo bene prominente ornata, 0,7 cm longo, clinandrio alato-dilatato margine grosso dentato; ovario carnosus, cylindrico, brunneo-squamellato, c. 0,9 cm longo.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 700m
- R.Schlechter no. 20546, flowering in Dec. 1906 [1909].

This species is closely related to G. javanica (Bl.) Benth., but is distinguished by the colouring of the flowers, the petals being narrower towards the apex, by the labellum being densely bristled and papillose in front, and by the column of the clindandrium having much sharper and rougher teeth. The sepals and petals are white, the papillae on the lip are golden-yellow, with the latter being suffused lightly with pink on the inside.

VIII. Vanilla Sw.

1. Vanilla platyphylla Schltr., sp. nov.

Terrestris vel demum epiphytica, alte scandens, ramosa; radicibus filiformibus, elongatis, flexuosis, puberulis vel glabratis; caule flexuoso,

crasse carnoso, tereti, glabro, sicco 1—1,3 cm diametente, internodiis 7—9 cm longis; foliis patentibus, ellipticis, acuminatis, breviter petiolatis, usque ad 30 cm longis, medio fere usque ad 13 cm latis, petiolo sulcato 1—1,5 cm longo; racemis demum elongatis usque ad 15 cm longis, pedunculo brevi; bracteis patentibus, semiorbicularibus, obtusis, glabris, c. 0,5 cm longis; floribus erecto-patentibus, in genere mediocribus; sepalis oblongo-ellipticis, obtuse acuminatis, glabris, c. 4 cm longis, lateralibus obliquis; petalis sepalis similibus, sed paulo minoribus, textura tenuioribus, nervo medio extus incrassatis; labello e basi cuneata, marginibus columnae adnata dimidio superiore dilatato, trilobo, antice undulato-plicato, lobis lateralibus rotundatis, intermedio haud bene distincto, triangulo-semirotundo, laterales superante, parvulo, excavatione oblanceolata e basi usque supra medium labelli, fasciculo squamellarum apice laceratarum antice terminata, lobo medio usque infra basin papillis subulatis aggregatis ornato, labello toto 3,7 cm longo, supra medium 3,2 cm lato, lobo medio c. 0,7 cm longo, basi c. 1,2 cm lato; columna semitereti, usque juxta stigma marginibus labelli adnata, facie medio puberula, 2,5 cm longa, clinandrii marginibus subcrenulatis; anthera quadrato-cucullata, antice paulo angustata, glabra; ovario cylindrico, glabro, 3,5—4 cm longo.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 400m
— R.Schlechter no. 20556, flowering in Dec. 1909.

In the structure of its flowers, this species approaches the Javanese *V. albida* Bl. and even more so, several species from New Guinea, viz. *Vanilla varienses* Schltr. and *V. Kempferiana* Schltr., in particular the latter with which it has the large, broad leaves in common. The flowers also are of similar colouring. The sepals and petals are yellowish, the labellum white with red subulate appendages on the middle lobe.

2. *Vanilla planifolia* Andr., Bot. Rep., VIII (1808), t. 538.

[Celebes] : Growing wild in old plantations near Ayermadidi, alt. c. 150m — R.Schlechter no. 20523, flowering in Dec. 1909.

Originally introduced for cultivation and still often planted in the Minahassa [region], this *Vanilla* species can already be found wild in patches.

IX. *Aphyllorchis* Bl.

1. *Aphyllorchis gracilis* Schltr., sp. nov.

Saprophytica, erecta, gracilis, usque ad 50 cm alta; rhizomate abbreviato; radicibus carnosulis, flexuosis, villosulis; caule stricto vel substricto, tereti, glabro, vaginis 4—5 alte et arcte amplectentibus, obtusiusculis, glabris, dissitis obsesso; racemo eretto, sublaxe 12—20-floro, usque ad 17 cm longo; bracteis eretto-patentibus, oblongis, obtusiusculis, glabris, ovario pedicellato brevioribus, demum decurvis; floribus illis *A. pallidae* Bl. valde similibus, sed paululo majoribus; sepalis oblongo-ligulatis, obtusis, extus sparsim brunneo-squamellatis, 0,6 cm longis, lateralibus obliquis; petalis oblique oblongis, basin versus margine anteriore paululo ampliatis, sepalis paulo latioribus, 0,5 cm longis, nervo medio extus incrassato, glabris; labelli hypochilio quadrato, basi sagittato, auriculis recurvis obtusiusculis, triangulis, vix 1,5 mm longitudine excedente, antice constricto, epichilio subreniformi, obscure trilobato, cochleari, lobis lateralibus semi-quadratis, intermedio haud bene distincto, semiorbiculari, obtuso, incrassato, marginibus antice cucullato-incurvis, parvulo, epichilio toto 0,3 cm longitudine paulo excedente, supra basin 0,4 cm lato; columna

brevi, vix 0,3 cm alta, semitereti, clinandrio dorso alte bilobato, lobis oblique quadratis obtusis; anthera subreniformi-cucullata, obiusa, umbonata, glabra; ovario cum pedicello clavato, glabro, c. 0,7 cm longo.

Celebes : In humus of the forests of the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang, in the Toli-Toli district, alt. c. 180m - R.Schlechter no. 20654, flowering in Jan. 1910.

The plant is of similar colour to A. pallida Bl., with which it is closely related. The stems and ovaries are spotted and hatched in violet-blue, but the flowers are white with violet-blue keels on the outside of the sepals and petals. The species is more slender and taller than A. pallida Bl. Other differences are found in the petals, which here are broader than the sepals; in the labellum which differs in shape from that of A. pallida Bl.; and finally in the clinandrium, where the rear lobes here are broader, blunter and almost square, whilst for A. pallida Bl. they are triangular and pointed.

X. Goodyera R.Br.

1. Goodyera rubicunda Lindl., Bot. Reg., 1839, p. 92.

Var. celebica (Bl.) Schltr.

G. celebica Bl.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 800m - R.Schlechter no. 20534, flowering in Dec. 1909.

The variety differs from the Type in a thicker, less slender column, but otherwise they agree.

2. Goodyera viridiflora Bl.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 1400m - R.Schlechter no. 20570, flowering in Dec. 1909.

The flowers of the specimen were not yet completely developed, but there is no doubt that this species is present.

3. Goodyera amoena Schltr., sp. nov.

Terrestris, erecta, humilis, usque ad 15 cm alta: rhizomate caulinis, radicante, tereti; radicibus filiformibus, elongatis, flexuosis, puberulis; caule tereti, glabro, usque supra medium bene foliato, supra vaginis paucis lanceolatis, acuminatis, sensim in bracteas abeuntibus obpresso, papilloso-puberulo; foliis 4-6 petiolatis, patentibus, lamina lanceolata vel anguste lanceolata, acuta vel acuminata, basi rotundata, utrinque glabra, 3-8 cm longa, infra medium 1-1,8 cm lata, petiolo basi dilatata vaginante, c. 1 cm longo; spica denso multiflora, elongata, usque ad 5 cm longa; bracteis erecto-patentibus, lanceolatis, acuminatis, glabris, flores aequantibus vel paulo superantibus; floribus in genere inter minores, erecto-patentibus, illos G. reticulatae Bl. in mentem revocantibus; sepalis lanceolato-ovatis, obtuse acuminatis, extus sparsim papilloso, vix 0,3 cm longis, lateralibus obliquis; petalis oblique linearis-ligulatis, obtusiusculis, supra medium margine anteriore paulo dilatatis, glabris, sepalis intermedio subaequilongis; labello o basi oblongo-saccata antice late ovato, breviter et obtusiuscule acuminato, extus sparsim papilloso, intus usque

supra medium appendicibus multis subulatis ornato, apicem versus sparsim puberulo, sepalis aequilongo, sacco et lamina basi 0,2 cm lata; columna pro genere brevi, glabra, rostellum brevi; anthera late ovato-cordata, acuminata, glabra; ovario sparsim papilloso, c. 0,4 cm longo, cylindraceo.

Celebes : In humus of the forests on Mount Mahawo (Minahassa), alt. c. 1200m - R.Schlechter no. 20490, flowering in Nov. 1909.

On superficial observation this species is strongly reminiscent of Goodyera reticulata Bl., with which it is also closely related. The plant is beautifully coloured. The leaves uppermost are a dark velvety green with a pale pink net of veins longitudinally; underneath they are dark brown-red; the flowers are greenish with a white labellum.

XI. Cystorchis Bl.

1. Cystorchis celebica Schltr., sp. nov.

Terrestris, erecta, pusilla, usque ad 14 cm alta; rhizomate decumbente, cauliniformi, gracili; radicibus filiformibus, elongatis, flexuosis, glabris; caule supra basin foliato, tereti, glabro, caeterum subundo, inflorescentiam versus glanduloso-puberulo; foliis erecto-patentibus patentibusve, petiolatis, 4-7, vulgo supra basin caulis plus minus approximatis. lamina oblique ovata vel elliptica, acuta vel breviter acuminata, basi plus minus rotundata, utrinque glabra, 1,5-2,8 cm longa, medio vel infra medium 1-1,5 cm lata, petiolo basi dilatata caulem vaginante, glabro, 0,5-1 cm longo; racemo dense 2-5-floro, subsecundo; bracteis lanceolatis, valde acuminatis, nunc ovario longioribus nunc brevioribus; floribus illis C. variegatae Bl. fere aequimagnis, erecto-patentibus: sepalo intermedio lanceolato, obtusiusculo, retrorsim glanduloso-puberulo, 5,5 mm longo, lateralibus lanceolato-oblongis, obtusis, basi margine anteriore in lobum semiglobosum, basin labelli amplectentem productis, sepalum intermedium haud superantibus, extus sparsim pilis retrorsis glanduloso-puberulis; petalis oblique linear-ligulatis, obtusis, apicem versus papillosis, sepalo intermedio paululo brevioribus; labello e basi bisaccata in unguem marginibus incurvis linear-lanceolatum, dimidio inferiore extus papillosum producto, apice in lobum semiobtusum-remiformem, obtusissimum expanso, 6,5 mm longo, ungue supra basin 2,5 mm lato, lobo apicali 1,5 mm longo, 2,5 mm lato, sacco dupli subquadrato 0,4 cm lato, apice in calcar breve, conicum, obtusiusculum, vix 1,5 mm longum producto, intus margine utrinque callo ruguloso, substipitato ornato; columna brevi generi, rostellum brevi; stigmatis margine inferiore deflexo lobato-producto, libero; anthera ovato-cucullata, subacuta, glabra; ovario fusiformi, pilis retrorsis glanduloso-puberulo, c. 0,7 cm longo.

Celebes : In humus of the forests near the old goldmines on [Mount] Djang-djang (in Toli-Toli district), alt. c. 180m - R.Schlechter no. 20658, flowering in Jan. 1910.

An excellently characterised species which is best placed next to Cystorchis Beccarii Schltr., from Borneo. The leaves are dark green-red above and reddish underneath; the flowers are whitish with the sepals brownish in the middle, whilst the lip-claw is orange-yellow.

XII. Macodes Bl.

1. Macodes celebica Rolfe in Kew Bull.

Celebes : On rocks between moss in the mountain forests near Toli-Toli, alt.

c. 500m - R.Schlechter no. 20703, flowering in Jan. 1910. [cf., XLI/4, same citation]

This species is closely related to M. Sanderiana Rolfe from New Guinea, but differing in the petals and labellum.

XIII. Cheirostylis Bl.

1. Cheirostylis quadrilobata Schltr., sp. nov.

Terrestris, erecta, pusilla; rhizomate caulinormi; decumbente; radicibus flexuosis, puberulis, brevibus; caule erecto vel suberecto, vulgo usque supra medium foliato, tereti, glabro, supra vaginulis paucis bracteiformibus obsesso, glanduloso-puberulo; foliis nunc subrosulato-approximatis nunc sparsis, 4—7, petiolatis, erecto-patentibus, lamina oblique ovata, acuta vel apiculata, utrinque glabra, 1,3—2 cm longa, infra medium 0,8—1,2 cm lata, petiolo basi dilatata vaginante, glabro, 0,5—0,8 cm longo; racemo paucifloro, erecto; bracteis erecto-patentibus, anguste lanceolatis, acuminatis, ovario vulgo fere aequilongis; floribus in genero inter mediocres, niveis, approximatis; sepalis oblongo-ligulatatis, obtusis, pilis reversis glanduloso-puberulis, 0,7 cm longis; intermedio basi paulo dilatata cum lateralibus ima basi connato, lateralibus obliquis; petalis oblique ovatis, supra medium angustatis, obtusis, glabris, margine anteriore juxta apicem paucidentatis, sepalo intermedio subaequilongis; labello e basi lanceolato-ligulata marginibus incurvis, antice 4-lobato, lobis 2 posterioribus brevibus quadratis, anterioribus divaricatis obtusis, cum apiculo minuto interjecto, posterioribus conspicue majoribus, labello toto 0,6 cm longo, supra basin 2,5 mm lato, inter apices loborum posteriorum 0,3 cm lato, inter apices loborum anteriorum 0,4 cm lato; columna brevi, antice bilamellata, rostello amplio alte bifido, utrinque ligula breviore aucto; anthera late ovata, acuminata, glabra; ovario fusiformi, pilis reversis glanduloso-puberulo, c. 0,9 cm longo.

Celebes : In humus of the forests on Mount Lokon (Minahassa), between moss, alt. c. 1400m - R.Schlechter no. 20431, flowering in Nov. 1909.

An extremely interesting novelty within the genus, to be placed next to C. Chalmersii Schltr. (Zeuxine Chalmersii Schltr.) from New Guinea. The leaves are green with 1-3 snow-white, longitudinal veins.

XIV. Zeuxine Lindl.

1. Zeuxine Minahassae Schltr., sp. nov.

Terrestris, erecta, 15—25 cm alta; rhizomate decumbente, caulinormi; radicibus filiformibus, elongatis, flexuosis, villosulis; caule usque ad medium fere foliato, tereti, glabro, supra vaginulis paucis, dissitis, bracteiformibus obsesso, glanduloso-puberulo; foliis erecto-patentibus, oblique ovatis vel ovato-lanceolatis, acuminatis, basi rotundatis, utrinque glabris, 4—6 cm longis, infra medium 2—3,4 cm latis, petiolo basi dilatata vaginante, 1,5—2 cm longo; racemo erecto, subdense 4—14-floro, usque ad 7 cm longo; bracteis erecto-patentibus, ovatis acuminatis, ovario brevioribus; floribus erectis, illis Z. torricellensis Schltr. similibus; sepalis late ovatis, obtuse acuminatis, glanduloso-puberulis, 3,5 mm longis, lateralibus obliquis; petalis oblique latiovatis, obtusiusculis, margine anteriore infra medium dilatatis, glabris, sepalo intermedio paululo brevioribus; labello e basi semigloboso-quadrata marginibus incurvis antice subito contracto et in lobulum late ovatum, acutum expanso, basi intus bisquamato, linea media incrassata, glabro, petalis aequilongo, medio fere 0,2 cm lato, lobo apicali vix 0,1 cm longo; columna brevi subglobosa, glabra, facie alte bicarinata; ovario glabrato, cylindraceo, c. 0,8 cm longo.

Celebes : In humus of the forests on Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20510, flowering in Dec. 1909.

Z. Minahassae Schltr. represents a new species of my section Hetaeriopsis, which comes close to several Papuan types: viz. Z. torricellensis Schltr. and Z. Novae-Hiberniae Schltr. It is distinguished by the broad leaves and by the labellum. The leaf colouring on the upper side is dark green-brown with a paler central stripe, underneath reddish. The flowers are brown-red with whitish sepals and labellum.

XV. Odontochilus Bl.

1. Odontochilus klabatensis Schltr., sp. nov.

Terrestris, erecta, pusilla, 5—9 cm alta; rhizomate decumbente, cauliniformi; radicibus flexuosis, villosulis, brevibus; caule tereti glabro, usque infra basin racemi foliato; foliis 5—8, petiolatis, erecto-patentibus, lamina ovata, acuta vel apiculata, interdum breviter acuminata, basi rotundata, utrinque glabra, 1—2,3 cm longa, infra medium 0,6—1,4 cm lata, petiolo basi dilatata vaginante, glabro, 0,4—0,8 cm longo; racemo abbreviato, dense pauci-(2—5-)floro; bracteis erecto-patentibus vel suberectis, lanceolatis, acuminatis, ovarium aequantibus vel paulo superantibus; floribus erecto-patentibus, niveis; sepalis ligulatis, obtusis, basi sparsim pilosulis, c. 1,3 cm longis, intermedio basi paulo dilatato, lateralibus obliquis, apice sublatiobus; petalis oblique lanceolatis, obtusis, glabris, supra medium paulo angustatis, sepalo intermedio paulo brevioribus; labello e basi semigloboso-cucullata intus bisquamata, in unguem linearem margine pectinato-dentatum producto, antice in lobum amplum reniformem, excisum cum apiculo expanso, glabro, 1,5 cm longo, basi vix 0,4 cm lato, ungue antice cum dentibus 0,4 cm lato, lobo apicali 0,5 cm longo, 0,9 cm medio lato; columna generis, antice lamella dupli, curvata, carnosula ornata, glabra; anthera lanceolato-cucullata, obtusiuscula acuminata, glabra; ovario cylindraceo, pilis reversis glanduloso-puberulo, c. 0,9 cm longo.

Celebes : In humus of the forests of Mount Klabat (Minahassa), at open places, alt. c. 1200m - R. Schlechter no. 20557, flowering in Dec. 1909.

The species is somewhat isolated in the shape of the labellum. The flowers are snow-white, the leaves green.

XVI. Anoectochilus Bl.

1. Anoectochilus insignis Schltr., sp. nov.

Terrestris, erecta, humilis, c. 16 cm alta; rhizomate decumbente, cauliniformi; radicibus, flexuosis, villosulis; caule basi foliato, tereti, glabro, supra vaginulis paucis, dissitis, bracteiformibus, arcte amplectentibus obpresso, glanduloso-puberulo; foliis c. 5 patentibus, petiolatis, lamina ovata, breviter acuminata, basi subcordato-rotundata, utrinque glabra, 3,5—6 cm longa, infra medium 2—4,5 cm lata, petiolo basi dilatata vaginante, glabro, 1—1,7 cm longo; racemo subdense 4—6-floro, secundo, c. 4—5 cm longo; bracteis erecto-patentibus, lanceolatis, acuminatis, ovario aequi-longis vel brevioribus; floribus erecto-patentibus, in genere mediocribus; sepalis ovato-lanceolatis, acuminatis, extus glanduloso-puberulis, c. 1,3 cm longis, lateralibus obliquis, intermedio angustioribus; petalis oblique oblango-ligulatis, acuminatis, glabris, sepalo intermedio fere aequilongis; labello e basi calcarata, cuneato-quadrato subito in unguem brevem angustum, lateribus fimbriis paucis (4—5) ornatum contracto et antice in

lobum elliptico-lanceolatum, acuminatum producto, petalis aequilongo, lobo apicali cum ungue c. 0,5 cm longo, calcare conico obtuso, glabro, c. 3,5 mm longo, lateraliter paulo compresso; columna brevi glabra, antice lamella dupli bene alta, basi in calcar elongata, apice bifida producta ornata; anthera cordato-lanceolata, acuminata, glabra; ovario cylindraceo, dense glanduloso-puberulo, c. 1,2 cm longo.

Celebes : In humus of the primary forests on Mount Klabat (Minahassa), alt. c. 700m - R.Schlechter no. 20548, flowering in Dec. 1909.

If this novelty can at all be compared with the previously described species, it belongs, as far as the labellum structure is concerned, close to A. imitans Schltr. However, the column is characterised by having the lamellae extended forwards and downwards as a spur-like appendage, which penetrates deep into the lip-spur.

The flowers are brownish with whitish petals and labellum. The leaves are beautifully velvet-like, dark red-green and transversed by a delicate rose-red net of veins. Cultivation of this plant is highly recommended on account of its large, broad leaves.

XVII. Vrydagzenia Bl.

1. Vrydagzenia celebica Schltr., sp. nov.

Terrestris, erecta, 10–20 cm alta; rhizomate decumbente, cauliniformi; radicibus flexuosis, villosulis; caule stricto vel substricto, tereti, glabro, praesertim inflorescentiam versus foliato; foliis 6–8, erecto-patentibus patentibusve, petiolatis, lamina oblique lanceolata, acuta vel acuminata basi subcuneata, utrinque glabra, 2,5–6 cm longa, infra medium 1,3–2 cm lata, petiolo basi dilataja vaginante, 1–1,5 cm longo; racemo dense 10–20-floro, oblongoideo, usque ad 2,5 cm longo, c. 1 cm diametiente; bracteis lanceolatis, acuminatis, inferioribus ovarium superantibus, superioribus sensim paulo minoribus; floribus illis V. albostriatae Schltr. haud dissimilibus, erecto-patentibus; sepalis ligulatis, apice rhombo-incrassatis, basin versus sparsim pilosulis, caeterum glabris, c. 5,5 mm longis, lateralibus obliquis, basi margine anteriore dilatatis; petalis e basi breviter unguiculata oblique lanceolato-ligulatis, obtusis, glabris, basi margine anteriore sublobato-dilatatis, sepalo intermedio paulo brevioribus; labello rhombo-ovali, obtuso, glabro, marginibus incurvulis, petalis fere aequilongo, medio fere c. 2 mm lato, calcare subclavato-oblongoideo, apice subexciso, c. 5 mm longo; columna basin versus distincte angustata, processibus frontalibus divergentibus apice subquadratis, rostello aequilongis; anthera subreniformi-cucullata, umbonata, glabra; ovario cylindraceo, glabro, c. 0,8 cm longo.

Celebes: In humus of the primary forests, near the old goldmines on [Mount] Djangdjang (Toli-Toli district), alt. c. 180m - R.Schlechter no. 20659, flowering in Jan. 1909 [1910].

Amongst the previously known species, the present one is best compared with V. albostriata Schltr. In habit, as well as in the colouring of the leaves and flowers, both species have similarities, but differ in the shape of the floral segments.

2. Vrydagzenia obliqua Schltr., sp. nov.

Terrestris, erecta, 14–18 cm alta; rhizomate decumbente, cauliniformi; radicibus flexuosis, villosulis, caule tereti, glabro alte foliato, supra vaginulis paucis, bracteiformibus obsesso; foliis erecto-patentibus, petiolatis, c. 6, lamina bene obliqua elliptica, acuminata, basi plus minus cuneata, utrinque glabra, 4–6,5 cm longa, medio fere 1,6–2,3 cm lata, petiolo basi dilatata vaginante, glabro, 1,4–2 cm longo; racemo breviter pedunculato, dense 20–30-floro, cylindraceo, usque ad 3 cm longo, c. 1,3 cm diametro; bracteis erecto-patentibus, oblongis, apiculatis, inferioribus interdum florum longitudine, superioribus sensim brevioribus; floribus erecto-patentibus, illis *V. albidae* Bl. similibus, et fere aequimagnis; sepalis lanceolato-ligulatis, apice incrassatis, glabris, c. 0,6 cm longis, lateralibus basi margine anteriore paulo dilatatis, obliquis; petalis oblique lanceolato-ligulatis obtusis, infra medium margine anteriore subdilatatis, glabris, apicem versus paulo incrassatis, sepalo intermedio paulo sed distincte brevioribus, basi haud unguiculatis; labelli lamina circuitu ovata, marginibus incurvulis obtusiusculae acutata, per medium fascia leviter incrassata, minutissime puberula donata, caeterum glabra, petalis aequi-longa, infra medium c. 2,5 mm lata, calcare subclavato-cylindraceo, obtuso, glabro, c. 0,5 cm longo; columna brevi, facie subquadrato-rhombea, processibus frontalibus suberectis, apice subrhombico-triangulis, obtusiusculis, rostellum subexcedentibus; anthera ovato-cucullata, obtusa, basi cordata, umbone oblongo donata; ovario cylindraceo, glabro, c. 0,8 cm longo.

Celebes : In humus of the mountain forests near Toli-Toli, alt. c. 500m – R. Schlechter no. 20907, flowering in Jan. 1910. [possibly no. 20709].

This species is reminiscent of *V. albida* Bl., both in habit and colouring. However, it is readily distinguished in the floral segments.

XVIII. *Corymbis* Bl.1. *Corymbis exaltata* Schltr., sp. nov.

Terrestris, valida, fruticosa, 2–2,50 m alta, pluricaulis; caulis basi vaginis urce et alte amplectentibus obtectis, supra bene foliatis, vaginis foliorum vestitis, usque 1 cm diametentibus; foliis erecto-patentibus ellipticis, acuminatis, basi cuneatis, superne glabratis, subtus subinconspicue squamellis sparsis ornatis, 11–13-nerviis, lamina 50–70 cm longa, medio fero 6–9 cm lata; paniculis axillaribus, distiche ramosis, quam folia multo brevioribus, ramis divaricatis, sensim decrescentibus, rhachi flexuosa, subdense pluriflora; bracteis erecto-patentibus ovato-lanceolatis, acuminatis, ovario plus minus brevioribus; floribus niveis, erecto-patentibus, glabris; sepalis e basi linearis-unguiculata in laminam lanceolatam, subacutam dilatatis, c. 3 cm longis, lamina, c. 0,4 cm medio lata, lateralibus falcato-obliquis, cum lamina paulo minore; petalis sepalis similibus lamina tamen obliqua et latiore, acuta vel subacuminata, margine leviter undulata, sepalis subaequilongis; labello e ungue basin versus dilatata columnam leviter amplectente, 1,8 cm longo, antice in laminam suborbiculari subcuspidato-apiculatam, margine leviter undulatam 1,2 cm longam dilatato, carinis 2 e ungue in basin laminae decurrentibus ibique margines versus divaricatis; columna gracillima, glabra, apicem versus paulo dilatata, 2,4 cm longa, rostello triangulo, exciso, brevi; anthera oblonga, obtusa, glabra; polliniis clavatis, cum stipite breviore glandulæ oblongo-quadratae ampliæ affixis; ovario cylindraceo, gracili, c. 1,7 cm longo.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 700m – R. Schlechter no. 20544, flowering in Dec. 1909.

This is by far the tallest of all species known to date. The specimens I

have observed measured up to 2.5m tall. The flowers are pure white.

XIX. Diglyphosa Bl.

1. Diglyphosa latifolia Bl., Bijdr. (1825), 337, f. 60.

var. celebica Schltr., var. nov.

Differt a forma typica inflorescentia laxiore et labello magis pandurato.

Celebes : In humus of the forests on the mountains near Toli-Toli, alt. c. 800m - R. Schlechter no. 20720, flowering in Jan. 1910.

A closer examination of the flowers showed that it had too many similarities to Blume's species for me to risk declaring it as the Type of a separate species. Later on it may be proven that some of the characters now appearing to be significant within the group are important, when the plant could be considered as a separate species. The flowers were brown with a yellowish lip.

XX. Nephelaphyllum Bl.

1. Nephelaphyllum, sp. nov.?

Celebes : In humus of the forests on the upper Lampasioe [River] (Toli-Toli district), alt. c. 180m - R. Schlechter no. 20665, fruiting in Jan. 1910.

Unfortunately, only specimens in fruit were available of the species, which, in habit, is intermediate between N. cordifolium Lindl. and N. pulchrum Bl.

XXI. Coelogyne Lindl.

1. Coelogyne rhizomatosa J.J.Sm., in Rec. Trav. Botan. Néerl., II (1905), p. 141.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20430, flowering in Nov. 1911 [1909].

The plant can be met with frequently in the ranges of the Minahassa [district] from an altitude of c. 1000m up to 1400m. It often forms large, globular bushes on the branches of larger trees.

2. Coelogyne Sarasinorum Krzl., in Engl. Pflanzenr., IV, 50, II. B. 7 (1907), p. 29, fig. 7.

Celebes : On trees near Kakaskassen, not far from Tomohon (Minahassa), alt. c. 800m - R. Schlechter no. 20406, flowering in Oct. [Nov.] 1909.

The illustration of the labellum made by Kränzlin differs appreciably from my observations. The isthmus of the front lobe is much too long and the front lobe not as round, rather longer and more square. For the colouration I noted : Sepals and petals whitish green, labellum with brown markings, column yellow uppermost.

3. Coelogyne caloglossa Schltr., sp. nov.

Epiphytica, erecta, elata, usque ad 60 cm alta; rhizomate abbreviato, dense pseudobulbis obsesso; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis e basi incrassata apicem versus cylindraceoangustatis, apice 2-foliatis, c. 13 cm longis, supra basin c. 1,5 cm diametentibus; foliis erecto-patentibus elliptico-lanceolatis, 40—50 cm longis, medio fere 4—6 cm latis, basin versus sensim subpetiolato-angustatis; scapis cum foliis bene evolutis synanthis, gracillimis, denum folia superantibus; pedunculo tereti, glabro, evaginulato, racemo laxe 6—12-floro, usque ad 25 cm longo, rhachi flexuosa; bracteis lanceolatis, acuminatis, caducis, ovarium bene superantibus; floribus in genere permagnis, speciosis, more sectionis succedaneis; illis *C. Beccarii* Rchb. f. similibus, sed majoribus; sepalis oblongis, subacutis, basi concavis, glabris, extus nervo-medio carinato-incrassatis, 5 cm longis, medio vel infra medium c. 1,3 cm latis, lateralibus obliquis; petalis anguste linearibus obtusiusculis, glabris, sepalo intermedio paulo brevioribus; labello e basi lateovali e medio trilobo, lobis lateralibus oblique quadratis, obtusissimis, istum lobi intermedii vix excedentibus, lobo intermedio e istmo brevi quadrato, in laminam suborbiculari obtusam, margine irregularem, 1,5 cm longam, medio 1,7 cm latam expanso, labello toto c. 4,5 cm longo, supra medium c. 3,2 cm lato, carinis 2, breviter cristatis e basi usque in medium lobi intermedii decurrentibus, carina parvula simili in basi labelli interjecta; columna leviter arcuata, semitereti, gracili, c. 4 cm longa, apicem versus valde dilatata, testudiniformi, subquadrata, margine minute crenulata; anthera cucullata, umbonata; ovario cum pedicello, glabro, subclavato, c. 2 cm longo.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 1000m

- R. Schlechter no. 20571, flowering in Dec. 1909.

Amongst all species, even those of the section Speciosae, the present one is distinguished by the size of the flowers. It should be considered as the closest relative of *C. Beccarii* Rchb.f. from New Guinea, but is well distinguished by the labellum. This species is one of the most beautiful of the Coelogyne and it is to be hoped that it will soon find its way into European gardens.

4. Coelogyne chlorophaea Schltr., sp. nov.

Epiphytica, erecta, usque ad 26 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis conicis vel cylindraceo-conicis, 4-angulatis, bifoliatis, 3—7 cm longis, supra basin 1—1,8 cm diametentibus; foliis erecto-patentibus, elliptico-lanceolatis, acuminatis, basin versus sensim subpetiolato-angustatis, utrinque glabris, 13—20 cm longis, medio fere 2—5 cm latis; scapis cum foliis nondum evolutis synanthis, patulis, laxe 2—6-floris, foliis evolutis fere aequilongis, evaginulatis; floribus erecto-patentibus, illis *C. chloropterae* Rchb. f. similibus; bracteis ovalibus, apiculatis, ovarium breviorem superantibus, caducis; sepalo intermedio ovato, apiculato, extus carinato, c. 2 cm longo, lateralibus oblique lanceolatis, apiculatis, glabris, extus carinatis, intermedio aequilongis; petalis linearibus, obtusiusculis, supra basin paululo dilatatis, obliquis, glabris, 1,9 cm longis; labello circuitu late ovali, e medio trilobo, lobis lateralibus rotundatis, minute crenulatis, brevibus, intermedio bene majore, suborbiculari, obtuso, margine undulato, c. 0,7 cm longo, labello toto glabro, 1,5 cm longo, medio fere 0,6 cm lato; columna semitereti, glabra, leviter arcuata, juxta stigma paululo dilatata, clinandrio obscure trilobulato, lobulo dorsali ampio apiculato, c. 1 cm longa; anthera cucullata, glabra, apice breviter emarginata; ovario cum pedicello glabro, c. 1 cm longo, 6-costato, costis undulatis.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c.

1200m - R. Schlechter no. 20420, flowering in Oct. 1909.

The present species belongs to the section Lentiginosae and should be placed there close to C. chloroptera Rchb.f. The labellum distinguishes it from its relatives. A good characteristic of C. chlorophaea Schltr. also is shown by the markedly undulate ridges of the ovary. The green flowers have a lip with brown markings and with white crests in front.

5. Coelogyne multiflora Schltr., sp. nov.

Epiphytica, erecta, valida, usque ad 75 cm alta, habitu C. asperatae Ldl. similis; rhizomate valde abbreviato: radicibus crassiusculis, flexuosis, villosulis, demum glabratris; pseudobulbis valde approximatis, oblongoideis, paulo compressis, longitudinaliter sulcatis, bifoliatis, c. 15 cm altis, infra medium vel medio 3–3,5 cm latis; foliis erecto-patentibus, lanceolato-ellipticis, acutatis, basi in petiolum 7–9 cm longum sensim angustatis, utrinque glabris, textura rigidulis, lamina 40–55 cm longis, medio fere 7–8 cm latis; scapis cum foliis juvenilibus synanthis, erectis, teretibus, squamulis brunneis tomentosulis, pedunculo pseudobulbi fere aequilongo evaginulato, racemo dense multifloro, cylindrico usque ad 25 cm longo, c. 5 cm diametente; bracteis, patulis, persistentibus, lanceolatis, acuminatis, ovario pedicellato fere aequilongis, floribus in genere inter minores, erecto-patentibus patentibusve, extus sparsim brunneo-lepidotis; sepalo intermedio ovali, obtusiusculo, 1,3 cm longo, lateralibus oblique oblongis, subacutis, intermedio aequilongis; petalis oblique linearili-gulatis, obtusiusculis, glabris, basi paululo angustatis; labello e ungue brevi sigmoideo-fexo late cuneato, infra medium trilobato, lobis lateralibus divergenti-erectis, oblique oblongis obtusis, intermedio multo majore subquadrato. antice exciso, marginibus bene undulato, c. 0,7 cm longo, medio fere 0,6 cm lato, labello toto glabro, cristis 3 papilliferis parallelis e basi, lateralibus usque supra medium lobi intermedii decurrentibus, in lobo intermedio duabus brevibus auctis, intermedia paulo breviore usque infra medium lobi intermedii, labello toto 1,2 cm longo, inter apices loborum lateralium (expansorum) 1,3 cm lato; columna semitereti, glabra, c. 6,5 mm longa, clinandrio paulo ampliato, trilobulato, lobulo dorsali majore exciso; stigmate alte marginato, subtubuloso vel potius poculiformi; ovario pedicellato, gracili, squamellis brunneis dense lepidoto-tomentosulo, pedicello inclusu c. 2 cm longo.

Celebes : On old primary forest trees at the summit of Mount Mahawo (Minahassa), alt. c. 1200m – R. Schlechter no. 20513, flowering in Dec. 1909.

A peculiar plant, which does not fit into any of the previously known sections of the genus and which differs from these in many aspects, so that I am obliged to make it the Type of a separate sub-genus Cyathogyne. The inflorescence is reminiscent of the American genus Coelia. The cup-shaped, tall-margined stigma is very noticeable. The base of the lip is tortuous, exactly as for C. flexuosa Rolfe. The whole plant with its dense inflorescences of white flowers and brown-marked labellum presents an extremely stately appearance.

XXII. Dendrochilum Bl.

1. Dendrochilum macropterum Krzl., in Engl. Pflanzenr., IV, 50, II. B., 7 (1907), p. 99.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c.

1200m - R. Schlechter no. 20415, flowering in Oct. 1909.

This is the most common Dendrochilum species in the Minahassa [district]. The very large stelidia of the column are most conspicuous. The flowers are white, the labellum reddish towards the base, the anther orange-red.

2. Dendrochilum macrobulbon Krzl., in Engl. Pflanzenr., IV, 50, II. B., 7 (1907), p. 108.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20434, flowering in Nov. 1909.

XXIII. Pholidota Lindl.

1. Pholidota celebica Schltr., sp. nov.

Epiphytica, patula, ramosa, usque ad 40 cm longa; rhizomate crassiusculo, sensim elongato, vaginis amplis rigidulis obtecto; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis cylindraceo-conicis, teretibus, demum rugulosis, bifoliatis; foliis erecto-patentibus erectisve, linear-ligulatis, acutis, basin versus sensim subpetiolato-angustatis, usque ad 20 cm longis, medio fere 0,8-1,1 cm latis; scapis gracillimis, cum foliis juvenilibus synanthis, arcuatis, folia matura bene superantibus, pedunculo evaginulato, racemo ipso fere aequilongo; racemo elongato laxe 15-25-floro, usque ad 18 cm longo; bracteis caducis; floribus parvulis, illis P. torricellensis Schltr. similibus, glabris; sepalo intermedio late ovali, obtuso, vix 2,5 mm longitudine superante, lateralibus lanceolatis, acutis, concavis, dorso alte carinatis, intermedio aequilongis; petalis oblique ovalibus, obtusis, margine leviter undulatis, 0,2 cm longis; labello late ovali-rhombeo, basi concavo, antice obtuso, marginibus supra medium paulo recurvis, intus nervis 3 incrassatis e basi usque supra medium ornato, infra apicem callis 2 V-formiter divergentibus, parvulis praedito, sepallis paulo breviore, medio fere 0,2 cm lato; columna perbrevi; ovario cylindraceo, glabro, 0,4 cm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c.

1200m - R. Schlechter no. 20472, fruiting in Nov. 1909.

Unfortunately, the specimens that I found were already much in fruit, but I managed, nevertheless, to reconstruct the flower. However, it will be necessary to complete the gaps in the description when better specimens arrive. The species belongs to the section Crinonia and is related to P. torricellensis Schltr. from New Guinea.

2. Pholidota imbricata Lindl., in Hk., Fl. Exot., t. 138.

var. platyphylla Schltr., var. nov.

Differ a forma typica foliis subsessilibus, vulgo latioribus, usque ad 8cm latis, bracteis amplis, perlatis, floribusque majoribus, labelli lobis anterioribus amplis, suborbiculari-quadratis.

Celebes : On trees in the forests at the foot of Mount Lokon and Mount Empung, alt. c. 1000m - R. Schlechter no. 20442, flowering in Nov. 1909.

This variety gives almost the impression of being different from Pholidota imbricata Lindl., but, nevertheless, I could not find sufficient evidence for

establishing a separate species.

