

# ***The Orchids of Dutch New Guinea***

**Johannes Jacobus Smith**

**Book 2 of 3:**

**A translation into English of**

***Die Orchideen von Niederlandisch-Neu-Guinea***

**as published in**

***Nova Guinea*, Vol XII, part I, pp 1-104 (1913)  
with index; and**

***Nova Guinea*, Vol XII, part III, pp 173-272 (1915)  
(pagination continues with part IV).**

**D F Blaxell, H J Katz & J T Simmons**



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(1867-1947)**



**Dutch New Guinea [now West Papua &  
Papua Provinces, Indonesia]**



*The Australian Orchid Foundation*





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'THE ORCHIDS  
OF  
DUTCH NEW GUINEA'

BY

J.J. SMITH

BEING A TRANSLATION OF

'DIE ORCHIDEEN

VON

NIEDERLÄNDISCH - NEU - GUINEA'

FROM

'NOVA GUINEA' VOL. XII, PART I (1913)



## Preface

The present work is a continuation of the compilation in 'Nova Guinea' VIII (1911), 608.

Predominantly it consists of the small, but elegant collection made by the military doctor A.C. De Kock of the Exploratie-Detachement in southern New Guinea during the months of January to April 1911, partly of dried, but mostly of formalin or alcohol-preserved specimens. All the plants were found en route from the Eilanden River to the summit of the 3450m high Mt. Goliath.

According to the reports of De Kock, the ground is covered up to an altitude of 600m with a thick humus layer, swampy at many places, from which a sand layer intermittently emerges. From thereon Mt. Goliath rises steeply and the humus layer becomes sparse; at an altitude above 1350m no thicker than a foot. Higher up, the rocks are bare at several places and no longer moss-covered. According to the geologist's report Mt. Goliath consists predominantly of limestone.

It is conspicuous that the number of orchid genera in the highlands is only very small. Of the 100 numbers related to this family, 51 are Dendrobiinae, whilst the Glomerinae are represented by 25 and the Thelasinae by nine numbers. The remaining numbers belong to Corysanthes (2), Calanthe (3), Spathoglottis (1), Coelogyne (1), Sarcochilus (1) and Trichoglottis (1), of which, furthermore, Coelogyne, Spathoglottis, Sarcochilus and Trichoglottis were collected only in the lower regions.

Many of these orchids of the highlands are very small plants with relatively large, beautifully coloured flowers, which on their mossy carpet, as De Kock informed me, made a splendid impression, so that even the prisoners were frequently surprised. They never or very seldom occur in large groups so that they contribute little, or nothing at all, to the character of the landscape.

In particular, Dendrobium and Glomera account for numerous pretty

species, with very colourful flowers for the first genus, but generally white flowers for Glomera. The species of the section Oxyglossum, as well as Dendrobium Agathodaemonis J.J. Sm., are true jewels.

The compilation contains further, most of the species collected by the military doctor K. Gjellerup during June - July 1911 in the vicinity of the Hollandia Bivouac and on the Cyclops Range in northern New Guinea, as well as species flowered at the Botanical Garden at Buitenzorg and in private gardens, together with supplements and corrections to previous reports, etc.

J.J. Smith

circa 1913.

Paphiopedilum Pfitz.

Paphiopedilum praestans Pfitz., in Engl. Bot. Jahrb. XIX (1894), 41;

Hallier, in Ann. Jard. Bot. Buit. XIV (1896), 43.

Cypripedium praestans Rchb.f., in Gard. Chron., 1886, II, 766; 1887, II, 813, f. 155; Journ. Hort. XV (1887), 170, f. 24; Lindenia III, t. 202; Williams, Man. 7. ed. (1895), 293; Pucci, Cyprip. (1891), 172; Desbois, Cyprip. (1898), 399.

Tab. I, 1.

(latin diagnosis)

Dutch New Guinea : Between Geelvink Bay and the MacCluer Gulf.

(W. Den Berger 1906, living plant).

In Veitch's 'Manual of Orchidaceous Plants IV, 25', as well as in Kränzlin's monograph, Cypripedium praestans Rchb.f. and C. glanduliferum Bl. were united, but Pfitzer separated them again (see above).

There is no doubt that Blume's description and illustration show fairly large differences from the often described P. praestans Pfitz., and if Blume's description and illustration can be taken as quite correct, then it is equally sure that the two plants are specifically different.

However, I am much inclined to think that Veitch was correct in uniting the two species. It would appear that Blume investigated incomplete material. As Blume himself states regarding the drawings, they were made from a flower-bud and hence several deviations can be explained.

Peristylus Bl.

Peristylus papuanus J.J. Sm.

P. remotifolius J.J. Sm., in Nova Guinea VIII (1909), 134, t. XLV, 149.

Habenaria papuana Krzl., in Warb. Pl. Hellwig. 188; Schltr., in Fedde Rep. Beih. I (1911), 7.

According to Schlechter, Habenaria papuana Krzl. and Peristylus remotifolius J.J.Sm., are identical. On account of the peculiar stigma structures I consider that there are good reasons for retaining the genus Peristylus, so I have included Kränzlin's species in this genus. Should one wish to unite them, then Platanthera L.C. Rich. should probably, also be included. Peristylus is probably closer to Platanthera than Habenaria Willd.

Schlechter recently (in Fedde Rep. Beih. I,5) under Habenaria described a whole series of new Peristylus species. For the present I am not placing them in the genus, since from the descriptions it is not clear whether we are actually dealing only with Peristylus species. Thus for some of the species the stigma is described as cylindrical or terete, but which applies less for adnate stigma.

Habenaria Willd.

Habenaria dryadum Schltr., in Fedde Rep. III (1906), 60;

H. epiphylla Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee, 78; J.J.Sm., in Nova Guinea VIII, 6, t. 2, fig. 4.

Dutch New Guinea : Hollandia Bivouac at Humboldt Bay, alt. c. 20m

(K. Gjellerup no. 453, flowering in June 1911).

Schlechter (in Fedde Rep. Beih. I (1911), 15) places into H. dracaenifolia Schltr. the plant described by me as H. dryadum Schltr. However, neither the description of H. dryadum Schltr. nor that of H. dracaenifolia Schltr. agree completely with the plant collected by Versteeg under no. 1678. However, from the descriptions, the differences are not sufficient to set up a new species.

The plant collected near Hollandia by Gjellerup has somewhat smaller flowers than those of the specimens I have seen, and the relative dimensions of the floral segments are slightly different. Since only a solitary plant was to hand it cannot be stated whether the

differences are individual or whether the species varies locally.

Habenaria chloroleuca Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee, 77; J.J. Sm., in Nova Guinea VIII (1909), 4, t. I, 2.

Dutch New Guinea : Humboldt Bay, near Hollandia, alt. c. 20m, in the forest, on a hill (K. Gjellerup no. 454, flowering in June 1911).

Corysanthes R. Br.

Corysanthes epiphytica J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 1.

Tab. I. 2.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1850m, on a mossy tree (A.C. De Kock nos 33 and 172, flowering in March and April 1911).

Among the Papuasian species so far known this one has the largest flowers. For the genus they are of very simple construction and in this respect they are best placed with C. mirabilis Schltr. from the New Hebrides [now Vanuatu].

Nervilia Gaud.

Nervilia acuminata Schltr., in Engl. Bot. Jahrb. XLV (1911), 402; in Fedde Rep. Beih. I (1911), 40.

Pogonia acuminata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 34; in Nova Guinea VIII (1909), 8, t. III, 7.

Tab. II, 3.

Dutch New Guinea : On the Noord (Lorentz) River, near Sabang (Lorentz Expedition 1907, Djibdja, living plant in cultivation at Hort. Bog. under no. 361 ).



From several living specimens cultivated at Buitenzorg I can now augment my earlier remarks with the following :

The bulbs are approximately globose to ovate, composed of few segments, c. 1.3 - 1.8 cm long and for the genus develop relatively long, with as it appears only by exception, somewhat branched roots and like the other terrestrial stem segments are white, beset with hairy warts. From the corners of the scales they each develop 1-2 c. 0.8 - 6.5 cm long terrestrial tubers which swell at their extremities to form new bulbs. These bulbs and tubers are not annual, i.e. they do not die as soon as the new bulbs have ripened, as for N. punctata Schltr., N. crispata Schltr., N. discolor Schltr., etc., and in this way form a new sort of rhizome.

The bulbs at their apex produce a vertically growing stem, which, as observed for other Nervilia tubers, I have never seen terminating in an inflorescence. From the corner of a thin scale at the base of an inflorescence, after a certain time, a new very short shoot develops which terminates also in an inflorescence. Thus in sequence, about four inflorescences are formed with the growth of this segment and terminating in the development of a leaf. This stem segment (sympodium?) above the ground strives obliquely upwards and always forms the inflorescences towards one side; it is fairly thick, fleshy, grey-green and beset with warts arranged in longitudinal rows, and initially carries large sheaths which soon disappear. The flowering shoots of this sympodium are always tri-segmented.

The peduncle and leaves are angular, pallid green and coloured slightly violet at the edges. The sepals and petals are pallid green, the former characterized externally by three protruding more-or-less continuous violet-purple veins between which, especially towards the apex, there are violet-purple longitudinal markings. The lip is white, greenish at the base, in the middle with two large, lively purple marks embellished in front with a likewise-coloured longitudinal line.

I do not know how Schlechter came to say that I described the labellum as white with two round red markings at the base. I had not yet mentioned the colour.

Schlechter separated the genus Nervilia Gaud. again from Pogonia Juss., his reasoning is, however, not given. One is inclined to accept that Schlechter was right in carrying out this separation of the clearly fairly polymorphic genus Pogonia, as it is frequently considered in the broader sense, but it must be stressed that according to the illustrations and descriptions of the flowers of the genuine Pogonia, they look extremely similar to those of Nervilia, and that, for example, the Japanese P. similis Bl. actually seems in habit to approach the genus Nervilia. Since the species outside of Malaya are known to me only from illustrations and descriptions, I will not pursue this matter any further.

Schlechter places Nervilia in the Gastrodiinae group, even though it is completely different in habit from the other genera placed here. Nervilia has true bulbs which die off after having produced one or several inflorescences and a leaf or, as for example in N. acuminata Schltr., stay alive for a short period. The other genera of Schlechter's Gastrodiinae group have, as far as I know, a fleshy rhizome.

In my opinion Gastrodia R.Br. and Didymoplexis Falc. should form a group together with Leucolaena Ridl., with which Nervilia has no connection. Nervilia and Corysanthes are mutually completely similar, as Pfitzer has correctly realized. The runners of the terrestrial stem segments which by swelling develop at their apex into a new bulb have been incorrectly regarded by Schlechter (in Fedde Rep. Beih. I, 18 et seq.) as roots.

I cannot see the advantage in creating a new name Neottinae Pfitz.  
[Tribe Neottinae?]

Pogonia campestris J.J.Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908) 34; in Nova Guinea VIII (1909), 9, t. III, 8.

To the description in 'Nova Guinea' should be added that the lip is not hirsute only on the ridges, but also on both sides of the latter. Likewise the column is also somewhat hirsute underneath towards the base. The shape of the middle lobe is variable.

The species was placed somewhat incorrectly by Schlechter into the section Vinerlia; it belongs to the section Eu-Nervilia with extended rachis and widely separated flowers.

It is probably most closely related to N. macrophylla Schltr.

Lecanorchis Bl.

Lecanorchis javanica Bl., in Mus. Bot. Lugd. Bat. II, 188; Fl. Jav.

Orch. 150, t. 63, f. 1, t. 66A; etc.

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1000m, growing in humus (K. Gjellerup no. 481, flowering in June 1911).

This plant is strongly developed and c. 40cm tall so that in this respect it comes close to the Javanese specimens. The flowers are the same as those previously described for L. triloba J.J.Sm., however, this description needs to be augmented in several aspects. The lip is traversed on the inside by two hairly longitudinal ridges which are thickened at the base of the middle lobe.

The hairs of the middle lobe are bent back in the bud stage.

It is of course possible, as Schlechter surmises, that two species exist in Java, one of which has an undivided labellum, as described by Blume. At present I shall retain the name L. javanica Bl. also for the Papuasian plant.

Aphyllorchis Bl.

Aphyllorchis torricellensis Schltr., in Fedde Rep. Beih. I (1911), 35.

Tab. II, 4.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1000m, growing in humus (K. Gjellerup no. 480, flowering in June 1911).

Geographic distribution : German New Guinea.

The plant is very similar to A. pallida Bl. The main and, so to say, the only difference is in the hypochile of the lip, where the antrorse margins are broadened in a triangular manner towards the base in the case of A. pallida Bl., but, with A. torricellensis Schltr. on the other hand, are narrowed.

The inflorescence is glabrous, according to Schlechter, but with the specimens I have seen, they are hirsute in a furfuraceous manner as with the Javanese A. pallida Bl.

According to Gjellerup the whole plant, including the flowers, is Isabelle [buff]-coloured with deep violet dots and small stripes.

#### Vrydagzynea Bl.

Vrydagzynea triloba J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 39; in Nova Guinea VIII (1909), 13, t. IV, 12.

Schlechter (in Fedde Rep. Beih. I (1911), 37) unites V. triloba J.J. Sm. with V. Schumanniana Krzl. Unless a mistake has occurred here I cannot comprehend how Schlechter could consider two such completely different plants as identical.

After having examined the Type of V. Schumanniana Krzl., I am now convinced that V. paludosa J.J. Sm. is not specifically different from Kränzlin's species.

#### Eurycentrum Schltr.

Eurycentrum Smithianum Schltr., in Engl. Bot. Jahrb. XLV (1911), 393, in Fedde Rep. Beih. I (1911), 62.

E. obscurum J.J. Sm. (non Schltr.?) in Nova Guinea VIII (1907),  
[1909], 14, t. V, 13.

Cystorchis obscura Bl., Fl. Jav. I, Orch. 74, t. 37, fig. 2.

Hetaeria obscura Miq., Fl. Ind. Bat. III, 726.

Schlechter (in Engl. Bot. Jahrb. 1.c.) has described, as a novelty, the species I described and illustrated as E. obscurum Schltr.

When I expressed the opinion (see above) that if the plants described by Schlechter and myself were specifically different, then his species would have to be altered, I was still adhering to the Kuntze interpretation of the priority principle. However, according to the Vienna Rules, Schlechter is quite correct in saying that his species does not have to be altered.

The main question, however, is what constitutes Blume's Cystorchis obscura and that it must be accepted that there is a greater possibility of the Versteeg plant being identical with that of Zippeli, both having been collected in the same district, rather than with the species originating in northern New Guinea. It still remains open as to whether perhaps other very similar species occur in southern New Guinea.

Blume's illustration does not agree better with Schlechter's than with my plant.

Kuhlhasseltia J.J. Sm.

Kuhlhasseltia papuana J.J. Sm., sp. nov.

Tab. III, 5.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1400m. on humus in the forest (K. Gjellerup no. 569, flowering in June 1911).

The species is very closely related to K. muricata J.J. Sm., from Ambon. It is still open as to whether the plants should be considered

as varieties.

Only two specimens were collected, with only one in flower.

The column shows a very unusual transformation. The two paired (lower), otherwise polliniferous, stigmas were transformed in this case to parallel appressed rostellum with upper grooves, whereas the third stigma which is usually transformed into the rostellum, was in this case viscid. It appears as a small longish area on the upper side of the clinandrium, so that it was in immediate contact with the pollinia.

According to Gjellerup the leaves and stems are violet-red greenish, the flowers white or pale pink.

Hetaeria Bl.

Hetaeria oblongifolia Bl. var. papuana J.J. Sm., in Nova Guinea VIII (1909), 17, t. VI, 16.

Dutch New Guinea : In the southern part, near Tjemara Bivouac, alt. c. 50m (A.C. De Kock no. 215, flowering in Dec. 1911).

It is possible that Schlechter is correct and that this plant is specifically different from H. oblongifolia Bl.

On the other hand H. Erimae Schltr. is probably identical with H. oblongifolia Bl. The illustrations show no differences.

Hetaeria falcata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX [1908] 26; in Nova Guinea VIII [1909], 16, t. V. 15.

Zeuxine falcata Schltr., in Engl. Bot. Jahrb. XLV (1911), 394.

Schlechter (see above) transferred this plant to Zeuxine.

It remains to be seen whether the genus Zeuxine Lindl. can, in the long run, be maintained together with Hetaeria Bl. At any rate I cannot agree with Schlechter, where he transfers a portion of the genus Hetaeria, e.g. H. falcata J.J. Sm. and H. cristata Bl. as the section Heteriopsis, to Zeuxine. These species stand definitely closer to H. oblongifolia Bl. than the typical Zeuxine. According to Schlechter's interpretation,

for example, H. lamellata Bl. is placed in Hetaeria on account of the non-resupinate flowers, but the very closely related H. cristata Bl., with the almost completely resupinate flowers, belongs to Zeuxine, even though the former species is more similar in lip structure to a Zeuxine than to H. cristata Bl.

Lepidogyne Bl.

Lepidogyne longifolia Bl., Fl. Jav. Orch. 78, t. 25; etc.

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1000m, growing in humus (K. Gjellerup no. 506, flowering in June 1911).

The alcohol-preserved flowers show just as few differences as with those I investigated earlier, to warrant the creation of one or more new species.

Coelogyne Lindl.

Coelogyne asperata Lindl., in Jour. Hort. Soc. IV (1849), 221; etc.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 150m [sic], in the shade of lightly mossed trees, standing isolated, common, (A.C. De Kock no. 175, flowering in Apr. 1911.)

This plant is very widely distributed in Dutch New Guinea and has been collected by every expedition. In the Buitenzorg Garden there are many plants in cultivation from New Guinea and from other islands, such as Halmahera. Those originating from New Guinea definitely are not specifically different, as Schlechter appears to accept, and, although they belong to the forms with the smallest flowers, I consider that even the setting-up of a variety is redundant.

