

New Papuasian Orchids

Rudolf Schlechter

A translation into English of

Neue Orchidaceen Papuasiens

from

Beiträge zur Flora von Papuasien IX

as published in

Engler's *Botanische Jahrbücher ...*, Vol LVIII (1923), pp 50-154

with preface, contents, Ledermann Collection index and species listing.

D F Blaxell, H J Katz, H R Toelken & J T Simmons



Rudolf Schlechter
(1872-1925)



German New Guinea [now part of Papua New Guinea]

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PREFACE

This work was published originally in 'Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie' herausgegeben von A. Engler (usually abbreviated to Engl. Bot. Jahrb. or Engl. Pflanzenr.) vol. 58 (1922-23), pp. 50-154, as part of C. Lauterbach's 'Beiträge zur Flora von Papuasien IX'. (Contributions to the Flora of Papuasia IX).

Rudolf Schlechter was the author of the Orchidaceae section of the paper entitled 'Neue Orchidaceen Papuasiens' which describes 128 new species or varieties of 27 genera. The material principally consists of the collection made by C. Ledermann during the German - Dutch Boundary Expedition in the Sepik River District of Kaiser Wilhelms Land in 1912-13. Small collections made by Schultze, Moszowski and Peekel are also included.

Together with the four sections of 'Additmenta ad Orchideologiam Papuanum' from 'Orchidaceae Novae et Criticae' published in Fedde's Repert. vol XVI (1919) and vol. XVII (1921) the work constitutes a supplement to Schlechter's major work on Papuasian Orchidaceae 'Die Orchidaceen von Deutsch-Neu-Guinea' published originally as fascicles of Fedde's Repert. between 1911 and 1914.

Unfortunately no illustrations for either 'Neue Orchidaceen Papuasiens' or 'Additmenta ad Orchideologiam Papuanum' were ever published or are known to exist. The Type material was destroyed at the Berlin Herbarium in 1943 and the existence of complete duplicates must be considered doubtful.

Ledermann's field work was quite thorough and his collection details list locations, elevations and flowering dates etc. Schlechter has followed a practice adopted in some of later work of including

with the Latin description and general species notes, a detailed description of the taxon including measurements. These have been translated from the German.

Although published a decade later than his 'Orchidaceae of German New Guinea' there is no major revision, in 'New Papuan Orchidaceae', of the views expressed previously particularly in respect of Dendrobiinae and Bulbophyllinae where both he and J.J. Smith were in such conflict with Kränzlin. The text includes the description of a further 32 species of Dendrobium from 12 previously described sections as well as 19 new species of Bulbophyllum.

He further confirms his views on the separation of Glomera, Glossorhyncha and Guilianettia where he and J.J. Smith expressed quite conflicting taxonomic judgments.

Schlechter also reconsiders his previous treatment of the genus Phreatia Lindl. and decides to combine his two sections Dilostypus and Rhynchophratia into a new genus Rhynchopreatia Schltr.

NEW PAPUASIAN ORCHIDS.

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Introduction

The investigation of the orchids in the collections of Ledermann and Prof. Schultze, commenced during the stay of the German - Dutch Boundary Expedition in the western part of Kaiser-Wilhelms-Land, has as might have been expected, provided us with a considerable number of novelties, which I now propose to publish. Some of these were discovered by Father Peekel in the Island of New Mecklenburg and these have been included here.

Although these collections contain a fairly high percentage of new species, it is nevertheless remarkable that they show very few really new basic types, which are not present in my collections, described 1911-14 in 'The Orchidaceae of German New Guinea'. It would thus appear that we are fairly acquainted already with the principal types of the orchidaceous flora of Papuasia. The new species described here, are with few exceptions related to those known already from Papuasia. This must not lead us to believe that hardly any new genera are to be expected, for some isolated types will certainly be found. However, it is improbable that new genera of large dimensions, such as we have in Epiblastus, Pedilochilus, Microtatorchis and so on, will still continue to appear. After all, we know only a small portion of the floristic area of New Guinea, while the greatest part of it is still quite unexplored. For example, the Islands of the Bismarck Archipelago and likewise the Solomons, from which I still expect upwards of 100 new orchids, are, in respect to their flora, completely unknown, as the collections in our possession from these parts can only be regarded as small samples.

As I have treated already the orchidaceous flora of Papuasia in its phyto-geographical relationships, it is unnecessary to repeat

my remarks here. However, as we have received meanwhile better data regarding the orchidaceous flora of certain tropical countries, it may be interesting to institute a comparison with those which I had to omit for want of a survey of their orchidaceous flora, such as the Cordillerian States of South America, which have been regarded as the richest of all countries in the world so far as their orchids are concerned.

In my enumeration of the Orchidaceae of German New Guinea, I have stated 1450 species were known from there in 1914. I have since described 126 new species which increases this number to 1576. In addition Ledermann's collection contains a series of species described from the north-eastern part of Dutch New Guinea, but not hitherto reported from the German territory, so that we can now state the number known from the latter as 1600.

As far as can be ascertained, Dutch New Guinea has supplied us with 900 species not yet recorded in the German area, and British Papua with about 150. Thus, in the aggregate we know already from Papuasia (i.e. New Guinea, with its adjacent islands, Bismarck Archipelago and Solomons), upwards of 2600 species of orchids. Thus the total number is considerably higher than that which I took as my basis in 1914, when I computed it at 2100 Papuasia.

I am now able to make a more precise statement about the orchid flora of the Cordillerian states of South America, as in the meantime I have received from these countries collections of orchids which I hope to publish shortly. These have yielded the following results, which for the present I will only state in normal numbers:- Venezuela (942,300 square kilometres) has supplied 640 orchids. Colombia (1,206,200 square kilometres) has supplied 1300 orchids.

Ecquador (307,200 square kilometres) has supplied 750 orchids.

Peru (estimated at 1,300,000 square kilometres, but yet little explored) has supplied 840 orchids.

Bolivia (1,440,000 square kilometres, which already lies beyond the chief centre of development for orchids and the flora of which is not well known) has supplied 320 orchids.

We must undoubtedly assume that these countries still harbour many species unknown to us, but it is also certain that we must continue to expect many novelties from Papuasia. From my experience there, I believe the number of species still to be expected will considerably exceed those from any of the Cordillerian states of South America. In 1914 I calculated that German New Guinea possessed an average of one species to 164 square kilometres. This average will now have to be altered to one species to every 149 square kilometres.

These calculations are of course only of value if they can be compared with other territories of the same size. Ecquador affords such an opportunity as its area of 307,200 sq. kilometres is not quite half the size of New Guinea, i.e. it is nearly one third the size of German New Guinea. Its richness in orchids has long been known and we were always of opinion that in this respect Ecquador and Colombia should be regarded as the richest countries in the world. The computations which can now be established prove that Papuasia is considerably richer than either in species. If we combine Ecquador or Colombia, the area covered by them is twice as large as that of Papuasia and the number of species known from them may be estimated at about 2050, as many are common to both countries.

These may now be compared with 2650 species from Papuasia with an area of half the size. In my opinion it has been proved that in

orchids, Papuasia is the richest country in the world. Of the countries in Asia in similar latitudes and with similar meteorological conditions, we can consider only Java and the Malay Peninsula, as the orchidaceous flora of the Moluccas, Celebes, Borneo and Sumatra is not yet compiled and a review is therefore, not available. As explained previously we may estimate the number of species at about 600 for Java which covers an area of 126,900 square kilometres.

As the island is about half as large as Papuasia, it certainly does not contain, in comparison to its size, the richness in species of Papuasia. Of course, the orchids might represent the largest family of plants in both countries. The conditions of the Malay Peninsula are similar but not quite as favourable for orchids. This territory, the exploration of which we have chiefly to thank the English botanist H.W. Ridley, covers an area of 190,000 square kilometres, and in 1907 had supplied a total of 442 orchidaceous species as estimated by Ridley. Owing to the publication of further species, this number may have, in the meanwhile, increased to 470. We thus see that none of these territories approach Papuasia even approximately in richness.

A specially remarkable feature in the orchid flora of Papuasia is the prevalence of large genera. Three of these each possess upwards of 100 species, and of these Bulbophyllum and Dendrobium each exceed 500; third, Phreatia is still growing considerably, although it has already produced 115 species in the Territory. The time may not be far distant when other genera such as Liparis, Microstylis, Oberonia and Taeniophyllum each number 100.

At least 13 genera exceed 20 species, viz. Habenaria, Corysanthes, Mediocalcar, Cerastostylis, Agrostophyllum, Glomera, Glossorhyncha, Appendicula, Calanthe, Cadetia, Eria, Pedilochilus

and Microtatorchis. Some of these have also exceeded the species number of 50.

I have previously drawn attention to the high percentage of endemism.

Corysanthes R. Br.

Besides the species earlier enumerated by me, four more have meanwhile been described, so that now including also those described here, 21 species have been recorded from the Territory. They all belong to the section Calcaria, which no doubt comprises the majority of species belonging to the genus.

C. Ledermanii Schltr., sp. nov.

Herba terrestris, pusilla. Tuber ovoidum vel subglobosum, parvulum. Caulis brevis, tenuis, glaber, basi vaginatus, apice unifoliatus. Folium ovatum, acuminatum, basi profunde cordatum, glabrum, horizontaliter patens. Bractea linearis-lanceolata, acuta, ovarium aequans vel paulo superans. Flos in genere medioeris, satis magnus, erectus, glaber. Sepalum intermedium obovato-spathulatum, breviter acuminatum, dimidio superiore fornicato-concavum; lateralia perrecta anguste linearia, acutissima, petala multo excedentia. Petala minuta, linearis-lanceolata, valde acuta, perrecto-decurva. Labellum cuculliforme, e basi angustata breviter bicalcarata in laminam antice reniformem, emarginatam, margine pectinato-serratam expansum, supra medium callo oblongoideo, cucullato-incurvo, obtuso ornatum. Columna brevissima generis.

Whole plant, consisting of the parts above the soil, including the flower, to 5 cm high. Stalk delicate, rarely more than 2.75 cm high; leaf reddish green, underneath bluish red, 1.5 - 2 cm long, above the soil 1 - 1.5 cm broad. Flower sessile, erect, up to 2 cm long; the lateral sepals c 1.3 cm long, overtopping the petals by scarcely 3 mm [Ed. - interpretation by translator]; lip distinctly shorter than the up to 2 cm long dorsal sepal, with strongly spreading platform up to 1 cm broad and curved towards the front.

North-east New Guinea : In slippery humus of the range forests near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12414, flowering in July 1913.

Owing to the cuspidate dorsal sepal the species is closely related to C. aristata Schltr. The flowers are white, striped with carmine-red with a carmine-red labellum.

Cryptostylis R.Br.

In my enumeration of the Papuasian species of this genus in 1911, I was only able to include two. In the meantime four more species C. carinata J.J. Sm., C. arfakensis J.J. Sm., C. sigmoidea J.J. Sm., and C. apiculata J.J. Sm., have been described from Dutch New Guinea, so that we already have six species from there, but not including the one C. lancilabris Schltr., described below.

It would thus appear that the developing centre of this genus also lies in Papuasia, from whence the species have penetrated easterly to the Samoan Islands, south-east to Australia and west across the Malayan Islands, on the one hand, to Ceylon, and on the other across the Philippines to Formosa.

*

C. zeylanica (Lindl.) Schltr. (Zosterostylis Zeylanica Lindl.)

The re-naming of Zosterostylis zeylanica and Z. Walterae Wight was not made by Blume, as stated in Index Kewensis. He merely stated that Zosterostylis and consequently both species, belong to Cryptostylis.

I regard as a different species to the Javanese C. Arachnites Bl. the plant described by Oakes Ames in his 'Orchidaceae' Vol. 11, p. 45 as C. Arachnites Bl. which should also be separated and may herewith be designated as C. philippensis Schltr., while the Ceylon species has a considerably larger and broader labellum than C. Arachnites Bl. and the entire flower is smaller and shaped differently from that of the latter. Of C. philippensis Schltr., I have good material collected by M. Ramos in March and April at Camguica de Mindauas (Bureau of Science, nos. 14416 and 14442).

C. lancilabris Schltr., sp. nov.

Terrestris, erecta, vix pedalis. Radices
crassiusculi, villosi. Folium radicale vulgo singulum, suberectum, petio-
latum, lamina oblongo-elliptica, acuminata, basi rotundata, glabra, petiolo
gracili, sulcato, quam lamina breviore. Scapus strictus vel substrictus, cum
racemo sublaxe plurifloro folium plus duplo superante, vaginulis 2—3 acu-
minatis obsessus, teres, glaber. Bracteae ovato-lanceolatae, acuminatae,
ovario duplo breviores. Flores in genere inter minores, erecti. Sepala
lineari-ligulata, acuta, erecta, margine involuta, lateralia paulo obliqua.

Petala quam sepala subdupo breviora, anguste et oblique lanceolato-linearia, acuta, glabra. Labellum dorsale, circuitu lanceolatum subacutum e basi concava constrictum et sursum in laminam lanceolatam, intus dense papillosam, linea mediana carinato-incrassatum, leviter concavam, sepalis aequilongam expansum. Columna brevis, clinandrio 3-lobulato, crassiuscula. Anthera ovato-cucullata, obtusiuscula, extus minute papillosa.

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Whole plant rarely more than 25 cm high. Leaves erect, green with whitish varigation, 7 - 8.5 cm long, 3.5 - 4 cm broad at about the middle, on a 3.5 - 4.5 cm long stalk. Flowers green, labellum brownish red with blackish red spot. Sepals 1.5 cm long; petals 1 cm long. Labellum lancelote, spread out c. 1.7 cm long, at the base and below the middle 3.5 mm broad.

North-east New Guinea : In mountain forest on Mount Lord (Sepik District), alt. c. 1000 m - C. Ledermann no. 9867, flowering in Nov. 1912.

As in C. carinata J.J. Sm., this species has a similar thickening atthe axis of the labellum but this is more slender in comparison with the other species from the region.

Lecanorchis Bl.

The species described below constitutes the third member of the genus recorded from German New Guinea. Whether L. papuana Schltr. is really identical with L. triloba J.J. Sm., I do not care to decide without comparing it with authentic material of the latter. The labellum of Smith's plant is so entirely different in its parts, also, on the whole, of much broader form with a different middle lobe, that I have not hesitated to exclude it from identity with L. papuana Schltr., unless the published illustration by J.J. Smith is incorrect. My sketch, made from living material, has always been re-examined whenever I came across the same species, (which I have collected in three different places), so that an erroneous conception here is hardly possible. Concerning the identity of L. triloba J.J. Sm., with L. javanica Bl., I would like to point out that Blume's illustrations have proved to be so perfect, that at present there is no reason to assume that the rather distinctly tri-lobed labellum

has been overlooked by him, all the more so as he compared his Javanese species with the tri-lobed labellum of L. japonica Bl.

It would therefore be more proper in my opinion to keep the species separate.

L. bicarinata Schltr., sp. nov.

Terrestris, saprophytica, gracilis. Radices crassiusculi, flexuosi. Caulis simplex vel ramosus, strictus vel subflexuosus, rigidus, violascens, vaginulis dissitis squamiformibus, deltaeis ornatus, teres, glaber. Racemus sublaxe pluriflorus, brevis; bracteis deltaeis, obtusis, ovario multoties brevioribus. Flores in genere mediocres, erecto-patentes. Sepala ligulata, obtusa, supra medium paulo dilatata, glabra, lateralia paulo obliqua. Petala sepalis similia sed paululo breviora, obliqua. Labellum usque ad medium fere columnae marginibus adnatum, circuitu pandurato-ligulatum, supra medium trilobatum, carinis 2 puberulis e basi usque in basin lobi intermedii decurrentibus ornatum, lobis laterali bus suborbicularibus columnam haud superantibus, intermedio obovato-quadrato, margine crenulato, antice truncato-obtusissimo, medio pilis vel papulis clavatis longis dense barbato. Columna semiteres, facie infra stigma puberula, gracilis; ovarium gracile cylindricum, calyculi dentibus triangulis, obtusiusculis.

Up to 50 m [Ed. - cm] high, not rarely branched saprophyte with wiry blackish blue stems. Flowers grey outside, white inside. Sepals and petals almost equal, the sepals 6 mm long, the petals little shorter. Lip narrow, scarcely 6 mm long, spread out between the two side lobes 2 mm broad, with central lobe 2 mm long. Column slender, c. 4.5 mm long. Ovary sessile, slender, c. 1.1. cm long.

North-east New Guinea : Saprophyte in dense tall forest of the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9278, no. 9475a, no. 9061, flowering in Oct. 1912.

This is most closely related to L. triloba J.J. Sm. but is well separated by the narrower labellum with both margins hairy.

Erythrodess Bl.

I have frequently had occasion to examine the Physurus-species of the New World, and am now convinced that Erythrodess has very little in common with Physurus and must certainly be kept separate from it.

The genus seems to have a distribution similar to Cryptostylis, the only difference being that it does not occur in Australia. Eight species are now known from New Guinea.

E. sepikana Schltr., sp. nov.

Herba terrestris, erecta, simplex. Rhizoma decumbens, laxe radicans, cauliniforme. Caulis infra medium 4—5-foliatus, supra scapiformis, sparsim vaginatus, sparsim glanduloso-pilosulus. Folia petiolata, erecto-patentia, oblique elliptico-lanceolata, acuminata, basi cuneata, glabra, petiolo basi dilatata caulem cucullato-amplectente. Racemus sublaxe 15—20 floribus, angustus, erectus. Bracteae lanceolatae acuminatae, inferiores ovarium superantes, superiores sensim breviores. Flores in genere inter minores, extus sparsim glanduloso-pilosuli. Sepala ovato-elliptica, obtusa, lateralia paulo-obliqua, erecto-patentia. Petala oblique oblongo-spathulata, obtusa, glabra, sepalo intermedio margine interiore agglutinata. Labellum e basi cucullato-calcarata circuitu late ovatum, obtusiusculum, supra medium breviter et acute constrictum, 5-nervium, glabrum, calcare cylindraceo, a dorso paulo compresso, quarta parte apicali bifido, ovarii dimidium vix aequante. Ovarium cylindraceo-fusiforme, glanduloso-pilosulum.

A herb c. 30 cm high. Leaves up to 6.5 cm long, 2.3 cm broad at about the middle, on a 2—2.5 cm long stalk. Raceme of flowers c. 9 cm long. Sepals and petals c. 4 mm long, the former tinged red, the latter white. Platform of lip as long as petals, 3.5 mm broad below the middle, white; spur about as long as platform of lip. Ovary 8 mm long.

North-east New Guinea : In humus in the range forests of the mountain base (Sepik District), alt. c. 850m — C. Ledermann no. 9168 flowering in Oct. 1912.

The species belongs to the relationship of E. purpurascens Schltr. but differs in the form of the labellum and the petals.

Zeuxine Lindl.

I notice that the circumscription of the genus Zeuxine by J.J. Smith is different from that used by me in the description of the Orchidaceae of German New Guinea. He proposes to include certain species of my section Hetaeriopsis under Hetaeria where, in my opinion, they do not belong. I have previously stated the reasons which induced me to limit Hetaeria more narrowly, and in my opinion more

sharply, by leaving in it only two types with reversed flowers and a rather characteristic column, thus including Z. cristata (Bl.) Schltr., (Hetaeria cristata Bl.) and Z. falcatula (J.J. Sm.) Schltr. (Hetaeria falcatula J.J. Sm.) in the section Hetaeriopsis of the genus Zeuxine. After exclusion of these heterogeneous types, Hetaeria above has to be separated from Zeuxine, unless one should dismember them into still smaller genera, for which there is no necessity in the circumscription of Zeuxine and Hetaeria.

Z. leucotaenia Schltr., sp. nov.

Herba terrestris, erecta. Rhizoma cauliniforme, decumbens, laxe radicans. Caulis teres, basi foliatus, glaber, apicem versus glanduloso-pilosus. Folia erecto-patentia, oblique ovato-lanceolata vel lanceola, breviter acuminata, utrinque glabra, basi rotundato-cuneata, petiolo basi dilatata vaginante, lamina 2—3 plo breviore. Racemus laxe pluri- vel multiflorus, erectus; bracteis elliptico-lanceolatis, acuminatis, ovarium aequantibus vel paulo superantibus. Flores in sectione inter minores. Sepala elliptica, obtuse acuminata, glabra, lateralia obliqua, sub-patentia. Petala falcato-oblonga obtusa, sepalo intermedio margine intus arcte agglutinata. Labellum e basi oblongo-cucullata marginibus inflexis sensim in unguem brevem productum, antice in lobum transverse oblongum, apiculatum dilatatum, glabrum, intus supra basin squamis 2 falcatis instructum, medio sere lamellis 2 parallelis carnosulis, semioblongis ornatum. Columna brevis, facie subquadrata, glabra, lamellis 2 satis altis leviter curvatis ornata, rostello brevi. Anthera remiformi-cucullata, glabra, breviter acuminata. Ovarium cylindraceo-fusiforme, subglabrum.

A herb c. 20 cm high. Leaves closer together in lower part of stems, c. 4 – 6, 3.5 – 4 cm long, 1.2 – 1.5 cm broad below the middle, on a stalk c. 1.5 cm long. Scape (ie. the upper part of the stalk) slender, furnished with scattered pointed sheath, up to 10 cm long. Raceme loosely arranged, with 10–20 flowers, up to 8 cm long. Flowers moderately small, with sepals 3.5 mm long and scarcely shorter petals. Labellum 4 mm long, c. 1.5mm broad just above the base, with front lobe 1.5 mm broad. Column c. 1.75 mm long. Ovary 5 – 5.5 mm long.

North-east New Guinea : Mountain base (Sepik District), alt. c. 850 m – C. Ledermann no. 8907a (TYPE), no. 8950a, flowering in Sept. – Oct. 1912.

Because of the small flowers and the dark green leaves with a

white longitudinal band, this species is distinguished from the others in the section Hetaeriopsis.

var. floribunda Schltr., var. nov.

Differt a forma typica racemo multifloro, habitu robustiore.

North-east New Guinea : [Mount] Kameelrücken 'Camel-back' (Sepik District), alt. c. 1100 up to 1150m - C. Ledermann no. 8843a, no. 10382d, flowering in Sept. - Dec. 1912.

The plant collected at 1050m in the Hunstein Ranges as Ledermann no. 8433 probably belongs also to this species. However, the flowers were too young to identify this with certainty against the original.

Z. curvata Schltr., sp. nov.

Terrestris, erecta, pro genere valida. Caulis erectus vel adscendens, dimidio inferiore foliatus, teres, glaber, dimidio superiore sparsim glanduloso-pilosus, vaginulis dissitis, acuminatis obsessus. Folia erecto-patentia, circa 5—7, petiolata, lamina oblique ovali vel latiovata, breviter acuminata, basi rotundata vel subcordata, petiolo basi dilatata vaginante, quam lamina vulgo paulo breviore. Racemus cylindraceus, subdense multiflorus; bracteis elliptico-lanceolatis, acuminatis, ovarium aequantibus vel paulo superantibus. Flores curvato-patentes, in sectione mediocres, perigonio incurvo. Sepala ovata, obtususcule acuminata, glabra, lateralia obliqua. Petala oblique ovato-oblonga, obtususcule acuminata, sepalo intermedio margine interiore agglutinata, glabra. Labellum e basi ovali-eucullata supra medium marginibus incurvis in unguem brevem attenuato, autice in laminam transverse ovalem, perbreviter apiculatam expansum, supra basin squamis 2 falcato-triangulis ornatum, medio gibbo oblongo satis amplio intus auctum. Columna brevis, facie ovoidea, lamellis 2 amplis, basin versus dilatatis; rostello bipartito, brevi. Anthera late ovoideo-eucullata, acuminata, glabra. Ovarium cylindraceo-fusiforme, glabrum, tortum.

A herb up to 50 cm high and with fleshy stems with the leaves being born in the lower half. Leaves stalked, 5 – 6.5 cm long, c. 3.5–4 cm long in the middle, on a stalk 3.5 – 4.5 cm long. Raceme of flowers cylindrical, up to 10 cm long, c. 2 cm in diameter and with flowers bent downwards. Flowers brownish outside, white inside, of average size within the genus. Sepals and petals c. 5 cm long. Lip 5 mm long, 2 mm broad above the base and with front lobe 1.25 mm broad. Column 3 mm high, glabrous. Ovary glabrous, twisted, c. 9 mm long.

North-east New Guinea : In range forest of Mount Schrader

(Sepik District), alt. c. 2070m - C. Ledermann no. 12198, flowering in June 1913.

This species is closely related to Z. alticola Schltr. but considerable differences exist due to the rounder leaves, the refracted flowers much nearer the ground with entirely glabrous sepals and the much broader labellum which has inside, a distinct protuberance.

Microstylis Nutt.

The number of new species belonging to this genus is smaller than I would have expected in the large collection of Ledermann. It is surprising for instance that no new species of the section Pseudo-Liparis are included. We now know altogether nearly 70 species from New Guinea, showing a considerably larger number of forms than in any other country on earth.

Since the publication of my work on the Orchidaceae of German New Guinea it is strange that only ten more species have been described from Papuasia. These are divided as follows : M. heliophoba J.J. Sm. and M. atrobrachiata Ridl., belong to §. Pseudo-Liparis ; M. wappeana J.J. Sm., must be placed §. Oistochilus ; M. rhabdophylla Ridl. seems to belong to §. Bothrocycla; M. carinatifolia J.J. Sm., should be included in §. Hololobos : M. laxa Ridl. and M. producta J.J. Sm. are species of the polymorphic §. Pleidon ; M. circaea Ridl. has already been correctly placed in §. Commelinodes (Commelinoides) by its author. M. grandiflora J.J. Sm. represents a species of §. Herpetorhizis. I am not at present able to decide the relationship of M. acuminata Ridl.

Contrary to the opinion of J.J. Smith, I would like to still retain §. Oistochilus close to §. Pseudo-Liparis from which the column is not very different. I have examined species of these two sections in the living material, and contrary to my original opinion, I believe now that they differ more from each other than I formerly

thought.

That the two basic types, however, are related to one another, I have already expressed agreement by causing one section to follow the other.

Of the new species described here, the first five belong to

S. Pleiodon and M. Stolleana Schltr. to S. Commelinodes.

M. dolichostachys Schltr., sp. nov.

Herba perennis, erecta, glabra.

Caulis erectus, cylindraceus, 8—9-foliatus, vaginis foliorum plus minusve. absconditus. Folia erecto-patentia, petiolata, lamina oblique elliptica, acuminate, basi longe cuneata, margine leviter undulata, petiolo basi dilatata vaginante, quam lamina multo breviore. Scapus erectus, angulatus, gracilis, cum racemo perlongo elongato folia superiora multo superans, erectus. Bracteae deflexae, lanceolatae, acuminatae, ovario pedicellato vulgo breviores. Flores in sectione mediocre, rosei, apicibus viridi-flavis, erecto-patentes. Sepala oblonga, obtusa, lateralia obliqua. Petala oblique ligulata, obtusa, quam sepala paululo tantum breviora. Labellum e basi alte sagittata circuitu suborbiculare, supra medium trilobatum, lobis lateralibus angulo exteriore rotundatis, caeterum dentibus 3 triangulis ornatis, lobo intermedio antico semioblongo, usque ad medium fere bifido, sovea basilari anguste oblonga, incrassatione obscura circumdata, auriculis basilaribus oblique lanceolato-ligulatis obtusis, fere parallelis, quam lamina dimidio brevioribus. Columna brevis sectionis. Ovarium 6-costatum graciliter pedicellatum.

A glabrous herb 35 — 45 cm high and with a stem c. 10 cm long.

Leaves 7 — 9 cm long, up to 3 cm broad at about the middle, on a stalk 2 — 3 cm long. Scape with raceme of flowers up to 35 cm long of which the raceme itself is up to 25 cm long. Flowers carmine-red with greenish yellow tips almost 6 mm in diameter. Ovary with stalk 6 — 7 mm long.

North-east New Guinea : In primary forest on the peak of [Mount] Hunstein (Sepik District), al. c. 400 — 500m — C. Ledermann no. 8230d flowering in Aug. 1912.

This species which is closely related to M. xanthochila Schltr. is very easily recognised by the flower colour and the conspicuously long flower raceme.

M. fluva Schltr., sp. nov.

Terrestris, erecta, glabra. Caules abbreviati, 3—6-foliati, carnosuli, cylindracei. Folia erecto-patentia, petiolata, lamina obliqua elliptica, obtusiuscula acuminata, basi cuneata, margine leviter undulata, petiolo basi bene dilatato vaginante, quam lamina fere 4—5-plo breviore. Scapus nudus, angulatus, cum racemo folia superiora 2—3-plo superans; racemo elongato, pro genere subdense multifloro, erecto. Bracteae lanceolatae, acuminatae, demum recurvae, ovario pedicellato vulgo paulo breviores. Flores fulvi, erecto-patentes, in sectione vix inter mediocres. Sepala oblonga, obtusa, lateralia paulo obliqua, erecta, petaia obliqua ligulata, obtusa, quam sepala paulo breviora. Labellum e basi alte sagittata supra medium trilobatum, lobis lateralibus tridentatis, dente inferiore abbreviato, triangulo, dentibus 2 superioribus lanceolato-falcatis, acutissimis, fere 2—3-plo longioribus, lobo intermedio antico semioblongo, usque ad medium fere bitido, segmentis apice subacutis, fovea basilari oblonga, in crassatione oblonga, basin lobi antici attingente circumdata, auriculis basilaribus obliqua triangulo-lanceolatis, obtusis, margine interiore subparallelis, quam lamina labelli dimidio brevioribus. Columna brevis, crassiuseula sectionis. Ovarium pedicellatum clavatum, acute 6-costatum.

A herb 25 — 40 cm high with a stem 5 — 8 cm long; leaves 6 — 10 cm long, c. 2 — 3.5 cm broad at about the middle, on a stalk 1.5 — 2 cm long. Scape with raceme of flowers 20 — 30 cm long. Flowers yellowish red fading to rose red and carmine-red, relatively small within the section. Dorsal sepal scarcely 3 mm long, the lateral ones slightly shorter. Petals 2.75 mm long. Lip 2.5 mm long, equally broad at the base, with ears (lobes) 2 mm long. Ovary together with stalk almost 4 mm long.

North-east New Guinea : In swampy primary forest, on the Leonhard-Schultze River (Sepik District), alt. c. 20 — 50 m.

C. Ledermann no. 7755, flowering in June 1912.

This species has a close relationship to M. melanophylla Schltr.

M. Ledermannii Schltr., sp. nov.

Herba glabra, perennis terrestris. Caulis cylindraceus, ascendens vel suberectus, 6—8-foliatus. Folia erecto-patentia, petiolata, lamina obliqua oblongo-elliptica, acuminata, basi cuneata, margine leviter undulata, petiolo basi dilatata vaginante, quam lamina 4—5-plo breviore. Scapus gracilis, cum racemo folia superiora 3—4-plo superans, angulatus; racemo subdense multifloro, elongato, erecto. Bracteae deflexae lanceolatae, acuminatae, ovario pedicellato breviores. Flores pallidiflavi, in genere inter mediocres. Sepala oblonga obtusa, intermedio quam lateralia bene angustiore, lateralibus obliquis. Petala obliqua ligulata obtusa,

quam sepala vix breviora. Labellum e basi alte sagittata subquadratum, supra medium trilobatum, lobis lateralibus tridentatis, dente inferiore obtuse triangulo abbreviato, dentibus 2 superioribus triangulo-falcatis, acutis, lobo intermedio antico ovali, usque supra medium bifido, fovea basilaris anguste oblonga, apicem versus incrassatione V-formi obtusa circumdata, auriculis basilaribus oblique triangulo-oblongis obtusis, basi subparallelis, apice leviter divergentibus. Columna sectionis, crassiuscula. Ovarium pedicellatum gracile, 6-costatum.

A glabrous herb 30 - 40 cm high with stem 7 - 12 cm long.

Leaves 6.5 - 11 cm long, 2.5 - 3.5 cm broad at about the middle, on a stalk 1.8 - 2.5 cm long. Scape with raceme of flowers up to 30 cm long. Flowers light yellow. Sepals 3.25 mm long; petals 3 mm long. Lip with platform 3 mm long and at the base about equally broad and with basal ears (lobes) 2 mm long. Ovary together with stalk about 5 mm long.

North-East New Guinea : In alluvial forest near Malu (Sepik District), alt. c. 30 - 50 m - C. Ledermann no. 10595, flowering in Jan. 1913.

This species must be placed closely to M. fluva Schltr., but is distinguished by its pale yellow flowers, with shorter teeth of the lateral lobes of the labellum as well as by its broader front lobe and blunter basal ears which are more upward diverging.

M. petiolaris Schltr., sp. nov.

Herba terrestris, gracilis, glabra. Caulis cylindraceus, erectus vel suberectus, dimidio superiore 4—6-foliatus. Folia erecto-patentia, pro genere longius petiolata, lamina oblique ovato-elliptica, obtusiuscule acuminata, basi cuneata vel cuneato-rotundata, petiolo quam lamina tantum paulo brevior. Scapus cum racemo elongato folia superiora 2—4-plo superans, angulatus, nudus vel subnudus; racemo densius multifloro, angusto. Bracteae recurvae lanceolatae, acuminatae, ovario pedicellato breviores. Flores in sectione mediocres, lutei, subpatentes. Sepala oblongo-elliptica, obtusa, lateralia intermedio paulo latiora, obliqua. Petala oblique ligulata, obtusa, quam sepala paulo breviora. Labellum e basi late sagittata quadratum, supra medium trilobatum, lobis lateralibus tridentatis, dente inferiore late triangulo breviter acuminato, superioribus 2 lineari-falcatis, acutissimis, inferiore paulo longioribus, lobo intermedio antico oblongo, usque supra basin bifido, fovea basilaris elliptica, incrassato-marginata, auriculis basilaribus oblique triangulis, obtusiusculis, divergentibus. Columna sectionis. Ovarium gracilis pedicellatum 6-costatum, glabrum.

A herb 20 - 35 cm high, with stalk 7 - 10 cm long. Leaves 6 - 8 cm long, 2.3 - 3.2 cm below the middle, on a stalk 3 - 5 cm long. Scape with raceme of flowers up to 23 cm long and distinctly over-topping the upper leaves. Flowers light yellow, scarcely 5 cm in diameter. Lip with divergent basal ears. Ovary together with slender stalk 5 - 6 mm long.

North-east New Guinea : In swampy primary forest on the Freida River (Sepik District), alt. c. 20 - 40m - C. Ledermann no. 7447, flowering in June, 1912.

This species is somewhat isolated in the section Pleiodon. It stands out especially because its leaf stalks are longer than in other related species. Also characteristic are the diverging basal ears of the labellum.

M. Stolleana Schltr., sp. nov.

Herba terrestris, adscendens, glabra. Caulis decumbens vel adscendens, 9—10-foliatus, cylindraceus. Folia erecto-patentia vel suberecta, petiolata, oblique ovato-lanceolata, obtusiuscula acuminata, basi subrotundata, petiolo basi dilatata vaginata, lamina 3—4-plo breviore, scapus suberectus, angulatus, cum racemo folia multoties superans; racemo sublaxe multifloro, pedunculo fere duplo breviore. Bracteae decurvae, lanceolatae, acuminatae, ovario pedicellato fere aequilongae. Flores in sectione inter mediocres, pallide virescentes, erecto-patentes. Sepala ovato-elliptica, oblonga, lateralia quam intermedium paulo latiora. Petala oblique ligulata, oblonga, sepalo intermedio paulo breviora. Labellum est basi alte sagittata quadratum, supra medium trilobatum, lobis lateralibus tridentatis, dente inferiore triangulo acuminato, superioribus 2 lanceolato-falcatis, acutis, exteriore paulo longioribus, lobo intermedio antico ovali, apice breviter bisido, dentes lobi lateralium dimidio superante, fovea anguste oblonga, basi lamella carnosa semicirculari circumdata, apice callo V-formi usque supra medium lobi antici decurrente aucta. Columna brevis sectionis. Ovarium breviter pedicellatum 6-costatum.

A decumbent perennial herb with pale red stems about 30 cm long. Leaves 1.5 - 2.5 cm long, 0.8 - 1.4 cm broad below the middle, on a stalk 4 - 7 mm long, pale green reddish underneath. Scape with raceme of flowers erect and about 60 cm long. Flowers greenish white, scarcely 4 mm in diameter. Ovary together with a short stalk 3.5 - 4 mm long.

North-east New Guinea : In range forest near Camp Felsspitze

'Rocky-Peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no 12677, flowering in Aug. 1913.

A species from the section Commelinodes. It would be placed best next to M. warapussae Schltr.

M. vinosa Schltr., sp. nov.

Herba perennis, humilis, erecta, glabra. Caulis suberectus, brevis, cylindraceus, densius 5—7-foliatus. Folia erecto-patentia, petiolata, lamina oblique angusti-elliptica, acuta vel acuminata, basi cuneata, margine leviter undulata, petiolo lamina 2—3-plo breviore, basi dilatata vaginante. Scapus erectus vel suberectus, cum racemo folia 4—5-plo superans; racemo dense multifloro, elongato. Bracteae lanceolatae, acuminatae, deflexae, flores superantes. Flores in sectione inter minores, vinosi. Sepala late oblonga, obtusa, lateralia obliqua. Petala anguste et oblique ligulata, obtusa, quam sepala paululo breviora. Labellum e basi peralte sagittata circuitu quadratum, supra medium trilobatum, lobis lateralibus grosse 4 dentatis, dentibus lanceolato-linearibus, acutis, falcatis, interioribus quam exteriores paululo majoribus, lobo intermedio antico ovali, apice breviter bifido, dentibus interioribus lobarum lateralium paulo breviore, sovea basilaria oblonga, basin versus utrinque incrassato-marginata, auriculis basilaribus subparallelis, oblique lanceolatis, obtusiusculis, quam lamina fere aequilongis. Columna generis crassiuscula. Ovarium cum pedicello glabrum, 6-costatum, breviusculum.

A perennial herb 20 - 30 cm high with stem 4 - 6 cm long.

Leaves 4.5 - 8 cm long, 2 - 3 cm broad in about the middle, on a wine red stalk 1.8 - 2.3 cm long. Scape with raceme of flowers very slender, up to 25 cm long, erect, with the raceme up to 18 cm long. Flowers dark wine red, with sepals 2.5 mm long and slightly shorter petals and labellum. Ovary together with stalk scarcely 3 mm long.

North-east New Guinea : In light, rocky, primary forests on the peak of [Mount] Hunstein (Sepik District), alt. c. 800m -C. Ledermann no. 8325, flowering in Aug. 1912.

According to its habit, as well as its flowers, this species is closest to M. arachnoidea Schltr., but has considerably shorter teeth on the lobes of the labellum.

Oberonia Lindl.

More novelties might have been expected from Ledermann's collection of Oberonia originating, as it does, from a territory quite unexplored botanically. Up to the present it contains only two

undescribed species, which increases the total number from Papuasia to about 75, of which 61 have been recorded from German New Guinea.

Five more must be added to the species from Papuasia previously enumerated by me, viz. O. inversiflora J.J. Sm. belonging to §. Scytoxiphium; O. altipetala J.J. Sm and O. torana J.J. Sm., two new types of §. Otoglossum; likewise O. marginata Ridl. and O. Klossii Ridl., the relationship of which I am unable to decide from the descriptions.

Oberonia is distributed over the entire monsoonal territory towards the west even as far as East Africa, where a species has been collected in fruit, but not as yet properly determined, though evidently related closely to the only lemurian form, O. equitans (Sw.) Schltr., which has been found repeatedly. In the north the boundary of the genus extends to Japan, where O. japonica (Maxim) Makino occurs. The Samoan and Society Islands seem to form the eastern boundary, while in Australia this genus is represented by O. palmicola F.v.M. and O. Fitzgeraldiana Schltr. (O. iridifolia Fitzg. Aust. Orch. non Lindl.) in N.S.W. and Qld., as well as O. Viellardi (Rchb.f.) Schltr. and O. neocaledonica Schltr. on the Island of New Caledonia which are the most southern sentinels.

Besides Papuasia, British India also seems to represent a centre of development in which a whole series of basic Types are recorded, all of which are completely missing in the territories. [Papuasia] It is interesting to find that the most western forms are closely related with the most eastern.