3. Pholidota Minahassae Schltr., sp. nov.

Epiphytica, dependens, ramosa, usque ad 50 cm longa; rhizomate cum pseudobulbis connato, elongato; radicibus filiformibus, elongatis, flexuosis, glabratris; pseudobulbis superpositis, cylindraceis, teretiusculis, vulgo plus minusve quadrangularibus, bifoliatis, 7—9 cm longis, 0,7—0,9 cm diametentibus, foliis erecto-patentibus, ellipticis, breviter acuminatis, basi cuneatis, breviter petiolatis, lamina 7—11 cm longa, medio fere 2,7—4,2 cm lata, petiolo sulcato, 0,5—0,8 cm longo; racemis cum foliis jam bene evolutis synanthis, arcuato-patulis, breviter pedunculatis, folia vulgo superantibus, distichis, sublaxe 12—16-floris; bracteis caducis, suborbicularibus, obtusis, ovario longioribus, florem basi amplectentibus; floribus illis *P. articulatae* Ldl. similibus, sed paulo majoribus; sepalis ovato-oblongis, obtusiusculis, concavis, 0,8 cm longis, extus nervo medio carinato-incrassatis, lateralibus obliquis, intermedio paululo angustioribus; petalis oblique oblongo-ligulatis, obtusiuscula apiculatis, glabris, extus nervo medio incrassatis, 0,7 cm longis; labello porrecto, hypochilio ovali, subcucullato-concavo, intus lineis 5 incrassatis usque ad istum ornatis, antice contracto, istmo brevi marginibus incurvulis, epichilio decurvulo, in laminam late reniformem antice emarginatam cum apiculo minuto expanso, labello toto glabro, hypochilio 0,6 cm longo, medio fere 0,4 cm lato, epichilio 0,3 cm longo, 0,5 cm lato, margine subundulato; columna brevi, bene lata, hypochilio plus duplo breviore, clinandrio leviter trilobato, lobulo intermedio majore rotundato, rostellum erecto, lanceolato, acuminato; anthera cucullata, antice tridentata, dente intermedio lateralibus multo majore; ovario cum pedicello clavato, glabro, c. 0,6 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m — R. Schlechter no. 20453, flowering in Nov. 1909; on trees on the hills near Lansot (Minahassa), alt. c. 700m — R. Schlechter no. 20627, flowering in Dec. 1909.

After a precise comparison of this species with the Indian *P. articulata* Lindl., I have described it as new, since it exhibits several differences which point to a separation, such as broader leaves, the larger flowers, the epichile protruding downwards (not parallel to the hypochile as in *P. articulata* Lindl.), the shorter column, the fewer-toothed clinandrium; and the rostellum longer and more pointed. The flowers are yellowish white, the labellum has five golden-yellow ridges and a yellow spot on the isthmus.

XXIV. Oberonia Lindl.

1. Oberonia hastata Schltr., sp. nov.

Epiphytica, dependens, pluricaulis, usque ad 30 cm longa; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis elongatis, flexuosis, laxe 5—8-foliatis, ancipitibus, basibus foliorum omnino absconditis; foliis ligulato-falcatis, acuminatis, parte libera usque ad 9 cm longis, basi 0,7—0,8 cm latis; racemo dense multifloro, usque supra basin florifero, cylindrico, usque ad 10 cm longo, c. 1 cm diametente; bracteis circuitu lanceolatis, acuminatis, ovario aequilongis, erecto-patentibus, marginibus alte pectinato-laceratis; floribus minutis, erecto-patentibus, pallide flavidis; sepalis oblongis, obtusis, glabris, 1,25 mm longis, lateralibus obliquis, intermedio paulo latioribus; petalis oblique rhomboe-ligulatis, obtusis, supra medium paulo dilatatis, glabris, sepalis subaequilongis; labello hastato, e basi lata mox apicem versus angustato, apice obtusissimo, subtridentato, glabro, petalis aequilongo,

basi vix 0,75 mm lato; columna brevi, crassiuscula; anthera reniformi-cucullata, glabra; ovario cum pedicello subclavato, sparsim papilloso, c. 1,5 mm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 800m - R. Schlechter no. 20516, flowering in Dec. 1909.

This species belongs to the affinity of O. monstruosa Lindl. from Java and similar forms of the Papuasian flora, thus to section Platystreptus of the subgenus Menophyllum that I established. It is characterised by the shape of the lip. As for nearly all the other species of the section, the flowers are of a pallid yellow colour.

2. Oberonia exaltata Schltr., sp. nov.

Epiphytica, erecta vel patula, pro genere valida, usque ad 60 cm longa; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis erectis, dense 10—14-foliatis, omnino basibus foliorum absconditis; foliis erecto-patentibus, oblique lanceolatis, acutis vel subacutis, parte libera usque ad 12 cm longis, basi 1,2—1,4 cm latis; spica perlonga, usque supra basin florifera, dense multiflora, cylindrica, usque ad 30 cm longa, 0,9—1 cm diametente; bracteis lanceolatis, acuminatis, hispido-villosulis, ovario brevioribus; floribus patentibus, in genere mediocribus, aurantiacis; sepalis late ovatis, obtusis, extus muriculato-papilloso, vix 1,25 mm longitudine excedentibus, lateralibus obliquis; petalis oblique ovato-ligulatis, obtusis, margine irregularibus, glabris, sepalis paulo brevioribus; labello e basi breviter auriculata quadrato, dimidio anteriore dilatato, antice bilobato-exciso, sepalis fere aequilongo, supra medium 0,1 cm lato; columna brevi, crassiuscula, anthera reniformi-cucullata, glabra; ovario cum pedicello hispidulo, 2,5—3 mm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20494, flowering in Nov. 1909.

This species is conspicuous in the genus by its height and robust growth. It belongs to the section Platyacon, of a preponderantly Papuasian group, where, however, the majority of species is distinguished by a reduction in the length of the stems, even though complete absence of stem does not occur in the section. The flowers of O. exaltata Schltr. are orange-yellow.

3. Oberonia masarangica Schltr., sp. nov.

Epiphytica, erecta, pluricaulis, habitu O. glandulosam Ldl. in mentem revocante; rhizomato valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis strictis vel subflexuosis, dense 8—12-foliatis, omnino basibus foliorum absconditis; foliis erecto-patentibus, linear-lanceolatis, subfalcatis, acutis vel acuminatis, parte libera usque ad 7 cm longis, basi 0,4—0,7 cm latis; racemo erecto, gracili, usque supra basin florifero, dense multifloro, apicem versus saepius sterili, usque ad 12 cm longo, 0,5 cm diametente; bracteis ovato-lanceolatis, cuspidatis, margine lacerato-incisis, dorso papilloso-muriculatis, ovario subaequilongis; floribus patentibus, virescenti-flavidis, interdum subbrunnescentibus; sepalis late ovalibus, obtusis, glabris, vix 0,1 cm longis, lateralibus obliquis; petalis oblique ligulatis, obtusis, sepalis paulo brevioribus; labello e basi auriculata subpandurato, antice dilatato, bilobato, lobis brevibus rhomboe-rotundatis, margine exteriori subdentatis, labello toto glabro, sepalis paulo

majore, antice vix 0,7 cm lato; columna brevi, crassiuscula; anthera reniformi-cucullata, obtusa, glabra; ovario cum pedicello papilloso, puberulo, c. 2,5 mm longo.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c.

1200m - R. Schlechter no. 20419, flowering in Nov. 1901 [1909].

A species of the small section Adenorhachis which has been identified from the East African islands as far as the Tonga and Fiji Islands in the Pacific Ocean, in numerous areas. This species is easily recognised by the glabrous sepals and the barely-toothed lip.

4. Oberonia pleistophylla Schltr., sp. nov.

Epiphytica, erecta vel patula, elata, pluricaulis; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis strictis vel substrictis, dense 10—18-foliatis, basibus foliorum omnino absconditis; foliis erectis vel suberectis, anguste falcato-lanceolatis, valde acutis, parte libera usque ad 5 cm longa, basi 0,5—0,8 cm lata; spica erecta, dense multiflora, usque supra basin florifera, cylindrica, 6—10 cm longa, c. 0,6 cm diametente, bracteis ovalibus cuspidatis, margine laceratis, ovarium aequantibus vel paulo superantibus; floribus patentibus, virescentibus; sepalis ovato-oblongis, subacutis, glabris, 0,75 mm longis, lateralibus obliquis; petalis lineari-ligulatis, obtusiusculis, glabris, obliquis, sepalis paulo brevioribus; labello e basi cordato-auriculata oblongo-quadrato, medio vix angustato, antice leviter exciso, marginibus dimidio anteriore serrato-denticulatis, labello toto glabro, sepalis vix longiore, basi 0,6 cm lato, antice 0,5 cm lato; columna perbrevi, crassiuscula, glabra; anthera reniformi-cucullata, glabra; ovario cum pedicello 0,2 cm longo, costis papilloso-puberulis.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c.

1200m - R. Schlechter no. 20421, flowering in Oct. 1909.

Likewise, a species of the section Adenorhachis, which is unusual in that the otherwise so characteristic covering by papillae is restricted to the seams of the ridges on the ovary. The long stems with their large number of leaves are an easily recognised feature of the species.

5. Oberonia celebica Schltr., sp. nov.

Epiphytica, erecta, gracilis 12—16 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis subflexuosis, sublaxe 5—6-foliatis, basibus foliorum omnino absconditis; foliis erectis vel suberectis, linearibus, falcatis, valde acutis, parte libera usque ad 7 cm longa, basi 3,5—4 mm lata; racemis gracilibus, dense multifloris, elongatis, usque ad 9 cm longis, c. 0,3 cm diametentibus, usque supra basin floriferis; bracteis lanceolato-triangulis, acuminatis, extus sparsim granuloso-punctatis, ovario fere acquilongis; floribus patentibus subverticellatim approximatis, flavescenti-brunneis; sepalis ovalibus, obtusiusculis, extus sparsim granuloso-punctatis, 1,25 mm longis, lateralibus obliquis, intermedio paulo latioribus; petalis oblique oblongo-ligulatis, obtusis, glabris, margine irregularibus, basin versus paululo dilatatis sepalis paulo brevioribus; labello e basi auriculato-emarginata late ligulato, tertia parte anteriore bilobato, lobis vix divergentibus, oblongis, obtusis, margine obscure paudentatis, apiculo minuto interjecto, labello toto glabro, lobis inclusis 1,75 mm longo, basi 0,75 mm lato, inter apices loborum 0,75 cm lato, medio 0,50 mm lato; columna perbrevi, crassius-

cula, glabra; anthera roniformi-cucullata, glabra; ovario cum pedicello glabro, 0,2 cm longo.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20474, flowering in Nov. 1909.

A species of the large section *Otoglossum*, which is closely related to several Papuan types. The colouring of the flowers is yellow-green.

6. *Oberonia rhizophoreti* Schltr., sp. nov.

Epiphytica, erecta, subacaulis, usque ad 16 cm alta; rhizomate valde abbreviato; radicibus filiformibus elongatis, flexuosis, glabris; caule subnullo; foliis c. 4—5, inaequilongis, imbricantibus, usque ad 12 cm longis, medio 0,5—0,7 cm latis, basin versus paulo angustatis, linearifalcatis, acutis; racemis usque supra basin floriferis, perdense multifloris, cylindraceis, folia paulo superantibus, c. 0,4 cm diametentibus: bracteis lanceolatis, acuminatis, margine minute serrato-dentatis, ovario aequilongis vel paulo longioribus; floribus subverticellatim approximatis, patentibus, aurantiacis; sepalis ovalibus, obtusiusculis, extus minute papilloso-granulosis, vix 0,5 mm longitudine excedentibus, lateralibus obliquis; petalis circuitu rhomboe-ovalibus, basi cuneata excepta grosse inciso-dentatis, glabris, sepalis haud minoribus; labello e basi auriculato-emarginata trilobo, lobis lateralibus divergentibus, circuitu semiorbiculatis, margine grosse et alte inciso-dentatis, lobo intermedio lateralia conspicue superante oblongo-ligulato, tertia parte anteriore forcipato-bifido cum apiculo interjecto, segmentis linearifalcatis, acutis, labello toto glabro, 0,75 mm longo, supra basin inter apices loborum lateralium 0,75 mm lato; columna brevi, crassiuscula, glabra; ovario cum pedicello glabro, vix 1,5 mm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli at the beach - R. Schlechter no. 20645, flowering in Jan. 1910.

This species, characterised by its labellum, could be considered as the Type of a separate section. It belongs to the sub-genus *Menophyllum*.

7. *Oberonia vulcanica* Schltr., sp. nov.

Epiphytica, brevicaulis, parvula, c. 13 cm alta; rhizomate valde abbreviato; radicibus filiformibus elongatis, flexuosis, glabris; caule abbreviato, dense c. 6-foliato, vaginis foliorum omnino abscondito; foliis erecto-patentibus, articulatis, falcato-linearibus, acutis, lamina 4—6 cm longis, basi c. 0,3 cm latis; racemo gracili, subdense multifloro, elongato, folia fere duplo superante, breviter pedunculato; bracteis lanceolatis, acuminatis, margine irregularibus, glabris, ovario fere aequilongis; floribus subverticellatim approximatis, patentibus; sepalо intermedio oblongo, obtuso, glabro, vix 0,5 mm longo, lateralibus late ovatis, obtusiusculis, glabris, obliquis, intermedio aquilongis; petalis oblique elliptico-ligulatis, obtusiusculis, glabris, margine subirregularibus, sepalis paululo brevioribus; labello e basi subemarginato-truncata, quadrata infra medium trilobo, glabro, c. 0,75 mm longo, inter apices loborum lateralium 0,50 mm lato, lobis lateralibus patentibus, oblique trapezoideis, leviter undulato-crenulatis, apice (i. e. angulo anteriore) triangulis, obtusiusculis, lobo intermedio cuneato, usque ad medium bilobulato, 0,50 mm longo, lobulis leviter divergentibus, oblongo-ligulatis, obtusis, denticulo interjecto; columna brevi, crassiuscula, glabra; anthera subreniformi-cucullata, glabra; ovario cum pedicello glabro, c. 1,5 mm longo.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20509, flowering in Dec. 1909.

Whilst all Oberonia species described above belong to the sub-genus Menophyllum, we have in O. vulcanica Schltr. and the two species following, three species of the sub-genus Apotemnophyllum, which all appear to belong to the same section. In the foreseeable future, I hope to be able to investigate this sub-genus more fully, thus I omit giving the new section a name. The flowers of this species are fox-brown.

8. Oberonia tomohonensis Schltr., sp. nov.

Epiphytica, erecta, subacaulis, 20-30 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis valde abbreviatis, c. 6-foliatis, basibus foliorum omnino absconditis; foliis erecto-patentibus, articulatis, lanceolato-ligulatis, valde acutis, subfalcato-obliquis, lamina usque ad 15 cm longa, basi 0,7-1,1 cm lata; racemo erecto, dense multifloro, elongato, cylindrico, folia plus minus excedente, breviter pedunculato; bracteis lanceolatis, acuminatis, margine irregularibus, subdentalis, ovarium paulo superantibus; floribus verticellatim approximatis, patentibus; sepalis reflexis, ovalibus, obtusis, glabris, c. 1,25 mm longis, lateralibus obliquis; petalis oblique ovalibus, obtusis, margine irregulariter et obtuse dentatis, sepalis paululo brevioribus; labello e basi subauriculato-emarginata subquadrato, infra medium trilobo, c. 1,25 cm longo, inter apices loborum 1,25 mm lato, lobis lateralibus oblique triangulis, acutiusculis, margine irregularibus, lobo intermedio e istmo brevi in laminam circuitu subreniformem antice trilobulatam expanso, 0,75 mm longo, antice 0,50 mm lato, lobulis lateralibus falcato-lanceolatis, acutis, forcipiformi-convergentibus, intermedio obtuso, abbreviato majoribus; columna brevi, crassiuscula, glabra; ovario cum pedicello glabro, c. 0,2 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20636, flowering in Dec. 1909.

The species is well characterised by the shape of the lip, in particular the middle lobe. In habit it is similar to O. mahawoensis Schltr., and has, in common, the yellowish flowers.

9. Oberonia mahawoensis Schltr., sp. nov.

Epiphytica, erecta, subacaulis, 15-20 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis valde abbreviatis, 4-5-foliatis, basibus foliorum omnino absconditis; foliis erecto-patentibus, articulatis, linear-lanceolatis, acutis vel acuminatis, subfalcato-obliquis, lamina usque ad 16 cm longa, basi 0,7-1,3 cm lata; racemo vulgo arcuato, dense multifloro, cylindraceo, breviter pedunculata, folia vulgo plus minusve superante; bracteis lanceolatis, acuminatis, glabris, margine subdentalis, ovario fere aequilongis; floribus subverticellatim approximatis, virescenti-flavidis; sepalis ovatis, obtusis, glabris, c. 1,25 mm longis, lateralibus obliquis; petalis oblique ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello e basi subcordato-auriculata subreniformi, e medio trilobo, lobis lateralibus rotundatis, subobsoletis, hinc et inde subdentalis, intermedio late cuneato, antice usque supra medium bilobulato, lobulis oblique oblongo-quadratis, apice excisis, subdivergentibus apiculo interjecto, labello toto glabro, lobulis anterioribus inclusis 0,2 cm longo, basi 1,25 mm lato, antice 1 mm lato; columna brevi, crassiuscula, glabra; anthera ovato-cucullata, glabra; ovario cum pedicello glabro, c. 0,3 cm longo.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20487, flowering in Nov. 1909.

This species is distinguished in floral structure from the two species described above, by the reduced, non-tapered lateral lobes of the labellum. In habit, it is of more robust growth. A whole series of species belonging to this section occur in the Sunda Islands.

XXV. Hippeophyllum Schltr.

1. Hippeophyllum celebicum Schltr., sp. nov.

Epiphyticum, humile, usque ad 40 cm altum; rhizomate elongato, ramoso, tereti, vaginis brevibus amplectentibus obtecto; caulis subnullis, 4—5-foliatis, basibus foliorum omnino absconditis, 2—3 cm distantibus; foliis articulatis, erectis vel suberectis, inaequifloris, subfalcato-obliquis, linearibus, acutis, lamina usque ad 20 cm longa, basi 0,4—0,6 cm lata; racemis gracilibus, erectis, dense multifloris, elongatis, usque ad 30 cm longis, 0,8—0,9 cm diametentibus, usque supra basin floriferis; bracteis oblongis, subacutis, ovarium subduplo longius basi amplectentibus; floribus patentibus, flavidis; sepalis oblongis, obtusis, extus granuloso-papilloso, c. 1,75 mm longis, lateralibus obliquis; petalis oblique linear-ligulatis, obtusiusculis, apicem versus paululo dilatatis, sepalis subaequifloris; labello circuitu oblongo, e medio fere trilobo, glabro, petalis aequifloro, inter apices loborum lateralium 0,75 mm latitudine vix excedente, lobis lateralibus oblique lanceolatis, obtusiusculis, intermedio late rhomboeo, antice obtuse acuminato, 0,75 mm longo, infra medium 0,50 mm lato, callis 2 parvulis oblique conicis in basi labelli; columna semitereti, glabra, apices loborum lateralium haud attingente, apicem versus paululo ampliata; stigmate quadrato; anthera reniformi-cucullata, antice truncata; ovario cum pedicello subclavato, dense papilloso-puberulo, 0,3—0,4 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 1000m - R. Schlechter no. 20492, flowering in Nov. 1909; on trees near Lansot (Minahassa), alt. c. 700m - R. Schlechter no. 20628, flowering in Dec. 1909.

This species is related to H. Scortechinii (Hook.f.) Schltr. from Perak, but easily recognised by the longer and narrower leaves. It differs considerably from the Papuan H. micranthum Schltr. in the anther, as well as in habit.

XXVI. Liparis L.C. Rich.

1. Liparis fericola Schltr., sp. nov.

Epiphytica, erecta, 8—15 cm alta; rhizomate valde abbreviato; radicibus filiformibus elongatis, flexuosis, puberulis; pseudobulbis (i. e. caulis) ovoideis, lateraliter paulo compressis, unifoliatis, c. 2 cm altis, supra basin c. 1 cm diametro; folio petiolato, lamina ovata, acuminata, basi cordato-amplexicaule, utrinque glabra, 6—9 cm longa, infra medium 4—6,2 cm lata, petiolo scapum amplectente 2—3,5 cm longo; scapo cum folio juvenili synantho, erecto, leviter angulato, evaginulato, sub anthesi folio breviore demum fere aequifloro; racemo plurifloro (5—10), sensim elongato, usque ad 5 cm longo; bracteis ovato-deltoides..minutis, ovario multoties brevioribus; floribus in genere mediocribus, viridibus; sepalis ligulatis, obtusiusculis, recurvis, glabris, c. 0,6 cm longis, lateralibus obliquis, intermedio laterioribus, sublanceolatis; petalis linearibus, subacuteis, sepalis subaequifloris; labello cuneato-ovato, antice cuspidato-

apiculato, glabro, margine medio irregulari, basi callo lanceolato-triangulo, acuto, versus medium decurrente ornato, 0,5 cm longo, supra medium 0,3 cm lato; columna leviter arcuata, juxta stigma subalata, basi dilatata, labello duplo fere breviore, anthera subreniformi, obtusissima, glabra; ovario cum pedicello glabro, c. 0,8 cm longo.

Celebes : Epiphytic on my Ficus species bearing fruit, at the summit of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20476, flowering and fruiting in Nov. 1909.

The two specimens I collected grew on two different trees under the same peculiar circumstances, viz. at c. 1.5m height amongst convoluted groups of fruit of a Ficus species, between which some earth had either collected or was brought up by ants. The species belongs to the sub-genus Sturmia of that section of Old World species, which is characterised by only a single leaf on the stem and is designated as the section Phyllocardium. L. cordifolia Hook.f. is probably the closest relative of this species, which likewise has green flowers.

2. Liparis punctifera Schltr., sp. nov.

Terrestris, erecta, c. 17 cm alta; rhizomate abbreviate; radicibus filiformibus, elongatis, puberulis; caule tereti, glabro, basi vaginato, apicem versus 3-foliato, c. 5 cm alto, 0,4 cm diametente; foliis erecto-patentibus, petiolatis, oblique ellipticis, acuminatis, basi cuneatis, utrinque glabris, textura tenuibus, lamina 7—9 cm longa, medio fere 3—4,5 cm lata; petiolo basi caulem vaginante, 1—2 cm longo; scapo erecto, folia excedente, stricto vel substricto, pedunculo costato, glabro, racemo laxe plurifloro; bracteis parvulis, lanceolatis, acuminatis, ovario multoties brvioribus; floribus illis L. pectiniferae Ridl. similibus, erecto-patentibus; sepalis reflexis, glabris, intermedio lanceolato-ligulato, obtuso, c. 0,7 cm longo, lateralibus oblongis, obtusiusculis, falcato-obliquis, 5,5 mm longis; petalis deflexis, oblique linearibus, basin versus paulo angustatis, sepalo intermedio aequilongis, labello e basi oblonga dimidio anteriore sensim cuneato-dilatato, antice breviter bilobato, lobis circuitu rotundatis, alte pectinato-laceratis, labello toto glabro, 0,7 cm longo, supra basin 0,4 cm lato, antice 0,5 cm lato, callis 2 parvulis, semilunatis in basi; columna arcuata, apice dilatata, glabra, labello fere duplo breviore; ovario cum pedicello glabro, 6-costato, c. 1 cm longo.

Celebes : In humus in the mountain forests near Toli-Toli, alt. c. 700m - R. Schlechter no. 20718, flowering in Jan. 1910.

The species belongs to that small group of section Eu-Liparis of the sub-genus Sturmia which is characterised by the lacerated labellum. It is related to L. pectinifera Ridl. from the Malay Peninsula and from Java and to Liparis maboroensis Schltr. from New Guinea. Unfortunately, the tip of the inflorescence of my solitary specimen has been eaten away, so that I cannot give any indication of its length. I gave it the above species name because the labellum, in particular, on dying, exhibits many oval dots in front.

3. Liparis Minahassae J.J.Sm., in Icon. Bogor, VII (1900), p. 43, A. CIX.A.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c.

900m - R. Schlechter no. 20579, flowering in Dec. 1909; on trees in the forests of the mountain near Toli-Toli, alt. c. 900m - R. Schlechter no. 20719, flowering in Jan. 1910.

The species is related to L. latifolia Lindl. and L. pallida Lindl.

4. Liparis confusa J.J.Sm., Orch. Fl. Jav. (1905), p. 275, var.

Celebes : On trees near Tomohon (Minahassa), alt. c. 800m - R. Schlechter no. 20515, flowering in Dec. 1909; on trees in the forests of Mount Klabat (Minahassa), alt. c. 600m - R. Schlechter no. 20586, flowering in Dec. 1909.

I am not yet completely satisfied with the delimitation of this species.

5. Liparis minima Lindl., Gen. et Spec. Orch. (1830), p. 32.

Celebes : On trees in the mountain forests near Toli-Toli, alt. c. 700m - R. Schlechter no. 20723, flowering in Jan. 1910.

I consider this species completely different from L. caespitosa Lindl., whose area of distribution is probably restricted to the Mascarene [Islands] and Madagascar.

6. Liparis celebica Schltr., sp. nov.

Epiphytica, erecta, 25–35 cm alta; rhizomate longe decumbente, elongato, vaginis arce appressis obtecto, flexuoso; radicibus filiformibus, elongatis, flexuosis, glabratibus; pseudobulbis 4–6 cm distantibus, e basi subgloboso-incrassata angustatis, ancipitibus. 3,5–5 cm altis, basi c. 1 cm diametentibus, unifoliatis; folio erecto lineari-ligulato, acuto, basin versus paulo angustato, utrinque glabro, usque ad 30 cm longo, medio fere 1,3–2 cm lato; scapo ancipiti, gracili, folio-fere aequilongo, evaginulato, racemo dense multifloro, disticho, compresso, usque ad 3 cm longo; bracteis compressis, ovatis, acutis, dorso carinatis, ovario pedicellato plus duplo brevioribus; floribus erecto-patentibus vel patentibus, flavidio-brunneis; sepalis lanceolato-ligulatis, subacutis, reflexis, 0,6 cm longis, lateralibus obliquis; petalis reflexis, linearibus, acutis, glabris. sepalis subaequilongis; labello e basi genuflexo-decurva oblongo-quadrato, medio paulo angustato, antice bene dilatato, trilobulato, lobulis lateralibus oblongo-quadratis, obtusis, margine anteriore irregulari-subdentatis, divergentibus, intermedio multo breviore apiculato, labello toto c. 5,5 mm longo, supra basin 3,5 mm lato, inter apices lobulorum anteriorum 4 mm lato, basi callo amplio suborbiculari, obtuso, erecto ornato; columna pro sectione gracili, incurvula, juxta stigma ampliata, auriculis praemors-truncatis; anthera reniformi, obtusissima, glabra; ovario cum pedicello glabro, c. 1,2 cm longo.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20668, flowering in Nov. 1909. [cf., XXVI/7, date indicates no. 20468 may be correct].

This species is very closely related to L. mucronata Lindl. from Java, but on closer comparison it is seen that the lip of the flowers has considerable differences. Furthermore, the colour of the flowers is different, since for L. celebica Schltr. this is yellow-green.

7. Liparis quadribullata Schltr., sp. nov.

Epiphytica, erecta, 13–23 cm alta; rhizomate pro sectione breviore, decumbente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis lateraliter bene compressis, circuitu ovato-lanceolatis, unifoliatis, 1.7–2.2 cm altis, supra basin 0.5–0.7 cm latis, pro sectione approximatis; foliis linearibus, apiculatis, basin versus paulo angustatis, usque ad 20 cm longis, medio fere 0.5–0.7 cm latis; scapis gracilibus, erectis, ancipitibus, evaginulatis, foliis vulgo fere aequilongis; racemis distichis, compressis, dense 10–20-floris, erectis, usque ad 4 cm longis; bracteis subimbricantibus, bifariis, ovatis, apiculatis, compressis, dorso carinatis, ovario pedicellato duplo brevioribus; floribus erecto-patentibus, ochraceis; sepalis deflexis, oblongis, obtusiusculis, glabris, c. 5.5 mm longis, lateralibus obliquis; petalis erectis, lineari-subspathulatis, obtusis, glabris, sepalis paulo brevioribus, obliquis; labello e basi genuflexo-decurva quadrato, angulis 4-bullato, dimidio anteriore dense papilloso-punctato, antice emarginato cum lobulo obtuso interjecto, petalis aequilongo, antice vix 0.4 cm lato; columna subgloboso-pyramidalata, clinandrio contracta, petalis fere 3 plo breviore; anthera subreniformi, obtusa, glabra; ovario cum pedicello glabro, c. 1 cm longo.

Celebes : On trees in the forests on the upper Lampasioe [River], in the Toli-Toli district, alt. c. 150m – R. Schlechter no. 20668, flowering in Jan. 1910. [cf. no. XXVI/6].

A relative of L. gibbosa Finet, but completely different in habit and in the lip. A greater similarity to it is shown by the New Caledonian Liparis species of this affinity which I earlier designated as 'L. disticha', but which Finet later declared to be 'L. gibbosa'. That now has proven to be a separate species, differing in a reduced rhizome, broader pseudobulbs and leaves, more compact habit and completely different lip, and which herewith is reclassified as L. Finetiana Schltr.

XXVII. Microstylis Nutt.1. Microstylis trigonopetala J.J.Sm., in Naturk. Tijdschr. Néederl. Ind., LVIII (1898), p. 358.

Celebes : In humus in the forests of Mount Klabat (Minahassa), alt. c. 600m – R. Schlechter no. 20540, flowering in Dec. 1909.

A very peculiar species which is quite unique in the shape of the petals and the lip, and which I have made the Type of a separate section, Trigonopetalum, to follow Pseudo-Liparis.

2. Microstylis celebica Schltr., sp. nov.

Terrestris, erecta, 13–20 cm alta; rhizomate decumbente, cauliniformi; radicibus filiformibus, elongatis, flexuosis, puberulis; caule brevi, 4–5-foliat. tereti, vaginis foliorum obtecto; foliis erecto-patentibus, petiolatis, lamina oblique elliptica, acuta vel apiculata, basi subcuneata, utrinque glabra, 4.5–7 cm longa, medio vel infra medium 1.9–3 cm lata, petiolo; basi dilatata vaginante, 1.5–2.3 cm longo; scapo stricto vel substricto, folia superante, pedunculo angulato, glabro, racemo laxe vel subdense 10-multi-floro, usque ad 10 cm longo; bracteis patulis, linearibus, acuminatis, inferioribus ovarium superantibus, superioribus sensim brevioribus; floribus erecto-patentibus, in genere inter minores, glabris; sepalis intermedio oblongo, obtusiusculo, 0.3 cm longo, lateralibus obliquis

ovalibus, obtusis, intermedio paulo brevioribus, sed latioribus; petalis oblique lineariligulatis, obtusis, sepalis lateralibus aequilongis; labello basi alte auriculato, lamina e medio triloba, 2,5 mm longa, basi 3 mm lata, lobis lateratibus cum angulo exteriore abbreviato, obtusato, ad basin lobi intermedii dente brevi triangulo donatis, lobo intermedio triangulo obtuso, apice breviter exciso, laterales bene superante, fovea basilar oblonga, incrassato-marginata, auriculis basalibus falcato-oblongis, obtusis, subparallelis, 1,5 mm longis; columna brevi, crassiuscula; anthera subreniformi, glabra; ovario cum pedicello gracili, glabro, 0,6—0,7 cm longo.

Celebes : In humus of the forests of Mount Masarang (Minahassa), alt. c. 1200m — R. Schlechter no. 20467, flowering in Nov. 1909.

The species is recognised by the blunt auricles of the lip and the side lobes, with only a very short tooth. The leaves of the species are green, with two broad, brown margins, the flowers initially are yellow, turning later to reddish.

3. Microstylis lokonensis Schltr., sp. nov.

Terrestris, erecta, c. 13 cm alta; rhizomate brevi; radicibus filiformibus, elongatis, flexuosis, puberulis; caulis erectis, strictis, 7—9 cm altis, basi subnudis, apicem versus 4—5-foliatis, vaginis foliorum obssessis; foliis erecto-patentibus, petiolatis, lamina obliquo elliptica vel lanceolato-elliptica, acuminata, basi subcuneata, utrinque glabra, 4—9 cm longa, medio vel infra medium 1,5—2,2 cm lata, petiolo basi dilatata vaginante 1,5—2,5 cm longo; scapo stricto vel substricto, folia superante, pedunculo angulato, glabro; racemo laxius multifloro; bracteis erecto-patentibus, anguste lanceolatis, acuminatis, glabris, inferioribus flores superantibus, superioribus sensim brevioribus; floribus erecto-patentibus, flavis, glabris; sepalis oblongis, obtusis, 0,3 cm longis, lateralibus obliquis; petalis lineariligulatis, obtusiusculis, obliquis, sepalis subaequilongis; labello basi breviter auriculato, lamina e basi subreniformi supra medium triloba, 2,5 mm longa, supra basis 2,75 mm lata, lobis lateralibus cum angulo dentiformi, juxta lobum intermedium dentibus 2 minutis auctis, lobo intermedio semiovali apice breviter exciso, amplio, fovea ampla oblonga, incrassato-marginata e basi labelli usque ad basin lobi intermedii, auriculis basalibus perbrevibus semiorbicularibus; columna brevi; anthera late ovali, suborbiculari, glabra; ovario cum pedicello glabro, 6-costato, c. 0,4 cm longo.

Celebes : In humus of the forests of Mount Lokon (Minahassa), alt. c. 1000m — R. Schlechter no. 20445, flowering in Nov. 1909. [cf. XXVII/6, same citation].

In the shape of the lip a rather unusual form, which also in habit appears to be different from species of the section Pleiodon. Unfortunately, I found only a solitary, weak specimen of the species in bloom.

4. Microstylis truncicola Schltr., sp. nov.

In basi truncorum arborum epiphytica, erecta, habitu *M. congestam* Ldl. imitans, usque ad 35 cm alta; rhizomate abbreviato; radicibus flexuosis, puberulis; caule abbreviato, 4—5-foliato, vaginis foliorum vestito; foliis erecto-patentibus, petiolatis, lamina elliptica vel lanceolato-elliptica, acuminata, basi cuneata, utrinque glabra, 10—15 cm longa, medio foro 3—5 cm lata, petiolo late, basi dilatata vaginante, 3—4,5 cm longo; scapo stricto, folia bene superante, pedunculo angulato, glabro; racemo perdense multifloro, elongato, usque ad 15 cm longo, c. 1 cm diametente; bracteis patentibus patulisve, linearibus, acuminatissimis,

floros excedentibus; floribus in genere inter minores, viridibus, glabris; sepalis ovalis, obtusis, 2,5 mm longis, lateralibus obliquis; petalis lineariligulatis, obtusis, glabris, sepalis paulo brevioribus; labello basi breviter auriculato, jam infra medium trilobato, lobis lateralibus cum angulo conspicuo, triangulo, obtuso et dentibus 2 grossis, acutis juxta lobum intermedium, lobo intermedio late ovato, obtuso, integro, magno, dentes loborum lateralium multo superante, labello toto c. 0,2 cm longo, inter angulos loborum lateralium 2,25 mm lato, fovea ampla oblonga, incrassato-marginata e basi labelli usque supra medium lobi intermedii decurrente, auricula basilaribus late triangulis, obtusatis, quam lamina labelli fere 4-plo brevioribus; columna brevi, incrassata; anthera subquadrato-cucullata, glabra; ovario cum pedicello glabro, c. 0,3-0,4 cm longo.

Celebes : On tree-trunks, c. 1½-2 ft. above the ground on Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20478, flowering in Nov. 1909.

In habit this plant is similar to M. latifolia J.J.Sm., but has a completely differently shaped, very characteristic labellum. The location abodes of the species also are unusual.

5. Microstylis umbraticola Schltr., sp. nov.

Terrestris, erecta, gracilis, 20-25 cm alta; rhizomate elongato, decumbente; radicibus filiformibus, elongatis, flexuosis, puberulis; caule brevi, dense 6-8-foliato, vaginis foliorum vestito; foliis erecto-patentibus, petiolatis, lamina oblique lanceolato-elliptica, apiculata, basi cuneata, 4,5-8 cm longa, infra medium 1,8-2,8 cm lata, utrinque glabra, petiolo basi dilatata vaginante, 1,5-2,5 cm longo; scapo gracili, erecto, stricto, folia fere duplo superante, pedunculo angulato, evaginulato, glabro; racemo pro genere laxa pluri-multi-floro, elongato, usque ad 8 cm longo, c. 1,5 cm diametente; bracteis anguste lanceolatis, acuminatis, ovario pedicellato duplo brevioribus; floribus patentibus, aureis, glabris; sepalis oblongis, obtusis, c. 2,5 mm longis, lateralibus obliquis, quam intermedium paulo latioribus et subbrevioribus; petalis oblique lineariligulatis, obtusis, sepalis paulo brevioribus; labello basi alte auriculato, lamina circuitu subreniformi, e medio trilobata, 0,2 cm longa, supra basin 2,25 mm lata, lobis lateralibus cum angulo exteriore parvulo, juxta lobum intermedium dentibus 2 triangulis, subacutis, brevibus, aequimagnis auctis, lobo intermedio semiorbiculari, apice breviter exciso, marginibus apicem versus incurvulis, dentes loborum lateralium plus duplo superante, fovea oblonga lamellis 2 latere ornata, e basi usque ad basin lobi intermedii, gibbo semilunato obscuro in basi lobi intermedii anteposito, auriculis basilaribus lanceolato-obliquis, obtusiusculis, subparallelis, 0,1 cm longis; columnam brevi, crassiuscula; anthera late ovali; ovario cum pedicello pergracili, glabro, 6-costato, 0,4-0,5 cm longo.

Celebes : In humus of the forests on the upper Lampasoe [River], (Toli-Toli district), alt. c. 180m - R. Schlechter no. 20661, flowering in Jan. 1909 [1910].

The species is distinguished by the lax inflorescences with very delicate pedicels. It is related to several Papuanian species, such as M. fasciata Schltr.

6. Microstylis trichopoda Schltr., sp. nov.

Terrestris, erecta, 20-25 cm alta; rhizomate abbreviato; radicibus filiformibus, elongatis, flexuosis, puberulis; caule valde abbreviato, 3-5-foliato, vaginis foliorum obtecto; foliis erecto-patentibus, petiolatis, lamina oblique ovata, acuminata, basi rotundata, utrinque glabra, 5-8,5 cm longa, infra medium 3,5-4,5 cm lata, petiolo basi dilatata vaginante, 2-3 cm longo; scapo gracili, folia plus duplo superante, pedunculo

angulato glabro; racemo sensim elongato, usque ad 15 cm longo, ob pedicellos perlongos c. 4 cm diametiente, dense multifloro; bracteis deflexis, lanceolatis, acuminatis, pedicellis multoties brevioribus; floribus patentibus, mediocribus, glabris; sepalo intermedio oblongo, obtuso, 0,5 cm longo, lateralibus oblique ovalibus, obtusis, intermedio paulo brevioribus; petalis oblique linearibus, obtusiusculis, sepalis lateralibus aequilongis; labello basi peralte auriculato, circuitu ovali, e medio fere trilobato, lobis lateralibus cum angulo brevi, obtuso, juxta basin lobi intermedii dentibus 2, falcato-linearibus, acutis auctis, lobo intermedio late ovali, amplio, apice breviter exciso, dentes loborum lateralium paulo superante, fovea basali oblonga, gibbo obscuro hippocrepiformi circumdata, usque ad basin lobi intermedii decurrente, auriculis basilaribus lanceolatis, obtusiusculis, parallelis, c. 2,25 mm longis; columna brevi, crassiuscula; anthera reniformi, obtusa, glabra, ovario cum pedicello perlongo, filiformi, glabro, 1,8 cm longo.