Pholidota Lindl.

Pholidota imbricata Lindl., in Hook., Fl. Exot. t. 138; etc.

Dutch New Guinea : Humboldt Bay, near the Hollandia Bivouac, on hills, alt. c. 50m, epiphytic (K. Gjellerup no. 464, flowering in June 1911); on the upper Digul [Digoel River] (B. Branderhorst 1909, living plant in cultivation at Hort. Bog. under no. 212B).

The plant belongs to a more robust form with extended peduncles and is found in other areas.

Pholidota imbricata Lindl. from New Guinea has been in cultivation at the Buitenzorg Garden since 1901, as I stated in 'Nova Guinea' VIII (1909), 21.

Dendrochilum Bl.

Dendrochilum longifolium Rchb.f. var. papuanum J.J. Sm., in Nova Guinea VIII (1912) [1911], 527.

Dutch New Guinea : Cyclops Range, eastern spur, alt. c. 900m, epiphytic in forest (K. Gjellerup no. 570, flowering in June 1911).

The specimens are as large as those from Java, whilst those plants from the Lorentz Expedition 1907 in cultivation at the Buitenzorg Garden have developed strongly and equal the others in size.

The variety can hardly be justified and the plant is definitely not to be considered as a species.

D. Bartonii (Ridl.) Schltr. probably also belongs here.

Calanthe R. Br.

Calanthe Engleriana Krzl. - J.J. Sm., in Nova Guinea VIII (1909), 24, t. VIII, I, 24.

Dutch New Guinea : Ruimzicht Bivouac, (Mt. Goliath), alt. c. 100m, solitary, on the river bank (Collector? no. 216, flowering in Dec. 1911).



var. brevicalcarata J.J. Sm., nov. var.

Tab. III, 6.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c.

1500m, common, at swampy locations in forest (K. Gjellerup no. 554, flowering in June 1911).

The variety differs mainly in the smaller flowers and very short spur, from the species, questionably determined by me as C. Engleriana Krzl. It grows under identical circumstances, but at a higher altitude in the mountains.

The spur length appears to be very variable in several Calanthe species.

Unfortunately, only a single leaf and two fragments of inflorescences were collected.

Calanthe breviscapa J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 1.

Tab. III, 7.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1250m, somewhat rare, isolated, in the shade of mossy trees (A.C. De Kock no. 19,

flowering in Mar. 1911); at the same place, alt. c. 1700m, common, isolated, on mossy humus in the shade on swampy ground (A.C. De Kock no. 173, flowering in April 1911).

This plant definitely is closely related to C. rhodochila Schltr., but, according to the description, the differences are too great to class the plants as identical. The labellum of this plant can perhaps be described as 'oblongo-ligulatum'. Furthermore, it has a definite protruding callus, rounded-off at the rear end, and short and free in the tube formed by fusion of the lip and column, whilst Schlechter's species has explicitly been termed 'ecallosum'. The spur also is appreciably shorter, and can hardly be called 'clavatus' nor the

column 'perbrevis'; the latter has the normal length of that in the genus.

Numbers 19 and 173 resemble each other completely. For no. 19 De Kock notes without anything further that the flowers are white; the specimen stored in formalin shows a definite yellow-coloured lip. For no. 173 the flowers were described as white, the apex of the sepals pale green, the apex of the lip scarlet-red; thus in a like manner to C. rhodochila Schltr.

The leaves are definitely articulated with the sheath; but whether they would actually be discarded cannot be judged from the present material.

Calanthe caulescens J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 2.

Tab. IV, 8.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250m, isolated, common on rocks covered with mossy humus (A.C. De Kock no. 144, flowering in April 1911).

A very peculiar species. The stems are erect and clearly continue to lengthen at the apex for a long period, developing inflorescences. The stem to hand has completely lost the lower leaves and inflorescences, somewhat higher up the flowers left from the decomposed leaf-sheaths are to be found. In the lower leaf-axils fruit-bearing inflorescences are present, and in the upper ones flowering inflorescences.

Even though there are several Calanthe species with extended stems, this one differs mainly in the regular new formation of leaves and inflorescences at the apex.

The individual inflorescences are strongly reminiscent of C. rhodochila Schltr. and C. breviscapa J.J. Sm., and the floral structure is closely akin to all these species.

The flowers are white, the apex of the lip orange.

Spathoglottis Bl.

Spathoglottis plicata Bl., Bijdr. 401, t. 76; etc.

Dutch New Guinea : On [Mt.] Goliath, alt.c. 150m on stony river banks with sunny aspects, isolated, common (A.C. De Kock no. 176, flowering in Apr. 1911); Ruimzicht Bivouac, [Mt.] (Goliath) alt. c. 100m, on the river bank (Collector?, no. 222, flowering in Dec. 1911).

Oberonia Lindl.

Oberonia inversiflora J.J. Sm., in Fedde Rep. [X (1912), 487].

(latin diagnosis)

Dutch New Guinea : On the hills near Alkmaar (Lorentz Expedition (1909), Rachmat, living plant in cultivation at Hort. Bog. under no. 431R).

According to Schlechter's classification of the genus this species must belong to the section Scyttoxiphium.

The very small flowers are twisted towards the rachis and do not have retrorse sepals and petals; they have an odour reminiscent of yeast.

Microstylis Nutt.

Microstylis latifolia J.J. Sm., Fl. Buit. VI, Orch. 248; Atlas, fig.

CLXXXV.

Microstylis congesta Rchb. f., in Walp. Ann. VI, 206; Ridl., in Journ. Linn. Soc. XXIV, 334; Mat. Fl. Mal. Penins. I, 14; Hook. f., Fl. Br. Ind. V, 689; King et Pantl., in Ann. Bot. Gard. Calc. VIII, 14, t. 23.

M. Bernaysii F.v.M., *Fragm.* XI, 21.

M. trilobulata Kurz., in *Andam. Rep. App. B.* XIX.

Diena congesta Lindl., in *Wall. Cat.* 1936; *Gen. et Sp. Orch.* 22;  
in *Bot. Reg. sub. t.* 825; *Rchb.f.*, in *Bonpl.* III, 259.

Malaxis latifolia Smith, in *Rees Cycl.*

M. plicata Roxb., *Fl. Ind.* III, 450.

Gastroglottis montana Bl., *Bijdr.* 387.

Dutch New Guinea : Merauke (Lorentz Expedition 1909, Rachmat, living  
plant in cultivation at Hort. Bog. under no. 368R).

Microstylis nitida Schltr., *Orch. Deutsch-Neu-Guinea* (1911), 125.

var. cyclopensis J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, eastern slopes, alt. c. 1200m,  
in forest, growing on the ground (K. Gjellerup no. 511, flowering  
in June 1911).

The plant agrees in general with Schlechter's description (in  
*Fedde Rep. Beih. I* (1911), 125), except that the leaves are slightly  
broader, and the lip broader with shorter auricles.

Schlechter does not mention the strongly convex sepals and petals  
with the middle lobe of the lip bent inwards.

According to Gjellerup the flowers are pale yellow-brown.

Only a solitary specimen was found.

Microstylis epiphytica Schltr., in *Schum. et Laut., Nachtr. Fl. Deutsch.*

*Schutzgeb. Südsee*, 99; J.J. Sm., in *Nova Guinea VIII* [1909], 28.

Pseudoliparis epiphytica Finet, in *Bull. Soc. Bot. France* LIV  
(1907), 536, pl. XI, fig. 29-40.

Schlechter (in *Fedde Rep. Beih. I* [1911], 118) has surmised that  
the basal lamella of the lip, described by me and illustrated by Finet  
does not occur with normal flowers. The flowers I investigated were,  
however, all completely normal, so that I am more inclined to believe

that this is generally the normal state, but it is difficult to see when the pressing has been too severe.

Schlechter has taken on the worthy task of separating the genus Microstylis (and others) into sections. It is, however, advisable in this regard to use only the truly major characteristics.

Thus I cannot agree with Schlechter when he separates the two small sections Oistochilus and Trigonopetalum from the very natural section Pseudoliparis. The main characteristic of my section Pseudoliparis is not to be found in the hump or horn of the column, but rather in their general arrangement, especially in the strongly-developed, impinging column auricles. The horn is only a secondary characteristic; sometimes it is strongly developed, other times reduced to a hardly visible tooth, until it disappears completely. It is very large, for example in M. epiphytica Schltr. and M. Rhinoceras J.J.Sm.; very small with M. incurva J.J.Sm., which is closely related to the latter species in floral structure, and with M. latipetala J.J.Sm. which is more closely related to the hornless M. moluccana J.J.Sm. and M. Zippelii J.J.Sm. than to the previously mentioned species. The division of the section undertaken by Schlechter is not a natural one.

Microstylis gibbosa J.J.Sm. in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 28; in Nova Guinea VIII [1909], 30, t. X, 29.

Schlechter unites this species with his M. dryadum. The description of this species, especially that of the lip, fits M. gibbosa J.J.Sm. so badly that the correctness of the relationship does not appear to me to be certain.

On the other hand M. sordida J.J.Sm. definitely belongs to M. xanthochila Schltr.

Microstylis tubulosa J.J.Sm., in Bull. Dép. Agric. Ind. Néerl. V (1907), 1; in Nova Guinea VIII (1909), 35, t. XI, 36.

Dutch New Guinea : Cyclops Range, eastern slopes, alt. c. 1000m, on humus in the primary forest (K. Gjellerup no. 503, flowering in June 1911).

I find no difference from the plant I described earlier, except that Gjellerup describes the lip as being brown-violet. Did he perhaps mean the column?

Liparis L.C. Rich.

Liparis pandaneti J.J. Sm., sp. nov. - L. pseudo-disticha J.J. Sm.

(nec. Schltr.); in Nova Guinea VIII (1909), 30, t. XIII, 41.

(latin diagnosis)

Dutch New Guinea : At the Noord (Lorentz) River, epiphytic in Pandanus and Metroxylon swamps (G.M. Versteeg no. 1743, flowering in Sept. 1907); at the same place (L.S.A.M. von Römer no. 156, flowering in Sept. 1909; no. 440, flowering in Oct. 1911).

Since Schlechter has recently described a whole series of closely-related species from German New Guinea and the identity of the Versteeg and von Römer plants with L. pseudo-disticha Schltr. is not completely assured, I find myself compelled to describe [this one] tentatively as a new species until comparative material is available.

Amongst Schlechter's drawings, the one of L. anemophila Schltr. is very similar to Versteeg's plant. This species, however, has extended pseudobulbs and olive-green flowers, which in the case of L. pandaneti J.J. Sm., according to Versteeg, [the flowers] are a muddy brown-red with a somewhat darker red lip, and, according to von Römer, pale orange.

The description of L. pseudo-disticha Schltr. agrees in most respects with L. pandaneti J.J. Sm. The leaves here are, however, appreciably larger and the colour of the flowers slightly different. Furthermore, L. pseudo-disticha Schltr. occurs fairly high up in the range, whilst L. pandaneti J.J. Sm. reaches hardly above sea-level. The

lip description and particularly that of the column of L. pseudo-disticha Schltr. are somewhat lacking when one considers the species to be so closely related.

Agrostophyllum Bl.

Agrostophyllum lamellatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XXXIX (1910), I.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2600m, isolated, rare, in shade on mossy humus on rocks (A.C. De Kock no. 62, flowering in Mar. 1911).

The lip underneath, at the apex, has a small conical head which occurs also with the Type.

Agrostophyllum uniflorum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee 129; J.J. Sm., in Nova Guinea VIII, no. I (1909), 42, tab. XV, 47.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1850m, rather rare, isolated, in the shade of mossy trees (A.C. De Kock no. 28, flowering in Mar. 1911).

Glomera Bl.

Section : Euglomera

Glomera goliathensis J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér II

(1911), 2.

Tab. IV, 9.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1850m, isolated, rare, in the shade on a mossy tree (A.C. De Kock no. 32, flowering in March 1911).

Differs from G. dentifera J.J. Sm. in thicker stems, more pointed leaves, larger bracts and flowers, an obovate lip-lamina and a longer

spur; and from G. subracemosa J.J. Sm. in thicker stems, broader leaves with a warty sheath, etc.

G. erythrosma Bl. is, likewise, related but differs apart from other respects, in that the leaf-sheath lacks the tooth.

The flowers are white with the lip-lamina rose-red.

Glomera palustris J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser II (1911),  
3.

Tab. IV, 10.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250 - 3450m,  
on rocks covered with mossy humus at swampy sunny locations, common  
(A.C. De Kock no. 72, flowering in Mar. 1911).

The species of section Euglomera are generally very similar to each other.

The present species, as far as given by the short diagnosis, differs from G. papuana Rolfe in the multi-flowered inflorescences, larger flowers, non-ovate petals; from G. neo-hibernica Schltr. in longer leaves, much longer bracts, larger flowers and lip; from G. torricellensis Schltr. in longer leaves, smaller inflorescences, longer bracts and smaller flowers; from G. dentifera J.J. Sm. in smaller leaves with the leaf-sheaths incised in the front at the apex, but tooth-less; and from G. subracemosa J.J. Sm. in much thicker stems, larger less-pointed leaves, finely wrinkled, non-warty tooth-less sheaths.

I had at my disposal only a solitary stem-apex with the leaves very much intercompressed.

The flowers are white with an orange lip.

Glomera Dekockii J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 2.

Tab. IV, 11.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250 - 3450m, usually



on swampy moss-covered humus on rocks (A.C. De Kock nos 74 and 159, flowering in Mar. and Apr. 1911).

The species appears to be closely related to G. papuana Rolfe, but differs in several respects from his somewhat brief diagnosis.

G. Dekockii J.J. Sm. has shorter leaves, larger flowers, non-ovate, very blunt petals.

The flowers are white with a black lip-apex. The stem pieces to hand were up to 25 cm long.

Glomera triangularis J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 3.

Tab. V. 12.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt.c. 3250m, usually on mossy, humus-covered rocks (A.C. De Kock no. 142, flowering in Apr. 1911).

Among the species known to me with capitate inflorescences, this one is characterized by the broad triangular lip-lamina and the broad tri-lobed gynostemium.

The flowers are white with the lip-apex red.

The species was represented in the collection only by the flowering apex of a stem.

Glomera manicata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 15.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3000 - 3450m, isolated on moss-covered humus on rocks in sunny locations, common (A.C. De Kock no. 41, flowering in Mar. 1911).

Section : Glossorhyncha

Glomera brevipetala J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 4.

Glossorhyncha brevipetala Schltr., Orch. Deutsch-Neu-Guinea (1912)

295.

Tab. V, 13.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2000m, isolated, rare, on mossy humus, in the shade (A.C. De Kock no. 40, flowering in Mar. 1911).

A small characteristic species with small, longitudinal delicately-furrowed leaves, long subulate-pointed sepals, smaller petals and a mentum not surrounded by bracts.

Glomera rhombea Schltr., Orch. Deutsch-Neu-Guinea (1912), 295.

Tab. V, 14.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1900 - 3450m, on mossy humus-covered rocks in sunny locations common (A.C. De Kock no. 93, flowering in Mar. 1911).

This species is characterized by small leaves, relatively large flowers, a short spur sideways compressed, but not appressed to the ovary, very long column auricles, an extended anther and hooded lower margin of the stigma.

No. 93 probably belongs here but I did not include it in the description since the specimen was somewhat sparse and exhibited a few aberrations. Not only does it grow terrestrially and reach a height of 30 cm, but the flowers are larger (sepals and petals 1.3 cm long), the lip is thicker and the column auricles appear to be shorter.

The flowers are white with a black lip-apex.

Glomera terrestris J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911),

6.

Glossorhyncha terrestris Schltr., Orch. Deutsch-Neu-Guinea (1912)

295.

Tab. V, 15.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1900 - 3450m, on mossy rock walls in sunny locations, common (A.C. De Kock no. 56, flowering in Mar. 1911).

The species shows a certain similarity with G. acuminata J.J. Sm., but differs in longer leaves, smaller flowers, the lateral sepals not surrounding the spur and not connate to any extent, a much thinner spur and the lip-lamina acute in front.

The plant grows to a height of 30 cm and has white flowers with a black lip-apex.

Glomera acuminata J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 3.

Glossorhyncha acuminata Schltr., Orch. Deutsch-Neu-Guinea (1912), 295.

Tab. VI, 16.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt.c. 1800m, in shade between moss, on humus, rather rare (A.C. De Kock no. 29 pp., flowering in Mar. 1911).

Among the many related species this one is characterized by the lateral sepals which surround the spur and which are connate upwards for a fair distance in a pouch-like manner, as is general for species of the section Euglomera.

One is tempted to compare the plant with G. squamulosa (Schltr.) J.J. Sm. since it is reported that there also the lateral sepals are connate upwards for a fair distance. Schlechter told me, however, that this assertion is incorrect and that the lateral sepals are not connate, but are adnate to the spur as is the case for G. uniflora J.J. Sm. I therefore suspect that in all probability G. uniflora J.J. Sm. and G. squamulosa (Schltr.) J.J. Sm. are identical.

The colour of the flowers is white with a black lip-apex.

Glomera conglutinata J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II

(1911), 4.

Glossorhyncha conglutinata Schltr., Orch. Deutsch-Neu-Guinea (1912),

295.

Tab. VI. 17.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3000m, on mossy rock walls in sunny locations, rare (A.C. De Kock no. 55, flowering in Mar. 1911).

According to the description, G. torricellensis (Schltr.) J.J. Sm. is the closest related species, the lateral sepals being connate almost to the apices, as for several Bulbophyllum species and reminiscent of G. torricellensis (Schltr.) J.J. Sm. This has, however, broader, bilobed leaves, appreciably smaller flowers (the dorsal sepal 0.3 cm long), the labellum with two purple markings, and a non-lobed rostellum.