O. elegans Schltr., sp. nov.

Epiphytica, pluricaulis, erecta. Caules pro genere elongati, perdense foliati. Folia equitantia, imbricantia, lamina libera brevi, triangulari-falcata, acuta. Racemus dense multiflorus, cylindraceus, suberectus. Bracteae lanceolatae acuminatae, margine irregulares, ovarium fere aequantes. Flores parvuli, in sectione vix mediocres, sub-

verticillati, aurei. Sepala ovata, obtusa, lateralia obliqua. Petala oblique ligulata, obtusa, sepalis subaequilonga. Labellum e basi altiauriculata quadrato-oblongum, antice bilobum, sepalis duplo longius, lobis antice obtusis oblique oblongis, margine exteriore inaequaliter grosse dentatum, auriculis basilaribus columnam amplectentibus oblique oblongis, obtusis, tenuiter carinatis, quam lamina subtriplo brevioribus. Ovarium cylindraceum glabrum, gracile.

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An erect epiphyte up to 40 cm high with tufted branches. Leaves equitant and with very short free apices, imbricately overlapping, rarely more than 2 cm long. Racemes of flowers up to 7 cm long, about 5 mm in diameter. Flowers spreading, dark yellow, glabrous, with sepals and petals 0.8 mm long and a labellum 1.5 mm long. Ovary, scarcely 1.75 mm long.

North-east New Guinea : In dense primary forest on the hill slopes, near Malu, on the Sepik [River], alt. c. 60 - 80m - C. Ledermann no. 6694, flowering in Mar. 1912.

In habit and flower morphology this species is closest to O. anguina Schltr., but is well distinguished by the shorter leaves and the form of the labellum.

O. Ledermannii Schltr., sp. nov.

Epiphytica, caulescens, suberecta. Caules fasciculati, perdense foliati. Folia falcato-lanceolata, basi dilatata, acuta, lamina suberecta. Racemus suberectus, perdense multiflorus, elongatus, anguste cylindraceus. Bracteae lanceolatae, acuminatae, margine irregulares, ovarium fere aequantes. Flores in sectione mediocres, pallide brunnei, subverticillati, inversi. Sepala patentia, ovata, obtusa, glabra, lateralia obliqua. Petala oblique ligulata, obtusa, apicem versus paululo dilatata. Labellum sepala plus duplo superans, e basi alte auriculata, circuitu quadrato-oblongum, usque supra medium antice bilobum cum denticulo obtuso interjecto, margine grosse dentato-incisum, lobis apice acutis, auriculis basilaribus obtuse oblongis, columnam amplectentibus, tenuiter carinatis, quam lamina fere 4-plo brevioribus. Ovarium cylindraceum, glabrum.

An epiphyte 30 - 35 cm high, with tufted stems which are densely covered with leaves. Leaves equitant, completely covering the stems, the lower ones up to 5 cm long and 8 mm broad at the base, the upper ones becoming gradually smaller. Raceme of flowers up to 13 cm long about 6 mm in diameter. Flowers minute, light coffee brown, with sepals and petals about 1.25 mm long and a labellum 3 mm long. Ovary little more than 1.5 mm long.

North-east New Guinea : In rocky light primary forest on [Mount] Zuckerhut (Sepik District), alt. c. 560m - C. Ledermann no. 7094, flowering in Apr. 1912.

A very characteristic species of the section Labidous, related to O. pachyampon Schltr., but well distinguished by the colour patterns as well as by the lip.

Liparis L.C. Rich.

It is remarkable that Ledermann's collection contains only two new species of Liparis, neither of which possesses any characteristics of noteworthy forms, but are closely related with some already known. Papuasia has already supplied 70 species of the genus, and as may be seen by later publications the number of species is by no means exhausted. In my opinion upwards of 100 species will be recorded from the entire territory, or almost as many as Ridley enumerated on his monograph of the whole genus in 1886.

To my enumeration of the species of Papuasia, there are now to be added 18 species, all of which come from Dutch New Guinea. They are distributed as follows : L. puberula Ridl., belongs to §. Eu-Liparis; L. cyperifolia Ridl., L. brachystele Ridl., and L. congesta Ridl. to §. Pleiophyllum; L. latibasis J.J. Sm., L. Pullei J.J. Sm., L. insectifera Ridl. and L. Gibbsiae J.J. Sm. to §. Platychilus; L. riparia J.J. Sm. and L. indifferens J.J. Sm. to §. Blepharoglossum; L. pandaneti J.J. Sm., L. Gjellerupii J.J. Sm. L. geelvinkensis J.J. Sm., L. gautierinses J.J. Sm., L. Janowskii J.J. Sm., L. loliacea Ridl. and L. triticea Ridl. to §. Distichon, and lastly L. lacus J.J. Sm to §. Rhachidubulbon, the occurrence of which I had previously anticipate in that Territory.

The richness in the number of species of §. Distichon is especially remarkable and is distinguished by its multiplicity in form in the Philippines, for to those species previously enumerated

by me, there must be added L. Cummingii Lindl., L. linearifolia (Ames) Schltr., (Cestiches linearifolia Ames), L. halconensis (Ames) Schltr., (Cestiches halconensis Ames) and L. nutans (Ames) Schltr., (Cestiches nutans Ames).

L. anceps Schltr., sp. nov.

Epiphytica, erecta, gracilis. Rhizoma decumbens, flexuosum, radicans. Pseudobulbi distantes, e basi ovata angustati, compressi, unifoliati. Foliū anguste lineare, acutum, erectum, basin versus leviter attenuatum. Scapus compressus, anceps, folium subaequans; racemus perdense multiflorus, distichus, leviter incurvus; bracteis subimbricantibus conduplicatis, lanceolatis, glumaceis, ovarium pedicellatum aequantibus. Flores in sectione mediocres, glaberrimi, ochracei. Sepala decurva ovalia, apiculata, lateralia obliqua. Petala erecta, oblique spatulato-ligulata subapiculata, quam sepala fere aequilonga. Labellum more sectionis genuflexum, antice quadrato-ovale, e medio trilobatum, lobis lateralibus, i. e. gibbis, medioribus oblongis obtusis, convexis, lobo antico suborbiculari, subapiculato-acuminato, latitudine dimidium inferius labelli vix excedente, callo basiliari e basi quadrata antice contracto, breviter bigibbo. Columna subgeneris abbreviata, apice contracta, circuitu ovata, dimidium labelli haud aequans. Ovarium erecto-patens, pedicello inclusō gracile, obtuse triquetrum, bracteas fere aequans.

A creeping epiphyte up to 40 cm high with single-leaved pseudo-bulbs or stems rarely longer than 1.5 cm and which arise at intervals of 2.5 - 3 cm. Leaves 25 - 35 cm long, 6 - 8.5 cm broad at about the middle. Scape most of the time somewhat shorter than the leaves, sharply (distinctly) two-ranked with a raceme up to 6 cm long. Bracts 5 - 7 mm long. Flowers of average size for the section, brick red. Sepals and petals about 4 mm long. Ovary together with pedicel 6 - 7 mm long.

North-east New Guinea : In montane primary-forest on the peak of [Mount] Hunstein (Sepik District), alt. c. 1300m- C. Ledermann no. 11310, flowering in Mar. 1913.

One of the many species of the section Distichon from this area.

It is nearest placed to L. glumacea Schltr.

L. scleriifolia Schltr., sp. nov.

Terrestris, erecta, glabra, 40-45 cm alta. Rhizoma abbreviatum. Caules approximati, valde abbreviati, ovoidei, foliis 4-5 obtecti. Folia linearia, acuminata, basi angustata, nervis 3 subtus crassius prominulis ornata, glabra. Scapi erecti graciles, racemo laxe plurifloro, folia vulgo vix aequantes. Bracteae patentes, ovato-lanceolatae,

acuminatae, ovario pedicellato multo breviores. Flores in sectione inter majores, suberecti, glaberrimi. Sepala reflexa anguste lanceolata, obtusiuscula, lateralia obliqua. Petala anguste et oblique linearia, obtusiuscula, basi margine anteriore leviter dilatata, petalis aequilonga. Labellum e basi breviter concavo-unguiculata late ovale, apice breviter et obtusiuscule apiculatum, margine subcrenulatum, ima basi callo crassiusculo bilobato instructum, porrectum. Columna mediocris, semiteres, basi haud conspicue dilatata, juxta stigma leviter dilatata. Ovarium gracillime pedicellatum, glabrum, pedicello inclusa sepala reflexa plus duplo superans.

An erect shrublet similar in habit to L. imperatifolia Schltr., with strongly shortened rarely up to 2 cm long, stems or pseudobulbs which are completely covered by the leaf sheath. Leaves erect, up to 45 [Ed. 4.5?] cm long, 1.5 cm broad above the middle; in structure reminiscent to some broad leaved species of Scleria. Scape with the raceme of flowers scarcely overtopping the leaves. Flowers fairly large, pale brown with rose white labellum. Sepals and petals reflexed, 1.5 - 1.7 cm long. Labellum about 1.5 cm long, 1 - 1.2 cm broad at about the middle. Column scarcely 6 mm long. Ovary together with the long, slender stalk 3 cm long.

North-east New Guinea : Terrestrial orchid in the range forest on the April River (Sepik District), alt. c. 780m - C. Ledermann no. 10380, flowering in Dec. 1912; in range forest on the rocky peaks (Sepik District), alt. c. 1500m - C. Ledermann no. 12357, flowering in July 1913.

Closely related to L. imperatifolia Schltr.

Mediocalcar J.J. Sm.

This genus, first founded in 1900 on a plant from the Island of Ambon, has unexpectedly increased in size, owing to the exploration of Papuasia. In 1911, I was only able to enumerate 19 species belonging to it, but meanwhile nine more have been described from Dutch New Guinea, so that with two described below, it now contains 30 species. At that time, I divided the genus into three sections and with my subsequent experience these may still be maintained. Of the nine species which have been described since 1911, the allocation is as

follows: M. cluniforme J.J. Sm., M. alpinum J.J. Sm., M. arfakense J.J. Sm. and M. bulbophylloides J.J. Sm. belong to §. Eu-Mediocalcar; the three, M. geniculatum J.J. Sm., M. longipes Ridl. and M. montanum Ridl. to §. Epicalcar; and two M. conicum J.J. Sm. as well as M. crassifolium J.J. Sm. to §. Microcalcar.

This genus has very little in common with Eria Lindl. to which Kränzlin adds it, in spite of the detailed descriptions by J.J. Smith and myself concerning its structure and relationships. Still more inconceivable are the opinions of Kränzlin (expressed in the Pflanzenreich No. 50a, S. 30) concerning its nomenclature.

A genus which has been withdrawn by its original author, and re-established by another cannot under any circumstances be given a new name. Kränzlin prefers the name Epiblastus to Mediocalcar as according to him these two should not be separated generically. Firstly, both genera are very well separated generically; and secondly, supposing they should really be united, the name Mediocalcar should be retained in any case, as Epiblastus was established five years later. However, anyone who has really examined both genera closely would never think of uniting them.

M. ericiflorum Schltr., sp. nov.

Suffrutex epiphyticus, decumbens, glaberrimus. Rhizoma elongatum, copiose radicans, laxe pseudobulbis obssessum. Pseudobulbi depresso, latere inferiore rhizomati adnati, cylindracei, unifoliati. Folia elliptica vel oblongo-elliptica, breviter acuminata, crassius cotiacea, basi breviter petioliformi-contracta, subtus carinata. Inflorescentiae geminatae, more generis uniflorae, pedunculo ovarium pedicellatum fere aequante. Bracteae ovato-deltoidae, breviter acuminatae, parvulae. Flores in genere mediocres, oblique ovoidei, pallide purpurei, apicibus flavoviridis. Sepala usque ad 4-tam partem apicalem connata, apicibus liberis ellipticis, acutis, extus carinalis, lateralia dimidio anteriore conspicue ampliata, Petala oblique linear-ligulata, acuminata, quam sepala subaequata, Labellum e ungue oblongo conico-saccatum, antice in laminam suborbiculari acuminatam expanso, sacco unguem longitudine aequante. Columna semiteres, apice leviter contracta, pede brevi. Ovarium pedicellatum anguste cylindraceum, gracile.

A creeping epiphyte up to 30 cm long, with depressed pseudobulbs up to 1.2 cm long and 4 mm thick. Leaves 3 - 4 cm long, 1.2 - 1.7 cm broadin about the middle. Inflorescences with single flower on a slender stalk c. 1.25 cm long. Flowers pale red with greenish yellow tips, and egg-shaped [ovate]. Sepals about 8 mm long, the lateral ones acropetally broadened, swollen and fused to the upper quarter. Petals scarcely shorter than the sepals. Lip together with nail c. 5 mm long situated at the mouth of the sack c. 2 mm broad. Ovary with stalk 1 - 1.25 cm long.

North-east New Guinea : In range forest on the peak of [Mount] Hunstein (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12419, flowering in July 1913.

A species related to M. latifolium Schltr., but with a somewhat different lip pouch.

M. sepikanum Schltr., sp. nov.

Susfrutex epiphyticus, decumbens, glaberrimus. Rhizoma elongatum laxe pseudobulbis obsessum. Pseudobulbi adscendentes, anguste cylindracei, unifoliati, quarta parte basili latere inferiore ad rhizoma adnati. Folia erecto-patentia oblongo-ligulata obtusa, basi cuneata, coriacea. Inflorescentiae ut videtur singulae, more generis uniflorae, pedunculo gracili, ovarium pedicellatum fere aequante. Bracteae ovato-deltoideae apiculatae parvulae. Flores inter genere in maiores, laete coccinei apicibus viridiflavis. Sepala usque ad quintam partem apicalem connata, apicibus liberis ovato-triangulis subacutis, lateralia dimidio inferiore valde ampliata mentum sacciforme semioblongoideum formantia. Petala anguste et oblique lanceolato-ligulata, acuta, sepala longiludine fere aequantia. Labellum e basi cuneato-ligulata alte conico-saccatum in lamine suborbiculari apiculatam dilatatum, sacco obtuso unguem longitudine paulo excedente. Columna semiteres, juxta stigma paulo dilatata, labello paulo breviore, pede conspicuo. Ovarium anguste cylindraceum cum pedicello breve gracile.

A creeping epiphyte with narrowly cylindrical pseudobulbs about 2 cm long and 2.5 mm thick. Leaves 7 - 9 cm long, 1 - 1.3 cm broad at about the middle. Flowers coral red with greenish yellow tips. Sepals c. 8 mm long, the lateral ones much broadened and swollen at the base forming a bubble-like, elongated pouch and all fused up to the top fifth. Petals pale, scarcely shorter than the sepals. Lip expanded,

c. 9 mm long, with a nail 3.5 mm long and a pouch 3.75 mm long; platform strongly concave, 5 mm long and 4 mm broad. Ovary with stalk c. 1.2 cm long.

North-east New Guinea : In mountain forest on Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 9894, flowering in Nov. 1912.

This species is related most closely to M. uniflorum Schltr., but is distinguished by its vigorous growth. The lip-pouch is more spherical, the petals broader and the column shorter and thicker.

Epiblastus Schltr.

This genus is apparently not so rich in species as Mediocalcar with which it has an almost similar distribution. In my enumeration of the species in 1911, I recorded eleven species, of which two proved to exist outside Papuasia, viz. E. sciadanthus (F.v.M.) Schltr., from the Samoan Island, and E. masarangicus (Krzl.) Schltr. in North Celebes.

Another species E. Pullei J.J. Sm. has since then been recorded from Dutch New Guinea, so that with E. Schultzei described below, the genus now contains 13 species.

The individual species are related rather closely to each other, but separated nevertheless by constant characteristics. All possess red flowers, but this colour is rarely the same in the different species; in some it is bright rose-red (crimson) with white tips to the sepals; in others bright scarlet, but apparently characteristic for each.

E. Schultzei Schltr., sp. nov.

Suffrutex epiphyticus, patulus, glaberrimus. Pseudobulbi cylindracei, paulo compressi, more generis superpositi, unifoliati, validiusculi. Folia satis magna lorata vel anguste ligulata, obtusa vel obtusiuscula, coriacea. Inflorescentiae numerosae, more generis fasciculatae, uniflorae, pedunculo gracillimo, bractea deltoidea, acuta, parvula. Flores in genere mediocres, verosimiliter laete purpurei. Sepala ovata vel ovato-elliptica, obtusiuscula acuminata, lateralia obliqua basi margine anteriore dilatata. Petala oblique oblonga, obtuse acutata, quam sepalum paulo breviora. Labellum e basi cuneata medio distincte trilobatum,

lobis lateralibus erecto-patentibus semiorbicularibus obtusis, intermedio ovato obtusiusculo, apice ipso in apiculum inflexum brevem exente, laterales plus duplo superante, basi incrassationibus 2 semicircularibus brevibus ornato. Columna semiteres, juxta stigma leviter dilatata, lobos laterales labelli vix superans, pede satis longo, apicem versus paulo angustato. Ovarium gracile, cylindraceum, breviter pedicellatum.

A hanging, branched epiphyte with single-leaved pseudobulbs 8 - 9 cm long and up to 1 cm broad and arising above one another. Leaves 28 - 32 cm long, 3 - 3.3 cm broad at about the middle. Flowers probably bright red, glabrous. Sepals 6 mm long; petals scarcely shorter. Lip distinctly trilobed, 8 mm long, broadened between the lateral lobes and little more than 4 mm broad, with front lobe 3 mm long. Ovary together with stalk 1.2 - 1.3 cm long.

North-east New Guinea : Camp 'Hochmoos', approximately 65 km south of the mouth of the Tami [River], alt. c. 1600m - L. Schultze no. (83) 44, flowering in July 1910.

As a consequence of the trilobed labellum, this species must be placed into the relationship of E. cuneatus J.J. Sm.

Ceratostylis Bl.

Due to the exploration of Papuasia, this genus, previously very small in numbers, has increased unexpectedly in its dimensions. In 1911 I recorded 30 species from Papuasia in my description of the Orchidaceae of German New Guinea. All of these belonged to the section Eu-Ceratostylis, with one exception. Subsequently, however, 12 new species were described from Dutch New Guinea, viz. C. von Roemeri J.J. Sm., C. sessilis J.J. Sm., C. arfakensis J.J. Sm., C. ciliolata J.J. Sm., C. parciflora J.J. Sm., C. acutilabris J.J. Sm., C. longicaulis J.J. Sm., C. tenericaulis Ridl., C. Armeria Ridl., C. glabra Ridl., C. breviceps Ridl., and C. angiensis J.J. Sm. They all belong to §. Eu-Ceratostylis and as I can now supply nine more species, this genus in Papuasia alone already contains 51 species. It is remarkable that the second section Pleuranthemum in spite of its richness in forms is so poorly represented, for it has only supplied

two species. The centre of development for this section evidently lies further west for it displays an unevenly stronger development in the Sunda Islands and the Philippines, especially the latter, from where species with conspicuously large flowers have also been reported. Therefore, Papuasia alone is apparently not to be regarded as the centre of development for this genus, more so as representatives of a related genus Sarcostoma have been recorded from the Sunda Islands (Java and Sumatra) and from the Celebes. I have previously drawn attention to the unification of King and Pantling's genus Ritaia from the Himalayas, with Ceratostylis. The species C. Ritaia, Schltr. (Ritaia himalaica King and Pantl.) also belongs to the section Pleuranthemum.

*
C. Bulbophylli Schltr., sp. nov.

Suffrutex patulus, ramosus, epiphyticus.

Rhizoma elongatum, cauliniforme, ramosum, laxe pseudobulbis obcessum. Pseudobulbi (i. e. caules) abbreviati, anguste cylindracei, unifoliati. Folia lineari-lanceolata vel lineari-ligulata, acuta, basi attenuato-subpetiolata, coriacea. Inflorescentiae fasciculatae uniflorae, vaginis paucis acuminatis circumdatae, breves, pedunculis brevibus pilosulis; bractea hyalina parvula. Flores in sectione mediocres, albi extus pilosi. Sepala oblongo-lanceolata, obtusiuscula, lateralia basi margine anteriore dilatata mentum breve obtusum cum pede columnae formantia. Petala anguste linear-ligulata sub-acuminata, glabra, sepalo intermedio subaequilonga. Labellum e basi oblongo-unguiculata cuneatum, diuidio superiore trilobatum, circuitu rhombeum, lobis lateralibus triangulis obtusis, patentibus, intermedio antico ovato obtuso, apicem versus paulo incrassato, lineis 3 incrassatis parallelis e basi labelli usque in medium lobi antici decurrentibus. Columna brevi, brachiis stigmatiferis brevibus apiculatis. Anthera quadrato-cucullata, glabra. Ovarium breviter pedicellatum clavatum, pilosum.

A branched almost hanging epiphyte up to 23 cm long, with branches [rhizomes] covered with brown pointed sheaths. Pseudobulbs 6 - 8 mm long, scarcely 1.5 mm thick. Leaves 5 - 7 cm long, 4 - 5 mm broad in about the middle. Pseudo-flower-head to 8 mm long. Flowers white, densely covered with soft hairs on the outside. Sepals 4.5 mm long, with lateral ones oblique [falcate]. Petals scarcely shorter than sepals. Lip about 4 mm long, 2 mm broad in the middle and with front lobe 1.5 mm long. Column short, with short foot. Ovary with stalk about 3 mm long.

North-east New Guinea : In dense, tall forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9309, flowering in Oct. 1912.

In general appearance one would be inclined to place this plant as a species of Bulbophyllum rather than Ceratostylis. It is the second species of the section Pleuranthemum from this area.

C. sphaerocephala Schltr., sp. nov.

Epiphytica, erecta, caespitosa.
 Rhizoma valde abbreviatum. Caules elongati, cylindracei, basi vaginis paucis imbricantibus, acuminatis, brunneis obtecti, unifoliati. Folia erecta; anguste lanceolato-ligulata, acuta, basi in petiolum brevem attenuata, coriacea, quam caules 2-4-plo breviora. Inflorescentiae more generis uniflorae in capita subglobosa sessilia dispositae, vaginis brevibus apiculatis basi circundatae, pedunculis brevibus, pilosulis; bractea ovali-cucullata ovarium vulgo paulo superante. Flores griseo-brunnei, labello laete aureo, in sectione inter majores. Sepala ovata obtusa, extus pilosa, lateralia basi margine anteriore bene dilatata cum pede columnae mentum semioblongum obtusum formantia. Petala anguste et oblique elliptica subacuta, glabra, sepalo intermedio fere aequilonga. Labellum circuitu oblongum medio rhombo-dilatum, e basis subunguiculato-contracta subovali-orbiculatum, margine minute ciliolatum, tercia parte anteriore carnosò-incrassatum, ovato-oblongum obtusum, carinis 2 minute ciliolatis e basi labelli usque supra medium decurrentibus parallelis. Columna brevis, medium labelli subatttingens, pede mediocri. Ovarium cylindraceum subsessile, subviloso-pilosum.

An epiphyte forming short tufts, 30 - 40 cm high, with slender pseudobulbs or stems 15 - 35 cm long and to 3 mm thick. Leaves 10 - 13 cm long, up to 9 mm broad at about the middle. Flower-heads almost spherical, up to 2 cm in diameter. Flowers greyish brown, with bright yellow labellum. Sepals 4 mm long, with the lateral ones forming at the basis, a blunt chin 2.5 mm long. Petals little shorter than sepals. Labellum almost 6 mm long, 2.5 mm broad in about the middle. Ovary about 6 mm long.

North-east New Guinea : In mountain forest of the Hunstein Ranges (Sepik District), alt. c. 1300m - C. Ledermann no. 11237 (TYPE), no. 11893, flowering in March 1913.

The species is easily recognised from others in the area by the vigorous growth and the almost spherical flower-heads. It should be closest [related] to C. triloba Schltr.

C. gracilicaulis Schltr., sp. nov.

Epiphytica, erecta, caespitosa. Rhizoma valde abbreviatum. Caules pergraciles, tereti, basi vaginis pluribus acuminatis, pallide griseis circumdati, unifoliati. Folia erecta, linearia vel lineari-lanceolata, acuta, basi breviter subpetiolato-attenuata, subcoriacea, quam caules vulgo subduplo breviores. Inflorescentiae in caput subglobosum sessile dispositae, more sectionis uniflorae, fasciculatae, vaginis ovalibus acuminatis circumdatae; bracteis ovalibus apiculatis, hyalinis, ovarium aequantibus. Flores in sectione mediocres, virescenti-albidi extus niveo-pilos. Sepala oblonga, subacuta, lateralia basi margine anteriore producta saccum oblongoideum valde obtusum, sepalo ipso triplo vel quadruplo breviorem formantia. Petala oblique linearis-ligulata, acuta, sepala subaequantia. Labellum e basi breviter subunguiculato-angustata lanceolato-oblongum, dimidio anteriore paulo attenuatum et carnosò-incrassatum, carinis 2 tenuibus parallelis e basi usque medium ornatum. Columna semiteres, glabra, labelli dimidium subaequans, brachiis stigmatiferis ovalibus obtusis. Ovarium breviter pedicellatum, clavatum, pilosum.

An epiphyte 22 - 27 cm high with slender stalks 8 - 17 cm long and rarely more than 1.5 mm thick, each with a single leaf. Leaves 6 - 10 cm long, 3 - 5 mm broad at about the middle. Flower-head about 1 cm in diameter. Flowers greenish white outside, with white hairs. Sepals 3 mm long, with the lateral ones, for 1/3, connate in front and forming a pouch c. 1 mm long. Lip about 4 mm long. Ovary with short stalk c. 2 mm long.

North-east New Guinea : In light, mountain forest of Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 9967, flowering in Dec. 1912.

Related to C. triloba Schltr., but more delicate and slender in all parts, and without a clearly lobed labellum.

C. pinguis Schltr., sp. nov.

Epiphytica, erecta, caespitosa. Rhizoma valde abbreviatum. Caules (vel pseudobulbi) teretes, pro sectione pingues, unifoliati, basi vaginis acuminatis paucis, pallide brunneis circumdati. Folia erecta, anguste ligulata obtusiuscula acutata, crassiuscula, basi complicato-attenuata, quam caules fere dimidio breviora. Capita florum parvula ovalia, vaginis brevibus apiculatis circumdata, parvula. Inflorescentiae uniflorae brevissime pedunculatae. Flores in sectione mediocres, pallide rubescens-flavidi, extus niveo-pilosuli. Sepala lanceolato-oblonga, subacuta, lateralia obliqua basi margine anteriore producta et connata saccum obovoideum obtusum quam sepala 4-plo breviorem formantia. Petala anguste et oblique lanceolato-linearis, acutiuscula, quam sepala paululo breviora. Labellum ligulatum, medio dilatatum, tertia parte apicali carnosò-incrassatum, apice

obtusiusculum, carinis 2 tenuibus parallelis e basi usque ad medium fere decurrentibus. Columna semiteres, glabra, quam labellum subtriplo brevior, brachiis stigmatiferis ovalibus obtusis, pede brevi. Ovarium breviter pedicellatum clavatum dense niveo-pilosum.

An epiphyte 17 - 25 cm high with thickish stem 9 - 15 cm long, 2.5 - 3 mm thick. Leaves 7 - 8 cm long, 5.5 - 7 mm broad at about the middle. Flower-heads rarely more than 8 mm broad. Flowers pale reddish yellow, outside with delicate white hairs. Sepals about 3 mm long, with the lateral ones forming a short pouch about 0.85 mm long at the base. Labellum about 4 mm long. Ovary with short stalk about 2.75 mm long.

North-east New Guinea : In mountain forest on the summit of [Mount] Hunstein, alt. c. 1350m - C. Ledermann no. 11095 (TYPE), flowering in Feb. 1913, no. 8474, 8434, flowering in Aug. 1912.

Like C. gracilicaulis Schltr., this species must be referred to the affinity of C. triloba Schltr. but it is particularly close to the former. It is distinguished by its thicker stalks, smaller flowers in smaller heads, the narrower labellum and shorter column.

C. tetrarioides Schltr., sp. nov.

Epiphytica, erecta, gracillima, caespitosa. Rhizoma valde abbreviatum. Caules (i. e. pseudobulbi) tenuissimi, teretes, unifoliati, basi vaginis paucis acuminatis, pallidis circuindati, erecti. Folia erecta, linearia vel anguste linearia, acuta, basi angustata, quam caulis duplo vel triplo breviora. Capitula ellipsoidea, vaginis breviter acuminatis circumdata, inflorescentiis brevissime pedunculatis, unifloris; bractea hyalina, ovali, apiculata, ovario subaequilonga. Flores in sectione vix inter mediocres, albidi, rubro-suffusi, labello aureo, extus niveo-pilosulo. Sepala oblonga, obtusiuscula, lateralia obliqua, basi margine anteriore producta et connata saccum oblique obovoideum, obtusissimum, quam sepala ipsa dimidio breviorem formantia. Petala e basi oblongo-ligulata lanceolato-attenuata, obtusiuscula, glabra, quam sepala subaequilonga. Labellum e basi oblonga elliptico-dilatata, 5-ta parte apicali contracta ovata, incrassata, apice ipso obtuso, carinis 3 tenuibus e basi labelli usque ad tertiam partem apicalem decurrente. Columna brevis, dimidium labelli superans, brachiis anguste oblongis magnis, pede satis longo. Ovarium breviter pedicellatum clavatum, niveo-pilosum.

A grass-like epiphyte to 35 cm high, similar in habit to some Cyperaceae. Stem 15 - 28 cm long, scarcely 1 mm in diameter. Leaves 7 - 10 cm long, 2 - 3 mm broad. Flower-head rarely more than 4 mm broad, erect. Flowers whitish red with golden lip. Sepals 3 mm long, with

the lateral ones forming a bladder-like pouch which is very blunt downwards and about 1.5 mm long. Lip almost 4 mm long. Ovary with the very short stalk about 3 mm long, densely covered with white hairs.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11684, no 11603, flowering in May 1913.

Among the species from this area this one is most closely related to C. glabriflora Schltr.

C. brachyphylla Schltr., sp. nov.

Epiphytica, pusilla, erecta, caespitifica. Rhizoma valde abbreviatum. Caules subulati, erecti, basi vaginis paucis apiculatis circumdati, unifoliati, teretes, gracillimi. Folia erecta, abbreviata, subuliformia, abbreviata, obtusa, teretia, facie leviter sulcata, capitula vulgo paulo tantum superantia. Capitula oblongoidea, erecta, vaginis paucis breviter acuminatis circumdata; inflorescentiis more generis unifloris, subsessilibus; bractea hyalina, apiculata, ovarium subaequante. Flores in sectione inter minutos, albidi. Sepala ovato-lanceolata, subacuta, basi niveo-pilosulo, apicem versus glabrata, lateralia obliqua, basi margine anteriore producta et connata mentum vel saccum semioblongoideum, obtusissimum formantia, sepalum intermedium paulo superantia. Petala oblique lanceolato-ligulata, acuta, glabra, sepallo intermedio subacquilonga. Labellum circuitu ovatum, tertia parte apicali carnosò-incrassatum, obtusissimum, usque ad medium carnis 2 tenuibus subparallelis ornatum. Columna brevis, brachiis stigmatiferis ovalibus, obtusis, labello tertia parte fere brevioribus. Ovarium breviter pedicellatum, niveo-pilosulum, clavatum.

A small epiphyte 6 - 8 cm high with a habit similar to species of the genus Scirpus. Stalk 5 - 7 cm long, scarcely 1.5 mm in diameter. Leaves little thinner than the stalks remarkably short, rarely overtopping by far the flower-heads, 5 - 8 mm long. Flower-heads 2 - 3 mm in diameter at present always with few flowers. Flowers minute, white. Sepals about 1.5 mm long. Labellum scarcely 1.75 mm long. Ovary with very short stalk 1.5 mm long.

North-east New Guinea : In primary forest on the April River (Sepik District), alt. c. 1000m - C. Ledermann no. 8617, flowering in Sept. 1912.

This species is related to C. Kaniensis Schltr. but is easily distinguished by the conspicuously shortened leaves which are often

reduced to short awl-shaped points.

The species represents a very characteristic type from the mountains so that I must once again express my doubts whether the altitude specified by Ledermann corresponds with reality.

C. heleocharis Schltr., sp. nov.

Epiphytica, erecta, caespitifica, pusilla. Rhizoma valde abbreviatum. Caules gracillimi, tenues, teretiusculi subulati, unifoliati. Folia erecta filiformia, obtusiuscula, ut videtur vulgo incurvula, quam caules 2—3-plo breviore, superne leviter sulcata. Capitula angusta, obovoidea vel oblongoidea, vaginis ellipticis acuminatis circumdata; inflorescentiis more generis unifloris, brevissime pedunculatis; bractea elliptica acuminata, hyalina, ovario subaequilonga. Flores in genere inter minimos, albi vel nivei, extus basi sparsim niveo-pilosuli. Sepala elliptica vel ovalia, obtusa vel obtusiuscula, lateralia basin versus dilatata ima basi connata mentum breve obtusum formantia. Petala oblique oblonga, apice subacuta, glabra, quam sepala paululo tantum breviora. Labellum circuitu late rhombium, dimidio anteriore contractum, quasi trilobatum, lobis lateribus semiovatis, obtusis, intermedio apicem versus carnosò-incrassato, obtuso, semiovali, carinis 2 tenuibus, e basi labelli usque ad medium parallelis ornatum. Columna brevis, labello plus duplo breviore, brachiis stigmatiferis semiovalibus, pede brevi. Ovarium subsessile clavatum, niveo-pilosum, sepalis fere aequilongum.

An erect epiphyte in habit hardly distinguishable from species of Heleocharis, 12 — 14 cm high. Stalk 5 — 10 cm long, scarcely exceeding 1 mm in diameter. Leaves 3 — 5 cm long, scarcely thinner than the stalks, often recurving towards the apex. Flower-heads sessile, rarely more than 3 mm in diameter. Flowers very small for the genus, white, 1.25 mm long. Labellum scarcely 1.5 mm long, 1 mm broad at about the middle. Ovary with short stalk hardly 1.5 mm long.

North-east New Guinea : In range forest on the rocky peaks (Sepik District), alt. c. 1400 — 1500m — C. Ledermann no. 12813 (TYPE) flowering in Aug. 1913; in range forests on the [Mount] Kameelrücken 'Camel-back' (Sepik District), alt. c. 1150m — C. Ledermann no. 8853, flowering in Sept. 1912.

This species must be placed near C. nivea Schltr.

C. tenuis Schltr., sp. nov.

Epiphytica, erecta, tenuis. Rhizoma valde abbreviatum. Caules pergraciles, tenuissimi, unifoliati, basi vaginis paucis acuminatis, pallide brunneis circumdati. Folia erecta, filiformi-subulata, acuta, superne leviter sulcata, quam caules multoties breviores. Capitula subglobosa, sessilia, vaginulis brevibus hyalinis circumdata, inflorescentiis

subsessilis unifloris; bractea hyalina, ovata, apiculata, ovarium fere aequante. Flores in genere inter minores, albi. Sepala elliptica, obtusiuscula, extus basi sparsim pilosula, apicem versus glabrata, lateralia basi antice producta et connata saccum oblique obovideo-inflatum sepalo ipso dimidio brevius formantia. Petala oblique lanceolata, acuminata, glabra, sepalis subaequilonga. Labellum late oblongo-ligniformis, obtusum, tertia parte apicali refracto angustatum, basi cuneatum, carinis 2 tenuibus parallelis e basi usque supra medium decurrentibus. Columna brevis, glabra, brachiis stigmatiferis oblique rhombeo-quadratis, brevibus, labelli medium haud attingentibus. Ovarium brevissime pedicellatum clavatum, niveopilosum.

A very slender, delicate epiphyte about 20 cm high with a habit of very slender species of Scirpus. Stalk very thin, to 18 cm long and with an equally very thin, erect leaf which is ridged on the upper surface and to 3 cm long. Flower-heads to 7 mm in diameter with small white flowers. Sepals hairy towards the base, scarcely 2 mm long, with a pouch about 1.5 mm long formed by the lateral sepals. Petals scarcely shorter than the sepals. Labellum 2.25 mm long when spread out. Ovary with very short stalk about 2 mm long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11623, flowering in May 1913.

This species is distinguished from others in the affinity of C. scirpoides Schltr. by the form of the labellum and the very slender habit.

C. juneoides Schltr., sp. nov.

Epiphytes, erecta, tenuis, caespitifica. Rhizoma valde abbreviatum. Caules tenuissimi, filiformes, erecti, unifoliati, basi vaginis paucis acuminatis, flavescenti-brunnecentibus circumdati. Folia erecta, filiformia, acuta, superne leviter sulcata, quam folia plures breviiora. Capitula sessilia elliptica vel ovalia, vaginis paucis ovatis, acuminatis circumdata; inflorescentiis subsessilibus unifloris; bractea ovali, apiculata, mox hyalina, ovarium fere aequante. Flores in sectione inter minores, verostimiliter albidi. Sepala elliptica, obtusa, extus basi niveo-pilosula, apicem versus glabrata, lateralia basi margine anteriore producta et connata saccum oblique ovalem sepalis paulo breviorum formantia. Petala oblique ovato-oblonga, oblique acuminata, glabra, quam sepalis subaequilonga. Labellum e basi subunguiculato-contracta circuitu elliptico-rhombeum, tertia parte anteriore haud bene distinete trilobatum, lobis lateralibus abbreviatis obtusissimis, intermedio antico apice incrassato, obtuso, oblongo, carinis 2 tenuibus parallelis minute ciliolatis e basi labelli usque in medium decurren-

tibus. Columna brevi, brachiis stigmatiferis subquadratis, medium labelli subhattingentibus, pede mediocri. Ovarium clavatum perbreviter pedicellatum, niveo-pilosum.

A very slender tufted epiphyte in habit reminiscent of certain species of Juncus, 25 - 35 cm high. Stalks 11 - 28 cm high, scarcely thicker than 1 mm. Leaves 3.5 - 6 cm long, little thinner than the stalks. Flower-heads to 5 mm thick, with very small brownish red flowers. Sepals 2 mm long. Labellum about 3 mm long when spread out. Ovary with very short stalk with white hairs, about 2.5 mm long.

North-east New Guinea : In range forest on the rocky peaks (Sepik District), alt. c. 1500m - C. Ledermann no. 12657b, flowering in Aug. 1913.

Related to C. tenuis Schltr. but well characterised by the lip.

Agrostophyllum Bl.

I have nothing to add to my previous remarks on this genus but to merely record three additional species to those already described from Papuasia, viz: A. cyclopense J.J. Sm., a species belonging to §. Dolichodesme as well as A. curvilabre J.J. Sm. and A. patentissimum J.J. Sm., A. rigidifolium Ridl., A. biflorum Ridl. and A. curvum Ridl., five which are known to belong to §. Eu-Agrostophylla. Together with the three newly established below, Agrostophyllum already possesses 44 species in Papuasia.

A. congestum Schltr., which is described here is therefore especially interesting as being up to the present only the second member of the hitherto monotypic section Oliganthe.

A. sepikanum Schltr., sp. nov.

Epiphyticum, erectum, pro genere humile. Rhizoma valde abbreviatum. Caules compressi, vaginis foliorum compressis omnino obtecti, basi vaginati, dimidio superiore 4-5-foliati. Folia erecto-patentia, pro genere tenuiora, oblique lanceolato-oblonga, oblique et breviter acuminata, basi breviter petioliformi-contracta. Capitula semiglobosa, terminalia, vaginis brevibus circumdata, sessilia; inflorescentia more sectionis unifloris; bractea ovali acuminata, ovarium paulo superante. Flores in sectione inter maiores, nivei. Sepala ovalia, breviter acuminata; extus sparsim furfuracea, lateralia patentia, obliqua, basi margine anteriore

paulo dilatata. Petala erecto-patentia, oblique obovato-spathulata, obtusa, quam sepala paulo breviora. Labellum e basi saccato-concava, contracta laxe obreniformi-flabellatum, antice obtusissime et perbreviter bilobatum, margine integrum, lamella erecta quadrata, retusa, minutissime papillosa supra basin ornatum. Columna crassiuscula, rostellum porrecto-adscendente pro genere magno, dimidio superiore facie semigloboso-incrassata. Ovarium sessile, cylindraceum, fufuraceum.

An epiphyte 15 - 25 cm high, with compressed stem 9 - 15 cm long, with leaves 6 - 10 cm long and 1.7 - 2.1 cm broad at about their middle. Flower-heads 2 - 3 cm in diameter with somewhat large white flowers. Sepals 6 mm long, petals about 5 mm long. Labellum with pouch-like base about 9 mm long, 7.5 mm broad above the middle; column 4 mm long, with large rostellum slightly ascending towards the front. Ovary nearly 6 mm long.

North-east New Guinea : In primary forest near Malu, on the Sepik [River], alt. c. 50 - 100m - C. Ledermann no. 7856 (TYPE), flowering in July 1912; in mountain forest on the rocky peaks (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12406, flowering in July 1913; in range forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9249, flowering in Oct. 1912.

The occurrence of this orchid, typical of the mist-forest, in the valley-forest near Malu is a fact that in my view still needs to be authenticated. The species is related to A. compressum Schltr.