Celebes : In humus of the forests near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20445, flowering in Nov. 1909. [cf. XXVII/3, same citation].

The most closely related species is M. pedicellata Rchb.f. from New Guinea, but each is readily distinguished by the labellum. The leaves of M. trichopoda Schltr. are dark green uppermost, violet-red underneath. The yellow-green flowers are red spotted.

7. Microstylis klabatensis Schltr., sp. nov.

Terrestris, erecta, c. 35 cm alta; rhizomate decumbente, cauliniformi; radicibus filiformibus, elongatis, flexuosis, puberulis; caule abbreviatu, 5-6-foliato, vaginis foliorum obtecto; foliis erecte-patentibus, petiolatis, lamina obliqua elliptica, acuminata, basi cuneata, utrinque glabra, 10-15 cm longa, medio fere 5-6,3 cm lata, petiolo basi dilatata vaginante, 6-7 cm longo; scapo erecto, folia bene superante, pedunculo angulato, glabro; racemo sublaxe multifloro, elongato, usque ad 18 cm longo, c. 2,5 cm diametiente; bracteis patulis, linearibus, acuminatis, ovario pedicellato brevioribus; floribus mediocribus, patentibus, glabris; sepalo intermedio anguste oblongo-ligulato, obtuso, 0,7 cm longo, lateralibus oblique oblongis, obtusis, c. 0,5 cm longis; petalis oblique linearibus, obtusis, 0,7 cm longis; labello basi peralte auriculato, lamina circuitu subreniformi, 0,5 cm longa, medio fere 0,6 cm lata, supra medium trilobata, lobis lateralibus cum angulo exteriore brevi, triangulo, acuto, dentibus 3 linear-lanceolatis, acuminatissimis, amplis juxta basin lobi intermedii auctis, lobo intermedio alto bifido, segmentis dentibus loborum lateralium similibus aequimagnisque, fovea basali suborbiculari, incrassato-marginata, auriculis basilaribus, oblique lanceolatis, subacutis, parallelis, 4,5 mm longis; columna brevi, crassiuscula; anthera subreniformi, glabra; ovario cum pedicello gracili, glabro, 6-costato, 1 cm longo.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 400m - R. Schlechter no. 20568, flowering in Dec. 1909.

This species also has its closest relatives in New Guinea, viz. Microstylis grandifolia Schltr. Its flowers are yellowish, the labellum violet at the base and the ovary likewise is violet.

8. Microstylis nigrescens J.J.Sm., in Naturk. Tijdsch. Néederl. Ind., LVIII (1898), p. 359.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 600m

R. Schlechter no. 20541, flowering in Dec. 1909.

The species is probably best placed in the section Commelinodes by reason of its extended, more-or-less creeping stems. The flowers are dark violet-red with yellow tips to the petals and the labellum.

9. Microstylis repens Rolfe in Kew Bull., 1899, p. 127.

M. cordifolia Rolfe, l.c., p. 127.

Celebes : In humus of the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20418, flowering in Nov. 1909; in humus of the forests of Mount Klabat (Minahassa), alt. c. 1200m - R. Schlechter no. 20572, flowering in Dec. 1909.

The species is abundant and fairly widely distributed in the mountain forests of the Minahassa [district]. I am not able to separate M. cordifolia Rolfe from M. repens Rolfe and therefore see myself compelled to withdraw the first name. The flowers are of a very pale colour; the sepals and petals are pale yellow, the labellum almost white.

XXVIII. Podochilus Bl.

1. Podochilus curviunguis Schltr., sp. nov.

Epiphytica, decumbens, ramosa; radicus filiformibus, incrassatis, flexuosis, puberulis; caulis ramiisque gracilibus, flexuosis, dense foliatis, teretibus, glabris, vaginis foliorum omnino obtectis, usque ad 17 cm longis; foliis erecto-patentibus, lanceolato-ligulatis, aristato-acuminatis, glabris, 0,5—0,8 cm longis, medio fere 1,5—2,5 mm latis; racemis terminalibus, brevibus, laxe paucifloris, usque ad 1 cm longis, pedunculo brevi, tenuissimo, glabro; bracteis deflexis, ligulatis, obtusiusculis, ovario pedicellato duplo fere brevioribus; floribus illis *P. sciurooides* Rchb. f. similibus, in genere inter minores; sepalis ovatis, obtusis cum apiculo, glabris, vix 0,2 cm longitudine excedentibus, lateralibus basi margine anteriore valde dilatata cum columnae pede mentum oblongum, obtusum, 1,75 mm longum formantibus, antice breviter connatis; petalis oblique oblongis, obtusissimis, glabris, sepalis paulo brevioribus; labello circuitu oblongo-ligulato, infra medium angustato, basi dilatata refracta, rotundata, unguis gracili affixo, apice obtuso, c. 3,5 mm longo, supra medium 0,2 cm lato; columna brevi, rostello lanceolato, erecto, bene longo, breviter exciso, pede gracili bene elongato; stigmate incrassato-marginato; anthera lanceolato-cordata, acuminata, glabra; polliniis oblique pyriformibus, stipite singulo, gracili, polliniis longiore, glandula parvula; ovario cum pedicello gracili clavato, glabro c. 2,5 mm longo.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 700m - R. Schlechter no. 20542, flowering in Dec. 1909.

The lip of the species at the base, respectively the claw, is very peculiarly folded-over and therefore dissimilar to any previously described species. The flowers are greenish white or yellow, with a red spot on the petals and a red-margined column.

2. Podochilus Minahassae Schltr., sp. nov.

Epiphytica, decumbens, gracilis, ramosa; radicibus filiformibus, elongatis, flexuosis, papillosum; caulis ramisque filiformibus, flexuosis, bene foliatis, vaginis foliorum vestitis, usque ad 7 cm longis; foliis erecto-patentibus, lanceolato-ligulatis, aristato-apiculatis, glabris, 0,4—0,6 cm longis, medio fere 1,5—2 mm latis; racemis terminalibus, brevibus, laxe 2—4-floris, tenuibus, usque ad 0,7 cm longis, pedunculo tenui, brevi; bracteis minutis, ovatis, obtusiusculis, glabris, ovario multo brevioribus; floribus in genere inter minores, illis *P. sciroides* Rchb. f. similibus, glabris; sepalis ovatis, obtusiusculis, 2,75 mm longis, intermedio apiculato, lateralibus basi margine anteriore valde dilatata mentum oblique oblongum, obtusum, c. 2 mm longum, cum columnae pede formantibus; petalis oblique ellipticis, obtusis, medio margine anteriore paululo ampliatis, sepalis paulo brevioribus; labello ligulato-spathulato, apiculato, basi truncato, unguis supra basin peltatum affixo, 3,5 mm longo, infra apicem 1,25 mm lato; columna brevi rostellum bene longo, apice breviter exciso, pede bene elongato; anthera cordato-lanceolata, acuminata; polliniis oblique pyriformibus, stipite gracili, polliniis longiore, glandula parvula; ovario cum pedicello glabro, gracili, c. 0,3 cm longo.

Celebes : On trees in the forests of Mount Kaweng (Minahassa), alt. c. 1000m — R. Schlechter no. 20593, flowering in Dec. 1909.

The species is reminiscent of *P. longipes* J.J.Sm. from New Guinea, but is easily recognised by the very narrow labellum. The flowers are white, with a red spot on the petals and with the lip-lamina red in front.

3. *Podochilus schistanthera* Schltr., sp. nov.

Epiphytica, depressa, decumbens, ramosa; radicibus filiformibus, elongatis, flexuosis, glabratibus; caulis ramisque flexuosis, filiformibus, dense foliatis, usque ad 10 cm longis; foliis patentibus, ligulatis, oblique apiculatis, glabris, vulgo subtortis, 0,4—0,6 cm longis, medio fere 1,25—1,5 mm latis; racemis terminalibus, abbreviatis, vulgo unifloris, folia superantibus; bractea ovarium per breve sessile amplectente, lanceolata, apiculata; floribus illis *P. gracilis* Ldl. similibus, in sectione inter majores; sepalis lanceolatis, acutis, glabris, 0,4 cm longis, lateralibus falcato-obliquis, basi margine anteriore dilatatis, mentum breve obtusum formantibus; petalis subsfalcato-obliquis, lanceolato-ligulatis, acutis, glabris, sepalis paulo brevioribus, labello e basi oblonga dimidio anteriore in laminam late ovatum acutam expanso, basi supra insertionem paululo producto, breviter et obtuso bilobulato, 3,5 mm longo, basi 1,25 mm lato, supra medium 1,75 mm lato; columna brevi, rostellum tripartito, brevi, pedo pro sectione brevi; anthera lanceolato-cucullata, antice alte bifida; polliniis 4 pyriformibus, paribus stipitibus separatis longioribus affixis, glandulis 2 separatis, oblongis, parvulis; ovario sessili, glabro, 0,2 cm longo.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 600m — R. Schlechter no. 20555, flowering in Dec. 1909; on trees in the mountain forests near Toli-Toli, alt. c. 700m — R. Schlechter no. 20706, flowering in Jan. 1910.

Externally, the species is strongly reminiscent of *P. gracilis* Lindl., but differs in the labellum, as well as in the two separated viscid masses, which hereby gives the rostellum a different shape. The sepals and petals are white with rose-red tips, the labellum has a violet-red apex.

4. *Podochilus trilobus* Schltr., sp. nov.

Epiphyticus, erectus, habitu *P. penduli* (Bl.) Schltr.; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, puberulis; caulis simplicibus, dense foliatis, teretibus, glabris, 20–25 cm altis, vaginis foliorum omnino vestitis; foliis erecto-patentibus, oblongis, inaequaliter bilobulatis cum apiculo interjecto, 2,5–4 cm longis, medio fere 1,4–1,7 cm latis; racemis patulis, dense 10–20-floris, usque ad 7 cm longis, pedunculo vaginis obsesso, c. 4–5 cm longo; bracteis patulis, ovalibus, apiculatis, ovario pedicellato brevioribus; floribus in genere inter maiores, patentibus; sepalis ovato-oblongis, obtusiusculis, glabris, 0,5 cm longis, lateralibus basi margine anteriore valde dilatata cum pede columnae mentum oblongum obtusissimum, c. 0,4 cm longum formantibus; petalis rhomboe-spathulatis, obtusis, glabris, sepalis paulo brevioribus; labello e basi angustiore valde dilatato, supra medium trilobo, 5,5 mm longo, inter apices loborum lateralium 4,5 mm lato, glabro, lobis lateralibus subdivergentibus, triangulis, obtusis, intermedio semielliptico, obtuso, cum apiculo minuto, lamella hippocrepiformi, basi leviter excisa e basi usque infra apicem lobi intermedii decurrente, cruribus subparallelis dimidio anteriore leviter sinuosis; columna brevi, pede elongato, rostello triangulo, breviter exciso; anthera ovato-cordata, breviter et obtuse acuminate; polliniis 6 clavatis, stipitibus 2 brevioribus basi conjunctis, appressis, glandula parvula; ovario cum pedicello clavato, glabro, c. 0,6 cm longo.

Celebes : On trees in the mountain forests near Toli-Toli, alt. c. 500m –

R. Schlechter no. 20704, flowering in Jan. 1910.

A very well characterised species which is unique in its lip shape and which has the same habit as *P. pendulus* (Bl.) Schltr. The flowers are greenish.

5. *Podochilus celebicus* Schltr., sp. nov.

Epiphyticus, erectus vel patulus, ramosus, usque ad 75 cm longus; radicibus filiformibus, elongatis, flexuosis, puberulis; caulis ramisque dense foliatis, teretibus, glabris, vaginis foliorum vestitis; foliis erecto-patentibus, lanceolato-ligulatis, apice inaequaliter tridentatis, dente intermedio cuspidiformi, tenui, utrinque glabris, textura pro genere tenuioribus, 2,5–4,5 cm longis, medio vel infra medium 0,4–0,8 cm latis; racemis patulis, usque supra basin floriferis, basi vaginis paucis donatis, laxe multifloris, elongatis, usque ad 15 cm longis, vulgo terminalibus nec non lateralibus; floribus illis *P. penduli* (Bl.) Schltr. similibus, patentibus; sepalis ovatis, obtusiusculis, glabris, 0,3 cm longis, lateralibus basi margine anteriore valde dilatata cum pede columnae mentum obtusum, oblongum, c. 3,5 mm longum formantibus; petalis oblique oblongo-spathulatis, obtusis, glabris, sepalis paulo brevioribus; labello oblongo-ligulato, obtuso, antice margine leviter undulato, medio subangustiore, glabro, lamella hippocrepiformi e basi usque supra medium decurrente, cruribus subparallelis, 0,5 cm longitudine subattingente, supra medium 2,25 mm lato; columna brevi, pede elongato, rostello adscendente; anthera subreniformi-cordata, obtuse apiculata; polliniis 6, oblique clavatis, stipitibus 2 separatis concavulis, brevioribus, glandula ovata, parvula; ovario cum pedicello clavato, glabro, c. 0,7 cm longo.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m – R. Schlechter no. 20466, flowering and fruiting in Nov. 1909.

This species is probably placed best next to *P. xythriophorus* (Rchb.f.) Schltr. from the Philippines, from which it differs in the taller growth and in floral characters.

6. *Podochilus cyclopetalus* Schltr., sp. nov.

Epiphyticus, erectus, pluricaulis, usque ad 60 cm altus, habitu *P. cornuto* (Bl.) Schltr. valde similis; rhizome valde abbreviato; radicibus filiformibus, elongatis, flexuosis, villosis; caulis simplicibus, plus minus flexuosis, dense foliatis, vaginis foliorum vestitis, teretibus, glabris; foliis erecto-patentibus, oblongo-ligulatis, obtuse bilobulatis, cum apiculo tenui interjecto, utrinque glabris, 2,5—3 cm longis, medio fere 0,7—1 cm latis; racemis patulis, abbreviatis, axillaribus terminalibusve, usque ad 1,5 cm longis, dense plurifloris; bracteis reflexis, oblongis, obtusiusculis, glabris, ovario brevioribus; floribus illis *P. cornutae* (Bl.) Schltr. similibus, sed majoribus; sepalis late ovatis, obtusis, extus apicem versus minute verruculosis, glabris, 3,5 mm longis, lateralibus basi margine anteriore valde dilatata, mentum obtusum, oblongum, c. 3,5 mm longum cum pede columnae formantibus; petalis suborbicularibus, obtusissimis; sepalis paulo brevioribus; labello e basi subquadrato-ovali, subcucullato-concava medio paulo angustato et dimidio anteriore in lobum ovalem, obtusum, apice reflexum medio gibbo carnoso oblongo ornatum expanso, lamella hippocrepiformi e basi usque ad medium labelli ibique subito ad margines recurvula, labello toto 0,6 cm longo, supra basin 3,5 mm, supra medium 3 mm lato; columna brevi, apice bibrachiata, rostello triangulo, brachiis aequilongo, breviter exciso, pede lato, producto; anthera ovato-cordata, breviter acuminata, dorso umbonata; ovario cum pedicello minutissime verruculoso, clavato, glabro, c. 0,4 cm longo.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 500m

- R. Schlechter no. 20527, flowering in Dec. 1909.

The species doubtless is closely related to *P. cornutus* (Bl.) Schltr. and *P. calliferus* (J.J.Sm.) Schltr. (*Appendicula callifera* J.J.Sm.), but differing completely, specifically from both. The flowers are white with two red spots, and have red tubercles on the labellum.

7. *Podochilus anceps* (Bl.) Schltr., in Mem. Herb. Boiss. (1900), Sep. 33.

Celebes : In trees in the forests on the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang (Toli-Toli district), alt. c. 180m - R. Schlechter no. 20656, flowering in Jan. 1910.

I have not been able to establish adequate differences to separate this plant from *P. anceps* (Bl.) Schltr. The flowers are whitish with two rose-red spots on the labellum and a red hump on the anther.

8. *Podochilus reflexus* (Bl.) Schltr., in Mem. Herb. Boiss. (1900), p. 31.
var. *cycloglossus* Schltr., var. nov.

Differ a forma typica labello suborbiculari et rostello breviore.

Celebes : On trees near Tampusso (Minahassa), alt. c. 1000m - R. Schlechter no. 20506, flowering in Dec. 1909; on trees in the forests of Mount Sopoetan (Minahassa), alt. c. 1300m - R. Schlechter no. 20615, flowering in Dec. 1909; on trees in the forests on the upper Lampasioe [River] (Toli-Toli district), alt. c. 380m - R. Schlechter no. 20677, flowering in Jan. 1910.

This variety is characterised by the circular lip-lamina. I consider it possible that it will prove to be a separate species.

9. Podochilus buxifolius Schltr., in Mem. Herb. Boiss. (1900), p. 52.
var. striatus Schltr., var. nov.

Differet a forma typica floribus brunneo-striatus, petalis angustioribus, rostello et anthera bene brevioribus.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 600m
- R. Schlechter no. 20536, flowering in Dec. 1909.

Probably only a local form of the widely distributed species, so long as not too much importance is attached to differences in the rostellum and anther.

XXIX. Arundina Bl.

1. Arundina (Dilochia) celebica Schltr., sp. nov.

Epiphytica, erecta vel patula, usque ad 60 cm longa; rhizomate valde abbreviato; caulis erectis, dense foliatis, teretibus, glabris; foliis erecto-patentibus, ellipticis, acuminatis, basi angustatis, utrinque glabris, textura coriaceis, usque ad 12 cm longis, medio fere 2,8—3,7 cm latis, articulatis; panicula pauciramosa, subdense multiflora, usque ad 25 cm longa, ramis erecto-patentibus, vix pedunculata; bracteis deflexis, persistentibus, ovalibus, obtusis, inferioribus flores aequantibus, superioribus sensim brevioribus: floribus erecto-patentibus, glabris, pro genere parvis; sepalo intermedio oblongo, obtuso, 1,9 cm longo, medio fere 0,8 cm lato, lateralibus oblique oblongo-ligulatis, obtuse acuminatis, intermedio aequilongis, medio fere 0,6 cm latis; petalis oblique et anguste elliptico-lanceolatis, obtusiusculis, basin versus angustatis, sepalis aequilongis, medio fere 0,5 cm latis; labello e basi cuneata tertia parte anteriore trilobo, lobis lateralibus oblique triangulis obtusis, bene evolutis, intermedio quadrato-rotundato, apice subretuso, margine undulato, labello toto 1,7 cm longo, inter apices lobi lateralium 1,3 cm lato, carinis 3, basi altioribus apicem versus subcrenulatis, sensim decrescentibus, parallelis, e' basi labelli usque infra apicem lobi intermedii decurrentibus, carinis 2 lateralibus in basi lobi intermediis additis; columna semitereti, apicem versus paulo dilatata, 1,5 cm longa, glabra, clinandrio obscure 5-angulato, cum apiculo dorsali; anthera cucullata, antice breviter excisa; polliniis 8, oblique ovatis, compressis; ovario cum pedicello clavato, glabro, c. 1,3 cm longo.

Celebes : On trees on the mountains near Tomohon (Minahassa), alt. c. 800m
- R. Schlechter no. 20452, flowering in Nov. 1909.

I have now seen myself compelled to question whether Dilochia and Arundina should be considered as separate genera, and after examination of the material to hand have come to the conclusion to unite the two, as Reichenbach fil., Bentham and Hooker fil. have suggested or carried out. I do not find any characteristics, either of a vegetative or morphological nature that warrant keeping the two genera separate.

A. celebica Schltr., described here, should be considered as the closest relative of A. Wallichii Lindl., whose habit it shares completely. However, the flowers are only half the size and differ completely in the shape of the individual segments.

XXX. Glossorhyncha Ridl.

1. Glossorhyncha celebica Schltr., sp. nov.

Epiphytica, bene ramosa, usque ad 50 cm longa; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis ramisque plus minusve flexuosis, bene foliatis, gracilibus, vaginis foliorum omnino vestitis; foliis patentibus, linearibus, acutis, carnosis, basi angustatis, 1,3—2,5 cm longis, medio-fere 2—2,5 mm latis, vaginis minute sed distincte verrucosis apice setis paucis ciliatis; floribus ad apices ramulorum singulis, niveis, glabris, vagina amplectente, ovali, apiculata, extus sparsim squammellata protectis; bractea hyalina, ovario aequilonga, ovali; sepalis oblongo-ligulatis, obtusiusculis, c. 1,2 cm longis, lateralibus falcato-obliquis, basi margine anteriore dilatata paulo decurrentibus; petalis oblique subspathulato-oblongis, obtusis, glabris, sepalis aquilongis; sed paulo latioribus; labelli lamina ovata, obtusa, glabra, c. 0,4 cm longa, calcare elongato subfiliformi, e basi latiore angustato, apicem versus vix dilatato, obtuso, c. 1,2 cm longo; columna brevi generis, glabra, clinandrio margine minute denticulata; ovario cylindrico, glabro, c. 1,3 cm longo.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m — R. Schlechter no. 20416, flowering in Nov. 1909.

This species is related to several, still undescribed, Papuasian forms, and amongst those previously published only G. Giulianettia Schltr. bears a closer relationship.

XXXI. Agrostophyllum Bl.1. Agrostophyllum simile Schltr., sp. nov.

Epiphyticum, erectum, pluricaule, usque ad 70 cm altum; rhizomato valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus, dense foliatis, compressis, vaginis foliorum c. 10 cm longis, imbricantibus omnino vestitis, usque ad 55 cm longis; foliis erecto-patentibus, lamina linear-ligulata, apice inaequaliter et minuto bilobulata, glabra, usque ad 20 cm longa, 1—1,2 cm lata; spicis paucifloris, in inflorescentiam capitiformem, densam, c. 3 cm diametentem congregatis; floribus erectis, in genere inter minores; bracteis lanceolatis, subacutis, ovario aequilongis; sepalis ovalibus, apiculatis, glabris, c. 0,3 cm longis, lateralibus obliquis, basi margine anteriore ampliatis; petalis oblique lanceolato-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello petalis aequilongo, glabro, hypochilio cucullato-ovali, lobis laterali bus erectis, rotundatis, parvulis, sed bene distinctis, lamella transversa, minute 3—4-dentata inter se antico conjunctis, epichilio (i. e. lobo intermedio) suborbiculari, obtuso, margine subirregulari, medio incrassato, cum linea media foveolata, c. 2,25 mm longo, infra medium aequilato; columna ercta, glabra, medio antice constricta, apice incrassata, labello paulo breviore, clinandrio obtuse 3-lobulato, callo vel ligula carnosa, semi-orbiculari ad basin stigmatis prominula; anthera subreniformi, obtusa; ovario cylindraceo, glabro, c. 0,6 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 850m — R. Schlechter no. 20519, flowering in Dec. 1909.

This novelty is not unlike the Papuasian A. parviflorum J.J.Sm. in habit, but differs considerably in floral structure and is more reminiscent of A. longifolium Rchb.f. and A. atrovirens J.J.Sm. from Ambon. The flowers are yellowish with a white labellum.

2. Agrostophyllum celebicum Schltr., sp. nov.

Epiphyticum, erectum vel patulum, usque ad 30 cm longum; rhizomate decumbente vaginulis imbricantibus obtecto; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus, flexuosis, dense foliatis, paulo compressis, vaginis foliorum omnino obtectis; foliis patentibus, lamina oblongo-ligulata, inaequaliter ac breviter bilobulata, cum denticulo minuto, basi subito subtruncata et in petiolum brevissimum contracta usque ad 1,1 cm longa, medio fere 0,3—0,4 cm lata, vaginis apice oblique truncatis et more *A. stipulati* (Griff.) Schltr. utrinque in dentem brevem stipuliformem productis; floribus ad apices caulinum in spicis unifloris capituliformi-aggregatis, illis *A. stipulati* (Griff.) Schltr. similibus et fere aequimagnis, extus squamellis brunneis sparsis obsessis; sepalis ovato-lanceolatis, acutis vel breviter acuminate, 0,5 cm longis, lateralibus obliquis, basi margine anteriore valde dilatata cum pede columnae mentum oblongum obtusum, 0,3 mm longum formantibus; petalis oblique lineariligulatis, obtusiusculis medio subgenusflexo-falcatis, infra medium paulo dilatatis, sepalis paulo brevioribus, glabris; labello e basi saccato-concava cum pede columna adnata trilobo, lobis lateralibus erectis linearilongis, obtusis, lobo intermedio duplo fere brevioribus, inter se lamella emarginata, transversa, medio calloso-incrassata, humili conjunctis, lobo intermedio orbiculari, apice retuso cum apiculo minutissimo, c. 2,5 mm diametiente, dimidio inferiore excavationibus 2 oblongis donato, labello toto 0,5 cm longo, glabro; columna altiore, apicem versus antice paulo ampliata, subbibrachiata, rostellum erecto linearis; anthera late ovato-cordata, umberata; ovario cylindraceo, brunneo-squamellato, 0,7 cm longo.

Celebes : On trees in the forests on the upper Lampasie [River], near the old goldmines on [Mount] Djangdjang (Toli-Toli district), alt. c. 180m — R. Schlechter no. 20655, flowering in Jan. 1910.

Without examining the flower, one would at once be inclined to declare the species to be *A. stipulatum* (Griff.) Schltr., so much do the two species resemble each other. However, the labellum is quite different and removes any doubt that we here are dealing with an excellently characterised, separate species. The flowers are white, the labellum with a golden-yellow centre, the column has a red apex.

XXXII. Epiblastus Schltr.

1. Epiblastus masarangicus Schltr., in Fedde, Repert., IX (1911), p. 287.
(sphalm. masangaricus).

Eria masarangica Krzl., in Engl. Jahrb., Beibl. 101 (1910), p. 30.

Celebes : On trees in the forests of Mount Kaweng (Minahassa), alt. c. 1000m — R. Schlechter no. 20598, in bud in Dec. 1909.

As I explained in the previous volume of this publication, Kränzlin's Eria masarangica is a typical Epiblastus and hence belongs here. My specimens are not yet well developed, but there is no doubt that the plant described by Kränzlin is present here.

XXXIII. Sarcostoma Bl.

1. Sarcostoma celebicum Schltr., sp. nov.

Epiphyticum, caespitosum, brevicaule, usque ad 20 cm altum; rhizome brevi, vaginis oblongis, acutis, alte amplectentibus, brunneopunctatis obtecto; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis (vel caulis) gracilibus, petioliformibus, vaginis obtectis apice unifoliatis, usque ad 3,5 cm longis, 1–1,5 mm diametentibus; foliis erectis, arcuatis, linearibus vel anguste linearibus, acutis, basin versus paulo angustatis, glabris, usque ad 16 cm longis, medio fere 1,75–3,25 mm latis; floribus infra apicem caulis in fasciculis lateralibus, paucifloris, niveis, vagina parvula elliptica primum protectis; bractea ovato-lanceolata, acuminata, glabra, ovarium vix superante; sepalis ovato-lanceolatis, obtusiusculis, glabris, 0,4 cm longis, lateralibus obliquis, basi margine anteriore dilatata mentum oblongoideum, obtusum, breve cum pede columnae formantibus; petalis oblique rhomboe-lanceolatis, obtusiuscule acuminatis, glabris, sepalis paulo brevioribus; labello e basi oblongocuneata supra medium trilobato, 0,5 cm longo, medio fere 2,25 mm lato, lobis lateralibus abbreviatis, rotundatis, intermedio lanceolato-triangulo, multo majore, antice carnosulo, c. 0,2 cm longo, labello toto superne medio puberulo; columna brevi generis, facie infra stigma puberulo, pede elongato, glabro; anthera reniformi-cucullata, glabra; polliniis 4, oblique pyriformibus, glandula minuta parvula; ovario cylindraceo, piloso, 2,5 mm longo.

Celebes : On trees in the forests of Mount Lokon (Minahassa), alt. c. 1400m
- R. Schlechter no. 20432, flowering in Nov. 1909.

The second species of the up to the present, monotypical genus. It differs considerably from S. javanicum Bl. in the lip, and in habit could hardly be mistaken for it.

XXXIV. *Ceratostylis* Bl.

1. *Ceratostylis vagans* Schltr., sp. nov.

Epiphytica, pendula, vagans, ramosa, usque ad 25 cm longa; rhizome elongato, flexuoso, vaginis brunneis, acutis, alte amplectentibus obtecto, laxe pseudobulbis obpresso; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis gracilibus, petioliformibus, teretibus, vaginis obtectis, c. 1 cm longis, 0,1 cm diametentibus, apice unifoliatis; folio erecto, linearis vel linearis-ligulato, apiculato vel inaequaliter et brevissime bilobulato cum apiculo minuto interjecto, 3–7 cm longo, medio fere 0,2–0,3 cm lato, vulgo marginibus paulo revolutis, basin versus paulo angustatis; floribus in medio pseudobulbo lateralibus, fasciculatis, illis *C. pendula* Hk. f. similibus, breviter pedicellatis; bracteis ovatis, acuminatis, ovario subdupo brevioribus; sepalis oblongis, obtusiusculis, extus pilis recurvis sparsim puberulis, 0,5 cm longis, lateralibus obliquis, basi margine anteriore dilatata mentum breve obtusum formantibus; petalis oblique linearibus subacutis, glabris, supra basin paululo dilatatis; labello e basi breviter unguiculata concava subito in laminam ovatam obtusam, apice incrassatam dilatato, 4,5 mm longo, lamina supra basin 2,5 mm lata, basi puberula, apice incrassata minutissime papillosa, carinis 2 incrassatis e basi labelli usque supra medium decurrentibus, evanescentibus; columna brevi, brachiis pro genere brevibus, apiculatis, pede brevi, puberulo; anthera subquadrato-cucullata, obtusiuscula apiculata; ovario cylindrico, c. 0,4 cm longo, pedicelloque c. 0,5–0,6 cm longo, sparsim puberulo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20483, flowering in Nov. 1909; on trees in the forests of Mount Klabat (Minahassa), alt. c. 1000m - R. Schlechter no. 20576, flowering in Dec. 1910; on trees in the mountain forests near Toli-Toli, alt. c. 800m - R. Schlechter no.

10908, flowering in Jan. 1910. [possibly 20708].

I consider it very probable that this is the plant identified by J.D.Hooker and Ridley as C. pendula Hook.f. However, it differs completely in the flowers, despite being very similar in habit. The colour of the flowers is white with the labellum being sulphur-yellow in front.

2. Ceratostylis sima J.J.Sm., in Bull. Dept. Agr. Ind. Néerl., XV (1908), p. 9.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20465, flowering in Nov. 1909; on trees in the mountain forests near Toli-Toli, alt. c. 900m - R. Schlechter no. 20725, flowering in Jan. 1910.

XXXV. Phaius Lour.

1. Phaius Incarvillei (Bl.) O.Ktze., Rev. Gen., II, p. 675.

Celebes : On grassy slopes on Mount Mahawo (Minahassa), alt. c. 1000m - R. Schlechter no. 20514, flowering in Dec. 1909.

2. Phaius celebicus Schltr., sp. nov.

Terrestris, erectus, gracilis, usque ad 70 cm altus; rhizomate brevi; radicibus filiformibus, elongatis, flexuosis, puberulis; pseudobulbis erectis, cylindraceis, c. 5 cm altis, medio fere c. 1 cm diametentibus, vulgo trifoliatis; foliis erectis, petiolis sese amplectentibus, 20—30 mm longis, lamina lanceolata, acuminata, 25—35 cm longa, medio fere 3—4 cm lata, basi sensim in petiolum angustata, utrinque glabra; scapo supra basin pseudobulbi nato, erecto, gracili, c. 40 cm alto; pedunculo tereti, glabro vaginis paucis, dissitis, obtusiusculis, arcte amplectentibus obsesso; rameo laxe paucifloro (c. 4—6-floro), usque ad 10 cm longo; bracteis erecto-patentibus, ovato-lanceolatis, acuminatis, ovario brevioribus; floribus erecto-patentibus, illis P. flavi Ldl. similibus, flavidis; sepalis oblongis, glabris, intermedio obtuso, 2,9 cm longo, lateralibus obliquis, apiculatis, intermedio paulo brevioribus; petalis oblique oblongo-spathulatis, obtusis, glabris, margine anteriore supra medium paulo dilatatis, sepalis lateralibus obliquis, acutis, labello late cuneato, antice trilobo, lobis lateralibus obliquis, semioblongis, obtusis, intermedio brevi, margine valde undulato, lateralibus vix longiore, labello toto c. 2,5 cm longo, antice 2,5 cm iato, medio apicem versus minute puberulo, nervo medio in-crassato; columna semitereti, crassiuscula, facie pilosula; ovario cum pedicello tereti, glabro, c. 3 cm longo.

Celebes : In humus in the forests on Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20507, flowering in Dec. 1909.

P. flavidus Lindl. is to be considered as the closest related species, although the present species is completely different from both in its slender habit, as well as in the shape of the labellum.

3. Phaius amboinensis Bl., Mus. Bot. Lugd. Bat., II, [1858] p. 180.

Celebes : In humus of the forests on Mount Klabat (Minahassa), alt. c. 600m - R. Schlechter no. 20564, flowering in Dec. 1904 [1909].

I have only a leaf and an inflorescence of this plant, brought to me by a native. The leaf certainly is conspicuously large, but I cannot establish any other valid differences that warrant separating it as a species.

4. Phaius stenocentron Schltr., sp. nov.

Terrestris, erecta, humilis, 20–30 cm alta; rhizome valde abbreviato; radicibus filiformibus elongatis, flexuosis, villosis; caule gracili, brevi, basi vaginis alte amplectentibus obsesso, apicem versus 2–3-foliato, teretiusculo, glabro; foliis erecto-patentibus, ellipticis, acuminatis, basi cuneatis, utrinque glabris, 6–16 cm longis, medio fere 3–7 cm latis; racemis caulinis, graciliter pedunculatis, paucifloris; pedunculo erecto, tereti, glabro, vaginis paucis, dissitis, amplectentibus obsesso; bracteis erectis, lanceolatis, acuminatis, ovario brevioribus; floribus illis *P. pauciflorus* Bl. similibus, flavescens; sepalis oblongo-ligulatis, apiculatis, glabris, 2.5 cm longis, lateralibus obliquis; petalis e basi angustiore oblique ellipticis, obtusiusculis, glabris, sepalis fere acquilongis; labello obovato-oblongo, obtuso, antice subretuso, margine supra medium subcrenulato-irregulari, medio lamellis 2 brevibus, parallelis donato, glabro, c. 2.8 cm longo, supra medium 1.7 cm lato, calcare e basi conica filiformi, acuto, deflexo, glabro, c. 3 cm longo; columna gracili, semitereti, glabra, juxta stigma biauriculata, 1.8 cm alta; ovario cylindraceo, glabro, cum pedicello c. 1.6 cm longo.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 800m

– R. Schlechter no. 20547, flowering in Dec. 1909.

An excellently characterised species of the affinity of *P. pauciflorus* Bl. and *P. corymbioides* Schltr., but which both have a much shorter spur. This species has, in common with *P. corymbioides* Schltr., the two short lamellae on the lip, but it is much shorter, has larger flowers, as well as a different column.

XXXVI. Calanthe R.Br.

1. Calanthe triplicata (Willem.) Ames, Orchid, II (1906), p. 159.

Celebes : In humus of the forests on the hills near Tomohon (Minahassa), alt. c. 1000m – R. Schlechter no. 20437, flowering in Nov. 1909; in humus of the forests of Mount Klabat (Minahassa), alt. c. 500m – R. Schlechter no. 20528, flowering in Dec. 1909.

The appearance of this species, which occurs throughout the entire monsoon region, was to be expected. However, I suspect that a whole series of species is included under this collective name, but this can be established only after lengthy observations of living specimens. The flowers are white.

2. Calanthe celebica Rolfe in Kew Bull., 1899, p. 129.

Celebes : In humus on the borders of coffee plantations on Mount Masarang (Minahassa), alt. c. 1000m – R. Schlechter no. 20413, flowering in Nov. 1909; in humus of the forests on Mount Kaweng (Minahassa), alt. c. 900m – R. Schlechter no. 20602, flowering in Dec. 1909.

This species is widely distributed in the forests of the ranges in the

Minahassa [district]. It is distinguished by the lustrous violet-red flowers, the labellum having a white front lobe. The plant is worthy of being introduced into European gardens.

XXXVII. Acanthephippium Bl.

1. Acanthephippium splendidum J.J.Sm., in Naturk. Tijdschr. Néederl. Ind. LVIII (1898), p. 360.

Celebes : In humus of the secondary forest at the foot of Mount Klabat (Minahassa), alt. c. 500m - R. Schlechter no. 20553, flowering in Dec. 1909.

A beautiful plant that has a preference for the secondary forest. The colourful flowers belong to the largest in the genus. There is a close relative of the species occurring in New Guinea.

XXXVIII. Spathoglottis Bl.

1. Spathoglottis plicata Bl., Bijdr., p. 401, t. 76.

Celebes : On rocky slopes near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20460, flowering in Nov. 1909.

All the specimens of S. plicata Bl. present in the various herbaria require a more precise appraisal. It is possible that several different species are involved here.

XXXIX. Plocoglottis Bl.

1. Plocoglottis lobulata Schltr., sp. nov.

Terrestris, erecta, habitu P. acuminatae Bl. bene similis, 40–55 cm alta; rhizomate decumbente, demum elongato; radicibus filiformibus, elongatis, flexuosis, puberulis; pseudobulbis cylindraceis, 2–4 cm distantibus, 2–7 cm longis, c. 0,5 cm diametentibus, unifoliatis; folio erecto, petiolato, lamina elliptica, acuminata, basi cuneata, 15–24 cm longa, medio fere 5,5–8,5 cm lata, petiolo 5–7 cm longo; scapo supra medium pseudobulbi nato, laterali, gracili, folia vulgo bene superante, tereti, vaginulis paucis dissitis, alte amplectentibus obpresso, minute puberulo, praesertim apicem versus; racemo laxe 10–20-floro, elongato, usque ad 15 cm longo; bracteis lanceolatis, acuminatis, ovario aequilongis vel paulo brevioribus; floribus erecto-patentibus, illis P. acuminatae Bl. similibus; sepalis patentibus, oblongo-lanceolatis, acuminatis, extus minute et sparsim puberulis, 2,3 cm longis, lateralibus obliquis, basi margine anteriore paulo decurrentibus; petalis linear-lanceolatis, acuminatis, subfalcatis, glabris, c. 2,1 cm longis; labello circuitu quadrato, medio margine utrinque lobulo parvo triangulo aucto, antice subtruncato cum acumine bene evoluto, glabro, supra basin lamellis 2 triangularibus, acutis ornato, cum acumine c. 1,2 cm longo, medio fere 0,7 cm lato; columna semitereti, crassiuscula, brevi, glabra; c. 0,7 cm longa; anthera ovata, glabra, obtusa: ovario cum pedicello cylindraceo, puberulo, c. 1,8 cm longo.

Celebes : In humus of the forests on the upper Lampasioe [River], near the old gold mines on [Mount] Djangdjang, Toli-Toli district, alt. c. 180m - R. Schlechter no. 20663, flowering in Jan. 1910.