The plant reaches a height of 20 cm and has white flowers with a brown lip-apex.

Glomera latilinguis J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX

(1910), 14.

Glossorhyncha latilinguis Schltr., Orch. Deutsch-Neu-Guinea (1912),

295.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1800m, between moss on humus in the shade, isolated and rather rare (A. C. De Kock no. 29 p.p., flowering in Mar. 1911).

Glomera saccosepala [sarcosepala] J.J. Sm., in Bull. Jard. Buit. 2<sup>e</sup> sér. II (1911), 5.

Glossorhyncha sarcosepala Schltr., (sphalm) Orch. Deutsch-Neu-Guinea (1912), 295.

Tab. VI, 18.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250m, on mossy trees growing in the shade, common (A.C. De Kock no. 90, flowering in Mar. 1911).

A species related to G. uniflora J.J. Sm. but differing in habit, leaf shape, the larger lip and the long spur. Noteworthy, furthermore, are the basal lobes of the lateral sepals which have a pouch-like depression at their apex.

According to De Kock the species is a pendulous plant, about 30 cm long with white flowers and a red lip-apex.

Glomera scandens J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911),

6.

Glossorhyncha scandens Schltr., Orch. Deutsch-Neu-Guinea (1912)

295.

Tab. VIII, 19.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1500m, in the shade on humus-covered rocks, scandent on a mossy tree, uncommon (A.C. De Kock no. 188, flowering in Apr. 1911).

A species easily recognised by the long scandent stems, up to 3m long according to De Kock, with far-spreading little branches and leaves, and by the spur distended towards the apex.

Most of the flowers present were already slightly withered and, for example, no anther could be found. It showed, in part, a tri-lobed labellum. It could be possible that the serrations occurred later (insect attack?), for a tri-lobed lip is not generally present in this species.

The flowers were white.

Glomera compressa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV (1911),

2.

Glossorhyncha compressa Schltr., Orch. Deutsch-Neu-Guinea (1912),

293.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1800m, on mossy trees, isolated, rare (A.C. De Kock no. 23, flowering in Mar. 1911); at the same place, alt. c. 2200m, in the shade on mossy humus, isolated, common (A.C. De Kock no. 39, flowering in Mar. 1911); Cyclops Range, eastern slopes, alt. c. 1500m (K. Gjellerup no. 517, flowering in June 1911); Johannes Keyts Range, alt. c. 2200m, on mossy rocks, isolated (J.H.I. le Cocq d'Armandville no. 250, flowering in Dec. 1911).

Section : Giulianettia

) Glomera grandiflora J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 14.

Glossorhyncha grandiflora Schltr., Orch. Deutsch-Neu-Guinea (1912), 293.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2800m, on mossy rock faces in sunny locations, isolated, rare. (A.C. De Kock no. 115, flowering in Mar. 1911).

The flowers are brown-red with black lip-margins. The leaves appear yellow-spotted on the underside.

) Glomera fruticula J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 5.

Glossorhyncha fruticula Schltr., Orch. Deutsch-Neu-Guinea (1912), 293.

Tab. VII, 20.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250m, on a mossy rock wall in a sunny location, rare (A.C. De Kock no. 104, flowering in Mar. 1911).

This plant is closely related to G. carnea J.J. Sm., G. grandiflora J.J. Sm. and G. tenuis (Rolfe), J.J. Sm.; from the former it can be

separated almost only by its vegetative characters. It is extensively branched and has thin, closely-articulated branchlets, very small leaves and only weakly ciliated leaf-sheaths, so that it is quite different in habit. In addition the flowers are not smaller than for G. carnea J.J. Sm. The lip-lamina is, however, shorter and broader and the column shorter than for this species.

The plant grows up to 30 cm tall and has brown-red flowers, with a black margin to the lip.

Mediocalcar J.J. Sm.

Mediocalcar conicum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 18. [70].

Tab. VII, 21.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1800m, in forest on moss-covered trees (K. Gjellerup no. 533, flowering in June 1911).

Among the species so far known in Dutch New Guinea, this one is characterized by its thick pseudobulbs, broad leaves, paired inflorescences and narrow flowers.

The colour of the flowers is pale brown-red with a pale green apex.

According to Schlechter's classification the species belongs to the section Microcalcar, but it has a very large spur.

The validity of this arrangement needs further confirmation.

Mediocalcar bifolium J.J. Sm. var. validum J.J. Sm.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3200m, on mossy humus-covered rocks, in groups, common (A.C. De Kock nos 68 and 143, flowering in Mar. and Apr. 1911).

Frequently with Mediocalcar species large differences can exist between the lower and upper parts of the rhizome. For this reason I am not convinced that the tentatively suggested variety can be maintained.

It is even possible that this plant represents another species. Even though very similar in floral construction, small differences can be shown, and these, together with the vegetative characteristics, may later on make the setting-up of a new species unavoidable.

The flowers are Bordeaux-red with a green margin.

Mediocalcar geniculatum J.J. Sm., in Bull. Jar. Bot. Buit. 2<sup>e</sup> sér. XII [III] (1912), 18. [70].

Tab. VIII, 22.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, eastern slopes, alt. c. 1800m, in forest, on moss-covered trees (K. Gjellerup, mixed with no. 533, flowering in June 1911).

A small piece consisting of the apex of a pseudobulb with two leaf bases and two flowers was mixed up with no. 533. The flowers of both species are externally very similar, but are essentially very different. The pouch-like labellum which is rectangular approximately at the centre, is reminiscent of M. Agathodaemonis J.J. Sm., but from which it differs, apart from other respects, in narrower flowers. With none of the other species have I observed the column-foot of M. geniculatum J.J. Sm., which is bent in the shape of a knee.

Epiblastus Schltr.

Epiblastus cuneatus J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908) 22; in Nova Guinea VIII [1909], 45, t. XVI, 51.

Eria cuneata Krzl., in Pflanzenr. 50. Heft (IV 50, IIB. 21), 28.



Kränzlin (see above) incomprehensibly placed the genus Epiblastus Schltr. into Eria, whilst on the other hand the sections Trichotosia and Cylindrolobus of Eria which agree completely with it in floral structure are separated as a separate genus named Trichotosia.

Under E. sciadanthus Schltr. (Eria sciadantha Krzl.), Dutch New Guinea is also named as a locality, but until now, this species has not been found in our region. The no. quoted by Kränzlin (Versteeg no. 1525) belongs to Ceratostylis albiflora J.J. Sm.

Ceratostylis Bl.

Section : Acaules

Ceratostylis Vonroemerii J.J. Sm. sp. nov.

(latin diagnosis)

Dutch New Guinea : Papuan border [area], alt. c. 240m. (L.S.A.M. von Römer no. 416, flowering in Oct. 1909).

When I examined an alcohol-preserved flower of this plant, I believed that I was dealing with C. albiflora J.J. Sm., but it looks so different in the vegetative segments that I now consider it should be treated as a separate species.

Ceratostylis sessilis J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 7.

Tab. VIII, 23.

(latin diagnosis)

Dutch New Guinea : Ridge of [Mt.] Goliath, alt. c. 2000m, on mossy trees (A.C. De Kock no. IV, flowering in Jan. 1911).

The species is closely related to C. albiflora J.J. Sm., C. Vonroemerii J.J. Sm. and probably also to C. platychila Schltr.; it, likewise, has white flowers.

It is characterized above all by appreciably larger flowers, a relatively small, sessile labellum and almost completely lacks a column-

foot.

Schlechter recently created not only new names for the two sections of the genus Ceratostylis, correctly separated by Reichenbach, but has defined them differently although they completely match Reichenbach's concepts. This definition is completely redundant and incorrect in itself; the floral relationships of both groups are completely identical.

The sections are correctly defined as follows:

Section 1 : Euceratostylis : Rhizome branched, very short. The little stems are extended.

Section 2 : Pleuranthemum : Rhizome branched, more-or-less extended. The little stems are very short. The names, although less appropriate, are probably the best to use.

Dendrobium Sw.

Section : Cadetia

Dendrobium cyclopense J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 19. [71].

Tab. VIII, 24.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1200m, epiphytic in forest (K. Gjellerup no. 508, flowering in June 1911).

A species of the section Cadetia closely related to D. chamaephytum Schltr.; characterized particularly by the long, thin, bent, spur-shaped mentum.

The flowers are white.

Dendrobium subhastatum J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 19. [71].

Tab. IX, 25.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, alt. c. 1200m, epiphytic in forest (K. Gjellerup mixed up with no. 508, flowering in June 1911).

A small flowering piece, as well as a few separated leaves, were mixed up with no. 508, D. cyclopense J.J. Sm.

The two species are completely similar to each other in habit. However, D. subhastatum J.J. Sm. differs in smaller flowers, a much shorter mentum, and the swollen front apex of the labellum being reminiscent of Ceratostylis.

Dendrobium aprinum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911),

7.

Cadetia aprina Schltr., Orch. Deutsch-Neu-Guinea (1912), 424.

Tab. IX, 26.

(latin diagnosis)

Dutch New Guinea : Ridge and summit of [Mt.] Goliath, alt. c. 2000 and 3250m, on mossy trees (A.C. De Kock nos III and X, flowering in Jan. and Feb. 1911).

The species is characterized by the fairly large flowers and especially by the strongly retrorse side lobes of the lip, like the tusks of a boar.

The colour is white.

The description of the ovary was made from a solitary specimen and I cannot say whether it is always bent and opens only with a single line of dehiscence.

Dendrobium macrolobum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 8.

Cadetia macroloba Schltr., Orch. Deutsch-Neu-Guinea (1912), 424.

Tab. X, 27.

(latin diagnosis)

Dutch New Guinea : Summit of [Mt.] Goliath, alt. c. 3250m, on

moosy limestone rocks (A.C. De Kock no. VI, flowering in Feb. 1911).

A noteworthy species of the section Cadetia with, for the section, very large flowers, stated to be white; the mid-lobe of the lip is strongly developed.

D. aprinum J.J. Sm. is probably the closest related species.

Dendrobium goliathense J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 7.

Cadetia goliathensis Schltr., Orch. Deutsch-Neu-Guinea (1912), 424.

Tab. X, 28.

(latin diagnosis)

Dutch New Guinea : Summit of [Mt.] Goliath, alt. c. 3250m, on mossy limestone rocks (A.C. De Kock no. XI, flowering in Feb. 1911); at the same place, in the shade of a mossy tree, isolated, rare (A.C. De Kock no. 86, flowering in Mar. 1911).

This interesting species of the section Cadetia is noteworthy on account of the relatively thick little stems of the inflorescences which emerge from the front and rear of the leaf, and by the very long spur-shaped mentum.

The flowers appear to develop only singly, not in bunches, thus two at the most on each stem. Even with older stems I was unable to find any remnants of several inflorescences.

The flowers, as noted by the collector for no. XI, are yellowish, for no. 86, white.

Section Diplocaulobium

Dendrobium lageniforme J.J. Sm., in Ic. Bog. II (1903), 86, t. CXVIB.

Diplocaulobium lageniforme Krzl., in Pflanzenr. Heft 45 (1910), 340.

Dutch New Guinea : On the upper Eilanden River (B. Branderhorst, living plant in cultivation at Hort. Bog. under no. 227B).

Dendrobium atriferum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

(1908), 13; in Nova Guinea VIII (1909), 54, t. XIX, 61; etc.

Dutch New Guinea : Cyclops Range, eastern slopes, alt. c. 1100m,  
epiphytic in forest (K.Gjellerup no. 509, flowering in June 1911).

Dendrobium compressicolle J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér.

III (1912), 19. [71].

Tab. XI, 29.

(latin diagnosis)

Dutch New Guinea : Hollandia Bivouac, on hills, alt. c. 50m,  
epiphytic in forest, scattered (K. Gjellerup no. 411, flowering  
in Dec. 1910).

The species differs particularly in the pseudobulbs, which gradually narrow towards the apex, are laterally compressed and in cross section are narrow-triangular, one of the broad sides in convex, the others concave.

The flowers have the general structure of D. longicolle Lindl. but I do not consider the species identical.

According to the collector's label the plant grows to 40 cm tall, the flowers being pale yellow with a pale brown apex, the lip dark sulphur-yellow with dark red-brown dots and markings, particularly on the lateral lobes.

Section : Desmotrichum

Dendrobium rhipidolobum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee, 151; J.J.Sm., in Nova Guinea VIII (1909), 60,  
t. XXII, 70.

Dutch New Guinea : Humboldt Bay, near Hollandia Bivouac, epiphytic  
on rock faces covered by forest, at the coast, alt. c. 5 - 25m  
(K. Gjellerup no. 448, flowering in Mar. 1911).

This valid species is incorrectly presented by Kränzlin as a  
synonym of Desmotrichum fimbriatum Bl.

Section : Euphlebia

Dendrobium inaequale Rolfe, in Kew Bull. 1901, 147; Hook.f., in Bot. Mag.

1900, t. 7745; Krzl., in Pflanzenr. Heft 45 (1910), 264, Fig. 22,  
G - N.

Dutch New Guinea : Hollandia Bivouac, alt. c. 10m (K. Gjellerup  
no. 445, flowering in Mar. 1911).

Section : Sarcopodium

Dendrobium simplex J.J. Sm. in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
(1911), 8.

Tab. XI, 30.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2700m, in the shade,  
on a tree with little moss, isolated, very rare (A.C. De Kock no.  
113, flowering in Mar. 1911).

This species is the first one of the section Sarcopodium in New  
Guinea and is characterized by the simple, strongly concave lip, with  
a conspicuous tri-ribbed callus at its base.

According to the discoverer the flowers are white with violet dots,  
on the inside whitish green. The sepals and petals of the flowers,  
preserved in formalin, were of a pallid colour, the lip violet.

Dendrobium uncipes J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III  
(1912), 20. [72].

Tab. XII, 31.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, south-east slopes, alt. c. 900m,  
epiphytic in primary forest (K. Gjellerup no. 568, flowering in  
June 1911).

A very characteristic species of the section Sarcopodium, the  
second [found] in New New Guinea.

The strongly bent column-foot and the mentum thereby formed is  
especially peculiar. The labellum also cannot be compared with that  
of any other species in the genus.

Unfortunately, only a single bulb, together with a solitary inflorescence and solitary flower, was found.

The bulbs are brown-yellow, the leaves dark green and the flower yellow-brown.

Section : Latouria

Dendrobium macrophyllum A. Rich. var. subvelutinum J.J.Sm., in Nova Guinea VIII (1911), 552.

A specimen of the plant has flowered in the Botanical Garden at Buitenzorg. The flowers are a pallid-green, the lateral lobes with radiating somewhat muddy-violet veins, the rear ones of which dissolve into dots; the middle lobe is pallid-green, with violet veins uniting at the base.

Dendrobium subquadratum J.J.Sm., in Bull. Dép. Agric. Ind. Néerl. XIX. (190), 20; in Nova Guinea VIII (1909), 65, t. XXIII, 73; l.c. [1911], 553.

D. Kingianum Bidw. var. subquadratum Krzl., in Pflanzenr. Heft 45, 274.

Dutch New Guinea : On [Mt.] Goliath (A.C. De Kock 1911, living plant in cultivation at Hort. Bog. under no. 157).

The specimens collected by A.C. De Kock on Mt. Goliath are appreciably larger than the ones I have seen previously. It cannot be decided yet whether they are a larger variety of more robustly developed plants, since so few specimens from the earlier locality exist.

The stems were up to 27.5 cm long and 0.525 cm broad at the apex, the leaves 18 - 20 cm long, 6.4 cm broad; the inflorescences about eight-flowered.

Dendrobium acutisepalum J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 8.

Tab. XII, 32.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath 3250 - 3450m, on mossy rock faces in sunny locations, somewhat rare and isolated (A.C. De Kock nos 73, 97, 122, 137 and 164, flowering in Mar. and Apr. 1911).

Amongst the four inter-related new species of the section Latouria described here, this one is characterized especially by the lip. The lateral lobes are rhombic, truncated at the front, wavy and crenate; the mid-lobe is broader or narrower rhombic. The three ridges are connate at the front to form a three-ribbed callus; the two lateral ones, separated by a deep furrow, can be traced to the base of the lip.

According to De Kock, the plant attains a height of 0.5m and has branched roots. The petals are white, the sepals green, violet underneath.

Dendrobium guttatum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 9.

Tab. XII, 33.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250m, in the shade on a mossy tree, very rare (A.C. De Kock nos 76 and 161, flowering in Mar. and Apr. 1911).

This species is closely related to D. rhomboglossum J.J. Sm., being very similar in floral structure and perhaps best considered as a variety. However, since there are several specimens collected in March and April which show exactly the same difference, I should like to regard them at present as specific.

The plants are immediately distinguished by their habit; D. guttatum J.J. Sm. has six widely-separated, short leaves and looks very much like a species of the section Ceratobium, whereas D. rhomboglossum J.J. Sm., on the other hand, appears always to have two narrower leaves, located closely together.

The individual segments are broader and less pointed than for



D. guttatum J.J. Sm., and the flowers therefore more robust than for D. rhomboglossum J.J. Sm. The lateral lobes of the lip, furthermore, are semi-circular for D. guttatum J.J. Sm. and triangular with a rounded apex for D. rhomboglossum J.J. Sm.; whilst for D. guttatum J.J. Sm. the column-foot is bent, even though not strongly and straight for D. rhomboglossum J.J. Sm.

D. guttatum J.J. Sm. and D. rhomboglossum J.J. Sm. differ from D. acutisepalum J.J. Sm. and D. terrestre J.J. Sm. in the obtuse angle separating the middle and lateral lobes of the lip.

The colour of D. guttatum J.J. Sm. is white with violet speckles, the lip dotted a dark violet.

Dendrobium rhomboglossum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 9.