A. congestum Schltr., sp. nov.

Epiphyticum, subpatulum, congestum, habitu A. superpositi Schltr. Caules semisuperpositi, dimidio inferiore vaginis imbricantibus acutis, dimidio superiore foliis erecto-patentibus 5--6 dense obtecti, subflexuosi. Folia linear-lanceolata, apice inaequaliter et acute bifida, subrigidula, basi subrotundata. Capitula oblongoidea vaginis acuminate circumdata, inflorescentiis unifloris; bractea ovali, acuminate, ovarium fere aequante. Flores illis A. superpositi Schltr. subaequimagni. Sepala ovalia, breviter acuminata, extus subglabra, lateralia obliqua, basi margine anteriore ampliata. Petala oblique ovato-ligulata, obtusiuscula, glabra. Labellum e basi oblongo-saccatum in laminam late rhombream breviter acuminatam expanso, laminae basi lamella transversa erecta, cuneata, tridentata ornatum. Columna brevis, incrassata, infra stigma tabula carnosa bilobata decurva ornata, dimidio inferiore incrassata, longitudinaliter sulcata. Ovarium cylindraceum, sessile, sparsim furfuraceum.

A branched epiphyte slightly drooping, to 30 cm long. Leaves 4.5 - 6 cm long, 5 - 6 cm broad below the middle sitting on the terminating sheath which is tapering on both sides of it into long, obliquely lanceolate points. Stalks (i.e. the individual sprouts) 4.5 - 6.5 cm long. Flower-heads 0.7 - 1 cm in diameter. Flowers white. Sepals 5.5 mm long. Petals 5 mm long. Labellum with a platform 5 mm long, 4.5 mm broad and a pouch-like base 3 mm long. Column 3.5 mm long. Ovary 5 mm long.

North-east New Guinea : In light mountain forest on Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 10317, flowering in Dec. 1912.

Related to A. superpositum Schltr. but from which it is well distinguished specifically by the compact growth; broader shorter and thicker leaves and the broader petals and labellum.

A. cycloglossum Schltr., sp. nov.

Epiphyticum, erectum vel suberectum. Rhizoma valde abbreviatum. Caules simplices compressi, vaginis foliorum alte amplectentibus, erecto-patentibus, compressis obtecti, ima basi vaginati, caeterum 5-7-foliati. Folia erecto-patentia, ligulata, apice breviter et obtusiuscule acuminata, basi cuneato-attenuata, textura pro genere tenuiora. Capitula subglobosa, sessilia; inflorescentiis unifloris; bractea ovali-cucullata, breviter acuminata, ovarium fere aequante. Flores in genere mediocres, albi. Sepala ovalia breviter acuminata, extus sparsim furfuracea, lateralia patentia obliqua, basi margine anteriore ampliata. Petala erecto-patentia, oblique ligulata, obtusa, quam sepala paulo breviora. Labellum e basi saccato-contracta suborbiculare, obtuse apiculatum, margine leviter crenulatum, glabrum, basi laminae lamella erecta transversa quadrata, alte emarginata, papillosa ornatum. Columna crassiuscula, infra stigma callosolobata, dimidio inferiore pulvinato-incrassata, rostello brevi, triangulo decurvo. Ovarium sessile cylindraceum, sparsim furfuraceum.

An epiphyte 30 - 40 cm high, with compressed stems 18 - 25 cm long, and up to 1 cm broad, with leaves 11 - 17 cm long, 1.8 - 2.3 cm broad at about the middle. Flower-heads 3.5 cm in diameter. Flowers ivory white. Sepals 6 mm long; petals little shorter. Labellum with a platform 5 mm long and almost 6 mm broad below the middle as well as with pouch-like base. Column 3 mm long. Ovary sessile, almost 7 mm long.

North-east New Guinea : In range forest on Mount Schrader,
alt. c. 2070m - C. Ledermann no. 11884, flowering in June 1913.

Also related to C. compressum Schltr. but well distinguished.
by the almost circular lip-platform and the higher stouter growth.

Glomera Bl.

The species members of the genus Glomera has considerably increased, as I expected, since the publication of my work on the Orchidaceae of New Guinea. In 1911, 26 species were known, 23 of which were Papuan [Papuasian]. Since then eight more species have been described from Dutch New Guinea, and I now add to these another five, so that the genus, which undoubtedly has its centre of development in Papua, is known there by 38 species. The eight mentioned above as described since 1911, and species not included in any former enumeration are : G. sublaevis J.J. Sm., G. jabiensis J.J. Sm., G. longicaulis J.J. Sm., G. keytsiana J.J. Sm., G. rubroviridis J.J. Sm., G. transitoria J.J. Sm., G. ericifolia Ridl. and G. similis J.J. Sm.

In spite of the explanations of J.J. Smith, I fail to see any reasons to unite Glossorhyncha and Giulianettia with Glomera. I have always been able until now to separate them at first sight. Finally it is really a matter of opinion whether a separate genus Glomera is to be maintained and to be divided into three distinct sections Eu-Glomera, Glossorhyncha and Giulianettia as was done by J.J. Smith or whether three distinct genera are to be recognised. In questions like these, botanists who work at the same subject will never entirely agree.

I was already convinced from the examination of living material in New Guinea that these three genera should be kept separate and from the further examination of Ledermann's rich collection, I have found no types which cause me to change my opinion. I notice even H.N. Ridley has kept the three genera separate in his treatise on the orchids

of the Wollaston Expedition. He thus appears to have found no intermediate types which would lead him to unite them.

G. asperata Schltr. sp. nov.

Epiphytica, rigidula, e basi simpliciter ramosa, erecta. Caules rigidi, dimidio superiore ramosi, densius foliati, ramisque vaginis arctissime amplectentibus dense verruculoso-asperatis omnino obtectis, teretiusculis. Folia erecto-patentia lanceolato-linearia, obtusiuscule et valde inaequaliter bilobulata, coriacea, basi leviter attenuata. Capitula subnutantia, vagina rostrata mox caduca, ovalia; bracteis ovali-cucullatis ovarium fere aequantibus. Flores in genere vix inter medios, flavi, labello lacte sanguineo, glaberrimi. Sepala ovalia, obtusa, lateralia basi saccato-cucullata, usque ad medium fere connata. Petala elliptica, obtusa, obliqua, quam sepala vix breviora. Labellum e basi quadrato-saccata in laminam carnosulam, late ovalem obtusam productum, sacco semiovale obtusissimo, lamina labelli fere duplo breviora. Columna brevis, tertiam partem labelli paulo superans, clivandrio dorso trilobulata. Ovarium sessile, sepala haud aequans.

An evidently erect (according to Ledermann) epiphyte to 40 cm high with rigid sprouts including the branches to 40 cm high. Leaves 5 - 7.5 cm long, 5 - 7 mm broad below the middle. Flower-heads about 1.5 cm in diameter, drooping. Flowers orange-yellow with bright red platform of the lip, of medium size within the genus. Sepals about 5 mm long; petals scarcely shorter. Labellum with platform 3 mm long and 2 mm broad above the middle. Column very short, about three times shorter than the labellum. Ovary almost sessile, 4.5 cm [4.5 mm?] long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 12089, flowering in June 1913.

This species is closest [related] to G. fruticulosa Schltr. and G. Schultzei Schltr.

G. graminifolia Schltr., sp. nov.

Epiphytica ramosa, gracilis, ut videatur subpatula. Caules graciles, bene foliati, vaginis arctissime amplectentibus, minute et dense verruculosis apice truncatis omnino obtecti, leviter compressi. Folia erecto-patentia gramineoidea, anguste lanceolato-linearia, inaequaliter et subacute bilobulata, glabra, pro genere tenuiora. Capitula nutantia sessilia, vaginis suborbicularibus breviter acutatis vel apiculatis circumdata, subglobosa vel ovalia, perdense multiflora; bracteis hyalinis ovali-cucullatis, acutatis, ovario fere aequilongis. Flores in genere vix inter

mediores, flavis, labello purpureo vel aurantiaco(?), glaberrimi. Sepala late elliptica obtusa, lateralia basi saccato-concava, usque ad medium fere connata. Petala oblique elliptica obtusa, quam sepala subaequilonga. Labellum e basi saccata in laminam late obovatam obtusam basi incrassatulam productum. Columna brevis, labello fere 3-plo breviore, clinandrio paucidentato, dorso triangulo. Ovarium cylindraceum sessile.

A sparse epiphytic subshrub, evidently forming overhanging shrubs to 50 cm long, with grass-like leaves 8 - 12 cm long, 5 - 7 cm long, 5 - 7 mm broad in the lower third. Flower-heads about 1.3 cm in diameter and to 1.7 cm long. Flowers bright yellow to whitish, with purple-red or shining orangy red (?) platform of the lip. Sepals 4.5 mm long; the petals little shorter. Lip with a platform 2.5 mm long and a basal pouch-like part 3 mm long. Ovary sessile, cylindrical 6 mm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 11289 (TYPE), no. 12594, no. 12595, flowering in July - Aug. 1913.

This species must be placed next to G. kaniensis Schltr.

G. macrophylla Schltr., sp. nov.

Suffrutex epiphyticus, subpatulus, parum ramosus. Caules robustissimi in genere, arcuati, dense foliati, vaginis foliorum omnino obtecti. Folia erecto-patentia, anguste ligulata, inaequaliter et obtusiuscula bilobulata, tenuiter coriacea, pro genere permagna. Capitula nutantia, sessilia, vaginis paucis breviter acuminatis circumdata, subglobosa. Flores in genere inter maiores, albi, labello sulphureo, glaberrimi. Sepala oblonga, obtusiuscula, lateralia obliqua, basi subsaccato-concava, 5-ta parte basilari connata. Petala oblique oblongo-ligulata, obtusa, quam sepala subaequilonga. Labellum e basi breviter saccata in laminam elliptico-oblongam, obtusam, carnosulam productum, sacco semiorbiculari leviter antrorso, brevi. Columna brevis, labello subtriplo brevior. Ovarium cylindraceum, sessile, glabrum.

An epiphyte 40 - 50 cm high but probably longer, and evidently, according to Ledermann, obliquely spreading downwards from trees. Stems conspicuously robust, 7 - 9 mm in diameter. Leaves 9 - 13 cm long, 1.8 - 2.1 cm broad below the middle, leathery. Flower-head 2.5 to almost 3 cm in diameter. Sepals 9 mm long; the petals little shorter. Labellum as a whole about 5 mm long; the platform about 3.75 mm long and as the platform is strongly demarcated [constricted]

it is being overtopped by the pouch at the base. Column scarcely overtopping the lower third of the lip. Ovary sessile almost 7 mm long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 12087, flowering in June 1913.

This species is distinguished from all other species in the genus by its very robust growth and the conspicuous large leaves which give it the appearance of a species of Agrostophyllum.

G. patens Schltr., sp. nov.

Epiphytica, pendula, parum ramosa, elongata. Caules paulo compressi, perdense foliati, omnino vaginis foliorum arcte amplectentibus minute verruculosis obtecti. Folia valde patentia, oblique ovato-lanceolata, acuta vel subacuta, glabra. Capitula subglobosa, vaginis semiorbicularibus, obtussissimis vel breviter acuminatis circundata; bracteis hyalinis, ovali-cueullatis, ovarium fere aequantibus. Flores in genere mediocres, nivei, labello sanguineo coccineo-maculato, glaberrimi. Sepala elliptica, obtusa, lateralia obliqua, basi valde concava, usque supra medium connata. Petala oblique elongata, obtusa, basin versus paulo angustata, quam sepala subaequilonga. Labellum e basi saccata, ovali-ellipticum valde obtusum, lamina basi incrassata, sacco quam lamina subdupo breviore, obtusissimo, a dorso paulo compresso. Columna brevis, clinandrio dorso obtuse tridentato. Ovarium sessile cylindraceum.

A hanging, sparsely branched epiphyte to 60 cm long, with stems densely covered with leaves. Leaves horizontally spreading, 3 - 4.5 cm long, 1 - 1.4 cm broad below the middle. Flower-heads densely multiflowered, 2.3 - 2.5 cm in diameter. Flowers white with platform of lip with blood red spots. Sepals 7 mm long; petals scarcely shorter. Labellum with platform 3 mm long. Ovary cylindrical, sessile, 5 mm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no 13080 flowering in Aug. 1913.

Similar to G. torricellensis Schltr. this species has the short spreading leaves which densely cover the stems. It is distinguished from G. torricellensis Schltr. by the smaller flowers, thinner leaves,

the lateral sepals which are not fused so high up, the larger more distinctly oval platform of the lip and column.

G. Schultzei Schltr., sp. nov.

Epiphytica, ut videtur bene ramosa. Rami rigiduli, bene foliati, vaginis foliorum arctissime amplectentibus, verruculosis omnino obtecti. Folia erecto-patentia, linear-lanceolata, apice inaequaliter ac obtusiuscula bilobulata, carnosulo-coriacea, glabra, basi breviter attenuata. Capitula nutantia oblongoidea, spathis cadueis; bracteis ovalicucullatis, ovarium fere aequantibus. Flores sive collectoris albi*, glaberrimi, in genere mediocres. Sepala elliptico-oblonga, apiculata, lateralia basi saccato-concava, usque supra medium connata. Petala oblique obovata, obtusa, sepala longitudine subaequantia. Labellum e basi subgloboso-saccata in laminam subquadratam obtusissimam, carnosam, basi leviter angustata in productum, sacco quam lamina dimidio fere breviore. Columna brevi, stigmate perlato, dinandro dorso obtuse triangulo. Ovarium cylindraceum, sessile.

A branched, firm epiphyte, probably growing in tufts and more or less hanging, with rigid, branched stems and branches which are somewhat densely covered with leaves. Leaves 3 - 5.5 cm long, 5 - 7 mm broad below the middle. Flower-heads about 1.5 cm long, to 1 cm thick. Flowers scarcely medium-sized within the genus, according to the collector white (but probably with yellow or red platform of the lip). Sepals and petals almost 5 mm long. Labellum with platform blunt at the apex 3 mm long, almost 2.8 mm broad and a slightly shorter pouch. Column short, about three times shorter than labellum. Ovary cylindrical, sessile, about 4 mm long.

North-east New Guinea : 'Sepik-bivouac 48' - L. Schultze no. 310, flowering in Nov. 1910.

This species is most closely related to G. fruticulosa Schltr., but well distinguished by the warted leaf-sheath, smaller flowers and broader petals.

Glossorhyncha Ridl.

This genus, in my opinion, is by no means an unnatural one. In 1911 it already contained 44 species in Papuasia to which there later had to be added six more species, described under Glomera by J.J. Smith, viz. Glossorhyncha dubia (J.J.Sm.) Schltr., G. geelvinkensis (J.J.Sm.)

Schltr., G. Pullei (J.J.Sm.) Schltr., G. salicornioides (J.J.Sm.)

G. Versteegii (J.J.Sm.) Schltr., and G. Gibbsiae (J.J.Sm.) Schltr.

Four more new species are characterised below. In consequence of this, the genus now contains 54 species in Papuasia. That the number of species is by no means exhausted is proved by every new collection made in New Guinea. Most of the species seem to have a fairly local distribution, and almost every mountain range has species peculiar to it. It is noteworthy that some of them descend below the boundary of the mist-forest zone.

So far Glossorhyncha is known only beyond Papuasia by three species, viz. the Type of the genus G. amboiensis Ridl. from the Island of Ambon; G. celebica Schltr. from the mountains of Minahassa in the North Celebes, and G. MacDonaldii Schltr. from the New Hebrides. It may be mentioned that in October, on the top of tall trees on Mt. Mon, New Caledonia, I observed a flowerless orchid in fairly large numbers which probably belongs to Glossorhyncha. Unfortunately, I neglected at the time to collect evidence of the plant, but I would like to draw attention to it, so that local collectors may be on the look out for this species, which is interesting from a plant-geographical point of view. The species grows on thick branches of trees on the summit, most in large clusters. It probably blooms in August or September, thus rather early for the local flora.

G. Hunsteiniana Schltr., sp. nov.

Suffrutex humilis, erectus vel sub-patulus, e basi bene ramosus. Caules et rami bene foliati, vix compressi, vaginis foliorum arctissime amplectentibus, striatis, rugulosis, apice in fibros plures setiformes excurrentibus omnino obtecti. Folia erecto-patentia linearia, inaequaliter ac obtuse bilobulata, basi paulo angustata, carnosula, glabra, vaginas fere duplo superantia. Flores in genere mediocres, glaberrimi, e spatha ovali-cucullata, glabrata, magna, nivei, labello antice griseo-papilloso. Sepala elliptico-oblonga, subacuta, lateralia subfalcata, apiculata, conniventia. Petala obovato-spathulata, obtusissima, obliqua, sepala paulo superantia. Labellum e sacco oblongoideo obtuso apice libero inter bases sepalorum

paulo prosilente, suborbiculare, obtusissime apiculatum, quam sepala plus duplo brevius. Columna brevis, clinandrio dorso semiorbiculari, denticulato. Ovarium sessile, cylindraceum, glabrum.

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An erect or slightly overhanging subshrub up to 30 cm long, branched from the base, with dense leaf cover. Leaves 1.5 - 2 cm long, 1.5 - 2.5 mm broad at about the middle, with cuneate base. Flowers of about medium size in the genus, snow-white with grey-green zone of papillae at the tip of the labellum. Sepals 6.5 - 7 mm long. Petals 8 - 8.5 mm long. Labellum with a blunt spur 2.5 mm long and a platform 3 - 3.5 mm long. Ovary sessile, 4.5 mm long.

North-east New Guinea : In range forest at the ridge camp near the peak of [Mount] Hunstein (Sepik District), alt. c. 1050 - 1300 - C. Ledermann no. 8406a (TYPE), no. 11216, no. 11005, flowering in Aug. [1912] and Feb. - Mar. 1913..

A species related to G. hamadryas Schltr. which is complex and difficult to separate, but it is characterised by the narrow comparatively thick leaves and blunt petals which are strongly constricted towards the base. The species is dedicated to the memory of Hunstein, a highly deserving collector who did so much for the exploration of the bird fauna of New Guinea, but to whom we also are indebted for the discovery of a few plants.

G. Ledermannii Schltr., sp. nov.

Suffrutex erectus, e basi ramosus, humilis. Caules et rami dense foliati, teretiusculi, vaginis foliorum arctissime amplectentibus, striatis, subverruculosis, apices in fibros plures subulatos solutis eminno obtecti. Folia erecto-patentia vel suberecta, linearia, apice breviter attenuato, obtusiuscula, carnosa, basi cuneata, vaginas fere triplo longitudine superantia. Flores singuli, e spatha cucullato-ovali, apiculata, glabra, in genere mediocri, glabri, nivei, apice labelli griseo-papillosi. Sepala oblonga, subacuta, lateralia obliqua, subapiculata, basi concava. Petala oblongo-spathulata, obliqua, sepala haud superantia. Labellum quam sepala fere 3-plo brevius, e basi conico-saccata ovale, obtusum, sacco inter bases petalorum perbreviter prosilente. Columna brevi, clinandrio dorso ampliato, triangulo, obtuso, subdentato. Ovarium cylindraceum sessile glabrum.

An erect but low subshrub to 30 cm high, branched from the base and with dense cover of foliage. Leaves almost erect, linear, blunt, scarcely constricted towards the apex and blunt, somewhat thick.

Flowers of medium size within the genus, with greenish grey tip of the lip. Sepals about 1 cm long, the lateral ones falcate. Petals 1 cm long, distinctly spatulate with rhombic upper part. Labellum with blunt conical pouch 3 mm long and with not very distinct platform 3.5 mm long. Column twice shorter than the platform of the lip which is bent downwards in front. Ovary sessile, glabrous, about 8 mm long.

North-east New Guinea : In range forest near the [Camp] Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12844, flowering in Aug. 1913.

Related to G. Hunsteiniana Schltr., but with distinctly denser and narrower leaves, larger flowers with narrower petals and narrower labellum.

G. pteropetala Schltr., Sp. nov.

Suffrutex epiphyticus, dependens, ramosus, ut videtur flaccidus. Caules ramique leviter compressi, bene foliati, vaginis foliorum arctissime amplectentibus, lucidis, striatis, apicem versus sparsim verruculosis, apice ipso in fibros plures flexuosos, solutis, quam folia plures brevioribus omnino obtecti. Folia erecto-patentia, linearia, apicem versus sensim paulo angustata, obtusiusculo, basi angustata, obliqua. Flores singuli, in genere vix inter majores, nivei, apice labelli griseo-papillosi, glabri, e spatha ovali-cucullata, apiculata, glabrata. Sepala oblonga, subacuta, lateralia conniventia, subfalcato-obliqua. Petala late ovali-ovovata, spatulata, aliformia, obtusissima, sepala longitudine superantia. Labellum e basi conico-saccata perlate ellipticum breviter acuminatum, quam sepala plus duplo brevius, columnam plus duplo superante. Columna brevis, clinandrio dorso triangulo-semiorbiculari, inaequaliter denticulata. Ovarium sessile cylindricum, glabrum.

An evidently flaccid hanging, branched epiphytic subshrub, surely more than 50 cm long, and of similar habit as G. brachychaete Schltr. but much more slender and delicate. Leaves 5 - 6 cm long, 2.5 - 3.5 mm broad below the middle. Flowers snow white, with a grey-green spot of papillae at the apex of the labellum, of medium size within the genus, characterised by the wing-like petals. Sepals 1 cm long, the lateral ones sickly-shaped towards the front. Petals about 1.1 cm long more than 8 mm broad above the middle. Labellum with a blunt pouch scarcely 3 mm long and not protruding between the sepals and with platform 5 mm

long. Ovary about 3 mm long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11594, flowering in May 1913.

This very characteristic species should be placed next to
G. brachychaete Schltr.

G. Schultzei Schltr., sp. nov.

Suffrutex humilis, ramosus, adscendens.
 Caules ramique bene foliati, teretiusculi, vagini foliorum arctissime amplexentibus, verruculosis apice in setas plures solutis omnino obtecti. Folia patentia, anguste linearia, obtusiuscula, carnosa, semiteretia, vaginas longitudine fere duplo superantia. Flores singuli e spatha ampla ovali-euculata, apiculata, subglabra, in genere mediocres, glaberrimi. Sepala elliptico-oblonga, obtusiuscula, lateralia falcato-obliqua, conniventia. Petala oblique elliptico-spathulata, obtusa, apice subexcisa, quam sepala paululo longiora. Labellum e basi conico-saccata late rhombicum obtusum, sacco inter bases sepalorum libero bene prosiliente. Columna brevis, dorso clinandrii denticulata. Ovarium sessile, cylindricum, glabrum.

An ascending, low subshrub to 25 cm long, much branched. Leaves almost spreading, fleshy, 1 - 1.5 cm long, rarely over 1.5 mm broad at about the middle, half circle-shaped in section. Flowers medium sized within the genus, presumably snow white and with grey spot of papillae at the apex of the labellum. Sepals 4.5 mm long. The petals about 5 - 5.5 mm long. Lip twice shorter than sepals with spherical blunt pouch about 2.5 mm long and appressed to the ovary. Ovary about 5 mm long.

North-east New Guinea : Approximately 65k south of the mouth of the Rami [River] near Camp 'Hochmoos', alt. c. 1600m - L. Schultze no. 33(15), flowering in July 1910.

The species approaches G. acerosa Schltr. because of its narrow leaves but the upper surface is obviously flat; in addition the petals and labellum are different.

Giulianettia Rolfe

I have already mentioned the reasons which induced me to main-

tain this genus alongside Glossoryncha. I see now, since the illustrations of a species of Glomera have been published by J.J. Smith, that three species previously arranged by me under Eu-Glossorhyncha more properly belong here, viz. Julianettia carnea (J.J. Sm.) Schltr., Schltr., (Glomera carnea J.J. Sm.); G. grandiflora (J.J. Sm.) Schltr (Glomera grandiflora J.J. Sm.) and G. fruticula (J.J. Sm.) Schltr., (Glomera fruticula J.J. Sm.) Four more species must be added here, viz. G. Fransseniana (J.J. Sm.) Schltr., G. salmonea (J.J. Sm.), G. microphylla (J.J. Sm.) Schltr., and G. angiensis (J.J. Sm.) Schltr., all of which have been published since 1911 as species of Glomera. Including the three described below, the genus therefore contains 12 species. No species have been reported from outside New Guinea.

G. disticha Ridl., described previously, certainly does not belong here. It seems improbable that it should even be arranged under the Glomerinae at all.

G. verrucosissima Schltr., sp. nov.

Suffrutex patulus, ramosus, bene foliatus. Caules ramique teretiusculi, vaginis foliorum arctissime amplectentibus, dense verruculosis (verrucis apice fimbriatis) apice fimbriatis omnino obtecti. Folia subpatentia, oblonga vel oblongo-ligulata, obtuse et inaequaliter bilobulata, basi subrotundata, glabra. Flores in genere inter majores, singuli, pallide brunnei, e spatha obtusa subhirta; bractea ovarium subaequante, spatham dimidio superante. Sepala recurva ligulata, obtusa, carnosula, lateralia obliqua, basi margine anteriore paulo dilatata. Petala oblique linearia, obtusa, basi paulo angustata, quam sepala subaequilonga. Labello perlate rhombo-suborbiculari, dimidio anteriore subcrenulato, apice obtuse sublobulato-apiculato, incalcar anguste cylindricum obtusum, ovarium aequantem appressum productum. Columna brevis, clinandrio dorso ampliato, denticulato cum apiculo, pede haud bene conspicuo, in calcar transente. Ovarium sessile, anguste cylindraceum, glabrum.

A much branched epiphytic sub-shrub up to 70 cm long, more or less hanging over, with a dense leaf cover. Leaves 2 - 3 cm long, about 1 - 1.5 cm broad at about the middle. Flowers somewhat fleshy. pale brown. Sepals about 1.6 cm long; the petals scarcely shorter. Labellum almost three times shorter than the sepals, 5 mm long, when spread out about 5.5 mm broad, with a spur about 1.5 cm long. Column

about 4 mm high. Ovary slender, cylindrical, about 1.5 cm long, glabrous.

North-east New Guinea : In mist-forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12855 flowering in Aug. 1913.

The very characteristic species is distinguished by a wart-like out-growth of the leaf sheaths which are drawn here into very fine points. Otherwise, it is most closely related to G. viridis Schltr.

G. fusca Schltr., sp. nov.

Suffrutex validus, erectus, fere pedalis, ramosus. Caules et rami teretiusculi, dense foliati, vaginis densissime verrucoso-rugosis (verrucis apice fimbriatis) arcte amplectentibus, apice fimbriato-laceratis omnino obtecti. Folia elliptica vel ovato-elliptica, obtuse et inaequaliter bilobulata, basi rotundata, margine recurvo subserrato-asperata, patentia. Flores singuli carnosí e spatha arcte amplectente dense furfuraceo-asperata, ovario duplo breviore, fusi. Sepala oblongo-ligulata, obtusa, lateralia obliqua, basi margine anteriore dilatata. Petala anguste et oblique ligulata, obtusa, basin versus vix angustata. Labellum perlate subreniformi-rhombeum, obscure trilobulatum, obtusum, basi callo semilunato transverso obscuro auctum, calcare anguste cylindraceo, obtusiusculo, ovario paululo breviori appresso. Columna brevis, stigmate magno, clinandrio ampliato, obtuso, dense denticulato. Ovarium sessile cylindricum, glabrum.

A robust, branched epiphytic subshrub with dense leaf cover from 30 to 45 cm high. Leaves 1.5 - 2.7 cm long, 0.8 - 1.1 cm broad below the middle. Flowers in the genus are moderately large, pale brown. Sepals about 2.3 cm long; the petals little shorter. Labellum about 5 mm long, 6 mm broad, with linear-cylindrical spur, 2.2 cm long. Ovary 2.5 cm long.

North-east New Guinea : In range forest near Camp Felsspitze (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12845, flowering in Aug. 1913.

This species is related most closely to G. verrucosissima Schltr. but has a more robust growth habit, broader leaves and floral parts and a somewhat different labellum. The leaf sheaths are densely covered with obliquely placed warts which are comb-like lacerated above, so that they produce an almost felt-like cover which

is dark brown.

G. inflata Schltr., [sp. nov.]

Fruticulus erectus vel adscendens, valde ramosus. Caules et rami dense foliati, vaginis foliorum arctissime appressis verrucosis, apice fimbriato-laceratis omnino obtecti. Folia erecto-patentia vel patentia, linearia vel linearis subulata, obtusiuscula, basi breviter petiolato-attenuata, carnosa, glabra, vaginas 3—4-plo superantia. Flores parvuli, pallide brunnescentes, glabri, e spatha ovali-cucullata caduca. Sepala patentia vel recurva, oblonga, obtusa, lateralia obliqua, basi margine anteriore dilatata. Petala sepalis similia, subaequilonga, sed vulgo paulo angustiora, recurvula. Labellum perlate cuneato-flabellatum, antice truncatum, obscure trilobulatum, carnosulum, quam petala fere 3-plo brevius, calcare deflexo cylindraceo, apice inflato-globoso, a dorso paulo compresso. Columna brevis, pede producto, clinandrio dorso humili. Ovarium graciliter cylindraceum, glabrum, sessile.

A small, much-branched subshrub up to 30 cm high and with dense leaf cover. Leaves 1 – 1.3 cm long, scarcely more than 1 mm [Ed. – 1 cm?] broad, fleshy. Flowers small, pale brown. Sepals about 4 mm long, the lateral ones broadened towards the base. Petals distinctly narrower than sepals, but about of equal length. Labellum 2 mm long, 2.5 mm broad below the apex with a cylindrical spur, almost 4 mm long, broadened into a blister-like apex. Ovary almost 5 mm long, glabrous.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky -peak' (Sepik District), alt. c. 1400 – 1500m – C. Ledermann no. 12944, flowering in Aug. 1913.

This species is easily recognised in the genus by the inflated tip of the spur.

Aglossorhyncha Schltr.

Six species of this endemic Papuan [Papuasian] genus were known in 1912. Two more were published by J.J. Smith between 1913 and 1915, and a new species is described below.

The comparative similarity of all these species is remarkable, and they are so much alike that it is difficult to distinguish one from the other without the leaves or pieces of the branches. Even A. serrulata Schltr., so very different in its vegetative parts,

forms no exception. There can be no doubt however as to the specific differences between the various individuals. We thus have before us an example of specific differentiation, which is expressed particularly in the leaves.

A. stenophylla Schltr., sp. nov.

Suffrutex parvulus, adscendens, parum ramosus. Caules et rami dense foliati, vaginis foliorum brevibus, striatis, arctissime amplectentibus omnino obtectis. Folia erecto-patentia, anguste linearia, acuta, basi attenuata, marginibus incurvis rigustula. Flores in genere mediocri, patentes, singuli, e spatha ovali-cucullata, breviter acuminata brevi, viridescentes bruneo-striati, glaberrimi. Sepala oblonga, sub-acuta, concavula, lateralia obliqua. Petala oblique ligulata subacuta, quam sepala sere aequilonga. Labellum more generis cymbiforme anguste oblongum, subacutum, medio leviter constrictum, marginibus apicem versus paulo dilatum, glabrum. Columna clavata semiteres, apice ampliata, labelli dimidium paulo superans, clinandrio dorso alte bilobato, lobis apice truncato dentatis. Ovarium triquetrum, sessile, glabrum lucidum.

A small epiphyte subshrub, ascending, little branched and up to 12 cm high and with a creeping rhizome. Leaves 1.6 - 3 cm long, stiff, pointed to almost spiny, rarely more than 2 mm broad. Flowers singly spreading, of medium size in the genus, greenish with few brownish stripes. Sepals 1 cm long; petals 1 cm long; petals scarcely shorter but narrower. Labellum 8 mm long, in the lower half about 2 mm broad, in the upper 3.5 mm broad. Ovary shiny, about 4 mm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no 123700 [Ed. - probably 12370], no. 12799, flowering in July - Aug. 1913.

This species is already superficially distinguished externally from all others in the genus by the narrow, almost spiny leaves.

Podochilus Bl.

No further novelties of this genus have been described since my compilation of the Papuan [Papuasian] species in 1912, but I am now able to record three new species discovered by Ledermann. The genus in Papuasia is thus increased to 14 species.

I note that J.J. Smith places the Podochilinae after the

Thelosinae, and I would like to make some remarks about its position.

The Podochilinae are doubtless normally acranthous orchids like the Dendrobiinae and Polystachynae. That the development of terminal inflorescences often ceases and is replaced by lateral ones, (or both), is of no great significance. All acranthous orchids have now very properly been placed, in contrast to the pleuranthous groups by Pfitzer, but he has made the mistake in this case of including the Dendrobiinae in the pleuranthous groups. That they do belong to the acranthous group however, is proved by Cadetia, by different sections of Dendrobium, as well as by Diplocaulobium, Sarcopodium and by the sections Trichosma, Mycaranthus and so on. This is also the case in the Eria, Podochilinae and others. They have therefore to take their place together with the Dendrobiinae in the acranthous groups. The pleuranthous orchids are for the most part from the New World, whereas the Corallorhizinae, Phajinae, Bulbophyllinae, Genyorchidinae, Ridleyelinae, Thelasinae, Cymbidinae and Thecostelinae belong to the Old World, i.e. to say the first nine groups in which the pollinia are not surrounded by a strong cartiliginous layer.

For this reason the Phajinae must not be placed in front of the Liparidinae as was done by J.J. Smith. I now think it probable that Pfitzer has not quite correctly grasped the position of the inflorescence in the Collabiinae and that these may still belong to the pleuranthous groups. An examination must be made on living material.

P. agnuinus Schltr., Sp. nov.

Epiphyticus, decumbens, ramosus. Rami et caules filiformes, flexuosi, dense foliati, vaginis foliorum dense obtecti, teretiuseculi, glaberrimi. Folia erecto-patentia, linearia, sublente obtusiuscula, semel torta, ut videtur equitantia, vaginas 3—4-plo superantia. Racemi ad apices ramicorum, folia vix superantia, laxe pauciflora; bracteis ovato-lanceolatis, acuminatis, inferioribus ovarium excedentibus, superioribus sensim brevioribus. Flores in genere inter minutos, albi, glaberrimi. Sepala ovata, subacuta, lateralia valde obliqua, basi margine anteriore dilatata et ampliata in mentum semioblongum obtusissimum, sepalo ipso dimidio sub-

breviorem connata. Petala anguste et oblique elliptico-spathulata, subacuta, quam sepala subaequilonga. Labellum e basi breviter peltato-unguiculata oblongo-quadratum, medio et tertia parte apicali leviter constrictum, basi supra insertionem in appendicem parvulam quadratam, breviter bilobulatam productum, glabrum. Columna brevis, pede curvato, rostello alte bifido, dente paulo breviore intus donato. Pollinia 4, oblique obovoidea, stipitibus 2 separatis, glandulis 2 minutis, separatis. Ovarium breviter pedicellatum, clavatum glabrum.

A long-creeping, minute epiphyte 20 - 30 cm long. Leaves 3 - 5 mm long. Flowers white, delicate and small. Sepals about 1.5 mm long; petals little shorter. Labellum about 2 mm long. Ovary with stalk about 1.5 mm long.

North-east New Guinea : By the 'Pyramid' [Ed. - a rock feature?] on the April River (Sepik District), alt. c. 200 - 400m - C. Ledermann no. 7551, no. 5758, [Ed. - This number probably 7558], flowering in June 1912.

The species related most closely to P. muscosus Schltr., but has shorter leaves, narrower petals and sepals and a much shorter mentum.

P. falcipetalus Schltr., sp. nov.

Epiphyticus decumbens vel adscendens, ramosus. Caules et rami flexuosi, graciles, dense foliati, vaginis foliorum arce amplectentibus, brevibus ornatino obtecti. Folia erecto-patentia ligulata vel lanceolato-ligulata; oblique acuta vel subacuminata, glabra. Racemi terminales folia paulo superantia, laxe pauciflora; bracteis elliptico- vel rhomboe-cucullatis, acuminatis, flores aequantibus vel paulo superantibus, margine leviter undulatis. Flores parvuli, tamen in genere inter majores, violacenti-albi. Sepala ovato-lanceolata, acuminata, lateralia falcato-obliqua, extus carinata, basi margine anteriore ampliata et connata mentum semioblongum obtusum formantia. Petala linear-lanceolata, acuta, falcata, margine dimidio superiore subdenticulata, sepalis paululo breviore. Labellum peltato-unguiculatum, circuitu oblongum, acuminatum, tertia parte inferiore angustatum, basi ipsa supra insertionem breviter producta truncatissimum, angulis acutis leviter divergentibus, tertia parte apicali subdenticulatum. Columna brevi, rostello triangulo erecto, breviter exciso. Ovarium breviter pedicellatum, clavatum, glabrum vel subglabrum.

A small branched prostrate epiphyte with slender branches densely covered with leaves, to about 20 cm long. Leaves 7- 10 mm long, 1.5 - 2 mm broad, at about the middle. Racemes 3 to 4-flowered. rarely only

1 cm long. Flowers white, tinged bluish pink, glabrous. Sepals 4.5 mm long; the lateral ones forming at the base a chin 2 mm long. Petals 3.5 mm long. Lip 3.75 mm long. Ovary together with stalk 3.5 mm long.

North-east New Guinea : In range forest on Mount Regen (Sepik District), alt. c. 1500m - C. Ledermann no. 12230, flowering in June 1913.

This species is somewhat isolated because of the shape of the labellum. The basal continuation [stalk] of the labellum is very short but abruptly truncate with pointed corners. The shape of the rostellum indicates that this species has only a glandular spot for the pollinia.

P. lancilabris Schltr., sp. nov.

Epiphyticus, pusillus, decumbens, ramosus. Caules et rami filiformes, flexuosi, bene foliati, teretes, vaginis foliorum amplectentibus omnino obtecti. Folia erecto-patentia oblongo-ligulata, oblique acuminata, basi paulo angustata, glabra. Racemi apicales abbreviati, pauciflori, folia paulo tantum superantia. Bracteae ovatae acuminatae, inferiores ovarium superantes, superiorae ovarium aequantes. Flores parvuli, glabri, albidi, violacei-suffusi. Sepalum intermedium ovatum, obtusum, lateralia valde obliqua, anguste ovata obtusa, margine inferiore basi valde dilatata et ampliata mentum semioblongum obtusum, quam sepala ipsa semilongum formantia. Petala oblique elliptico-oblonga, obtusa, sepalis subaequilonga, glabra. Labellum peltato-unguiculatum circuitu lanceolato-linguiforme, obtusiusculum, medio subconstrictum, basi supra insertionem in lobum quadratum brevem, truncato-obtusissimum productum, trinerve. Columna brevi, pede angusto, rostello lanceolato-triangulo, breviter bifido. Ovarium pedicellatum clavatum glabrum.

A small creeping herb to 8 cm high and with branches densely covered with leaves. Leaves 3.5 - 5 mm long. Racemes of flowers terminal, but scarcely overtopping the leaves. Flowers small, white or tinged violet. Sepals about 0.75 mm long; the lateral ones forming a blunt pouch 4 mm long. Lip about 1.25 mm long. Ovary together with stalk about 0.5 mm long.

North-east New Guinea : In dense tall forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9259 (TYPE), flowering in Oct. 1912..

Among the Papuasian species, this species should probably be

placed next to P. bimaculatus Schlt. but is smaller and more dainty and has a much narrower labellum. I seem to have observed that the pollinia have two separate stalks which in turn are connected to a common sticky disc. In P. bimaculatus Schltr. I found only one stalk to the pollinia.

Appendicula Bl.

Up to 1912, thirty two species of this genus had been recorded from Papuasia. Four more have since been described, viz. A. fasciculata J. J. Sm., A. furfuracea J.J. Sm., C. carinifera J.J. Sm. and A. rostrata J.J. Sm. From Ledermann's collection I can only add the single novelty below.

Thus, we know 37 species from Papuasia. Of course those species which I have separated into Chilopogon and Cyphochilus are not included. Regarding these two genera, I would like to emphasize the fact that I have determined most decidedly to maintain them in spite of objections by J.J. Smith, because they are undoubtedly natural genera which are well characterised not only by their entire floral structure, but in particular, by the structure of the lip, the column and the anther together with the pollinia, as indeed by their entire appearance also.