The species is most closely related to P. acuminata Bl., but differs in the

presence of two lateral lobules to the labellum and in their shape. The flowers are yellow with red spots on the sepals and petals, and with a red column. The leaves often have yellow spots.

XL. Eulophia R.Br.

1. Eulophia macrorhiza Bl., Fl. Jav. Orch., p. 155, t. 63, f. 2.

var. Minahassae Schltr., var. nov.

Diffrerit a forma typica floribus majoribus, labelli lobo intermedio magis producto et carinis longioribus.

Celebes : In humus of the forests of Mount Klabat (Minahassa), alt. c. 500m - R. Schlechter no. 20552, flowering in Dec. 1909.

It is possible that this variety may later on be removed as a separate species. The flowers are brown, the labellum is whitish on the outside, inside a muddy red with a darker base and a white centre.

2. Eulophia squalida Lindl., Bot. Reg., 1841, Misc. 77.

var. celebica (Bl.) Schltr.

Eulophia celebica Bl., Fl. Jav. Orch., p. 154.

Celebes : On grassy slopes near Ayermadidi (Minahassa), alt. c. 150m - R. Schlechter no. 20524, flowering in Dec. 1909.

This variety differs from E. squalida Lindl. in the shorter spur, also slightly in the lip-lamina with more delicate swollen veins at the base. The flowers are reddish violet or yellow-green, the petals being whitish or yellowish in front.

XLI. Dendrobium Sw.

1. Dendrobium hypodon Schltr., in Fedde Repert., VIII (1910), p. 502.

D. capitellatum KrzL., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910) p. 215.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20502, flowering in Dec. 1909; on trees near Langowan (Minahassa), alt. c. 800m - R. Schlechter no. 20612, flowering in Dec. 1909.

Kräntlin's species is completely identical with mine. Kräntlin has withdrawn D. capitellatum, established by J.J. Smith, and again used the species name of capitellatum for D. hypodon Schltr., erroneously described as a novelty. Thereby, naturally, considerable confusion has resulted, since D. capitellatum J.J.Sm. is a good species and D. capitellatum KrzL. a synonym.

2. Dendrobium oligadenium Schltr., in Fedde Repertor., VIII (1910), p. 502.

Celebes : On trees near Toli-Toli, alt. c. 10m - R. Schlechter no. 20693, flowering in Jan. 1910. [cf. LVI/1, same citation].

3. Dendrobium lockhartioides Schltr., in Fedde Repertor., VIII (1910), p. 507.

Celebes : On trees at the foot of Mount Lokon, above Kakaskassen (Minahassa), alt. c. 1000m - R. Schlechter no. 20447, flowering in Nov. 1909.

4. Dendrobium cultratum Schltr., sp. nov.

Epiphyticum, decumbens vel dependens, ramosum, usque ad 30 cm longum; rhizomate brevi; radicibus filiformibus, elongatis, flexuosis, glabris; caulis teretibus, dense foliatis, vaginis foliorum omnino absconditis; foliis erecto-patentibus, oblique triangulo-lanceolatis vel ovato-lanceolatis, acutis, glabris, textura crassiuscula coriaceis, 1,6—3 cm longis, basi 0,5—0,8 cm latis; racemis valde abbreviatis, 1—2-floris, axillaribus, foliis brevioribus; pedunculo vaginis imbricantibus, acuminatis vel cuspidatis obsesso; bracteis ovatis, cuspicatis, ovarium superantibus; floribus illis *D. atropurpurei* Miq. similibus, atropurpureis; sepalo intermedio ovato-oblongo, apiculato, 0,5 cm longo, glabro, lateralibus oblique ovato-triangulis, antice basin versus ampliatis, cum pede columnae mentum breve, obtusum formantibus, intermedio aequilongis, extus marginem anteriorem versus pilis sparsis stellatis ornatis; petalis oblique ligulatis, obtusis, glabris, sepalis paulo sed distinete brevioribus; labello ligulato, antice subretuso, cum apiculo conico subtus infra apicem, medio vel infra medium paulo dilatato, speculo linearis-oblongo excepto superne margineque dense papilloso-asperato, 0,5 cm longo, infra apicem 1,75 mm lato, medio fere 2,25 mm lato; columna brevi, crassiuscula, pede bene elongata, clinandrii dente dorsali (i. e. filamento) bene evoluto, linearis; anthera galeato-cucullata, glabra; ovario cylindraceo, glabro, sepalis fere duplo breviore.

Celebes : On trees in the mountain forests near Toli-Toli, alt. c. 400m - R. Schlechter no. 20703, flowering in Jan. 1910. [cf. XII/1, same citation].

The species is completely different from *D. atropurpureum* Miq., where Kränzlin placed it. In Kränzlin's published 'monograph' of the genus, under Aporum, in a peculiar mix, we find the section Oxystophyllum, which in itself is well separated. Likewise, the species often are quite incorrectly interpreted and those species which have been clarified by knowledgeable persons, such as J.J. Smith for example, have been shuffled up again. As was recently stated in England, one result of this 'monograph' is that a reappraisal of the genus *Dendrobium* has now become more important than ever before.

5. Dendrobium speculigerum Schltr., in Fedde Repertor., VIII (1910), p. 507.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 900m - R. Schlechter no. 20567, flowering in Dec. 1909.

6. Dendrobium diaphanum Schltr., in Fedde Repertor., VIII (1910), p. 508.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 500m - R. Schlechter no. 20525, flowering in Dec. 1909.

7. Dendrobium confusum Schltr., sp. nov.

Dendrobium salicornioides J.J.Sm., in Orch. Ambon (1905), p. 52 (nec *Teysm. et Binnend.*).

Dendrobium parciflorum Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910),
p. 222 (nec Rchb.f.).

Epiphyticum, erectum vel patulum, pluricaule; rhizome valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis plus minus flexuosis, teretibus, glabris, usque ad apicem dense foliatis, vaginis foliorum omnino obtectis; foliis equitantibus, carnosis, linear-lanceolatis vel linearibus, subsarcinatis, obtusiusculis, nunc subteretibus, lamina 2-3 cm longa, basi 2,5-4,5 mm lata; floribus in fasciculis terminalibus, plurifloris, succedaneis; bracteis ovatis, acuminatis, ovario pedicellato multoties brevioribus; sepalis ovato-lanceolatis, obtusiusculis, glabris, c. 1,2 cm longis, lateralibus margine anteriore praesertim basi valde ampliatis, cum pede columnae mentum conicum, obtusum, leviter incurvum, c. 2 cm longum formantibus; petalis oblique lanceolato-spathulatis, subacutis, glabris, c. 1,1 cm longis; labello e basi breviter unguiculata cuneato, antice obscure 4 lobulata, apice exciso, lineis 2 incrassatis, parallelis e basi usque ad tertiam partem apicalem decurrentibus ibique evanescentibus, labello toto c. 2,3 cm longo, infra apicem c. 1,3 cm lato; columna brevi, glabra, pede elongato, clinandrio breviter 3-lobato; anthera suborbiculari-cucullata, glabra; ovario cum pedicello glabro, clavato. c. 1,3 cm longo.

Celebes : On trees along the main road between Menado and Tomohon (Minahassa), abundant, between alt. c. 20 - 800m - R. Schlechter no. 20403, flowering in Nov. 1909.

This plant was regarded as 'D. salicornioides T. et B.' by J.J. Smith, but I cannot share this view, since the description by Teysman and Binnendijk differs in several important points. Furthermore, the original locality of the island of Krakataua for D. salicornioides T. et B. does not speak for identifying this species with our typical Moluccan plant.

Still less can I share the opinion of Kränzlin that the plant from Celebes represents the relatively unknown D. Jenkinsii Griff. from Assam. Perhaps D. kentrophyllum Hook.f. may be identified with the latter.

I have already written above of D. capitellatum J.J.Sm. which Kränzlin united with it. That plant of course has nothing to do with the species described here, furthermore, in floral structure it is related closer to D. subulatum Lindl.

D. marivelense Ames, likewise united with it by Kränzlin has a shorter and blunter mentum, a quite differently shaped labellum with a simple, broad, swollen central band and terete leaves. The species probably stands closest to the one described here. I include all these forms in Aporum, not in Strongyle. The latter section is best eliminated and the species included part in Aporum and part in Crumenata.

8. Dendrobium ramificans J.J.Sm., in Rec. Trav. Bot. Néerl., no. 2 (1905), p. 2.

D. micranthum Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 212, p.p. (nec Lindl.).

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter [no number], flowering in Nov. 1909.

I just cannot understand how one can consider this species as a synonym of D. micranthum Lindl., from which it differs not only in habit, but also completely in all floral segments.

9. Dendrobium thysanophorum Schltr., sp. nov.

Epiphyticum, erectum, pro sectione validum, pluricaule, 20–35 cm altum; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus compressis, lucidis, dense foliatis, apicibus internodiorum exceptis vaginis foliorum omnino obtectis, basi angustatis, medio sere usque ad 0,8 cm latis; foliis erecto-patentibus, oblique ovato-lanceolatis vel ovato-triangulis, subfalcatis, obtusiusculis vel acutis, glabris, textura crasse coriacea, parte libera 1–2,5 cm longa, basi 0,5–1,2 cm lata; fasciculis multifloris, sessilibus, versus apicem caulinum lateralibus vel terminalibus; vaginis mox in fibros solutis; floribus illis D. indivisi Miq. simillimis, succedaneis; sepalis late ovatis, obtusiusculis, glabris, 3,5 mm longis, lateralibus basi margine anteriore ampliata cum pede columnae mentum obtusum breve formantibus; petalis oblique lanceolato-ligulatis, acutis, margine minute ciliatis, caeterum glabris, sepalis sere aequilongis; labello e basi quadrato-unguiculata in laminam subreniformem, apiculatam, apice reflexam expanso, glabro, e medio callo ampio, quadrato, apice subretuso, apicem laminae attingente ornato, petalis aequilongo, lamina supra basin 0,3 cm lata; columna brevi, glabra, pede apice excavato; anthera subquadrata, dorso excisa; ovario cum pedicello glabro, clavato, c. 3,5 mm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 1000m – R. Schlechter no. 20493, flowering in Nov. 1909.

This interesting species is closely related to D. distichum (Presl.) Rchb.f. and is so similar to it in habit, that without knowing its origin and without an examination of the flower, they can hardly be distinguished from each other. However, both are quite different in floral structure, since D. distichum (Presl.) Rchb.f. has much narrower petals and a clearly trilobed lip, which in the present species is undivided. On the other hand, in floral structure, the species is very close to D. indivisum (Bl.) Miq., but which is already easy to distinguish in habit.

Unfortunately, Kränzlin has brought the quite correct synonymy of D. indivisum (Bl.) Miq. by J.J.Smith into complete confusion again. Smith made only one mistake in making the Philippine Schismorceras disticha Presl a synonym of D. indivisum (Bl.) Miq., on which the thoroughly distinct D. distichum (Presl) Rchb.f. was founded, but from which D. sagittatum J.J.Sm., with which Kränzlin unites it, is quite different.

10. Dendrobium concavum J.J.Sm., Orch. Amb. (1905), p. 50.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m – R. Schlechter no. 20456, flowering in Nov. 1909.

In a peculiar manner Kränzlin united D. teloense J.J.Sm. with this species, even though it does not even belong to this affinity.

11. Dendrobium Smithianum Schltr., sp. nov.

Epiphyticum. erectum. pluricaule. 15—35 cm altum; rhizome valde abbreviato; radicibus filiformibus. elongatis. flexuosis. glabris; caulis simplicibus. plus minus flexuosis. dimidio inferiore bene foliatis, supra vaginulis. dense appressis vestitis. ancipitibus; foliis falcato-lanceolatis, acutis vel acuminatis. glabris. textura tenue coriaceis, parte libera 2—5 cm longis. basi 0.4—0.8 cm latis; floribus illis *D. concari* J. J. Sm. similibus in fasciculis distantibus. paucifloris, lateralibus versus apicem caulis terminalibusque. erecto-patentibus: bracteis hyalinis ovario brevioribus; sepalis ovatis. obtusiusculis. glabris. 5.5 mm longis, lateralibus basi margine anteriore dilatata cum pede columnae mentum breve obtusum formantibus; petalis oblique lanceolato-ligulatis. basi angustatis. glabris, sepalis aequilongis; labello e basi unguiculato-cuneata infra medium trilobo, lobis lateralibus erectis. oblongo-ligulatis obtusis, intermedio reniformi-transverso, apice alte exciso cum apiculo minuto, marginibus leviter undulato. callo transverso leviter bisulcato, retrorsum spectante in medio labelli. labello toto petalorum longitudine. inter apices lobarum lateralium 1.2 cm lato, lobo intermedio 0.7—0.8 cm lato; columna brevi. glabra, pede apice callo parvulo purpureo ornata; anthera altigaleata, glabra; ovario cum pedicello glabro, clavato. c. 1.2 cm longo.

Celebes : On trees near Ayermadidi (Minahassa), alt. c. 150m — R. Schlechter no. 20522, flowering in Dec. 1909; on trees in the forests on the Lampasioe. [River] Toli-Toli district, alt. c. 80m — R. Schlechter no. 20681, flowering in Jan. 1910.

I consider it possible that this species is *D. concavum* J.J.Sm. var. *celebense* J.J.Sm., but I am not completely sure of this, since I do not have the originals of the variety. It is however, certain that the species under consideration differs specifically from *D. concavum* J.J.Sm. The colouration of the flower is that given by J.J.Smith for his variety.

var. *nebularum* Schltr., var. nov.

Differt a forma typica lobis lateralibus labelli brevioribus lobo medio angustiore.

Celebes : On trees in the mountain forests near Tomohon (Minahassa), alt. c. 800m — R. Schlechter no. 20433, flowering in Nov. 1909.

This plant can probably be considered only as a mountain form of *Dendrobium Smithianum* Schltr.

12. Dendrobium mirandum Schltr., in Fedde Repertor., VIII (1910), p. 509.

Celebes : On trees near Tampusso, not far from Tomohon (Minahassa), alt. c. 850m — R. Schlechter no. 20505, flowering in Dec. 1909; on trees in the forests on Mount Kaweng (Minahassa), alt. c. 800m — R. Schlechter no. 20601, flowering in Dec. 1909.

The last three species are all completely alike in habit, but all quite different in their flowers.

13. Dendrobium chrysotaenium Schltr., in Fedde Repertor., VIII (1910), p. 508.

Celebes : On trees near Kakaskassen (Minahassa), alt. c. 800—900m — R.

Schlechter no. 20407, flowering in Nov. 1909.

This species presents more-or-less a transition form between the sections Aporum and Crumenata.

14. Dendrobium suaveolens Schltr., in Fedde Repertor., VIII (1910), p. 504.

? D. gemmiferum Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 237.

Celebes : On trees near Toli-Toli, alt. c. 100m - R. Schlechter no. 20691, flowering in Jan. 1910.

15. Dendrobium odoratum Schltr., in Fedde Repertor., VIII (1910), p. 503.

D. podagraria Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 230 (p.p. nec Hook.f.).

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20457, flowering in Nov. 1909.

16. Dendrobium cuneilabrum J.J.Sm., in Ic. Bogor., III (1906), p. 11, t. 205.

D. utriculariopsis Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 239.

Celebes : On trees in coffee plantations on Mount Masarang (Minahassa), alt. c. 1000m - R. Schlechter no. 20409, flowering in Nov. 1909; on trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1200m - R. Schlechter no. 20624, flowering in Dec. 1909.

The species published by Kränzlin in no way differs from D. cuneilabrum J.J.Sm.

17. Dendrobium plebejum J.J.Sm., in Bull. Dep. Agr. Ind. Néerl., V (1907), p. 6.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 10m - R. Schlechter no. 20716, flowering in Jan. 1910.

18. Dendrobium juncifolium Schltr., sp. nov.

Epiphyticum, gracillimum, pluricaule, 20–60 cm altum; rhizomate abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus, erectis, nodis 2 supra basin clavato-ampliatis, vulgo 4-angulatis, 5–8 mm diametentibus, caeterum teretibus, glabris, laxe 5–8-foliatis, vaginis foliorum arcte amplectentibus laxe ob sessis, basi apiceque efoliatis; foliis gracilibus, junciformibus, teretibus, acutis, filiformibus, 4–12 cm longis, 1–1,5 mm diametentibus; floribus albis, erecto-patentibus, in fasciculis apicalibus vel lateralibus infra apicem caulis, plurifloris; vaginis bracteisque mox fissis, ovario multo brevioribus; sepalis triangulis, apiculatis, glabris, 0,6 cm longis, lateralibus basin versus margine anteriore per hulto ampliatis, cum pede columnae mentum conicum obtusum, c. 1,1 cm longum formantibus; petalis subfalcatis, oblique lanceolato-ligulatis, obtusiusculis, glabris, sepalo intermedio subaequilongis; labello e basi unguiculato-cuneata tertia parte anterio trilobo, glabro, 1,2 cm longo, inter apices loborum lateralium c. 1 cm lato, lobis laterali-

bus subfalcato-oblongis obtusis, intermedio reniformi, apice exciso, margine undulato, lateralia longitudine paulo excedente, fascia linearis, incrassata, apice tridentata et basi labelli usque in medium lobi intermedii decurrente; columna brevi, glabra, pede elongato, apice intus carina incrassata ornata; ovario cum pedicello glabro, gracili, c. 1,3 cm longo.

Celebes : On trees on the Lampasioe and Kuala Besaar [Rivers] (Toli-Toli district), alt. c. 30-50m - R. Schlechter no. 20680, flowering in Jan. 1910; on trees near Toli-Toli, alt. c. 30m - R. Schlechter no. 20701, flowering in Jan. 1910.

The present species is related to D. gracile Lindl., but easily distinguished by the floral structure. The colouring of the flowers is white, with a yellow spot on the labellum.

19. Dendrobium stenophyton Schltr., in Fedde Repertor., VIII (1910), p. 500.

Diplocaulobium arachne Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 334.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20501, flowering in Dec. 1909.

The species described by Kränzlin differs in no way from my Dendrobium stenophyton. The flowers are yellowish, later on with a reddish hue, the labellum is white with red spots.

20. Dendrobium filiforme J.J.Sm., in Ic. Bogor., II (1903), p. 73, t. 113 D.

Diplocaulobium filiforme Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 341.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20481, flowering in Nov. 1909; in trees in the forests of Mount Klabat (Minahassa), alt. c. 1600m - R. Schlechter no. 20565, flowering in Dec. 1909.

This find establishes the previously unknown land of origin of this species.

21. Dendrobium parietiforme J.J.Sm., in Ic. Bogor., II (1903), p. 92, t. 117 C.

Desmotrichum parietiforme Krzl., Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 349.

An aberrant species of the section, at least as far as the lip structure is concerned. The flowers are yellowish with a white labellum.

22. Dendrobium rhodobalion Schltr., in Fedde Repertor., VIII (1910), p. 501.

Celebes : On solitary trees not far from Lansot, alt. c. 600m - R. Schlechter no. 20631, flowering in Dec. 1909.

23. Dendrobium mentosum Schltr., sp. nov.

Epiphyticum, ramosum, usque ad 60 cm longum; rhizomate more sectionis ramoso, tereti, multiarticulato, glabro; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis distantibus, cylindraceo-fusiformibus, paulo compressis, mox longitudinaliter rugosis, 4–6 cm longis, medio fere 1–1.3 cm latis, unifoliatis; foliis ellipticis vel elliptico-lanceolatis, obtusiusculis, utrinque glabris, 15–17 cm longis, medio vel infra medium 4,5–6 cm latis; floribus ad apices pseudobulborum in axillis foliorum fasciculatis, succedaneis; bracteis mox fisis, ovario brevioribus; sepalis oblongo-ligulatis, subacutis, glabris, lateralibus basi margine anteriore in lobum linearem, retrorsum producta cum pedo columnae mentum angustum, calcariforme, apice oblique truncatum, 0,6 cm longum formantibus; petalis oblique lanceolato-ligulatis, subacutis, basin versus paulo angustatis, glabris, sepalis subaequilongis; labello e basi cuneato-unguiculata infra medium trilobo, lobis lateralibus brevibus, oblique triangulo-lanceolatis, acutis, intermedio explanato semiorbiculari-flabellato, margine undulato-plicato, crenato-inciso, apice cum apiculo minuto, carinis 2 parallelis e basi labelli in lobo intermedio undulatis usque infra apicem decurrentibus, nervo medio in basi lobi intermedii incrassato et carinis c. 2 brevibus lateralibus antice additis, labello toto c. 1,4 cm longo, inter apices loborum lateralium 0,4 cm lato, lobo intermedio explanato c. 1 cm lato; columna brevi, glabra, pede angusto, clinandrii lobis lateralibus rotundatis, minute denticulatis; anthera subglobosa; ovario cum pedicello glabro, clavato, c. 0,8 cm longo.

Celebes : On trees in the forests on the upper Lampasoe [River], near the old goldmines on [Mount] Djangdjang, in the Toli-Toli district, alt. c. 180m – R. Schlechter no. 20662, flowering in Jan. 1910.

The species is closest related to D. flabellum Rchb.f., but differs from it in the smaller flowers and in the narrow mentum, which is cut off obliquely at the apex. The flowers are yellow with the sepals and petals spotted and dotted red on the outside.

This group [section], Desmotrichum, despite Kränzlin's recently published 'monograph', urgently needs a critical reappraisal, all the more since a series of species rectified by Ridley, J.J.Smith and myself, have again been thrown into confusion.

24. Dendrobium heterobulbum Schltr., in Fedde Repertor., VIII (1910), p. 501.

Celebes : On trees in the coffee plantations on Mount Masarang (Minahassa), alt. c. 1000m – R. Schlechter no. 20410, flowering in Oct. 1909.

25. Dendrobium parvulum Rolfe, in Kew Bull., 1899, p. 127.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m – R. Schlechter no. 20471, flowering in Nov. 1909.

Regarding this little known species, it can be stated that it belongs in my section Oxyglossum and together with D. masarangense Schltr., described below, must rank as the westerly salient of the section. The flowers are violet-red, the labellum has a cinnabar-red tip and the anther is blueish.

26. Dendrobium masarangense Schltr., sp. nov.

Epiphyticum, caespitosum; pusillum, 2,5–3,5 cm altum; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis cylindraceis apicem versus paulo attenuatis, glabris, apice 2–3-foliatis, 0,4–0,7 cm altis, infra medium 1,5–2,5 mm diametentibus; foliis erecto-patentibus, angustissime linearibus, acutis, glabris, textura rigidulis, 1–2 cm longis, c. 0,1 cm latis; inflorescentiis ad apices pseudobulborum subsessilibus, bifloris, abbreviatis; bracteis ovatis, acuminatis, ovario multo brevioribus; floribus erectis, illis *D. subacaulis* Reinw. similis, glabris; sepalis lanceolatis, cuspidato-acuminatis, c. 0,4 cm longis, lateralibus basi margine anteriore in lobum oblique lanceolatum, deflexum producta cum pede columnae mentum anguste conicum, subrectum, subacutum, c. 0,6 cm longum formantibus; petalis oblique linearis-ligulatis, acuminatis, glabris, sepalis subaequilongis; labello linearis-ligulato, tertia parte basilari margine columnae pedi adnata, apicem versus paulo-dilatato et apice ipsa distinete cuspidato, 0,8 cm longo, supra medium 1,75 mm lato; columna brevi, pedo elongato. clinandrii lobis lateralibus brevibus rotundatis, dorsali dentiformi, acuto; anthera subreniformis, cucullata, antice truncata, subinconspicue papillosa; ovario 5-costato, cum pedicello brevi subclavato, c. 0,7 cm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m – R. Schlechter no. 20473, flowering in Nov. 1909.

My specimens had just finished flowering when I found them, but the complete flower could still be reconstructed. The colouring of the flowers with some certainty is white, with the lip having a yellow apex.

Amongst those species so far described, this one is probably most closely related to *D. subacaulis* Reinw., but I have quite a number of closely related forms from New Guinea which I shall soon publish.

27. Dendrobium macrophyllum A.Rich., Sert. Astrol. (1834), p. 22, t. 9.

D. tomohonense Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 244.

Celebes : On trees near Tomohon (Minahassa), alt. c. 1000m – R. Schlechter no. 20491, flowering in Nov. 1909; on trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1200m – R. Schlechter no. 20619, flowering in Nov. 1909.

I cannot distinguish Kränzlin's *D. tomohonense* from *D. macrophyllum* A.Rich., as it is now understood. Should it, nevertheless, become apparent that the plant described by Achille Richard initially from New Guinea is different from the western form which has penetrated to Java, then *D. Veitchianum* Lindl. and *D. ferox* Hassk. would still have priority over Kränzlin's name. *D. polysema* Schltr., which inconceivably was placed next to *D. macrophyllum* A.Rich. as a synonym by Kränzlin, even though I saw specimens of it, hardly warrants a comparison with Richard's species, at least not now, where so many species of this affinity have appeared.

28. Dendrobium Rumphianum Teysm. et Binnend., in Tijdschr. Néederl. Ind., XXIV (1862), p. 317.

D. bicaudatum Krzl., Engl. Pflanzenr., IV, 50, II.B., 21 (1910), p. 149

(an Lindl.?).

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20454, flowering in Nov. 1909; on trees near Lansot (Minahassa), alt. c. 700m - R. Schlechter no. 20635, flowering in Dec. 1909; on trees on Kapoetan Island, not far from Toli-Toli, alt. c. 20m - R. Schlechter no. 20689, flowering in Jan. 1910.

This species is widely distributed in the Moluccas and, without doubt, is the plant described by Teysman and Binnendijk. Likewise, the plants described by Kränzlin as D. bicaudatum (l.c.) belong to it, but whether the plant is identical with D. bicaudatum Lindl., must still be established. If this proves to be so, then Lindley's name has priority.

29. Dendrobium sororium Schltr., in Fedde Repertor., VIII (1910), p. 504.

D. pruinatum Krzl., in Engl. Pflanzenr., IV, 50, II. B., 21 (1910), p. 365 p.p. (nec Teysm. et Binnend.).

Celebes : On solitary, large trees near Kakas (Minahassa), alt. c. 650m - R. Schlechter no. 20603, flowering in Dec. 1909.

30. Dendrobium imitans Schltr., sp. nov.

Epiphyticum, erectum vel patulum, usque ad 100 cm longum; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus, bene foliatis, teretiusculis, rigidulis, vaginis foliorum omnino obtectis; foliis erecto-patentibus, linear-ligulatis, apice inaequilater et obtuso bilobatis, glabris, 7-10 cm longis, medio fere 0,7-1 cm latis; floribus in racemis lateralibus, abbreviatis, more sectionis bifloris, basi vagina duplicata, obtusa, brevi protectis; bracteis ovato-lanceolatis, parvulis, ovario breviribus; sepalis ovato-oblongis, obtusis, glabris, c. 6,5 mm longis, lateralibus basi margine anteriore dilatata, mentum obtusum, c. 5,5 mm longum formantibus; petalis oblique spathulato-ligulatis, nunc sublinearibus, obtusis, glabris, sepalis fere aequilongis; labello oblongo subcuncato, apice breviter bilobato, cum apiculo brevi, lobuliformi, obtuso interjecto, glabro, linea media a basi usque infra apicem inocrassata, c. 1 cm longo, infra apicem c. 3,5 mm lato; columna brevi, glabra, clinandrio minute denticulato, pede producto; anthera subquadrato-cucullata, glabra; ovario cum pedicello clavato, glabro, c. 0,8 cm longo.

Celebes : On trees near Lansot (Minahassa), alt. c. 700m - R. Schlechter no. 20625, flowering in Dec. 1909.

This species is very closely related to D. salaccense Lindl., but is best considered as a separate species, since it differs in the shape of the lip and in the relatively longer mentum. The flowers are coloured white-yellow.

31. Dendrobium truncicola Schltr., sp. nov.

Epiphyticum, patulum, habitu D. acuminatissimum Bl. simillimum, usque ad 100 cm longum; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus, vulgo leviter curvatis, bene foliatis, teretibus, glabris, vaginis foliorum arctissime amplectentibus omnino obtectis; foliis patentibus patulis, lanceolato-linearibus,

acutissimis, glabris, 8—10 cm longis, infra medium vel supra basin 0.4—0.6 cm latis; floribus in racemis abbreviatis, lateralibus, more sectionis bifloris, vagina duplicata, obtusa, brevi basi protectis; bracteis ovatis, acuminatis, hyalinis, ovario 3—4-plo brevioribus; sepalis e basi lanceolata filiformi-elongatis, glabris, c. 4.5 cm longis, lateralibus basi margine anteriore dilatata mentum obtusum, c. 0.5 cm longum formantibus; petalis sepalis similibus sed basi multo angustioribus, obliquis, sepalis subaequilongis; labello e basi cuneata supra medium trilobo, c. 0.9 cm longo, medio 0.6 cm lato, lobis lateralibus oblongo-falcatis, obtusis, margine interiore irregulariter subdentatis, intermedio lateralia paulo superante, circuitu late ovato, acuminato, marginibus altius lacerato-fimbriato, labello toto glabro, lobis lateralibus exceptis sparsim papillis subulatis donato, carina linearis, marginibus libera apice tridentata e basi labelli usque ad medium decurrente; columna brevi, semitereti, glabra, clinandrii lobis lateralibus denticulatis, pede producta; anthera cucullata, antice truncata, glabra; ovario cum pedicello glabro, clavato, c. 0.7 cm longo.

Celebes : On tree trunks on the hills near Lansot (Minahassa), often together with D. imitans Schltr., alt. c. 700m — R. Schlechter no. 20630, flowering in Dec. 1909.

The species grows only on thick tree-trunks in relatively open terrain, usually at about 3 — 4m above the ground. It represents a second example of the close relationship to certain species from the Malayan Archipelago, but which nevertheless must rightly be considered as existing side by side. Whilst D. imitans Schltr., which often grows in company with it, approximates closely to the Javanese D. salaccense Lindl., D. truncicola Schltr. is a species which imitates the Javanese D. acuminatissimum Bl., even though it differs altogether in the labellum.

32. Dendrobium Koordersii J.J.Sm., in Orch. Amboen (1905), p. 67.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m — R. Schlechter no. 20482, flowering in Nov. 1909.

My specimens agree well with the material I received from the Buitenzorg Gardens.

33. Dendrobium purpureum Roxb. var. Steffensianum Schltr., var. nov.

Epiphyticum, erectum vel patulum, pluricaulo, usque ad 50 cm longum; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus crassiusculis, denso foliatis, vaginis foliorum omnino obtectis, teretibus, demum longitudinaliter rugosis, glabris, usque ad 1 cm diametentibus; foliis erecto-patentibus, oblique ellipticis vel oblongis, obtusiusculis, glabris, 5—7 cm longis, medio sere 1.5—2.5 cm latis; racemis dense multifloris, subcapitato-abbreviatis, lateralibus, usque ad 2.5 cm longis, basi c. 3 cm diametentibus; bracteis patentibus, ovato-lanceolatis, ovario plures brevioribus; floribus in genere inter minores, illis D. purpurei Roxb. similibus; sepalis ovato-oblongis, apiculatis, extus minute papilloso-puberulis, c. 5.5 mm longis, lateralibus basi margine anteriore bene dilatata cum pedo columnas mentum conicum, obtusum, subrectum, c. 0.9 cm longum formantibus; petalis oblique oblongo-lanceolatis, acutis, margine minutissime ciliatis, sepalis subaequilongis; labello

e basi oblanceolata cum pede columnae quinta parte (labelli) connata medio paulo constricto, dimidio superiore sursum in laminam lanceolato-ellipticam, acutam, antice marginibus minutissime ciliatam dilatato, glabro; medio incrassatione lunata transversa donato, c. 1,4 cm longo, infra medium 0,2 cm lato, supra medium 3,5 mm lato; columna brevi, pede bene elongato, apice excavatione oblonga donato, clinandrii lobis laterali-bus oblique quadratis, integris; anthera subquadrato-cucullata, antice truncata; ovario cum pedicello clavato, minutissime papilloso-puberulo, c. 1,3 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 800m

- R. Schlechter no. 20549, flowering in Dec. 1909.

The variety to hand differs from the Type in somewhat broader leaves, shorter inflorescences and in the denser covering of papillae on the ovary, as well as on the outside of the petals. The rose-red flowers are paler at the base.

Perhaps the form will later be regarded as a species. I have dedicated it to our German Consul at Menado, H.F. Steffens, who assisted me with advice and help in every possible way during my stay in northern Celebes.

Incidentally, Kränzlin in his 'monograph' united my D. Morrisonii with D. purpureum Roxb. These are just about as different as, let us say, Orchis laxiflora Lam. is from Orchis incarnata L.

34. Dendrobium amblyogenium Schltr., sp. nov.

D. erosum Krzl., in Engl. Pflanzenr., IV, 50, II. Bd., 21 (1910), p. 97
p.p. (nec Lindl.).

Epiphyticum, patulum, pluricaule, usque ad 70 cm longum; rhizomate valde abbreviato; radicibus crassiusculis, elongatis, flexuosis, glabris; caulis gracilibus, foliatis, teretibus, mox longitudinaliter sulcatis, glabris, pennae corvinae crassitudine; foliis patentibus, 2,5—3 cm distantibus, linear-lanceolatis, obtusiusculis, apice inaequalibus, 4,5—7 cm longis, infra medium 0,5—0,8 cm latis, glabris; racemis dense 10—15-floris, erecto-patentibus, brevibus, 2—3 cm longis; floribus in sectione inter minores, illis D. obtusi Schltr. similibus, sed bene minoribus; sepalis oblongis, obtusis, glabris, 0,6 cm longis, lateralibus basi margine anteriore lobato-dilatata cum pede columnae mentum oblongum, obtusum, rectum, c. 7,5 mm longum formantibus; petalis oblique ellipticis, obtusis, margine minutissime ciliatis, cacterum glabris, sepalis subaequilongis; labello e basi ovali-concava tertia parte inferiore sensim constricto et sursum in laminam obovatam, concavam dilatato, apice cucullato-incurvo cum marginibus pectinato-incisis, obtuso, lamella semilunata, transversa in parte constricta infra medium ornato, glabro, 1,1 cm longo, supra basin 0,3 cm lato, infra apicem 0,4 cm lato; columna brevi, glabra, pede elongato, clinandrio trilobato, lobis laterali-bus postice in dentem triangulum productis, lobo intermedio (dorsali) lanceolato, acuto; anthera rhombeo-cucullata, antice excisa; ovario cum pedicello clavato, glabro, c. 1,5 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 1000m

- R. Schlechter no. 20574, flowering in Dec. 1910 [1909].

This is the most western species of my section Calyptrochilus, a group which is well defined and easily recognised by the labellum, but which appears to have been missed by Kränzlin, even though J.J. Smith recently has described several

species which have been placed in it. How Kränzlin could have named this plant as 'D. erosum' is inconceivable to me.

35. Dendrobium klabatense Schltr., in Fedde Repertor., VIII (1910), p. 505.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 500m - R. Schlechter no. 20550, flowering in Dec. 1909.

36. Dendrobium furcatum Reinw., ex Lindl., in Journ. Linn. Soc. Bot., III (1854), p. 13.

D. amabile Schltr., in Fedde Repertor., VIII (1910), p. 505.

D. Sarasinorum Krzl., in Engl. Pflanzenr., IV, 50, II. Bd., 21 (1910), p. 55.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 900m - R. Schlechter no. 20463, flowering in Nov. 1909; on trees in the forests of Mount Klabat (Minahassa), alt. c. 1700m - R. Schlechter no. 20577, flowering in Dec. 1909; on trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1300m - R. Schlechter no. 20623, flowering in Dec. 1909.

When I published my D. amabile, the presence of the obscure D. furcatum Reinw. had escaped my notice; but shortly afterwards, by chance, I came across its description and became convinced that my D. amabile was identical with it. Kränzlin's species agrees completely with mine and thus, likewise, is identical with D. furcatum Reinw. Although Kränzlin saw the Type in Lindley's Herbarium and published his comments about it, the identity appears to have escaped him.

As I mentioned already earlier, I based a separate section Dolichocentrum, on it.

37. Dendrobium heterocarpum Wall., ex Lindl., Orch. (1830), p. 78.

D. Minahassae Krzl., in Engl. Pflanzenr., IV, 50, II. Bd., 21 (1910), p. 107.

D. Hildebrandii Krzl., in Engl. Pflanzenr., IV, 50, II. Bd., 21 (1910), p. 34 p.p. (nec Rolfe) quoad spec. celebic.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20496, flowering in Nov. 1909; on trees in forest clearings on Mount Sopoetan (Minahassa), alt. c. 1000m - R. Schlechter no. 20622, flowering in Dec. 1909.

In the Berlin Herbarium I have seen both the specimens described by Kränzlin as 'D. Hildebrandii and D. Minahassae sp. nov.' and find in them nothing other than the common, widely distributed D. heterocarpum Wall. The illustrations ascribed by Kränzlin, l.c. (1910), p. 106, fig. 5 E-G to 'D. Minahassae' obviously do not belong to this species, as one can readily convince oneself of by comparing the description. Perhaps L-M belong to it, but then could be classed as caricatures.

Warburg's specimens of 'Dendrobium Minahassae' clearly have been badly dried

after lying in alcohol for a long time and therefore the species can only be recognised by examination of the flowers.

38. Dendrobium superbum Rchb.f., in Walp., Ann., VI (1861), p. 282.

Celebes : On trees near Ratahan (Minahassa), alt. c. 400m - R. Schlechter no. 20608, flowering in Dec. 1909.

The present specimens agree overall well with those I collected in Borneo at Samarinda (13346), but they have grown more robustly. The above locality in Celebes is the yard of the resthouse at Ratahan and is the only place where I know the species in the Minahassa [district]. Near to the same 'resthouse', especially in Mangifera trees, a new Taeniophyllum is growing, but it was not in flower when I spent the Christmas days there in 1909.

XLII. Eria Lindl.*

* Footnote : Unfortunately, I was already involved in the second proof when Kränzlin's treatment of the Eria genus appeared. I therefore have had to omit mentioning the many synonyms with which this author has presented us.

1. Eria klabatensis Schltr., in Fedde Repertor., VIII (1910), p. 510.

Trichotosia klabatensis Krzl., in Engl. Pflanzenr., IV, 50, II B., 21 (1911), p. 145.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 800m R. Schlechter no. 20539, flowering in Dec. 1909.

2. Eria virginialis Schltr., in Fedde Repertor., VIII (1910), p. 511.

Trichotosia virginialis Krzl., in Engl. Pflanzenr., IV, 50, II B., 21 (1911), p. 161.

Trichotosia pleistophylla Krzl., l.c. (1911), p. 160.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20461, flowering in Nov. 1909.