Tab. XIII, 34.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3200m, on mossy rock faces in sunny locations, very rare (A.C. De Kock nos 77 and 162, flowering in Mar. and Apr. 1911).

The differences between this species and its closest relative D. guttatum J.J. Sm. have already been given under the latter.

According to the collector the species reached a height of 30 cm and has violet flowers.

Dendrobium terrestre J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 10.

Tab. XIII, 35.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2500m, on mossy humus covering rocks in the shade, very rare (A.C. De Kock no. 119, flowering in Mar. 1911).

Distinguished from the three other species described here, by a

very short mentum and the ridges of the lip not reaching anywhere near the base of the middle lobe.

According to the notes, the plant is 0.5m tall and has firm green stems, long roots and ochre-yellow flowers.

Section : Phalaenanthæ

Dendrobium affine Steud., Nom. ed. 2(1840), 489; etc.

Kränzlin united D. bandaense Schltr. with this species, although the descriptions are fairly different, but on page 147 he accepts it again as a separate species.

Since Kränzlin gives Schlechter's description of D. bandaense for D. affine and not Decaisne's original description, D. affine Krzl., (non Steud.) should be accepted as a synonym for D. bandaense Schltr.

Furthermore, D. Urvillei Finet and D. leucophotum Rchb.f., which I united with D. affine Steud. (see Nova Guinea VIII [1909], 65) are again separated and placed in very different sections. Since, however, the descriptions agree very well with each other, I consider that my opinion must be regarded as the correct one.

Kränzlin's description of D. leucophotum Rchb.f. (in Pflanzenr. Heft 45 [1910], 69) differs from Reichenbach's original description.

Section : Ceratobium

Dendrobium undulatum R.Br., Prodr. 332; etc.

var. Albertisii F.v.M., Descript. Not. Pap. Pl. I (1875), 73.

Tab. XIII, 36.

(latin diagnosis)

Dutch New Guinea : Merauke (J.W.R. Koch nos 2, 10 and 11, 1903 - 1904); Jaheri, flowering in Apr. 1901). Geographic distribution : British and German New Guinea ; Aru Islands, (P. van Kampen, living plant); Thursday Island.

The variety differs from the Type in the larger flowers, markedly wavy sepals and petals with a middle ridge terminating in a fairly large,

free, pointed tooth.

The flowers of a specimen cultivated at the Buitenzorg Garden were darker than usual.

W. Rothert noted, for the specimen he collected, that it grew terrestrially.

The variety does not appear in Kränzlin's monograph.

var. gracile J.J.Sm., nov. var.

Tab. XIII, 37.

(latin diagnosis)

Habitat?

This variety apparently comes from New Guinea or the adjacent islands; sometimes I obtained specimens from private gardens.

It differs from the var. Albertisii in the retrorse but not recurved sepals, narrower petals, narrower flowers on account of the thinner mentum, whilst the ridges of the lip, as well as the column, are different. Dendrobium conanthum Schltr., Orch. Deutsch-Neu-Guinea (1912), 550.

Tab. XIV, 38.

(latin diagnosis)

Dutch New Guinea : Hollandia Bivouac, epiphytic in the coastal hills, alt. c. 20m (K. Gjellerup no. 432, flowering in Mar. 1911).

According to Schlechter's description and sketch which the author allowed me to copy, this plant must belong to D. conanthum Schltr. My description as a new species had already gone to press when Schlechter's description of the section Ceratobium appeared.

The next closest species is D. undulatum R. Br.

According to the notes of the collector, the flowers are pale brown-yellow with irregular brown longitudinal stripes, the lip has white pectinate margins with brown-red transverse veins, the hypochile with small brown dots, the base of the lip and column pale violet, the column otherwise yellow-white and the anther yellow.

Dendrobium strepsiceros J.J. Sm., [sp. nov.]

Tab. XIV, 39.

(latin diagnosis)

Habitat?

Plants of this species were bought by Mr. C. Joseph at an auction at Buitenzorg and flowered in his garden, but the origin is unfortunately not known.

The species belongs to the closer relatives of D. antennatum Lindl., D. d'Albertisii Rchb.f., D. Stratiotes Rchb.f., D. leporinum J.J. Sm., etc., but differs in the broader concave leaves, the colour of the flowers, the relatively longer middle lobe and the ridges, raised to a triangular lamella at the apex, etc.

Section : Grastidium

Dendrobium falcatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

[1908], 17; in Nova Guinea VIII [1909], 72, t. XXV, 78.

Dutch New Guinea : Hills near Alkmaar (Lorentz Expedition 1909, Rachmat, living plant in cultivation at Hort. Bog. under nos 413R and 460R); on [Mt.] Goliath, alt. c. 150m, in the shade on a smooth tree trunk, isolated, rare (A.C. De Kock no. 179, flowering in Apr. 1911); Humboldt Bay, near the Hollandia Bivouac, alt. c. 50 - 100m, on the hills covered with forest, on the coast (K. Gjellerup no. 442, flowering in July 1911).

No. 413R differs from the Type in longer and narrower leaves, (up to 5.3 cm long, 0.95 cm broad) with flowers more openly dotted.

These and most of the species of the section Grastidium, which is strongly represented in New Guinea, are very elegant on account of the variety and beautiful coloration of the flowers. It is a pity that they are ephemeral.

Dendrobium Pulleanum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV

(1911), 4; in Nova Guinea VIII (1912) [1911], 557, t. XC, C.

Dutch New Guinea : On [Mt.] Goliath (A.C. De Kock 1911, living plant in cultivation at Hort. Bog. under no. 149).

Dendrobium ostrinum J.J. Sm. var. ochroleucum J.J. Sm., nov. var.

(latin diagnosis)

German New Guinea : On the upper Kaiserin-Augusta [Sepik] River, in the central mountains, alt. c. 250m, epiphytic in open forest along streams (K. Gjellerup no. 444, flowering in Mar. 1911).

The plant was collected devoid of flowers and flowered in March 1911 at the Hollandia Bivouac.

According to Gjellerup the flowers are cream-coloured, the lip and column pale sulphur-yellow, with apex of the mentum salmon-coloured. The flowers are reported to have the odour of weak hydrochloric acid.

The variety differs from the Type, apart from the colour, in the relatively narrower sepals and petals and a dense bunch of prickles on the middle lobe of the lip.

Dendrobium Vonroemeri J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 12; in Nova Guinea VIII (1912) [1911], 565, t. XCII C.

Dutch New Guinea : Cyclops Range on the eastern slopes, alt. c. 1600m, epiphytic in forest (K. Gjellerup no. 559, flowering in June 1911).

According to Gjellerup the flowers are white with a violet-flecked lip.

Dendrobium rugulosum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 10.

Tab. XIV, 40.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 150m, in the shade on a smooth tree trunk, isolated, rare (A.C. De Kock no. 181, flowering in Apr. 1911).

Amongst the Papuasian species of the section with the labellum bereft of bunches of hair or papillae, this species is characterized by the narrow graminaceous leaves.

The flowers are white.

Dendrobium erectopatens J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
(1911), 10.

Tab. XV, 41.

(latin diagnosis)

Dutch New Guinea : On the north coast (K. Gjellerup 1910, without number); Hollandia Bivouac, epiphytic. alt. c. 40m (K.Gjellerup no. 430, flowering in Mar. 1911). Geographic distribution : Kaiser-Wilhelms-Land; on the upper Kaiserin-Augusta [Sepik] River, alt. c. 225m (K. Gjellerup no. 431, flowering in Mar. 1911).

) In floral structure the species is very similar to D. igneum J.J. Sm., and after inspecting only the flowers I considered regarding it possibly as a variety of this species. However, since the vegetative parts showed considerable differences, the setting up of a new species is unavoidable.

D. erectopatens J.J. Sm. differs from D. igneum J.J. Sm. in the somewhat pointed, not appreciably spreading leaves, hence different habit; in smaller flowers, very short lateral lobes and the middle lobe retrorse at the apex.

) The flowers of no. 430, according to the collector, are yellowish white, the base of the lip pale violet and with a yellow anther.

A living plant of no. 431 was collected in November 1910 and it flowered in March 1911. The flowers are somewhat smaller than for no. 430 and are described as pale wax-yellow, the labellum a deeper yellow and with an intense yellow longitudinal ridge; the column brownish at the base, and with a yellow anther.

Dendrobium Branderhorstii J.J.Sm., in Bull. Dép. Agric. Ind. Néerl.

XXXIX (1910), 8; in Nova Guinea VIII (1912) [1911] 561, t. XCID;  
Krzl. in Pflanzenr. Heft 45 (1910), 360.

Dutch New Guinea : On Jotéfa Bay, common on trees on cliffs at

the seashore, alt. c. 3m (K. Gjellerup no. 425, flowering in Jan. 1911).

Dendrobium ingratum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 20. [72].

Tab. XV, 42.

(latin diagnosis)

Dutch New Guinea: Seka, at the Tami [River] mouth, epiphytic on a tree at the sandy sea-shore, alt. c. 5m (K. Gjellerup no. 579, flowering in July 1911).

A species of the section Grastidium, deceptively similar in habit to species of the section Biloba, e.g. D. piestocaulon Schltr. and D. erectifolium J.J. Sm. The two-flowered inflorescences and the remaining structure of the flowers direct it into the section Grastidium.

The middle lobe of the lip is short, retrorse, swollen in a carnose manner at the bend, and therefore, not easy to lay flat.

The immature stems are green-yellow, the developed ones pale brown, the leaves pale green, thin and carnose; the flowers either green-yellow or brown-yellow, the labellum characterized by a pale brown longitudinal stripe, the column greenish white. The flowers have a very unpleasant odour of putrid horse urine.

Section : Monanthos

Dendrobium piestocaulon Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee, 173; J.J. Sm., in Nova Guinea VIII (1909), 78, t. XXVII, 86; Krzl., in Pflanzenr. Heft 45 (1910), 164.

Dutch New Guinea : Humboldt Bay near the Hollandia Bivouac, alt. c. 50 - 100m, epiphytic in forest on the hills at the coast (K. Gjellerup no. 576, flowering in July 1911); on the upper Digul [River] (B. Branderhorst 1909, living plant in cultivation at Hort. Bog. under no. 191).

This plant from Hollandia coincides completely, also in the

colour of the flowers, with the specimens cultivated in the Botanical Garden, which I initially considered to be a new species, but recognized by Schlechter as D. piestocaulon. The specimens collected by Branderhorst on the upper Digul [River] had a differently coloured lip, the middle lobe being dark red, towards the base yellow and with dark brown dots. In other respects they do not differ.

Schlechter's description does not agree completely with these plants; the middle lobe of the lip can hardly be described as longish. Unfortunately, Schlechter does not give the colour of the flowers.

Dendrobium erectifolium J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

(1908), 16; in Nova Guinea VIII (1909), 76, t. XXVI, 84; l.c.

(1912) [1911], 566, t. XCIIIA; Krzl., in Pflanzenr. Heft 45 (1910), 163.

Dutch New Guinea : On [Mt.] Goliath (A.C. De Kock, living plant in cultivation at Hort. Bog. under no. 162).

Dendrobium crenatilabre J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III

(1912) 21. [73].

Tab. XV, 43.

(latin diagnosis)

Dutch New Guinea : Cyclops Range on the eastern slopes, alt. c. 2000m, epiphytic in forest (K. Gjellerup no. 556, flowering in June 1911).

Similar in habit to D. piestocaulon Schltr. and D. erectifolium J.J. Sm., but easily recognised by the irregularly crenate labellum.

The flowers are pale yellowish rose-red, the lip with a yellow front margin, the base with violet patches.

Section Pedilonum

Dendrobium confusum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV

(1911), 5; in Nova Guinea VIII (1909), 570, t. XCIVB.

D. constrictum J.J. Sm., p.p. in Nova Guinea VIII [1909], 70, t.



XXVII, 87 Fig. a.

Dutch New Guinea : Hollandia Bivouac, alt. c. 40m (K. Gjellerup no. 429, flowering in -?).

The inflorescences are more robust than those I had seen previously and reach a length of 5.75 cm. The collector did not report the colour of the leaves.

Dendrobium crenatifolium J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 11.

Tab. XV, 44.

(latin diagnosis)

/ Dutch New Guinea : Summit of [Mt.] Goliath, alt. c. 3250 - 3450m, on rocks covered with mossy humus, common (A.C. De Kock nos 71, 102, 136, 158 and 165, flowering in Mar. and Apr. 1911).

This well characterized species belongs to the section Pedilonum, however, is reminiscent of Oxyglossum in the pseudo-terminal inflorescences.

According to De Kock the plants are 20 - 30 cm tall. The colour of the flowers is violet with an orange-coloured violet-margined lip.

) Dendrobium concavissimum J.J. Sm. in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. II (1911), 11.

Tab. XVI, 45.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1600m, in the shade of a mossy tree, rare (A.C. De Kock no. 203, flowering in May 1911).

The closest relative of this species is probably D. glomeratum Rolfe. However, it is smaller in all segments and has a markedly hood-shaped lip which is held between the claw and lamina and has a transverse plate together with a short tooth on each side of the margin, a good distinguishing factor.

The flowers are violet, the lip orange.

Only stem fragments were available.

Section : Calypetrochilus

Dendrobium Bauerlenii F.v.M. et Krzl., in Österr. Bot. Zeitschr. XLIV  
(1894), 163; in Pflanzenr. Heft 45 (1910), 128, 7 D - F.

Tab. XVI, 46.

(latin diagnosis)

Dutch New Guinea : On the upper Eilanden River (B. Branderhorst,  
living plant in cultivation at Hort. Bog. under no. 220B).

I suspect that this plant represents D. Bauerlenii F.v.M.

Dendrobium conicum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. III (1912),  
21. [73].

Tab. XVI, 47.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the eastern slopes, on moss-  
covered trees in the forest (K. Gjellerup no. 534, flowering in  
June 1911).

This species appears to stand close to D. aphanochilum Krzl., from  
Ambon.

The flowers are green-yellowish white, this colour appearing  
seldom in the section.

Dendrobium aristiferum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
(1911), 12.

Tab. XVI, 48.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 900m, in the shade  
on a tree, rare (A.C. De Kock no. 14, flowering in Mar. 1911).

This plant differs in its vegetative parts from the other species  
of the section known to me.

The stems are square in cross-section, the short leaves ovate and

and with a longish bristle at the apex.

In floral structure it is very similar to D. mitriferum J.J. Sm. Noteworthy, are the two tubercles at the base between the dorsal and lateral sepals, which are formed there by the somewhat broadened appressed margins of the sepals. Furthermore, in contrast to D. mitriferum J.J. Sm., the lip has a horseshoe-shaped transverse callus.

According to the collector, the flowers are a ponceau-red colour. Dendrobium obtusisepalum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér.

II (1911), 13.

Tab. XVII, 49.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1850m, on mossy trees, not rare (A.C. De Kock no. 208, flowering in May 1911).

This species of the section Calyptrochilus is not very characteristic. Amongst its relatives it is recognised by the multi-bent stems, ovate leaves, blunt sepals and petals, an obtusely bent mentum, somewhat raised behind the apex.

According to the notes, the stems are 40 cm long and the flowers have an orange colour.

Dendrobium mitriferum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 10; in Nova Guinea VIII (1912) [1911], 571, t. XCIVC; Krzl., in Pflanzenr. Heft 45 (1910), 361.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3000m, in the shade of rocks, covered with mossy humus, isolated, common (A.C. De Kock nos 42 and 141, flowering in Mar. and Apr. 1911).

Agreeing very well with the previously described specimens, but the leaves are 2 - 3 cm long and 0.4 - 0.8 cm broad.

Dendrobium calyptratum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 12.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1950m, in the shade on a mossy tree, also growing terrestrially (A.C. De Kock no. 30, flowering in Mar. 1911).

Related to D. subclausum Rolfe and D. mitriferum J.J. Sm.; however, differing in broader leaves, multi-flowered inflorescences, small flowers and the lip less broad at the apex.

The flowers are orange with a yellow centre.

Dendrobium Vannouhuysii J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV (1911), 6.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2800m, on mossy limestone rocks (A.C. De Kock no. I, flowering in Jan. 1911); at the same place, alt. c. 3250m, on rocky walls, common (A.C. De Kock no. 81, flowering in Mar. 1911).

The flowers, which may be a little larger than described earlier, are stated by De Kock to be cinnabar-red (no. I) and brick-red with an orange lip (no. 81).

Section : Oxyglossum

Dendrobium subuliferum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 15.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 300m growing on a mossy tree in the shade, in groups, uncommon (A.C. De Kock no. 199, flowering in May 1911).

A small species with pointed, linear leaves and widely-opened flowers, with pointed sepals, petals and lip. The latter has a constriction one third the distance above the base where a bi-lobed

transverse lamella is located corresponding to a reflexed tooth of the column-foot. The anther is very noteworthy, having two almost-square ledges on the inside, which are expanded in a semi-globular manner at the centre, and have an oval-transverse opening from which the widely separated, paired pollinia with their base, protrude.

The flowers are white with a purple lip-margin.

Dendrobium rupestre J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 15.

Tab. XVII, 52.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3800m, on moss-covered limestone (A.C. De Kock no. II, flowering in Jan. 1911); at the same locality, alt. c. 2000m, somewhat rare, on mossy humus spread over rocks (A.C. De Kock no. 166, flowering in Apr. 1911).

The flowers are violet, and in addition for no. 166 an orange lip-margin is stated.

So far among the species of the section Oxyglossum, only two with a keeled dorsal sepal are mentioned: viz. D. cerasinum Ridl. and D. pentagonum Krzl. The former is reputed to have smaller flowers, but likewise keeled petals and a mentum broadened at the apex, whilst the latter is characterized by large leaves and a five-winged ovary.

Although the species of this section are easy to recognise, Kränzlin placed them in very different sections in his monograph of the Dendrobiinae and even listed D. parvulum Rolfe as a Sarcopodium.