A. sepikana Schltr., sp. nov.

Suffrutex erectus, parvulus, epiphyticus. Caules simplices vel subsimplices, dense foliati, vaginis foliorum arcte amplectentibus omnino obtecti, teretiusculi. Folia erecto-patentia oblique ligulata vel lanceolato-ligulata, acuta vel acuminata, sublente inaequaliter biaristata. Racemi apicales, erecti vel arcuati, folia paulo vel subdupo superantes, perbreviter pedunculati, dense pluriflori; bracteis patentibus lanceolatis, subacutis, ovario pedicellato plus duplo brevioribus. Flores in genere inter mediocres, albi denum flavescentes, glabri, extus sparsim et minute furfuracei. Sepala ovata apiculata, lateralia basi conspicue ampliata et connata cum pede columna mentum oblongoideum obtusissimum formantia. Petala oblique ligulata, obtusa, quam sepala paulo breviora. Labellum circuitu ellipticum, obtuse apiculatum, basi rotundatum, medio pandurato-contractum, basi concava appendice hippocrepiformi retroso pro affinitate parvulo ornatum. Columna brevis, rostello erecto valde acuminato, brevi, pede ligulato. Ovarium breviter pedicellatum cylindraceo-clavatum, glabrum.

A soft epiphyte 20 - 30 cm high and densely covered with leaves.

Leaves 1.5 - 2.3 cm long, 4 - 7 mm broad at the middle or below that.

Racemes of flowers to 3 cm long. Flowers white, later yellowish, glabrous. Sepals about 3 mm long; the lateral ones form a blunt mentum scarcely 1.75 mm long. Petals hardly (observably) shorter than the sepals. Labellum 3 mm long, 1.75 mm broad in the front half, while it is 1.5 mm broad below the middle, with very small basal outgrowth. Ovary together with stalk about 4 mm long.

North-east New Guinea : In mountain forest on the peak of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11440, flowering in Mar. 1913; in mountain forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11922a, no. 12108b. flowering in June 1913.

A species related to A. fallax Schltr.

Cadetia Gaud.

I have previously explained in detail the reasons which induced me to restore the genus Cadetia. Even Blume has approved its maintenance in his fourteenth volume of the 'Rumphia', at a time when he regarded Desmotrichum and Sarcopodium as sections of Dendrobium. He also admits that the lines of demarcation from Dendrobium are difficult to establish, but regards it nevertheless as a special genus. It was just the same with me. Whenever I found a Cadetia and examined the live material, I had to admit that these plants do not belong to Dendrobium, and yet, apart from the habit, it is difficult to say in what respect they are to be separated from it. Approaches to Dendrobium are to be found in every possible characteristic of the genus, and yet I would consider the unification of the two genera as quite unnatural, for the small fleshy peculiarly shaped flowers of Cadetia are surely not Dendrobium-flowers, but represent a special natural genus.

The only definite contrast to Dendrobium seems to be found finally in the fruit which is either broadly three-winged or covered with tubercular excrescences (i.e. muricated), whereas in Dendrobium

the fruit is always roundish or smooth. Until a more definite one is found, we must be satisfied with these characteristics.

In 1912, I enumerated 36 species of the genus from Papuasia, but the following 12 have been recorded meanwhile, all of them having been described by J.J. Smith and placed under Dendrobium. C. cyclopensis (J.J.Sm) Schltr., C. subhastata (J.J.Sm.) Schltr., C. coordinata (J.J.Sm) Schltr., C. subradiata (J.J.Sm.) Schltr., C. legareiensis (J.J.Sm.) Schltr., C. apiculifera (J.J.Sm.) Schltr., C. micronephelium (J.J.Sm.) Schltr., C. homochroma (J.J.Sm.) Schltr., C. opacifolia (J.J.Sm.) Schltr., C. arfakensis (J.J.Sm.) Schltr., C. subfalcata (J.J.Sm.) Schltr. and C. toadjana (J.J.Sm.) Schltr. Of these C. cyclopensis (J.J.Sm.) Schltr. and C. subhastata (J.J.Sm.) Schltr. belong to the §. Sarcocadetia, C. apiculifera (J.J.Sm.) Schltr. C. micronephelium (J.J.Sm) Schltr., C. homochroma (J.J.Sm.) Schltr. and C. opacifolia (J.J.Sm.) Schltr. to §. Eu-Cadetia, the rest evidently to §. Ptero-Cadetia.

I describe here six more species from Papuasia, so that there are now 54 known species.

C. cuneilabia Schltr., sp. nov.

Epiphytica, erecta, pusilla. Rhizoma valde abbreviatum. Caules graciliter cylindracei, unifoliati, erecti, basi vaginulis 2 amplectentibus cirdumdati, teretiusculi. Folia erecta, anguste ligulata vel linearia, apiculata, basi angustata, dorso carinata, marginibus recurvulis. Flores in sectione inter minores, graciliter pedicellati, albi, labello virescente. Sepala late elliptica, subapiculata vel subacute, glabra, lateralia basi margine anteriore conspicue dilatata cum pede columnae mentum falcato-conicum, obtusiusculum formantia. Petala anguste ligulata, obtusiuscula, obliqua, basi vix decurrentia. Labellum e basi anguste unguiculata cuneatum, subintegrum, lobia lateralibus subobsoletis, lobo antico reniformi-quadrato, breviter et obtuse bilobulato cum apiculo minuto interjecto, glabro, callis 3 obscuris brevibus juxtapositis infra basi lobi antici, dimidio inferiore labelli concavulo, minute papilloso. Columna brevis, clinandrii lobis lateribus oblongis, obtusis, intermedio dentiformi longioribus, antice concavula glabrata. Ovarium triquetrum, glabrum, clavatum.

A tiny epiphyte forming small tufts 2.5 - 4 cm high. Stems 0.8 - 2 cm long, 1 - 1.5 mm in diameter. Leaves 1.3 - 1.6 cm long, 2 - 3 mm broad in about the middle. Flowers small, white with greenish labellum, often overtopping the leaves. Sepals 4 mm long;

the lateral ones forming a slightly curved, spur-like chin about 4 mm long. Petals 3 mm long; lip 7.5 mm long and 2.5 mm broad in front. Column 2.5 mm long. Ovary together with stalk 0.8 - 1.3 cm long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 12163, no. 11831, flowering in May - June 1913.

Related to C. chamaephyton Schltr. but differing from it and all known species by the almost complete absence of the lateral lobes of the labellum.

C. lactiflora Schltr., sp. nov.

Epiphytica, pusilla, caespitifica. Rhizoma valde abbreviatum. Caules graciliter cylindracei, unifoliati, terciusculi, basi vaginulis paucis circumdati. Folia linearia vel linearis-ligulata, apiculata, dorso carinata, marginibus recurvatis. Flores graciliter pedicellati, in sectione inter minores, lactei vel nivei. Sepala elliptica, acuta vel subacuminata, glabra, lateralia basi margine anteriore dilatata cum pede columnae mentum oblique cylindraceo-conicum obtusum formantia. Petala anguste lanceolato-ligulata, acuta, obliqua, basi breviter decurrentia, glabra, sepalis subaequilonga. Labellum e basi linearis-ligulata circuitu oblongum, supra medium trilobatum, lobis lateralibus brevibus triangulo-lanceolatis subacutis, intermedio oblongo-quadrato, antice truncato cum apiculo obtuso, medio papilloso, laterales fere 4-plo superante. Columna brevis, facie papillosa, lobis clinandrii brevibus, obtusis. Ovarium graciliter pedicellatum, glabrum, triquetrum.

A tiny epiphyte forming dense tufts 3.5 - 4.5 cm high. Stems 1 - 1.7 cm long, scarcely 2 mm thick. Leaves 1.3 - 2.7 cm long, 2.5 - 4 mm broad at about the middle. Flowers small, milky white to snow white. Sepals 6 mm long; the lateral ones forming a slender chin to 5 mm long. Petals 5 mm long. Labellum with nail almost 1 cm long, 3 mm broad between the points of the lateral lobes, central lobe 2.5 mm broad in front. Column 3 mm long. Ovary together with stalk 1 - 1.2 cm long, glabrous.

North-east New Guinea : In range forest on the peak of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11365, no. 11146, flowering in Feb. - Mar. 1913; in range forest of the Hunstein Ranges (Sepik District), alt. c. 1050m - C. Ledermann no.

8403, flowering in Aug. 1912.

This species is distinguished from the closely related
C. chamaephyton Schltr. by the shape of the petals and the labellum.

C. latoureoides Schltr., sp. nov.

Epiphytica, pusilla, caespitifica. Rhizoma valde abbreviatum. Caules graciles, erecti, leviter angulati, unifoliati, basi vaginis 2 laxe et alte amplectentibus, acuminatis, striato-nervosis circumdati, vix 1—1,5 mm crassitudine excedentes. Folium erectum lineariligulatum, apiculatum, marginibus recurvis, subtus carinatum. Flores in genere mediocres, albi, labello viridi luteo-macuto. Sepala ovata, obtusiuscule acuminata, glabra, lateralia basi margine anteriore producta et ima basi connata cum pede columnae mentum curvatum oblique conicum, apice contracto subgloboso-incrassatulum amplum formantia. Petala oblique linearia, acuta, medio leviter dilatata, basi decurrenti-dilatata, quam sepala paululo breviora. Labellum e basi anguste oblongo-ligulata semio-orbiculari cuneato, supra medium trilobo, lobis lateralibus carina carnoso obscure bilobulata conjunctis ovato-falcatis, subacutis, intermedio antico, late obovato-trapezoideo, usque ad medium semirhombeo-bilobulato cum apiculo interjecto, basi appendicibus 2 crasse subulatis dimidium superantibus, basi tantum adnatis ornato. Columna brevis, crassiuscula, facie puberula, pede ovali-excavato. Ovarium clavatum, triquetrum, glabrum.

An epiphyte 11 — 15 cm high, with branches (stems) 3 — 8 mm long and 1.5 mm thick. Leaves 5 — 10 cm long, 5 — 8 mm broad in about the middle. Flowers small, white with greenish yellow spots on the labellum. Sepals 6 mm long; the lateral ones forming a chin about 3.5 mm long. Petals 5.5 mm long. Labellum almost 6 mm long, when spread out (flattened) 4 mm broad between the points of the lateral lobes. Column 2.5 mm long. Ovary together with the short stalk 7 mm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1500m — C. Ledermann no. 12488, flowering in Aug. 1913.

The unusual structure of the labellum reminds one of some of the species of Latourea. [Ed. — section Latouria of Dendrobium] The species stands somewhat isolated in the section Ptero-Cadetia.

C. platyloba Schltr., sp. nov.

Epiphytica, pusilla, caespitifica. Rhizoma valde abbreviatum. Caules graciliter cylindracei, unifoliati, ima basi paucivaginati, teretiusculi, pro sectione crassiusculi. Folia erecta, linearia mucronulata, dorso carinato, marginibus recurvula, basi breviter angustata. Flores in sectione mediocres, longi pedicellati, folia vulgo paulo superantes, viridi-

albi. Sepala elliptica breviter acuminata; glabra, lateralia basi dilatata cum pede columnae mentum falcato-conicum, obtusiusculum formantia. Petala subfalcato-linearia subacuta, basi leviter decurrenti-dilatata, glabra, sepalis subaequilonga. Labellum e basi ligulato-unguiculata semiorbiculari-cuneatum, tertia parte anteriore alte trilobum, medio dense et minute papillosum, lobis lateralibus anguste oblongo-falcatis, obtusis, dimidio inferiore papillosis, lamella bilobulata humili inter se conjunctis, lobo intermedio antico transverse oblongo, apiculato, glabro. Columna brevi, lobis clinandrii apiculatis, facie infra stigma dense papillosa. Anthera quadrato-cucullata, apice papillosa. Ovarium longi pedicellatum, triquetrum, glabrum.

A small epiphyte 5 - 8 mm high. Stems 1.3 - 2 cm high and up to 2 mm thick below the middle. Leaves 3 - 5 cm long and 3 - 5 mm broad. Flowers small, greenish white. Sepals 5.5 - 6 mm long, the lateral ones forming a mentum 2.5 mm long. Petals 5 - 5.25 mm long. Lip about 5 mm long, 3 mm broad between the points of the lateral lobes when spread out; front lobe 5.5 mm broad. Column 2.75 mm long. Ovary together with slender stalk 2 - 2.5 cm long.

North-east New Guinea : In range forest on the Hunstein Range (Sepik District), alt. c. 1050m - C. Ledermann no. 8414, flowering in Aug. 1912.

Related to, and in habit quite similar to C. chionantha Schltr., but specifically well distinguished by the large lateral lobes and conspicuous broad front lobe of the labellum.

C. quadriquetra Schltr., sp. nov.

Epiphytica, parvula, caespitosa. Rhizoma valde abbreviatum. Caules quadriquetri, graciles, unifoliati, apicem versus paulo dilatati. Folia erecto-patentia, oblonga vel oblongo-ligulata, obtusa, subtus carinata, basi rotundata. Flores in sectione mediocri, albi, rubro-marginato, e spatha compressa mediocri. Sepala ovata, obtusa, lateralia basi margine anteriore conspicue producta cum pede columnae mentum oblongoideum obtusum, apicem versus paululo ampliatum formantia. Petala ligulata, obtusiuscula, supra medium leviter dilatata, basi antice paulo dilato-decurrentia, sepalis subaequilonga. Labellum e basi lineariligulata circuitu quadratum alte trilobatum, basi truncatum, lobis lateralibus dolabriformi-ovalis, obtusis, intermedio fere triplo majore latiobovato-quadrato, antice truncato-obtusissimo, lineis 3 longitudinalibus incrassalis ornato, callis 2 parallelis parvulis lamelliformibus glabris supra basin laminae labelli. Columna brevis, clinandrii lobis brevibus, subacutis, facie glabrata. Ovario trigono, cum pedicello glabro clavato.

An epiphyte forming small tufts 11 - 17 cm high. Stems 4 - 10 cm long and 3 - 4 mm broad below the apex. Leaves 4.7 - 6 cm long and 1.5 - 2 cm broad at about the middle. Flowers small, white with

carmine edges to the labellum. Sepals 5.5 mm long; the lateral ones forming a spur-like chin 4 mm long. Petals 4.75 mm long. Lip together with a nail, which is 4.5 mm long, 9 mm long, 4 mm broad at about the middle, with front lobe 4 mm long and 3.5 mm broad in front. Column 3 mm long. Ovary together with stalk about 1.2 cm long.

North-east New Guinea : In primary forest on the slopes near Malu, on the Sepik [River], alt. c. 50 - 100m - C. Ledermann no. 8025, flowering in July 1912.

The species is closely related to C. sepikana Schltr. has, however, shorter and comparatively broader leaves, narrower petals, a longer nail of the lip, smaller lateral lobes and two smooth calluses which are situated near the platform of the lip.

C. sepikana Schltr., sp. nov.

Epiphytica, parvula, caespitosa. Rhizoma valde abbreviatum. Caules graciles, acute 4-angulares, apicum versus paucilato dilatati, basi vaginis 2 lax amplectentibus circumdati, unifoliati. Folia erecto-patentia, oblique oblongo-ligulata, obtusa, basi rotundata. Flores in sectione inter mediocres, albi, labello purpureo-marginato, erecti, e spatha compressa, mediocri. Sepala late ovata, obtusa, glabra, lateralia basi margine anteriore valde ampliata cum pede columnae mentum oblongoideum obtusum formantia. Petala anguste oblongo-spathulata, obtusa, glabra, basi antice decurrenti-dilatata, sepalis subaequilonga. Labellum e basi linearis-unguiculata circuitu latiquadratum basi cordatum, alte trilobum, lobis lateralibus latiovato-falcatis, obtusis, divergentibus, intermedio antico quadrato-reniformi, antice leviter exciso, lateralibus duplo majore, lineis 7 incrassatis longitudinalibus, leviter verrucosis ornato, callis 2 parvulis globosis minute ciliolatis in medio laminae labelli inter lobis lateralibus. Columna brevis, facie subglabra, clinandrii lobis brevibus, lateralibus obtusis. Ovario triquetro, clavato, glabro, pedicellato.

An epiphyte forming small tufts 11 - 18 cm high. Stems 3.5 - 12 cm long, 2.5 - 4 mm broad below the apex. Leaves 5 - 7 cm long, 1.1 - 1.8 cm broad at about the middle. Flowers small, white with red-edged labellum. Sepals 6 mm long; the lateral ones forming a spur-like chin 5 mm long. Petals 5.5 mm long. Lip together with the nail, which is 4 mm long, 9 mm long and 5 mm broad at about the middle when spread out. Front lobe 4 mm long, 3 mm broad in front. Column 3 mm long. Ovary together with stalk 1 cm long.

North-east New Guinea : In the Bari Gorge near Malu, on the Sepik [River], alt. c. 40 - 60m - C. Ledermann no. 8138, (TYPE),

flowering in Aug. 1912; in primary forest near the Zuckerhut 'Sugar-Cap' (Sepik District), alt. c. 560m - C. Ledermann no. 7124, flowering in Apr. 1912.

Related most closely to C. obliqua Schltr.

Dendrobium Sw.

Probably in no country in the world of equal area to New Guinea has such an accumulation of species occurred in one genus, as in this particular case.

In 1912, I enumerated 256 species of the genus for German New Guinea. From British Papua and Dutch New Guinea, there had been recorded 123 more species, that is to say, at that time the surprisingly large number of 379 species were already known from Papuasia. Since then, as far as I can ascertain, 103 more novelties, all from Dutch New Guinea, have been described, and I have now to describe below 32 more species. Thus we get the startling result that up to the present there are not less than 514 species of Dendrobium known from Papuasia. It is evident that this number will be considerably increased in the near future, for nearly every collection from the Territory brings further novelties.

Later we will see that these conditions are almost identical in Bulbophyllum.

So far as the species from Papuasia are concerned, I have nothing new to add to my division of the genus.

All species which I have received in the meantime could be distributed without trouble under the proposed sections, which have proved themselves to be thoroughly natural groups.

Concerning the individual sections, I will state below briefly what dimensions they have attained and which species have been added for Papuasia, since the publication of my 'Orchidaceae of German New Guinea'. Ledermann's collection affords a good proof

that we may still expect many novelties in the genus from New Guinea.

§. Desmotrichum.

The eastern boundary of distribution of this section is obviously to be found in Papuasia. It is therefore not surprising that we find only a few species of it in our Territory. Including D. lonchigerum Schltr., described below, we know up to the present only eight Papuan species which belong here. They all plainly indicate a relationship with western types, such as those of the Sunda Island which are obviously the distribution centre of the section.

D. lonchigerum Schltr., sp. nov.

Epiphyticum, longe decumbens, distanter caulis vel pseudobulbis obsessum, ramosum. Rhizoma flexuosum, elongatum. Pseudobulbi fusiformi-clavati, compressi, unifoliati. Folia erecta lanceiformia, basi subrotundata, acuta cum apiculo subulato, glabra. Flores in sectione mediocres, albi, extus sparsim furfuracei. Sepalum intermedium lanceolatum acutum, lateralia oblique ovato-triangula, acuta, basi margine anteriore dilatata cum pede columnae mentum triangulo-ovatum obtusum formantia. Petala obliqua linearia, acuta, glabra, sepalis subaequilonga. Labellum e basi late cuneata infra medium trilobatum, glabrum, lobis lateralibus obque triangulis obtusis, intermedio fere triplo longiore elliptico, apiculato margine leviter undulato, carinis 4 infra medium ampliatis in lobo medio leviter undulatis e basi labelli usque infra apicem decurrentibus, nervo mediano paululo tantum incrassato. Columna brevis clinandrii lobi lateralibus triangulis obtusis dorsali subulato duplo brevioribus. Ovarium subclavatum leviter furfuraceum, breviter pedicellatum.

A long-creeping epiphyte. Pseudobulbs 6 - 8 cm long, 0.3 - 1.2 cm broad above the middle. Leaves 6 - 9 cm long, 2.2 - 2.8 cm broad below the middle. Flowers whitish. Sepals 1.2 cm long; the lateral ones forming a chin 4 - 5 mm long. Petals 1 cm long. Lip 1.2 cm long and 8 mm broad between the points of the lateral lobes when flattened out, with central lobe 7 mm long and about 3.7 mm broad. Column 4 mm long. Ovary together with short stalk 6 mm long.

North-east New Guinea : In the Bari Gorge near Malu, on the Sepik River, alt. c. 40- 60m - C. Ledermann no. 8145 (TYPE), flowering in Aug. 1912 ; in forest on Mount Bambus (Sepik District), alt. c. 650m -

C. Ledermann no. 9598, flowering in Nov. 1912.

The habit of the species reminds one of D. pemaee Schlt. but has a very different labellum.

S. Goniobulbon

J.J. Smith has united this section with Diplocaulobium. To me it seems better to keep them separate as the review will be considerably easier, because Diplocaulobium has already attained such a large size, that a survey of the species is rather difficult. Besides this, the species of Goniobulbon are easily recognised by their elongated creeping rhizomes and short usually acute edged gonioblastic pseudobulbs. With D. sepikanum Schltr., described below, this purely Papuan group now contains 13 species, three of which, D. sublobatum J.J. Sm., D. tuberculatum J.J. Sm. and D. bulbophylloides J.J. Sm. described from Dutch New Guinea in recent years, must be added to the species previously enumerated by me.

It is not always easy to distinguish a species, as they resemble each other in the vegetative parts very closely, with the exception of D. glabrum J.J. Sm. Apart from the colour of the flowers, the differences are to be found chiefly in the form and structure of the very delicate labellum.

D. sepikanum Schltr., sp. nov.

Epiphyticum, perhumile, decumbens.
Rhizoma repens, dense pseudobulbis obsessum. Pseudobulbi adscendentia, ovoidei, 4-angulati, unifoliati. Folia oblonga vel ligulato-oblonga, basi cuneata, carnosula, rigida, erecto-patentia. Flores graciliter pedicellati, folia vix superantes, in sectione mediocres, virescenti-albidi. Sepala e basi lanceolata elongato-acuminata, glabra, lateralia basi antice dilatata mentum breve obtusum formantia. Petali e basi lineari-lanceolata oblique elongato-acuminata, palis paululo breviora, glabra. Labellum e basi cuneato-oblonga medio trilobatum, glabrum, carnis 2 dimidio inferiore leviter arcuatis, deinde subparallelis, leviter flexuosis cum intermedia interjecta e basi usque infra apicem ornatum, lobis lateralibus brevibus rotundatis subcrenatis, intermedio elliptico-lanceolato, acuto, margine undulato. Columna brevis sectionis. Ovarium graciliter pedicellatum, clavatum, glabrum.

A creeping epiphyte to 15 cm long and rarely more than 2.5 cm high. Pseudobulbs 1 - 1.2 cm long, 5 - 8 mm broad below the middle.

Leaves 1.3 - 2.3 cm long, 0.6 - 1 cm broad at about the middle.

Flowers greenish white, glabrous. Sepals 1.3 cm long; the lateral ones forming a blunt chin about 3.5 mm long. Petals 1.2 cm long, lip about 1.1. cm long and 2.5 mm broad between the shortened lateral lobes when spread out; front lobe 5 mm long, 1.75 mm broad at about the middle. Ovary together with stalk 8 - 9 mm long.

North-east New Guinea : In primary forest near Malu, on the Sepik [River], alt. c. 40 - 60m - C. Ledermann no. 8087, flowering in July 1912.

The species belongs in the section Goniobulbon and is best placed next to D. Jadunae Schltr. It is distinguished from the latter by shorter pseudobulbs, broader leaves, blunter and larger lateral lobes and a longer front lobe.

Ledermann states that the flower colour is greenish white but one must assume that the labellum is in addition marked with red and yellow, as is found in related species.

§. Diplocaulobium

In my former enumeration of the Papuan species of this section I was only able to quote 29. In the meanwhile the following have been described : D. compressicolle J.J. Sm., D. platyclinoides J.J. Sm., D. vanillodorum J.J. Sm., D. Franssenianum J.J. Sm., D. scotiiforme J.J. Sm., D. Janowskii J.J. Sm., D. Sitalanae J.J. Sm., D. pililobum J.J. Sm., D. Ajoibii J.J. Sm., D. cerviculiferum J.J. Sm., also D. megalanthum Schltr. (Diplocaulobium grandiflorum Ridl.), D. gracilifolium Schltr. (Diplocaulobium linearifolium Ridl.) and D. humilicolle Schltr. (Diplocaulobium humile Ridl.)

As two more are described below, this section in Papuasia alone contains already 44 species. It appears here that the centre of development lies in the western part of Papuasia (and on the Moluccas).

D. ischnophyton Schltr., sp. nov.

Epiphyticum, gracillimum, erectum, caespiticium. Rhizoma valde abbreviatum. Pseudobulbi e basi obclavata angustissimi, gracillime cylindracei, unifoliati. Folia erecta, anguste linearia, obtusiuscula, apice ipso breviter bidentata, glabra. Flores in sectione intermediocres, erecti, rosei, labello albido, gracillime pedicellati, quam folia breviores. Sepala e basi lanceolata elongato-attenuata, glabra, lateralia basi margine anteriore conspicue dilatata cum pede columnae mentum semioblongo-triangulum obtusum formantia. Petala oblique linearia, elongato-attenuata, quam sepala paulo breviora. Labellum e basi cuneata infra medium panduri, formi-trilobatum, lobo antico lanceolato elliptico acuto, medio pulvillo lanceolato farinoso-tomentello ornato, marginibus subundulato, carinis 2 e basi subparallelis, infra medium approximatis, e basi labelli usque in tertiam partem basilarem lobi antice decurrentibus, ibique truncato-obtusis ornatum. Columna brevis sectionis. Ovarium graciliter clavatum, gracillime pedicellatum, glabrum.

A very slender epiphyte forming dense tufts 16 - 20 cm high.

Pseudobulbs extremely slender, 5 - 14 cm long, thickened above the base, to 4 mm in diameter, upwards rarely more than 1 mm thick. Leaves 9 - 13 cm long, 1.5 - 2.5 mm broad. Flowers of medium size for the section, pale rose-coloured with white lip. Sepals and petals about 2.2 cm long, the lateral ones forming a chin about 5 mm long. Lip 1.8 cm long, 3.5 mm broad below the middle and at the middle about 1.5 mm broad, front lobes 7 mm long, 2 mm broad in the middle. Ovary together with stalk 2.7 cm long.

North-east New Guinea : In mountain forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9377, flowering in Oct. 1915 [Ed. - 1912.].

The species is related to D. arachnoideum Schltr. and has a similar habit, but a somewhat differently shaped labellum.

D. opilionites Schltr., sp. nov.

Epiphyticum, erectum, gracillimum, caespiticium. Rhizoma breve. Pseudobulbi e basi obclavata elongato-attenuata, gracillimi, rigidi, unifoliati, lucidi. Folia stricta, erecta, anguste linearia, oblique subacuta, rigidula, marginibus (exsiccatione [?]) leviter incurvatis. Flores in sectione intermediocres, fide collectoris lacte sanguinei, labello albo-brunneo-suffuso. Sepala e basi lanceolata, elongato-attenuata, lateralia basi margine anteriore bene dilatata cum pede columnae mentum semioblongum obtusum formantia, glabra. Petala e basi oblique linearia elongato-attenuata, sepalis paululo breviora. Labellum subtrilobato-panduriforme, circuitu oblongum, dimidio anteriore marginie undulatum, apice ob-

tusiusculum, pulvillo anguste elliptico farinoso-tomentello in medio dimidii anterioris, carinis 2 leviter curvatis antice paulo ampliatis apice abrupte truncatis e basi usque supra medium decurrentibus ornatum. Columna brevis generis. Ovarium gracillime pedicellatum, subclavatum, glabrum.

A stiff erect epiphyte forming tufts to 35 cm high. Pseudobulbs thickened above the base, to 4 mm in diameter, upwards rarely more than 1.5 mm thick, 13 - 18 cm long. Leaves 11 - 18 cm long, 2 - 3 mm broad. Flowers, according to the collector carmine, labellum with a white brown tinge. Sepals and petals about 3.5 cm long; the lateral ones forming a blunt chin 5 mm long. Lip 1.2 cm long, 4 mm broad above and below the middle while it is constricted at the middle and 2.5 mm broad. Ovary together with stalk about 3 cm long.

North-east New Guinea : In the range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12587, flowering in Aug. 1913.

The species is close to D. ischnophyllum Schltr. but is more robust, has larger and longer pseudobulbs with stiffer and thicker leaves, larger flowers and a broader and much blunter labellum. The sepals and petals are long and tapering, spreading like the legs of the spider genus Opilia.

§. Latouria P. 99.

Here again we have to deal with a chiefly Papuan group, but it decreases rather quickly in species-number towards the east and west.

In 1912, 28 species were enumerated from Papuasia. Exclusive of that described below, there must be added the following ten which have been recorded lately from Dutch New Guinea :

D. acutisepalum J.J. Sm., D. guttatum J.J. Sm., D. rhomboglossum J.J. Sm., D. terrestre J.J. Sm., D. sarcopodiooides J.J. Sm., D. dendrocolloides J.J. Sm., D. informe J.J. Sm., D. Wollastoni Ridl. D. amphigenium Ridl. and D. curvimentum J.J. Sm., so that the number of species now already stands at 39. It is not quite certain

whether the first four belong here.

Dendrocoryne, a more south-eastern section, had better be kept separate, chiefly because the structure of the lip is different from that of Latouria.

D. eustachyum Schltr., sp. nov.

Epiphyticum, erectum, robustum.
Rhizoma valde abbreviatum. Pseudobulbi clavato-fusiformes, paulo compressi, longitudinaliter plurisulcati, apice 2—3-foliati, lucidi. Folia erecto-patentia, elliptica, oblique obtusiuscula, coriacea, subrigida. Racemus folia multe superans, pro sectione subdense multiflorus, erectus, strictus; pedunculo racemo ipso fere aequilongo; bracteis ellipticis vel elliptico-lanceolatis, acutis, ovarium pedicellatum aequantibus vel brevioribus. Flores satis magni, virescenti, labello brunneoli lacinopicti, illis *D. macrophylli* Rich., similes, sed paulo majores. Sepala ovata, acuminata, extus sparsim appendicibus setaceo-subulatis reversis obtecta, alticarinata, lateralia basi antice dilatata cum pede columnae mentum obtuse triangulum formantia. Petala oblongo-elliptica, breviter acuminata, subfalcato-obliqua, basin versus paulo angustata, margine undulata. Labellum e basi breviter unguiculata circuitu quadratum, curvatum, lobis lateralibus amplis oblique quadratis, obtusissimus, intermedio antico reniformi vel transverse oblongo, apiculato, callo basali alto, libero, circuitu anguste oblongo, obtuse tricarinato, antice bilobulato. Columna perbrevis, lobis clinandrii lateralibus falcatis. Ovarium clavatum cum pedicello densissime appendicibus reversis setiformibus obsessum.

A magnificent 50 — 75 cm high epiphyte. Pseudobulbs 20 — 35 cm high, across the middle 2 — 2.5 cm wide. Leaves 18 — 25 cm long, about the middle 5 — 8 cm wide. Inflorescences up to 40 cm long. flowers fairly large, greenish white, with brown-violet marked lip. sepals and petals 1.7 cm long, the lateral sepals forming a chin 5 mm long. Lip diffuse, 1.7 cm long, between the edge and the lateral lobe 2.4 cm wide, front lobe 7.0 mm long, 1.2 cm wide. Ovary with stalk about 2.2 cm long.

North New Guinea : On river banks near Pamoi — Moszkowski no. 103, flowering in June 1910; near Taua, on the Mambarane [River], in beach forest — Moszkowski no. 187, flowering in July 1910.

Is related to D. macrophyllum A. Rich.

§. Pedilonum

In the treatment of the genus Dendrobium for the 'Pflanzenreich' this section contains an almost inextricable mixture of heterogeneous species of which, in reality, not one half should be included, and is

therefore more in need of a new treatise than ever before. Above all, it is desirable that its boundaries should be more definitely established, for even in its ordinary conception, it still contains a great many ill-fitting species, even after Calyptrochilus, Amblyanthus and Platycaulon are excluded.

In my former enumeration, I recorded 18 species for Papuasia, which I think should be included here.

Four species have also been published since then, viz :

D. crenatifolium J.J. Sm., D. concarissimum J.J. Sm., D. angustiflorum J.J. Sm., and D. rhodobotrys Ridl.

Including that described below, this section now shows 23 species for Papuasia.

D. leucochysum Schltr., sp. nov.

Epiphyticum, humile, pluricaule.
Rhizoma valde abbreviatum. *Pseudobulbi* vel caules erecto-patentes vel patentes, carnosuli, cylindracei, laxe foliati, vaginis foliorum arcte amplectentibus omnino obtecti, basin versus paululo attenuati. Folia erecto-patentia, linearia vel lineari-ligulata, inaequaliter et obtuse bilobulata, glabra. Racemi subnudantes, abbreviati, dense 3--5-flori, bracteis ovatis acutis, extus carinatis, coloratis, quam flores paulo brevioribus vel subaequilongis. Flores in sectione inter medios, glaberrimi, albidi, labello aureo. Sepala oblongo-elliptica, apiculata, extus carinata, lateralia basi margine anteriore bene ampliata cum pede columnae mentum conico-oblongoideum, obtusum rectum formantia. Petala oblique linearia, subacuta, basin versus paululo angustata. Labellum subpandurato-ligulatum, quarta parte basilari marginibus columnae pedi adnatum, obtusiusculum, margine apicem versus minutissime ciliatum, medio fere in parte contracta lamella retrorsa breviter trilobulata humili ornatum. Columna brevis, pede excavato. Ovarium breviter pedicellatum, glabrum, subclavatum.

A tufted epiphyte 18 - 35 cm high. Stems 4 - 6 mm in diameter and to 30 cm long. Leaves 5 - 7 cm long, 4.5 - 8 mm broad. Inflor-escences almost sessile with flowers rarely more than 2 cm long.

Flowers white or greenish white and with yellow platform of the lip.

Bracts are similarly coloured to the sepals. Sepals 1.2 cm long;

the lateral ones forming a chin 7 mm long. Petals 1.1 cm long.

Labellum 1.3 cm long, 3 mm broad in the first half. Column 3.5 mm high. Ovary together with stalk about 8 mm long.

North-east New Guinea : In sago swamp forest on the April River (Sepik District), alt. c. 20m - C. Ledermann no. 8720, flowering in Sep. 1912; in primary forest near the 'Pyramid' (Sepik District), alt. c. 400m - C. Ledermann no. 7629, flowering in June 1912.

The species is related to D. bracteosum Rchb.f. from which it is already distinguished by the different flower colour.

S. Calyptrochilum

This very natural group is distinguished by an astonishing wealth in forms in Papuasia, where doubtless lies its centre of development. In 1912, I enumerated 33 species in this section from the Territory. Since then others have been published in quick succession. No less than 19 have been added, viz : D. quadriquetrum J.J. Sm., D. purpureifolium J.J. Sm., D. infractum J.J. Sm., D. cylindricum J.J. Sm., D. riparium J.J. Sm., D. jabiense J.J. Sm., D. fruticicola J.J. Sm., D. angicense J.J. Sm., D. keytsianum J.J. Sm., D. pubiflorum J.J. Sm., C. cuculliferum J.J. Sm., D. glaucoviride J.J. Sm., D. strictum Ridl., D. brachycentrum Ridl., D. deflexum Ridl., D. anhelium Ridl., D. scabrifolium Ridl., D. papuanum J.J. Sm. and D. parvifolium J.J. Sm.

Therefore, inclusive of the eight new species described below, there have been 60 species described already from the Territory.

D. brachycalyptra Schltr., sp. nov.

Epiphyticum, patulum, pluricaule. Rhizoma valde abbreviatum. Caules gracilius cylindracei, carnosuli, mox longitudinaliter sulcati, bene foliati, vaginis foliorum omnino oblecti. Folia erecto-patentia, lanceolata vel lanceolato-ligulata, setaceo-acuminata, glabra. Inflorescentiae breves sectionis, subsessiles; bracteis ovatis, breviter acuminatis, ovario pedicellato pluries brevioribus. Flores in sectione vix inter mediocres, laete aurantiaci, apicibus pallidioribus. Sepala elliptica, obtusiuscula, laterali basi margine anteriore valde ampliata cum pede columnae mentum leviter curvatum, perlongum, conicum, obtusiusculum formantia. Petala oblique oblongo-ligulata, ohtusa, quam sepalis paulo breviora. Labellum circuitu anguste ligulato-spathulatum, usque ad medium fere marginibus columnae pedi adnatum, antice cucullato-concavum, apice calyprato-infractum, basin columnae ipsae longitudine paulo tantum superans, margine apice acute dentatum. Columna brevis, clinandrii lobis lateralibus oblique rhombeo-

triangulis, obtusiusculis, margine irregulariter subdenticulatis, lobum posteriorem triangulo-subulatum paulo superantibus. Ovarium graciliter pedicellatum subclavatum, gracile, glabrum.

An obliquely hanging, tufted epiphyte 20 - 50 cm long. Stems fairly slender 2 - 3.5 mm in diameter. Leaves 2.5 - 5 cm long, 3 - 6 mm broad below the middle. Flowers orangey yellow with lighter tips, quite smooth. Sepals 6 mm long; the lateral ones forming a slightly bent chin about 2.2 cm long. [Ed. - mm?] Petals 5 mm long. Labellum about 1.9 mm long. Column 3 mm high, with long narrow foot. Ovary together with stalk almost 2.5 cm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak', (Sepik District), alt. c. 1400m - C. Ledermann no. 11268, no. 12485a, flowering in Aug. 1913.

Among the species with a shortened hood of the lip this species is best compared with D. verruculosum Schltr. It has, however, larger flowers, narrower sepals and especially the labellum is particularly narrower in front.

D. eumelinum Schltr., sp. nov.

Epiphyticum, patuna, parum ramosum. Rhizoma valde abbreviatum. Caules gracilius cylindracei, parum ramosis subflexuosi, bene foliati, vaginis foliorum omnino obtecti. Folia erecto-patentia, lanceolato-ligulata, valde acuta, basi angustata. Inflorescentiae breves sectionis; bracteis ovalibus, breviter acuminatis vel apicalatis, ovario pedicellato plures brevioribus. Flores in sectione inter minores laetissime aurantiaci, labello paulo palliodiore. Sepala ovalia obtusa, lateralia antice basi valde ampliata cum pede columnae mentum oblongoideum obtusum, leviter curvatum formantia. Petala oblique elliptica, obtusa. Labellum circuitu anguste pandulato-ligulatum, dimidio anteriore oblongo-dilatata, cucullatum, usque infra medium marginibus columnae pedi adnatum, apice calyptrato infracto marginibus limbriato-serratum, calyptra columnam paulo superans. Columna brevis, clinandrii lobis lateralibus oblique quadratis, dorsale subulato paulo brevioribus, pede angusto, intus obtuse carinato. Ovarium pedicellatum graciliter subclavatum glabrum.

A tufted epiphyte 30 - 50 cm long and obliquely hanging down.

Leaves 3.5 - 8 cm long, 6 - 815 mm broad below the middle. Flowers for this section quite small, bright orange with orangey yellow lip. Sepals 6 mm long; the lateral ones forming an almost straight blunt chin 8 mm long. Petals 5.5 mm long. Lip about 1 cm long. Column scarcely more than 3 mm high. Ovary together with the stalk 1.3 cm

long.

North-east New Guinea : In mountain forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11804, no. 11625, flowering in May 1913; in range forest on Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 9931, flowering in Nov. 1912.

Similar to D. flammula Schltr. but with smaller flowers, with blunter chin and broader labellum in front.

D. mystroglossum Schltr., sp. nov.

Epiphyticum, patulum, pluricaule.

Rhizoma valde abbreviatum. Caules gracilius cylindracei, carnosuli, mox plurisulcati, vaginis foliorum arce amplectentibus omnino obtecti. Folia erecto-patentia, lanceolata vel lanceolato-ligulata, setaceo-apiculata, basi angustata. Inflorescentiae sectionis abbreviatae; bracteis ovalibus, breviter acuminatis vel apiculatis, ovario pedicellato multoties brevioribus. Flores in sectione inter minores, laete rubro-aurantiaci, glabri. Sepala oblongo-elliptica, obtusa, lateralia basi antice ampliata cum pede columnae mentum pro sectione breve, obtusum formantia. Petala oblique oblongo-ligulata, subspathulata, dimidio apicali margine irregulariter subdenticulata. Labellum obovato-spathulatum, antice cochleare, rotundatum tertia parte apicali margine incurvo serrato-dentatum, columnam plus duplo superans. Columna brevis, lobis lateralibus clinandrii obliquae semioblongis obtusis, postice denticulatis, dorsalem subulatum superantibus. Ovarium gracillime pedicellatum, subclavatum, glabrum.