3. Eria decipiens Schltr., sp. nov.

Epiphytica, erecta, in ramis arborum repens, usque ad 20 cm alta; rhizomate elongato, tereti, vaginis arcte amplectentibus obpresso; radicibus filiformibus, elongatis, flexuosis, villosulis; caulinis simplicibus, dense foliatis, varianis foliorum omnino absconditis, aspectu species sectionis Oxystophylli in genere Dendrobium in mentem revocantibus, 3-4 cm distantibus; foliis equitantibus, falcato-lanceolatis, obtusiusculis vel acutis, glabris, textura carnosulis, parte libera (lamina) usque ad 3 cm longis, basi 0.7-0.9 cm latis; racemis brevibus, paucifloris, erecto-patentibus, pedunculo cum rhachi foliis subduplo breviore; bracteis patentibus ovato-lanceolatis, subacutis, ovario subdupo brevioribus, glabris; floribus in sectione inter minores, erecto-patentibus, glabris; sepalo intermedio oblongo, obtuso, c. 1 cm longo, lateralibus subfalcato-oblongis, obtusis, basi margine anteriore dilatata mentum breve, obtusum formantibus, sepalo

intermedio aequilongis; petalis oblique oblongo-subspathulatis, obtusis, glabris, sepalis paulo brevioribus; labello e basi cuneato-obovata tertia parte anteriore trilobo, petalis acquilongo, medio fere 0.4 cm lato, lobis lateralibus brevibus, triangulis, obtusiusculis, intermedio subquadrato-oblongo, obtuso, margine leviter undulato, lateralia bene superante, labello toto glabro, fascia mediana incrassata, haud bene distincta e basi usque ad basin lobi intermedii decurrente; columna brevi crassiuscula, clinandrio trilobato, pede elongato, glabro; anthera late ovata, apiculata, glabra; ovario cylindrico glabro, gracili, c. 1.7 cm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 5m - R. Schlechter no. 20692, flowering in Jan. 1910.

This belongs to a small group of species which are very closely related in their characters to the Erias of the section Cylindrolobus, but which on account of their equitant leaves are reminiscent of the section Aporum and therefore are probably best separated as an individual section Aporodes. The Type of this section is E. aporoidea Lindl., and recently I placed a further species, Eria soronensis Schltr. (cf. Repertor., IX, p. 286) in it. The species here differs from both of these, but is distinguished by the labellum. Furthermore, I even initially considered it to be E. aporoidea Lindl.

Dendrobium lunatum Lindl. probably belongs here, if the specimens I have under this name in my herbarium have been correctly identified, since I suspect that the flowers of Lindley's specimens were damaged.

4. Eria tricuspidata Rolfe, in Kew Bull. (1899), p. 128.

Eria Sarasinorum Krztl., in Engl. Bot. Jahrb., Beilb. 101 (1910), p. 29, p.p.
E. tomohonensis Krztl., l.c., Beilb., 101. p. 30.

Celebes : On trees in the coffee plantations on Mount Masarang (Minahassa), alt. c. 1000m - R. Schlechter no. 20408, flowering in Nov. 1909.

I must admit that, had I not seen the Types of the species, I would not have been able to identify them, since their description in no way agrees with my diagnoses. Furthermore, I have examined the Types of both Kränzlin species and can find no difference from Rolfe's species.

The species is a common orchid in the ranges of the Minahassa [district] at an altitude of c. 1000m.

5. Eria kawengica Schltr., sp. nov.

Epiphytica, erecta, humilis, c. 25 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis ovoideis vel angusto conicis, unifoliatis, 5-7 cm altis, infra medium 1.8-2.5 cm diametentibus; folio erecto-patente, elliptico-ligulato vel elliptico-ob lanceolato, obtuso, basi cuneato, sensim in petiolum brevem angustato, glabro. petiolo inclusio 18-22 cm longo, medio fere 3.5-4.2 cm lato; racemis versus apicem pseudobulborum lateralibus, erecto-patentibus, folio brevioribus, dense multifloris, cylindraceis, cum pedunculo brevi usque ad 15 cm longis: bracteis lanceolatis, acuminatis, ovario brevioribus; floribus in sectione mediocribus, erecto-patentibus: sepalis ovalibus, obtusis, extus stellatim-puberulis, intermedio 5.5 mm longo, lateralibus basi margine anteriore dilatata cum pede columnae mentum oblongum, obtusum, c. 0.5 cm longum formantibus, antice sepalo intermedio paululo longioribus; petalis oblique obovato-oblongis, obtusis, glabris, sepalo intermedio paululo brevioribus; labello e basi linearis-unguiculata cuneato.

quarta parte anteriore trilobo, c. 0,7 cm longo, inter apices loborum lateralium 3,5 mm lato, lobis lateralibus oblique oblongis, parvulis, intermedio subreniformi cum apiculo lobuliformi brevi interjecto, glabro, carinis 2 obtusis e basi labelli usque in basin lobi intermedii decurrentibus, approximatis, parallelis, callo parvulo quadrato in ima basi labelli; columna brevi, crassiuscula, glabra, pede gracili, elongata, apice dente brevi ornata; anthera subreniformi, antice retusa cum apiculo minuto, glabra; ovario cum pedicello clavato, stellatim-puberulo, c. 0,8 cm longo.

Celebes : On trees in the forests on Mount Kaweng (Minahassa), alt. c. 1000m

- R. Schlechter no. 20595, flowering in Dec. 1909.

In the structure of its lip, this species is fairly isolated in the section Hymeneria and shows no close connections to any of the species known at present in Celebes. The flowers are white-pink, the labellum yellow in front, the petals rose-red towards the base.

6. Eria rhizophoreti Schltr., sp. nov.

Epiphytica, erecta, 15—20 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis crasse cylindraceis, vaginis paucis obsessis, apice unifoliatis, usque ad 8 cm longis, medio fere 0,9—1,4 cm diametentibus; folio erecto-patente, elliptico-ligulato vel anguste oblongo-ligulato, obtuso, basi sensim paulo angustato, glabro, 8—11 cm longo, medio fere 1,6—3,2 cm lato; racemis versus apicem pseudobulborum lateralibus, pro sectione sublaxe 15—25-floris. pedunculo brevi inclusu usque ad 12 cm longis, erecto-patentibus; bracteis oblongo-ligulatis, obtusis, ovario brevioribus: floribus in sectione inter mediores, erecto-patentibus; sepalis lanceolato-oblongis, obtusiusculis, glabris, 0,9 cm longis, lateralibus basi margine antero dilatata cum pede columnae mentum breve, obtusum, 0,3 cm longum formantibus; petalis oblique lanceolato-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello e basi cuneata supra medium trilobo, c. 1 cm longo, inter apices loborum lateralium 0,5 cm lato, lobis lateralibus falcato-oblongis, parvulis, intermedio e ungue quadrata antice paulo dilatata subreniformi, exciso, laterales duplo fere superante, carinis 3 e basi labelli puberulis, intermedio usque ad apicem decurrente callis 2 farinosis in dimidio inferiore lobi intermedii aucto, apice farinoso, lateralibus intermedio parallelis usque ad medium labelli productis; columna semitereti, glabra; ovario cum pedicello glabro, 1,2 cm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 10m - R. Schlechter no. 20694, flowering in Jan. 1910.

This species, likewise, is a somewhat divergent type of the section Hymeneria and is easily distinguished from the others in habit, as well as in the structure of the lip. The colouring of the flowers is yellowish, the labellum has red-margined side lobes.

7. Eria oreogena Schltr., sp. nov.

Epiphytica, erecta, 25—30 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis caulinformibus, cylindricis, carnosus, 12—19 cm altis, medio fere 0,4—0,7 cm diametentibus, apice 2—3-foliatis; foliis erecto-patentibus vel patentibus, approximatis, lanceolato-ligulatis, acuminatis, basi angustatis, glabris, 12—16 cm longis, medio vel infra medium 2,5—3 cm latis; racemis erecto-patentibus, cum pedunculo brevi 6—8 cm longis, laxius 10—15-floris; bracteis patulis, ovato-lanceolatis, acuminatis, ovario vulgo breviori-

bus; floribus erecto-patentibus in sectione mediocribus; sepalis oblongis, obtusis, glabris, 0,9 cm longis, lateralibus basi margine anteriore dilatata cum pede columnae mentum obtusum, 0,6 cm longum formantibus; petalis oblique ovalibus, obtusis, glabris, sepalis subaequilongis; labello late cuneato, dimidio anteriore trilobo, c. 1 cm longo, inter apices loborum lateralium 0,9 cm lato, glabro, lobis lateralibus oblique oblongis obtusis. parvulis, intermedio subdupo longiore reniformi, antice exciso, callis 6 obscuris in medio cum nervo medio incrassato, carinis 3 subparallelis e basi labelli usque infra medium apicem versus paulo incrassatis; columna brevi, glabra; ovario cum pedicello glabro, c. 1,2 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 600m

- R. Schlechter no. 20584, flowering in Dec. 1909.

The species belongs to the relationship of E. oligotricha Schltr: and E. papuana J.J.Sm., thus approaching the Papuan types of the section Hymeneria. The colouring of the flowers is whitish yellow with a reddish labellum and a golden-yellow front lobe.

8. Eria vulcanica Schltr., in Fedde Repertor., VIII (1910), p. 510.

Celebes : On trees in the forests of Mount Mahowo (Minahassa), alt. c. 1200m

- R. Schlechter no. 20511, flowering in Dec. 1909.

9. Eria pulla Schltr., sp. nov.

Epiphytica, erecta, exsiccatione nigrescens, pulla, usque ad 30 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis cylindraceis, carnosis; apice vulgo bifoliatis, 3-6 cm altis, medio fere 1-1,5 cm diametentibus; foliis erecto-patentibus, elliptico-lanceolatis, subacutis, basin versus sensim in petiolum plus minus distinctum angustatis, petiolo incluso 10-25 cm longis, medio vel supra medium 2,3-3,5 cm latis; racemis versus apices pseudobulborum lateralibus, pedunculo brevi incluso usque ad 6,5 cm longis, erecto-patentibus, sublaxe 10-20-floris; bracteis oblongis, obtusis, ovario fere aequilongis; sepalis ovalibus, obtusis, extus sparsim stellato-puberulis, c. 0,6 cm longis, lateralibus basi margine anteriore valde dilatata cum pede columnae mentum oblongum, obtusum, 0,5 cm longum formantibus; petalis oblique oblongo-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello e basi cucullato-concava quarta parte inferiore utrinque lobulo brevi dentiformi donato, deinde in laminam concavam late cuneatam, antice aequaliter trilobatam expanso, glabro, vix 0,6 cm longo, antice vix 0,4 cm lato, lobis triangulis subacutis, lateralibus divergentibus; columna brevi, glabra, pede elongato: anthera reniformi, apiculata, glabra; ovario cum pedicello clavato, pilis stellatis subviloso, 0,5 cm longo.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 800m

- R. Schlechter no. 20551, flowering in Dec. 1909.

A divergent species of the section Urostachya which is not difficult to recognise by the shape of the labellum. The pale rose-red flowers have a dark violet-red column..

10. Eria celebica Rolfe, in Kew Bull., 1899, p. 128.

Eria straminea Krzl., in Engl. Bot. Jahrb., Beibl., 101, p. 27.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20469, flowering in Nov. 1909.
 Kränzlin's species does not differ in any way from Rolfe's plant.

11. Eria opeatoloba Schltr., in Fedde Repertor., VIII (1910), p. 511.

Celebes : On trees near Mount Tampusso (Minahassa), alt. c. 900m - R. Schlechter no. 20504, flowering in Dec. 1909.

The species is closely related to E. celebica Rolfe, but differs in the labellum. Perhaps when still more locality specimens become available, it may be established that it should be considered only as a variety of E. celebica Rolfe.

12. Eria Minahassae Schltr., sp. nov.

Epiphytica, erecta, gracilis, usque ad 40 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis caulinibus, carnosis, nunc subclavatis, basi vaginis paucis obsessis, apicem versus 5-8-foliatis, c. 30 cm altis, supra medium 1-1,5 cm diametentibus; foliis patentibus, anguste lanceolato-ligulatis, acutis, basin versus sensim paulo angustatis, glabris, 17-30 cm longis, medio sere 0,8-1,5 cm latis; racemis versus apices pseudobulborum lateribus, erecto-patentibus, pedunculo abbreviato inclusio usque ad 12 cm longis, cylindricis, dense multifloris; floribus in sectione inter minores patentibus; bracteis decurvis, ovatis, obtusis, ovario vulgo brevioribus; sepalis late ovatis, subacutis, dimidio inferiore sparsim stellato-puberulis, vix 0,3 cm longis, lateralibus basi in margine anteriore bene dilatata mentum obtusum, c. 0,2 cm longum formantibus; petalis oblique oblongis, obtusis glabris, sepalis paulo brevioribus; labello e basi cucullata trilobo, lobis lateralibus basalibus, oblique triangulis, obtusis, erectis, parvulis, inter se in ungue lobi intermedii lamella profunde emarginata conjunctis, lobo intermedio e basi breviter unguiculata in laminam perlate rhombream obtusam expanso, apicem columnae haud attingente, labello toto glabro, c. 3,5 mm longo, usque ad apices loborum lateralium vix 1,5 mm longo, lobo intermedio infra apicem c. 2,25 mm lato; columna perbrevi, glabra; anthera reniformi-cucullata, glabra; ovario cylindraceo, cum pedicello stellato-puberulo, vix 0,5 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20634, flowering in Jan. 1910.

The species to hand is a relative of E. erecta Lindl., but which in habit is more reminiscent of E. multiflora Lindl. The species of the section Urostachya from this affinity are often so very similar that they can be held apart only with difficulty, even though one is aware of dealing with species that really are quite different.

The flowers of E. Minahassae Schltr. are pale or dark rose-red, with a darker labellum and dark purple column.

13. Eria sopoetanica Schltr., sp. nov.

Epiphytica, erecta, usque ad 45 cm alta; rhizomate valde abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis caulinibus, cylindraceis, carnosis, basi vaginatis, apice 5-7-foliatis, 20-30 cm longis, 1-1,5 cm diametentibus; foliis erecto-patentibus, lanceo-

lato-ligulatis, obtusis, basi sensim paulo angustatis, 15—25 cm longis, medio fere 2—3,8 cm latis; racemis suberectis versus apices pseudobulborum lateralibus, perdense multifloris, cylindraceis, pedunculo per breve inclusio usque ad 7 cm longis; bracteis deflexis, oblongis, obtusis, ovario brevioribus; floribus in sectione inter minores, patentibus, pallide roseis; sepalis oblongis, obtusiusculis, glabris, c. 3,5 mm longis, lateralibus basi margine anteriore dilatata mentum obtusum c. 2,5 mm longum cum pede columnae formantibus; petalis subfalcato-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello e basi cucullato-concava trilobo, lobis lateralibus basalibus, erectis, anguste oblongis, obtusis, parvulis, inter se in basi unguis lobi intermedii lamella emarginata conjunctis, lobo intermedio longius unguiculato; antice in laminam late obovatam obtuse apiculatam dilatato, apicem columnae paululo excedente, labello toto glabro, c. 0,4 cm longo, usque ad apices lobi lateralium 1,5 mm longo, lobo intermedio infra apicem 0,2 cm lato; columna brevi, glabra, pede facie subinconspicue puberulo; anthera subreniformi-cucullata, glabra; ovario gracili, cum pedicello minute puberulo, c. 0,4 cm longo.

Celebes : On trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1300m — R. Schlechter no. 20618, flowering in Dec. 1909.

Likewise, a relative of E. erecta Lindl., hence also of E. Minahassae Schltr. described above. The differences between the species are to be found in the variation of the individual floral segments. E. sopoetanica Schltr. has single-coloured whitish rose-red flowers

14. Eria vagans Schltr., sp. nov.

Epiphytica, vagans, ramosa, usque ad 80 cm longa; rhizomate elongato, flexuoso, vaginis arcte amplectentibus obtecto, tereti, 0,5—0,8 cm diametente; radicibus filiformibus, elongatis, flexuosis, villosulis; pseudobulbis 4—10 cm distantibus, cylindraceis, carnosis, basin et apicem versus nunc paulo attenuatis, basi vaginis paucis obsessis, dimidio superiore 6—8-foliatis, saepius plus minus curvatis, 9—25 cm longis, medio fere 1—1,3 cm diametentibus; foliis erecto-patentibus, angustius lanceolato-ligulatis, acutis, basin versus paulo angustatis, 12—20 cm longis, medio fere 1,2—1,9 cm latis; racemis versus apices pseudobulborum lateralibus, flexuosis, foliis aequilongis, laxe multifloris; bracteis patulis oblongis, obtusis, ovario brevioribus; floribus erecto-patentibus, in genere inter minores; sepalis lanceolatis, subacutis, glabris, 0,6 cm longis, lateralibus subfalcatis, basin versus margine anteriore paulo dilatatis; petalis sepalis similibus sed angustioribus, obliquis, acuminatis, paululo brevioribus; labello suborbiculari-rhombeo, minute apiculato, basi subauriculato, glabro, lamellis 3 brevibus obscuris infra medium in disco ornato, vix 0,3 cm longo, infra medium aequilato; columna semitereti glabra; ovario cylindrico, gracili, sparsim et minutissime stellato-puberulo, c. 0,4 cm longo.

Celebes : On trees on Kapoetan Island, near Toli-Toli, alt. c. 10m — R. Schlechter no. 20678, flowering in Jan. 1910. [cf. LXIII/1, same citation].

The plant belongs to the small section of Eria I have designated as Polyura (cf. Fedde Repertor., IX (1910), p. 106). The section is very characteristic in the short, very simple labellum and in the strongly reduced mentum formation of the flower. The major portion of the species appears to occur in the

Philippines, but the section penetrates to the west as far as the hinterlands of India and to the east as far as the Samoan and Tongan Islands. This species is easily recognised by its habit and in other respects it is close to E. polyura Lindl. The flowers are reddish white.

15. Eria glabra Schltr., sp. nov.

Epiphytica, erecta, gracilis, glaberrima, usque ad 25 cm alta; rhizome abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis caulinibus, gracilibus, cylindraceis, basi paucivaginatis, apice 3-4-foliatis, 7-15 cm altis, 0,4-0,7 cm diametentibus; foliis erecto-patentibus, lanceolato-vel elliptico-ligulatis, obtusiusculis, basin versus sensim paulo angustatis, glabris, 6-12 cm longis, medio fere 1,5-2 cm latis; spicis gracilibus, versus apicem caulis lateralibus, erecto-patentibus, cum pedicello brevi usque ad 10 cm longis, laxius 20-30-floris; bracteis ovato-ellipticis, acuminatis, ovario fere duplo brevioribus; floribus erecto-patentibus, illis E. Vieillardii Rchb. f. similibus; sepalis oblongo-lanceolatis, subacutis, glabris, 0,6 cm longis, lateralibus obliquis, basin versus margine anteriore paululo dilatatis; petalis sepalis similibus sed paulo minoribus, obliquis, glabris; labello ovato, obtusiusculo, e medio paululo angustato, dimidic inferiore superne lamellulis 2 obliquis, brevibus ornato, glabro, c. 3,5 mm longo, infra medium 2 mm lato; columna semitereti, glabra; anthera subreniformi-cucullata, breviter apiculata, glabra; ovario gracili, glabro, cum pedicello c. 0,6 cm longo.

Celebes : On trees in the forests of the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang (Toli-Toli district), alt. c. 180m - R. Schlechter no. 20673, flowering in Jan. 1910.

E. Vieillardii Rchb.f. and E. tenuiflora Ridl. should be considered as the closest relatives, but it can be readily distinguished from both these by the colouring of the flowers. Eria glabra Schltr. has pale yellowish flowers with a lip that is dark purple in the lower half.

16. Eria javanica Bl. ex J.J.Sm., Orch. Jav. Figur. Atl. (1911), f. CCLXXXVII.

Eria rugosa Lindl., Gen. Spec. Orch. (1830), p. 66.

Celebes : On trees not far from Lansot (Minahassa), alt. c. 700m - R. Schlechter no. 20626, flowering in Dec. 1909.

The specimens agree completely with those from Java.

17. Eria, sp. nov.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 10m - R. Schlechter no. 20696, in fruit in Jan. 1910.

Clearly a [member of the section] Hymeneria which has the same habit as E. bractescens Lindl. The flowers were too far into fruit to be able to describe the individual segments.

XLIII. Bulbophyllum Thou.1. Bulbophyllum subuliferum Schltr., sp. nov.

Epiphyticum, decumbens, c. 15–20 cm altum; rhizomate elongato, tereti, rigido, c. 0.5 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis depauperatis, 7–10 cm distantibus, cylindraceis, basin versus vix dilatatis, unifoliatis, c. 1 cm altis, quam rhizoma vix crassioribus; foliis elliptico-oblongis, obtusissimis, nunc apice breviter excisis, basi in petiolum brevem sensim angustatis, petiolo inclusu 12–17 cm longis, lamina medio fere 4,5–6,2 cm lata; pedunculis singulis in rhizomati natis, vaginis paucis obsessis, vulgo c. 2 cm altis, unifloris; bractea abbreviata, truncata; floribus erectis in genere inter majores, glabris illis, *B. patentis* King similibus, sed paulo majoribus; sepalis patentibus, oblongo-ligulatis, obtusis, c. 4 cm longis, lateralibus basi margine anteriore ampliatis, subfalcato-obliquis; petalis oblique lanceolato-ligulatis, obtusiusculis, sepalis paulo brevioribus; labello e basi ovato-cordata curvato in subulam acutam, satis conspicuum producto, c. 2,5 cm longo, subtus carinato; columna crassiuscula ebrachiata, glabra, pede gracili apice incurvo; ovario cum pedicello acili glabro, c. 5,5 cm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 10m – R.

Schlechter no. 20646, flowering in Jan. 1910.

The species is most closely related to several, still undescribed Papuasian ones, otherwise it could compared with D. patens King. It is conspicuous in lacking column-arms. The flowers are reddish, with darker spots.

2. Bulbophyllum Minahassae Schltr., sp. nov.

Epiphyticum, decumbens, usque ad 20 cm altum; rhizomate elongato, crassiusculo, tereti, vaginis brevibus obtecto: radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 1,5–2 cm distantibus, cylindraceis, obscure 4-angulatis, unifoliatis, apicem versus paulo attenuatis, 3–3,5 cm longis, medio fere 0,5–0,8 cm diametentibus; foliis erectis, oblanceolatis, obtusis, basin versus sensim in petiolum 1–1,5 cm longum attenuatis, lamina 7–9 cm longa, supra medium 2,3–2,7 cm lata; pedunculo tereti, glabro, vaginis arcte amplectentibus, apiculatis, c. 4 obsesso, pseudobulbis duplo fere longiore, unifloro; bractea perbrevi, deltoidea, acuminata; floribus in genere inter majores, erectis; sepalis lanceolatis, longius acuminatis vel e basi ovala angustatis, intermedio fenestrato, c. 8 cm longo, lateralibus obliquis, basi subunguiculato-angustatis, intermedio paulo brevioribus; petalis oblique lanceolato-ovatis, apice setiformi-aristatis cum tentaculo subgloboso, lamina ipsa c. 0,7 cm longa, arista fere aequilonga; labello linguiformi, obtuso, arcuato, glabro, dimidio anteriore paulo angustato, subtus carinato, haud explanato c. 5,5 mm longo; columna perbrevi, crassiuscula, brachiis triangulis, brevibus, pede gracili, curvato; anthera galeato-cucullata, glabra, dorso et apice excisa; ovario cylindrico, glabro, cum pedicello c. 3 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 850m – R. Schlechter no. 20518, flowering in Dec. 1909.

One of those interesting species of a small Malayan-Papuasian group gathered around B. grandiflorum Bl., for which I suggest the name Hyalosema on account of the peculiar glossy spots on the dorsal sepal which are so characteristic for these species. The present species is probably best compared with B. Leysianum Burb. from Java, but from which it differs in the narrower pseudobulbs, the glabrous lip, the anther and in the conspicuously small column. Unfortunately,

I found only a solitary specimen of the species.

3. Bulbophyllum amplebracteum Teysm. et Binnend., in Naturk. Tydschr. Nederl. Ind., XXIV (1863), p. 307.

Celebes : On trees near Tomohon (Minahassa), alt. c. 1000m - R. Schlechter no. 20498, flowering in Nov. 1909.

This species, together with B. klabatense Schltr., described below, I should like to class as Types of a separate section Lepidorhiza, which is distinguished from Sestochilus by the extended multi-flowered inflorescence, and which in section Pahudia (with B. Pahudi Rchb.f. and B. virescens J.J.Sm.) is umbellate.

4. Bulbophyllum klabatense Schltr., sp. nov.

Epiphyticum, pro genere robustum, 25—30 cm altum; rhizomate abbreviato, dense pseudobulbis obsesso; radicibus filiformibus, elongatis, flexuosis, more *B. amplebractei* Teysm. et Binnend. densissime lepidoto-asperatis; pseudobulbis ovoideis vel anguste ovoideis, unifoliatis, 3—4 cm altis, infra medium 1,4—1,8 cm diametentibus; foliis erectis, ellipticis, obtusis, basi sensim in petiolum plus minus brevem angustatis, lamina 17—25 cm longa, medio 4,5—6,5 cm lata, petiolo sulcato 2—5,5 cm longo; pedunculis erectis vel adscendentibus, teretibus, glabris, vaginulis paucis dissitis obsessis, laxe 2—3-floris, foliis vulgo brevioribus, inflorescentia inclusa usque ad 20 cm longis; bracteis cucullato-amplectentibus, apiculatis, amplis, tamen ovario gracili 2—3-plo brevioribus; floribus illis *B. amplebractei* T. et B. similibus sed paulo minoribus; sepalo intermedio ovato, acuminato, carinato, glabro, 3,2 cm longo, lateralibus more sectionis basi tortis, ligulatis, obtusiusculis, glabris, extus carinatis, 4,5 cm longis, obliquis; petalis oblique ovatis, subacutis, glabris, c. 2 cm longis; labello leviter curvato, circuitu ovato-lanceolato, carnosulo, basi utrinque lobulo brevi falcato, apice truncatulo, serrulato donato, basi medio callo ornato, carinis 2 denticulatis, in medium decurrentibus antepositis, antice leviter acuminato, superne dentibus pluribus subulatis sparsis obsesso, haud explanato c. 1,5 cm longo; columna brevi, glabra, brachiis linearibus, amplis, subfalcato-adscendentibus; anthera galeato-cucullata, glabra; ovario cum pedicello glabro, c. 2,5 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 900m - R. Schlechter no. 20526, flowering in Dec. 1909.

Undoubtedly, this species belongs to the closer affinity of B. amplebracteum Teysm. et Binnend. and the Papuan B. tridentatum Rolfe. It is readily distinguished from these by the broader labellum which is covered in the front, and on the upper side, with short, pointed, soft bristles. The flowers are yellowish with red-veined sepals and petals.

5. Bulbophyllum pachyneuron Schltr., sp. nov.

Epiphyticum, gracillimum, perlonge repens, vagans; rhizomate filiformi, flexuoso, valde elongato, c. 0,2 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 2,5—10 cm distantibus, cylindraceis, unifoliatis, nunc apicem versus paulo attenuatis, 2—3 cm altis, medio sere 2,5—3,5 mm diametentibus; foliis erectis, lanceolatis vel elliptico-lanceolatis, acutis vel subacuminatis, basi abruptius in petiolum brevem, 0,5—1 cm longum contractis, glabris, lamina 6—10 cm longa, infra medium 1,5—2,5 cm lata; pedunculis singulis in rhizomate inter-

pseudobulbis natis, gracillimis, erectis, tenuibus, glabris, basi vaginulis paucis minutis obssessis, caeterum nudis, unifloris; 0,9—1,5 cm longis, bractea parvula, ovario pedicellato multo breviore; floribus pro genere inter minores, atrosanguineis; sepalo intermedio triangulo, apiculato, dorso nervis 3 incrassatis donato, 4,5 mm longo, glabro, lateralibus oblique ovalibus, apiculatis, glabris, extus nervis 5 incrassatis, c. 0,6 cm longis; petalis minutis, oblique lancolato-ligulatis, acutis, basi margine anteriore obtuse angulatis, c. 1,5 mm longis, glabris; labello carnosovali, basi apiceque retuso, medio subconstricto, superne sulcato, lateribus et subtus dense papilloso-verruculoso, subtus medio foveolato, 2,75 mm longo; columna glabra, labello duplo breviore, bracteis subulatis, brevibus; anthera dorso umbonata, antice profunde excisa, glabra; ovario cum pedicello gracili c. 0,7 cm longo, glabro.

Celebes : On trees in the forests of Mount Kaweng (Minahassa), alt. c.

1000m - R. Schlechter no. 20596, flowering in Dec. 1909.

In floral structure this species resembles B. gracile Lindl., but in habit is closer to B. ciliatum Lindl.; however, it is larger in all segments. The Monanthaparva group [section] includes very different species and at a later date should probably best be divided into several sections.

6. Bulbophyllum lokonense Schltr., sp. nov.

Epiphyticum, gracillum, longe repens; rhizomate valde elongato, flexuoso, filiformi, c. 0,2 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis oblique ovoideis vel subglobosis, unifoliatis, 5—10 cm distantibus, 0,7—1 cm altis, infra medium 0,5—0,8 cm diametentibus; foliis erectis, ligulatis, subacutis vel oblique apiculatis, basi subpetiolato-angustatis, 5—9 cm longis, medio fere 0,7—1,3 cm latis; pedunculis singulis ad basin pseudobulborum vel saepius in rhizomate inter pseudobulbos natis, gracilimis, filiformibus, erectis, vaginulis paucis dissitis obssessis, 3—4 cm altis, unifloris; bractea minuta apiculata vel obtusa, ovario pedicellato multoties breviore; floribus pro sectione inter majores, incurvis, glabris; sepalo intermedio lanceolato-ligulato, acuto, basin versus angustato, 1,5 cm longo, lateralibus subfalcato-ligulatis, apiculatis, intermedio latioribus sed aequilongis; petalis subfalcatis, lineari-ligulatis, obtusis, 7,5 mm longis; labello oblongo-ligulato, obtuso, basi utrinque subangulato, marginibus paulo recurvis, glabro, petalis aequilongo sed latiore; columna glabra, c. 2 mm alta, brachiis auriculiformi-abbreviatis, falcato-decurvis, obtusis, pede c. 0,3 cm longo; anthera glabra, apiculata, basi profunde cordata; ovario cum pedicello glabro, gracili, 0,8—1 cm longo.

Celebes : On trees in the forests on Mount Lokon (Minahassa), alt. c. 1300m

- R. Schlechter no. 20438, flowering in Nov. 1909.

In floral size this species, likewise, stands alone in the section Monanthaparva. In addition, the column-arms are much reduced and bent downwards. So far, I know of no species with which it is closely related. The flowers are yellowish with brown veining.

7. Bulbophyllum longerepens Schltr., sp. nov.

Epiphyticum, pusillum, perlonge repens, vagans; rhizomate valde elongato, filiformi, flexuoso, tereti, 1—1,5 mm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 1,5—5 cm distantibus, ovalibus vel cylindraceis, apicem versus angustatis, unifoliatis, 0,5—1 cm altis, infra medium 0,3—0,6 cm diametentibus; foliis erectis, ligulatis, obtusiusculis, basi subpetiolato-angustatis, glabris, 1,8—5 cm longis.

medio fere 0,3—0,8 cm latis; pedunculis in rhizomate natis, nunc singulis, nunc approximatis, tenuibus, basi vaginulis paucis obsessis, unifloris, 0,3—0,5 cm longis; bractea pedicellum basi amplectente, late ovata, apiculata, ovario bene breviori; floribus in genere inter minores, flavidis, illis *B. ciliati* Ldl. similibus, sed multo minoribus; sepalis anguste lanceolatis, acuminatis, glabris, 0,7 cm longis, lateralibus subfalcato-obliquis; petalis minutis, oblique oblongo-ligulatis, obtusis, glabris, vix 1 mm longitudine excedentibus; labello genuflexo-arcuato, oblongo, obtuso, glabro, 1,5 mm longo, basi leviter exciso; columna perbrevi, brachiis brevibus triangulis, apiculatis, antheram haud superantibus, pede longiore; ovario cum pedicello glabro, c. 0,4 cm longo.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m

- R. Schlechter no. 20423, flowering in Nov. 1909.

This species is one of the smaller forms of the section Monanthaparva. It belongs to the affinity of *B. ciliatum* Lindl., but has smaller flowers on shorter pedicels and a differently shaped labellum. The flower colouring is pale yellow.

8. *Bulbophyllum amblyoglossum* Schltr., sp. nov.

Epiphyticum, pusillum, decumbens; rhizome pro genere breviore, pseudobulbis depressis fere omnino tecto; radicibus filiformibus, elongatis, flexuosis, microscopice rugulosis; pseudobulbis depresso-oblongoideis, unifoliatis, obliquis, 0,6—0,8 cm longis, medio fere 0,3—0,4 cm latis; foliis erectis, oblongo-ligulatis, obtusis, basi angustatis, 0,8—1,5 cm longis, medio fere 3,5—5 mm latis; scapis filiformibus, gracillimis, unifloris, basi vaginulis paucis obsessis, caeterum nudis, 2,5—3 cm longis; bractea parvula, pedicello multoties breviore; floribus illis *B. tenellum* Ldl. similibus; sepalum intermedio oblongo, obtusiusculo, glabro, 0,5 cm longo, lateralibus ovalibus, obtusis, glabris, obliquis, 0,7 cm longis; petalis oblique ligulatis, obtusis, glabris, c. 0,2 cm longis; labello late ovali, obtusissimo, basi cordato-recurvo, superne verruculoso, lineis 2 incrassatis, arcuatim, e basi usque in medium decurrentibus, c. 2,5 mm longo; columna brevi, glabra, brachiis subulatis, labelli dimidium subexcedentibus; anthera subreniformi, antice retusa, alte umbonata, glabra; ovario cum pedicello gracili c. 1,3 cm longo, glabro.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m

- R. Schlechter no. 20422, flowering in Nov. 1909.

A close relative of *B. tenellum* Lindl., but which is distinguished by the broader labellum with two swollen lines and two column arms. The flowers are golden-yellow, orange towards the base, the labellum is brown-red.

9. *Bulbophyllum masarangicum* Schltr., sp. nov.

Epiphyticum, repens, pusillum; rhizomate elongato, gracili, 1—1,5 mm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 0,5—1 cm distantibus, oblique cylindraceis apicem versus sensim angustatis, unifoliatis, 0,4—0,7 cm altis, supra basin 0,2—0,3 cm diametentibus; foliis erectis, lanceolato-vel elliptico-ligulatis, apiculatis, basi sensim angustatis, 1—2,3 cm longis, medio fere 0,4—0,6 cm latis; pedunculis singulis in rhizomate brevibus, vaginulis paucis minutis obsessis, 0,3—0,4 cm longis, unifloris; bracteis ovarium fero aequilongum amplectentibus, breviter acuminatis; floribus parvulis, illis *B. acutum* J. J. Sm. similibus; sepalis lanceolatis, acutis, glabris, vix 0,5 cm longis. lateralibus subfalcatis, subacuminatis; petalis oblique oblongo-ligulatis, breviter acutis, 0,2 cm longis; labello 3,5 mm longo, e basi obovata, con-

cavula e tertia parte basili triollo, lobis lateralibus rotundatis brevibus, intermedio multo longiore, ligulato, apicem versus paululo dilatato, obtuso, linea media carinato-incrassata e basi labelli usque ad apicem, callo parvulo conico in ima basi; columna perbrevi, brachiis brevibus, triangulis, acutiusculis; anthera obcordata, glabra; ovario sessili c. 1,5 mm longo, glabro.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m

- R. Schlechter no. 20424, flowering in Nov. 1909.

According to the present delimitation of the section Monanthaparva, this species should probably belong to it, but I have come to the conclusion to separate it, together with a small number of Papuan species and B. acutum J.J.Sm. as a separate section Hybochilus, which is distinguished by short inflorescences with equitant ovary, white-red flowers and a narrow, usually trilobed labellum which has a small tubercle at its base. The flowers are red, white at the base.

var. nanodes Schltr., var. nov.

Diffrer a forma typica, pseudobulbulbis magis approximatis et bene latioribus foliis latioribus, habitu humillimo.

Celebes : On trees on the summit of Mount Lokon (Minahassa), alt. c. 1600m - R. Schlechter no. 20500, flowering in Nov. 1909.

This variety differs from the Type only in the more compact habit.

10. Bulbophyllum aberrans Schltr., sp. nov.

Epiphyticum, pusillum, 2,5—4 cm altum; rhizomate abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis minutis, valde approximatis, subglobosis, paulo depresso, c. 0,2 cm diametentibus, unifoliatis; foliis erectis, oblongo-ob lanceolatis, obtusis, interdum cum apiculo minuto, basin versus cuneatis, 1—3,3 cm longis, supra medium 0,5—1 cm latis; pedunculis approximatis, gracibus, erectis, 1,2—1,5 cm altis, unifloris, basi vaginulis paucis obsessis, glabris; bractea ovata, ovarium amplectente et paulo-superante; floribus inversis, illis B. purpurascens Bail. similibus; sepalo intermedio ovato-oblongo, subacuto, glabro, 0,5 cm longo, lateralibus in laminam sepalo intermedio similem, aequilongam, sed paulo latiore, obtusam usque ad apicem cohaerentibus, glabris; petalis oblique ovato-lanceolatis, acuminatis, 0,4 cm longis, margine dense et minutissime ciliatis; labello e basi breviter unguiculata, breviter sagittato-auriculata, subquadrata in tertia parte basili paulo angustato et sursum in laminam oblongo-ligulatam obtusam, margine pilis brevibus clavatis dense ciliatam dilatato, 0,4 cm longo, linea media supra basin incrassata usque ad apicem decurrente, sensim tenuiore, callis 2 supra basin lateralibus additis; columna brevi crassiuscula, glabra, triandra, pede valde abbreviato; antheris 3 fertilibus, cucullatis, dorso verruculoso-papilloso; ovario sessili, vix 0,2 cm longo, glabro.

Celebes : On trees in the forests on the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang, (Toli-Toli district), alt. c. 180m - R. Schlechter no. 20666, flowering in Jan. 1909. [1910].

The species belongs to a very characteristic Malayan-Papuan section which I designate Polyblepharon. Apart from B. purpurascens Bail. from Queensland, already mentioned above, B. polyblepharon Schltr. from New Guinea and

B. retrorsiflorum J.J.Sm. from Ambon belong here. The section is well characterised by the floral structure.

The flowers of B. aberrans Schltr. are a muddy violet-red.

11. Bulbophyllum codonanthum Schltr., sp. nov.

Epiphyticum, humili, 5-9 cm altum; rhizome valde abbreviatum; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis ovoideo-cylindraceis, longitudinaliter pauci sulcatis, unifoliatis, 0,5-1 cm altis, supra basin 0,3-0,5 cm diametentibus; foliis erectis, lanceolato-ligulatis; acutis, glabris, basi angustatis, 4-8 cm longis, infra medium 0,8-1,3 cm latis; pedunculis valde abbreviatis; approximatis, unifloris, vaginulis paucis obsessis, c. 0,4 cm longis; bractea brevi, apiculata, ovario multo breviore; floribus incurvis; sepalis usque ad medium in tubum campanulatum connatis, parte libera ovata, longe acuminata, intus dense papilloso-puberulis, 0,9 cm longis; petalis oblique oblongo-quadratis, apice truncatis, antice minute puberulis, 0,8 cm longis; labello haud articulato, immobili, circuitu ovato, antice filiformi attenuato, sigmoideo-fexo, marginibus medio verruculosis, 0,7 cm longo; columna gracili, subapoda, brachiis erectis, denticulato-laceratis; ovario subsessili, cylindrico, glabro, c. 0,2 cm longo.