I have attempted to make a list from the literature of those species which I consider belong here, however, on account of the many imperfect descriptions, it is easily possible that one or more species are missing.

F. von Mueller has compared D. Cuthbertsonii F.v.M. with D. puniceum Ridl. and D. cerasinum Ridl., however, according to the description the

species belongs more likely to the section Calypetrochilus. In Kränzlin's monograph it is placed in the Dendrocoryne.

1. D. subacaule Reinw. ex Lindl., in Jour. Linn. Soc. III (1859), II; Miq., Fl. Ind. Bat. III, 637; Krzl., in Pflanzenr. Heft 45 [1910], 279 (excl. syn.).

Tidore (Moluccas, not Java as given by Kränzlin).

2. D. puniceum Ridl., in Journ. Bot. XXIV (1886), 314.

British New Guinea.

Kränzlin united this species and D. delicatulum Krzl. with D. subacaule Reinw., but in my opinion this needs a more precise confirmation. I consider it somewhat unlikely that one of these Papuan species can be identical with the one from Tidore. Furthermore, I am not convinced that D. puniceum Ridl. and D. delicatulum Reinw. belong together. The descriptions of this and several other species of this section are insufficient.

3. D. cerasinum Ridl., in Journ. Linn. Soc. XXIV (1886), 334; Krzl., in Pflanzenr. Heft 45 [1910], 279.

British New Guinea.

4. D. delicatulum Krzl., in Engl. Bot. Jahrb. XVI (1893), 17.

Kaiser-Wilhelms-Land.

In case this species is not identical with D. puniceum Ridl. the name needs to be changed since D. delicatulum F.v.M. et Krzl. has priority.

5. D. Hellwigianum Krzl., in Engl. Bot. Jahrb. XVI (1893), 16; in Pflanzenr. Heft 45 [1910], 279.

Kaiser-Wilhelms-Land.

6. D. brevicaule Rolfe, in Kew Bull. (1889), 110; Krzl., in Pflanzenr. Heft 45 [1910], 127 (excl. syn.).

British New Guinea.

Kränzlin unites D. pentapterum Schltr. with this species, but

this is not possible since D. brevicaule Rolfe has a three-sided ovary, whilst with D. pentapterum Schltr. it is five-sided.

7. D. parvulum Rolfe, in Kew Bull. 1899, 127;

Sarcopodium parvulum Krzl., in Pflanzenr. Heft 45 [1910], 322.

Celebes.

8. D. cyanocentrum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 160; Krzl., in Pflanzenr. Heft 45 [1910],

108. Kaiser-Wilhelms-Land.

9. D. pentapterum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 161.

Kaiser-Wilhelms-Land.

10. D. pentagonum Krzl., in Pflanzenr. Heft 45 (1910), 128.

New Guinea.

11. D. violaceum Krzl., in Pflanzenr. Heft 45 (1910), 108.

New Guinea.

12. D. tenuicalcar J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV (1911), 6; in Nova Guinea VIII (1912) [1911], 574, t. XCV C

Dutch New Guinea.

13. D. rupestre J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 15.

Dutch New Guinea.

14. D. calcarium J.J. Sm. l.c. [13].

Dutch New Guinea.

15. D. asperifolium J.J. Sm., l.c. 13.

Dutch New Guinea.

16. D. Dekockii J.J. Sm., l.c. 14.

Dutch New Guinea.

17. D. retroflexum J.J. Sm., l.c. [14].

Dutch New Guinea.

18. D. subuliferum J.J. Sm., l.c. 15.

Dutch New Guinea.

19. D. begoniicarpum J.J. Sm., l.c. III (1912), 22.[74].

Dutch New Guinea.

Dendrobium begoniicarpum J.J. Sm., Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III [74].

Tab. XVIII, 53.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, eastern spurs, alt.c. 1500m, growing dispersed on the moss-covered trees, in open forest, on the summit of a mountain ridge (K. Gjellerup no. 566, flowering in June 1911.

This species has the smallest leaves of all those so far known in our Territory.

The flowers are orange-red and hence reminiscent of D. Dekockii J.J. Sm., but which nevertheless is different.

var. parviflorum J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, east slope, alt. c. 1800m, in forest on moss-covered trees.

Provisionally I have based a variety on this plant, even though the differences are not very marked and perhaps later may not be confirmed as constant.

The variety differs mainly in the not-swollen, three to four-leaved little stems and smaller yellow-orange flowers.

Dendrobium Dekockii J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 14.

Tab. XVIII, 54.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2700 - 3000m, in the shade on mossy trees, common (A.C. De Kock no. 47, flowering in Mar. 1911).

Clearly section Oxyglossum is represented in New Guinea by many



species which have relatively large, very beautifully -coloured flowers.

This species belongs to the smaller ones in the section and is characterized by the three to four-leaved constricted pseudobulbs; small, fairly broad, blunt, thick leaves; falcate lateral sepals, linear petals and a prominently five-ribbed ovary.

According to a note by the collector the flowers are coloured orange.

Dendrobium calcarium J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 13.

Tab. XVIII, 55.

(latin diagnosis)

Dutch New Guinea : Summit of [Mt.] Goliath, alt. c. 3250m, on mossy limestone rocks (A.C. De Kock no. IX, flowering in Feb. 1911); at the same locality, up to alt. c. 3450m, common (A.C. De Kock nos 101 and 138, flowering in Mar. and Apr. 1911).

The most closely related species appear to be D. pentagonum Krzl., D. violaceum Krzl., D. tenuicalcar J.J. Sm.

D. pentagonum Krzl. differs in the keeled dorsal sepal, shorter sepals and petals and a keel-shaped or obovate lip; D. violaceum Krzl. in the shorter bi-lobed leaves, a blunt mentum, a much shorter, non-linear, only 0.3 cm broad lip, and D. tenuicalcar J. J. Sm. in the much longer leaves, pointed sepals and petals and a longer pedicel (with ovary).

The flowers, according to the collector, were orange, those of no. 101, furthermore, had a brown-red lip-margin.

Dendrobium retroflexum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 14.

Tab. XIX, 56.

(latin diagnosis)

Dutch New Guinea : Summit of [Mt.] Goliath alt. c. 3250 - 3450m,

on mossy humus-covered rocks in a sunny location (A.C. De Kock nos 103 and 100, flowering in Mar. 1911); at the same location, alt. c. 2200m, on a mossy tree trunk in the shade, very rare (A.C. De Kock no. 108, flowering in Mar. 1911).

Distinguished from the related species by relatively strongly developed stems; and from species with a keeled dorsal sepal by blunt sepals and a simple, non-pointed lip, non-crispate at the apex.

The colour of the flowers, according to a note, is emerald-green with a black-blue, red-margined lip for no. 100 and green with a violet lip-margin for no. 103.

Furthermore for no. 103, the lip in the natural state is somewhat contracted at the apex, whilst for no. 100 it is somewhat broader than immediately below. I do not think that the plants are specifically different.

The description has been made only from no. 103.

Dendrobium asperifolium J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 13.

Tab. XIX, 57.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 900m, rare, in shade on a mossy tree (A.C. De Kock no. 15, flowering in Mar. 1911).

In habit this plant is completely akin to species of the section Oxyglossum, but the flowers belong equally to a Pedilonum.

The leaves, covered closely with warts, are noteworthy.

The colour of the flowers is carmine-red.

Dendrobium Agathodaemonis J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XXXIX (1910), 7; Krzl., in Pflanzenr. Heft 45 (1910), 360.

Dutch New Guinea : On [Mt.] Goliath on mossy trees, alt. c. 2300m (A.C. De Kock no. VII, flowering in Jan. 1911); alt. c. 2400m (A. C. De Kock nos 109a and 109b, flowering in Mar. 1911); alt. c.

2800m (A.C. De Kock nos V, 110b, 110c, and 110d, flowering in Jan. and Mar. 1911); alt. c. 3000m (A.C. De Kock no. 110a, flowering in Mar. 1911); alt. c. 3200m (A.C. De Kock no. 69, flowering in Mar. 1911); Cyclops Range, on the east slope, alt. c. 1800m, in forest on moss-covered trees (K.Gjellerup no. 531, flowering in June 1911); alt. c. 1500m, in open forest on a mountain ridge (K. Gjellerup no. 565, flowering in June 1911).

This Dendrobium species is surely one of the most noteworthy so far known in New Guinea. Not only does the small plant sport lively coloured flowers, as is the case for many Dendrobiums from this region, but the variety of colour, according to the collectors is probably larger than ever seen for any other orchid species.

These specimens here are grouped according to their habit into two groups that surely would be regarded, at first sighting, as specifically different. The one group has a thin sympodium, likewise with thin little stems and well-separated narrow leaves; the other has either well-separated or compressed stems swollen at the nodes into pseudobulbs, and generally a lesser number of broader leaves. At times the stems are also clavate. Of the specimens collected by De Kock those with thin stems come from an altitude of 2300-2400m, those with more-or-less swollen stems from an altitude of 2800 - 3000m.

The new shoots are not formed at the base, viz. below the leafed part of the old, but emerge at one to two or perhaps even more of the lower leaf-axils. They appear not at the end of an internode, but rather between two nodes, generally past the centre.

For the specimens with thickened stems the arrangement is usually not very distinct, and furthermore the specimen available frequently was inadequate.

A short description of the different specimens follows below, the colour of the flowers is according to De Kock.

No. 109a. Stems thin, 5 - 6 leaved. The leaves linear-lanceolate,

c 1.25 - 2.8 cm long, 0.175 - 0.225 cm broad. Flowers red with orange margin, the lip orange with a red margin.

No. 109b. Stems thin, c. 6-leaved. Leaves linear-lanceolate c. 1.0 - 1.5 cm long, 0.2 - 0.26 cm broad, flowers red.

No. 110a. Pseudobulbs conical-ovate, constricted, 2-leaved, leaves longish, c. 1.2 - 1.3 cm long, 0.5 - 0.43 cm broad. Two tepals (probably petals) green, three tepals (probably sepals) pale violet; the lip dotted with a Bordeaux-red margin.

No. V. Pseudobulbs extended, conical or fusiform, 2 - 3 leaved. Leaves lanceolate c. 0.9 - 1.65 cm long, 0.3 - 0.55 broad. Flowers red-violet.

No. 110c. Pseudobulbs spindle-shaped, extended in a conical or compressed-conical manner, 2 - 3 leaved. Leaves ovate to lanceolate c. 0.7 - 1.8 cm long, 0.425 - 0.46 cm broad. Two tepals (petals) yellow-green, three tepals (sepals) pale violet. Lip yellow-green.

No. 110d. Pseudobulbs cylindrical, spindle-shaped or short ovate, 2 - 3 leaved. Leaves ovate, c. 0.7 - 1.1 cm long, 0.45 - 0.65 cm broad. The leaves above and on the margins, the sepals outside, the ovary and the peduncle are densely covered with warts, beset with papillae and therefore have a mossy appearance. The flowers are violet, the lip white with a Bordeaux-red margin.

No. 110b. Pseudobulbs short or extended, constricted, c. 3-leaved. The leaves lanceolate c. 1.8 - 2.75 cm long, 0.45 - 0.65 cm broad. Flowers yellow-green, the lip with a Bordeaux-red margin.

No. 69. Lateral branches extended, clavate, 4-leaved. Leaves lanceolate, c. 0.8 - 1.7 cm long, 0.3 - 0.45 cm broad. Flowers yellowish with a violet lip-margin. Very similar to no. 106b. Of those specimens collected earlier by von Römer and van Nuhuys, no. 710 from von Römer's collection (locality unknown) and the plant collected by van Nuhuys in the Hellwig Range, alt. c. 2400m, have thin stems,

whilst no. 1296 from von Römer's collection found at alt. c. 2583m has short stems, thickened to bulbs.

The following remarks apply to the specimens collected by Gjellerup:

No. 531. Pseudobulbs thick or thin spindle-shaped, 2 - 3 leaved. Leaves dark blue-green, deep violet underneath and, together with the ovary and peduncles, moss-like warty as for no. 110d of De Kock's collection. Flowers violet-red, the lip with a white front margin.

No. 565. As for no. 531, but the leaves less warty. The flowers of a pale colour, dark rose-red, the petals cream-coloured at the base.

Section : *Eugenanthe*

*Dendrobium anosmum* Lindl., in Bot. Reg. XXI (1844) Misc. 41; in *Lindenia* VI, t. 364.

*D. superbum* Rchb. f. var. *anosmum* Rchb.f., in Walp. Ann. VI (1861), 283; Krzl., in *Pflanzenr. Heft* 45(1910), 33.

Dutch New Guinea : Humboldt Bay, near the Hollandia Bivouac, epiphytic, on rocky slopes covered with forest, near the sea, alt. c. 5 - 25m. Geographic distribution : Philippines.

The name *D. anosmum* Lindl. is older than *D. superbum* Rchb.f., so that if these plants are to be considered as varieties *D. superbum* Rchb.f., as a variety, must be placed under *D. anosmum* Lindl. as *D. anosmum* Lindl. var. *superbum* Rchb.f. and not the reverse, as Reichenbach did.

Gjellerup describes the flowers as white, pale violet at the base, with the lip blue-violet towards the base, white at the apex; also he specifically states that they are odourless. I have, however, established that flowers sent live by Gjellerup to the Botanical Garden have the same peculiar odour as that of a typical *D. superbum* Rchb.f.

*Eria* Lindl.

Section : *Trichotosca* [*Trichotosia*]

*Eria integra* J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), [74].

(latin diagnosis)

Dutch New Guinea : Cyclops Range, east slope, alt. c. 1800m, epiphytic in forest, common (K. Gjellerup no. 550, flowering in June 1911).

Amongst the few species of the section Trichotosia known from New Guinea, this one is easily recognised by the almost undivided labellum.

Gjellerup describes the colour of the flowers as follows :

Sepals green-yellow, suffused with pale brown-red, petals pale brown-red, the lip green-yellow, the column brown-violet.

Section Cylindrolobus

Eria rigida Bl. (non Rchb.f.), Mus. II, 183; Miq., Fl. Ind. Bat. III, 657.

var. papuana J.J. Sm., nov. var.

Tab. XX, 59.

(latin diagnosis)

Dutch New Guinea : Hollandia Bivouac, on Humboldt Bay, epiphytic, alt. c. 30m (K. Gjellerup no. 441, flowering in Mar. 1911).

The variety differs especially in the less-distinct lateral ridges of the lip, a shorter anther and the appendage to the column-foot covered with only short papillae.

According to the collector, the bracts are yellow-brown, the rachis brown-violet, the flowers white, the hypochile and the base of the column purple, whilst the anther is yellowish white.

#### Bulbophyllum Thou.

Section : Sestochilos [Sestochilus]

Bulbophyllum Versteegii J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

(1908), 10; in Nova Guinea VIII (1909), 102, t. XXXIV, 113.

I have established the flower colour from several specimens collected by the 'Mantri' Rachmat in 1909, and which later flowered

at Buitenzorg.

Flowers carnose, fairly pale yellow, the lower part of the sepals dotted chestnut-red, petals yellowish; the lip yellow at the base, the middle part of the lateral lobes closely dotted violet-brown. The ovary pale green, the pedicels greenish white.

Section : Monanthaparva

Bulbophyllum quadrangulare J.J. Sm., in Bull. Jard. Buit. 2<sup>e</sup> sér, II (1911), 16. —

Tab. XX, 60.

(latin diagnosis)

Dutch New Guinea : On the upper Digul [River] (B. Branderhorst, in cultivation at Hort. Bog. under no. 68B).

A pretty species of the section Monanthaparva well characterized by the colour of the flowers and the shape of the petals and the lip.

Bulbophyllum zebrinum J.J. Sm., Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 16. [17].

Tab. XX, 61.

(latin diagnosis)

Dutch New Guinea : On the Noord River (Lorentz Expedition 1909, Rachmat, living plant in cultivation at Hort. Bog. under 55R).

A typical species of the section Monanthaparva comparable with B. Blumei J.J. Sm. on account of the long caudate lip, and with which it is similar in habit.

Bulbophyllum aspersum J.J. Sm., Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. [further details lacking]

Tab. XXI, 62.

(latin diagnosis)

Dutch New Guinea : in the south-western region (A.C. De Kock, living plant in cultivation at Hort. Bog. under no. 143).

This plant is very closely related to B. spathipetalum J.J. Sm.,

however, I think that I must consider it as a separate species.

The major differences are as follows : B. spathipetalum J.J. Sm. has the dorsal sepal retrorse at the apex, the lip is narrowed towards the apex and then thinly papillose underneath only; for B. aspersum J.J. Sm., on the other hand, the dorsal sepal is not retrorse, the labellum is broadened towards the apex and markedly papillose, especially above.

The colour also, is different.

Bulbophyllum obovatifolium J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 24. [76]

Tab. XXI, 63.

(latin diagnosis)

Dutch New Guinea : Humboldt Bay, near the Hollandia Bivouac, alt. c. 100m, epiphytic in forest on a hill (K. Gjellerup no. 580, flowering in July 1911).

The closest relative of this species is B. falciferum J.J. Sm.

According to a detailed note by the collector the carnose leaves are brown-yellow, green underneath; the rhizome brown to brown-violet, the peduncle green-yellow, the dorsal sepal pale brown-yellow on both sides, the lateral sepals pale brown-yellow, white inside and diluted with red-brown, brown-violet at the base; the petals, lip and column greenish white, the lip furthermore dotted lightly in brown, the spur (column-foot?) white.

Only a solitary specimen scandent in a tree, was found.

Bulbophyllum cortortisepalum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 23. [75].

Tab. XXI, 64.

(latin diagnosis)

Dutch New Guinea : Humboldt Bay, near the Hollandia Bivouac, alt. c. 50m, epiphytic, on hills covered with forest, at the coast (K. Gjellerup no. 575, flowering in July 1911).