A tufted epiphyte 30 - 50 cm long. Leaves 4.5 - 8 cm long, 1 - 1.7 cm broad below the middle. Flowers small for this section, orangey red to brownish red, quite smooth. Sepals 1 cm long; the lateral ones forming a blunt chin 6 mm long. Petals almost as long as the sepals. Lip 1.3 cm long, 5 mm broad in the first third. Column 4 mm high. Ovary together with the stalk 1.6 cm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1000m - C. Ledermann no. 12352, flowering in July 1913; in range forest on the Hunstein Range (Sepik District), alt. c. 1000m - C. Ledermann no. 8402, flowering in Aug. 1912; in range forest on Mount Regen (Sepik District), alt. c. 1500m - C. Ledermann no. 12235, flowering in June 1913.

This species is distinguished from the related D. Oreogenum Schltr. by smaller flowers and broader petals which are serrulate

on the upper margin.

D. rhabdoglossum Schltr., sp. nov.

Epiphyticum, patulum, parum ramosum. Rhizoma valde abbreviatum. Caules carnosuli, graciliores, bene foliati, mox plurisulcati, vaginis foliorum omnino obtecti. Folia erecto-patentia, lanceolata acuta, apice ipso oblique setaceo-acuminata, vaginas multo superantia. Inflorescentiae abbreviatae sectionis; bracteis ovatis, acuminatis ovario pedicellato pluries brevioribus. Flores in sectione mediocres, glabri, aurantiaci vel aurantiaco-rosei, apicibus pallidioribus, labello flavo, rubro-striato. Sepalum intermedium oblongum, obtusiusculum, lateralia oblique triangulo-ovata, obtusiuscula, margine anteriore basi ampliata cum pede columnae mentum conicum obtusum magnum formantia. Petala oblique elliptico-oblonga, obtusa, basi cuneata. Labellum concavum, antice cucullatum, columnam paulo superans, crenitu e basi attenuata obovato-rhombeum, apice cucullato-infracto truncato serrulato-denticulatum. Columna brevis, clinandrii lobis lateralibus semiquadrato-triangularibus, irregulariter denticulatis, pede perlongo, angusto. Ovarium pedicellatum, subclavatum, glabrum.

An obliquely hanging tufted epiphyte to 30 cm long. Leaves 4 - 6 cm long, 7 - 9 mm broad below the middle. Flowers are of medium size for the section, orange-red or dark rose-coloured with lighter tips and a yellow lip with blood-red or orange-red stripes. Sepals 1 cm long; the lateral ones forming a chin 1.2 cm long. Petals 8.5 cm long. Labellum 1.5 cm long, 8 mm broad when spread out above the middle. Column 4 mm high. Ovary together with stalk about 2.3 cm long.

North-east New Guinea : In range forest at the summit of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11459, flowering in Mar. 1913; in range forest on Mount Regan (Sepik District), alt. c. 1500m - C. Ledermann no. 12231, flowering in June 1913.

This species is best placed next to D. phlox Schltr., from which it is distinguished by the individual flower parts and the narrower leaves.

D. roseoflavidum Schltr., sp. nov.

Epiphyticum, erectum vel patulum, gracile. Caules simplices, graciles, bene foliati, vaginis foliorum arcte amplectentibus omnino obtecti. Folia erecto-patentia, anguste linearia, acuta, vaginas multo superantia. Inflorescentiae sectionis abbreviatae, subsessiles, pauciflorae; bracteis ovatis, acuminatis, ovario graciliter pedicellato multo

brevioribus. Flores in sectione inter medios, cerasino-violacei, apicibus flavidis. Sepala ovata, obtusa, lateralia antice basin versus valde ampliata, cum pede columnae mentum longum cylindraceo-conicum obtusum formantia, glabra. Petala oblique oblongo-elliptica, obtusa, margine minute ciliolata, sepalis paulo breviora. Labellum usque infra medium columnae pedis marginibus adnatum, e basi ligulata anguste obovato-oblongum, concavum, apice calyprato-cucullato margine serrato-dentatum, columna brevius. Columna brevis, clinandrii lobis lateralibus oblique rhombeis, postice subdentatis, dorsali linearisubulato breviore. Ovarium graciliter pedicellatum, glabrum.

An erect or obliquely hanging epiphyte with bunched (tufted) slender stems, 35 – 50 cm long. Leaves 9 – 12 cm long, 3 – 5 mm broad at about the middle. Flowers of medium size for this section, cherry violet with yellow tips. Sepals 6 mm long; the lateral ones forming a chin 1.5 cm [Ed. – mm?] long. Petals 5 mm long. Labellum 1.6 mm long, broadened towards the apex and almost 7 mm broad. Column 4.5 mm high, with narrow, long foot. Ovary together with the stalk 1.8 cm long.

North-east New Guinea : Near Bivouac 48, on the Sepik [River] – L. Schultze no. 246, no. 297, flowering in Nov. 1910.

In vegetative build the species resembles most closely D. roseum Schltr. but is more slender and has smaller, differently coloured flowers with narrower ciliate petals and a much shorter labellum.

D. Stolleanum Schltr., sp. nov.

Epiphyticum, patulum, ramosum, pluricaule. Caules gracie, carnosuli, plusminus ramosi, bene foliati, vaginis foliorum arte amplectentibus omnino obtecti. Folia erecto-patentia, lanceolato-ligulata, apice sublente acute et valde inaequaliter bidentata. Inflorescentiae sectionis abbreviatae subsessiles; bracteis ovalibus, breviter acuminatis, ovario graciliter pedicellato multo brevioribus. Flores in sectione inter medios, glaberrimi, sanguinei, apicibus roseis. Sepala elliptica, obtusiuscula, lateralia antice basin versus valde ampliata, cum pede columnae mentum oblique conicum, obtusiusculum, longum formantia. Petala oblique elliptica, obtusiuscula, sepalis subaequilonga. Labellum tertia parte basiliari columnae pedis marginibus adnatum, obovato-oblongum, apice calyprato-infracto marginibus acute serratum, columnam bene superans. Columna brevis, clinandrii lobis lateralibus oblique semioblongis, obtusis, postice subdenticulatis, dorsali subulato-triangulo breviore. Ovarium graciliter pedicellatum, gracile.

An epiphyte 40 – 50 cm long with tufted (bunched) stems more or less branched. Leaves 2 – 6 cm long 3.5 – 8 mm broad below the middle. Flowers of medium size in the section, blood red or

rose coloured with lighter tips, smooth. Sepals 1.2 cm long; the lateral ones forming a chin 1.7 cm [mm?] long. Petals almost as long as the sepals. Labellum 2.3 cm long, 1.2 cm broad above the middle. Column 5 mm high with long and narrow foot. Ovary together with the stalk 2.8 cm long.

North-east New Guinea : In range forest near Camp Felsspitze (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12360, no. 12762, flowering in July - Aug. 1913.

This species is distinguished from all other species in the section by the conspicuously broad lip which is only the apex, curved inwards. In the form of the flowers, it reminds one somewhat of D. lawesii F.v.M.

D. trachythece Schltr., sp. nov.

Epiphyticum, patulum, parum ramosum. Rhizoma valde abbreviatum. Caules cylindracei, parum ramosi, bene foliati, vaginis foliorum arcte amplectentibus, dense granuloso-verruculosis omnino obtecti. Folia erecto-patentia lanceolato-ligulata, obtusiuscula, cum apiculo brevi. Inflorescentiae sectionis abbreviatae, subsessiles; bracteis ellipticis, acuminatis, ovario graciliter pedicellato plures brevioribus. Flores in sectione inter minores, glabri. Sepalo intermedio elliptico, obtuso, lateralia valde obliqua, perlate triangula, obtusa, antice basin versus valde ampliata, cum pede columnae mentum conicum obtusiusculum formantia. Petala oblique obovato-elliptica, obtusa, basin versus paulo angustata, sepaloo intermedio subaequilonga. Labellum dimidio inferiore marginibus columnae pedis adnatum, e basi linearis-ligulata anguste obovatum, antice calyptrato-cucullatum apice infracto lacerato-dentatum, columnae apicem attingens, glabrum. Columna brevis, lobis lateralibus clinandrii oblique quadratis denticulatis, dorsali subulato, incurvula, paulo longiore. Ovarium graciliter pedicellatum, glabrum.

Evidently, an obliquely hanging, tufted epiphyte 30 - 50 cm long. Leaves 3 - 5 cm long, 8 - 13 mm broad below the middle. Flowers somewhat small for the section, glabrous. Sepals 8 mm long; the lateral ones forming a chin 1.2 cm long. Petals almost as long as the sepals. Labellum 1.6 cm long, 6 mm broad, upspread in front, 3 mm broad in the lower part. Column 3 mm high with narrow foot. Ovary together with the stalk about 2.3 cm long, glabrous.

North-east New Guinea : Near Bivouac 48, on the Sepik
[River] - L. Schultze, no. 301 flowering in Nov. 1910.

As the closest relation of this species I would name D. flammula Schltr. It is distinguished from that species by the fine granular warts densely covering the leaf sheaths.

D. xanthogenium Schltr., sp. nov.

Epiphyticum, erectum vel patulum, pluricaule. Rhizoma valde abbreviatum. Caules carnosuli, graciles, mox longitudinaliter sulcati, perdense foliati, vaginis foliorum arete amplectentibus omnino obtecti. Folia erecto-patentia oblongo-lanceolata, oblique obtusiuscula, basi subrotundata. Inflorescentiae more sectionis abbreviatae, subsessiles; bracteis ovalibus, breviter acuminatis vel apiculatis, ovario pedicellato multo brevioribus. Flores in sectione inter maiores, rosaceo-lilacinis, mento aurantiaco, glabri. Sepala elliptica, subacuta, lateralia basi margine anteriore valde ampliata cum pede columnae mentum cylindraceum, calcariforme, obtusum, leviter curvatum formantia. Petala oblique elliptico-subspathulata, obtusa, sepalo intermedia fere aequilonga. Labellum dimidio inferiore columnae pedis marginibus adnatum e basi ligulata circuitu oblongum concavum, antice apice infracto cucullato-calypratatum, apice ipso laciniato-dentatum, columnam paulo excedens. Columna brevis, clinandrii lobis lateralibus oblique triangulis obtusis, dorso denticulatis, dorsali subulato vix longiore. Ovarium graciliter pedicellatum, glabrum.

An epiphyte 40 - 60 cm long with unbranched stems which are densely covered with leaves. Leaves 2.8 - 4.5 cm long, 0.6 - 1.2 cm broad at about the middle. Flowers fairly large, rose coloured lilac with orange-red chin [spur]. Sepals 1.4 cm long, the lateral ones forming a spur-like chin 2.3 cm long. Petals scarcely shorter than sepals. Lip 2.6 cm long, 7 mm broad in front. Column 5.5 mm high, with long and narrow foot. Ovary together with stalk about 3 cm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12945, no. 12375, flowering in July - Aug. 1913.

The species under consideration is related most closely to D. apertum Schltr. and has, similar to that one, spreading lateral sepals but is well distinguished by more robust growth, denser leaf cover and larger flowers which are differently coloured.

§. Oxyglossum

This may also be regarded as a typical Papuasian group for, up to the present, only three species have been recorded further west from the Celebes and Moluccas. According to my computation in 1912, the section contained 38 species in Papua. Since then eight new species have been recorded from Dutch New Guinea, viz.

D. flavispiculum J.J. Sm., D. Discrepans J.J. Sm., D. caespiticum Ridl., D. lateriflorum Ridl., D. chlorinum Ridl., D. chrysornis Ridl., D. montigenum Ridl. and D. caccinellum Ridl. As I have described five novelties here, the number of species now stands at 49.

I am of opinion that this group is a very natural one as I have defined it, that is to say with the exclusion of Cuthbertsonia. J.J. Smith however, considers that the latter should be united with it. Ridley has lately applied the name Cuthbertsonia to Oxyglossum, but this is not admissible, because I established the section Oxyglossum long before Cuthbertsonia.

Anyone who has had the opportunity of studying species of Oxyglossum and Cuthbertsonia from living material will admit that nothing is to be gained by the union of the two sections. Oxyglossum with its invariably pointed perianth-segments and sharply pointed labellum forms a very natural species-group, in contrast to the species of Cuthbertsonia with their blunt perianth-segments, very blunt concave labellum and remarkable hairiness of the ovary. I prefer therefore to keep both sections well separated in future. Besides the species already placed there, two others, previously appear to belong to Cuthbertsonia, viz. D. euphues Ridl. and D. laetum Schltr. (D. fulgidum Ridl. non Schltr.)

D. brachyphyta Schltr., sp. nov.

Epiphyticum, humile, parvulum, caespiticium. Rhizoma valde abbreviatum. Pseudobulbi lagenoiformi-fusiformes, apice 2-3-foliati, erecti. Folia erecto-patentia, linearia, subacuta vel apiculata, basi angustata, glabra. Inflorescentiae abbreviatae, biflorae;

pedunculo perbrevi; bracteis ellipticis, acuminatis, ovario duplo brevioribus. Flores in sectione mediores, erecti, glaberrimi, virescenti-albi, labello aurantiaco. Sepala ovato-oblonga, acuminata, lateralia obliqua extus carinata, basi margine anteriore valde producta cum pede columnae mentum perlongum subrectum, apice obtusiusculum formantia. Petala anguste et oblique elliptica acuta, glabra. Labellum e basi linearis-unguiculata linguiforme, quarta parte apicali sublobato angustatum acutum. Columna brevi, clinandrii lobis lateralibus semiquadratis trilobulatis, dorsali linearis-subulata paulo longiore, pede angusto elongato. Anthera late rhomboeocucullata, antice minute papillosa. Ovarium tripterum, breviter pedicelatum, ala dorsali in acumen breve liberum producta.

A low epiphyte growing in small tufts, rarely more than 5.5 cm high. Pseudobulbs 1 - 1.5 cm high, 2.5 - 3.5 mm in diameter in the lower third. Leaves 2- 3.5 cm long, 3 - 6 mm broad at about the middle. Flowers greenish white with orangey yellow platform of the lip, scarcely over topping the leaves. Sepals 8 mm long; the lateral ones forming a chin 1.2 cm long and appressed to the ovary. Petals 7 mm long; lip almost 2 cm long; upper third of platform 2.5 - 2.75 mm broad. Column 3.5 mm high. Ovary together with the short stalk 1.3 cm long.

North-east New Guinea : In dense tall forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 8875, flowering in Sept. 1912.

The species stands most closely to D. sulphureum Schltr. but has, however, a more robust growth and a broader labellum which is conspicuously tapering to the front. The flowers are, in addition, somewhat bigger and have a longer mentum.

D. cyperifolium Schltr., sp. nov.

Epiphyticum, humile. Rhizoma valde abbreviatum. Pseudobulbi fusiformi-lageniformes, apice vulgo 3-foliati, breves. Folia erecta, anguste linearia, acuta, rigescens, apice subpungentia. Inflorescentiae abbreviatae, geminiflorae; pedunculo perbrevi; bracteis ovatis, acuminatis, ovario pluries brevioribus. Flores in sectione majusculi, glabri, erecti. Sepala elliptica valde acuminata, lateralia extus carinata valde obliqua, basi margine anteriore valde producta cum pede columnae mentum longum dimidio apicali attenuatum, ovario appressum formantia. Petala, oblique lanceolato-ligulata, acuminata, dimidio inferiore angustata, quam sepala paulo breviora. Labellum anguste ligulatum, dimidio inferiore marginibus columnae adnatum, lamina libera lanceolato-ligulata, acutissima,

basin versus marginibus incurvula. Columna brevis, lobis lateralibus clinandrii oblique triangulis, obtusis, dorsali linearis-subulato, longiore, leviter incurvo. Ovarium pedicellatum, antice bicostato, dorso 4-costatum et alis 3 leviter undulatis donatum (i. e. sectione acute 5-angulatum costis 4 interjectis) glabrum.

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A small epiphyte forming dense tufts. Pseudobulbs 1.5 - 3 cm high, to 4 mm in diameter in the lower part. Leaves 10 - 18 cm long, 0.75 - 1.5 mm broad. Flowers for the section somewhat large. Sepals 1.8 cm long; the lateral ones forming a chin 2 - 2.4 cm long and appressed to the ovary. Petals 1.6 cm long. Labellum 3.2 cm long, almost 3 mm broad in the upper fifth. Column 3.5 mm high, with long and narrow foot. Ovary together with stalk about 3.3 cm long.

North-east New Guinea : In range forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1350m - C. Ledermann no. 10935a, no. 8487a, flowering in Feb. 1913 and Aug. 1912.

The species is well characterized by the long, narrow stiff leaves and the large flowers with long chin.

D. gemma Schltr., sp. nov.

Epiphyticum, pusillum, caespitosum. Rhizoma valde abbreviatum. Pseudobulbi lageniformi-fusiformes, apice 2—3-foliati. Inflorescentiae abbreviatae, geminiiflorae; pedunculo perbrevi; bracteis ovalibus, longius apiculatis, ovario pedicellato pluries brevioribus. Flores in sectione inter minores, virescenti-albis. Labello antice miniato. Sepala oblonga, apiculata, lateralia breviter acuminata, basi margine anteriore valde producta, cum pede columnae mentum longum, ovario appressum, obtusum formantia. Petala oblique oblanceolato-ligulata, subspathulata, breviter acuminata, sepalis paulo breviora. Labellum lineare, usque ad medium marginibus columnae pedi adnatum, apice obscure trilobatum cum angulis obtusis, apice ipso triangulo producto acuto. Columna brevis, clinandrii lobis lateralibus semi quadratis, apice irregulariter paucidenticulatis, dorsali longiore subulato, incurvula. Ovarium gracilis pedicellatum triquetrum, glabrum.

A minute epiphyte 2.5 - 3.5 cm high, forming small mats. Pseudobulbs 4 - 6 mm high, more than 2 mm in diameter below the middle. Leaves 1.2 - 2.8 cm long, about 1.5 mm broad. Flowers erect, usually shorter than the leaves, greenish white with brilliant brick red platform of the lip, small. Sepals 5 mm long; the lateral ones forming a blunt chin almost 8 mm long and appressed to the ovary. Petals 5 mm long. Lip 1.1 cm long, 1.5 mm broad. Column c. 2 mm

high, with linear, long foot. Ovary together with slender stalk about 1.2 cm long.

North-east New Guinea : In range forest on the peaks of the Schrader Ranges (Sepik District), alt. c. 2070m - C. Ledermann no. 1715 [Ed. - possibly 11715], flowering in May 1913.

Should be placed next to D. pumilio Schltr. but specifically well distinguished by the broader leaves and the blunt chin. Also, the colour of the lip is different.

D. microblepharum Schltr., sp. nov.

Epiphyticum, humile. Rhizoma valde abbreviatum. Pseudobulbi subsusiformi-lageniformes, apice 2-3-foliati, basi breviter stipitati. Folia erecto-patentia, linearia, acuta vel sub-acuta, basi angustata, glabra. Racemi abbreviati, geminiflori; pedunculo perbrevi; bracteis ovali-cucullatis, breviter acuminatis, ovario pedicellato multoties brevioribus. Flores in sectione inter majores, erexit vel erecto-patentes (in sicco, in vivo verosimiliter semper erexit), laete aurantiaci. Sepalum intermedium ellipticum obtusum, lateralia valde obliqua triangula oblusa cum apicalo, basi margine anteriore valde ampliata cum pede columnae mentum longum, obtusiusculum, ovario appressum formantia. Petala oblique obovato-oblonga, subapiculata, margine minutissime papilloso-ciliolata, quam sepala paulo breviora. Labellum usque infra medium columnae marginibus adnatum anguste linguiforme, parte libera oblanceolata antice breviter acuminata, quarta parte apicali minutissime papilloso-ciliolata, caeterum glabrum. Columna brevis, clinandrii lobis lateralibus oblique triangulis, obtusis, margine irregularibus, dorsali linearis-subulato paulo longiore, leviter incurvulo. Ovarium triquetrum apicem versus tripterum, pedicellatum, glabrum.

An epiphyte forming short tufts 8 - 10 cm high. Pseudobulbs 3 - 4.5 cm long, 5 mm in diameter in the lower part. Leaves 4 - 7 cm long, 4 - 6.5 mm broad at about the middle. Flowers dark orangey yellow with reddish labellum. Sepals 0.9 - 1 cm long; the lateral ones forming a chin about 1.6 cm long. Petals about 8 - 9 mm long. Lip 2.5 mm long, 5.25 mm broad in the front part. Column 5 mm high. Ovary together with the stalk about 2 cm long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11676, flowering in May 1913.

This species is well characterised by the magnificent orangey yellow flowers with a reddish lip, the short papillose-ciliate petals and apex of the lip. It would be closest to D. uncinatum Schltr.

D. tumidulum Schltr., sp. nov.

Epiphyticum, erectum, humile. Rhizoma valde abbreviatum. Pseudobulbi aggregati, graciliter cylindracei, di-midio inferiore tumiduli, apice 2-, rarius-foliati, pro sectione alti. Folia erecto-patentia linearis-ligulata, subacuta, basin versus sensim paulo angustata, glabra. Inflorescentiae abbreviatae, biflorae; pedunculo perbrevi, bracteis ellipticis, acuminatis, ovario pluries brevioribus. Flores errecti, in sectione vix inter maiores, sanguinei. Sepala ovata, intermedium acutum, lateralia valde acuminata, extus carinata, basi margine anteriore valde producta, cum pede columnae mentum longum, ovario appressum subacutum formantia. Petala oblique lanceolato-elliptica, acuta, margine apicem versus subdenticulata, sepalis subaequilonga. Labellum e basi unguiculata lanceolato-linguiforme, acutum, margine in quinta parte apicali incurvo breviter subdenticulatum. Columna brevi, clinandrii lobis lateralibus semiquadratis leviter retusis, dorsali linearis paulo longiore. Ovarium acute 5-alatum, alis 3 dorsalibus leviter undulatis, breviter pedicellatum.

An epiphyte forming short tufts 17 - 20 cm high. Pseudobulbs 7 - 10 cm long, below 5 mm, somewhat higher up 3 mm in diameter. Leaves 7 - 10 cm long, 5 - 8 mm broad at about the middle. Flowers dark meat-coloured, shorter than the leaves. Sepals 1.1 cm long, the lateral ones forming a chin 1.5 cm long and appressed to the ovary. Petals 1 cm long. Lip 2.5 cm long, slightly constricted in the middle, in upper quarter 4.5 mm broad. Column 3.4 - 4 mm high. Ovary with short stalk 1.9 cm long.

North-east New Guinea : In range forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11714, flowering in May 1913.

This species, which stands out in the section because of its elongated pseudobulbs, would need to be placed next to D. uncinatum Schltr. from which it is, however, distinguished by its five-winged ovary.

§. Amblyanthus

I have nothing to add to my previous remarks on this section, except that since then, only one new species, D. furfuriferum J.J.Sm. seems to have been recorded in it. Inclusive of the four species established below, the group [Section] now contains 14 purely Papuan species. These are so characteristic in their floral structure that

this section may also be regarded as quite a natural one. Further there are no forms that show a very near relationship with Amblyanthus in other distribution territories of the genus.

D. ceraceum Schltr., sp. nov.

Epiphyticum, patulum, pluricaule. Caules simplices, pro sectione graciliores, dense foliati, vaginis foliorum arcte amplectentibus omnino obtecti. Folia erecto-patentia, lanceolato-ligulata, acuta, basi et apice obliqua. Inflorescentiae more generis abbreviatae, subsessiles, 4—6-florae; bracteis ovalibus, obtusis, extus furfuraceis, apice subcucullato-concavis, ovarium subaequantibus. Flores in sectione mediocribus, ceracei, albidi, extus brunnescentes breviter lepidoto-furfuracei. Sepala elliptica obtusa, lateralia basi antice bene ampliata cum pede columnae mentum obtuse conicum formantia. Petala obovato-spathulata, obliqua, obtusa, dimidio superiore margine subdentato-irregularia, sepalis subaequilonga, glabra. Labellum circuitu obovato-spathulatum, tertia parte apicali trilobulatum, medio convexum, lobis lateralibus parvulis, obtusatis, haud bene conspicuis, intermedio antico, reniforme, obtuse apiculato, glabro, margine basin versus denticulato, appendice oblonga retrorsa incumbente lacerato-dentata in tertia parte basali labelli. Columna brevis, glabra, pede apice excavatione obovata ornata. Ovarium fusiforme-cylindraceum, furfuraceum.

An obliquely hanging epiphyte 45 — 60 cm long and with bunched unbranched stems. Leaves 6 — 9 cm long, 1.1 — 1.7 cm broad below the middle. Flowers moderately large, white, tinged brown outside, of wax-like texture. Sepals 1.2 cm long; the lateral ones forming a chin about 8 mm long. Petals hardly shorter than sepals. Labellum about 1.6 cm long, 7 mm broad in the upper third, i.e. above the base of the front lobe. Column 4 mm high. Ovary about 1 cm long.

North-east New Guinea : In primary forest on the slopes of the summit of [Mount] Hunstein (Sepik District), alt. c. 200 — 300m — C. Ledermann no. 8254, flowering in Aug. 1912.

Because of its glabrous labellum this species is placed into the proximity of D. bismarckiene Schltr. and D. xanthomeson Schltr. but in its habit it reminds one more of D. melanostictum Schltr.

D. chryosema Schltr., sp. nov.

Epiphyticum, pluricaule, patulum. Rhizoma valde abbreviatum. Caules simplices, leviter flexuosi, bene foliati, carnosuli, vaginis foliorum arcte et alte amplectentibus, striato-nervosis omnino obtecti. Folia erecto-patentia, lanceolato-elliptica, acuminata, basin versus angustata, pro sectione tenuiora. Racemi more sectionis abbreviati,

subsessiles, dense pluriflori; bracteis erecto-patentibus, ovato-lanceolatis vel lanceolatis, acuminatis, nunc flores aequantibus, nunc breviores. Flores in sectione inter majores, ceracei, albi, extus brunnescentes, labello macula pallide aurea ampla ornati. Sepala oblonga, obtusa, extus furfuraceo-lepidata, lateralia basi margine anteriore ampliata cum pede columnae mentum semioblongoideo-conicum, obtusum formantia. Petala oblique oblongo-subspathulata, obtusa, sepala subaequantia. Labellum circuitu pandurato-spathulatum, obtusum cum apiculo obtuso, basi breviter unguiculato attenuatum, antice marginibus subdentatum, dimidio inferiore concavum, obscure bicarinatum, appendice semioblonga retrorsa, apice pluridentata depressa in quarta parte basilari ornatum, dimidio anteriore concavulo sparsim verruculis conicis acutis retrorsis asperatum. Columna brevis, supra basin margine utrinque breviter unindentata, pede excavatione semioblonga ornata. Ovarium breviter pedicellatum, clavatum, furfuraceo-lepidotum.

An obliquely hanging epiphyte 35- 50 cm long and with bunched stems. Leaves 10 - 17 cm long, 1.7 - 3.7 cm broad at about the middle. Flowers white, outside tinged brownish and on the lip with a large yellow spot. Sepals 1.7 cm long, the lateral ones forming a chin about 7 mm long. Petals 1.6 cm long. Labellum 2.2 cm long, 8 mm broad below the middle, 6 mm broad in the middle and in the upper third 1.1 cm broad. Column about 5 mm high. Ovary together with short stalk 1.3 cm long.

North-east New Guinea : In mountain forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1350m - C. Ledermann no. 10917, flowering in Feb. 1913; on Mount Schrader (Sepik District), alt. c. 1500m - C. Ledermann no. 11557, flowering in May 1913.

The species is related most closely to D. bismarckiene Schltr.

D. Dielsianum Schltr., sp. nov.

Epiphyticum, patulum, certe pluri-caule. Rhizoma valde abbreviatum. Caules simplices, pro sectione graciliores, bene foliati, vaginis foliorum arce amplectentibus, striato-nervosis, omnino obtecti, teretes. Folia erecto-patentia, lanceolata vel anguste oblongo-lanceolata, subacuta, basi angustata, vaginas 3-4-plo excedentia. Racemi more sectionis abbreviati, subsessiles, dense pluri- (8---13-)flori. Flores in sectione vix inter medios, ceracei, albi, extus sparsim furfuraceo-lepidoti; bracteis ellipticis, vulgo obtusiusculis, vulgo ovarium vix superantibus. Sepala elliptica, obtusa, lateralia antice basi bene ampliata cum pede columnae mentum oblongoideum obtusum formantia. Petala oblique elliptica, obtusa, glabra, sepalis subaequilonga. Labellum circuitu obovato-oblongum, medio fere paulo attenuatum, concavum, tertia parte apicali intus dente pilis brevibus retrorsis puberulum, in tertia parte basilari appendice semi-ovali jacerato-altidentata, retrorsa, depressa ornatum, apice valde obtusum. Columna brevis, pede excavatione ovali conato. Ovarium subsessile cylindraceum, furfuraceo-lepidotum.

An epiphyte about 50 cm long, with unbranched, bunched stems which are hanging down obliquely. Leaves 9 - 12 cm long, 1.5 - 2.5 cm broad below the middle. Flowers scarcely medium size in the section, whitish, wax-like. Sepals about 1.1 cm long, the lateral ones forming a chin about 7 mm long. Petals 9 mm long. Labellum 1.4 cm long, about 6.5 mm broad in the first half. Column 5 mm high. Ovary 1.1 cm long.

North-east New Guinea : Near Bivouac 48, on the Sepik [River] - L. Schultze no. 235, flowering in Nov. 1910.

This species is distinguished from the related D. melanostictum Schltr. by the more slender, evidently longer stems with narrower leaves, the somewhat smaller flowers with narrower petals and the narrower labellum, which is panduriform and not denticulate.

D. serratipetalum Schltr., sp. nov.

Epiphyticum, patulum, pluricaule. Caules simplices, pro sectione graciles, bene foliati, vaginis foliorum arcte amplectentibus omnino obtecti. Folia erecto-patentia, anguste lanceolata, acuta, sublente apice obliqua, basi paulo angustata. Inflorescentiae more sectionis abbreviatae, sessiles, pauciflorae; bracteis ovalibus obtusis, vel apiculatis, extus furfuraceis, ovarium aequantibus vel paulo superantibus. Flores in sectione inter minores, albi, extus fuscescentes, lepidoto-furfuracei. Sepala ovalia, obtusa, lateralia antice basi ampliata cum pede columnae mentum obtusum, oblongoideo-conicum formantia. Petala oblique obovato-elliptica, obtusa, dimidio superiore margine breviter serrata, glabra, sepalis fere aequilonga. Labellum circuitu late obovato-spathulatum obscure trilobatum, lobis lateralibus valde abbreviatis incurvis, margine serrulatis, antice permagno semiorbiculares, margine incurvulo inaequaliter serrulato, dense pilis brevibus retrorsis strigilloso, appendice retrorsa, semioblonga, serrato-lacinata infra medium labelli. Columna brevis, glabra, pede basi excavatione ovali donata. Ovarium cylindraceo-subfusiforme, lepidoto-furaccum, sessile.

An epiphyte 30 - 45 cm long, with bunched slender stems. Leaves 7 - 11 cm long, 7 - 12 mm broad below the middle. Flowers somewhat small for this section, wax-like, white tinged yellowish brown outside. Sepals 7.5 mm long; the lateral ones forming a chin 7 mm long. Petals scarcely shorter than the sepals. Lip 1.1 cm long, almost 6 mm broad in the upper half. Column 4 mm high. Ovary about 7 mm long.

North-east New Guinea : In range forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1350m - C. Ledermann no.

10915 (TYPE), flowering in Feb. 1913; on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 12175b - flowering in June 1913; near Camp 9 on the [Mount] Kameelrücken 'Camel-back' (Sepik District), alt. c. 600 - 900m - C. Ledermann no. 8845, flowering in Sept. 1912.

This species is closest to D. melanostictum Schltr. but has narrower leaves and the petals are serrate.

§. Grastidium

I have no doubt that Grastidium will prove to be the largest species-group, not only in the Territory, but of the entire genus when Papuasia has been thoroughly explored. In my 'Orchidaceae of German New Guinea', I enumerated 95 species for Papuasia or 69 from German New Guinea alone. Since then, the following 13 have been described from Dutch New Guinea, viz. D. dionaeoides J.J. Sm., D. coloratum J.J. Sm., D. aromaticum J.J. Sm., D. recurvilabre J.J. Sm., D. patentissimum J.J. Sm., D. giriwoense J.J. Sm., D. hollandianum J.J. Sm., D. papyraceum J.J. Sm., D. triangulum J.J. Sm., D. Klossii Ridl., D. Vanderwateri Ridl., D. donacoides Ridl., and D. bambusinum Ridl. I was surprised to find only three more novelties in Leder- mann's large collection. There is also D. Peekeli Schltr., another novelty from New-Mecklenburg. Thus we are acquainted at present with 112 species of the group from Papuasia. When I separated Eriopexis as a section from Grastidium I had a very good reason. A group which, like Grastidium, already contains over 150 species, should be defined as sharply as possible, in order that one may be able to properly survey its species. The division into groups is only for the purpose of making such a review, but this advantage is immediately lost when the group becomes too large. Now in Eriopexis, we have a species- community, which is recognisable by anyone who has come in contact with these plants, by their habit and the form of their flowers. It is therefore very necessary that these should be separated. Later on a

further division of Grastidium may be unavoidable, but I am afraid the new groups will then have to be separated on the basis of less important characters.

D. acanthophippiiflorum J.J. Sm. still belong to [section]
Eriopexis.

D. lambusiforma Schltr., sp. nov.

Epiphyticum, pluricaule, pensile perlongum. Gaules simplices, usque supra bimetales, teretes, dense foliati, vaginis foliorum arce amplectentibus omnino oblecti. Folia erecto-patentia, anguste lanceolata acuta vel subacuminata, subiente inaequaliter bilobulata, glabra. Racemi more sectionis e spatha oblonga compressa, subsessiles, biflori; bracteis minutis, deltoideis. Flores in genere mediocres, carnosuli, glabri. Sepala ligulata, obtusa, lateralia falcata, basin versus antice ampliata, cum pede columnae mentum breve obtusum formantia. Petala anguste falcato-ligulata, obtusa, quam sepala paulo breviora et angustiora. Labellum curvalum, circuitu e basi cuneata lanceolatum, acutum, marginibus leviter undulatum, dimidio inferiore transversim rugosum, verrucis interjectis, dimidio superiore medio sparsim verrucis obtusis ornatum, e basi usque infra medium carina angusta subcrenulata auctum. Columna brevi, apicem versus angustata, lobis lateralibus clinandrii obtusis, brevibus, pede leviter incurvulo. Ovarium sessile, obconicum, glabrum.

A gigantic epiphyte hanging down laxly, with unbranched, bunched stems 2 - 2.5 m long and 6 mm thick. Leaves 13 - 17 cm long, 1.6 - 2 cm broad below the middle. Flowers of medium size for the section, yellowish white with wine red spots, completely glabrous. Dorsal sepal about 2 cm long; the lateral ones about 1.3 cm long and forming at the base a chin about 5 mm long. Petals 1.8 cm long, distinctly shorter than the dorsal sepal. Labellum about 9 mm long when spread out, 4 mm broad below the middle. Column very short c. 2.5 mm long. Ovary about 4 mm long.

North-east New Guinea : In light range forest on Mount Lord (Sepik District), alt. c. 6000m [Ed. - probably 600m], C. Ledermann no. 10132, flowering in Dec. 1912.

This species must without doubt be seen as one of the closest relatives of D. perlongum Schltr. It is, however, well distinguished by the undivided labellum.

D. longicaule Schltr., sp. nov.

Epiphyticum, patulum, pluricaule. Caules simplices, dense foliati, teretiusculi, vaginis foliorum demum transverse rugulosis omnino obtecti. Folia erecto-patentia vel subpatentia, lineariligulata, inaequaliter et obtuse bilobulata, coriacea, glabra. Inflorescentiae more sectionis e spatha brevi compressa, subsessiles, geminiflorae; bracteis deltoideis, ovario multo brevioribus. Flores fide collectoris nivei, in sectione inter majores. Sepala oblonga, apiculata, glabra, extus nervo medio carinata. Petala obliqua elliptica, obtusiuscula, basin versus paulo angustata, glabra, sepalis subaequilonga, sed paulo latiora. Labellum circuitu late ovale, tertia parte apicali trilobatum, lobis lateralibus abbreviatis, rotundatis, intermedio antico semiquadrato, apiculato, toton intus appendicibus piliformibus sparsim obtectum, carina bene elevata, e basi usque ad medium decurrente ornatum, sepalis fere duplo brevius. Columna brevi, crassiuscula, glabra, clinandrii lobis lateralibus semiorbicularibus, dorsali subulato fere aequilongo. Ovarium obconico cylindraceum subsessile glabrum.

An obliquely hanging epiphyte with unbranched, bunched stems 1 - 1.5 m long and about 6 - 7 mm thick. Leaves 6 - 8 cm long, 1 - 1.4 cm broad below the middle. Flowers moderately large for the section, snow white. Sepals about 2.7 cm long; the lateral ones forming a short blunt chin. Petals 2.6 cm long. Labellum 1.2 cm long, 1 cm broad at about the middle when spread out. Column 4 mm high, with foot 4 mm long. Ovary 9 mm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12363, flowering in July 1913.

This species stands somewhat isolated and only the shape of the flowers shows some resemblance to D. angraecifolium Schltr. but in other characters only distantly related to that species. Especially it lacks the point of the foot of the column characteristic of D. angraecifolium Schltr.

D. Peekelii Schltr., sp. nov.

Epiphyticum, patulum, pluricaule. Caules simplices, fasciculati, usque supra metrales, teretiusculis, dense foliati, vaginis foliorum arce amplectentibus omnino obtecti. Folia erecto-patentia anguste lanceolato-ligulata, acuta, lucida, basi subrotundata. Inflorescentiae more sectionis geminiflorae, subsessiles, e spatha brevi oblonga, obtusa; bracteis parvulis, triangulis, acuminatis, ovario pedicellato multo breviori-

bus. Flores mediocres albi. Sepala lanceolata elongato-acuminatissima, glabra, lateralia basin versus antice ampliata cum pede columnae mentum obtusum formantia. Petala oblique et anguste lanceolata, elongato-acuminata, quam sepala paulo breviora. Labellum e basi semiovali infra medium alte 3-lobatum, carina depressa linearis obtusa e basi usque infra medium ornatum, dimidio inferiore verrucis conicis sparsis obtectum, lobis lateralibus falcato-triangulis subacutis, margine interiore subdentatis, intermedio circuitu lanceolato, acuminato, margine pectinato-laciñato, laterales fere 4-plo excedente, superne dense appendicibus subulato-filiformibus obtecto. Columna brevi, clinandrii lobis lateralibus oblique rhombis, apice subcrenulatis, dorsali breviora. Ovarium gracillime pedicellatum, glabrum.

A robust, obliquely hanging epiphyte with bunched stems surely more than 1 m long, about 5 mm in diameter. Leaves 11 - 14 cm long, 9 - 12 mm broad above the base. Flowers of medium size, white. Sepals about 4 cm long; the lateral ones forming a blunt chin 3 - 4 mm long. Petals about 3.6 cm long. Labellum 1.2 cm long, 5 mm broad at about the middle when spread out, with central lobe 7 mm long. Column 4 mm high. Ovary together with very slender stalk about 2.7 cm long.

Bismarck Archipelago : On Calophyllum trees at the beach near Mamatanai (Neu-Mecklenburg) - G. Peekel no. 459 - flowering in June 1910.

Related most closely to D. leopardinum Schltr. and D. pantherinum Schltr. It is distinguished from D. schwartzkopfianum Krzl. by its much more robust growth.

D. polyphyllum Schltr., sp. nov.

Epiphyticum, patulum, pluricaule. Caules simplices, teretiusculi, areuati, dense foliati, vaginis foliorum arcte amplectentibus, verruculosis, omnino obtecti. Folia patentia, lanceolato-ligulata, obtusiuscula, sublente obtusiuscula et valde inaequaliter bilobulata, glabra. Inflorescentiae more sectionis e spatha compressa, subsessiles, biflorae; bracteis deltaideo-lanceolatis, ovario pedicellato multo brevioribus. Flores in genere mediocres, glabri, fide collectoris brunneo-rubri. Sepala e basi lanceolata elongato-acuminata, lateralia basi antice ampliata, cum pede columnae mentum obtusum, breve formantia. Petala e basi anguste et oblique lanceolata elongato-acuminata, petalis paulo breviora. Labellum e circuitu anguste oblongo-ligulatum, supra medium trilobatum, lobis lateralibus abbreviatis, obtusis, intermedio anguste lanceolato acuminato, superne perdense appendicibus clavatis obtecto, margine altissime crenato-inciso, dimidio inferiore labelli pilis clavatis obsesso, carina e basi usque in basin lobii intermedii decurrente. Columna brevis, clinandrii lobis lateralibus oblique semioblongo-triangulis, obtusis, dorsali brevioribus. Ovarium pedicellatum, gracile, glabrum.