Celebes : On trees in the forests of Mount Mahawo (Minahassa), alt. c. 1200m

- R. Schlechter no. 20425, flowering in Nov. 1909.

The present species shows a peculiar deviation from the usual types of the genus. These differences from most of the species are so conspicuous, that one is almost induced to set up a new genus. For the present I consider the species as the Type of a separate section, Condonosiphon. The flowers are dark red, the labellum has a golden-yellow tip. The species, conspicuously, is closely related to a so far undescribed one from New Guinea.

12. Bulbophyllum myrianthum Schltr., sp. nov.

Epiphyticum, ramosum, patulum, globosum, usque ad 20 cm longum; rhizomate caulinum, bene ramoso, vagante, tereti, dense vaginis et radicibus appressis obtecto; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 1-1,5 cm distantibus, rhizomati subparallelis, parvulis, cylindraceis, unifoliatis, 0,3-0,5 cm longis, c. 0,2 cm diametentibus; foliis carnosis, obovatis, obtusissimis, vulgo breviter excisis, glabris, basi cuneato-angustatis, subpetiolatis, 1,5-2 cm longis, supra medium 0,9-1,2 cm latis; pedunculis in rhizomate inter pseudobulbos natis, valde abbreviatis, inter vaginas rhizomatis subabsconditis, 0,2 cm longis, vaginulis paucis obsessis, glabris, unifloris; bractea ovata, acuta, ovarium amplectente et superante; floribus illis B. sessilis (Koenig) J. J. Sm. similibus, flavescens-albidis; sepalis lanceolatis, attenuato-acuminatis, glabris, 4,5 mm longis, lateralibus subfalcatis; petalis oblique oblongis, obtusis, vix 0,1 cm longitudine excedentibus, glabris; labello oblongo, obtuso, basi retuso-truncato, glabro, c. 1,5 mm longo; columna perbrevi, brachiis brevibus, triangulis, subacutis; anthera cucullata, antice emarginato, glabra; ovario sessili, glabro, vix 0,1 cm longo.

Celebes : On trees near Kakas (Minahassa), alt. c. 800m - R. Schlechter no. 20605, flowering in Dec. 1909.

This species of the section Oxysepalum is closely related to B. sessile J.J.Sm. (B. clandestinum Griff.), but is easily distinguished by the appreciably more compact growth, broader leaves and much blunter petals and lip.

13. Bulbophyllum laxiflorum Lindl., Gen. et Spec. Orch. (1830), p. 57.

var. celebicum Schltr., var. nov.

Differet a forma typica petalis basi latioribus, sepalis margine minute pilis capitatis ciliatis, labello oblongo-ligulato, obtuso.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20480, flowering in Nov. 1909.

The whole plant gives a more robust impression than the Type, from which it may later be separated. The flowers are pallid yellow with white petals and labellum.

14. Bulbophyllum mutabile Lindl., Gen. et Spec. Orch. (1830), p. 48.

var. ceratostyloides Schltr., var. nov.

Differet a forma typica habitu minore, foliis angustioribus, floribus paulo minoribus, petalis angustioribus et labello magis acutato.

Celebes : On trees in the forests of Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20414, flowering in Nov. 1909.

Because of its narrow, often almost linear leaves, the variety is similar to several Ceratostylis species and may perhaps, later on, be separated from the Type as a species.

15. Bulbophyllum agapethoides Schltr., sp. nov.

Epiphyticum, fruticosum, rigidulum, gracile, e basi pauciramosum, usque ad 40 cm longum, erectum vel patulum; rhizomate cauliniformi, ramoso, mox denudato, rigido, 1,5-2 mm diametiente; radicibus solum in basi rhizomatis, filiformibus, elongatis, flexuosis, glabris; pseudobulbis valde depauperatis, 1,5-4 cm distantibus, cylindraceis, valde depressis, usque ad 2 mm diametentibus, vulgo vix 1 mm altis, unifoliatis, textura rhizomati (i. e. cauli) omnino aequalibus; foliis anguste oblongo-vel linear-ligulatis, apiculatis, glabris, basi in petiolum brevem, 0,5-0,8 cm longum angustatis, lamina 5-6,5 cm longa, medio fere 0,5-1,2 cm lata; racemis ad basin pseudobulborum natis, pendulis, laxe 3-6-floris, usque ad 2,5 cm longis; bracteis lanceolatis, acuminatis, ovarium paulo superantibus; floribus in genere inter minores, niveis, glabris; sepalo intermedio lanceolato-ligulato, acuto, 0,5 cm longo, lateralibus e basi oblique ovata longius acuminatis, 0,6 cm longis; petalis oblique linear-ligulatis, subacutis, glabris, 0,3 cm longis; labello arcuato, dimidio inferiore late rhomboeo, dimidio superiore angustato, oblongo-ligulato, obtusiusculo, basi subretuso, superne longitudinaliter sulcato, omnino glabro, 0,3 cm longo; columna perbrevi, brachiis subquadratis, angulo superiore in apiculum productis; ovario cum pedicello brevi glabro, subclavato, 2,5 mm longo.

Celebes : On trees near Tampuso (Minahassa), alt. c. 1000m - R. Schlechter no. 20503, flowering in Dec. 1909.

A very peculiar species which, in its inflorescences, could indicate a relationship with B. unguiculatum Rchb.f., but which stands quite isolated in habit and shows a certain accord to the Papuanian B. dichotomum J.J.Sm. The stiff peduncles and growth are reminiscent of certain Ericacea, such as Agapetes.

16. Bulbophyllum perpendiculare Schltr., sp. nov.

Epiphyticum, perpendicularly dependens, usque ad 80 cm longum; rhizomate elongato, vaginis compressis, mox hyalinis, acuminatis dense obtecto; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 1—2 cm distantibus, minutissimis, vix conspicuis, depresso-depressis, vix 1 mm altis et diametentibus, unifoliatis; foliis lanceolatis, acutis, basi cuneatis, 4—5.5 cm longis, infra medium 1—1.3 cm latis; racemis breviter pedunculatis, laxius 3—4-floris, in rhizomate natis, pendulis, 1—1.3 cm longis; bracteis lanceolatis, acuminatis, ovarium sessile paulo superantibus; floribus patulis, illis *B. gibbosi* Ldl. fere aequimagnis; sepalis oblongis apiculatis, glabris, 4.5 mm longis, lateralibus falcatis, intermedio paulo latioribus; petalis oblique linearis-spathulatis, obtusis, glabris, 0.2 cm longis; labello e basi curvata, ovata cum marginibus leviter incurvis dimidio anteriore in laminam suborbicularis, apiculatam, planam dilatato, basi obtuse et breviter bicarinato, glabro, c. 0.3 cm longo; columna perbrevi, infra stigma umbone oblique conico in pedem decurrente ornato, brachiis oblique quadratis, brevibus, antice inaequaliter bilobulatis, lobulo superiore inferiori paulo breviore, anthera brevi, glabra; ovario sessili, glabro, c. 1.5 mm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m — R. Schlechter no. 20470, flowering in Nov. 1909.

Both in habit and floral structure the species is well distinguished from all others of the region. Its flowers are yellowish white. I make it the Type of a separate section *Stathmocaulos*.

17. Bulbophyllum tylophorum Schltr., sp. nov.

Epiphytica, valida, c. 40 cm alta; rhizomate crasso, decumbente, pro sectione brevi, c. 0.7—1 cm diametente; radicibus filiformibus, elongatis, flexuosis, dense squamulosis; pseudobulbis c. 1.5 cm distantibus, more sectionis quam maxime subpressis, c. 2 mm altis, c. 0.4—0.6 cm diametentibus, unifoliatis; foliis erectis, longipetiolatis, lamina 18—25 cm longa, medio fere 5.5—7 cm lata, petiolo suleato, glabro, 10—16 cm longo; racemis ad basin pseudobulborum natis, erectis, strictis, pedunculo inclusu 15—25 cm longis, dense multifloris, elongatis, c. 1.3 cm diametentibus; pedunculo basi vaginis amplis vestito, tereti, glabro, usque ad 10 cm longo; bracteis patentibus, lanceolatis, acuminatis, ovario aequilongis vel paulo longioribus; floribus patentibus, illis *B. odorati* Ldl. similibus; sepalis oblongis, obtusis, apicem versus conspicue incrassatis, glabris, c. 3.5 mm longis; petalis oblique oblongis, obtusis, glabris, c. 1.5 mm longis; labello carnosulo, rhombeo, supra medium obscure trilobato, medio pulvine oblongo, densissime farinoso-puberulo, e basi usque ad imum apicem obtusum ornato, petalis vix longiore; columna brevi, brachiis falcatis, subulatis, apicem labelli attingentibus; anthera ovato-cucullata, obtusiuscula acuminata, glabra; ovario cum pedicello glabro, c. 0.4 cm longo.

Celebes : On trees in the forests on the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang, Toli-Toli district, alt. c. 180m — R. Schlechter no. 20670, flowering in Jan. 1910.

Together with the species grouped around *B. odoratum* Lindl., *B. gibbosum* Lindl., *B. unguiculatum* Rchb.f. and *B. flavescens* Lindl. the present plant constitutes a very characteristic section amongst the Racemosae, which I designate as *Aphanobulbon*, on account of the completely aborted pseudobulbs.

B. tylophorum Schltr. is most closely related to *B. odoratum* Lindl. and is

extremely similar in habit, but completely different in the labellum. The flowers are yellowish, with an orange-yellow lip.

18. Bulbophyllum sopoetanense Schltr., sp. nov.

Epiphyticum, longe repens, usque ad 22 cm altum; rhizomate elongato, flexuoso, tereti, rigidulo, c. 3 mm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis more sectionis quam maximae reductis, 3—4 cm distantibus, c. 2,5 mm altis et diametentibus, unifoliatis; foliis erectis, petiolatis, oblongo-ligulatis, obtusis, basi cuneatis, glabris, coriaceis, lamina 10—15 cm longa, medio fere 2,5—3 cm lat, petiolo sulcato 3—5 cm longo; racemis ad basin pseudobulborum gracilis, erectis, laxe 8—14-floris, folio aequilongis vel paulo longioribus, pedunculo tereti, glabro, vaginis paucis, arcte amplectantibus, dissitis obpresso, racemo ipso fere acquilongo; bracteis oblongo-lanceolatis, acuminatis, glabris, ovario paulo brevioribus; floribus pro sectione magnis, flavidis, glabris, patentibus; sepalo intermedio ligulato, acuto, 1,3 cm longo, lateralibus oblique ovatis, breviter acuminatis, paulo brevioribus, basi margine anteriore dilatata, cum pede columnae mentum breve, obtusum, c. 0,6 cm longum, incurvum formantibus; petalis oblique lanceolato-ligulatis, obtusiusculis, glabris, c. 0,9 cm longis; labello curvato, oblongo-ligulato, supra medium paululo dilatato, antice breviter acuminato vel acuto, basi medio sulcato, c. 1,1 cm longo, supra medium 4,5 mm lato; columna perbrevi, brachiis brevibus, subquadratis, angulo superiore breviter apiculato, pede basi umbonato; ovario cylindraceo, glabro, 0,5 cm longo.

Celebes : On trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1300m — R. Schlechter no. 20614, flowering in Dec. 1909.

Amongst all the species of the section Aphanobulbon, known to me, this has the largest flowers and thereby alone is readily distinguished from the others.

19. Bulbophyllum elaphoglossum Schltr., sp. nov.

Epiphyticum, validum, longe repens; rhizomate valde elongato, flexuoso, tereti, 0,3—0,4 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis quam maxime reductis, 15 cm et ultra distantibus, c. 0,2 cm altis, 0,4—0,5 cm diametentibus, unifoliatis; foliis erectis, petiolatis, lamina oblonga, obtusa, basi rotundata, glabra, coriacea, c. 20 cm longa, medio fere 5—5,5 cm lata, petiolo sulcato, glabro, 8—9 cm longo; racemis ad basin pseudobulborum vel in rhizomate singulis natis, erectis, elongatis, plus minus flexuosis, laxe multifloris, gracillimis, pedunculo tereti, glabro, vaginis 2dissitis, arcte appressis obpresso, usque ad 20cm longo; bracteis ellipticis, acutis, ovario fere aequilongis, patentibus; floribus in sectione inter mediocres, patentibus; sepalo intermedio oblongo-ligulato, obtuso, medio paululo constricto, glabro, c. 0,6 cm longo, lateralibus ovato-oblongis, minute apiculatis, glabris, 0,7 cm longis; petalis linearifalcatis, acutis, glabris, 3,5 mm longis; labello linguiformi-obcuneato, obtuso, basi curvato, sovea longitudinali excepta superne minute papilloso-puberulo, subtus glabro, carnosulo, 0,6 cm longo; columna brevi, crassiuscula, labello triplo breviore, brachiis latis sed abbreviatis, minute bidentatis; anthera subreniformi, antice truncata, glabra; ovario cum pedicello brevi clavato, glabro, c. 0,6 cm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m — R. Schlechter no. 20462, flowering in Nov. 1909.

The species is readily distinguished already by the labellum, which is covered above with papillose hairs, and also by the unusual colouring of the

flowers. The latter are white with red-striped sepals and petals and have a golden-yellow lip.

20. Bulbophyllum oligoblepharon Schltr., sp. nov.

Epiphyticum, repens, c. 25 cm altum; rhizomate pro sectione brevi, tereti, c. 0,3 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis quam maxime reductis, 1,5–2 cm distantibus, 1,5 mm altis, 0,2 cm diametentibus, unifoliatis; foliis erectis, longipetiolatis, lamina oblongo-ligulata, obtusa, basi cuneata, 11–14 cm longa, medio fere 3–3,5 cm lata, glabra, coriacea, petiolo sulcato. 6–10 cm longo; racemis ad basin pseudo-bulborum natis, erectis, apice decurvatis (an semper); elongatis, c. 17 cm longis, laxe multifloris, pedunculo tereti, glabro, vaginis paucis, dissitis obpresso; bracteis lanceolatis, acuminatis, glabris, ovarium paulo superantibus; floribus patentibus, illis *B. unguiculatum* Rchb. f. similibus, et fere aequimagnis, ochroleucis; sepallo intermedio ligulato, acuto, infra medium paululo constricto, glabro, 0,6 cm longo, lateralibus oblique oblongis, breviter acuminatis, glabris, basi margine anteriore dilatata cum pede columnae mentum breve, obtusum, c. 2 mm longum formantibus, intermedio paululo brevioribus; petalis oblique linear-ligulatis, subacutis, apicem versus paululo incrassatis et microscopice papillosis, 0,3 cm longis; labello ambito ovato-lanceolato, obtuso, dimidio superiore margine sparsim et brevissime ciliolato, basi lata retuso, superne lamellis 2 brevibus ornato, 0,3 cm longo; columna brevi, brachiis brevibus, subulatis, pede decurvo, apice inflexo; ovario cum pedicello brevi clavato, glabro, c. 0,2 cm longo.

Celebes : On trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1000m – R. Schlechter no. 20613, flowering in Dec. 1909.

This species should be placed next to *B. unguiculatum* Rchb.f. It is distinguished by the labellum, which is broad at the base and carries very short cilia in front.

21. Bulbophyllum obliquum Schltr., sp. nov.

Epiphyticum, repens, c. 30 cm altum; rhizomate pro sectione brevi, flexuoso, c. 0,5 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis quam maxime reductis, 1–1,5 cm distantibus, c. 1,5 mm altis, c. 3 mm diametentibus, unifoliatis; foliis erectis, longius, petiolatis, lamina oblique ligulata, obtusiuscula, glabra, coriacea, c. 20 cm longa, medio fere 1,8–2,2 cm lata, petiolo crassiusculo, sulcato, 8–10 cm longo; racemis ad basin pseudobulborum erectis, laxe multifloris, folia paulo superantibus, pedunculo tereti, glabro, vaginulis paucis, dissitis donato, petiolis fero aequilongo; bracteis erecto-patentibus, lanceolatis, acuminatis, ovarium paulo superantibus; floribus erecto-patentibus, in sectione inter majores, flavidis; sepalis lanceolatis attenuato-acuminatis, glabris, intermedio 1,1 cm longo, lateralibus obliquis, basi margine anteriore paulo dilatatis, 1,3 cm longis; petalis oblique linear-ligulatis, obtusiusculis, glabris, basin versus paulo angustatis, 0,4 cm longis; labello lanceolato-ligulato, acuto, glabro, leviter curvato, basi superne sulcato, subtus carinato, 6,5 mm longo; columna perbrevi, brachiis abbreviatis, cuspidatis, callo compresso in basi pedis gracilis; ovario cum pedicello brevi clavato, glabro, 0,3 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m – R. Schlechter no. 20435, flowering in Nov. 1909.

One of the larger-flowered species of the section Aphanobulbon, which is

characterised by the much extended sepals and by the small oblique leaves. I found only a solitary specimen in flower.

22. Bulbophyllum angipes Schltr., sp. nov.

Epiphyticum, repens, 10–15 cm altum; rhizomate valde flexuoso, tereti, cortice pallido, lucido, suberoso, pro magnitudine plantae crasso, 4–5 mm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis quam maxime reductis, 3–6 cm distantibus, vix 0,2 cm altis, 0,4 cm diametentibus, unifoliatis; foliis erectis, petiolatis, lamina oblanceolata vel oblanceolato-ligulata, obtusa, basi cuneata, glabra, coriacea, 6–9 cm longa, supra medium 1,2–1,7 cm lata, petiolo sulcato, 2–3 cm longo; racemis erectis, ad basin pseudobulborum natis, 10–16 cm altis, subdense multifloris, illos *B. gibbosum* Ldl. in mentem revocantibus, pedunculo brevi, vaginis 3 altis amplectentibus obtecto; bracteis linear-lanceolatis, acuminatis, ovarium fere duplo superantibus; floribus illis *B. gibbosum* Ldl. similibus, patentibus, flavescenti-albidis; sepalis lanceolato-ellipticis, acutis, glabris, intermedio 5,5 mm longo, lateralibus obliquis basi margine anteriore paulo dilatatis, 6,5 mm longis; petalis oblique oblanceolato-spathulatis, obtusis, glabris, vix 0,3 cm longis; labello curvato, e basi subquadrata paulo angustato, lanceolato-ligulato, obtusiusculo, glabro, carnosulo, 3,5 mm longo; columna brevi, brachiis perbrevibus triangulis, obtuse apiculatis; anthera oblongo-cucullata, glabra; ovario cum pedicello brevi, glabro, vix 0,4 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 600m
— R. Schlechter no. 20580, flowering in Dec. 1909.

This species has much similarity with *B. gibbosum* Lindl., but has much thicker rhizomes, inflorescences appearing next to the old bulbs, and differently constituted floral segments.

23. Bulbophyllum pubiflorum Schltr., sp. nov.

Epiphyticum, longe repens; rhizomate valde elongato, flexuoso, tereti, e. 2,5 mm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis c. 5–10 cm distantibus, ellipsoideis vel ovoideis, obscure tetragonis, unifoliatis, 3,5–5 cm longis, medio vel infra medium 1,3–2 cm diametentibus; foliis erectis, ligulatis, obtusiusculis, basi angustatis, glabris, 13–16 cm longis, medio fero 1,7–2,7 cm latis; spicis ad basin pseudobulborum, subdense multifloris, arcuato-patulis, omnino 12–20 cm longis, pedunculo tereti, glabro, vaginis paucis dissitis, arcte amplectentibus obsesso, racemo ipso nunc aequilongo, nunc longiore, rhachi carnosa, incrassata, foveolata; floribus 4–5-fariis, cum ovario in foveis rhachidis paulo immersis; bracteis ovato-triangulis, acutis, ovarium paulo excurrentibus; sepalo intermedio ovato-elliptico, obtuso, extus minuto puberulo, 0,5 cm longo, lateralibus in laminam ovato-ellipticam, apice incisam, extus minute puberulam connatis, intermedio paululo longioribus; petalis oblique lanceolatis, angustato-attenuatis, acutis, margine minutissime ciliolatis, subfalcatis, 3,5 mm longis; labello e basi late cuneata late rhombo-hastato, antice angustato, oblongo, obtuso, glabro, 0,4 cm longo, supra basin 0,3 cm lato; columna semitereti, glabra, brachiis linearibus, apice obtuse bidentatis, antice cum lobulo deflexo; ovario sessili puberulo, 0,4 cm longo.

Celebes : On trees in the forests on Mount Mahawo (Minahassa), alt. c. 1200m
— R. Schlechter no. 20426, flowering in Nov. 1909.

This species is related closely to the one following, and to *Bulbophyllum saurocephalum* Rchb.f. from the Philippines. Because of their peculiar floral

structure, they together form a separate section which I name *Saurocephalum*. The flowers are whitish with pink veins.

24. *Bulbophyllum hastiferum* Schltr., sp. nov.

Epiphyticum vulgo erectum, validum, 30–40 cm longum, fruticosum; rhizomate dichotome ramoso, rigidulo, c. 0,4 cm diametente; pseudobulbis ellipsoideis, paulo compressis, unifoliatis, ad basin ramorum dispositis, vulgo 5–6 cm distantibus, 3,5–5 cm longis, medio vel infra medium 1,2–1,4 cm latis; foliis anguste oblongo-ligulatis, obtusiusculis, basi angustatis, glabris, 10–16 cm longis, medio fere 2–3,5 cm latis; spicis ad basin pseudobulborum, subdense multifloris, pedunculo abbreviato, quam pseudobulbum breviore, rhachi incrassata ad basin florum in gibbum incrassata; bracteis ovatis, obtusis, ovarium paulo superantibus; floribus illis *B. pubiflori* Schltr. similibus, sessilibus; sepalو intermedio ovato-elliptico, obtuso, margine minuto ciliato, caeterum glabro, 0,5 cm longo, lateralibus in laminam ovato-ellipticam, apice breviter bifidam, margine minuto ciliatam connatis, intermedio paulo longioribus; petalis linear-falcatis, acutissimis, margine minute ciliatis, 3,5 mm longis; labello e basi per late hastata, segmentis divaricantibus triangulis, acutis, subito angustato, oblongo, obtuso, glabro, 0,4 cm longo, basi 3,5 mm lato; columna semi-tereti, glabra, brachiis erectis, obliquis, inaequaliter bidentatis, antice in dentem brevem obtusum deflexum productis; ovario glabro, sessili, 3,5 mm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m – R. Schlechter no. 20459, flowering in Nov. 1909.

This species already is well distinguished from the otherwise closely related *B. pubiflorum* Schltr. by the erect shrub-like habit with dichotomous branching. The flowers are whitish, with dark red spots and veins; the lateral sepals, lip and column are yellow.

XLIII [XLIV]. *Cirrhopetalum* Lindl.

1. *Cirrhopetalum Koordersii* Rolfe, in Kew Bull., 1899, p. 128.

Celebes : On trees in the forests of Mount Klabat (Minahassa), alt. c. 800m – R. Schlechter no. 20533, flowering in Dec. 1909.

The flowers are pale rose-red, red-spotted, the petals dark purple-red spotted at the apex. The species is especially characteristic, with the anther being lacerated in front.

2. *Cirrhopetalum dolichoblepharon* Schltr., sp. nov.

Epiphyticum, decumbens; rhizomate elongato, flexuoso, tereti, c. 0,2 cm diametente; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis 1,5–5 cm distantibus, ovoideis, obtuse 4-angulatis, unifoliatis, 1–2 cm altis, supra basin 0,7–1 cm diametentibus; foliis erectis, oblongo-ligulatis, obtusis, basin versus angustatis, glabris, 4–8 cm longis, supra medium 1,1–2 cm latis; scapis ad basin pseudobulborum natis, filiformibus, gracillimis, vaginulis paucis arcte amplectentibus dissitis obsessis, teretibus, glabris, 15–20 cm altis; floribus 5–12, subumbellatis; bracteis lanceolatis, acuminatis, ovario pedicellato duplo fere brevioribus; sepalо intermedio ovato-oblongo, longius acuminato, margine longe ciliato, 0,6 cm longo, lateralibus ligulatis, acutis, usque ad apicem fere cohaerentibus, 3 cm longis, c. 3,5 mm latis; petalis falcato-lanceolatis, aristato-

acuminatis, margine longe ciliatis, dense papilloso-puberulis, c. 3.5 mm longis; labello curvato, e basi subquadrata oblongo-ligulato, obtuso, glabro, linea mediana incrassato, basi truncato, petalis paulo longiore, carnosulo; columna brevi, brachiis triangulis, acutis; anthera glabra, oblonga, umbonata; ovario cum pedicello glabro, 0.6 cm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 10m - R.

Schlechter no. 20644, flowering in Jan. 1910.

This species and C. brevibrachiatum Schltr., described below, are inter-related and belong close to C. lepidum (Bl.) Schltr. (Bulbophyllum lepidum J.J.Sm.) They both differ from the Javanese plant in the papillose petals and pointed column-arms. The flowers are dark red, the tips of the lateral sepals are paler.

More recently several authors have spoken against retention of Lindley's genus Cirrhopetalum and have united it with Bulbophyllum. I do not agree with this move, since I fear that we then would have to unite many others until finally only a few immense genera would remain. The majority of Cirrhopetalums can be recognised at first glance, and with their nearly always umbel-like, reduced inflorescences and always much extended, twisted lateral petals, form a readily distinguished genus. For practical reasons, it therefore should be retained. Certain so-called transitional forms introduced here by Hooker, are thus not Cirrhopetalums, but true Bulbophyllums, e.g. Bulbophyllum viridiflorum (Hook.f.) Schltr. and B. concinnum Hook.f.

3. Cirrhopetalum brevibrachiatum Schltr., sp. nov.

Epiphyticum, erectum, decumbens; rhizomate elongato. flexuoso. tereti. 2-3 mm diametente; radicibus filiformibus, elongatis, flexuosis, glabris: pseudobulbis ~ 5 cm distantibus, ovoideis, 4-angulatis, unifoliatis. c. 2.5 cm altis. infra medium c. 1 cm diametentibus; foliis erectis, oblongo-ligulatis, obtusis, basin versus subpetiolato-attenuatis, c. 12 cm longis, medio fere c. 3 cm latis; scapis gracilibus, strictis vel substrictis, teretibus, glabris, vaginulis paucis, arcte appressis obsessis, 20-23 cm longis; racemo umbelliformi-abbreviato, 10-15-floro: bracteis linearilanceolatis, acuminatis, ovario pedicellato fere 3-plo brevioribus: floribus patentibus, illis C. gamosepali Griff. similibus; sepalo intermedio ovato, aristato-acuminato, margine longe ciliato, acumine inclusu 0.7 cm longo. ateralibus usque ad apicem fere cohaerentibus, basi tortis, linearilanceolatis acutis, 3.5 cm longis, medio fere vix 0.5 cm latis; petalis falcato-lanceolatis, aristato-acuminatis, apicem versus minutissime papillosis. margine longe ciliatis, 0.6 cm longis; labello linguiformi, obtuso, margine leviter undulato, subitus bicarinato, petalis paulo breviore, glabro: columna crassiuscula, brevi, brachiis perbrévibus cum apiculo; anthera ovato-cordata, obtusa glabra; ovario cum pedicello gracili, clavato, glabro. 0.6 cm longu.

Celebes : On trees in the mangrove swamps near Toli-Toli, alt. c. 10m - R.

Schlechter no. 20702, [no date cited, probably Jan. 1910].

As explained above, the species is closely related to C. dolichoblepharon Schltr. It differs in more robust growth, broader leaves and in flower colouring and size, with the petals broader at the base and papillose only

towards the tip and in the uniformly broad labellum. The flower colouring is yellowish, with red spots on the dorsal sepal and on the petals.

XLIV [XLV]. Oxanthera Brogn.

1. Oxanthera carinata (Bl.) Schltr., in Mem. Herb. Boiss., XXI (1900), p. 76.

Celebes : On trees in the forests on the upper Lampasioe [River], Toli-Toli district, alt. c. 80m - R. Schlechter no. 20675, flowering in Jan. 1910.

The specimens, of which I found only a few, are characterised by especially lax inflorescences.

XLV [XLVI]. Thelasis Bl.

1. Thelasis celebica Schltr., sp. nov.

Epiphytica, habitu *Th. elongatae* Bl. similis; rhizomate decumbente, abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis depressoideis, oblongoideis, 1–1,5 cm longis, c. 0,3–0,5 cm altis, apice in collem c. 3–5 mm longum productis, unifoliatis, vagina nunc foliacea, mox desiccante obtectis; foliis erecto-patentibus, ligulatis, obtusis, basi angustatis, glabris, vivis textura carnosulis, 5–11 cm longis, medio fere 0,8–1,3 cm latis; scapis vulgo adscendentibus, gracillimis, glabris, medio vulgo vaginula parvula obsessis, caeterum nudis, 5–8 cm longis, spica dense multiflora, cylindrica, elongata, usque ad 6 cm longa, 0,5 cm lata; bracteis patentibus vel recurvis, ovatis, acuminatis, ovarium superantibus; floribus illis *T. elongatae* Bl. similibus; sepalis ovato-oblongis, obtusis, dorso carinatis, 0,3 cm longis, lateralibus obliquis; sepalis oblique sublineari-ligulatis, obtusis, basin versus paululo angustatis, sepalis subaequilongis, labello circuitu ovato, subtrilobo, obtusissimo, glabro, petalis aequilongo; columna perbrevi, rostellum erecto, lanceolato, exciso; anthera lanceolato-cordata, acuta, dorso umbonata; polliniis 8, oblique rotundatis, stipite linearis glandulam versus distincte attenuato, perlongo, glandula minuta brevi, lanceolata; ovario cylindraceo, glabro, 2,5 mm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 600m

- R. Schlechter no. 20587, flowering in Dec. 1909.

The species has greenish white flowers. It is closely related to Thelasis elongata Bl., but differs in the almost trilobed, very blunt lip, the shorter anther with a tubercle, and the very short viscid mass. I now also am of the opinion that T. triptera Rolfe from the Philippines really is specifically different from T. elongata Bl.

XLVI [XLVII]. Phreatia Lindl.

1. Phreatia potamophila Schltr., sp. nov.

Epiphytica, erecta, pusilla, brevicaulis, usque ad 5 cm alta; radicibus filiformibus, elongatis, flexuosis, glabris; caule valde abbreviato, 6–9-foliato; foliis erecto-patentibus vel patentibus, linearibus, subacutis, glabris, 2,5–5 cm longis, medio fere 0,3–0,4 cm latis, ad vaginam dilatatam brevem articulatis; racemis erectis, secundis, gracillimis, foliis brevioribus vel fero aequilongis, subdense multifloris, pedunculo racemo ipso aequilongo, vaginulis 2–3 distantibus, amplectentibus, apiculatis obpresso, glabro; bracteis patulis lanceolatis, acuminatis, floribus subaequilongis; floribus virescentibus, patulis, inversis, illis *P. secundae* Ldl. similibus, glabris; sepalis intermedio oblongo, subacuto, 0,1 cm longo,

lateralibus oblique ovatis, apiculatis, antice basi dilatatis, intermedio aequilongis; petalis ovato-lanceolatis, subacutis, paulo obliquis, glabris, sepalis subduplo brevioribus; labello concavulo, e basi angustiore suborbiculari, antice exciso, cum apiculo lobuliformi, obtuso, interjecto segmentis obtusissimis, glabro, sepalis fere aequilengo: columna perbrevi, glabra, clinandrio dorso lobato, rostello triangulo, obtuso, breviter exciso: pede brevi; stigmate transverso, humili; anthera reniformi, obtusa, glabra; polliniis obliquis, stipite anguste linearis polliniis paulo longiore, glandula minuta, rotundata; ovario cum pedicello glabro, clavato, 1,5 mm longo.

Celebes : On trees on the upper Lampasioe [River], Toli-Toli district, alt. c. 100m - R. Schlechter no. 20669, flowering in Jan. 1910.

One of the many small species of the P. secunda Lindl. affinity. It is easy to recognise by the labellum.

2. Phreatia Koordersii Rolfe, in Kew Bull., 1899, p. 129.

Celebes : On trees in the forests on Mount Lokon (Minahassa), alt. c. 1000m - R. Schlechter no. 20448, flowering in Nov. 1909; on trees in the forests on Mount Masarang (Minahassa), alt. c. 1000m - R. Schlechter no. 20411, flowering in Nov. 1909; on trees in the forests on Mount Klabat (Minahassa), alt. c. 1600m - R. Schlechter no. 20566, flowering in Dec. 1909.

An abundant species of the Minahassa [district].

3. Phreatia masarangica Schltr., sp. nov.

Epiphytica, pusilla, caespitifica; rhizomate abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis subglobosis vel ovoideis, apice in collum brevem productis, unifoliatis, c. 0,5 cm altis, supra basin 0,3-0,5 cm diametentibus; foliis erectis, oblanceolato-linearibus, obtusis, basin versus sensim angustatis, glabris, 5-11 cm longis, supra medium 0,5-0,8 cm latis; scapis gracillimis, erectis vel adscendentibus, cum inflorescentia folia vulgo bene superantibus, pendunculo tereti, glabro, vaginulis paucis dissitis, acuminatis, amplexentibus obpresso, racemo sublaxe multifloro, 4-6 cm longo, 0,7 cm diametente; bracteis lanceolatis, acuminatis, glabris, ovario brevioribus; floribus in genere vix mediocribus, niveis; sepalo intermedio oblongo, obtuso, glabro, vix 1 mm longitudine excedente, lateralibus obliquis, basi margine anterioro dilatata mentum breve obtusum formantibus, apiculatis; petalis oblique oblongis, obtusis, glabris, sepalis distincte brevioribus; labello e basi concavula late ligulato-unguiculato, subito in laminam subanchriformi-reniformem dilatato, apice retuso, omnino glabro, 1,25 mm longo, lamina 0,75 mm longa, 1,25 mm lata; columna brevi, pede bene longo, clinandrio dorso triangulo, obtuso, rostello bisido, lateribus truncato; anthera ovato-cucullata, obtusa, glabra; polliniis obliquis, stipite linearis polliniis aequilongo, glandula minuta; ovario clavato, glabro, pedicello gracili inclusu c. 2 mm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20417, flowering in Nov. 1909.

The species clearly is related to P. celebica Rolfe, but has closely adjacent pseudobulbs and a different labellum.

4. Phreatia klabatensis Schltr., sp. nov.

Epiphytica, habitu *P. sacciferae* Schltr. et *P. sulcatae* J. J. Sm., similis; rhizomate abbreviato; radicibus filiformibus, elongatis, flexuosis, glabris; pseudobulbis subglobosis, vaginis foliaceis obtectis, 1—1,5 cm diametentibus, unifoliatis; foliis erectis, ligulatis, obtusis, basin versus angustatis, 14—23 cm longis, medio fere 1,5—2 cm latis; scapis basilaribus, erectis, cum racemo usque ad 35 cm longis, pedunculo tereti, glabro, vaginis paucis, dissitis, appressis, acuminatis obpresso, racemo dense multifloro subsecundo, usque ad 10 cm longo; bracteis, oblongis, obtusis, ovarium superantibus; floribus illis *P. sacciferae* Schltr. similibus, niveis; sepalis ovatis, obtusis, glabris, c. 0,3 cm longis, lateribus obliquis; petalis oblique ovato-rhombris, obtusis, glabris, sepalis paulo brevioribus; labello e ungue sacciformi in laminam late ovato-quadratam, apiculatam, superne minute puberulam expanso, sepalis paulo breviore; columna brevi, rostello triangulo exciso, clinandrium superante; ovario cum pedicello glabro, clavato, c. 0,4 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 1400m

- R. Schlechter no. 20558, flowering in Dec. 1909.

My specimens were already somewhat withered when I found them, but nevertheless, I found the flowers still in such condition that the individual segments could be well recognised. The species is closely related to *P. sulcata* J.J.Sm. and *P. saccifera* Schltr., in particular the latter, but well distinguished by the lip. The main centre of dispersion of this group Sacco-*Phreatia* appears to lie in New Guinea.

XLVII [XLVIII]. Octarrhena Thw.1. Octarrhena celebica Schltr., sp. nov.

Epiphytica, pusilla, 6—7 cm alta; radicibus filiformibus, elongatis, flexuosis, glabris; caule dense foliato, vaginis foliorum omnino obtecto, c. 0,2 cm crasso; foliis erecto-patentibus, equitantibus, linearibus, acutis, obliquis, 1,5—1,8 cm longis, medio fere 2—2,5 mm latis; racemis erectis, gracilibus, folia fere duplo superantibus, laxe 8—10 floris, pedunculo gracili, racemo ipso breviore, glabro; bracteis ovatis, acuminatis, ovario pedicellato plus duplo brevioribus; floribus parvulis, flavidis, suberectis; sepalis ovalibus, obtusis, glabris, vix 0,1 cm longis, lateribus obliquis; petalis late obovatis, obtusissimis, sepalis fere 3-plo brevioribus, obliquis; labello ovato, obtuso, glabro, petalis aequilongo, dimidio inferiore obscure bibullato; columna distinete incrassata, perbrevi, rostello erecto, peramplo, ovato-triangulo, exciso; anthera reniformi-cordata, obtusissima; polliniis 8. oblique rhomboideo-orbicularibus, stipite anguste linearis fere duplo longiore, glandula minuta; ovario cum pedicello glabro, clavato, c. 1,5 mm longo.

Celebes : On trees in the forests on Mount Mahawo (Minahassa), alt. c. 1200m

- R. Schlechter no. 20486, flowering in Nov. 1909.

Outwardly, this plant is strikingly like *O. Amesiana* Schltr. from the Philippines, but differs appreciably in the shape of the labellum and column. The leaves are greenish yellow.

XLVII [XLIX]. Acriopsis Reinw.1. Acriopsis javanica Reinw., Flor. Litt., II, p. 4.

Celebes : On trees near Langowan (Minahassa), alt. c. 800m - R. Schlechter no. 20611, flowering in Dec. 1909; on trees in the mountain forests near Toli-Toli, alt. c. 600m - R. Schlechter no. 20710, flowering in Jan. 1910.

This widely distributed species is to be found from the hinterlands of India to New Guinea without, it appears, exhibiting much variation.

XLIX [L]. Cymbidium Sw.

1. Cymbidium Finlaysonianum Lindl., in Wall. Cat. no. 7358.

Celebes : On trees on Kapoetan Island, in front of Toli-Toli, alt. c. 10m - R. Schlechter no. 20685, flowering and fruiting in Jan. 1910.

This is the most beautiful amongst the species of the affinity of Cymbidium aloifolium Sw. Frequently, its lax, pendulous inflorescences attain a length of over one metre.

2. Cymbidium pubescens Lindl., Bot. Reg. (1840), Misc., 75.

var. celebicum Schltr., var. nov.

Diftert a forma typica foliis longioribus, racemis erectis, lobis lateralibus labelli magis obtusatis.

Celebes : On trees near Lansot (Minahassa), alt. c. 700m - R. Schlechter no. 20629, flowering in Dec. 1909.