An easily recognised relative of B. faciferum J.J. Sm. by the extended, much twisted lateral sepals.

The pseudobulbs and thickly carnose leaves are a matt dark green, the peduncle pale brown-red. The flowers are coloured green-yellow with brown-violet lines towards the base, the labellum dark brown-violet with a small white apex; the column is green-yellow.

Bulbophyllum membranaceum T. et B., in Nat. Tijdschr. Ned. Ind. III (1885), 397; Miq., Fl. Ind. Bat. III, 647, Rchb.f., in Walp. Ann. VI, 249; J.J. Sm., Fl. Buit. VI, Orch., 465; Atlas Fig. CCCLVI. B. Avicella Ridl., in Jour. Linn. Soc. Bot. XXXII, 270; Mat. Fl. Mal. Penins. I, 67.

Phyllorchis membranacea O.K., Rev. Gen. Pl. II, 677.

Dutch New Guinea : On the upper Digul [River] (B. Branderhorst, living plant in cultivation at Hort. Bog. under no. 55).

Geographic distribution : Java, Sumatra, Malayan Peninsula, Singapore.

Specimens from Java, Sumatra and New Guinea are in cultivation at Buitenzorg and are all remarkably similar.

Bulbophyllum xanthoacron J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV (1911), 10; in Nova Guinea VIII (1912) [1911], 586, t. CIIA.

It has been established that the specimen of B. xanthoacron J.J.Sm. cultivated at Buitenzorg, and which was the basis of my description, grew together with a specimen of B. cuniculiforme J.J. Sm. Although the plants are extremely similar in habit, this was not noticed until the second species started to flower. A small correction in the description of B. xanthoacron J.J.Sm. is therefore necessary.

The pseudobulbs are longish ovate, 1.5 - 2.1 cm long, 0.625 - 0.9 cm at the base and not violet flushed. The leaves are c. 5.75 - 7.3 cm long and 1.85 - 2.55 cm broad. The remainder of the description does not need to be altered.

Bulbophyllum cuniculiforme J.J. Sm., Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
(1911), 15.

Tab. XXI, 65.

(latin diagnosis)

Dutch New Guinea : On the Noord River near Alkmaar (Lorentz Expedition 1909, Rachmat, living plant in cultivation at Hort. Bog. under no. 485R).

In habit this species completely resembles B. callipes J.J. Sm., B. xanthoacron J.J. Sm., and B. stabile J.J. Sm., but is easily recognised by the peculiar tubular labellum.

Section Monanthaparva has an extensive series of well characterized species in New Guinea, the majority of which are very delicate.

Section : Hyalosema

Bulbophyllum trachyanthum Krzl., in Österr. Bot. Zeitschr. XLIV (1894), 336.

Tab. XXII, 66.

(latin diagnosis)

Dutch New Guinea : On the ridge of [Mt.] Goliath, alt. c. 2000m, on a mossy tree (A.C. De Kock no. VII, flowering in Jan. 1911).

Kränzlin's description of B. trachyanthum Krzl. agrees, as far as it goes, with the De Kock plant, but is however insufficient to say with certainty that the definition is correct, even though we are dealing with a very characteristic plant.

According to De Kock, the flowers are green, with brown dots.

Bulbophyllum fritillariiflorum J.J. Sm. Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 24. [76].

Tab. XXII, 67.

(latin diagnosis)

Dutch New Guinea : On the Noord River, on the hills near Alkmaar (Lorentz Expedition 1909, Rachmat, living plant in cultivation at Hort.

Bog. under no. 462).

A large-flowered very characteristic species closely related to B. Leysianum Burb., B. grandiflorum Bl., etc. Schlechter based his section Hyalosema on these species.

It is noteworthy that the large flowers of these plants usually open partially.

Section: Pelma

Bulbophyllum Pelma J.J. Sm. [comb. nov.]

B. absconditum J.J. Sm. var. neo-guineense J.J. Sm., in Nova Guinea VIII [1909], 88, t. XXIX, 95.

Pelma absconditum Finet, in Not. Syst. I (1909), 112, fig. 6, 1 - 7, Tab. XXIII, 68.

Finet's description induced me to examine a flower of Versteeg's specimen preserved in alcohol and compare it with the flowers of B. absconditum J.J. Sm., collected more recently near Bandung, likewise preserved in alcohol.

In fact, Finet is correct in saying that my description and illustration of B. absconditum var. neo-guineense J.J. Sm., in Nova Guinea [VIII], is erroneous. Clearly, with the flower examined at the time the delicate linguiforme lip-apex had been broken off.

In other respects I do not share Finet's opinion; I still consider the plant to be a true Bulbophyllum.

Regarding the supposed differences from Bulbophyllum, I should like to make the following remarks :

The flexibility of the lip varies considerably with the genus; several species grouped around B. callipes J.J. Sm. have a completely rigid lip.

B. absconditum J.J. Sm. does not have transverse swellings of the lip; what Finet regarded as such is the upper margin of the basal hollow. Indications of such hollows are seen with several species having a

carnose labellum, foremost B. pachyacris J.J. Sm., whilst B. Blumei J.J. Sm., and the relatives of B. callipes J.J. Sm. show something similar. Clearly, the hollow in the case of B. absconditum J.J. Sm, is much more marked, and the accommodation of the broadened column-foot most peculiar; but using such gradual differences as genus characteristics, one would soon arrive at splitting the natural genus Bulbophyllum (and very many others) into numerous, small, ill-defined unnatural genera.

The extension of the column-foot beyond the place of attachment of the lip, in conjunction with the hollowing-out of the lip base is very noticeable here. Swelling of the column-foot occurs in different shapes with Bulbophyllum; I should just like to point here to B. Blumei J.J. Sm., B. cryptanthum Schltr., B. neoguineense J.J. Sm., B. zebrinum J.J. Sm., etc. With several species the column-foot is convex only, particularly with the relatives of B. sessile J.J. Sm., etc.

Finally, concerning the shape of the column; this does not differ from that of the species grouped around B. sessile J.J. Sm. (in the first place probably B. serrulatum Schltr.). The clinandrium is weakly concave, the rostellum protruding, but relatively broader than shown in Finet's Fig. 6(4).

Another question is whether it might not perhaps be better to consider the Papuasian plant as a species separate from B. absconditum J.J. Sm. The pseudobulbs are smaller, which is not of great significance, but the sepals are either not pointed or much less so, whilst the lip is appreciably more excavated at the base with its apex contracted in a linguiforme manner and the rostellum protruding further. Should the plant not be found in the region between Java and New Guinea, this would be a reason for considering it as a species. I therefore provisionally suggest the above-mentioned name.

As Finet has shown, B. neo-caledonicum Schltr. is probably very

closely related to B. absconditum J.J. Sm. and B. pelma J.J. Sm., but according to Finet's illustration it is peculiar that the floral characters show a greater similarity to the Javanese than to the Papuan species.

Bulbophyllum subcubicum J.J. Sm., in Fedde. Rep. [further details lacking]

Tab. XXIII, 69.

(latin diagnosis)

Dutch New Guinea : At the Noord River, on the hills near Alkmaar (Lorentz Expedition 1909, Rachmat, living plant, mixed with no. 442B); on the upper Eilanden River (B. Branderhorst, living plant in cultivation at Hort. Bog. under no. 287B).

The closest relatives of this interesting species are B. absconditum J.J. Sm., B. Pelma J.J. Sm. and probably also B. neo-caledonicum Schltr. The new species is distinguished from others by the grape-like inflorescences [racemes].

Together they appear to form a natural section, for which I suggest the name Pelma.

Section : Uncifera

Bulbophyllum remotum J.J. Sm., in Fedde Rep. [further details lacking]

Tab. XXIII, 70.

(latin diagnosis)

Dutch New Guinea: Cyclops Range, east slope, alt. c. 2000m (K. Gjellerup no. 563, flowering in June 1911).

The species is similar in floral structure to that of B. ochroleucum Schltr., and B. rostratum J.J. Sm. However, it also stands close to B. cylindrobulbon Schltr. from which it differs only in narrower leaves, smaller pale yellow flowers, sepals blunt with a sharp point, and elliptical non-ovate petals. Perhaps it would be best to regard the plants as varieties.

Section : Dubious. Inflorescentiae uniflorae

Bulbophyllum acutilingue J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1903) [1908], 4; in Nova Guinea VIII [1909], I, 89, t. XXIX, 96.

German New Guinea : At the upper Kaiserin-Augusta [Sepik] River, in primary forest on the river bank, alt. c. 400m (K. Gjellerup no. 392, flowering in Nov. 1910).

The plant collected by Gjellerup differs from the specimen collected from the south side of the island in the following :

The lateral sepals are longer and thinner, c. 1.5 cm long and like the dorsal sepal are finely dentate downwards, the petals longish, spathulate, pointed; the lip shorter, c. 0.45 cm long and 0.13 cm broad.

Bulbophyllum cyclopense J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér.

III (1912), 23. [75].

Tab. XXIV, 71.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the east slope, alt. c.

1800m, epiphytic (K. Gjellerup no. 553, flowering in June 1911).

Related to B. perductum J.J. Sm., B. Planiteae J.J. Sm., etc.

The petals and the clearly tri-lobed labellum are, amongst others, good criteria of the species.

The colour of the flowers is brown-red, according to Gjellerup.

The leaves are matt green, pale violet-rose-red underneath.

Bulbophyllum goliathense J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II

(1911), 18.

Tab. XXIII [XXIV], 72.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt.c. 900m, in the shade of a mossy tree, isolated, rare (A.C. De Kock no. 12, flowering in Mar. 1911).

The species is best placed next to B. fruticicola Schltr.

The flowers are described as yellow with a red stigma.

Bulbophyllum latibrachiatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XIX (1908), 7; in Nova Guinea VIII (1909), 95, t. XXXII, 104.

Dutch New Guinea : Hills near Alkmaar (Lorentz Expedition 1909,

Rachmat, living plant in cultivation at Hort. Bog. under no. 503R).

The weak specimen has smaller flowers than for the plants I described earlier. The sepals are c. 1.0 cm long; the petals with transverse purple markings which flow together in the middle. The lip has long purple bristles.

This specimen, in the colour of its petals is approximately intermediate between the Type and the variety described below.

var. epilosum J.J. Sm., nov. var.

Tab. XXIV, 73.

(latin diagnosis)

Dutch New Guinea : Hills near Alkmaar (Lorentz Expedition 1909,

Rachmat, living plant in cultivation at Hort. Bog. under no. 427R).

Differs from the Type in the above-mentioned characteristics.

Bulbophyllum posticum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II

(1911), 19.

Tab. XXV, 74.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 1600m, on a mossy

tree, isolated, rare (A.C. De Kock no. 202, flowering in May 1911).

The inflorescences of this species are located on the far side of the pseudobulbs and are submerged in the rear groove of the latter. Good identifying characters of the species are also the two tooth-shaped, falcate lamellae at the base of the lip and the robust keel on the front part.

Bulbophyllum pseudoserrulatum J.J. Sm., [sp. nov.]

Tab. XXV, 75.

(latin diagnosis)

Dutch New Guinea : Humboldt Bay near the Hollandia Bivouac,  
 epiphytic in primary forest on a hill, alt. c. 30m (K. Gjellerup  
 no. 386, flowering in Dec. 1910). Geographic distribution :  
 German New Guinea.

The description was made from a small branch preserved in alcohol.

In habit this species is very similar to that of B. tortuosum  
 Lindl., B. perductum J.J. Sm., etc. The column resembles that of  
B. absconditum J.J. Sm.

The plant is very closely related to B. serrulatum Schltr., which I  
 considered it initially to be. However, according to the description  
 Schlechter's species differs in the larger flowers and a narrower,  
 keeled labellum, grooved above and blunt below.

Section: Dubious. Inflorescentiae racemosae  
Bulbophyllum colliferum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
 (1911), 17.

Tab. XXV, 76.

(latin diagnosis)

Dutch New Guinea : Hills near Alkmaar (Lorentz Expedition 1909,  
 Rachmat, living plant in cultivation at Hort. Bog. under no. 442R).

Related to B. fractiflexum J.J. Sm., differing, however, in the  
 pseudobulbs extended into a throat, two-flowered inflorescences, and  
 broader petals and lip.

Bulbophyllum Dekockii J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
 (1911), 17.

Tab. XXV, 77.

(latin diagnosis)

Dutch New Guinea : Summit of [Mt.] Goliath, alt. c. 3250m, on  
 mossy limestone rocks (A.C. De Kock no. XII, flowering in Feb.  
 1911).

I know of no close relatives of this species. The peduncles are



are articulated, as is often the case with single-flowered inflorescences in this genus. The flowers are medium large, of simple build and according to the collector, white with violet margins.

As for all orchids from this altitude, this plant grows on the ground in moss.

Bulbophyllum digitatum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 18.

Tab. XXVI, 78

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 900m, in the shade of a mossy tree, solitary, rare (A.C. De Kock nos 10 and 11, flowering in March 1911).

A characteristic species in all respects.

De Kock describes the colour as white with a Bordeaux-red lip. Judging by material preserved in formalin, the dorsal sepal would appear to have been purple-red.

Bulbophyllum orbiculare J.J., Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 23. [75].

Tab. XXVI, 79.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, east slope, alt. c. 1400m, epiphytic in forest (K. Gjellerup no. 483, flowering in June 1911); at the same place, alt. c. 1800m (K. Gjellerup no. 552, flowering in June 1911).

A distinct species in all its characters. The lip is marked in the longitudinal furrow by three thin, but distinct, longitudinal ribs.

The pseudobulbs and flowers are a pale green.

Octarrhena Thw.

Octarrhena Lorentzii J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX  
(1910), 18.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250m, on mossy  
humus, on rocks, at swampy sunny places, solitary and rare (A.C.  
De Kock nos 96 and 151, flowering in March 1911).

The plants are probably O. Lorentzii J.J. Sm., however the lip is  
somewhat smaller and not distinctly five-cornered.

Octarrhena goliathensis J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
(1911), 20.

Tab. XXVI, 80.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3250m, on rocks  
covered with mossy humus, at swampy locations, isolated and rare  
(A.C. De Kock nos 95 and 150, flowering in Mar. and Apr. 1911).

Differing from O. Lorentzii J.J. Sm. in shortened, short-segmented  
stems, smaller leaves and flowers, a narrower markedly smaller rachis,  
a narrower more pointed lip, and, according to De Kock, yellow flowers.

Vonroemeria J.J. Sm.

Vonroemeria tenuis J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX  
(1910), 22.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3200m, in the shade  
of mossy trees, in groups, common (A.C. De Kock no. 120, flowering  
in Apr. 1911).

Since only flower buds were to hand I am not totally convinced  
that we are actually dealing with this species. The plants are very  
similar in habit.

The anther from one of the largest buds was capped and had a  
short, broad beak. The eight pollinia were pyriform and occurred in

two adjacent groups of four.

Phreatia Lindl.

Section : Caulescentes

Phreatia semiorbicularis J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XXXIX (1910), 19.

Dutch New Guinea: On [Mt.] Goliath, alt. c. 2300 - 2500m, in the shade on mossy trees, isolated and somewhat rare (A. C. De Kock no. 116, flowering in Mar. 1911).

The plants agree well with those of von Römer, but are more robust. I noted the following dimensions : internodes c. 1.2 cm long, 0.325 cm broad; leaves c. 5.3 - 6.0 cm long, 0.85 cm broad. Peduncle c. 5.0 cm long, 0.175 cm broad, with up to 0.85 cm long leaves, the rachis c. 12 cm long, bracts up to 0.23 - 0.25 cm long.

The flowers are only slightly larger.

Phreatia rupestris J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911) 19.

Tab. XXVII, 81.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 3000m, on mossy rock faces in sunny locations, in groups, somewhat rare (A.C. De Kock no. 57, flowering in Mar. 1911).

The species is related to P. longicaulis Schltr., and P. semiorbicularis J.J. Sm.

Distinguished from P. longicaulis Schltr. by larger flowers, triangular or ovate sepals and petals and a very broad markedly concave labellum; from P. semiorbicularis J.J. Sm., by smaller leaves, more lax inflorescences, a retrorse dorsal sepal, and by the lip.

The flowers are white.

Section : Ebulbosae

Phreatia bicostata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

(1908), 31; in Nova Guinea VIII (1909), 105, t. XXXV, 116.

Dutch New Guinea : Johannes Keyts Range, alt. c. 2050m, on mossy rocks, isolated (J.H.I. le Cocq d'Armandville no. 234, flowering in Dec. 1911).

Although this species has now been collected for the third time, a complete specimen is not yet available, so that the habit of the plant is still unknown. Again, two inflorescences and a solitary leaf are to hand.

The leaf is lanceolate-linear, unevenly bi-dentate, folded at the base; above, obtuse-angled, concave with convex halves and furrowed mid-rib; below, keeled towards the apex, finely dotted on both sides, thin carnose, 15 cm long and 2 cm broad.

The claw of the lip does not have, as deduced from the earlier poor specimens, two ribs; but two almost round calli, so that the name is not applicable.

Phreatia breviscapa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

(1908), 31; in Nova Guinea VIII, (1909), 106, t. XXXVI, 118.

Dutch New Guinea : In the south-eastern part (A.C. De Kock, living plant in cultivation at Hort. Bog. under no. 153).

Section : Bulbosae

Phreatia laxa Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb.

Südsee. 188.

Tab. XXVII, 82.

Dutch New Guinea : Cyclops Range, on the summit of [Mt.] Sima, alt. c. 2000m, epiphytic in more open forest (K. Gjellerup no. 567, flowering in June 1911).

Agrees excellently with Schlechter's Type in the Buitenzorg Herbarium.

Phreatia dulcis J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912),

25. [77].

## Tab. XXVII, 83.

(latin diagnosis)

Dutch New Guinea : In the southern part (A.C. De Kock, living plant in cultivation at Hort Bog. under no. 122).