An obliquely hanging epiphyte to 40 cm long, with unbranched stems densely covered by leaves. Flowers of medium size, according to the collector brownish red. Sepals 4 cm long; the lateral ones forming a chin about 5 mm long. Petals 3 mm long. Labellum when spread out about 1.6 cm long, 5 mm broad at about the middle. Column 5 mm high, with narrow foot slightly bent inward. Ovary together with slender stalk almost 2 cm long.

North-east New Guinea : In mist-forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11144, flowering in Feb. 1913.

This species must in all likelihood be regarded as a close relative of D. phaeantum Schltr. It is, however, well specifically distinguished by its leaves and the more drawn out sepals and petals.

§. Pleianthe

I am now able to add another species to this monotypic section. Morphologically, this group is extremely interesting. The flowers erupt from within the sheaths in a vertical row. There is no doubt that this is a true raceme which has become adherent to the stem by the inner side of the rhachis. In D. pleianthum Schltr. parts of the rhachis are still distinctly apparent, but in the case of D. dolichocaulon Schltr., described below, which in a certain way represents a larger edition of the earlier species, the rhachis is still more evident. The inflorescence is much shortened in the latter species.

D. dolichocaulon Schltr., sp. nov.

Epiphyticum, patulum, usque binetrale, pluricaule. Rhizoma valde abbreviatum. Caules simplices, teretes, bene foliati, vaginis foliorum leviter striato-nervosis, arctissime amplectentibus omnino obtecti. Folia erecto-patentia, linearia subacuta, apice ipso sublente inaequaliter bilobulata, coriacea, glabra. Inflorescentiae sectionis, fasciculatae laterales, sessiles; bracteis deltoideis minutis. Flores mediocres, albidi, glaberrimi. Sepalum intermedium lanceolato-ligulatum, obtusiusculum, lateralia ovato-triangula falcata, apiculata, antice basin versus ampliata, cum pede columnae mentum obtusum, breve formantia. Petala oblique ligulata, subacuta, sepalis subaequilonga. Labellum e basi angustata cir-

cuitu ovale, tertia parte apicali trilobato, toro linearis apicem versus rugoso longitudinali ornatum, lobis lateralibus oblique oblongis, obtusis, brevibus, intermedio subreniformi-suborbiculari breviter apiculato dense verruculoso-rugoso, laterales multe superante. Columna brevis, clinandrii lobis lateralibus obtusi triangulis, paudentatis, dorsalis subulata longiore. Ovarium pedicellatum, subclavatum minute verruculoso-glandulosum.

A mighty hanging epiphyte with unbranched stems to 2 m long a diameter of 6 - 7 mm. Leaves 16 - 23 cm long, 1.4 - 1.7 cm broad. Flowers bunched, of medium size, creamy white. Sepals 1.4 cm long; the lateral ones forming a blunt chin 5 mm long. Petals 1.3 cm long. Labellum 1 cm long, when spread out 6 mm broad above the middle, with front lobe 3.5 mm long and almost 4 mm broad. Column 4.5 mm high. Ovary together with the stalk about 2.3 cm long.

North-east New Guinea : In primary forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 700m - C. Ledermann no. 8376, flowering in Aug. 1912; in tall forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9014, flowering in Oct. 1912.

This is the second species of the section Pleianthe. Distinguished from D. pleianthum Schltr. by the larger dimensions of the vegetative parts, larger flowers and the warted ovary.

§. Monanthos

One would hardly think it possible that nature could produce so many variations from such simple forms as occur in this section. Here habit-characters are found only to a lesser degree, but these also always go hand in hand with floral characters, and the latter always form the distinguishing features between species. The colour of the flowers also appears to be very characteristic. It varies from white with sometimes a purple or yellow labellum, to yellow or dark purple. Species with white sepals and petals and a dark purple intermediate lobe to the labellum, are the most frequent. Particularly striking types occur in D. integrum Schltr. and in D. subbilobatum Schltr., described below.

In 1912 I was able to record only 17 species of this group for Papuasia. Meanwhile two, D. crassinervium J.J. Sm. and D. planicaule Ridl. have been added from Dutch New Guinea. Inclusive of the two described below, it now contains according to our present knowledge 21 species in the Territory.

This section would only appear to be distributed towards the west, across the Moluccas, although no species have been recorded from there, to the Celebes.

D. subbilobatum Schltr., sp. nov.

Frutex epiphyticus, scopiformis, erectus, rigidescens. Rhizoma valde abbreviatum. Caules erecti, leviter compressi, bene foliati, graciles, simplices, vaginis foliorum arctissime amplectentibus apicem versus minute rugulosis omnino obtecti. Folia suberecta, linearia, apicem versus paulo angustata, apice ipso inaequaliter et subacuta bilobulata, rigidula, glabra. Flores citrini more sectionis solitarii, glaberrimi, in sectione mediocres, carnoculi, inversi. Sepalo intermedio elliptico obtuso, lateralia oblique et perlate triangulo-ovata, basi margine anteriore ampliata mentum oblique triangulo-oblongoideum obtusum formantia. Petala oblique ligulato-oblonga obtusa, sepala longitudine subaequantia. Labellum curvatum carnosum, explanatum circuitu obtriangulum, antice subbilobatum cum denticulo obtuso interjectum, speculo linearis in crassato e basi usque ad quartam partem apicalem decurrente. Columna brevis, crassiuscula, pede elongato, clinandrii lobis lateralibus rotundatis, dorsali breviore triangulo, obtuso. Ovarium breviter pedicellatum clavatum, glabrum.

An epiphytic shrub growing broom-like, with unbranched stems to 50 cm high. Leaves 6 - 9 cm long, 4 - 5 mm broad below the middle. Flowers lemon-yellow, quite smooth. Sepals 7.5 mm long; the lateral ones forming a blunt chin about 7 mm long. Petals 7 mm long. Lip 8 mm long, when spread out almost 1 cm broad below the apex. Column 3 mm long. Ovary together with short stalk 6 mm long, club-shaped.

North-east New Guinea : In mountain forest on Mount Schrader (Sepik District), alt. c. 2070m - C. Ledermann no. 11624, flowering in May 1913.

The habit of this species compares well with that of D. integrum Schltr. but the labellum is quite different, especially as it is strongly broadened and almost two-lobed at the apex.

Possibly Ledermann no. 9424 from 'Etappenberg' should also belong in this species, as its flowers were described as greenish white with some brown stripes but are now missing.

D. vinosum Schltr., sp. nov.

Suffrutex epiphyticus, erectus. Rhizoma valde abbreviatum. Caules simplices compressi, bene foliati, lucidi, vaginis foliorum arctissime amplectentibus, anciptibus, leviter striatis, cunnino obtecti. Folia suberecta, linearis-ligulata, obtuse et inaequaliter bilobulata, glabra, nervis 3 subtus prominentibus. Flores more sectionis singuli, vinoso-rubri, glaberrimi, in sectione mediocre, inversi. Sepalum intermedium ovato-oblongum obtusum, glabrum, lateralia oblique triangulo-ovata, basi margine anteriore dilatata cum pede columnae mentum obtusum breve formantia. Petala oblique ligulata, obtusiuscula, glabra, sepa longitidine subaequantia. Labellum more sectionis circuitu ovale, supra medium trilobum, lobis lateralibus semioblongis abbreviatis, intermedio antico suborbiculari, margine subcrenulato, speculo linearis-oblongo, leviter incrassato e basi labelli usque ad medium fere decurrente. Columna crassiuscula, apice leviter contracta, lobis lateralibus oblique et obtuse triangulis, dorsali duplo longiore. Ovarium leviter curvatum cum pedicello brevi clavatum, glabrum.

An epiphytic shrub with several stems from the base to 70 cm long. Leaves 3 - 6.5 cm long, 5 - 7 mm broad at about the middle. Flowers wine red, smooth, of medium size in the section. Sepals 8 mm long; the lateral ones forming a very blunt and spreading chin 5 mm long. Petals 7 mm long. Labellum 8 mm long, 4.5 mm broad below the middle, with a front lobe 3 mm long and broad. Column about 3 mm long. Ovary together with stalk 5 mm long, club-shaped, smooth.

North-east New Guinea : In light range-forest near the 'Ridge-Camp' on the Hunstein Range (Sepik District), alt. c. 1050m - C. Ledermann no. 8473, flowering in Aug. 1912.

It would be best to place this species next to D. lamproglossum Schltr. from which it is, however, distinguished by wine red flowers and shorter and blunter leaves.

S. Herpetophytum

Since its establishment, the rich material belonging to this group convinces me that I did quite right in separating this species-

community as a distinct section. I must confess that I had even considered eventually raising it to the rank of a separate genus. However, this was not done, as I thought it would be better for purposes of publication to defer the solution to this question until we are more intimately informed in regard to the flora of New Guinea, as this has already yielded so many surprises that we hardly know yet what to expect. The trouble maybe, however, that our modern conception of the genus Dendrobium may compel us to make a further division of it, the results of which cannot be estimated.

To all appearances Herpetophytum is a purely Papuan form, which must have become speared early from the basic form of the genus and must have undergone a rich development as in all forms of that kind. In my last compilation I enumerated 11 species of these remarkable plants. Ledermann's collection has contributed two more, so that we know of 13 species. They all have in common a very characteristic habit, and flowers whose structure has always reminded me of Podochilus. The peculiar appendage to the labellum also bears a certain resemblance to Podochililinae, but the column and anther point distinctly to the Dendrobiinae and there can be no doubt that the plants belong here.

Fruits from this group are not yet known. We shall have to wait until some further observations enlighten us as to whether we shall have to regard these plants as Dendrobia or separate them as a special genus.

D. vagans Schltr., sp. nov.

Suffrutex vagans, epiphyticus, humilis, decumbens vel patulus, ramosus, exsiccatione nigricans. Caules et rami graciles, plus minus elongati, teretes, glabri, dense foliati, vaginis foliorum arcte amplectentibus omnino obtecti. Folia erecto-patentia anguste linaria, subacute et inaequaliter bilobulata, glabra, textura subcoriacea. Inflorescentiae sectionis uniflorae, pedunculo brevi; bractea parvula. Flores parvuli, albi, in genere minutti, inversi. Sepala ovalia obtusa vel subobtusa, lateralia obliqua, usque supra medium connata, basi margine anteriore ampliata cum pede columnae inentum oblongoideum, obtusum formantia. Petala oblique elliptica, obtusa, glabra, quam sepala subaequilonga. Labellum e basi vix angustata cuneatum, quarta parte anteriore trilobum, dimidio anteriore sparsim pilosulum, lobis lateralibus semiorbicularibus obtusis, inter-

medio antico duplo majore obtuse apiculato, callo semilunato retrorso, carnosulo glabro, in dimidio anteriore laminae. Columna sectionis semiteres, apice trilobulata. Ovarium pedicellatum, clavatum, glabrum.

A creeping, branched epiphytic subshrub to 50 cm long. Leaves 3.5 - 6 cm long, at about the middle usually less than 3 mm, rarely 4 mm broad. Peduncle rarely more than 2 mm long. Flowers very small, white. Sepals 3.5 mm long; the lateral ones forming a blunt chin 3 mm long. Petals about 3 mm long. Lip 5 mm long, between the lateral lobes almost 3 mm broad when spread out. Column a little broadened towards the apex, 2.25 mm long. Ovary together with stalk almost 6 mm long.

North-east New Guinea : In range forest on the [Mount] Kameelrücken 'Camel-back' (Sepik District), alt. c. 1150m - C. Ledermann no. 8854, flowering in Sept. 1912.

This species with the laxly spreading habit I would place next to D. nigricans Schltr. from which it is distinguished by the narrow, long leaves and the lip.

D. podocarpifolium Schltr., sp. nov.

Suffrutex epiphyticus, erector, bene ramosus, exsiccatione nigricans. Caules et rami graciles, stricti, teretes, dense foliati, vaginis foliorum minute rugulosis arctissime amplectentibus omnino obtecti. Folia erecto-patentia, anguste linearia, inaequaliter et obtusiuscula bilobulata, coriacea, glabra. Inflorescentiae sectionis uniflorae: pedunculo brevi; bractea parvula. Flores more sectionis inversi, albi, in genere minimi. Sepala elliptica obtusiuscula, glabra, lateralia obliqua, basi margine anteriore amplata et connata mentum oblongoideum, obtusum cum pede columnae formantia. Petala oblique oblongo-spathulata, apiculata, subsfalcata quam sepala subaequilonga, glabra. Labellum e basi longius unguiculato-angustata late cuneato-flabellatum, antice trilobum, dimidio anteriore sparsim et breviter puberulum, lobis lateralibus triangulis obtusis, intermedio antico semiovali, margine undulato apice exciso, callo retrorso hippocrepiformi, dorso breviter bilobulato glabro, indimidio anteriore laminae sito. Columna sectionis. Ovarium pedicellatum, glabrum.

An epiphyte forming loose shrubs about 1 m high. Leaves 3 - 6 cm long, 3 - 5 mm broad at about the middle. Peduncle rarely more than 2 mm long. Flowers white, very small. Sepals 3.5 mm long; the lateral ones forming a blunt chin 1.5 mm long. Petals 3.25 mm long. Lip 5 mm long, 3 mm broad between the points of the lateral

lobes when spread out. Column 2 mm long. Ovary together with stalk 5 mm long, glabrous.

North-east New Guinea : In mountain forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11432, flowering in Mar. 1913.

This species, which is the most robust and tallest among the species in the section, is best placed next to D. appendicula Schltr. from which it differs by the form and the labellum and its top.

Pseuderia Schltr.

When I established this genus in 1912, seven species were known to me, six of them from Papuasia. Meanwhile, three more have been recorded from Dutch New Guinea and still three others from German New Guinea are described below, so that this genus now comprises of 12 Papuasian species. It is possible that Dendrobium spinescens Lindl. belongs to it, but before this can be decided it may be advisable to wait until the plant, which probably originated from the Moluccas, reappears. All species which have become known since 1912 are closely related to those previously described, and it is therefore certain that the genus is quite a natural one.

P. Ledermannii Schltr., sp. nov.

Frutex vagans, certe alte scandens, robustus, bene ramosus. Rami bene foliati, vaginis foliorum arcte et alte amplectentibus, persistentibus omnino obtecti. Folia erecto-patentia, lanceolata, acuminata, basi cuneata, nervis 7 subtus prominulis donata. Racemo more generis abbreviati, 3--6-flori, pedunculo brevi, rigescente vaginis paucis imbricantibus obpresso; bracteis recurvis, ellipticis obtusiusculis ovario fere 4-plo brevioribus. Flores in genere inter majores. Sepala ligulata obtusiuscula, lateralia subfalcata. Petala sepalis lateralibus similia sed paulo angustiora, subaeuta, glabra. Labello curvato, circuitu elliptico, obtusiusculo, minute papilloso, dimidio inferiore carinis 2 parallelis obtusis, glabratiss ornato. Columna semiteres leviter arcuata, apice haud ampliata, clinandrio dorso ampliato semiorbiculari, denticulato, glabra, quam labellum paulo tantum brevior. Ovarium gracile, cylindricum, glabrum.

Evidently an ascending shrub which is quite robust for the genus, with branches 6 - 7 mm thick. Leaves 17 - 22 mm long, 3 - 4 cm broad at about the middle. Inflorescences spreading, about 4 cm long.

Flowers moderately large in the genus. Dorsal sepal 1.7 cm long, lateral ones 1.4 cm long; petals 1.25 cm long. Labellum 1 cm long, almost 4 mm broad at about the middle. Column 8.5 mm long. Ovary 8 - 9 mm long.

North-east New Guinea : Near Camp 5 on the summit of [Mount] Hunstein (Sepik District), alt. c. 300 - 400m - C. Ledermann no. 8280a, flowering in Aug. 1912.

Like P. robusta Schltr. this species is distinguished by its very robust growth. It is distinguished from P. robusta Schltr. by the labellum and the column as well as the narrower leaves throughout.

P. robusta Schltr., sp. nov.

Frutex vagans, certe alte scandens, pro genere robustus. Caules et rami teretes, bene foliati, vaginis foliorum persistentibus, arcte amplectentibus omnino obtecti, teretes. Folia erecto-patentia elliptico-lanceolata, acuminata, pro genere magna, exsiccatione pallide brunnescentia, plurinervia. Racemi abbreviati; 2—3-flori, pedunculo basi rigescente vaginis paucis brevibus imbricantibus obtecto; bracteis parvulis oblongis, ovario gracili pluries brevioribus. Flores in genere inter majores. Sepala ligulata, subacuta vel apiculata, lateralia falcata. Petala sepalis lateralibus similia sed angustiora et paulo breviora. Labellum curvatum rhomboeoblongum obtusiusculum, basi cuneatum, superne minute papillosum, e basi carina sulcata in medio labelli evanescente ornatum, quam sepala bene brevius. Columna semiteres arcuata, glabra, clinandrio ampliato trilobato, lobo intermedio denticulato, dimidium labelli bene superans. Ovarium gracile, glabrum.

A robust, surely ascending shrub with rich branching. Branches 5 - 6 mm in diameter, more robust than in other species. Leaves 15 - 21 cm long, 3.5 - 4.2 cm broad at about the middle. Flower racemes with few flowers, each one to 4 cm long. Dorsal sepal 1.9 cm long, the lateral ones 1.5 cm long; the petals 1.3 cm long. Labellum 1 cm long, 3 mm broad at about the middle. Column 8 mm long. Ovary 1.5 cm long.

North-east New Guinea : Sepik - Bivouak 42 - 43 - L. Schultze no. 230, flowering in Oct. 1910.

This species, which is probably closest to P. foliosa (Broghn.) Schltr. is characterized by its especially robust growth and denser

venation of the leaves.

P. sepikana Schltr., sp. nov.

Frutex vagans, cerle alte scandens, valde ramosus. Rami plus minus patentes, dense foliati, teretes, vaginis foliorum arte amplectentibus omnino obtecti. Folia erecto-patentia oblique elliptico-lanceolata vel lanceolato-ligulata, acuminata, basi cuneata vel rotundato-cuneata, glabra. Racemi patentes, dense pauciflori, pedunculo abbreviato rigescente, basi vaginulis paucis imbricantibus obtecto; bracteis brevibus ovalibus obtusis. Flores in genere mediocres, pallide virescendes, intus plus minusve rubro-punctati vel maculati. Sepala anguste oblongo-ligulata, obtusa, glabra, lateralia falcata, Petala sepalis lateralibus similia tamen bene angustiora, obtusiuscula, glabra. Labellum curvatum, circuitu e basi angustiore ovali-ellipticum, obtusum, superne minute papillosum, carinis 2 approximatis antice confluentibus, glabris, e basi usque ad medium decurrentibus. Columna labelli tertiam partem apicali attingens, semiteres, glabra, curvata, apicem versus vix dilatata, clinandrio paulo ampliato, denticulato. Ovarium gracile, glabrum.

A branched shrub scrambling up with many spreading branches.

Leaves 8 - 14 cm long, 1.7 - 3 cm broad below the middle. Inflorescences with flowers to 3 cm long. Flowers pale greenish or whitish more less covered with red spots or dots. Dorsal sepal 1.1 cm long, the lateral ones about 9 mm long. Petals 9 mm long. Lip 8 mm long, 4 mm broad, a little above the middle. Column almost 6 mm long. Ovary very slender, about 8 mm long.

North-east New Guinea : In light primary forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 700m - C. Ledermann no. 8293, flowering in Aug. 1912; on the [Mount] Kameelrücken 'Camel-back', 600 - 900m - C. Ledermann no. 8844, flowering in Sept. 1912; on the mountain base, alt. c. 830m - C. Ledermann no. 9339, no. 9404 flowering in Oct. 1912; on Mount Regen alt. c. 800m - C. Ledermann no. 12221, flowering in June 1913.

Related to P. wariana Schltr. but with somewhat smaller flowers and broader, somewhat differently shaped lip as well as with more condensed inflorescences.

Eria Lindl.

In contrast to the behaviour of Dendrobium Sw., this genus has not developed any strikingly great abundance of species in Papuasia. The cause of this may be that its chief centre of development appears

to lie more to the west, perhaps on the Sunda Island and the Malayan Peninsula. In my treatise in 1912, I enumerated 52 species from the Territory [Kaiser-Wilhelms-Land] but this is rather small when compared with the size of the genus and its richness in species in western territories. As far as I can see, the following five species recorded from Dutch New Guinea belong to four different sections : E. peraffinis J.J. Sm. (§. Goniorhabdos), E. Wollastonii Ridl. (§. Hymeneria), E. rigida Bl. (§. Cylindrolobus) and E. gautierensis J.J. Sm. as well as E. brachiata J.J. Sm. (§. Trichotosia).

I have published below six new species, five of them belonging to §. Trichotosia and one, E. Ledermannii Schltr., to §. Hymeneria.

I estimate up to the present the known Papuasian species is increased with certainty to upwards of 63.

As far as I can ascertain, §. Trichotosia appears to have undergone a strong development, for it has supplied 18 species from the Territory, some of which approach the western forms, while others appear to represent a characteristic basic form, evidently for Papuasia. This is remarkable because the eastern boundary of distribution of this section appears to lie in New Guinea.

The section Goniorhabdos, a group comprising only a few species appears to have its developing centre in Papuasia.

E. ereogena Schltr. (Orch. Dtsch. Neu-Guinea p. 667) must be re-named, as I published a different species under the same name in Feddes Rep. X. p. 87, two years before. This name may therefore be altered to E. Takudui Schltr.

E. fractiflexa Schltr., sp. nov.

Epiphytica, patula, pluricaulis. Caules simplices, bene foliati, teretes, vaginis foliorum pilosis omnino obtecti. Folia erecto-patentia, lanceolato-ligulata, oblique acuminata, coriacea, subtus sparsim et breviter nigro-setulosa, superne glabrata. Racemi patuli, laxe 10—15-flori, fractiflexi, foliis fere aequilongi, dense hirti; bracteis ovatis, obtuse

acuminatis, quam flores subdupo minores. Flores in sectione inter minores, extus pilis brunneis dense hirto-pilos. Sepala oblonga, obtusiuscula, lateralia basi margine anteriore bene ampliata cum pede columnae mentum semioblongum obtusum formantia. Petala falcato-ligulata, sparsim pilosa, sepalis subaequilonga. Labellum e basi angustata late cuneatum, supra medium trilobum, subglabrum, carinis 2 parallelis e basi usque ad medium ornatum carina intermedia in lobo medio anteposito, lobis lateralibus oblique ovatis, subacutis, intermedio subquadrato, exciso cum apiculo minuto interposito, marginibus leviter undulato. Columna labelli dimidium sere aequans, subglabra, pede bene evoluto. Ovarium cylindraceo-obconicum dense rufo-pilosum.

An obliquely hanging epiphyte to 1 m long, with simple bunched stems. Leaves 7 - 10 cm long, 1 - 1.6 cm long below the middle. Flower-racemes with a very short stalk 7 - 9 cm long. Flowers somewhat small in the section, greyish yellow with brownish red hairs. Sepals scarcely 5 mm long; the lateral ones forming a chin 2 mm long. Petals 4.5 mm long. Labellum strongly curved, about as long as the sepals, 3 mm broad between the points of the lateral lobes; front lobe 1.5 cm long and broad. Ovary 2.5 cm long.

North-east New Guinea : In primary forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. 1400 - 1500m - C. Ledermann no. 12369, 12963, flowering in July - Aug. 1913.

A very characteristic species which stands about in the middle between E. collina Schltr. and E. oreodoxa Schltr.

E. hypophaea Schltr., sp. nov.

Epiphytica, patula, valida. Caules tomentellis demum glabratis omnino obiecti. Folia oblique lanceolato-ligulata, oblique et obtusiuscule acuminata, marginibus recurvulis, superne glabrata, subtus pilis perhrevibus brunneis tomentella, coreacea. Racemi breviter pedunculati, subdense 10-15-flori, folia sere aequantes, perdense brunneo-pilos, subvillosi. Flores in sectione inter medios, extus dense brunneo-pilos. Sepala oblonga, obtusiuscula, lateralia basi margine anteriore ampliata, cum pede columnae mentum oblongoideum obtusum formantia. Petala anguste et oblique ligulata, obtusa, basin versus paulo angustata, sparsim piloso-setosa, sepalis subaequilonga. Labellum e basi leviter dilatata concavula anguste cuneatum, quarta parte apicali trilobatum, carinis 2 papilloso-puberulis in disco basi evanidis, usque infra basin lobii intermedii decurrentibus, subparallelis, carinula intermedia obscura in dimidio anteriore interposita, lobis lateralibus obtusatis, parvulis, abbreviatis, intermedio antico quadrato, leviter emarginato, obtuse apiculato, margine leviter undulato sparsim setoso ciliato, superne sparsim papilloso. Columna brevis, lobis lateralibus obtusatis. Ovarium cylindraceo-obconicum, perdense setoso-pilosum.

An obliquely hanging epiphyte to 1 m long, with unbranched bunched stems 5 - 6 mm thick. Leaves 13 - 18 cm long, 1.8 - 2.3 cm broad below the middle. Flower-raceme 8 - 10 cm long, densely covered with brown hairs. Flowers greenish, densely covered with brown hairs. Sepals 1.2 cm long; the lateral one forming a chin c. 6 mm long. Petals 1.1 cm long. Lip 1.6 cm long, 4 mm broad in upper third when spread, front lobe 4 mm long and broad. Column 6 mm high. Ovary about 5 mm long.

North-east New Guinea : In primary forest near the camp spring on the summit of [Mount] Hunstein (Sepik District), alt. c. 700m - C. Ledermann no. 8311, withered flowers in Aug. 1912.

This species is related to E. longicaulis Schltr. but well distinguished by the brown felty tomentum on the undersurface of the leaves and the long lip with quadrangular front lobe.

[Ed. - During translation, it was noted that major errors had occurred in type-setting on pages 126, 127 and 128 of the original text. For example the Latin description of E. Ledermannii Schltr. starting on p. 125 is continued at the top of p. 127. The errors involve the Latin and German descriptions, collection details and species notes for E. Ledermannii Schltr., E. subsessilis Schltr. and E. moliflora Schltr. and have been transposed into their correct sequence. E. longicaulis Schltr. remains unchanged.]

E. Ledermannii Schltr., sp. nov.

Epiphytica, erecta, pro sectione satis valida. Rhizoma valde abbreviatum. Radices, graciles, tenues, minute puberuli. Pseudobulbi cylindraceo-fusiformes, apice 3 - 4-foliati, erecti vel suberecti, carnosii. Folia erecto-patentia vel suberecta, anguste lanceolata vel lanceolato-ligulata, obtusiuscula, basin versus sensim angustata, glabra. Racemi erecti, laterales, versus apicem pseudobulborum nati, dense multiflori, quam folia breviores, breviter pedunculati; bracteis patulis, ellipticis, subacutis, minute rufo-stellipilosis. Flores flavi, in sectione inter mediocre, erecto-patentes, textura tenues. Sepala oblonga, obtusa, extus sparsim pilis rufis stellato-puberula, lateralia obliqua, basi margine anteriore ampliata cum pede columnae mentum breve obtusum formantia. Petala oblique oblongo-ligulata, obtusa, glabra, quam sepala subaequilonga, sed distincte angustiora. Labellum circuitu quadrato-oblongum, usque supra medium

bicostatum, glabrum, tertia parte anteriore trilobatum, lobis lateralibus valde abbreviatis et obtusatis, subvanidis, intermedio antico obreniformi, antice emarginato cum apiculo minuto interjecto, labello toto petalis fere aequi-longo. Columna mediocris, glabra, semiteres. Ovarium cum pedicello gracie, pilis rufis stellato-puberulum.

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An epiphyte with robust growth, 25- 35 m high. Pseudobulbs 6 - 10 cm high, to 1.5 cm in diameter below the middle. Leaves 14 - 27 cm long, 1.8 - 3 cm broad at about the middle. Flower-raceme together with the short stalk about 15 cm long. Flowers yellow somewhat delicate. Sepals 6 mm long; the lateral ones forming at the base a blunt chin about 4 mm long. Petals 5.5 mm long. Lip 5.5 mm long. 3.5 mm broad in about the middle. Column scarcely 3 mm high. Ovary together with the stalk 1 cm long.

North-east New Guinea : In primary forest near the beach camp on the April River (Sepik District), alt. c. 100m - C. Ledermann no. 8616, flowering in Sept.

This species is well distinguished by the form of the lip from other species of the section Hymeneria from that area.

E. subsessilis Schltr., sp. nov.

Epiphytica, patula, pluricaulis. Caules simplices, teretiusculi, bene foliati, vaginis foliorum, breviter pilosulis, ostio dense setosis omnino obtecti. Folia erecto-patentia lineari-lanceolata, obtusiuscula et oblique acuminata, subtus minute strigoso-tomentella, superne glabrata, coriacea. Racemi breves, subsessiles, subdense 6—8-flori, quam folia 3—4-plo breviores, erecto-patentes, dense pilis brunneis setoso-pilos; bracteis recurvis, ovato-ellipticis, obtuse acuminatis, quam flores paulo brevioribus. Flores in sectione vix inter medios, latus dense ferrugineo-pilos, subsessiles i. e. ovario perbrevi. Sepala elliptica, obtusiuscula, lateralia basi margine anteriore bene ampliata cum pede columnae mentum semioblongum, obtusum formantia. Petala oblique et anguste ligulata, obtusiuscula, extus et margine sparsim pilosa, quam sepala subaequilonga. Labello e basi leviter dilatata cuneatum, tertia parte anteriore trilobum, superne praesertim dimidia anteriore papilloso-puberulum, carinis 2 haud bene conspicuis e basi usque ad medium praeditum, carinula intermedia in dimidio anteriore, lobis lateralibus brevibus oblique ovatis, obtusiusculis, intermedio obreniformi, antice obtusissimo cum apiculo valde obtuso. Columna brevis, lobis lateralibus oblique semioblongis, pede mediocri. Ovarium per breve obconicum, perdense setoso-pilosum.

An obliquely hanging epiphyte to 1 m long, with bunched stems 4 - 5 mm thick. Leaves 7.5 - 11 cm long, 1 - 1.4 broad below the middle. Flower-racemes to 3 cm long. Flowers moderately small, whitish red with darker stripes and yellow sparsely red-striped lip.

Sepals about 5 mm long; the lateral ones forming a chin 3 mm long. Petals scarcely shorter than the sepals. Lip 7 mm long, 1 mm broad above the base and 3.25 mm broad above the middle and at the connection to the central lobe. Column 2.5 mm high. Ovary about 4.5 mm long.

North-east New Guinea : In mountain forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9067, flowering in Oct. 1912.

This species would be closest to E. pauciflora Bl. from Malaysia. It is not really related to any other one from Papuasia.

E. longicaulis Schltr., sp. nov.

Epiphytica, patula, longicaulis. Rhizoma valde abbreviatum. Caules fasciculati, simplices, bene foliati, teretes, vaginis foliorum rufo-puberulis omnino obtecti. Folia erecto-patentia, lanceolato-ligulata, oblique subacuta, subtus subglabra, sub lente minute papillosa, superne glabra. Racemi patuli, perbreviter pedunculatis, sublaxe 10-18-flori, perdense rufo-hirsuti. Bracteae oblongae, recurvæ quam flores vulgo minores. Sepala oblongo-elliptica, obtuse apiculata, lateralia basi margine anteriore valde ampliata cum pede columnæ mentum oblongum obtusum formantia. Petala oblique ligulata, obtusa, basin versus paulo angustata, margine et extus sparsim hirsuta, quam sepala paulo breviora. Labellum e basi concavula cuneatum tertia parte anteriore trilobatum, lobis lateralibus parvulis abbreviatis, triangulo-ovatis, antice truncatis, intermedio antico perlate reniformi, apice emarginato cum apiculo obtuso interjecto, extus margines versus setoso-pilosæ, intus praesertim basi medio dense papilloso, carina brevi, papillosa, obtuso in medio labelli, carinis 2 brevioribus similibus in lobo antico. Columna brevi, lobis lateralibus rotundatis, pede angustiore. Ovarium sessile obconicum, perdense hirsutum, breve.

An obliquely hanging epiphyte 1.5 m high, with simple bunched stems about 1 cm in diameter. Leaves 22 cm long, to 3.2 cm broad at about the middle. Flower-racemes 8 - 12 cm long. Flowers moderately large for the section, yellow striped reddish brown, with yellow lip. Sepals 1.1 cm long; the lateral ones forming a blunt chin 6 mm long. Petals 9.5 mm long. Lip 1.1 cm long, 2.5 mm broad above the slightly broadened base, between the points of the lateral lobes 3.5 mm broad; front lobe 3 mm long, 6.5 mm broad below the middle. Ovary 5 mm long.

North-east New Guinea : In range forest on Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 9875, flowering in Nov. 1912.

Among the species from the region this species is distinguished by its very long branches. It is closest to E. atroferruginea Schltr.

E. molliflora Schltr., sp. nov.

Epiphytica, patula, pluricaulis, valida.

Caules fasciculati, bene foliati, vaginis foliorum brevissime tomentellis omnino obtecti, simplices. Folia subpatentia, oblique oblongo-ligulata, oblique et obtusiuscula acuminata, subtus brevissime tomentella, superne glabrata. Racemi patuli, pro sectione longi, laxe multiflori, breviter pedunculati, mollier et breviter tomentelli; bracteis ovalibus, obtuse acuminatis, ovarium vulgo paulo superantibus. Floribus in sectione inter mediocres, extus mollier tomentelli. Sepala ovato-lanceolata, obtusiuscula, lateralia falcato-obliqua, basi margine anteriore ampliata cum pede columnae mentum obtusum breve formantia. Petala oblique ovato-lanceolata, obtusa, sparsim ciliata, quam sepala paulo breviora. Labellum in forma nostra peloriali late ovatum obtuse acuminatum, subtus et margine pilosum, superne glabratum. Columna brevis, dorso pilosa, lobis lateralibus rotundatis, pede satis longo. Ovarium cylindraceum mollier tomentosum, sessile.

An epiphyte about 1 m long, with simple stems to 1 cm thick.

Leaves 15 - 18 cm long, 4 - 5.5 cm broad at about the middle. Flower-racemes with short stalk to 33 cm long. Flowers of medium size in the section, brownish meat red. Sepals about 9 mm long; the lateral ones forming a very blunt chin about 4 mm long. Petals 7 mm long. Lip of this only known pelorial form 7 mm long, 4 mm broad below the middle. Column 3 mm high. Ovary 6 mm long.

North-east New Guinea : In primary forest near Camp 18, on the April River (Sepik District), alt. c. 200 - 400m - C. Ledermann no. 9729, flowering in Nov. 1912.

I have dared to describe this species of which only the pelorial form is available it is easily distinguished from the closely related E. bracteata Schltr. already externally by the type of hairiness, smaller flowers and the broader petals.

A complete description of the normal lip must be added as soon as more material of the species becomes available.

Calanthe R. Br.

This genus develops such an abundance of exceedingly characteristic types in Papuasia that we may assume this to be one of its

developing centres. I recorded 27 in my enumeration of the Papuasian species in 1912. To these the following seven, recorded in the meantime from Dutch New Guinea must be added, viz. C. Versteegii J.J. Sm., C. Pullei J.J. Sm., C. reflexilatris J.J. Sm., C. truncata J.J. Sm., C. villosa J.J. Sm., C. geelvinkensis J.J. Sm., and C. afarkana J.J. Sm. With the exception of C. Versteegii J.J. Sm., which belongs to §. Caulodes, all the rest belong to my section Calothrysus. Including those described below, Papuasia has supplied us therefore with nearly 35 species.

J.J. Smith has recently declared that he does not agree with my division of the genus. In particular, he does not regard Preptanthe as a sub-genus. The vegetative characters of the latter are so remarkable, that, in my opinion, the group should certainly be treated as a sub-genus. Pfitzer even regarded it as a separate genus.

C. bracteosa Schltr., sp. nov.

Florestis vel epiphytica (?), acaulis.
 Rhizoma valde abbreviatum. Folia erecta, lanceolata, acuminata, plicata, in petiolum satis longum basi sensim angustata, glabra. Racemi breviter pedunculati, oblongo-cylindracei, congesti; pedunculo vaginis pluribus amplexentibus acuminatis obtecto, quam racemus subdupo breviore; bracteis ovato-lanceolatis, acuminatis, flores duplo vel plus duplo superantibus. Flores nivei, labello lacte coccineo, illis C. rhodochilae Schltr. similes et fere aequamagni. Sepala oblonga subacuta, lateralia obliqua intermedio paulo angustiora. Petala oblique elliptica apiculata, quam sepala subaequilonga, sed bene latiora. Labellum e basi columnae omnino adnata in laminam oblanceolato-spathulatam, antice obtusissimam cum apiculo brevi productum, ~~parvum~~ ~~lunulatum~~ ~~decurvo~~ oblongoideo obtuso, ovario subdupo breviore. Columna brevis, omnino marginibus labello adnata, glabra, utrinque apice paulo producta. Ovarium pedicellatum, clavatum, glabrum.

A terrestrial or occasionally epiphytic, stemless shrub with leaves 34 - 70 cm long, 4 - 6 cm broad in the middle and constricted into a stalk below. Inflorescences with stalk 12 - 15 cm high, raceme about 2.5 cm in diameter. Flowers white with platform of the lip brilliant blood red. Sepals about 1 cm long. The petals 0,9 cm long, almost twice as broad as the sepals. Platform of lip

5 mm long, almost 2 mm broad below the point. Column 3.75 mm long. Ovary together with stalk almost 1 cm long.

North-east New Guinea : Terrestrial in tall forest of the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9021, flowering in Oct. 1912; epiphyte in the tree forks? in the mountain forest of the summit of the Hunstein [Range], (Sepik District), alt. c. 8300m - [Ed. - probably 830m] - C. Ledermann no. 11170, flowering in March 1913.

This species is distinguished from the closely related C. rhodochila Schltr. by its more robust growth, longer bracts and the form of the labellum.

Bulbophyllum Thou.

I have hardly any doubt that this will prove to be by far the largest genus of Orchidaceae in Papuasia. It has hardly supplied more species than Dendrobium so far, but this may be due to the fact that in species of the latter genus, the flowers are frequently bright coloured and large and therefore more conspicuous than those of Bulbophyllum in which they are often tiny and hidden.

In 1913 I enumerated 329 species of the genus for German New Guinea. British Papua and Dutch New Guinea furnished 83 more. In the meantime, as far as I can ascertain, J.J. Smith and H.N. Ridley have described 86 further novelties from Dutch New Guinea and as I now publish below 19 new species, it is evident that 516 species have been recorded to date from Papuasia.

Concerning my genera Tapeinoglossum [Ed. - Error for Tapeinoglossum], Codonosiphon and Monosepalum, separated from Bulbophyllum, I would like to state that I still maintain them. The cohesion of three sepals into a single tube still seems to me of greater importance than J.J. Smith will admit. Besides, we must be satisfied that with such an important character as basis for

division into genera, we are able as in the case of Pleurothallidinae to separate these forms from the gigantic genus Bulbophyllum which is larger already and therefore more difficult to review than all the remaining genera of the family.

An examination of the numerous flowers has convinced me that in Tapeinoglossum the cohesion is rather short but very distant. In Monosepalum the sepals are not merely adherent, as J.J. Smith presumes, but according to my investigation of living material, thoroughly adherent. The latter genus is remarkable also in its flowers and I most decidedly regard them as generically distinct. Perhaps it will even be necessary to separate several other Types from Bulbophyllum. Regarding §. Vesicipetalum, establish by J.J. Smith, in which the sepals at the base are adherent, I cannot quite visualize this.

§. Coelochilus

I was very surprised to find that Ledermann's great collection contained only one new species of the entire sub-genus Hapalochilus, viz. a species belonging to the §. Coelochilus. I certainly expected more new Bulbophylla.

Doubtless this section is still represented by many new species in New Guinea and it may later prove to be the richest of all groups in numbers. In my 'Orchidaceae of German New Guinea', I have already enumerated 46 species. Of those described since, the following may be included here viz. B. caudatipetalum J.J. Sm., B. concolor J.J. Sm., B. scaphosepalum Ridl., B. scitulum Ridl., B. algidum Ridl., B. stellula Ridl., B. plagianthum Ridl., B. ovale Ridl. and B. arfakense J.J. Sm.

Unfortunately many species established by Ridley in the Wollaston Expedition are not sufficiently described to enable anyone to allocate them to a particular group. It is regrettable that he should not have given more consideration to publication on Papuasia by J.J. Smith and myself. It is probable, nevertheless, that some

of Ridley's species belong to this section. However, this group section has now supplied 56 species from Papuasia and, as mentioned above, we may still expect considerable accessions.