This variety, by virtue of its erect inflorescences and long leaves initially, appears to be very different from the Type, but it otherwise has the same characters, so that I thought I could consider it only as a variety.

L [LI]. Grammatophyllum Bl.

1. Grammatophyllum scriptum Bl., Mus. Bot. Lugd. Bat., I, p. 47.

var. Minahassae Schltr., var. nov.

Diftert a forma typica inflorescentiis laxioribus et conspicue longioribus, floribus longius pedicellatis, labelli lobis lateralibus acutis, lobo medio latiore.

Celebes : On trees in the forests on Mount Lokon (Minahassa), alt. c. 1000m - R. Schlechter no. 20446, flowering in Nov. 1909; on trees on Kapoetan Island, adjacent to Toli-Toli, alt. c. 30m - R. Schlechter no. 20688, flowering in Jan. 1910.

Initially, I believed that I was looking at a species different from G. scriptum Bl., but decided finally to consider it only as a variety.

LI [LII]. Grammangis Rchb.f.

1. Grammangis stapeliiflora (Teysm. et Binnend.) Schltr., in Engl. Bot. Jahrb., Beibl. 104 (1911), p. 53.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter

no. 20497, flowering in Nov. 1909. [cf. LX [LXI]/5, same citation].

The main difference between Grammangis Rchb.f. and Grammatophyllum Bl. is probably not to be found alone in the different viscid masses of the pollinia, but also in that for Grammatophyllum the base of the labellum is so strongly adnate to the base of the completely foot-less column, that it appears to be inserted above the base, whilst for Grammangis it is freely attached to the apex of a more-or-less definite column-foot.

LII [LIII]. Dipodium R.Br.

1. Dipodium gracile Schltr., sp. nov.

Terrestre, erectum simplex, c. 45 cm altum; radicibus filiformibus, elongatis, flexuosis, villosulis; caule stricto, dense foliato, usque ad 20 cm alto, tereti, c. 0.7 cm diametiente, vaginis foliorum omnino obtecto; foliis erectis vel suberectis, linear-lanceolatis, acutis, glabris, lamina 9—13 cm longa, basi 1—1.3 cm lata, vagina dilatata caulem arcte amplexente, usque ad 6 cm longa; racemis lateralibus, erectis, gracilibus, c. 30 cm longis, laxe 5—8-floris, pedunculo tereti, glabro, vaginulis paucis, dissitis obpresso; bracteis ovalibus, obtusis, patentibus, ovario pedunculato multo brevioribus; floribus in genere inter mediocres, erecto-patentibus; sepalis oblongo-ligulatis, obtusiusculis, glabris, c. 1.7 cm longis; petalis oblique oblongis, apiculatis, glabris, sepalis paulo brevioribus et latioribus; labello e basi oblongo-unguiculata trilobo, c. 1.7 cm longo, supra medium 0.7 cm lato, lobis lateralibus parvulis, oblongo-linearibus, obtusis, c. 0.3 cm longis, intermedio e basi subunguiculata elliptico, antice angustato et incrassato, obtuso, c. 1.3 cm longo, basi ligula dupli linearis hirsuta ornata, longitudinaliter carina apicem versus conspicue dilatata, dense barbata usque ad apicem percurso; columna semitereti, glabra, apicem versus paulo ampliata, 0.8 cm longa; ovario cum pedicello subclavato, glabro, c. 1.7 cm longo.

Celebes : At the edge of swamps, at the base of tree-stumps on the lower section of Mount Kaweng (Minahassa), alt. c. 750m — R. Schlechter no. 20599, flowering in Dec. 1909.

This species is probably best placed besides the Australian D. ensifolium F.v.M. Amongst the Malayan species it comes closest to D. palustre Rchb.f., but differs from it in the labellum.

LIII [LIV]. Luisia Gaud.

1. Luisia celebica Schltr., sp. nov.

Epiphytica, erecta, usque ad 45 cm alta; radicibus elongatis, flexuosis, glabris, vulgo plus minus applanatis; caule vulgo simplici, tereti, c. 0.4 cm diametiente, vaginis foliorum mox ruguloso-striatis, arcte appressis omnino obtecto; foliis c. 2 cm distantibus, subfiliformi-subulatis, obtusiusculis, teretibus, glabris, 12—22 cm longis, c. 2.5 mm diametentibus; racemis abbreviatis, dense 3—6-floris, internodiis brevioribus; bracteis semiorbicularibus, obtusis, ovario multo brevioribus; floribus illis L. teretifolia Gaud. similibus et fere aquimagnis, apice decurvis; sepalis ovato-oblongis, obtusis, glabris, c. 0.7 cm longis, lateralibus obliquis, extus apicem versus altius carinatis; petalis oblique ligulato-linearibus, apicem versus subdilatatis, obtusis, glabris, 8.5 mm longis; labello e basi semi-orbiculari, concavula infra medium constricto et subito in laminam reniformem, apiculatam dilatato, 7.5 mm longo, basi 0.6 cm lato, supra

medium 0,5 cm lato; columna crassa, glabra, 0,5 cm alta; anthera subglobosa, antice truncata; polliniis ovalibus, stipite linearis polliniorum longitudine, glandula orbiculari polliniis aequilonga; ovario glabro, cylindrico, apice incurvo, c. 1 cm longo.

Celebes : On trees along the main road between Menado and Kakaskassen (Minahassa), alt. c. 100-600m - R. Schlechter no. 20404, flowering in Nov. 1909.

One of the species of the L. teretifolia Gaud. affinity, but with a completely different labellum. The sepals are brownish, the petals yellowish, the labellum black-violet with a paler spot in front, the column green with a pale yellow anther.

LIV [LV]. Adenoncos Bl.

1. Adenoncos celebicus Schltr., sp. nov.

Epiphyticus, patulus, usque ad 30 cm longus; radicibus filiformibus, elongatis, flexuosis, glabris; caule tereti, dense foliato, c. 0,3 cm diametro, vaginis foliorum rugulosis, arcte appressis omnino obtecto; foliis patentibus oblongo-ligulatis, apice oblique obtusis, glabris, lucidis, 2-4,7 cm longis, medio fere 0,5-1 cm latis; inflorescentiis valde abbreviatis unifloris, vaginis et bractea semiorbicularibus, obtusis, florem basi amplectentibus; sepalis oblongis, apiculatis, glabris, 0,8 cm longis, lateralibus obliquis; petalis oblique ligulatis, breviter acutatis, glabris, sepalis paulo brevioribus; labello basi concavo, juxta basin utrinque lobulo parvulo auriculiformi donato, antice in laminam ovato-triangulam, obtusam, carnosam subito dilatato, ima basi callo oblongo papilloso, superne tenuiter carinato ornato, c. 1 cm longo, basi 0,7 cm lato, lamina apicali basi 0,8 cm lata; columna brevi, crassa, glabra; polliniis 4, duobus inferioribus superioribus minoribus, stipite oblanceolato, glandula parvula ovali, polliniis inferioribus paulo minore; ovario sessili, cylindrico, glabro, c. 0,4 cm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli - R. Schlechter no. 20693, flowering in Jan. 1910. [cf. XLI/2, same citation].

This species, which has a certain similarity to A. borneensis Schltr., is well characterised by the shape of the labellum. The flowers are greenish, the labellum initially green, soon turning to chocolate-brown.

2. Adenoncos nasonioides Schltr., sp. nov.

Epiphyticus, patulus, usque ad 20 cm longus; radicibus filiformibus, elongatis, flexuosis, glabris; caule tereti, c. 2,5 mm diametro, vaginis foliorum, rugulosis, arcte amplectentibus omnino obtecto, dense foliato; foliis patentibus, angustius oblongo-ligulatis, obtusis vel subobtusis, glabris, subtus acute carinatis, 1,3-2 cm longis, medio fere 0,3-0,6 cm latis; inflorescentiis subsessilibus unifloris, vaginis et bractea late ovatis, apiculatis florem basi amplectentibus; sepalis oblongis, obtusiusculis, glabris, nunc cum apiculo minuto, 0,5 cm longis, lateralibus obliquis; petalis oblique linearis-ligulatis, obtusis, basin versus paululo dilatatis, sepalis paulo brevioribus; labello basi excavato, juxta basin utrinque lobo parvulo semiorbiculari obtuso donato, antice in laminam semiorbicularem, valde carnosam, obtusissimam subito dilatato, ima basi callo oblongo-lineari, papilloso, basi cum carinula apiculiformi ornato, 0,5 cm longo, basi 2,5 mm lato, lamina apicali basi 0,4 cm lata; columna perbrevis, crassa, anthera suborbiculari, obtusa, glabra; polliniis 4, subaequalibus.

stipite linearis, basin versus paulo dilatato, glandula oblonga, dorso truncata, polliniis subaequimagna; ovario cylindro, glabro, sessili, c. 0,3 cm longo.

Celebes : On trees in the mangrove swamps near Toli-Toli, often together with Adenoncos celebicus Schltr.- R. Schlechter no. 20697, flowering in Jan. 1909 [1910].

A no-less interesting species than the one described above. In habit it is reminiscent of the American Nasonia species and is easily recognised by the labellum. The flowers are always yellow-green.

LV [LVI]. Phalaenopsis Bl.

1. Phalaenopsis amabilis Bl., Bijdr., p. 294, f. 74.

var. moluccana Schltr., var. nov.

Differet a forma typica labelli lobo intermedio basi angustiore et minus sagittato.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 400m - R. Schlechter no. 20581, flowering in Dec. 1909; on trees near Lansot (Minahassa) alt. c. 700m - R. Schlechter no. 20632, flowering in Dec. 1909.

I have separated off this variety, since I observed that those specimens originating from the Moluccas and Celebes always differ from the Javanese ones, in having a middle lobe that is much narrower at the base.

2. Phalaenopsis psilantha Schltr., sp. nov.

Epiphytica, erecta, subacaulis, 25-30 cm alta; radicibus filiformibus elongatis, flexuosis, glabris, nunc paulo applanatis; caule valde abbreviato, subnullo, vulgo 3-5-foliato; foliis erecto-patentibus vel patentibus, oblanceolato-ellipticis, obtuse apiculatis, basin versus sensim angustatis, 17-22 cm longis, supra medium 3,3-5,3 cm latis; racemis patentibus brevibus, vulgo simplicibus, 5-9 cm longis, pedunculo gracili, tereti, vaginulis paucis dissiti, parvulis obsesso, racemo ipso disticho 3-6-floro; bracteis compressis, ovalibus, parvulis, ovario pedicellato multoties brevioribus; floribus illis P. Lueddemanniana Rchb. f. similibus et fere aequimagnis, glabris; sepalis patentibus, oblongo-ellipticis, subacutis, c. 2,2 cm longis, lateralibus obliquis; petalis patentibus, sepalis similibus sed paulo minoribus, obliquis; labello porrecto, brevissime unguiculato, lobis lateralibus oblique quadrato-linearibus cum plica lunata, apice oblique apiculatis, c. 0,7 cm longis, lobo intermedio elliptico-lanceolato, longitudinaliter linea media alto carinato, carina cum apiculo brevi erecto apice terminata, c. 1,3 cm longo, labello toto petalis aequilongo, lamina basi superne callo duplice angusto ornata appendicibus 2 gracilibus, subulato-filiformibus, lobos laterales paulo superantibus antepositis; columna gracili teretiuscula, c. 0,8 cm alta, glabra; anthera subquadrata, antice plica cariniformi ornata, glabra; polliniis oblique pyriformibus, stipite oblanceolato basin versus linearis, glandula obovata, antice acuta, parvula; ovario cum pedicello gracili, glabro, c. 2,3 cm longo.

Celebes : On trees in the forests on the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang, Toli-Toli district, alt. c. 180m - R. Schlechter no. 20667, flowering in Jan. 1910.

The species belongs to the affinity of P. Lueddemanniana Rchb.f. and P. speciosa Rchb.f., but is always distinguished by the completely glabrous

labellum. The flower colouring is similar to that of P. Lueddemanniana Rchb.f., the basic tone is greenish white, the sepals and petals are brown-striped, the labellum is white with a brown-red centre, the side lobes golden-yellow at the base and the column white.

LVI [LVII]. Doritis Lindl.

1. Doritis Steffensii Schltr., sp. nov.

Epiphytica, erecta, subacaulis, 12—17 cm alta; radicibus elongatis, flexuosis, glabris, mox applanatis; caule valde abbreviato, subnullo, 3—5-foliato; foliis erecto-patentibus vel patentibus, oblique ellipticis, obtuse et oblique acuminatis, basi cuneatis, glabris, 5—9 cm longis, medio vel supra medium 2,2—3 cm latis; scapis erectis vel adscendentibus, plus minus flexuosis, pedunculo tereti, glabro, vaginulis paucis valde appressis doñato, racemo laxe 5—8-floro, usque ad 4 cm longo; bracteis minutis, deltoideis, acuminatis, ovario pedicellato multoties brevioribus; floribus illis D. Wightii Ldl. similibus, erecto-patentibus; sepalis oblongis, obtusiusculis, cum apiculo minuto, glabris, c. 0,6 cm longis, laterilibus obliquis intermedio paulo latioribus; petalis sepalis similibus, obtusis, obliquis, sed paulo minoribus; labello e basi subsacculata trilobo, 0,7 cm longo, inter apices loborum lateralium 0,9 cm lato, lobis lateralibus divaricatis, adscendentibus, oblique oblongo-quadratis, obtusissimis, medio plica incrassata squamiformi parvula donatis, lobo intermedio e basi unguiculato-angustata late obovato, antico breviter bilobulato, lobuli semiorbicularibus, obtusissimis, margine irregularibus, callo linearis, antice cunctato, acute bifido, libero e basi labelli in unguem lobi intermedii deurrente, lobo intermedio 0,5 cm longo, supra medium c. 0,4 cm lato; columna gracili, glabra, clinandrio attenuato, rostello alte bifido; polliniis oblique obovoideis, stipite ob lanceolato, basi conspicue angustato, polliniis subdupo longiore, glandula parvula; ovario cum pedicello gracili, c. 0,9 cm longo.

Celebes : In the vicinity of Menado (Minahassa) — Consul H.F. Steffens' collector, in the year 1910.

The first species from Celebes which extends the area of dispersion of the genus in an interesting manner, since only recently has a species become known from the Philippines. The plant then also is most closely related to Doritis philippinensis Ames, but is easily distinguished in the shape of the lip, especially in the short-clawed, narrower front lobes. I have dedicated it to the consul H.F. Steffens, who arranged for the specimen to be collected and whom I have to thank for assistance in advice and deed during my stay in Celebes.

LVII [LVIII]. Vandopsis Pfitz.

1. Vandopsis celebica Schltr., sp. nov.

Epiphytica, dependens, usque ad 70 cm longa; radicibus filiformibus, elongatis, flexuosis, glabris; caulis vulgo simplicibus, dense foliatis, 1—1,3 cm diametro, teretibus, vaginis foliorum rugulosis et verruculoso-punctatis, arcte amplectentibus omnino obtectis; foliis patentibus, anguste oblongo-ligulatis, apice inaequaliter et obtuse bilobulatis, glabris, 12—14 cm longis, medio fere vel infra medium 2,8—3,5 cm latis, textura coriacea; racemis patentibus, breviter pedunculatis, simplicibus, foliis duplo brevioribus vel subaequilongis, laxe 2—4-floris; bracteis semi-orbicularibus, amplexicaulibus, apiculatis, ovario plus duplo brevioribus; floribus in genero mediocribus; sepalis obovato-spathulatis, obtusis, margine leviter undulatis, c. 2 cm longis, lateralibus obliquis; petalis elliptico-

oblongis, obtusis, basi angustatis, falcatis, margine leviter undulatis, c. 1,7 cm longis; labello circuitu late elliptico, obscure trilobato, lobis lateralibus anguste rotundatis, intermedio incurvo, parvulo, carnoso, in acumen brevem leviter incurvulum producto, labello toto glabro, c. 0,9 cm longo, medio fere 0,7 cm lato, dimidio anteriore callis vel potius carinis 2 antepositis ornato; columna brevi, crassiuscula, glabra, labello paulo breviore; anthera subquadrato-cucullata, acuminata, glabra; polliniis oblique obovoideis, stipiti triangulo paulo brevioribus, glandula transversa semilunata, dorso in lobum brevem ampliata; ovario cum pedicello cylindrico, glabro, c. 1,5 cm longo.

Celebes : On trees near Lansot (Minahassa), alt. c. 700m - R. Schlechter no. 20633, flowering in Dec. 1909.

An interesting species which is most closely related to V. breviscapa (J.J.Sm.) Schltr. (Arachnanthe breviscapa J.J.Sm.). Its flowers are yellowish with red-brown spots.

At this opportunity perhaps a few notes about the genus Vandopsis Pfitz. and its related genera are appropriate. This differs, according to my opinion, completely from Stauropsis Rchb.f. and also from those forms added by Bentham. The latter expressed the possibility that Fieldia Gaud., which corresponds completely with Pfitzer's genus, could belong to it. It is also better to separate it from Arachnanthe Bl. by reason of the flower shape and of the labellum which, in the case of Arachnanthe Bl., is clearly divided into hypochile and epichile, both of which are separated by a short pouch. Furthermore, in the case of Arachnanthe Bl., the keel-like lamellae above the inflexed tip in the front of the labellum, which are so characteristic for Vandopsis Pfitz., are missing.

In the format repeated here the genus Vandopsis Pfitz. includes the following species :-

1. Vandopsis gigantea (Lindl.) Pfitz., in Engl. Pflanzenfam., II, 6 (1899), p. 210.

Vanda gigantea Lindl., in Wall. Cat. (1828), p. 7326.

2. Vandopsis lissochilooides (Gaud.) Pfitz., in Engl. Pflanzenfam., II, 6 (1889), p. 210.

Fieldia lissochilooides Gaud., in Voy. Freye. (1826), p. 424, t. 36.

3. Vandopsis Warocqueana (Rolfe) Schltr., in K. Schum. et Laut., Nachtr. (1905), p. 225.

Stauropsis Warocqueana Rolfe, in Lindenia, VII (1891), p. 65, A. 319.

4. Vandopsis Lowii (Lindl.) Schltr.

Vanda Lowei Lindl., in Gardn. Chron., 1847, p. 239.

5. Vandopsis chinensis (Rolfe) Schltr.

Stauropsis chinensis Rolfe, in Kew Bull., 1907, p. 130.

6. Vandopsis luchuensis (Rolfe) Schltr.

Stauropsis luchuensis Rolfe, in Kew Bull. (1907), p. 131.

7. Vandopsis Quaifei (Rolfe) Schltr.

Stauropsis Quaifei Rolfe, in Kew Bull., 1909, p. 64.

8. Vandopsis Muelleri (Krzl.) Schltr.

Vanda Muelleri Krzl., in Osterr. Bot. Zeitschr. (1894), p. 461.

9. Vandopsis breviflora (J.J.Sm.) Schltr.

Arachnanthe breviflora J.J.Sm., in Bull. Dep. Agr. Ind. Néerl., XXII (1909), p. 48.

The following should be noted about Arachnanthe Bl. :- According to the present, generally valid nomenclature rules, a plant name is not altered, even if it occurs in the animal kingdom. For this reason, there was no necessity to change the old name of Arachnis into Arachnanthe, hence Blume's first name of Arachnis must again become valid for Arachnanthe Bl.

To Arachnis Bl. I should now like to add the following species, which represent a well-defined Malayan group :-

1. Arachnis flosaeris (L.) Schltr.

Epidendrum flosaeris L., in Spec. Pl. (1753), p. 952.

2. Arachnis Hookeriana (Rchb.f.) Schltr.

Renanthera Hookeriana Rchb.f., in Xen. Orch., II (1862), p. 42, t. 113.

3. Arachnis alba (Ridl.) Schltr.

Arachnanthe alba Ridl., in Trans. Linn. Soc. Bot., III (1893), p. 369.

4. Arachnis Maingayi (Hook.f.) Schltr.

Arachnanthe Maingayi Hook.f., in Fl. Br. Ind., VI (1890), p. 28.

Of the other species previously usually included in Arachnanthe, in my opinion, Reichenbach's genus Esmeralda with its two species should be resurrected.

1. Esmeralda Cathcarthii Rchb.f., in Xen. Orch., II (1862), p. 38.

Vanda Cathcarthii Hook.f., in Ill. Him. Pl. (1853), t. 38 in Gard. Chron., 1888, II, p. 567.

2. Esmeralda Clarkei Rchb.f.

As a fourth genus of the affinity, Armodorum Breda, Kuhl. et v. Hass should be resurrected. It differs from the two genera considered above in the fairly large spur of the lip, and likewise consists of two species :-

1. Armodorum sulingi (Bl.) Schltr.

Aerides sulingi Bl., in Bijdr. (1825), p. 367.

2. Armodorum labrosum (Lindl. et Paxt.) Schltr.

Arrhynchium labrosum Lindl. et Paxt., in Fl. Gard., I (1851-52), p. 142.

This plant has recently been better known as Arachnanthe bilinguis Bth.

LVIII [LVIX]. Vanda R.Br.

1. Vanda celebica Rolfe, in Kew Bull., 1899, p. 131.

Celebes : In the vicinity of Menado (Minahassa) - Consul Steffens' collector, in the year 1910; on trees in the forests on Mount Klabat (Minahassa), alt. c. 300m - R. Schlechter no. 20538, flowering in Dec. 1909.

Since the colouring of the flowers is still not known, I include it here : Basic colour yellow-white, sepals and petals with brown markings; labellum red-striped, red in front.

2. Vanda arcuata J.J.Sm., in Bull. Dep. Agric. Ind. Néerl., V (1907), p. 35.

Celebes : On trees near Tomohon (Minahassa), alt. c. 900m - R. Schlechter no. 20458, flowering in Nov. 1909.

The species has been well illustrated by the author, so there is no need to add anything further.

LIX [LX]. Trichoglottis Bl.

1. Trichoglottis oblongifolia Rolfe, in Kew Bull., 1899, p. 130.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 300m - R. Schlechter no. 20537, flowering in Dec. 1909.

This species of the genus is somewhat isolated, due to the shape of the labellum. It appears to be widely distributed in the Moluccas region.

2. Trichoglottis Koordersii Rolfe, in Kew Bull. (1899), p. 130.

Celebes : On trees in the forests on Mount Lokon (Minahassa), alt. c. 1000m - R. Schlechter no. 20440, flowering in Nov. 1909.

The species shows close connections to T. flexuosa Rolfe from the Philippines and to T. litoralis Schltr. from the Bismarck Archipelago. The flowers are white, the labellum with a violet-red front lobe and the column apex, red on the sides. The species, likewise, appears to have a wide dispersion.

LX [LXI]. Saccolabium Bl.1. Saccolabium subulatum Schltr., sp. nov.

Epiphyticum, pusillum, usque ad 15 cm longum; radicibus filiformibus, elongatis, flexuosis, glabris; caule vulgo arcuato, bene foliato, vaginis foliorum rugulosis, arcte appressis, omnino obsesso, 1.5—2 mm diametro; foliis erecto-patentibus subulatis, acutis, teretibus, 2.5—3.5 cm longis, 1—1.5 mm diametentibus; racemis lateralibus, vulgo pendulis, dense 10—20-floris, 1.3—2 cm longis, usque supra basin floriferis; bracteis ovato-triangulis, apiculatis, ovario fere duplo-brevioribus; floribus in genere inter minimos, niveis; sepalis anguste oblongo-ligulatis, obtusis, glabris, c. 0.2 cm longis, lateralibus obliquis; petalis oblique oblongo-ligulatis, supra medium paululo dilatatis, obtusis, glabris, sepalis paululo brevioribus et latioribus; labello circuitu oblongo, e medio fere trilobo, petalis aequilongo, c. 1 mm lato, lobis lateralibus parvulis, abbreviatis, obtusis, intermedio multo majore semioblongo, obtuso, subtus incrassato, calcare saccato, oblongoideo, obtuso, incurvo, labelli laminae paulo breviore; columna brevi, glabra, rostellum segmentis erectis, subulatis, pro magnitudine columnae magnis, margine dente brevi subulato auctis; stigmate transverso, basi columnae valde approximato; ovario cylindraceo, minute squamuoso-puberulo, vix 0.2 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 600m

— R. Schlechter no. 20585, flowering in Dec. 1909.

This species belongs to the affinity of S. ramulosum Lindl. and S. chionanthum Lindl. It is easy to distinguish from both, with the stigma being almost directly above the base.

2. Saccolabium celebicum Schltr., sp. nov.

Epiphyticum, patulum, usque ad 25 cm longum; radicibus filiformibus, elongatis, flexuosis, glabris; caulis simplicibus, plus minus arcuatis, teretibus, bene foliatis, vaginis foliorum striato-rugulosis, arcte amplectentibus omnino obtectis, 0.3—0.4 cm diametentibus; foliis patulis ligulatis, vulgo distincte falcatis, oblique acuminatis, basin versus sensim angustatis, glabris, 10—15 cm longis, medio fere 1.2—1.7 cm latis; racemis brevibus vulgo geminatis vel ternatis, dense 3—8-floris, usque ad 1.7 cm longis, pedunculo crassiusculo brevi, rhachi distincte incrassata; bracteis semiorbicularibus, cum apiculo obtuso, subcucullatis, ovario multoties brevioribus; floribus illis S. rhopalorrhachis (Rchb. f.) J. J. Sm. similibus et fere aequimagnis; sepalis ovalibus, obtusis, glabris, c. 6.5 mm longis, lateralibus obliquis; petalis oblique oblongis, basin versus paulo angustatis, obtusis, glabris, sepalis paulo brevioribus; labello circuitu oblongo-cucullato, c. 5.5 cm longo, antice trilobulato, lobulis lateralibus abbreviatis, intermedio paulo longiore semiorbiculari, subtus in apiculum brevem obtusum carnosum producto, calcare conico obtuso, decurvo, lateraliter paulo compresso, c. 0.3 cm longo; columna brevi, glabra, c. 2 mm alta, rostellum brevi, adscendente; anthera subreniformi-cucullata, obtuse apiculata, glabra; polliniis globosis, stipite linearis, polliniis plus duplo longiore, glandula orbiculari parvula; ovario cum pedicello glabro, c. 0.7 cm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c.

1200m — R. Schlechter no. 20475, flowering in Nov. 1909; on trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1300—1500m — R. Schlechter nos 20617, 20621, flowering in Dec. 1909.

A species of the section Eu-Saccolabium, related to S. rhopalorrhachis (Rchb.f.) J.J.Sm. and S. sarcochilooides Schltr., but differing in the labellum.

The flowers are snow-white with a golden-yellow labellum apex.

3. Saccolabium Steffensii Schltr., sp. nov.

Epiphyticum, erectum vel patulum, usque ad 25 cm longum; radicibus filiformibus, elongatis, flexuosis, glabris; caule simplici, bene foliato, tereti, vaginis foliorum striatis, arcte amplexentibus omnino obtecto, 2,5–3 mm diametro; foliis patentibus, oblique ligulatis, inaequaliter et obtuse bilobulatis, glabris, basin versus paulo angustatis, 5–10 cm longis, medio fere 0,7–1,1 cm latis; racemis deflexis, laxe vel subdense multifloris, usque ad 8 cm longis, bracteis lanceolatis, acutis, ovario pedicellato fere duplo brevioribus; floribus in genere inter minores, erecto-patentibus, glabris; sepalo intermedio oblongo, obtuso, 3,5 mm longo, lateralibus oblique ovalibus, apiculatis, intermedio aequilongis, sed medio latioribus; petalis oblique oblongo-ligulatis, oblique apiculatis, sepalis paululo brevioribus; labello e basi trilobo, lobis lateralibus erectis, semi-quadratis, antice incumbentibus, humilibus, intermedio lanceolato, elongato-acuminato, basi in toros 2 incrassato, laterales multo excedente, apice revoluto, labello toto petalis aequilongo, calcare subrecto, vix recurvulo, cylindraceo dimidio anteriore antice paulo angustato, apice obtuso, subbilobulato, glabro, c. 0,4 cm longo.

Celebes : In the vicinity of Menado (Minahassa) – Consul Steffens' collector, in the year 1910.

This species belongs to the affinity of S. Witteanum Rchb.f. and S. palustre J.J.Sm., to the latter in particular. It is easily recognised by the spur. I have dedicated the plant to Consul H.F. Steffens in Menado, whose kindness I am indebted to in the Celebes for many a success.

var. tomohonensis Schltr., var. nov.

Differ a forma typica racemis densioribus, floribus magis patentibus et calcaribus brevioribus, habitu humiliore et robustiore.

Celebes : On solitary trees near Tomohon (Minahassa), alt. c. 800m – R. Schlechter no. 20436, flowering in Nov. 1909.

I consider this plant to be only a variety of the Type, although initially it appears to be appreciably different.

4. Saccolabium Minahassae Schltr., sp. nov.

Epiphyticum, validum, dependens, usque ad 40 cm longum; radicibus filiformibus, elongatis, flexuosis, glabris; caule simplici, dense foliato, tereti, vaginis foliorum arcte appressis omnino obtecto, 0,6–0,8 cm diametro; foliis loratis, apice inaequaliter et obtuse bilobulatis, glabris, 17–27 cm longis, medio fere 1,8–2,5 cm latis; inflorescentiis pendulis, graciliter pedunculatis, paniculatis, 10–15 cm longis, pedunculo tereti, glabro, 5–8 cm longo, ramis paucis, dense multifloris; bracteis reflexis, lanceolatis, acuminatis, ovario multo brevioribus; floribus erecto-patentibus, illis S. camploceras Schltr. similibus; sepalo intermedio subquadrato-oblongo, obtusissimo, glabro, 5,5 mm longo, lateralibus oblique ellipticis, apiculatis, glabris, 5,5 mm longis; petalis oblique oblongis, obtusis, glabris, 4,5 mm longis; labello trilobo, c. 0,5 cm longo, lobis lateralibus semi-quadratis, apico truncatis, intus cum plica lamelliformi apiculata, intermedio ovato-cucullato, obtuso, medio superne sulcato, lateralia distincte superante, glabro, calcare o basi conica cylindrico, apice incurvulo paululo ampliato, obtuso, 1 cm longo, glabro, antice intus lamella humili

donato; columna brevi, rostello bifido, erecto; anthera ovata, acuminata, glabra, dorso umberonata; polliniis globosis, stipite tertia parte superiore genuflexo. parte superiore conduplicato, inferiore linearis, bene longo, glandula ampla obovato-triangula, acuta, polliniis majore; ovario cylindraceo, squamulosus, c. 0,7 cm longo.

Celebes : On trees in the forests on Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20427, flowering in Nov. 1909.

A species of that group of the genus to which S. camptocentrum Schltr. and S. squamulosum J.J.Sm. belong. The flowers are yellow, the petals red-spotted inside.

5. Saccolabium aurantiacum Schltr., sp. nov.

Epiphyticum, erectum, usque ad 20 cm altum; radicibus filiformibus, elongatis, flexuosis, glabris; caule perdense foliato, tereti, vaginis foliorum imbricantibus, striatis omnino obtecto, 0,6—0,7 cm longo; foliis patentibus, linearis-ligulatis, apice obliquis, inaequaliter tricuspidatis, glabris, lucidis, textura carnosissimae, 9—16 cm longis, medio fere 0,5—0,9 cm latis; racemis erectis, usque ad 9 cm longis, dense 10—17-floris, pedunculo tereti, glabro, racemo ipso aequilongo; bracteis ovato-lanceolatis, acuminatis, ovario gracili multoties brevioribus; floribus erectis, illis S. miniati Ldl. similibus glabris; sepalis elliptico-oblongis, obtusis, 0,7 cm longis, lateralibus obliquis, intermedio paulo latioribus; petalis sepalo intermedio similibus, obliquis, obtusis, paulo minoribus; labello trilobo, 0,7 cm longo, lobis lateralibus basilaribus erectis, parvulis, oblique ovato-triangulis subacutis, 2,5 mm altis, intermedio porrecto, oblongo-ligulato obtuso, c. 0,4 cm longo, calcare cylindraceo, leviter incurvo, lateraliter valde compresso, apice subito subgloboso-inflato, obtuso, 0,7 cm longo; columna brevi, crassa, rostello adscendente, brevi; anthera cucullata, antice truncata; polliniis 2 obovoideis, stipite linearis, basi dilatata, polliniis paulo longiore, glandula suborbiculari, parvula, ovario 6-costato; glabro, cum pedicello c. 1,8 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 1000m - R. Schlechter no. 20497, flowering in Nov. 1909. [cf. LI [LII]/1, same citation].

A species of the affinity of S. miniatum Lindl., but which is characterised by the spur being suddenly swollen in front like a blister and which furthermore, is strongly compressed laterally. The flowers are a lustrous orange-red, the side lobes of the labellum are darker.

6. Saccolabium Koordersii (Rolfe) Schltr., nom. nov.

Cleisostoma Koordersii Rolfe, in Kew Bull., 1899, p. 131.

Celebes : On trees in the mountain forests near Toli-Toli, alt. c. 200m - R. Schlechter no. 20717, flowering in Jan. 1910.

The species is closely related to S. sphaerophorum Schltr. from New Guinea. It does not appear to reach up very high into the mountains.

7. Saccolabium bilamellatum (J.J.Sm.) Schltr., nom. nov.

Sarcanthus bilamellatus J.J.Sm., in Bull. Dep. Agr. Ind. Néerl., V. (1907), p. 28.

Celebes : On trees near Langowan (Minahassa), alt. c. 800m - R. Schlechter no. 20609, flowering in Dec. 1909.

The two swellings in the throat of the spur, as described by J.J. Smith, are densely papillose in my specimens. The flowers are whitish, the sepals and petals with a large centre spot. I could not establish a lamella in the spur. The species otherwise agrees in habit with species which usually are designated as Sarcanthus.

8. Saccolabium sterophyllum Schltr., sp. nov.

Erectum, rigidum, simplex, c. 20 cm longum; radicibus filiformibus elongatis, flexuosis, glabris; caule crasso, rigido, bene foliato, tereti, vaginis foliorum, arctissime appressis, granuloso-muriculatis omnino obtecto, c. 0,7 cm diametente; foliis erecto-patentibus, rigidis, ligulatis, inaequilater et obtuse bilobulatis, basin versus paulo angustatis, glabris, crasse coriaceis, 6,5—11 cm longis, medio fere 1,5—2,2 cm latis; racemis erectis vel suberectis, foliis fere aequilongis, subdense 10—15-floris, pedunculo rigido, tereti, glabro; bracteis semiorbicularibus, obtusis, ovario multoties brevioribus; floribus inversis, erecto-patentibus, illis Sarcanthi callosi (Bl.) Rchb. f. similibus; sepalis oblongis, obtusis, glabris, 0,9 cm longis, lateralibus obliquis, cum apiculo minuto; petalis subfalcatis, oblongo-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello trilobo, sacciformi, lobis lateralibus humilibus semilanceolatis, antice intus plica carnosula ornatis, 4,5 mm longis basi cum apiculo erecto, intermedio apicali, late ovato, apiculato, minuto, intus basi ligula carnosula, lineari, acuta, arcuata, parvula ornata; 0,2 cm longo, sacco ipso oblongoideo-conico, obtuso, c. 4,5 mm longo, labello toto, e basi ad apicem sacci 1 cm longo; columna brevi, leviter torta, glabra; anthera subquadrata, apiculata; polliniis globosis, pedicellis 2 brevibus stipiti perlongo linearis affixis, glandula parvula lanceolata; ovario cylindrica, squamuoso, c. 1 cm longo.

Celebes : On trees in the forests on Mount Lokon, alt. c. 1000m - R. Schlechter no. 20443, flowering in Nov. 1909.

There is no doubt that the genera Saccolabium, Sarcanthus and Cleisostoma cannot remain in their present delimitation. Following on Ridley, I have initially described all the species here as Saccolabium. The species present here forms, for example, together with Sarcanthus callosus Rchb.f. a type, which in the case of a division of the genera, surely deserves to be raised to a separate genus.

9. Saccolabium aberrans Schltr., sp. nov.

Epiphyticum, erectum, humile, usque ad 10 cm altum; radicibus filiformibus, elongatis, flexuosis, glabris; caule brevi, paulo compresso, 4—6-foliato, vaginis foliorum obtecto, c. 0,5 cm lato; foliis oblongis, inaequaliter et obtuse bilobulatis, basin versus sensim paulo angustatis, glabris, 8—13 cm longis, medio fere 2,3—3 cm latis; racemis patulis, dense multifloris, c. 5 cm longis, 2 cm diametro, pedunculo c. 1,5 cm longo, vaginis paucis ovatis, dissitis obsesso; bracteis lanceolatis, acuminatis, reflexis, ovario duplo brevioribus; floribus patentibus, glabris; sepalis oblongis, obtusiusculis, c. 0,5 cm longis, lateralibus obliquis, basin versus angustatis; petalis oblique oblongo-ligulatis, subacutis, 0,4 cm longis; labello decurvo, circuitu lanceolato-ligulato, medio paulo constricto, antice elongo-acuminato, 0,7 cm longo, ostio calcaris angusto in medio laminæ, appendice recurvo subulato supra ostium calcari, calcare cy-

lindrico, apice inflato, 0,5 cm longo; columna brevi, glabra; anthera late ovata, obtuse acuminata, glabra, dorso umbonata; polliniis ovalibus, stipite e basi linearis sensim apicem versus valde dilatato, apice truncato cum cuspidate, glandula minuta; ovario cum pedicello glabro, cylindraceo, c. 0,5 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 600m - R. Schlechter no. 20582, flowering in Dec. 1909.

A quite aberrant species, which shows a certain approach to Camarotis Lindl. The flowers are yellow, the labellum white with a red margin, the column pale yellow.

LXI [LXII]. Sarcochilus R.Br.

1. Sarcochilus macrosepala Schltr., sp. nov.

Epiphyticum, dependens, c. 20 cm longum; radicibus filiformibus, elongatis, flexuosis, glabris; caule simplici, tereti, bene foliato, vaginis foliorum striatis, arcte amplectentibus obteco, tereti, c. 0,3 cm crasso; foliis linearis-ligulatis, subacutis, basin et apicem versus sensim paulo angustatis, obliquis, glabris, 10—15 cm longis, medio fere 0,6—0,9 cm latis; racemis patulis, gracilibus, usque ad 9 cm longis, laxius 4—7-floris, pedunculo gracili, tereti, glabro, vaginulis paucis distantibus obsesso; bracteis deltoideis, minutis; floribus aureis, patentibus, glabris; sepalis oblongis, pro magnitudine petalorum amplis, intermedio obtuso, 0,6 cm longo, lateralibus falcato-obliquis, subacutis, 0,7 cm longis; petalis oblique ovalibus, obtusis, 0,4 cm longis; labello sacciformi, trilobo, lobis lateralibus decurrentibus, oblique aliformi-triangulis, obtusis, erectis, 0,3 cm longis, intermedio apicali in marginem incrassatum semicircularem reducto, sacco oblongo, obtuso, lateraliter compresso, 0,5 cm longo; columna brevi, glabra, rostellum brevi; anthera late ovata, obtusa; polliniis 2 globosis, stipite obovato antice acuminato, polliniis longiore, glandula orbiculari minuta; ovario cum pedicello glabro, c. 0,6 cm longo.