Section Bulbosae which Kränzlin quite unnecessarily changed to Thelasiformes is less strongly represented in New Guinea than section Ebulbosae. Some of the species of this section were separated off by Schlechter, as a section Saccophreatia, on account of the hairy labellum and a pouch, but connected with the section Bulbosae as an intermediate form.

This species therefore does have many relatives in New Guinea; it should be placed close to the smaller P. Habbemae J.J. Sm.

It should be pointed out that the flowers have a sweetish odour, somewhat like that of Galium verum L., and that the labellum has two parallel furrows on the claw.

Phreatia scandens J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 19.

## Tab. XXVII, 84.

(latin diagnosis)

Dutch New Guinea : On [Mt.] Goliath, alt. c. 2600m, in the shade of a mossy tree, rare (A.C. De Kock no. 98, flowering in Mar. 1911).

By its creeping habit this plant is reminiscent of P. prorepens Rchb.f. from the Philippines, P. laxa Schltr., and P. repens J.J. Sm. This one differs from all these plants in a marked keeled dorsal sepal, a three-sided ovary and the relatively long anther.

According to the notes of the collector, the plant extends to a length of 0.5m and has many roots.

The flowers are white.

Podochilus Bl.

Podochilus longipes J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 34; In Nova Guinea VIII (1909), III, t. XXXVII, 124.

In Orch. Deutsch-Neu-Guinea p. 327, Schlechter recently united this species with P. Hellwigii Schltr. I have never seen this plant, but the description indicates large differences so that for the present, I consider the identity as doubtful.

According to the description, the bracts are protruding or somewhat protruding, ovate-lanceolate and pointed for P. Hellwigii Schltr., whilst in contrast P. longipes J.J. Sm. has retrorse, ovate and very pointed bracts. The flowers of the latter species are appreciably larger, the sepals being 0.26 cm long and tri-veined, in the case of P. Hellwigii Schltr., only 0.15 cm long and single-veined. The labellum for P. longipes J.J. Sm. is not spathulate and 0.37 cm long, whilst for P. Hellwigii Schltr. it is only 0.2 cm long. The description of Schlechter's species states: racemis.....0.5 cm rarius excedentibus', but (see above) the author states that the Type had one inflorescence only.

Since P. Hellwigii Schltr. can show such big differences then P. bimaculatus Schltr. can also not be excluded. P. Hellwigii Schltr., P. longipes J.J. Sm. and its var. brevicalcarata J.J. Sm., P. bimaculatus Schltr., and perhaps one or more species could then be regarded as local forms. It would appear to me that too many such forms are being described as species.

var. emarginatus J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : On the Sermowai River, alt. c. 200m, in the tall moss-covered trees (K. Gjellerup no. 446, flowering in April 1911).

Appendicula Bl.

Appendicula palustris J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 4; in Nova Guinea VIII (1909), 116. t. XXXIX, 130.

With some of the plants in cultivation at Buitenzorg the leaves are flushed with violet below, the sepals a pallid-green and the petals white. The lip is white with two purple longitudinal spots on the claw and a pale yellow appendage. The greenish white column has a purple spot on the rostellum. The anther and column-foot are pre-dominantly purple. The leaves, apart from being green, may also be coloured yellowish, but perhaps only on withering.

Phalaenopsis Bl.

Phalaenopsis amabilis Bl., Bijdr. 294, Tab. 44; Rumphia IV, 52, t. 194A; etc.

Dutch New Guinea : In the southeast region, Tjemara Bivouac, alt. c. 50m, on trees on the river bank, isolated (Collector? no. 211, flowering in Dec. 1911).

Sarcochilus R. Br.

Sarcochilus ramuanum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee, 232; J.J. Sm., in Nova Guinea VIII (1909), Livr. I, [120], t. XLI, 135.

S. Englerianum Krzl., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee, 252.

Renanthera ramuana Krzl., l.c.

Dutch New Guinea : On [Mt.] Goliath, alt. c. 200m, on a tree without moss, not rare (A.C. De Kock no. 200, flowering in May 1911).

Trichoglottis Bl.

Trichoglottis celebica Rolfe, in Kew Bull. 1899, 130; J.J. Sm., in Bull.

Dép. Agric. Ind. Néerl. XLIII., (1910), 69.

Dutch New Guinea : On [Mt.] Goliath (A.C. De Kock 1911).

The leaves are much broader than for the specimen collected by Versteeg. The specimen therefore is more akin to the plants from Borneo and Celebes.

The bottle [specimen bottle] was broken on arrival at Buitenzorg and the number was missing.

Microtatorchis Schltr.

Microtatorchis tubulosa Schltr.; in Fedde Repert. IX (1911), 112.

Geissanthera tubulosa J.J. Sm., in Nova Guinea VIII (1909), 129, t. XLIV, 146.

Above I have already drawn attention to the close relationship between the genera Geissanthera Schltr. and Microtatorchis Schltr. Schlechter (see above) has withdrawn the first genus and transferred Geissanthera tubulosa to Microtatorchis.

Pomatocalpa Breda

Pomatocalpa orientale J.J. Sm., sp. nov. [nom nov?]

Cleisostoma Koordersii J.J. Sm., (nec Rolfe) Orch. Amb. (1905), 104, in Nova Guinea VIII (1909), 124.

Tab. XXVIII, 85.

Dutch New Guinea : Merauke River (Jaheri, 1901, living plant in cultivation at Hort. Bog. under no. 54n): Hollandia Bivouac, (Humboldt Bay), epiphytic in primary forest (K. Gjellerup no. 320, flowering in Sept. 1910).

Geographic distribution : Kei Islands, Ambon, Obi.

Earlier I incorrectly united this plant with P. Koordersii (Rolfe) J.J. Sm., which appears similar in habit, but from which it differs, especially in the very small middle lobe of the pouch of the lip, which



is broadened appreciably towards the apex. It could have been identical with P. marsupiale (Krzl.) J.J. Sm., if the inflorescence of this species had not been described as 'nutans'. In the case of P. orientale J.J. Sm., it is rigidly erect.

The true P. Koordersii (Rolfe), J.J. Sm. is so far only known from the Celebes.

The variety established in Orch. Amb. under P. Koordersii (Rolfe) J.J. Sm. should be transferred to P. orientale J.J. Sm., hence:

P. orientale J.J. Sm. var. buruense J.J. Sm.

Pomatocalpa incurvum J.J. Sm., [comb. nov?]

Cleisostoma incurvum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér.  
II (1911), 20.

Tab. XXVIII, 86.

(latin diagnosis)

Dutch New Guinea : At the Noord River, near Alkmaar (Lorentz Expedition 1907, Djibdja, living plant in cultivation at Hort. Bog. under no. 628Dj).

This species belongs to the group with relatively short, more-or-less pendulous inflorescences, e.g. P. spicatum Breda , P. marsupiale (Krzl.) J.J. Sm., etc.

The related, likewise in New Guinea endemic P. marsupiale (Krzl.) J.J. Sm. differs, according to the description, in the much shorter leaves, short not-branched inflorescences, appreciably larger flowers, and in the lateral lobes of the lip not being bi-lobed.

Schönorchis Bl. [Schoenorchis]

Schönorchis plebeja J.J. Sm. [comb. nov?]

Saccolabium plebejum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér.  
III (1912), 25. [77].

Tab. XXVIII, 88.

(latin diagnosis)

Dutch New Guinea : Humboldt Bay (K. Gjellerup , living plant no.

21 in cultivation at Hort. Bog. under no. 17, flowering in Dec. 1911).

This plant is closely related to S. micrantha Bl. but differing from it in size, relatively much shorter inflorescences and the spur strongly expanded at the rear.

Sarcanthus Lindl.

Sarcanthus Gjellerupii J.J. Sm., in Fedde Repert. [further detail lacking]

Tab. XXVIII, 89. [87].

(latin diagnosis)

Dutch New Guinea : Cyclops Range on the east slope, alt. c. 2000m, epiphytic in forest (K. Gjellerup no. 555, flowering in June 1911).

The closest relative of this species is S. bicornis J.J. Sm., from which it differs especially in colouring; the clearly spear-shaped middle lobe appreciably thicker in front and beset with distinct calli at the base which are slightly compressed laterally, but not from above.

The colour of the flowers, according to Gjellerup is green-brown, the lip white with very small teeth, which unfortunately, I omitted to mention earlier.

Robiquetia Gaud.

Robiquetia squamulosa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX

(1908), 35; in Nova Guinea VIII (1909), 131, t. XLIV, 148.

Dutch New Guinea : Humboldt Bay, epiphytic on a hill in the coastal region (K. Gjellerup no. 450, flowering in Mar. 1911).



## § Acaules

Agrostophyllum Bl.

    lamellatum J.J.Sm.

    uniflorum Schltr.

Aphyllorchis Bl.

    pallida Bl.

    torricellensis Schltr. II, 4.

Appendicula Bl.

    palustris J.J.Sm.

## § Biloba

Bulbophyllum Thou.

    absconditum J.J.Sm.

        var. neo-guineense J.J.Sm.

    acutilingue J.J.Sm.

    aspersum J.J.Sm. XXI, 62.

Avicella Ridl.

Blumei (Lind.) J.J.Sm.

callipes J.J.Sm.

colliferum J.J.Sm. XXV, 76.

cortortisepalum J.J.Sm. XXI, 64.

cryptanthum Schltr.

cuniculiforme J.J.Sm. XXI, 65.

cyclopense J.J.Sm. XXIV, 71.

cylindrobulbon Schltr.

Dekockii J.J.Sm. XXV, 77.

digitatum J.J.Sm. XXVI, 78.

faciferum J.J.Sm.

fractiflexum J.J.Sm.

fritillariiflorum J.J.Sm. XXII, 67.

## Bulbophyllum Thou.

fruticicola Schltr.

goliathense J.J.Sm. XXIV, 72.

grandiflorum Bl.

latibrachiatum J.J.Sm.

var. pilosum J.J.Sm. XXIV, 73.

Leysianum Burb.

membranaceum T. et B.

neo-caledonicum Schltr.

neoguineense J.J.Sm.

obovatifolium J.J.Sm. XXI, 63.

ochroleucum Schltr.

orbiculare J.J.Sm. XXVI, 79.

pachyacris J.J.Sm.

Pelma J.J.Sm. XXIII, 68.

perductum J.J.Sm.

Planiteae J.J.Sm.

posticum J.J.Sm. XXV, 74.

pseudoserrulatum J.J.Sm. XXV, 75.

quadrangulare J.J.Sm. XX, 60.

remotum J.J.Sm. XXIII, 70.

rostratum J.J.Sm.

serrulatum Schltr.

sessile (Koen.) J.J.Sm.

spathipetalum J.J.Sm.

stabile J.J.Sm.

subcubicum J.J.Sm. XXIII, 69.

tortuosum Lindl.

trachyanthum Krzl. XXII, 66

Versteegii J.J.Sm.

Bulbophyllum Thou.

xanthoacron J.J.Sm.

zebrinum J.J.Sm. XX, 61.

§ Bulbosae

§ Cadetia

Cadetia Bl. [Gaud.]

aprina Schltr.

golianthensis Schltr.

macroloba Schltr.

Calanthe R.Br.

breviscapa J.J.Sm. III, 7.

caulescens J.J.Sm. IV, 8.

Engleriana Krzl.

var. brevicarata J.J.Sm. III, 6.

rhodochila Schltr.

§ Calypstrochilus

§ Caulescentes

§ Ceratobium

Ceratostylis Bl.

albiflora J.J.Sm.

platychila Schltr.

sessilis J.J.Sm. VIII, 23.

Vonroemeri J.J. Sm.

Cleisostoma Bl.

incurvum J.J.Sm.

Koordersii J.J.Sm.

var. buruense J.J.Sm.

Coelogyne Lindl.

asperata Lindl.

Corysanthes R.Br.

epiphytica J.J.Sm. I, 2.

mirabilis Schltr.

§ Cyndrolobus

Cypripedium L.

glanduliferum Bl.

praestans Rchb.f.

Cystorchis Bl.

obscura Bl.

Dendrobium Sw.

acutisepalum J.J.Sm. XII, 32.

affine Steud.

Agathodaemonis J.J.Sm.

anosmum Lindl.

var. superbum Rchb.f.

antennatum Lindl.

aphanochilum Krzl.

aprinum J.J.Sm. IX, 26.

aratriferum J.J.Sm.

aristiferum J.J.Sm. XVI, 48.

asperifolium J.J.Sm. XIX, 57.

bandaense Schltr.

Bauerlenii F.v.M. et Krzl. XVI, 46.

begoniicarpum J.J.Sm. XVIII, 53.

var. parviflorum J.J.Sm.

Branderhorstii J.J.Sm.

brevicaule Rolfe

calcarium J.J.Sm. XVIII, 55.

calyptratum J.J.Sm. XVII, 50.

## Dendrobium Sw.

- cerasinum Ridl.
- chamaephytum Schltr.
- compressicolle J.J.Sm. XI, 29.
- conanthum Schltr. XIV, 38.
- concavissimum J.J.Sm. XVI, 45.
- confusum J.J.Sm.
- conicum J.J.Sm. XVI, 47.
- constrictum J.J.Sm.
- crenatifolium J.J.Sm. XV, 44.
- crenatilabre J.J.Sm. XV, 43.
- Cuthbertsonii F.v.M.
- cyanocentrum Schltr.
- cyclopense J.J.Sm. VIII, 24.
- d'Albertisii Rchb.f.
- Dekockii J.J.Sm. XVIII, 54.
- delicatulum Krzl.
- erectifolium J.J.Sm.
- erectopatens J.J.Sm. XV, 41.
- falcatum J.J.Sm.
- glomeratum Rolfe.
- golianthese J.J.Sm. X, 28.
- guttatum J.J.Sm. XII, 33.
- Hellwigianum Krzl.
- igneum J.J.Sm.
- inaequale Rolfe
- ingratum J.J.Sm. XV, 42.
- Kingianum Bidw.
- var. subquadratum Krzl.
- lageniforme J.J.Sm.



## Dendrobium Sw.

leporinum J.J.Sm.

leucophotum Rchb.f.

longicolle Lindl.

macrolobum J.J.Sm. X, 27.

macrophyllum A. Rich.

var. subvelutinum J.J.Sm.

mitriferum J.J.Sm.

obtusisepalum J.J.Sm. XVII, 49.

ostrinum J.J.Sm.

var. ochroleucum J.J.Sm.

parvulum Rolfe

pentagonum Krzl.

pentapterum Schltr.

piestocaulon Schltr.

Pulleanum J.J.Sm.

puniceum Ridl.

retroflexum J.J.Sm. XIX, 56.

rhipidolobum Schltr.

rhomboglossum J.J.Sm. XIII, 34.

rugulosum J.J.Sm. XIV, 40.

rupestre J.J.Sm. XVII, 52.

simplex J.J.Sm. XI, 30.

spirale J.J.Sm.

Stratiotes Rchb.f.

strepsiceros J.J.Sm. XIV, 39.

subacaule Reinw.

subclausum Rolfe

subhastatum J.J.Sm. IX, 25.

subquadratum J.J.Sm.

## Dendrobium Sw.

subuliferum J.J.Sm. XVII, 51.

superbum Rchb.f.

var. anosmum Rchb.f.

tenuicalcar J.J.Sm.

terrestre J.J.Sm. XIII, 35.

uncipes J.J.Sm. XII, 31.

undulatum R.Br.

var. Albertisii F.v.M. XIII, 36.

var. gracile J.J.Sm. XIII, 37.

Urvillei Finet

Vannouhuysii J.J.Sm.

violaceum Krzl.

Vonroemerii J.J.Sm.

## § Dendrocoryne

## Dendrochilum Bl.

Bartonii (Ridl.) Schltr.

longifolium Rchb.f.

var. papuanum J.J.Sm.

## § Desmotrichum

## Desmotrichum Bl.

fibriatum Bl.

Didymoplexis Griff.

Diena Lindl.

congesta Lindl.

## § Diplocaulobium

Diplocaulobium (Rchb.f.) Krzl.

lageniforme Krzl.

## § Ebulbosae

## Epiblastus Schltr.

cuneatus J.J.Sm.

sciandanthus (F.v.M.) Schltr.

## Eria Lindl.

cuneata Krzl.

integra J.J.Sm. XIX, 58.

rigida Bl.

var. papuana J.J.Sm. XX, 59.

sciadantha Krzl.

sciadanthus Schltr.

## § Eu-Ceratostylis

## § Eugenanthe

## § Eu-Glomera

## § Eu-Nervilia

## § Euphlebiium

## Eurycentrum Schltr.

obscurum J.J.Sm. [(Bl.) Schltr.]

Smithianum Schltr.

## Galium L.

verum L.

## Gastrodia R.Br.

## Gastroglottis Bl.

montana Bl.

## Geissanthera Schltr.

tubulosa J.J.Sm.

## § Giulianettia

## Glomera Bl.

acuminata J.J.Sm. VI, 16.

## Glomera Bl.

- brevipetala J.J.Sm. V, 13.
- carnea J.J.Sm.
- compressa J.J.Sm.
- conglutinata J.J.Sm. VI, 17.
- DeKockii J.J.Sm. IV, 11.
- dentifera J.J.Sm.
- erythrosoma Bl.
- fruticula J.J.Sm. VII, 20.
- goliathensis J.J.Sm. IV, 9.
- grandiflora J.J.Sm.
- latilinguis J.J.Sm.
- manicata J.J.Sm.
- neo-hibernica Schltr.
- palustris J.J.Sm. IV, 10.
- papuana Rolfe
- rhombea Schltr. V, 14.
- sarcosepala J.J.Sm. VI, 18.
- scandens J.J.Sm. VII, 19.
- squamulosa (Schltr.) J.J.Sm.
- subracemosa J.J.Sm.
- tenuis (Rolfe) J.J.Sm.
- terrestris J.J.Sm. V, 15.
- torricellensis (Schltr.) J.J.Sm.
- triangularis J.J.Sm. V, 12.
- uniflora J.J.Sm.