It would appear that throughout the whole subgenus Hapalochilus, Papuan endemism almost exclusively occurs, for the distribution in the west appears to have its boundary in the Celebes and up to the present, no species is known to me which has penetrated beyond Papuasia in the east.

I propose to still maintain the two sections Scaphochilus and Trachychilus, although I recognise they are not as sharply separated from Coelochilus as is desirable.

B. trichromum Schltr., sp. nov.

Epiphyticum, pensile, simplex vel subsimplex. Rhizoma elongatum, densius pseudobulbis obsessum, vaginis satis amplis obtectum. Pseudobulbi ad rhizoma plus minusve appressi, cylindracei, unifoliati, apicem versus paululo angustati. Folium oblongo-ligulatum, oblique subacutatum, basi attenuatum, coriaceum, glabrum. Inflorescentiae brevissimae, uniflorae, pedunculo perbrevi, vaginis paucis obtecto; bractea ovali, acuminata, ovarium aquante. Flos in subgenere vix ligulata, acuta, glabra, lateralia reflexa, obliqua. Petala sepalis multo minora, oblique ovata, subacuta, glabra. Labellum carnosulum, sessile, anguste ligulatum, obtusiusculum, supra basin subinconspicue attenuatum, subtus longitudinaliter sulcatum, sepalis paulo brevius. Columna brevis, basi bene incrassata, clinandrio breviter dentato. Ovarium vix pedicellatum, cylindraceum glabrum.

A hanging epiphyte to 30 cm long with unbranched stems. Pseudobulbs 1 - 1.5 cm long and up to 4 mm thick below the middle. Leaves 6 - 7 cm long, 1 - 1.3 cm broad at about the middle. Inflorescences very short, with flower scarcely 1.5 cm long. Flower moderately small, wine red with stripes and yellow lip. Sepals 7 mm long. Petals 1.75 mm long. Labellum 5.5 mm long, a little fleshy. Ovary together with stalk scarcely longer than 5 mm, glabrous.

North-east New Guinea : In primary forest near the beach camp on the April River (Sepik District), alt. c. 1000m - C. Ledermann no. 8606, flowering in Sept. 1912.

The species stands closest to B. leucorhodum Schltr. but is specifically well distinguished by the flower colour and the form of the petals.

§ Sestochilus

Recently J.J. Smith segregated the Papuan species and some others into a special section Stenochilus which in my opinion should be included here. I am not convinced of the necessity of this separation, for it appears to me that these species stand nearer still to members of the true Sestochilus than do those which I placed under Pahudia, but which J.J. Smith desires to have united with Sestochilus. Besides the species of § Sestochilus already recorded from Papuasia, two others have meanwhile been described, viz. B. caryophyllum J.J. Sm. and B. Wollastomii Ridl. Including those described below, this section now comprises 11 species from the Territory.

B. rhizomatosum Schltr., sp. nov.

Epiphyticum, decumbens, pro genere validum. Rhizoma crassum, polyrhizum, elongatum, distanter pseudobulbis obsessum. Pseudobulbi cylindracei, lateraliter compressi, unifoliati. Folium oblongo-spathulatum, obtusum, apice breviter excisum, basi in petiolum brevem sensim angustatum, carnoso-coriaceum. Inflorescentiae erectae, more sectionis uniflorae, in rhizomate distanter ortae, pedunculo brevi; bractea ovali-cucullata, apiculata, ovario pedicellato multe breviore. Flores erecti, satis magni glabri. Sepala patentia, intermedium oblongo-ligulatum, obtusiusculum, lateralia falcato-oblonga, basi margine anteriore dilatata, cum pede columnae mentum obtusum, subporrectum formantia. Petala obliquae lanceolato-ligulata, subacuta, sepalis paulo breviora. Labellum carnosum, anguste linguiforme, antice valde obtusum, basi sagittato-auriculata curvatum et in unguem anguste cuneatum contractum, subtus alticarinatum. Columna brevis, crassiuscula, brachiis brevibus, obliquae semiovalibus, obtusis, pede elongato. Ovarium pedicellatum gracile. glabrum.

A long-creeping epiphyte with robust rhizomes 6 mm thick and densely covered with roots. Pseudobulbs 2.5 – 3.5 cm high, to 7 mm broad at about the middle. Flowers moderately large with sepals brown outside, with petals lighter yellow on the inside and a yellow lip. Sepals 2.2 cm long; the lateral ones forming a blunt but spreading chin 1.2 cm long. Petals scarcely shorter than the sepals. Lip 1.2 cm long, 4 mm broad above the base, i.e. between the points

of the ears [lateral lobes]. Column 8 mm high. Ovary together with the stalk about 2.5 cm long.

North-east New Guinea : In alluvial forest near the main camp at Malu, on the Sepik [River], alt. c. 20 - 40m - C. Ledermann no. 7979, flowering in July 1912.

This very characteristic species of the section Sestochilus is distinguished from other species of the region by the narrow lip which is obviously blunt in front. In addition well distinguished by the strongly spreading mentum.

§. *Dialeipanthe*

I cannot understand how J.J. Smith should have failed to properly comprehend my section Lepidorhiza, for otherwise it is inconceivable that he should desire to unite it with a section of such characteristic habit as Dialeipanthe. The latter may be recognised quite easily by its fine wiry stalks.

In my work on the Orchidaceae of German New Guinea I was able to enumerate 16 species from Papuasia. Since then five more have been published from Dutch New Guinea and four are described below by me. Papuasia therefore has already supplied 25 species of the group [section].

The Dialeipanthe species belong to the most interesting type of a genus rich in peculiarities. It is becoming clearer that many species seem to have a very local distribution and to be limited in their occurrence to certain mountain ranges. It may now certainly be assumed that the centre of development of the section lies in Papuasia.

The five species described from Dutch New Guinea and referred to above are : B. scrobiculilabré J.J. Sm., B. mamberamense J.J. Sm., B. Pristis J.J. Sm., B. teretilabre J.J. Sm., and B. orsidice Ridl.

B. cuspidipetalum Schltr., sp. nov.

Epiphyticum, in ramis arborum decumbens. Rhizoma flexuosum, laxius pseudobulbis obssessum, gracilius. Pseudobulbi cylindracei, apicem versus paulo angustati, unifoliati. Folium oblongo-ligulatum, acutum, basi in petiolum breve attenuatum, plus minusve obliquum. Scapi gracillimi, rigidi, folia duplo vel plus duplo excedentes, erecti, paucivaginulati; racemus sensim evolutus, distichus, subdense multiflorus; bracteis anciptibus falcato-ovatis, acutis, ovario pedicellato paulo brevioribus. Flores in sectione inter maiores, glabri, sulfurei, labello fulvo apice flavo. Sepala lanceolata, acuminatissima, lateralia obliqua, basi margine anteriore dilatata cum pede columnae mentum obtusum, breve formantia. Petala oblique ovalia, cuspidata, margine juxta apicem, sublobulata, quam sepala multo minora. Labellum ambitu oblongo-lanceolatum, acuminatum, tercia parte basilari carinis 2 irregulariter crenulato-dentatis ornatum. Columna mediocris, juxta antheram breviter bicuspitatum, pede incurvulo brevi. Ovarium breviter pedicellatum, gracile, glabrum.

A long-creeping epiphyte 40 - 45 cm high. Pseudobulbs 2 - 3 cm high, 3.5 - 4.5 mm in diameter below the middle. Leaves with short stalk 14 - 18 cm long, 2 - 3.2 cm broad at about the middle. Scape together with raceme to 45 cm high. Flowers moderately large, sulphur yellow with brownish red lip tinged yellow on the tips. Sepals 3 cm long; the lateral ones forming a chin 3 mm long. Petals 4 mm long. Lip 1.9 cm long, 5.5 mm broad in the middle. Column 4.5 mm high. Ovary together with stalk 1 cm long.

North-east New Guinea : In range forest by the Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12977, flowering in Aug. 1913.

This characteristic species is best placed next to B. acuminatum Schltr.

B. falcibracteum Schltr., sp. nov.

Epiphyticum, in ramis arborum decumbens. Rhizoma flexuosum, pro sectione sublaxe pseudobulbis obssessum, gracilius. Pseudobulbi cylindracei, apicem versus sensim leviter attenuati, unifoliati. Folium erectum, ligulatum, acutum, basi in petiolum distinctum attenuatum. Scapi gracillimi, rigidi, cum racemo folium fere duplo superantes, erecti, paucivaginulati; racemo sensim evoluto, densius multifloro; bracteis anciptibus, ovato-falcatis, breviter acuminatis, ovario pedicellato paulo brevioribus. Flores in sectione mediocres, glabri, sulfurei, labello fusco. Sepala lanceolata, acuminatissima, lateralia basi margine anteriore ampliata cum pede columnae mentum obtusum, breve formantia. Petala quam sepala multo minora, oblique ovalia aristato-cuspidata, juxta apicem utrinque in dentem triangulum producta. Labellum circuitu anguste lanceolatum, acuminatissi-

mum, basi utrinque lobulo falcato-semiovali obtuso donatum, supra leviter constrictum et carinis 2 crenulatis in medium decurrentibus ornatum, antice margine grosse crenato-dentatum. Columna mediocris, apice dilatata, juxta antheram utrinque apiculata, pede adscendente, brevi. Ovarium pedicellatum gracile.

A creeping epiphyte to 40 cm high. Pseudobulbs 2 - 3 cm high, about 3 mm thick in lower part. Leaves with distinct stalk 12 - 18 cm long, 1 - 1.9 cm broad at about the middle. Scape together with raceme 40 cm long. Bracts about 8 mm long. Flowers of medium size, sulphur yellow with reddish brown lip. Sepals 1.1 cm long, the lateral ones forming a very blunt chin 4 mm long. Petals 2 mm [cm?] long. Labellum 1.3 mm long, 3 mm broad in the middle. Column 5 mm high. Ovary together with the stalk to 1 cm long.

North-east New Guinea : In range forest on the Hunstein Range (Sepik District), alt. c. 1050m - C. Ledermann no. 8435, flowering in Aug. 1912; on the mountain base (Sepik District), alt. c. 850m C. Ledermann no. 9277a, flowering in Oct. 1912.

Related most closely to B. tenuipes Schltr.

B. rubrolineatum Schltr., sp. nov.

Epiphyticum, in ramis truncisque arborum decumbens. Rhizoma flexuosum, gracilis, laxe pseudobulbis obsessum. Pseudobulbi cylindracei, unifoliati, basin versus paulo incrassati, erecti. Folium erectum, oblique oblanceolato-ligulatum, acutum, basin versus sensim subpetiolato-attenuatum, coriaceum. Scapi gracillimi, rigidi, paucivaginulati, folia bene superantes; racemo sensim evoluto, leviter flexuoso, subdense multifloro, usque ad 8 cm longo; bracteis distichis ovatis, acuminatis, falcato-conduplicatis, ovario pedicellato brevioribus. Flores in sectione inter medios, glabri, albi, rubrolineati. Sepala anguste lanceolata, acuta, lateralia obliqua, basi margine anteriore paulo dilatata, cum pede columnae mentum breve obtusum formantia. Petala minuta, oblique ovata, acuta. Labellum anguste lanceolato-ligulatum, basi in lobos 2 parvos, falcato-oblongos, apice truncato subcrenulatos productum, carinis 2 obtusis e basi usque in quartam partem basilarem decurrentibus ornatum. Columna brevis, crassiusscula apice breviter bicuspidata, pede angusto. Ovarium pedicellatum, glabrum.

A long-creeping epiphyte to 45 cm high. Pseudobulbs 3 - 4 cm high, about 4 mm in diameter above the base. Leaves 22 - 27 cm long, 2.5 - 3.7 cm broad above the middle. Scape together with raceme to 45 cm long. Bracts 6 mm long. Flowers moderately large, white with red stripes. Sepals 2.2 cm long; the lateral ones forming a chin 4 mm long. Petals 3.5 mm [cm?] long. Labellum 7 mm long.

Column 4.5 mm high. Ovary together with the stalk about 7 mm long.

North-east New Guinea : Near rocky creek banks in primary forest near the [Mount] Hunstein summit, (Sepik District), alt. c. 200m - C. Ledermann no. 8216, flowering Aug. 1912.

The habit of this species reminds one most strongly of B. elasmatopus Schltr. but is quite different by the form [shape] of the lip.

B. serripetalum Schltr., sp. nov.

Epiphyticum, in ramis arborum decumbens. Rhizoma flexuosum, laxe pseudobulbis obssessum, gracilius. Pseudobulbi cylindracei, basin versus paulo dilatati, unifoliati. Folium angustius lanceolatum, acutum, basin versus sensim in petiolum brevem angustatum. Scapi gracillimi, rigidi, folia duplo fere superantes, paucivaginulati; racemo disticho sensim evoluto, subdense multifloro; bracteis ancipitibus, ovato-falcatis breviter acuminatis, ovario pedicellato paulo brevioribus. Flores in sectione mediocres, glabri, heterochronici. Sepala anguste lanceolata, acuminatissima, lateralia basi margine anteriore paulo dilatata, cum pede columnae mentum breve obtusum formantia. Petala oblique ligulata, cuspidato-aristulata, dimidio superiore margine serrata, sepalis multo minora. Labellum anguste lanceolatum subalato-acuminatum, dimidio inferiore longitudinaliter et obtuse bicostatum, lobis basilaribus parvulis, falcato-oblongis, apice truncatis. Columna mediocris, juxta antheram bicuspida, pede brevi. Ovarium gracile breviter pedicellatum, glabrum.

A long-creeping epiphyte to 40 cm high. Pseudobulbs 2 - 2.5 cm high above the base 4 - 5 mm in diameter. Leaves with the short stalk 13 - 15 cm long, 2.3 - 3 cm broad at about the middle. Scape together with the raceme to 40 cm high. Flowers of medium size, pale yellow with reddish brown lip. Sepals 2 cm long; the lateral ones forming a chin 4 mm long. Petals scarcely 4 mm long. Labellum 1.6 cm long. Column 4 mm high. Ovary together with stalk 1 - 1.2 cm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12694 (TYPE), flowering in Aug. 1913; in tall forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 9260, flowering in Oct. 1912; in range forest on Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 9866, flowering in Nov. 1912.

Related to B. distichum Schltr.

§. Papulipetalum

In 1913 my enumeration of this section contained 16 species in Papuasia. Two species have been added since from Dutch New Guinea, so that including the one described below, it now contains 19 species in Papuasia.

As previously stated, it will be necessary to define the boundaries of the group more precisely when Papuasia has been further explored.

B. phaeorhabdos Schltr. sp. nov.

Epiphyticum humile. Rhizoma breve, decumbens, dense pseudobulbis obsessum. Pseudobulbi anguste cylindracei, basi lageniformi-incrassati, unifoliati. Folium erectum, oblique lineare, acutum, basi attenuatum, glabrum. Inflorescentiae singulae, uniflorae, pedunculo erecto, basi paucivaginulato; bractea ovata, apiculata, ovario longipedicellato multoties breviore. Flos in sectione mediocris, erectus, fuscus, striis brunneis ornatus, labello albo, roseo-punctato. Sepalum intermedium lanceolatum, obtusiusculum, glabrum, lateralia oblique oblonga, obtusiuscula, basi margine anteriore paulo dilatata cum pede columnae mentum obtusum, breve formantia, sepalum intermedium manifeste superantia. Petala sepalis multo minora, oblique oblongo-ligulata, obtusa, margine posteriore supra basin leviter dilatata, dimidio superiore papulis obtusis ornata. Labellum curvatum e basi latiovata oblongo-angustatum, obtusum, dimidio inferiore bicostatum, subtus longitudinaliter crasse carinatum, glabrum. Columna brevis, stelidiis suberectis, oblique ligulatis, obtusiusculis, pede angusto, incurvato. Ovarium cum pedicello gracili glabrum.

A creeping epiphyte 15 - 20 cm high. Pseudobulbs 1.5 - 2 cm high, to 3 mm thick above the base and scarcely more than 1.5 mm in diameter above. Leaves 12 - 17 cm long, 4 - 7 mm broad in about the middle. Scape about 1 cm long. Flowers erect, brownish yellow with brownish red stripes and white lip with red spots. Dorsal sepal 8 mm long; the lateral ones, more than 9 mm long and forming a chin 2.5 mm long. Petals scarcely 3 mm long. Labellum 4.5 mm long, about 3 mm broad below the middle. Column about 3 mm high. Ovary together with long, slender stalk 2 cm long.

North-east New Guinea : In range forest on Mount Lord, (Sepik District), alt. c. 1000m - C. Ledermann no. 9864, flowering in Nov. 1912.

Related to B. papulipetalum Schlt. but striking because of the very narrow leaves.

§. Brachypus

Nothing in this group [section] has been altered since my enumeration of the Papuan species. It now contains 12 species in the Territory.

B. Stolleanum Schltr., sp. nov.

Epiphyticum, humile. Rhizoma valde abbreviatum. Pseudobulbi anguste ovoidei vel cylindraceo-ovoidei, unifoliati. Folium erectum vel suberectum, oblanceolato-ligulatum, acutum vel sub-acuminatum, basin versus sensim petioliformi-attenuatum, subcoriaceum, glabrum. Inflorescentiae abbreviatae, uniflorae, pedunculo brevi, paucivaginato; bractea cucullata, apiculata, ovario pedicellato multo breviore. Flores in sectione vix mediocres, glabri, pallidi-flavidi, carnosos-maculati. Sepala anguste lanceolata, apicem versus attenuata, obtusiuscula, lateralia basi margine anteriore paulo ampliata cum pede, columnae mentum obtusum, breve formantia. Petala, quam sepala multo minora, oblique lanceolato-linearia, acuta, columnam fere duplo superantia. Labellum curvatum, circuitu anguste rhombeum, dimidio anteriore attenuatum, obtusiusculum, basi medio obscure bicostatum. Columna brevis, stelidiis suberectis, obtusiusculis, margine interiore obtuse sublobulatis, antheram bene superantibus, pede satis longo, apice incurvulo. Ovarium pedicellatum, glabrum, cylindraceum.

An epiphyte to 17 cm high forming short tufts. Pseudobulbs about 2 cm long, to 7 mm in diameter above the base. Leaves 12 - 20 cm long, 2 - 3.4 cm broad above the middle. Scape scarcely 1 cm long. Flowers moderately small for the section, pale yellow with flesh-coloured spots. Sepals 2.2 cm long; the lateral ones forming a blunt chin about 4 mm long. Petals 6 mm long. Labellum scarcely 4 mm long, 1.75 mm broad below the middle. Column scarcely 4 mm long. Ovary together with stalk 1.5 cm long.

North-east New Guinea : In primary forest on rocky creek banks on the creeks of the summit of [Mount] Hunstein (Sepik District), alt. c. 150m - C. Ledermann no. 8188, flowering in Aug. 1912.

The species stands close to B. rhomboglossum Schltr. but has longer tapering sepals and a labellum which is narrowing towards the front.

§. Diceras

It is of interest that two more species agreeing perfectly in habit and floral characters with this hitherto monotypic group [section] can now be added to it. One of the species has two curious excrescences instead of horns on the lip, but otherwise possess all the characteristics of the group, and thus in a way constitutes a transition to §. Uncifera.

B. posticum J.J. Sm. from Dutch New Guinea also belongs here.

I previously separated Uncifera and Manobulbon by their habit characteristics. J.J. Smith is of the opinion that the two should form only one section, but I think it advisable in the future to regard them as separate sections because as far as I can see Manobulbon, after including species from the western territories, will be of fair magnitude and by the addition of forms differing in habit, its size will be increased further.

The division into groups [sections] is only to facilitate a review, but this advantage will be lost if the group [section] becomes too large. In a gigantic genus like Bulbophyllum a division into many groups [sections] is desirable for practical reasons.

B. bicornutum Schltr., sp. nov.

Epiphyticum, patulum, ramosum.
Rhizoma caulinome, parum ramosum, patulum, laxe pseudobulbis ob sessum. Pseudobulbi ovoidei, unifoliati, angulati, parvuli. Folium ligulatum, apiculatum, sessile, coriaceum, glabrum. Inflorescentiae abbreviatae, uniflorae, pedunculo brevi, vaginis ob sesso; bractea ovata, apiculata, ovario breviora. Flores parvuli alboviridi, brunneo-striati, glaberrimi. Sepala ovata, subacute, lateralia basi margine anteriore bene ampliata cum pede columnae mentum obtusissimum, breve formantia. Petala oblique ovata, obtusa, quam sepala paulo breviora. Labellum curvatum, circuitu obovato-ellipticum, apiculatum, medio leviter constrictum, basi cornubus 2 subulatis, subfalcatis, obtusiusculis ornatum. Columua perbrevis, brachiis subquadratis, porrectis, margine superiore obtuse et per breviter bidentatis. Ovarium subsessile cylindraceum, sepalis subdupo brevius.

A hanging epiphyte to 30 cm long, little branched above, forming tufts. Pseudobulbs 8 - 12 cm high, 5 - 7 mm in diameter below the middle. Leaves 4 - 5.15 cm long, 5 - 7 cm broad at the middle.

Inflorescences with the flower very short, scarcely more than 7 mm long. Flowers whitish green, with brownish red stripes, small and delicate Sepals .4 mm long; the lateral ones forming a very blunt chin. Petals 3.75 mm long. Lip scarcely 2.5 mm long. Column very short, with narrow foot, scarcely 2.5 mm long. Ovary hardly more than 3 mm long.

North-east New Guinea : In range forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11452, flowering in Mar. 1913.

Closely related to B. diceras Schltr. but from it well separated by the shorter and thicker pseudobulbs, somewhat larger more ovate petals and the lip is broader in front, narrower in the lower part with thicker and less curved horns.

B. bigibbum Schltr., sp. nov.

Epiphyticum, patulum. Rhizoma cauliniforme, flexuosum, simplex vel parum ramosum, laxe pseudobulbis ob sessum. Pseudobulbi parvuli, ovoidei, unifoliati, obtuse angulati. Folia linearia vel ligulata, acuta, basi paulo angustata, coriacea, glabra. Inflorescentiae abbreviatae, uniflorae, cum flore pseudobulbis breviores. Flos parvulus, pallide vinosus, purpureo-striatus, glaberrimus. Sepala ovata, subacuta, lateralia basin versus antice ampliata cum pede columnae mentum breve, valde obtusum formantia. Petala oblique ovata, obtusa, quam sepala paulo breviora. Labellum curvatum, e basi late rhombea lanceolato-angustatum, obtusum, superne supra basin gibbis 2 obtusis, brevibus ornatum. Columna per brevis, brachiis adscendentibus ovatis obtusis, margine superiore breviter et obtuse unidentato, pede angusto, incurvulo. Ovarium subsessile, cylindraceum, glabrum.

An epiphyte hanging down in tufts, 20 - 25 cm long. Pseudobulbs at intervals of about 8 - 15 mm, small, 5 - 6 mm high, 3 - 3.5 mm in diameter below the middle. Leaves 2 - 3 cm long, 3 - 3.5 mm broad at about the middle. Inflorescence with the flower scarcely 5 mm long. Flowers very small, pale wine red with dark red stripes. Sepals 2.5 mm long, the lateral ones forming a very short and blunt chin. Petals little shorter than the sepals, little over 2 mm long. Lip about 1 mm long. Column very short with 1 mm long slender foot. Ovary almost sessile, 1.25 mm long.

North-east New Guinea : In range forest on Mount Lord
 (Sepik District), alt. c. 1000m - C. Ledermann no. 10123, flowering in
 Dec. 1912.

A somewhat interesting species out of the section Diceras, but
 in all its parts smaller than the two other species and therefore
 characteristic in that the two horns at the base of the lip are
 reduced to two short bumps.

§. Manobulbon

As far as I can ascertain, 16 species of this section have been reported from Papuasia, viz. in addition to the 14 previously enumerated by me, also the following : B. angicense J.J. Sm. and B. constrictilabre J.J. Sm. B. digitatum J.J. Sm. has recently been raised by J.J. Smith as the Type of a special section which he calls Gongorodes. In its floral structure the plant reminds one of Monomeria. B. adpressiscapum J.J. Sm. and B. furciferum J.J. Sm. belong to §. Uncifera as far as I understand Smith's group.

The centre of distribution for the section seems to extend the Moluccas to the Celebes and probably still further. East of Papuasia however the group is unrepresented.

B. longiserpens Schltr., sp. nov.

Epiphyticum, longiserpens, ramosum. Rhizoma filiforme, valde elongatum, distanter pseudobulbis ob sessum, radicans. Pseudobulbi cylindracei, unifoliati, valde distantes, erecti vel suberecti, mox plus minusve rugulosi. Folium erecto-patens, oblongo-ligulatum vel sublanceolatum, subacutum vel obtusiusculum, basi breviter contractum, glabrum, coriacenum. Inflorescentiae in rhizomate natae, satis numerosae, erectae per laxae pauci-(4—6-)florae, pedunculo gracili, pseudobulbos longitudine superante, paucivaginato; bracteis ovatis, acuminatis, ovario pedicellato multo brevioribus. Flores in sectione mediocres, glaberini, tenues, brunnescenti-flavi, resecostriati. Sepala ovata vel ovato-lanceolata, subacuta, lateralia basi margine anteriore dilatata cum pede columnae mentum obtusum, breve formantia. Petala oblique elliptica, breviter et obtusiuscule acuminata, sepalis subtriplo breviora. Labellum curvatum, circuitu oblongo-ligulatum, subacutum, laeve, medio fere levissime attenuatum. Columna brevis, brachiis falcato-oblongis obtusis, suborrectis, margine superiore obtuse bidentatis, pede angusto, apice leviter incurvulo. Ovarium pedicellatum, gracile, glabrum.

An epiphyte creeping over long distances with a slender winding rhizome to more than 2 m long. Pseudobulbs at intervals of 15 - 30 cm, erect, 1.5 - 4 cm high, 2 - 4 mm in diameter. Leaves 6 - 9 cm long, 1.5 - 2.5 cm broad at or below the middle. Inflorescences with stalk 8 - 12 cm high, very loosely 4 - 6 flowered. Flowers brownish yellow or pink with red stripes. Sepals 9 mm long; the lateral ones forming a chin 2 mm long. Petals 2.75 mm long. Labellum 3.5 mm long. Column very short, scarcely 1.5 mm high. Ovary together with stalk 1.5 cm long.

North-east New Guinea : In range forest on the summit of [Mount] Hunstein, (Sepik District), alt. c. 1350m - C. Ledermann no. 11017, no. 10941, flowering in Feb. 1913.

Related to B. cylindrobulbum Schltr. but distinguished by the very loose high inflorescences and the colour of the flowers.

§. Piestobulbon

It is desirable to establish a new section Piestobulbon, comprising the two species described below, which correspond quite well in their sectional characters. It includes dichotomously branched plants with elongated stems and pendant habit. The flatly compressed unifoliate pseudobulbs are chiefly found distributed in the forks of the stem-like rhizome. The single-flowered inflorescences appear singly or tufted between the sheaths of the rhizome and are characterised by short but slender more or less twisted flower-sheaths. The small flowers are white, striped with reddish brown or bluish red, with rather long lanceolate sepals, small petals and a tongue-shaped labellum which is very narrowly clawed and therefore very mobile and thickly ciliated on the edges. The short column is furnished with subulate stelidia and a conspicuous foot.

The group is perhaps best placed behind Sphaeracron but before Leptopus.

At present the section seems to be represented only by the two

species described here, but in Dahlem Herbarium there is a flowerless specimen, collected during the 'Gazelle Expedition' in the Galevostrails, marked by Kränzlin as 'Dendrobium sp.' which may belong here.

B. fasciculiferum Schltr., sp. nov.

Epiphyticum, scandens, hinc et inde dichotome ramosum. Radices elongatae, filiformes, tenues. Rhizoma decumbens vel scandens, cauliniforme. Pseudobulbi ovati, valde compressi, unifoliati, in rhizomate valde distantes. Folium lanceolatum, acutum vel subacutum, basi contractum. Inflorescentiae in fasciculis dissitis, in rhizomate natis, uniflores, pedunculo gracili, paucivaginulato; bractea ovata, acuminata, ovario paulo breviore. Flores parvuli, albidi, violaceo-striati. Sepala anguste oblonga, obtusa, glabra, lateralia basi margine anteriore dilatata cum nede columnae mentum breve obtusum formantia. Petala sepalis fere 4—5-plo breviora, oblique oblongo-spathulata, obtusa, glabra. Labellum oblongo-ligulatum basi paulo dilatum, apice ipso leviter incrassatum, dimidio anteriore margine pilis tenuibus glanduliferis ciliolatum, sepalis subaequitongum. Columna brevis, glabra, steliis oblique subulatis, satis magnis, pede mediocri. Ovarium subsessile, glabrum, cylindraceum.

A creeping to scrambling, little branched epiphyte to 40 cm long. Pseudobulbs 1 – 1.3 cm long, 5 – 6 mm broad below the middle. Leaves 3.5 – 5 cm long, 9 – 11 mm broad below the middle. Inflorescences with flower 2.5 – 3 cm long. Flower moderately small, whitish with bluish red stripes. Sepals 7 mm long; the lateral ones broadened towards the base in front and forming a short blunt chin. Petals scarcely 1.25 cm long. Lip almost as long as the sepals. Ovary scarcely 6 mm long.

North-east New Guinea : In range forest at the hill camp on the Sepik [River], alt. c. 800m – C. Ledermann no. 13133, flowering in Aug. 1913.

This species is distinguished from the related B. piestobulbon Schltr. by the creeping habit, lesser branching, smaller pseudobulbs and larger flowers with differently shaped parts.

B. piestobulbon Schltr., sp. nov.

Epiphyticum, patulum, ramosum. Rhizoma cauliniforme, dichotome ramosum, laxe pseudobulbis obsesum, vaginis dense obtectum. Pseudobulbi anguste oblongi, valde compressi, uni-

foliati, lucidi. Folium ovato-lanceolatum, acutum, basi contractum, glabrum, pro genere tenuius. Inflorescentiae sparsim in rhizomate in fasciculis natae, graciles, uniflorae, pedunculo paucivaginato flexuoso; bractea ovali, acuminate, ovarium fere aequante. Flos parvulus, albus, brunneo-striatus. Sepala oblongo-ligulata, obtusiuscula, margine dimidio inferiore minute et sparsim ciliolata, lateralia obliqua, basin versus margine anteriore paulo dilatata cum pede columnae mentum per breve obtusum formantia. Petala sepalis multo breviora, oblique oblonga, breviter acuminata, glabra. Labellum carnosulum linguiforme, obtusum, mobile, basi cordatum, margine dimidio anteriore tenuiter ciliolatum, sepalis subaequilongum. Columna brevis, stelidiis oblongis, breviter acuminatis, brevibus, pede brevi. Ovarium sessile, cylindraceum, glabrum.

A hanging dichotomously branched epiphyte to 80 cm long. Pseudo-bulbs, 1.5 - 2 cm long 6 - 8 mm broad at about the middle. Leaves 3 - 4.7 cm long, 1 - 1.3 cm broad below the middle. Inflorescences with flower about 8 mm long. Flowers small, white, with brown stripes, sepals 3.5 mm long; the lateral ones somewhat oblique. Petals scarcely 0.75 mm long. Lip almost as long as the sepals. Ovary about 2 mm long.

North-east New Guinea : In primary forest by the main camp at Malu, on the Sepik [River], alt. c. 20 - 80m - C. Ledermann no. 8081, flowering in July 1912.

This species together with the above B. fasciculiferum Schltr. form the new section, described above, under the subgenus Eu-Bulbophyllum. The habit already distinguishes the two species well.

§. Polyblepharon

Nest to §. Coiloc hilus, this is probably the section richest in species in Papuasia. At present it even exceeds slightly Coelochilus though I do not doubt that the latter will ultimately surpass it. I have previously mentioned 55 species for Papuasia which certainly belong here. As far as I can ascertain, five more have been recorded in the meantime, which should be included also. They are B. gautierense J.J. Sm., B. orohense J.J. Sm., B. palilabre J.J. Sm., B. cerambyx J.J. Sm. and B. birugatum J.J. Sm. Including the two described here, it is represented now in the Territory [Papuasia] by 62 species.

There can be no doubt that the centre of development for the

group is in Papuasia, for only a few species occur beyond Papuasia and these represent distinct radiants of the section towards the east and west.

B. ablepharon Schltr., sp. nov.

Epiphyticum, pusillum, caespiticium.

Rhizoma valde abbreviatum. Pseudobulbi aggregati, minuti, ovoideo-cylindracei, unifoliati, vaginis absconditi. Folium erectum, elliptico-oblongum, obtusum vel minute apiculatum, basin versus sensim petioliformi-attenuatum, glabrum. Inflorescentiae brevissimae, uniflorae, pedunculo perbrevi, vaginis paucis obtecto; bractea ovali-eucullata, subacuminata, ovarium subexcedente. Flos minutus, vinoso-purpureus, suberectus. Sepala anguste lanceolata, obtusiuscule acuminata, glabra, lateralia in laminam lanceolatam, obtusiuscule acuminatam, concavam connata. Petala sepalis subaequilonga, oblique lanceolata, longius acuminata, glabra. Labellum brevissime unguiculatum, lamina ima basi in auriculas 2 retrorsas, oblique semioblongas, obtusas, parvulas producta, tertia parte basali quadrata, angulis obtusis, caeterum linearili-linguiformis, obtusa, medio in tertia parte basali callo parvulo, obtuse conico ornata, eciliata, omnino glabra. Columna brevis brachis erectis, oblique linearibus, oblique acuminatis, pede brevi. Ovarium sessile, cylindraceum, glabrum.

A small epiphyte 5 - 6 cm high. Pseudobulbs completely hidden by the dry leaf sheaths, scarcely 3 mm high. Leaves 4.5 - 5.5 cm long, 1 - 1.3 cm broad at about the middle. Inflorescences with the flower scarcely more than 9 mm high. Flower wine red, small. Sepals 6.5 mm long. Petals little shorter than the sepals, 5 mm long. Labellum 3.5 mm long, scarcely 1 mm broad in the lower third when spread out. Columns together with the arms about 1.5 mm long. Ovary 1 mm long.

North-east New Guinea : In range forest on the rocky peaks (Sepik District), alt. c. 1100m - C. Ledermann no. 12354, flowering in July 1913.

The species is related to B. cryptanthum Schltr. and related species but can be distinguished from all those by the narrow, tapering sepals and the very characteristic eciliate lip as in B. eciliatum Schltr.

B. microthamnus Schltr., sp. nov.

Epiphyticum, erectum vel patulum, ramosum. Rhizoma caulinome, ramosum, plus minusve flexuosum, pseudobulbis numerosis, distantibus obsessum. Pseudobulbi parvuli, cylindracei vel ovoideo-cylindracei, unifoliati. Folium linearili-ligulatum, apiculatum, basin versus paulo angustatum. Inflorescentiae valde abbreviatae, uniflorae, pedunculo perbrevi, vaginis paucis (2-3) obtecto; bractea ovata, obtusa,

ovarium subexcedente. Flos in sectione inter minimos, laete flavus, fusco-striatus. Sepala oblonga, obtusa, margine minutissime ciliolata, lateralia in laminam late oblongam, apice breviter et obtuse bilobulatam connata. Petala e basi oblique oblonga linearis-attenuata, subacuta, glabra, sepalis subaequilonga. Labellum circuitu rhombeo-spathulatum, obtusum, ima basi cordato-emarginatum, dimidio anteriore margine ciliatum, supra basin callo parvulo, alto, emarginato ornatum. Columna brevis, brachiis e basi linearisubulatis, columna ipsa aequilongis, suberectis, pede brevi. Ovarium sessile cylindraceum glabrum.

A small shrubby epiphyte 10 - 15 cm high. Pseudobulbs very small, scarcely 2 mm high. Leaves 1 - 1.5 cm long, 1.5 - 2.75 mm broad. Inflorescences very minute, single-flowered. Flowers bright yellow with brownish red stripes. Sepals 3.5 mm long; the lateral ones form a very short and blunt chin at the base. Petals scarcely shorter than the sepals. Labellum 1.75 mm long. Ovary about 1 mm long.

North-east New Guinea : In range forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11240, no. 11392, flowering in Mar. 1913.

This species is close to B. microdendron Schltr. but has shorter leaves, flowers with different colours, blunter and the labellum ciliate only on the margin and the individual cilia are longer. The column with its long awl-shaped arms is very different.

S. Ephippium

I have previously stated that it is difficult to give this section definite boundaries. J.J. Smith therefore proposed to separate a number of species but it is doubtful if he has arranged them to better advantage. The final circumscription of this as well as of other sections belonging to this gigantic genus must be left for a future monograph. Without doubt we have already gained much by having the genus divided to such an extent that we do not grope in the dark among 1000 species as we did before 1912.

To the 15 species enumerated for Papuasia in 1913, five more have meanwhile been described from Dutch New Guinea, viz.

B. longicaudatum J.J. Sm., B. falcatacaudum J.J. Sm., B. undatilabre J.J. Sm., B. lamelluliferum J.J. Sm. and B. arachnideum Ridl.

This group [section] now has 22 [sic] representatives in the Territory, including that described below.

B. inaequisepalum Schltr., sp. nov.

Epiphyticum, decumbens, humile.
Rhizoma flexuosum, sensim elongatum, dense pseudobulbis obsessum. Pseudobulbi cylindracei, basin versus paulo ampliati, curvato-adscendentes, unifoliati. Folium erectum, anguste ligulatum, obtusum vel minute apiculatum, basi subpetioliformi-attenuatum, glabrum. Inflorescentiae singulae erectae, uniflorae, cum flore folia bene superantia, pedunculo gracili, paucivaginulato, quam foliam vulgo bene breviore; bractea parvula, ovato-cucullata, acuminata, ovario gracillime pedicellato multoties breviore. Flos in sectione mediocris, glaber, flavescens-albidus, striis fuscis notatus. Sepalum intermedium lanceolato-ligulatum, apice leviter incrassato lateraliter compressum, obtusiusculum, lateralia oblique ligulata, obtusiuscula apiculata, extus apicem versus carinata, intermedium tertia parte superantia. Petala minuta, oblique ovalia, apice incrassatulo obtusiuscule subacuminata. Labellum curvatum, e basi suborbiculari-cordata dimidio anteriore linguiformi-attenuatum, subitus alticarinatum. Columna perbrevis, brachiis oblique linearibus, obtusis, apicem versus postice leviter angustatis, antice basi lobulo triangulo auctis. Ovarium gracillime pedicellatum, cylindraceum, glabrum.

A creeping epiphyte to 6 cm high. Rhizome to 13 cm long.

Pseudobulbs 0 - 7 mm long, to 3 mm broad about the base. Leaves 2 - 3 cm long, in the middle 3.5 - 5 mm broad. Scape to 2.3 cm long.

Flower yellowish white with brownish red stripes. Dorsal sepal 7 mm while lateral ones 1.2 cm long. Petals 2 mm long. Labellum 2 mm long. Column very short with a foot 2 mm long. Ovary together with stalk about 2 mm long.

North-east New Guinea : In mountain forest on the summit
 [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann
 no. 11322, flowering in Mar. 1913.

Belongs into the section Ehippium where it should be placed next to B. potamophila Schltr.

§. Nematorhizis

Since my compilation of the Papuasian species, only one, B. ovalipetalum J.J. Sm. has been added to this section, which is easily recognised by its habit.

Therefore, including those which follow, we know eight species from Papuasia. To what extent the section is represented in western

territories cannot be ascertained with certainty at present, for it appears that some of the species described from the Philippines belong here also. However, no species belonging here is known from east of Papuasia.

B. microcharis Schltr., sp. nov.

Epiphyticum, repens, perpusillum.

Rhizoma filiforme, flexuosum, ramosum, gracile, distanter pseudobulbis obsecsum. Pseudobulbi parvuli, ovoidei vel subglobosi, unifoliati. Folium erectum vel suberectum, ovatum, ellipticum vel ovale, apiculatum, basi contractum. Inflorescentiae erectae, singulae, uniflorae, pedunculo setiformi, basi paucivaginulato, folium vulgo subexcedente; bractea ovato-cucullata, breviter acuminata, ovario graciliter pedicellata multoties breviore. Flos minutus, viridis, brunneo-maculatus, glaber. Sepala lanceolata, acuminata, lateralia falcato-obliqua, antice basin versus ampliata cum pede columnae mentum breve, valde obtusum formantia. Petala obliqua, anguste lanceolata, acuminata, sepalis subaequilonga. Labellum curvatum, circuitu oblongum obtusiusculum, infra medium margine utrinque in lobum brevem obtuse triangulum dilatatum. Columna apicem versus paulo ampliata, brachiis oblique ovato-triangulis, obtusis, brevibus. Ovarium gracillime pedicellatum, glabrum.