Celebes : On trees in the forests on Mount Sopoetan (Minahassa), alt. c. 1300m - R. Schlechter no. 20616, flowering in Dec. 1909.

I temporarily place this peculiar plant into Sarcochilus R.Br., although I am convinced that it will not remain there permanently. The structure of the lip is reminiscent of some of the species, but the column is completely foot-less.

2. Sarcochilus pallidus (Bl.) Rchb.f., in Walp. Ann., VI (1861), p. 500.

var. celebicus Schltr., var. nov.

Differ a forma typica habitu validiore, labelli lobo intermedio globoso, callo ovali.

Celebes : On trees near Ayermadidi (Minahassa), alt. c. 150m - R. Schlechter no. 20521, flowering in Dec. 1909.

The variety will at a later date surely be considered as a separate species. Under the name of S. pallidus Rchb.f., there is a whole series of species which are completely well separated, so that I cannot in any way agree with J.J. Smith, who also placed S. aureus Hook.f. and S. cladostachys Hook.f. here, since, in my opinion, these are two quite different plants. The flowers of the Celebes

variety are pale yellow with one to two brown spots inside at the base of the sepals and a brown-spotted labellum. I would not hesitate to describe the plant as a new species, were not my material somewhat incomplete.

3. Sarcochilus phalaenopsis Schltr., sp. nov.

Epiphyticus, subacaule; radicibus filiformibus elongatis, flexuosis glabris; caule valde abbreviato 4-6-foliato; foliis ligulato-oblongis, oblique et obtuse bilobulatis, basin versus paulo angustatis, 10-15 cm longis, medio fere 2,2-3,5 cm latis; racemis gracilibus, demum folia superantibus, flexuosis, laxe plurifloris, pedunculo gracili, tereti, glabro, vaginulis paucis, distantibus obsesso, 5-9 cm longo; bracteis ovatis, obtusis, ovario gracillimo multoties brevioribus; floribus succedaneis, in genere inter majores, erecto-patentibus, glabris; sepalis elliptico-lanceolatis, subacutis, 2,5 cm longis, lateralibus obliquis, intermedio paulo latioribus; petalis sepalis similibus, obtusis cum apiculo minuto, obliquis; labello parvulo c. 0,7 cm longo, lobis lateralibus basalibus, erectis, oblique oblongis, obtusis, 0,7 cm longis, lobo apicali subgloboso, paulo ab apice depresso, c. 0,3 cm diametente, callo oblanceolato carnoso e medio labelli in medium lobi apicali decurrente; columna brevi, glabra, 0,4 cm longa, pede 6,5 mm longo; polliniis oblique oblongoideis, stipite aequilongo, oblanceolato, glandula late hastata, parvula; ovario cylindrico, cum pedicello glabro, 2-2,7 cm longo.

Celebes : On trees on the Lampasioe [River], Toli-Toli district, alt. c.

80m - R. Schlechter no. 20652, flowering in Jan. 1910.

In regard to the flowers, the species is one of the largest in the genus. It belongs into the affinity of S. pallidus Rchb.f., but is already easily recognised in habit by the slender, longer-stemmed inflorescences. The labellum is similar to that of S. pallidus Rchb.f., but differs in detail.

4. Sarcochilus pulviniferus Schltr., sp. nov.

Epiphyticus, pusillus, c. 10 cm altus; radicibus filiformibus, elongatis, flexuosis, glabris; caule brevi, dense foliato, vaginis foliorum omnino obtecto, vix 0,3 cm diametro; foliis patentibus, falcato-ligulatis, obtusiusculis, basin versus paulo angustatis, glabris, 4,5-6,5 cm longis, medio fere 0,7-1 cm latis; racemis patentibus, gracillime pedunculatis, 5-6 cm longis, plurifloris; pedunculo filiformi, tereti, muricato-puberulo; bracteis minutis, deltoideis, ovario multoties brevioribus; floribus succedaneis, approximatis, erecto-patentibus; sepalis oblongis, obtusis, glabris, 5,5 mm longis, lateralibus obliquis intermedio supra medium paulo-latioribus; petalis oblique oblanceolatis, obtusis, glabris, sepalis paulo brevioribus; labello quadrilobo, 0,3 cm longo, lobis posterioribus divaricatis, falcato-ligulatis, obtusis, 0,2 cm longis, anterioribus divaricatis, anguste falcato-lanceolatis, acutis, posterioribus subduplo brevioribus, apiculo triangulo subacute lobuliformi in apice labelli interjecto, pulvine orbiculari, papilloso-puberulo ante ostium calcaris, calcare cylindrico, glabro, leviter incurvulo, apicem versus subclavato-ampliato, obtuso, 0,3 cm longo; columna semitereti, labello aequilonga; polliniis oblique oblongoideis, stipite subtriplo longiore, anguste oblanceolato, glandula ovali, minuta; ovario cum pedicello glabro, 0,5 cm longo.

Celebes : On trees in the forests on Mount Klabat (Minahassa), alt. c. 600m

- R. Schlechter no. 20583, flowering in Dec. 1909.

A species of the section Ascochilus (Ridl.) from the affinity of Sarcochilus Zollingeri Rchb.f. which is characterised by the cushion on the labellum. The

yellow flowers are red-spotted, the side lobes of the labellum have red-stripes, the front lobes are white and the spur yellow.

5. Sarcochilus quinquelobatus Schltr., sp. nov.

Epiphyticus, pusillus, subacaulis, c. 8 cm altus; radicibus filiformibus, elongatis, flexuosis, glabris; caule valde abbreviato, subnullo, 4—5-foliato; foliis erecto-patentibus, oblique ligulatis, acutis vel subacutis, basin versus angustatis, 5—8 cm longis, medio fere 0,6—1 cm latis; racemis gracillimis, 3—4 cm longis, paucifloris; pedunculo filiformi, muri-cato-puberulo, gracillimo, bracteis deltoideis, apiculatis, minutis, ovario pedicellato multo brevioribus; floribus erecto-patentibus, succedaneis, illis *S. Zollingeri* Rchb. f. similibus; sepalis elliptico-ligulatis, obtusis, glabris, extus nervo medio verruculoso-carinatis, 6,5 mm longis, lateralibus obliquis, intermedio paulo latioribus; petalis oblique falcato-ligulatis, obtusis, extus carinatis, glabris, sepalis paulo brevioribus; labello quinquelobato, glabro, 0,5 cm longo, lobis posterioribus linear-falcatis, acutis, vix 0,2 cm longis, lobis lateralibus anterioribus posterioribus duplo majoribus, linear-falcatis obtusis, lobo intermedio antico triangulo-lanceolato, acuto, vix 0,2 cm longo, calcare raro, cylindrico, apice paulo inflato, obtusissimo, subporrecto, 0,6 cm longo; columna semitereti, glabra, apicem versus paulo ampliata; ovario gracili, glabro, cum pedicello 0,7 cm longo.

Celebes : On trees in the forests on the upper Lampasioe [River], near the old goldmines on [Mount] Djangdjang (Toli-Toli district), alt. c. 180m — R. Schlechter no. 20672, flowering in Jan. 1910.

Likewise a species of the section Ascochilus (Ridl.). It is related to S. Zollingeri Rchb.f. and to S. pulviniferus Schltr., but distinguished by the labellum. The flowers are yellow; the labellum white, red in front.

LXII [LXIII]. Thrixspermum Lour.

1. Thrixspermum celebicum Schltr., sp. nov.

Epiphyticum, adscendens vel patulum, usque ad 15 cm longum; radicibus filiformibus, elongatis, flexuosis, glabris; caule vulgo simplici, bene foliato, leviter compresso, vaginis foliorum arcte appressis, striatis omnino obtecto, c. 0,5 cm crasso; foliis patentibus, oblongo-ligulatis, obtusis, inaequaliter bilobulatis, basin versus paulo angustatis, 8—12 cm longis, 2—2,8 cm supra medium latis; pedunculis erectis, teretiusculis, apicem versus sensim applanatis, glabris, vaginulis paucis distantibus obsessis, 5—8 cm longis; racemis valde compressis, bifariis, usque ad 5 cm longis; bracteis erecto-patentibus, valde compressis, ovatis, sub-acutis, ovario brevioribus; floribus erecto-patentibus, illis *T. arachnitis* (Bl.) Rchb. f. similibus et fere aequimagnis; sepalis linear-lanceolatis, attenuato-acuminatis, glabris, c. 3 cm longis, lateralibus paulo obliquis; petalis sepalis similibus, obliquis, sed paulo minoribus; labello saccato, trilobo, 0,7 cm longo, lobis lateralibus erectis, oblique oblongis, obtusis, margine anteriore subdenticulatis, 0,4 cm longis, lobo medio carnoso, late ovato, obtusissimo, lateralia duplo fere superante, callo brevi trapeziformi in media laminae labelli, sacco intus et medio laminae dense puberulo, late oblongo, obtusissimo, omnino 0,7 cm longo; columna brevi, glabra, rostello brevi; anthera suborbiculari antice emarginata, dorso umbonata; polliniis anguste oblongoideis, stipite fere 3-plo breviore lato elliptico, antice contracto, glandula parvula semilunata; ovario cum pedicello cylindrico, glabro, c. 0,8 cm longo.

Celebes : On trees on the Lampasioe [River], near the old goldmines on [Mount] Djangdjang, Toli-Toli district, alt. c. 180m — R. Schlechter no. 20678,

flowering in Jan. 1910. [cf. XLII/14, same citation].

The species should be placed next to T. arachnites Rchb.f., but differs from it in the labellum. The colouring of the flowers is yellowish white, the labellum white, yellowish at the base and with a few golden-yellow spots at the side.

2. Thrixspermum tylophorum Schltr., sp. nov.

Epiphyticum, erectum, pusillum, usque ad 8 cm altum; radicibus filiformibus, elongatis, flexuosis, glabris; caule brevi, usque ad 4 cm longo, dense foliato, vaginis foliorum omnino obtecto; foliis erecto-patentibus vel patentibus, oblongo-ligulatis, obtusis, basin versus paulo angustatis, glabris, 2,5—6 cm longis, medio fere 0,7—1 cm latis; racemis patentibus gracillimis, folia vulgo superantibus, dense pluri-multifloris, cum pedunculo 4—8 cm longis; pedunculis filiformibus, strictis, gracillimis, hinc et inde vaginula obsessis; bracteis bifariis, deltoideis, apiculatis, ovario multoties brevioribus; floribus erecto-patentibus, succedaneis; sepalis ellipticis, obtusis, concavis, 0,9 cm longis, lateralibus obliquis; petalis sepalis valde similibus, obliquis, sed paululo brevioribus; labello saccato, trilobo, 0,6 cm longo, explanato inter apices loborum lateralium 1,2 cm longo, lobis lateralibus erectis, divergentis, oblique ovato-triangulis, obtusiusculis, intermedio apicali, semi-quadrato, obtusissimo, pulvine oblongo transverso, dense farinoso-puberulo ornato, c. 0,2 cm longo, sacco brevi antrorum incurvo, basi appendice linearis, acuto, pilis glanduliferis ciliato ornato, c. 0,3 cm longo; columna brevi, glabra, marginibus superne incurvis; anthera subreniformi, apiculata, glabra; polliniis angusto oblongoideis, stipite 3—4-plo breviore semiovali, glandula parvula transversa; ovario cum pedicello glabro, c. 0,5 cm longo.

Celebes : On trees in the forests at the foot of Mount Lokon (Minahassa), alt. c. 1000m — R. Schlechter no. 20450, flowering in Nov. 1909.

This species is distinguished from all the other previously known ones by the lip, with the pouch bent forwards. The flowers are white. The labellum has a brown spot on the front of the pouch and a few brown dots on the margin of the middle lobe.

3. Thrixspermum Loogemanianum Schltr., sp. nov.

Epiphyticum, pusillum, 10—12 cm altum; radicibus filiformibus, elongatis, flexuosis, glabris; caule brevi, c. 4—6-foliato, vaginis foliorum omnino obtecto; foliis erecto-patentibus, oblique linearis-ligulatis, obtusis, basin versus vix angustatis, glabris, 6—9 cm longis, medio fere 0,7—0,9 cm latis; racemis gracillimis, dense paucifloris, patentibus, cum pedunculo 3—4 cm longo; pedunculo gracillimo setiformi, glabro, hinc et inde vaginula minuta obpresso; bracteis bifariis, deltoideis, apiculatis, parvulis, ovario multoties brevioribus; floribus erecto-patentibus, succedaneis; sepalis oblongis, obtusis, glabris, 0,7 cm longis, lateralibus obliquis, intermedio paulo latioribus; petalis sepalis similibus, obtusiusculis, glabris, sed paulo brevioribus; labello circuitu subquadrato, marginibus basi incurvulis subquadrato, intus medio e margine utrinque plica dupli arcuata ornato, antice truncato, leviter emarginato, callo-subclavato incumbente amplio superne in basi, supra medium antice puberulo, 4,5 mm longo, explanato basi 5,5 mm lato; columna semitereti, glabra, labello fere aquilonga; polliniis oblique oblongoideis, stipite semi-orbiculari fere 3-plo breviore, glandula transversa, parvula; ovario cum pedicello glabro, c. 0,6 cm longo.

Celebes : On trees near Toli-Toli, alt. c. 100m - R. Schlechter no. 20690, flowering in Jan. 1910.

A very peculiar form of the polymorphic genus. In the structure of the lip it is so far quite unique, but leans towards several still undescribed Papuasian forms. The flowers are white with a golden-yellow lip and column.

I have dedicated this species to Mr. Loogeman, who at the time as Dutch Civil Administrator in Toli-Toli, assisted me in every way with my researches in his district.

4. Thrixspermum cymboglossum Schltr., sp. nov.

Epiphyticum, pusillum, 8–12 cm altum; radicibus filiformibus, elongatis, flexuosis, glabris; caule brevi, bene foliato, usque ad 3 cm longo, vaginis foliorum arcte amplectentibus, striatis omnino obtecto, c. 2,5 mm diametro; foliis erecto-patentibus vel erectis, linearibus, acutis, basin versus angustatis, glabris, 4,5–9,5 cm longis, medio fere 0,4–0,8 cm latis; scapis gracillimis, adscendentibus vel erectis, apice dense plurifloris, filiformibus, rigidulis, 6–12 cm longis, hinc et inde vaginula appressa ob sessis; racemo ipso disticho, usque ad 2,5 cm longo; bracteis erecto-patentibus, lanceolatis, acuminatis, ovario bene brevioribus; floribus succedaneis, erecto-patentibus, glabris; sepalis oblongis, apiculatis, 1 cm longis, lateralibus obliquis; petalis sepalis similibus, oblique oblongis, obtusis, basin versus antice paulo angustatis, sepalis paulo brevioribus; labello circuitu ovato, naviculari-concavo, basi utrinque lobulo brevi, obtuse triangulo, obliquo instructo, caeterum indiviso, apice subapiculato, infra medium ligula parvula breviter bifida ornata, ima basi subsaccato-concavo, 0,9 cm longo; columna brevi, semitereti, glabra, c. 0,3 cm longa, pede brevi; anthera suborbiculari, dorso altius apiculata, glabra; polliniis subglobosis, stipite linearis, polliniis paulo longiore, glandula parvula suborbiculari; ovario cum pedicello cylindrico, glabro, c. 0,5 cm longo.

Celebes : On trees in the forests on Mount Masarang (Minahassa), alt. c. 1200m - R. Schlechter no. 20464, flowering in Nov. 1909.

In this species we have likewise, a very aberrant form to hand, but I am not yet aware of its relatives. The shape of the lip, in particular, is very peculiar. The flower colouring is pale yellow, the labellum inside on the margin, towards the base, is spotted in pale yellow.

5. Thrixspermum filifolium Schltr., sp. nov.

Epiphyticum, longe dependens, usque ad 50 cm longum; radicibus filiformibus elongatis, flexuosis, glabris; caule simplici vel e basi parum ramoso, filiformi, flexuoso, laxe foliato, 1,5–2 mm diametro, vaginis foliorum arcte amplectentibus obtecto; foliis patulis, filiformibus, acutissimis, glabris, 12–17 cm longis, medio c. 1,5 mm diametentibus; inflorescentiis patulis, pedunculo filiformi, glabro, vaginulis paucis, appressis ob sesso, 1,5–2 cm longo, racemo dense multifloro, disticho, usque ad 2 cm longo; bracteis bifariis lateraliter compressis subimbricantibus, triangulis, obtusiusculis, c. 2 mm longis; floribus in genere inter minimos, flavidis; sepalis ovalis, obtusis, glabris, c. 0,2 cm longis, lateralibus obliquis; petalis oblique oblongo-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello suborbiculari, apiculato, petalis aequilongo, glabro, concavo, medio 0,2 cm latitudine subattingente; columna brevi, crassiuscula, glabra.

Celebes : On trees in the forests on Mount Mahawo (Minahassa), alt. c. 1200m
 - R. Schlechter no. 20485, flowering in Nov. 1909.

What I have written here about the flowers was made from specimens that were all stung by a gall-fly. How much alteration this produced in the floral segments can be established only when normal floral material becomes available. The plant in its vegetative features is so extremely characteristic, and so different from all other species of the genus, that I did not hesitate to describe it here, despite the incomplete material.

LXIII [LXIV]. *Micrototorchis* Schltr.

1. *Micrototorchis celebica* Schltr., sp. nov.

Epiphytica, perpusilla, vix 1,5 cm alta; radicibus flexuosis, glabris, usque ad 2,5 cm longis; caule subnullo, 2-3-foliato; foliis erecto-patentibus, oblanceolato-ligulatis, obtusiusculis, cum apiculo minuto, basin versus angustatis. 0,7-1,2 cm longis, supra medium 2,5-3 mm latis; racemo 3-6-floro, cum pedunculo fere aequilongo, triquetro, usque ad 1,3 cm longo, erecto-patente, glabro, rhachi triqueta flexuosa; floribus erecto-patentibus, succedaneis, virescentibus; bracteis ovatis, acutis, dorso basi carinatis, ovario paulo brevioribus; sepalis ligulatis, obtusis, apicem versus extus incrassatis, c. 1,75 mm longis, intermedio cum petalis usque ad medium fere connatis, lateralibus obliquis, margine interiore cum petalis usque ad medium fere connatis, margine exteriore liberis; petalis e ungue linearis cum sepalis connato dimidio superiore in laminam oblique ovatam, obtusam, apicem versus extus incrassatam expansis, glabris, sepalis paulo brevioribus; labello ovato, obtuso, marginibus incurvolo, intus basi excavatione antice breviter bilobulata donato, glabro, 1,5 mm longo, calcare ovali, obtuso, glabro, laminae fere acquilongo, recto; columna perbrevi, brachiis 2 falcatis, excavatis, donata, stigmate transverso; anthera subreniformi, antice paulo producta, obtusa; polliniis globosis, stipite duplo longiore, e basi linearis apice conspicue dilatato, glandula late ovali, polliniis subdupo minore; ovario triquetro, glabro, vix 0,2 cm longo.

Celebes : On trees in the forests on Mount Mahawo (Minahassa), alt. c. 1200m - R. Schlechter no. 20429, flowering in Nov. 1909.

This species represents the second one from the Malay-Philippine Archipelago. It is probably most closely related to *M. compacta* (Ames) Schltr. from the Philippines.

LXIV [LXV]. *Taeniophyllum* Bl.

1. *Taeniophyllum usneoides* Schltr., sp. nov.

Epiphyticum, subacaule, polyrhizum; radicibus numerosissimis, filiformibus, elongatis, flexuosis, glabris, applanatis, usque ad 12 cm longis, 1,25-1,50 mm latis; caule subnullo, aphylo, usque ad 3 mm longo; scapis gracillimis, setiformibus, vaginulis paucis, distantibus, arcte appressis obsessis, teretibus, glabris, cum racemo usque ad 8 cm longis; racemo flexuoso, laxe 3-10-floro, usque ad 3 cm longo; bracteis ovatis, apiculatis, glabris, ovario plus duplo brevioribus; floribus erecto-patentibus, flavescentibus; sepalis lanceolato-ligulatis, subacutis glabris, c. 0,3 cm longis, usque ad medium fere cum sepalis connatis, lateralibus obliquis, margine anteriore liberis; petalis e ungue linearis, cum sepalis connato dimidio superiore in laminam oblique ovatam obtusam expansis, glabris, sepalis paulo brevioribus; labello ovato-lanceolato, subacuminato.

glabro, 0,2 cm longitudine vix excedente, apice superne appendice subulato, refracto, minuto donato, basi leviter excavato, calcare ovoideo obtuso, laminae fere duplo breviore; columna brevi, crassiuscula, glabra, rostello abbreviato; anthera subreniformi, glabra, antice obtuse apiculata; polliniis oblique pyriformibus, stipite subduplo longiore linearis basin versus angustato, glandula subhastato-oblonga, minuta; ovario cylindrico, glabro, 2,5 mm longo.

Celebes : On slender trees in the forests on Mount Masarang (Minahassa), alt.

c. 1200m - R. Schlechter no. 20428, flowering in Nov. 1909.

A species of my section Condonosepalum. It is characterised by the large number of its roots and is readily distinguished by the extremely delicate peduncles. The flowers are yellow-green.

2. Taeniophyllum sciapila Schltr., sp. nov.

Epiphyticum, perpusillum, subacaule; radicibus filiformibus, elongatis, valde flexuosis, glabris, applanatis, usque ad 8 cm longis, 1,25—1,50 mm latis; caule subnullo, aphylo; scapis gracillimis, setiformibus, minutissime papilloso-puberulis, vaginulis 1—2 distantibus, parvulis, arcte appressis, obsessis, cum inflorescentia 1—1,5 cm longis; racemo flexuoso, sublaxe pauci- (2—7-) floro, usque ad 0,7 cm longo; bracteis ovatis, subacutis, glabris, minutis, ovario multoties brevioribus; floribus erecto-patentibus minutis; sepalis lanceolato-ligulatis, subacutis, apice paulo incrassatis, glabris, usque infra medium cum petalis connatis, 3,75 mm longis, lateralibus obliquis, margine anteriore liberis; petalis e ungue linearis, cum sepalis connato dimidio superiore in laminam oblique ovatam, obtusam, apicem versus paulo incrassatam dilatatis, glabris, sepalis paulo brevioribus; labello angusto oblongo-ligulato, subacuto, glabro, antice marginibus leviter incurvis, apice superne in appendicem parvulum, subulatum, refractum producto, 0,3 cm longo, calcare ovoideo, obtuso, glabro, laminae fere 3-plo breviore; columna brevi, crassiuscula, rostello perbrevi; anthera reniformi, glabra, brevissime apiculata; polliniis oblongoideis, stipite aequilongo, linearis, glandula oblonga, polliniis subaequilonga; ovario cylindraceo, glabro, c. 2 mm longo.

Celebes : On tree-trunks in dense primary forest on Mount Kaweng (Minahassa), alt. c. 1000m - R. Schlechter no. 20592, flowering in Dec. 1909.

Likewise, a species of the section Condonosepalum. It is characterised by the extremely short, papillose peduncles and by the shape of the labellum. The flowers here, likewise, are yellow-green.

3. Taeniophyllum inconspicuum Schltr., sp. nov.

Epiphyticum, perpusillum, subacaule; radicibus paucis, (4—6), filiformibus, flexuosis, glabris, usque ad 4 cm longis, c. 1 mm latis, applanatis; caule subnullo, aphylo; scapis filiformibus, gracillimis, subinconspicue papilloso-asperatis, vaginulis 1—2 dissitis, minutis, arcte appressis obsessis, cum racemo 0,8—1,3 cm altis; racemo sublaxe 2—5-floro, usque ad 0,7 cm longo; bracteis minutis, ovatis, obtusiusculis, glabris, erecto-patentibus; floribus erecto-patentibus, minutis; sepalis lanceolato-ligulatis, subacuminatis, usque ad medium cum petalis connatis, glabris, 2,75 mm longis, glabris, lateralibus obliquis, margine anteriore liberis; petalis e ungue linearis, cum sepalis connato dimidio superiore in laminam oblique ovato-lanceolatam, subacuminatum expansis, glabris, sepalis paulo brevioribus; labello ovato-lanceolato, acuminato, glabro, apice superne appendice minuto refracto donato, dimidio inferiore superne excavatione ovali aucto, 2,5 mm longo, calcare ovoideo obtu-

sissimo, laminae duplo breviore, glabro; columna brevi, glabra, rostello brevi; ovario subcylindraceo, glabro, 0,3 cm longo.

Celebes : On trees near Tomohon (Minahassa), alt. c. 800m - R. Schlechter no. 20517, flowering in Dec. 1909.

Probably the smallest of the species of the [section] Condonosepalum from the Minahassa [district]. It is strikingly reminiscent of T. Alwisii Lindl. from Ceylon. These very small species are all the more invisible and difficult to find, because they appress their roots firmly to the tree-bark, so that they can hardly be recognised. The flowers of this species are red-brown.

4. Taeniophyllum potamophylla Schltr., sp. nov.

Epiphyticum, perpusillum, subacaule; radicibus flexuosis, applanatis, glabris, paucis, usque ad 4 cm longis, 1,50—1,75 mm latis; caule subnullo, aphylo; scapo singulo abbreviato, cum racemo vix 1 cm longitudine excedente, basi vaginulis minutis 1—2 obsesso, glabro; racemo ipso subdense pluri- (10—15-) floro, disticho, usque ad 8 mm longo; bracteis patentibus, triangulis, acutis, glabris, ovario pluries brevioribus; floribus erecto-patentibus, illis *T. obtusi* Bl. similibus et fere aequimagnis; sepalis ligulatis, obtusis, glabris, c. 2,5 mm longis, lateralibus obliquis, basin versus paulo angustatis; petalis linearis-ligulatis, obtusis, subfalcato-obliquis, glabris, sepalis paulo brevioribus; labello suborbiculari, apiculato, basi subcucullato-concavo, dimidio anteriore incrassatione suborbiculari humili donato, glabro, petalis aequilongo, calcare subgloboso, obtusissimo, laminae fere 3-plo breviore; columna perbrevi, glabra, rostello perbrevi; anthera subquadrata, glabra, antice subtruncata; polliniis oblique obovoides, stipite paulo longiore linearis, basin versus attenuato, glandula ovata, minuta; ovario cum pedicello glabro, 0,2 cm longo.

Celebes : On trees near Kuala Besar, Toli-Toli district, alt. c. 30m - R. Schlechter no. 20651, flowering in Jan. 1910.

One of the species from the closer affinity of Taeniophyllum obtusum Bl., from which it is distinguished by the lip and narrower petals. The flowers are yellow with a white labellum and two red spots on the anther.

5. Taeniophyllum aggregatum Schltr., sp. nov.

Epiphyticum, humile, subacaule; radicibus 15—20, flexuosis, elongatis, glabris, applanatis, usque ad 10 cm longis, 2,5—3 mm latis; caule subnullo, aphylo; scapis abbreviatis, aggregatis (usque ad 7), erectis vel adscendentibus, cum inflorescentia usque ad 2,5 cm longis, pedunculo perbrevi, omnino muriculato-asperatis, racemo ipso subdense 15—20-floro, disticho; floribus illis *T. obtusi* Bl. similibus, erecto-patentibus; bracteis triangulis, acutis, extus muriculato-asperatis, ovario pluries brevioribus; sepalis ligulatis, obtusis, glabris, nervo medio extus incrassato, sparsim muriculato, 3,5 mm longis, lateralibus falcato-obliquis, basin versus angustatis; petalis sepalis lateralibus similibus, sed tenuioribus et paulo brevioribus, obtusis, glabris; labello circuitu subquadrato-ovato cum apiculo obtuso, antice marginibus subcucullato incurvis, medio excavatione apicem versus decurrente ornato, 2,5 mm longo, basi 2 mm lato, glabro, calcare late ovoideo, obtusissimo, glabro, dimidium laminae superante; columna perbrevi, crassa, rostello porrecto, mediocri; anthera reniformi, glabra, obtusiuscula; ovario cylindraceo, glabro, 3,5 mm longo.

Celebes : On trees on the Lampasioe [River], Toli-Toli district, alt. c. 40m - R. Schlechter no. 20653, flowering in Jan. 1910.

This species, likewise, belongs to the affinity of T. obtusum Bl., but differs in the uneven inflorescences and the shape of the lip. The flowers are yellow with a white labellum.

6. Taeniophyllum paludicola Schltr., sp. nov.

Epiphyticum, pusillum, subacaule; radicibus pluribus, elongatis, flexuosis, glabris, usque ad 15 cm longis, 1,25—1,50 cm latis; caule subnullo, aphylo; scapis abbreviatis vulgo 1—3-nis, erectis, cum racemo 1,5—2 cm longis, pedunculo perbrevi, rhachi tenui, flexuosa; racemo ipso laxe 8—14-floro, sublaevi; bracteis patentibus, triangulis, acutis, ovario gracili multo brevioribus; floribus parvulis, erecto-patentibus, glabris; sepalis lanceolato-ligulatis, obtusiusculis, 0,3 cm longis, lateralibus obliquis, basin versus paulo angustatis; petalis oblique ligulatis, subacutis, sepalis paulo minoribus; labello trilobo, circuitu anguste elliptico, lobis lateralibus erectis, semiorbicularibus, brevibus, intermedio producto, carnosus, ovato, obtuso, fovea triangulari superne donato, labello toto glabro, 2,5 mm vix longitudine attingente, calcare cylindraceo-conico, obtuso, lateraliter paulo compresso, superne leviter carinato, 0,3 cm longo; columna brevi, brachiis concavis apice incurvis, rostello brevi; anthera late ovali cum apiculo obtuso, glabra; polliniis oblique oblongoideis, stipite duplo longiore, e basi tenui oblanceolato-dilatato, glandula minuta; ovario gracili, glabro, c. 0,3 cm longo.

Celebes : On trees in the mangrove swamps near Kuala Besar, Toli-Toli district, alt. c. 10m — R. Schlechter no. 20649, flowering in Jan. 1910.

Likewise, a characteristic species from the affinity of the two previous ones. It is characterised by the lax inflorescences, the shape of the lip and by the length of the spur.

7. Taeniophyllum ficicola Schltr., sp. nov.

Epiphyticum, gracile, subacaule; radicibus pluribus elongatis, flexuosis, applanatis, usque ad 20 cm longis, 2,5—3 mm latis; caule subnullo aphylo; scapis gracillimis, setiformibus, glabris, racemo brevi inclusu usque ad 5 cm longis, vaginulis 2—3, minutis, appressis obsessis, rigidulis; racemo ipso dense pauci-plurifloro, usque ad 0,5 cm longo, disticho; bracteis ovato-triangulis, obtusiusculis, glabris, ovario pluries brevioribus; floribus erecto-patentibus, illis T. pulvinati Schltr. similibus; sepalis oblongo-ligulatis, obtusis, glabris, c. 3 mm longis, lateralibus obliquis, basin versus paulo angustatis; petalis oblique oblongo-ligulatis, obtusis, glabris, sepalis paulo brevioribus; labello circuitu oblongo, supra medium trilobo, lobis lateralibus semioblongis, obtusis, intermedio obreniformi, incrassato, antice breviter bilobulato cum apiculo interjecto, lobulis obtusis, rotundatis, labello toto vix 0,3 cm longo, inter apices loborum lateralium vix 0,2 cm latitudine superante, lobo intermedio vix 1 mm longitudine excedente, 1,5 mm lato, calcare subclavato-cylindrico, obtuso, glabro, 0,2 mm longo; columna brevi, crassiulus, glabra; rostello brevi; anthera cordata, breviter et obtuse acuminata, glabra; polliniis oblique obovoideis, stipite anguste oblanceolato, polliniis 3-plo longiore, glandula minuta ovato-lanceolata; ovario cylindraceo, glabro, 0,3 cm longo.

Celebes : On large Ficus trees on the Lampasioe [River], Toli-Toli district, alt. c. 30m — R. Schlechter no. 20679, flowering in Jan. 1910.

This species shows a close leaning towards T. pulvinatum Schltr. from New Guinea, and is again a new proof for the close relationship of the flora of northern Celebes with that of Papuasia. The colouring of the flowers of T. ficicola Schltr. is pale yellow.

P.S. Apart from the Orchidaceae listed here, I still have a further six to ten numbers which belong to particularly critical groups. Should some novelties be found amongst these, they will be published in my 'Orchidaceae novae et criticae' in this periodical.



I.

APPENDIX I.LOCALITIES IN CELEBES.

SCHLECHTER R. (1911 & 1925) 'THE ORCHIDACEAE OF CELEBES'

KEY TO AREA LOCATIONS

C = Central Celebes

N = North Celebes

N-M = North Celebes, Minahassa district. Kuala = River mouth

S = South Celebes

S.E. = South-East Celebes

KEY TO TEXT NAMES

G = Gunong, Guenong = Mount or Volcano

Kota = Township

Kampong = Village

| | S | ° | °E |
|---------------------------------------|------|--------|--------------------|
| Ambabah, (Mount) | | | |
| Amoerang, (Township) | N-M | 1.11 N | 124.35 |
| Ayermadidi, (Village) Later Airmadidi | N-M | 1.25 N | 124.59 |
| Babelombang, (Mount) | S | | |
| Balapioe, (Mount) | S | | |
| Bantaeng (Pic), see Bonthain (Mount) | | | |
| Baverang, (Village) | S | | |
| Bili-Bili, (Village) Later Bilibili | S | | |
| Boeh, (Village) | N-M | | |
| Boesoe (Mount) | S | | |
| Bolaang Itang Later Bolaangitan | N | 0.54 N | 123.19 |
| Bone, (Village) | N | 0.33 N | 123.08 |
| Bonthain (Pic), (Mount) | | | |
| Later Lompobatang | S | 5.20 S | 119.55 |
| Bowonglang (i) (Pic), (Mount) | | | |
| Later Boang | S | | |
| Bujong, (Village) | N | | |
| Bwol, (Village) Later Buol | N | 1.10 N | 121.26 |
| Djangdjang, (Mount) | N-M | | Toli-Toli District |
| Donggala, Dongala, (Village) | C | 0.40 S | 119.44 |
| Empung, (Mount) | N-M | | |
| Enrekang, (Village) | C | 3.34 S | 119.47 |
| Goa (r), (Village) Gowa District | S | 5.10 S | 119.40 |
| Gorontolo, (Township) | N | 0.33 N | 123.03 |
| Kajoewatoe, (Village) Later Kajuwatu | N-M | 1.08 N | 124.58 |
| Kakas, Kakaskassen, (Village) | N-M | 1.11 N | 124.53 |
| Kandari, (Township & District) | | | |
| Later Kendari | S.E. | 3.57 S | 122.35 |

II.

| | | | |
|-------------------------------------|------|--------------------|--------|
| Kapoetan (Island) | N | 1.03 N | 120.38 |
| Katong Moan, Later Ketung? | S | 3.32 S | 116.11 |
| Kawangkoan, (Village) | | | |
| Later Kavangkoan | N-M | 1.12 N | 124.47 |
| Kaweng, (Mount) | N-M | 1.09 N | 124.54 |
| Kema, (Village) | N-M | 1.23 N | 125.44 |
| Keppe, (Mount & Village) | S | 3.33 S | 120.22 |
| Klabat, (Mount) | N-M | 1.28 N | 125.02 |
| Kolaka, Kolak | S.E. | 4.03 S | 121.36 |
| Kombi, (Village) | N-M | 1.14 N | 125.01 |
| Kovo, (District) | C | | |
| Kuala Besar, Kwala-Besar, (Village) | N | Toli-Toli District | |
| Kwala Besar, Kuala-Besaar, (River) | N | " | " |
| Lambelo, Lambolo, (Mount) | S | | |
| Lampasioe, (River) | N | Toli-Toli District | |
| Langowan, (Village) | N-M | 1.09 N | 124.50 |
| Lanjienga, (Village) | S | | |
| Lansot, (Village) Later Lansat | N-M | 1.13 N | 124.44 |
| Lepo-Lepo, (Village) Later Lepolepo | S.E. | 4.04 S | 122.51 |
| Lerk, (Village) | N | | |
| Lokon, (Mount) | N-M | 1.22 N | 124.47 |
| Lokon-Empung, (Mountains) | | | |
| See individual Mts. | N-M | | |
| Lolomboelan, (Range or Mount) | N-M | | |
| Macassar, Makassar, (Township) | | | |
| Later Ujung Pandang | S | 5.07 S | 119.24 |
| Madjene, (Village) | S | 3.30 S | 119.08 |
| Mahawo, Mahawa, (Mount) | N-M | | |
| Maros (Pic), (Mount & Village) | S | 5.00 S | 119.34 |
| Masawa, (Village) | S | 3.16 S | 119.20 |
| Masenrempoeloe, | C | | |
| Masarang, (Mount) | N-M | | |
| Matinang, (Range) | C | | |
| Menado, (Township) | N | 1.29 N | 124.51 |
| Minahassa, (District & Peninsula) | N-M | 1.00 N | 124.25 |
| Nanakan, (Mount) | S | | |
| Padah, (Village) | S | | |
| Paka-Paka, (Mount) | S | | |
| Pakoe-veroe, (Village) | N-M | | |
| Paleleh, Palele, (Village) | N | 1.04 N | 121.57 |

III.

| | | | |
|---------------------------------------|------|--------|--------|
| Paloppo, (Village) Later Palopo | C | 3.00 S | 120.12 |
| Pangararan, (Mount) | S | | |
| Pasangmalambe, (Mount) | S | | |
| Pinamorongan, (Bivouac) | N-M | | |
| Polewali (Village) | S | 3.25 S | 119.20 |
| Posso, (Lake) Later Poso | C | 1.52 S | 120.35 |
| Ranoketa (n), Later Ranoketang | N-M | 1.04 N | 124.39 |
| Ratahan, (Village) | N-M | 1.04 N | 124.48 |
| Ratatotok, (Village) | N-M | 0.51 N | 124.42 |
| Rindengan, | N-M | | |
| Salabanca, (Village) Later Salabangka | N | | |
| Samparan, (Village) | S.E. | | |
| Sankoep, (Village) Later Sangkup | N | 0.54 N | 123.38 |
| Sinadji, (Mount) | S | 3.15 S | 119.58 |
| Sonder, (Village) | N-M | 1.16 N | 124.46 |
| Sopoetan, (Mount) Later Sopotan | N-M | 1.07 N | 124.45 |
| Sosso, (Village) | C | | |
| Sudara, (Mount) Later Duasudara | N-M | 1.29 N | 125.09 |
| Takalekal, Takalekadjo, (Range) | C | | |
| Taloang, (Mount) | S | | |
| Tampuso, Tampusso, (Mount) | | | |
| Near Tomohon | N | | |
| Tapalang, (Village) | S | 2.51 S | 118.49 |
| Tjambo, (Village) Later Tjamba | S | 4.54 S | 119.50 |
| Toli-Toli, (Township & Bay) | N | 1.03 N | 120.49 |
| Tolmongah, (Mount) | S | | |
| Tolongan, (Mount) | S | | |
| Tomohon, (Village) | N-M | 1.19 N | 124.49 |
| Tondano, (Village & Lake) | N-M | 1.19 N | 125.54 |
| Totok, (Village) | N-M | 0.52 N | 124.47 |