A minute creeping epiphyte scarcely more than 2 mm [cm?] high.

Pseudobulbs at intervals of 6 - 12 mm, 2 - 3 mm high and almost as thick. Leaves 3 - 5 mm long, 2.5 - 3 mm broad below the middle. Scape 6 - 7.5 mm long. Flowers minute, green, with dark brown spots. Sepals 2.75 mm long; the lateral ones forming a short and blunt chin. Petals almost as long as the sepals, but much narrower. Labellum 1.5 mm long, 0.75 mm broad below the middle. Column 0.5 mm high. Ovary together with stalk about 4 mm long.

North-east New Guinea : In light primary forest near Camp 3 on the April River (Sepik District), alt. c. 100m - C. Ledermann no. 7365, flowering in May 1912.

An attractive little species which should be placed next to B. nematorhizis Schltr. in the section Nematorhizis, but well distinguished from all other species in the section of the region by the small flowers and the narrow, comparatively long petals.

§. Epibulbon

In Epibulbon we have a very characteristic group [section]

of which no species are known to me beyond Papuasia. I add another below to the ten species previously included here.

J.J. Smith has placed B. acutilingue J.J. Sm. under §. Fruticicola, but according to the description and illustration it should belong here. This section must be kept entirely separate from Fruticicola.

B. atrolabium Schltr., sp. nov.

Epiphyticum, erectum vel patulum. Rhizoma flexuosum, cum pseudobulbis omnino connatum. Pseudobulbi cylindracei, unifoliati, superpositi. Folia linear-ligulata, apiculata, basin versus sensim paulo angustata, subcoriacea, glabra, marginibus leviter recurvata. Inflorescentiae ad basin pseudobulborum natae, valde abbreviatae, uniflorae, pedunculo perbrevi; bractea ovata, apiculata, ovario pedicellato multo breviore. Flores tenues, in sectione mediocres, albi, labello atropurpureo. Sepala lanceolata, elongato-acuminatissima, glabra, lateralia basi margine anteriore dilatata, cum pede columnae mentum obtusum, breve formantia. Petala sepalis multo minora oblique rhombo-ovata, obtusiuscula, basi attenuata, glabra. Labellum lanceolatum, acutum, tertia parte basali paulo angustatum, margine et superne margines versus, breviter papilloso-puberulum. Columna brevis, glabra, brachiis erectis, falcato-subulatis, antheram vix excedentibus. Ovarium pedicellatum subclavatum, glabrum.

An erect or drooping epiphyte about 30 cm long. Pseudobulbs 1.5 - 2 cm long, scarcely 2 mm in diameter. Leaves 5 - 6.5 cm long, 6 - 7.5 mm broad. Inflorescences very short, single-flowered. Flowers white with blackish red lip. Sepals 1.1 cm long. Petals scarcely 1.5 mm long. Labellum 2.75 mm long. Column scarcely 1.5 mm long. Ovary with stalk about 5 mm long.

North-east New Guinea : On rocky creek banks near Camp 5 near the summit of [Mount] Hunstein (Sepik District), alt. c. 150m - C. Ledermann no. 8181, flowering in Aug. 1912.

The species is close to B. nebularum Schltr. and B. rhodoglossum Schltr., and must be placed after them. From both of these the species is well separated by the petals and the labellum.

§. Pelma

In 1913 I was already able to specify for Papuasia 24 species of this characteristic group [section]. Since then B. unigibbum

J.J. Sm. and B. oxysepaloides Ridl. have been described from Dutch New Guinea. It is possible also that a few more of Ridley's species may belong here, but due to a deficient description and remarks as to relationship, one cannot decide with certainty. Including those described below, we can assume with certainty that at least 27 Papuan species are known. However, I firmly believe that the group in Papuasia contains many more species, the discovery of which must be awaited.

B. lamprochlamys Schltr., sp. nov.

Epiphyticum, erectum vel patulum. Rhizoma crassiusculum, cauliforme, sublaxe pseudobulbis obsessum, vaginis pallidis, lucidis, compressis obtectum. Pseudobulbi graciles, cylindracei, unifoliati, lucidi. Folium oblongum, subacutum, basi breviter contractum, coriaceum, glabrum. Racemi arcuati laxe 3--10-flori, pseudo-bulbos haud superantes, pedunculo brevi, paucivaginulato. Flores in sectione vix inter mediocres, albidi, glabri. Sepala ovato-lanceolata, longius acuminata, lateralia intermedium paulo superantia, obliqua, basi antice paulo dilatata cum pede columnae mentum per breve, obtusissimum formantia. Petala sepalis multo minora, oblique oblonga, obtusiuscula, supra medium antice paululo dilatata. Labellum parvulum, circuitu oblongum, obtusum, basi truncatum, supra medium marginibus incurvis paulo constrictum, supra basin lamella semicirculari transversa donatum, tertia parte anteriore superne dense papillosum. Columna brevi, glabra, pede brevi. Ovarium breviter pedicellatum, clavatum, glabrum.

A somewhat robust epiphyte to 30 - 40 cm high. Pseudobulbs 4 - 5.5 cm long, 3 - 4 mm in diameter. Leaves 10 - 15 cm long, 3 - 4.7 cm broad at about the middle. Flower-racemes with the short stalk to 5 cm long. Flowers small, whitish. Dorsal sepal 4.75 mm long, the lateral ones 5.5 mm long and forming a very short blunt chin. Petals 2 mm long. Labellum scarcely 1.75 mm long. Column short, about 1.5 mm high, with short foot. Ovary together with stalk about 3 mm long.

North-east New Guinea : In range forest on the summit [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11454, withered flowers in Mar. 1913.

This species is best placed next to B. gorumense Schltr. in the section Pelma.

Chitonanthera Schltr.

This small and interesting genus, endemic in Papuasia, was only known up to 1913 by five species occurring in German New Guinea.

In 1915 two more species, C. reflexa J.J. Sm. and C. latipetala J.J. Sm. were recorded from Dutch New Guinea. There are now three novelties in Ledermann's collection so that the genus has increased to ten species. It is an interesting fact that in this genus, species occur with jointed and unjointed leaves.

C. angustissima Schltr., sp. nov.

Epiphytica, patula vel adscendens, pluricaulis. Rhizoma valde abbreviatum. Caules simplices, valde flexuosi, laxe foliati, gracillimi. Folia equitantia, angustissime linearia, acuta, dorso basi in caulem longe decurrentia, subcarnosula, glabra. Racemi more generis pauciflori, erecto-patentes, folio pluries breviores, pedunculo per-brevi; bracteis deltoideis, ovario brevi brevioribus. Flores minuti, pallide ochracei. Sepala patentia, intermedium ovale, obtusum, lateralia oblique latiovata, obtusiuscula. Petala quam sepala fere 3-plo breviora, oblique oblongo-spathulata, obtusa, glabra. Labellum petalis subdupo majus, oblongo-ligulatum, valde obtusum, basin versus sensim leviter angustum, minute papilloso-puberulum. Columna brevis, crassa, petala vix superans, clinandrio dorso obtuse bilobato, rostello brevi, triangulo, stigmate transverso, angustissimo. Ovarium sessile, cylindraceum, glabrum.

A tufted, drooping or ascending epiphyte to 30 cm long. Stems strongly curved and very slender, loosely covered with leaves. Leaves 1.2 - 2 cm long, scarcely reaching 1 mm broad. Inflorescences with flowers rarely longer than 4 mm. Flowers minute, pale brick red, scarcely 3 mm in diameter. Sepals about 1.25 mm long, the petals about three times shorter. Lip about 1 mm long. Column scarcely overtopping the petals.

North-east New Guinea : In range forest on the Lehm River, in the vicinity of the Hollrung Ranges (Sepik District), alt. c. 1500m - C. Ledermann no. 11567, flowering in May 1913.

The species stands closest to C. angustifolia Schltr. but has considerably narrower leaves, smaller flowers with glabrous petals and evidently glabrous, shorter column.

C. aphanopetala Schltr., sp. nov.

Epiphytica, patula e basi decum-
bente. Caules ut videtur plus minusve singuli, basi radicantes, simplices,
dense foliati, subflexuosi. Folia equitantia, oblique oblongo-ligulata, obtu-
siuscula, infra medium articulata, basi dorso longe in caulem decurrentia;
carnosula glabra. Inflorescentiae pauciflorae, folio duplo vel plus duplo
breviores, erecto-patentes, pedunculo brevi; bracteis deltoideis, ovario bre-
vioribus. Flores minuti, fide collectoris fusci, labello atrorubro. Sepala
patentia, late ovata, obtuse acuminata, glabra, lateralia obliqua. Petala
subinconspicua, minutissima, oblique oblonga, obtusa, minutissime papillosa.
Labellum oblongo-ligulatum, obtusum, medio leviter dilatatum, minute pa-
pillosum, sepalis paulo sed manifeste brevius. Columna crassa, sepalis sub-
duplo brevior, minute papillosa, clinandrii lobis dorsalibus recurvis, oblique
et obtusiuscule triangulis, brevibus; rostello triangulo, obtuso, medioeri.
Stigma generis. Ovarium breve, glabrum, cylindraceum.

A small erect or drooping epiphyte to 20 cm long, with simple
stems densely covered with leaves. Leaves 7 - 9 mm long, to 3 mm
broad at about the middle. Flower-racemes with flowers rarely more
than 4 mm long. Flowers minute, brownish red with dark red labellum,
scarcely 4 mm in diameter. Sepals 2 mm long, the petals scarcely
visible. Labellum about 1.5 mm long. Ovary 1.5 mm long.

North-east New Guinea : In range forest on the Lehni River in
the vicinity of the Hollrung Ranges (Sepik District), alt. c. 1500m -
C. Ledermann no. 11568, flowering in May 1913.

The species is best placed next to C. falcifolia Schltr. It
is well separated from it by the broader sepals, the much smaller
petals, the lip which is somewhat broadened in the middle and the
shorter column.

C. spathulata Schltr., sp. nov.

Epiphytica, caespitosa, multicaulis.
Rhizoma abbreviatum. Caules erecti vel patuli, simplices, densius foliati.
Folia equitantia lanceo-ligulata, acuta vel subacuta, infra medium articulata,
dorso basi in caulem longe decurrentia. Racemi erecto-patentes, pauci-
flori, dimidium folii vix excedentes, pedunculo brevi; bracteis deltoideis,
ovario brevioribus. Flores minuti, flavido-fusci, labello atrorubro. Sepala
patentia, oblonga vel elliptica, obtusiuscula, glabra, lateralia obliqua. Pe-
tala minuta oblique oblonga, obtusa, minute papillosa. Labellum sepalis
paulo brevius, obovato-spathulatum, obtusissimum, trinervium, minute pa-
pillosum. Columna crassiuscula, teres, petala subtriplo superans, minute
papillosa, clinandrii lobis dorsalibus refractis, lanceolato-triangulis, obtu-
siusculis, rostello erecto, triangulo, parvulo, stigmato generis. Ovarium sub-
sessile, breve, cylindraceum, glabrum.

A small epiphyte forming dense cushions of tufts, 20 - 30 cm high, with numerous unbranched stems. Leaves 1.1 - 1.5 cm long, 2.5 - 4 mm broad at about the middle. Inflorescences with flowers rarely more than 6 mm long. Flowers minute, according to the description of the collector brownish yellow with base of petals almost red. Labellum dark red, about 4 mm in diameter. Sepals 2 mm long, petals very tiny scarcely visible. Labellum about 1.75 mm long. Column scarcely 1 mm high. Ovary 1.5 mm long.

North-east New Guinea : In range forest by the Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12839, flowering in Aug. 1913.

The habitat of this species is closest to C. falcifolia Schltr. but has usually bigger leaves. Somewhat different are the flowers because of the broad, spathulate lip with three veins. I have not observed these three veins in any other species of the genus.

Phreatia Lindl.

I cannot entirely agree with circumscription of this genus as contrasted with Thelasis by J.J. Smith. If he had united them into one genus, I would have been able to understand, but that he should include now with Thelasis forms such as Thelasis phreatioides J.J. Sm. as well as Phreatia sphaerocarpa Schltr., must completely obscure the boundaries of the genus. In separating Oxanthera from Thelasis I have never experienced the least difficulty in keeping the species of these three genera distinct. J.J. Smith's difficulties began through not keeping Thelasis pure, but uniting it with Oxanthera. The transference of the new forms to Thelasis will naturally increase his difficulties, as there are no longer any boundaries for the distinction of these genera which previously could easily be kept separate.

The species approaching Oxanthera in the structure of their flower, but easily distinguished by the formation of a distinct

mentum, were arranged by me under the two sections Diplostypus and Rhynchophreatia. It might possibly have been better to unite these sections, as the character of the divided stipes in Diplostypus has not proved as valuable as expected. However, as the re-examination of my material shows, the species of these two sections are distinguished from the rest of the Phreatia species not only by the column, but also by the development of a conspicuous thick callus turned backwards at the base of the labellum.

As, on the contrary, the base of the labellum in Phreatia is usually concave and without the formation of the callus, I am now of the opinion that we shall keep Phreatia pure, if we separate as a special genus those species previously placed by me under the two sections Diplostypus and Rhynchophreatia, which may now be named Rhynchophreatia. This genus will then contain R. sphaerocarpa Schltr. (Phreatia sphaerocarpa Schltr.), R. wariana Schltr. (Phreatia wariana Schltr.), R. phreatioides (J.J. Sm.) Schltr. (Thelasis phreatioides J.J. Sm.), R. mamberamensis (J.J. Sm.) Schltr. (Thelasis mamberamensis J.J. Sm.), R. gautierensis (J.J. Sm.) Schltr. (Thelasis gautierensis J.J. Sm.) and R. angustifolia (J.J. Sm.) Schltr. (Thelasis angustifolia J.J. Sm.). After separation of these species there then remains for Phreatia the four sections Eu-Phreatia, Caulophreatia, Bulbophreatia and Saccophreatia. With this circumscription, in 1913 Phreatia already contained 94 species in Papuasia. The following 14 from Dutch New Guinea were afterwards added to the section Eu-Phreatia viz.

P. caespitosa J.J. Sm., P. alpina J.J. Sm., P. goliathensis J.J. Sm. P. Klossii Ridl., P. falcata Ridl., P. modesta Ridl., P. flaccida Ridl. and P. densispica Ridl.: to the section Caulophreatia, P. procera Ridl.; to the section Bulbophreatia, P. platyclinoides Ridl., P. pulchella Ridl., P. concinna Ridl., P. globulosa Ridl. and P. spathulata J.J. Sm.

As I have described below, seven new species from Ledermann's

collection the number of species from Papuasia now stands at 115.

I have removed from Phreatia, two of Ridley's species, viz.

P. vitellina Ridl. which = Octarrhena vitellina (Ridl.) Schltr. and
P. montana Ridl. which = Octarrhena montana (Ridl.) Schltr. It
will be necessary to rename Phreatia potamophila Schltr. - Orch. Dtsch.
Neu-Guinea p. 937 - to P. rivularis Schltr., as I have previously given
the first name to a plant from the Celebes. For similar reasons
P. stipulata Schltr. - Orch. Dtsch. Neu-Guinea, p. 928 must be altered
to P. djameunsis Schltr.

P. brachiphyton Schltr., sp. nov.

Epiphytica, valde pumila, pusilla.
Pseudocaulis perbreves, vaginis soliorum rugulosis, juxta apicem utrinque obtuse auriculatis, imbricantibus obtecti. Folia patentia, oblongo-ligulata, obtusa, basi in petiolum brevem sed manifestum attenuata, carnosula, glabra. Racemi erecti, breviter pedunculati, dense multiflori, folia longitudine vix aequantes vel manifeste breviores; bracteis ovato-lanceolatis, acuminatis, flores paulo excedentibus vel aequantibus. Flores minuti, glaberrimi, inversi, side collectoris albi. Sepala ovata, obtusiuscula, lateralia obliqua, basi margine anteriore paulo dilatata cum pede columnae mentum breve obtusum formantia. Petala sepalis paulo breviora, oblique ovata, obtusa. Labellum subquadrato-ovale antice truncato-ob'usissimum, leviter excisum cum apiculo minuto interjecto, margine irregulari, basi rotundatum, trinerve, sepalis fere aequilongum. Columna brevis, clinandrio dorso paulo ampliato, rostellum breve paulo excedente, pede brevi. Ovarium pedicellatum, clavatum glabrum.

A very small compact epiphyte 2 - 3 cm high. Leaves without sheathes but with short stalk 1.5 - 1.8 cm long, 3 - 4 mm broad above the middle. Flower-racemes together with the short stalk 1.2 - 1.5 cm long. Flowers even in the genus conspicuously small, white. Sepals scarcely reaching 1 mm in length, the petals distinctly shorter, but the labellum of equal length. Ovary with stalk scarcely 1 mm long.

North-east New Guinea : In primary forest near the 'Pyramid'
[Mountain] (Sepik District), alt. c. 400m - C. Ledermann no. 7628.
flowering in June 1912.

Among the species described to date the above species is closest to P. sororia Schltr. but is well distinguished by the form of the lip and the column.

P. crinonioides Schltr., sp. nov.

Epiphytica, erecta, validiuscula. Rhizoma valde abbreviatum. Pseudobulbi subglobosi, vulgo unifoliati. Folium ligulatum, acuminatum, basin versus sensim paulo angustatum. Inflorescentiae adscendentia vel erectae, folium longitudine vulgo aequantes, racemo dense multifloro, pedunculo gracili vaginis pluribus acuminatis obpresso; bracteis lanceolato-ellipticis, acuminatis, patentibus, flores vulgo fere aequantibus. Flores in subgenere inter minores, inversi, patentes, nivei. Sepala ovata, breviter acuminata, lateralia valde obliqua, antice basin versus valde ampliata cum pede columnae mentum oblongum, obtusum formantia. Petala oblique triangulo-ovata, acutiuscula, sepalis paulo breviora. Labellum e ungue brevi quadrato-ovatum, breviter et obtuse acuminatum, marginibus leviter undulatum, superne apice excepto sparsim papilloso-puberulum, sacco adscendente oblongo, obtuso, brevi. Columna brevis, rostello alto, alte bifido, pede elongato. Ovarium pedicellatum, clavatum, glabrum.

An erect, robust, compact epiphyte to 25 cm high. Pseudobulbs 7 - 8 mm [cm?] high, 8 - 9 mm in diameter. Leaves 14- 23 cm long, 1.5 - 2.2 cm broad above the middle. Inflorescences 19 - 20 cm high, with about 10 cm long and 1 cm broad raceme; flowers white, somewhat small. Sepals 3 mm long the lateral ones forming a chin 2 mm long. Petals about 2 mm long. Labellum 3 mm long, at the base of the platform scarcely 2 mm broad. Ovary together with stalk 4 mm long.

North-east New Guinea : In mountain forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 1300m - C. Ledermann no. 11179, flowering in Mar. 1913, on Mount Lord (Sepik District), alt. c. 1000m - C. Ledermann no. 10233a, flowering in Dec. 1912.

The species is closest to P. saccifera Schltr. but is distinguished by the nails on the platform of the lip and the form of the petals.

P. leioglossa Schltr., sp. nov.

Epiphytica, erecta, valida. Rhizoma valde abbreviatum. Pseudobulbi approximati, depresso-subglobosi, unifoliati, vulgo vagina foliacea minore basi donati. Folium erectum, ligulatum acutiusculum vel subacuminatum, basin versus sensim conspicue attenuatum, glabrum. Inflorescentiae e basi adscendentia erectae, racemo dense multifloro, pedunculo plurivaginato fere aequilongo; bracteis elliptico-lanceolatis, acuminatis, quam flores paululo brevioribus vel subaequilongis, patentibus. Flores patentes, inversi, in subgenere vix mediocres, nivei, glabri. Sepala ovata, subacuminata, lateralia valde obliqua, basin versus antice bene dilatata cum pede columnae mentum oblongum obtusum formantia. Petala oblique ovata, obtusiuscula, apicem versus subfalcata, sepalis paulo breviora. Labellum e basi breviter unguiculata late ovatum, breviter et obtusiuscula acuminatum, superne glabrum, calcare subadscendente, oblongo,

obtuso, labelli laminae dimidium **vix** aequante. Columna mediocris, clinandrio amplio, quam rostellum alte bifidum tamen paulo breviore, pede satis ongo. Ovarium pedicellatum clavatum, glabrum.

A robust erect epiphyte about 30 cm high. Pseudobulbs about 8 cm high and 1 cm in diameter. Leaves 25 – 28 cm long 1.9 – 2.7 cm broad above the middle. Inflorescences together with stalk about 20 cm high, raceme 10 cm long, about 8 mm in diameter. Flowers somewhat small, white. Sepals 2.5 mm long, the lateral ones forming a chin 1.5 mm long. Petals scarcely more than 1.75 mm long. Labellum 2.25 mm long with a platform 1.75 mm broad. Ovary together with stalk 3 mm long.

North-east New Guinea : In mountain forest on Mount Lord (Sepik District), alt. c. 1000m – C. Ledermann no. 10218, flowering in Dec. 1912.

This species is distinguished from all other species in the section especially from the affinity of P. saccifera Schltr. by the lip, which is glabrous above.

P. similis Schltr., sp. nov.

Epiphytica, pusilla, gracilis. Pseudocaules abbreviati, vaginis foliorum striatis, apice obtusangulis, imbricatis omnino obtecti. Folia erecto-patentia, subfalcato-obliqua, inaequaliter ac obtuse bilobulata, ligulata vel linear-ligulata, basin versus leviter angustata, glabra. Racemi erecti, graciles, sublaxe multiflori, folia fere duplo superantes, penduculo gracili, paucivaginato, folia fere aequante; bracteis lanceolatis, acuminatis, ovarium pedicellatum fere aequantibus. Flores minuti, nivei, glaberrimi. Sepala late ovata, obtusa vel obtusissima, lateralia obliqua, mentum obtusum cum pede columnae formantia. Petala oblique ovato-elliptica, obtusa, sepalis paulo breviora. Labellum e basi concava ovato-unguiculata in laminam late reniformem, antice obtusiusculum subito valde dilatatum, sepalis fere aequilongum. Columna brevis, crassiuscula, clinandrio dorso ampliato rostellum bene superante, pede brevi. Ovarium gracilius pedicellatum, clavatum, glabrum.

A dainty little epiphyte 10 – 14 cm high. Leaves without sheaths 4 – 6 cm long, 5 – 7.5 mm broad at about the middle. Inflorescences with stalk 10 – 14 cm long, scape about as long as the leaves. Flowers minute, white, completely glabrous. Sepals scarcely longer than 1 mm ; the petals are distinctly shorter but the labellum of equal

length. Ovary together with stalk 2.5 - 3 mm long.

North-east New Guinea : In primary forest on the summit of [Mount] Hunstein (Sepik District), alt. c. 100m - C. Ledermann no. 8151, flowering in Aug. 1912.

P. scaphioglossa Schltr. must be seen as its closest relation.

The new species is distinguished from it by the smaller leaves, the form of the petals and the labellum is more ovate at the base and tapering longer at the apex.

P. simplex Schltr., sp. nov.

Epiphytica, pusilla, caespitifica. Pseudo-caules approximati breves, plurifoliati, vaginis foliorum dilatatis, juxta apicem margine utrinque in dentem triangulum excentibus, rugoso-striatis, imbricantibus obtecti. Folia erecto-patentia, linearia, obtusiuscula, basin versus sensim paulo angustata, glabra. Racemi erecti, subdense multillori, usque supra basin floriferi, quam folia duplo fere breviores; bracteis ovatis, acuminatis, flores fere aequantibus. Flores minimi, inversi, albi, glaberrimi. Sepala ovata, obtusa, lateralia obliqua, basi margine anteriore dilatata cum pede columnae mentum obtusum formantia. Petala oblique et anguste ovata, obtusa, quam sepala paululo breviora. Labellum e basi semiquadrata suborbiculari-dilatatum, apiculatum vel breviter subacuminatum, leviter concavulum, sepalis subaequilongum. Columna brevis, crassiuscula, clinandrio humili, rostello erecto, breviter et late triangulo, breviter bifido, pede brevi, incurvulo. Ovarium pedicellatum, clavatum, glabrum.

A small epiphyte 7 - 10 cm high, with dense cover of leaves. Leaves without sheath 3.7 - 5.5 cm long, about 3 mm broad at about the middle. Flowering-raceme erect 2 - 3 cm long. Flowers very small in the genus, white. Sepals scarcely more than 1 mm long. Petals little shorter than the sepals. Lip almost the length of the sepals, 0.75 mm broad above the middle. Ovary together with stalk 1.25 mm long.

North-east New Guinea : In primary forest near the 'Pyramid' [Mountain] (Sepik District), alt. c. 400m - C. Ledermann no. 7627. flowering in June 1912.

The species belongs to the simplest and tiniest types in the genus. It differs from the related P. stenophylla Schltr. by the form of the labellum.

P. subsacculta Schltr., sp. nov.

Epiphytica, decumbens, pusilla, gracilis. Rhizoma elongatum, radicans, laxe pseudobulbis obsessum. Pseudobulbi depresso-ovoidei, unifoliati, parvuli. Folium erectum, lineare vel linear-ligulatum, obtusiusculum vel subacutum, basin versus sensim paulo angustatum, supra basin articulatum. Inflorescentiae gracillimae erectae, racemo subdense multifloro, elongato, pedunculo paucivaginato, folia vulgo bene excedente; bracteis erecto-patentibus, lanceolatis, acuminatis, quam flores vulgo paulo brevioribus. Flores in sectione inter minores, nivei, glaberrimi. Sepala ovata, obtusa, lateralia basin versus antice bene ampliata cum pede columnae mentum semioblongum, obtusum formantia. Petala oblique ovata, obtusiuscula, sepalis paulo breviora. Labellum e ungue oblongo, basi subsacculato-concavo dimidio anteriore in laminam reniformem, apiculatam dilatatum. Columna brevis, crassiuscula, rostello bifido, mediocri, clinandrium paulo superante, pede satis longo, stigmate transverse oblongo. Ovarium pedicellatum, clavatum, glabrum.

A slender, dainty, creeping epiphyte 13 - 22 cm high. Pseudobulbs at intervals of 1 - 1.5 cm, 3 - 4 mm high. Leaves 4 - 11 cm long, 4 - 7 mm broad at about the middle. Inflorescences to 20 cm high; raceme to 6 cm long. Flowers small, snow white. Sepals 1.25 mm long, the lateral ones forming a chin 1.5 mm long. Petals distinctly shorter than the sepals. Lip about 1.25 mm long, with platform about 1.15 mm broad. Ovary together with the stalk 2.5 mm long.

North-east New Guinea : In range forest on the mountain base (Sepik District), alt. c. 850m - C. Ledermann no. 8876 (TYPE), no. 8829, no. 8997, flowering in Sept. - Oct. 1912.

In the section Bulbophreatia this species would best be placed next to P. bulbophylloides Schltr. but is distinguished by the pouch-like depression of the lip at the base of the nail.

P. subtriloba Schltr., sp. nov.

Epiphytica, erecta, gracilis, pusilla. Pseudocaules abbreviati, vaginis foliorum dilatatis, striatis, apice vix auriculatis imbricantibus obtecti. Folia erecto-patentia vel suberecta, linearia, obtusiuscula cum apiculo, basin versus sensim paulo attenuata, glabra. Racemi graciles, erecti, subdense multiflori, pedunculo gracili, folia aequante vel paulo superante; bracteis lanceolatis, acuminatis, flores vulgo aequantibus. Flores minimi, albi, glaberrimi, erecto-patentes. Sepala late ovata, obtusa, lateralia obliqua, basin versus margine anteriore ampliata cum pede columnae mentum obtusum formantia. Petala oblique rhomboid-ovata, obtusa, sepalis paulo breviora. Labellum e basi subquadrato-unguiculata late cuneatum, antice subtrilobatum, apice triangulo obtusiusculum, sepalis fere

aequilongum. Columna brevis, crassiuscula, clinandrio dorso valde ampliato, erecto, rostellum multo superante. Ovarium gracilius pedicellatum, clavatum, glabrum.

A small, dainty epiphyte 6 - 7 cm high. Leaves without sheaths 3 - 4.5 cm long, 2.5 - 3.2 mm broad at about the middle. Inflorescences with stalk 6.5 cm long clearly overtopping the leaves. Flowers tiny, white. Sepals scarcely more than 1 mm long; the lateral ones forming a very distinct chin. Petals little shorter than sepals. Lip as long as sepals. Ovary together with the stalk about 2.5 mm long, glabrous.

North-east New Guinea : In primary forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12971, flowering in Aug. 1913.

The species would be best placed next to P. gracilis Schltr. but the very characteristic form of the labellum distinguishes it from its nearest relatives.

Taeniophyllum Bl.

The monopodial orchids do not play such an important role in the composition of the Orchidaceous flora of New Guinea as they do in the western countries. However, I was surprised that amongst Ledermann's Taeniophyllum, there was only one novelty. I had expected more interesting new types in this genus, of which I had collected upwards of 50 new species.

In 1913 I enumerated 72 species from Papuasia. The following six species have since been described from Dutch New Guinea, viz. T. tamianum J.J. Sm., T. toranum J.J. Sm., T. giriwoense J.J. Sm., T. singulare J.J. Sm., T. clavicalcar J.J. Sm. and T. erinaceum Ridl. According to this, the genus in Papuasia contains 79 species.

T. Ledermannii Schltr., sp. nov.

Epiphyticum, aphyllum, acaule. Radices filiformes, applanati, glabri, elongati, usque ad 40 cm longi, 3—4 mm lati. Racemi erecti vel erecto-patentes, dense multiflori, more generis

heterochronici; pedunculo gracili, dense muriculato-hispido; bracteis ovatis vel ovato-lanceolatis, muriculato-hispidis, ovario subdupo brevioribus. Flores in sectione mediocres, illis *T. torricellensis* Schltr. similes, glabri. Sepala oblonga, obtusa, lateralia paulo obliqua. Petala quam sepala breviora sed manifeste latiora, oblique ovata vel ovalia valde obtusa. Labellum petalis fere aequilongum, circuitu oblongum supra medium trilobatum, lobis lateralibus abbreviatis, obtusatis, intermedio antico, ampio, reniformi, obtuso, carnosulo, a calcariis ostio in laminam usque infra medium foveam lanceolatam efficiente, calcare dependente, graciliter cylindraceo, dimidio apicali leviter et oblique ampliato, obtusiusculo, ovarium dimidio excedente. Columna perbrevi glabra, rostello elongato antice adscendente. Ovarium pedicellatum gracilius, dense muriculato-hispidum.

A leafless and stemless epiphyte with long, green linear root, 30 - 40 cm long, 3 - 4 mm broad. Inflorescences on slender stalks 10 - 12 cm long, the densely covered flower-raceme develops gradually and is to 3 cm long. Flowers yellowish with white lip and whitish spur. Sepals about 3.5 mm long. Petals 3 mm long but distinctly broader than the sepals. Labellum 3 mm long, 1.5 mm broad. Spur about 7 mm long. Ovary together with the stalk about 5 mm long.

North-east New Guinea : In range forest near Camp Felsspitze 'Rocky-peak' (Sepik District), alt. c. 1400 - 1500m - C. Ledermann no. 12743 (TYPE), flowering in Aug. 1913; in tall forest on the mountain base, alt. c. 850m - C. Ledermann no. 8902, flowering in Sept. 1912; on the summit of [Mount] Hunstein, alt. c. 1300m - C. Ledermann no. 8252a - flowering in Aug. 1912; no. 10934a up to no. 10965a flowering in July 1912.

The species is related to *T. torricellense* Schltr. but well distinguished by the form of the lip and the spur.



LEDERMANN COLLECTION NUMBERS AND DATES.

FOR NEW PAPUASIAN ORCHIDS.

1912	Mar.	6694.
	Apr.	7094, 7124.
	May	7365.
	June	7447, 7551, 7627, 7628, 7629, 7755, 5758 [Ed. - probably 7558, possibly 7758]
	July	7856 (Type), 7979, 8025, 8081, 8087.
	Aug.	8138 (Type), 8145 Type, 8151, 8181, 8188, 8216, 8230d, 8252a, 8254, 8280a, 8293, 8311, 8325, 8376, 8402, 8403, 8406a (Type), 8414, 8434, 8435, 8473, 8474, 8487a.
	Sept.	8606, 8616, 8617, 8720, 8829, 8843a, 8844, 8845, 8853, 8854, 8875, 8876 (Type), 8902, 8907a (Type), 8950a, 8997.
	Oct.	9014, 9021, 9061, 9067, 9168, 9249, 9259 (Type), 9260, 9277a, 9278, 9309, 9339, 9377, 9404, 9475a.
	Nov.	9598, 9729, 9864, 9866, 9867, 9875, 9894, 9931.
	Dec.	9967, 10123, 10132, 10218, 10233a, 10317, 10380, 10382d.
1913	Jan.	10595.
	Feb.	10915 (Type), 10917, *10934a up to *10965a [Ed. - these numbers are recorded on page 154 of the German text, and shown as July 1912 collections. The term 'bis' is translated to mean 'up to' but this may have been used erroneously in lieu of 'und' as numbers 10935a and 10941 appear elsewhere in the text.] 10935a, 10941, 11005, 11017, 11095 (Type), 11144, 11146.

1913	Mar.	11170, 11179, 11216, 11237 (Type), 11240, 11310, 11322, 11365, 11392, 11432, 11440, 11452, 11454, 11459.
	Apr.	No collections
	May	11557, 11567, 11568, 11594, 11603, 11623, 11624, 11625, 11676, 11684, 11714, 1715, [Ed. - Assumed this number 11715.] 11804, 11831.
	June	11884, 11893, 11922a, 12087, 12089, 121086, 12163, 12175b, 12198, 12221, 12230, 12231, 12235.
	July	12352, 12354, 12357, 12360, 12363, 12368, 12369, 123700 [Ed. - assumed this number is 12370], 12375, 12389 (Type), 12406, 12412, 12419.
	Aug.	12485a, 12488, 12587, 12594, 12595, 12657b, 12677, 12694 (Type), 12743 (Type), 12762, 12799, 12813 (Type), 12839, 12844, 12845, 12855, 12944, 12945, 12963, 12971, 12977, 13080, 13133.
		[Ed. - Several numbers have been placed in logical chronological sequence where the German text shows a different collection month].

COLLECTION NUMBERS AND DATES FOR SCHULTZE, MOSZOWSKI, PEEKEL - 1910.

1910	June	103 (Moszowski) 459 (Peekel)
	July	(33) 44, (33) 15. (Schultze) 187 (Moszowski)
	Oct.	230 (Schultze)
	Nov.	235, 246, 297, 301, 310, (Schultze)

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serrulata Schltr.

stenophylla Schltr.

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biflorum Ridl.

compressum Schltr.

congestum Schltr.

curvum Ridl.

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cycloglossum Schltr.

cyclopense J.J. Sm.

patentissimum J.J. Sm.

rigidifolium Ridl.

sepikanum Schltr.

superpositum Schltr.

Amblyanthus

Appendicula Bl.

carinifera J.J. Sm

fallax Schltr.

fasciculata J.J. Sm.

furfuracea J.j. Sm.

rostrata J.J. Sm.

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nutans (Ames) Schltr.

Liparis L.C. Rich

pandeneti J.J. Sm.

puberula Ridl.

Pullei J.J. Sm.

riparia J.J. Sm.

scleriifolia Schltr.

triticea Ridl.

Manobulbon

Mediocalcar J.J.Sm.

alpinum J.J.Sm.

arfakense J.J.Sm.

bulbophylloides J.J.Sm.

cluniforme J.J.Sm.

conicum J.J.Sm.

crassifolium J.J. Sm.

ericiflorum Schltr.

geniculatum J.J.Sm.

latifolium Schltr.

longipes Ridl.

montanum Ridl.

sepikanum Schltr.

uniflorum Schltr.

Microcalcar

Microstylis Nutt.

acuminata Ridl.

arachnoidea Schltr.

atrobrachiata Ridl.

carnatifolia J.J.Sm.

circaeae Ridl.

dolichostachys Schltr.

fluva Schltr.

Microstylis Nutt.

grandiflora J.J. Sm.

heliophoba J.J. Sm.

laxa Ridl.

Ledermannii Schltr.

melanophylla Schltr.

peltiolaris Schltr.

producta J.J. Sm.

rhabdophylla Ridl.

Stolleana Schltr.

virescens Schltr.

wappeana J.J. Sm.

Warapussae Schltr.

xanthochila Schltr.

Micrototorchis Schltr.

Monanthos

Monosepalum Schltr.

Mycaranthes Bl.

Nematorrhiza

Oberonia Lindl.

altipetala J.J. Sm.

anguina Schltr.

elegans Schltr.

equitans (Sw.) Schltr.

Fitzgeraldiana Schltr.

inversiflora J.J. Sm.

iridifolia Fitz.

japonica (Maxim) Makino

Klossii Ridl.

Ledermannii Schltr.

Oberonia Lindl.

marginata Ridl.

neocaledonica Schltr.

pachyambon Schltr.

palmicola F.v.M.

torana J.J. Sm.

Viellardi (Rchb.f.) Schltr.

Octarrhena Thou.

montana (Ridl.) Schltr.

vitellina (Ridl.) Schltr.

Oistochilus

Oliganthe

Otoglossum

Oxyanthera Brogn.

Oxyglossum

Pahudia

Papulipetatum

Pedilochilus Schltr.

Pedilonum

Pelma

Phajinae

Phreatia Lindl.

alpina J.J.Sm.

brachyphyton Schltr.

bulbophylloides Schltr.

caespitosa J.J. Sm.

concinna Ridl.

crinonioides Schltr.

densispica Ridl.

djamuensis Schltr.

Phreatia Lindl.
 falcata Ridl.
 flaccida Ridl.
 globulosa Ridl.
 goliathensis J.J. Sm.
 gracilis Schltr.
 Klossii Ridl.
 leioglossa Schltr.
 modesta Ridl.
 montana Ridl.
 platyclinoides Ridl.
 potamophila Schltr.
 procera Ridl.
 pulchella Ridl.
 rivularis Schltr.
 saccifera Schltr.
 scaphioglossa Schltr.
 similis Schltr.
 simplex Schltr.
 sororia Schltr.
 sphaerocarpa Schltr.
 spathulata J.J. Sm.
 spathulata J.J. Sm.
 stenophylla Schltr.
 stipulata Schltr.
 subsacculta Schltr.
 subtriboba Schltr.
 vitellina Ridl.
 wariana Schltr.

Physurus

Piestobulbon

Platycaulon
Platychilus
Pleianthe
Pleiodon
Pleiophyllum
Pleuranthemum
Pleurothallidinae
Podochilinae
Podochilus Bl.
 agninus Schltr.
 bimaculatus Schltr.
 falcipetalus Schltr.
 lancilabris Schltr.
 muscosus Schltr.
Polyblepharon
Polystachynae
Preptanthe
Pseuderia Schltr.
 foliosa (Broghn.) Schltr.
 Ledermannii Schltr.
 robusta Schltr.
 sepikana Schltr.
 wariana Schltr.
Pseudo-Liparis
Pseudo-Cadetia
Rachidibulbon
Rhynchopreatia Schltr.
 angustifolia (J.J.Sm.) Schltr.
 gautierensis (J.J.Sm.) Schltr.
 mamberamensis (J.J.Sm.) Schltr.

Rhynchophreatia Schltr.
phreatioides (J.J. Sm.) Schltr.
sphaerocarpa · Schltr.
wariana Schltr.

Ridleyelinae

Ritaia King et Gamble
himalaica King et Pantl.

Saccophreatia

Sarco-Cadetia

Sarcopodium

Sarcostoma

Scaphochilus

Scytoxiphium

Sestochilus

Sphaeracron

Stenochilus

Taeniophyllum Bl.
clavicalcar J.J. Sm.

erinaceum Ridl.

giriwoense J.J. Sm.

Ledermannii Schltr.

singulare J.J. Sm.

tamianum J.J. Sm.

toranum J.J. Sm.

torricellense Schltr.

Tapeinoglossum Schltr.

Tapeinoglottis [sic]

Thecostelinae

Thelosinae

Thelasis Bl.

agustifolia J.J. Sm.

Thelasis Bl.

gautierensis J.J. Sm.

mamberamensis J.J. Sm.

phreatiooides J.J. Sm.

Trachychilus

Trichosma

Trichotosia

Uncifera

Vesicipetalum

Zeuxine Lindl.

alticola Schltr.

cristata (Bl.) Schltr.

curvata Schltr.

falcatula (J.J. Sm.) Schltr.

leucotaenia Schltr.

 var. *leucotaenia* Schltr.

Zosterostylis

Walterae Wight

Zeylanica Lindl.