## § Glossorhyncha

## Glossorhyncha Ridl.

- acuminata (J.J.Sm.) Schltr.
- brevipetala (J.J.Sm.) Schltr.

## Glossorhyncha Ridl.

- compressa (J.J.Sm.) Schltr.
- conglutinata (J.J.Sm.) Schltr.
- fruticula (J.J.Sm.) Schltr.
- grandiflora (J.J.Sm.) Schltr.
- latilinguis (J.J.Sm.) Schltr.
- rhombea (J.J.Sm.) Schltr.
- sarceseala (J.J.Sm.) Schltr.
- scandens (J.J.Sm.) Schltr.
- terrestris (J.J.Sm.) Schltr.

## § Grastidium

## Habenaria Willd.

- chloroleuca Schltr.
- dracaenifolia Schltr.
- dryadum Schltr.
- epiphylla Schltr.
- papuana Krzl.

## Hetaeria Bl.

- cristata Bl.
- Erimae Schltr.
- falcatula (Schltr.) J.J.Sm.
- lamellata Bl.
- oblongifolia Bl.
- var. papuana J.J.Sm.
- obscura Miq.

## § Heteriopsis

## § Hyalosema

Kuhlhasseltia J.J.Sm.

papuana J.J.Sm. III, 5.

muricata J.J.Sm.

§ Latouria

Lecanorchis Bl.

javanica Bl.

triloba J.J.Sm.

Lepidogyne Bl.

longifolia Bl.

Leucolaena Ridl.

Liparis L.C. Rich.

anemophila Schltr.

pandaneti J.J.Sm.

pseudo-disticha Schltr.

Malaxis Sw.

latifolia Smith

plicata Roxb.

Mediocalcar J.J.Sm.

Agathodaemonis J.J.Sm.

bifolium J.J.Sm.

var. validum J.J.Sm.

conicum J.J.Sm. VII, 21.

geniculatum J.J.Sm. VIII, 22.

§ Microcalcar

Microstylis Nutt.

Bernaysii F.v.M.

congesta Rchb.f.

dryadum Schltr.

## Microstylis Nutt

ephiphytica Schltr.

gibbosa J.J.Sm.

incurva J.J.Sm.

latifolia (Rees.) J.J.Sm.

latipetala J.J.Sm.

moluccana J.J.Sm.

nitida Schltr.

var. cycloensis J.J.Sm.

Rhinoceros J.J.Sm.

sordida J.J.Sm.

trilobulata Kurz.

tubulosa J.J.Sm.

xanthochila Schltr.

Zippelii J.J.Sm.

## Microtatorchis Schltr.

tubulosa (J.J.Sm.) Schltr.

§ Monanthaparva

§ Monanthos

## Neottinae Pfitz.

## Nervilia Gaud. [Comm. ex Gaud.]

acuminata Schltr. II, 3.

camprestris Schltr.

crispata Schltr.

discolor Schltr.

macrophylla Schltr.

punctata Schltr.

Oberonia Lindl.

    inversiflora J.J.Sm.

Octarrhena Thw.

    goliathensis J.J.Sm. XXVI, 80.

    Lorentzii J.J.Sm.

§ Oistochilus

§ Oxyglossum

Paphiopedilum Pfitz.

    praestans (Rchb.f.) Pfitz. I, 1.

§ Pedilonum

Pelma Finet

    absconditum Finet

Peristylus Bl.

    papuanus J.J.Sm.

    remotifolius J.J.Sm.

§ Phalaenanthus

Phalaenopsis Bl.

    amabilis Bl.

Pholidota Lindl.

    imbricata Lindl.

Phreatia Lindl.

    bicostata J.J.Sm.

    breviscapa J.J.Sm.

    dulcis J.J.Sm. XXVII, 83.

    Habbemae J.J.Sm.

    laxa Schltr. XXVII, 82.

    longicaulis Schltr.

    prorepens Rchb.f.

    repens J.J.Sm.



*Phreatia* Lindl.*rupestris* J.J.Sm. XXVII, 81.*scandens* J.J.Sm. XXVII, 84.*semiorbicularis* J.J.Sm.*Phyllorchis* Thou.*membranacea* O.K.*Platanthera* L.C. Rich.§ *Pleuranthemum**Podochilus* Bl.*bimaculatus* Schltr.*Hellwigii* Schltr.*longipes* J.J.Sm.var. *brevicalcarata* J.J.Sm.var. *emarginatus* J.J.Sm.*Pogonia* Juss.*acuminata* J.J.Sm.*campestris* J.J.Sm.*similis* Bl.*Pomatocalpa* Breda*incurvum* J.J.Sm. XXVIII, 86.*Koordersii* (Rofle) J.J.Sm.*marsupiale* (Krzl.) J.J.Sm.*orientale* J.J.Sm. XXVIII, 85.var. *buruense* J.J.Sm.*spicatum* Breda*Pseudoliparis* Finet*epiphytica* Finet*Renanthera* Lour.*ramuana* Krzl.

Robiquetia Gaud.

squamulosa J.J.Sm.

Saccolabium Bl.

plebejum J.J.Sm.

§ Saccophreatia

Sarcanthus Lindl.

bicornis J.J.Sm.

Gjellerupii J.J.Sm. XXVIII, 87.

Sarcochilus R.Br.

Englerianum Krzl.

ramuanus (Krzl.) Schltr.

§ Sarcopodium

Sarcopodium Lindl.

parvulum (Rolfe) Krzl.

Schönoorchis Bl. [Schoenorchis]

micrantha Bl.

plebeja J.J.Sm. XXVIII, 88.

§ Scytoxiphium

§ Sestochilus

Spathoglottis Bl.

plicata Bl.

§ Thelasiformes

Trichoglottis Bl.

celebica Rolfe

§ Trichotosia

Trichotosia Bl.

§ Trigonopetalum

§ Uncifera

§ Vinerlia

Vonroemeria J.J.Sm.

tenuis J.J.Sm.

Vrydagzynea Bl.

paludosa J.J.Sm.

Schumanniana Krzl.

triloba J.J.Sm.

Zeuxine Lindl.

falcatula (J.J.Sm.) Schltr.





'THE ORCHIDS  
OF  
DUTCH NEW GUINEA

BY  
J.J. SMITH

BEING A TRANSLATION OF  
'DIE ORCHIDEEN  
VON

NIEDERLÄNDISCH - NEU-GUINEA'

FROM

'NOVA GUINEA' VOL. XII, PART III (1915),



PREFACE.

This fourth contribution to the knowledge of the orchid flora of Dutch New Guinea comprises the following collections.

J.H.I. le Cocq d'Armandville. A small collection made in the Johannes Keyts Range in the most southern part of the Territory. The plants, which, unfortunately, consisted of only single specimens, were preserved in formalin.

K. Gjellerup. This worthy collector, who in the meantime has left New Guinea, made his collections between June 1911 and April 1912 in the Gautier and Arfak Ranges, as well as in the surroundings of Hollandia. Most of the specimens, at least those of the orchids, are present as herbarium and alcohol-preserved material.

J.A. W. Coenen. Some orchids were collected in 1912 at the Noordwest River in southern New Guinea and were preserved in alcohol; some living plants also being sent to the Buitenzorg Botanical Garden.

R.F. Janowsky. After Gjellerup's return to Java, Dr. Janowsky was appointed as his deputy as Staff Medical Officer to the 'Exploratief-Detachement' in northern New Guinea. This most important collection came from the Legarei and Giriwo Rivers on the east coast of Geelvink Bay (June-July 1912) and from the Jabi Range on the south coast of the same Bay (May - June 1913). The labels from the latter collection are lacking altitude details, but if I am not mistaken, all were collected at an altitude of about 1800m. Furthermore, from September 1913 to January 1914, a number of plants were collected at the mouth of the Mamberamo River, at Manokwari, Armopa and Kuria, as well as on Kurudu Island. Unfortunately, the material generally is sparse; of most of the orchids, alcohol and formalin preserved material was also collected.

A. Pulle. During the Third Dutch Expedition to the Schnee [Sneeuw] Range in southern New Guinea led by Captain A. Franssen Herderschee, Professor Dr. A. Pulle, who accompanied the expedition



as botanist, made a large collection of plants, a part of which was collected by the Staff Medical Officer, G.M. Versteeg who was responsible for the zoological collection, as well as by the native doctor, J.B. Sitanala. The Expedition was in New Guinea from September 1912 to April 1913.

Since my last contribution (refer Nova Guinea XII (1913), Part I) the large and important work on the Orchidaceae of German New Guinea by Dr. Schlechter has appeared. It is regrettable that several descriptions therein were somewhat curtailed, all the more since funding was lacking to include the illustrations. Until the Schlechter collections become available, it will frequently be difficult, particularly with the large genera, to determine a species with certainty.

I owe Dr. Schlechter a great debt of gratitude for graciously allowing me to copy his sketches during his stay at Buitenzorg in 1910. Thereby, I am in possession of, albeit very incomplete, copies of an estimated two-thirds of the Schlechter species, which is of great value for rapid determinations. However, I much regret that Dr. Schlechter has seen himself obliged to accuse me of having used these sketches to pre-empt him (l.c. 732). To refute this claim, I restrict myself to state that I was compelled by certain circumstances, already after the First Dutch Expedition in 1908, to begin the publication of preliminary descriptions, much against my inclination.

J.J. Smith.

circa 1914.

Apostasia Bl.

Apostasia papuana Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 72.

Tab. LV, 89.

(latin diagnosis)

Dutch New Guinea : Sawia, on the north coast, alt. c. 100m, in humus in forest (K. Gjellerup no. 624, flowering in Aug. 1911).

Schlechter's description fits this plant perfectly, so that the definition is doubtlessly correct.

According to Gjellerup, the flowers are a deep yellow.

Ridley and Schlechter consider Apostasia and Neuwiedia as a separate family Apostasiaceae. That is a matter of opinion, since one can conceive of a family as being either narrow or expansive. If, however, one accepts the family Apostasiaceae, then the concept of Cypripediinae, as a family, is unavoidable.

In no way can I agree with Schlechter who separates Apostasiaceae from Orchidaceae by Burmanniaceae and Corsiaceae (Footnote : Schumann et Lauterbach, Nachträge Flora Deutsch. Schutzgeb. Südsee (1905), 71 ). Apostasiaceae are most closely related to Orchidaceae and hence linked through Cypripediinae.

For the same reason, I do not see the purpose of Schlechter's setting up the section Syndactylus of the genus Apostasia.

Paphiopedilum Pfitz.

Paphiopedilum violascens Schltr., Orch. Deutsch-Neu-Guinea (1911), 2.

var. gautierense J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Gautier Range, on the north slope, alt. c. 900m, in deep, loose humus on limestone rocks, between tree roots, in moss-covered forest (K. Gjellerup no. 872, flowering in Nov. 1911).

Although the description of P. violascens Schltr. differs slightly in nearly all aspects, I do not consider that this is a new species; therefore I describe it as a variety.

In the first instance, the dimensions need mentioning. The dorsal sepal of the Schlechter plant is appreciably longer than it is broad, and appreciably shorter than the lateral sepals, whilst for Gjellerup's plant it is broader than long and larger than the lateral sepals. The petals of the variety are relatively larger and hirsute at the centre towards the rear. The upright auricles and the recurved lobes of the lip can only be described as triangular, but it must be admitted that these parts are not clearly defined and opinions can differ. The staminode of the variety differs in the pointed legs and the three little lobes of the sinus; furthermore, it is clearly bi-lobed at the base.

According to Gjellerup's notes, the flowers are pale violet-pink, suffused with green-brown, the lip and column are green.

The description is made from flowers preserved in alcohol, as well as from living non-flowering specimens.

Platanthera L.C. Rich.

Platanthera elliptica J.J.Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 53.

Tab. LV, 90.

(latin diagnosis)

Dutch New Guinea : Summit of Wichmann Range, alt. c. 3000m (A. Pulle no. 993, flowering in Feb. 1913).

The species is clearly related to P. papuana Schltr., but differs in several respects. According to the description, its leaves are much smaller, the dorsal sepal is ovate to circular, the lateral sepals are much larger than the dorsal one, the petals are broad, the lip-lamina longer, the spur and ovary equally long. Furthermore, Schlechter describes the anther of P. papuana Schltr. simply as almost square,

but does not mention the deep separation. The plant described by Ames as Habenaria angustata (Bl.) O.K. needs a closer comparison with this plant.

According to the collector, the flowers are a green colour.

To hand were a few dried plants and an inflorescence in alcohol, unfortunately with damaged flowers.

Peristylus Bl.

Peristylus goodyeroides Lindl., Gen. et Sp. Orch. (1835), 299; etc.

Dutch New Guinea : Arfak Range, at the Angi Lake, alt. c. 1900m, in swampy forest on a mountain slope, growing in humus mixed with granite debris (K. Gjellerup no. 1062, flowering in Apr. 1912).

I cannot distinguish this plant from the Javanese specimens; however, the flowers are smaller than would be expected with robust specimens.

According to Gjellerup, the leaves are matt pale green, the flowers pale yellow, with an acidic odour.

Peristylus grandis Bl. Bijdr. 404; etc.

var. papuanus J.J. Sm., in Nova Guinea VIII (1909), 3, t. I, 1.

Dutch New Guinea : Mankeba, in a swamp, on loamy ground (A. Pulle no. 262, flowering in Oct. 1912).

Peristylus ciliolatus J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 53.

Tab. LVI, 91.

(latin diagnosis)

Dutch New Guinea : Treub Range, on the steep south slope, alt. c. 2400m, growing on schist (A. Pulle no. 1096, flowering in Feb. 1913); Wasserfall Bivouac on a grass field, alt. c. 3400-3500m (A. Pulle no. 2490, leg. G.M. Versteeg, flowering and fruiting in Feb. 1913).

Amongst the Habenaria described and placed by Schlechter in the

section Peristylus, the description of H. pachyneura Schltr. is reminiscent of this new species in many respects. H. pachyneura Schltr., however, is generally different, since, according to Schlechter, it has cylindrical stigmatic appendages, whilst the stigma of P. ciliolatus J.J.Sm., as with all Peristylus species, is completely attached to the part formed by the fusion of the bases of the lateral sepals, petals and lip with the column auricles. Furthermore, the leaves of the new species are ovate and the margin is very finely dentate and ciliated, the peduncle (which Schlechter considers as belonging to the stem) angular; the inflorescence movable in all directions, and the lip having a strong, semi-circular, ring-shaped transverse swelling at its base. The ovary is clawed. The fused part of the lip here is relatively very long.

Especially noteworthy is the long thin part of the stem beneath the leaf rosette; I cannot say whether this part is always present or can be ascribed to some special circumstances. Under no. 1096, two little plants were collected and preserved in alcohol, but this part [the stem] was missing, perhaps broken off; whilst it was present with two of the three dried specimens collected under no. 2490.

The flowers of no. 1096 were described as green, those of no. 2490 as yellow-green.

Habenaria Willd.

Habenaria paucipartita J.J.Sm., in Mededeel. Herb. Leid. no. 23 (1915).

Tab. LVII, 92.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near Wape, growing terrestrially in the forest (R.F. Janowsky no. 339, flowering in May 1913).

Amongst the species of the section Salaccenses, this one is distinguished by the lip having at the middle, lateral lacinae with irregular lobes.

According to the notes the flowers are green.

Dried material only was available.

Corysanthes R. Br.

Corysanthes arfakensis J.J.Sm., in Fedde Rep. XI (1913), 552.

Tab. LVIII, 93.

(latin diagnosis)

Dutch New Guinea: Arfak Range, alt. c. 1400m, in between moist moss in the forest (K. Gjellerup no. 1105, flowering in Apr. 1912).

The plant belongs to those species with the labellum pouched in front and appears to be closest to C. gibbifera Schltr. According to the description and illustration, it differs from this species in other respects, besides having the dorsal sepal less broad at the apex, as well as shorter petals. Unfortunately, Schlechter hardly ever states the breadth of the individual floral segments in his descriptions, so that it frequently is difficult to obtain a good idea of the shape.

The flower, in particular the column, of the solitary plant preserved in alcohol was insect-damaged.

The flowers are described as brown-violet, with a white apex.

Corysanthes palearifera J.J.Sm., in Mededeel. Herb. Leid. no. 23

(1915), [Page no. omitted].

Tab. LVIII, 94.

(latin diagnosis)

Dutch New Guinea: Hellwig Range, on the north slope, alt. c. 2300m, in the primary forest, growing on schist (A. Pulle no. 1213, flowering in Mar. 1913).

The species is very closely related to C. gibbifera Schltr. (C. gibbiferum Schltr.) but differing in the gradually widening dorsal sepal, the lateral sepals and petals of about the same length; the non-pointed lip, deeper serrated at the margin and inside with short hairs; as well as by the colouring.

According to Pulle the hood is marked with a red spot on its back,

the lip white with a yellow spot, the remainder white with dark purple lines.

Three specimens were collected and preserved in alcohol.

Nervilia Gaud. [Commers. ex Gaud.]

Nervilia Aragoana Gaud., I. Freyc. Bot. (1826), 422, t. 35; etc.

Dutch New Guinea : Berkombor, on the Tor River, alt.c. 25m, in swampy, frequently water-logged forest (K. Gjellerup no. 780, flowering in Oct. 1911).

Under no. 658 Gjellerup collected, at the lower Tor River, the inflorescence of a Nervilia which I considered to be N. macrophylla Schltr. Since leaves are missing and the description does not completely agree, and I have seen no specimens, a reliable definition is not possible at this stage.

Cryptostylis Bl. [R. Br.]

Cryptostylis apiculata J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915), [Page no. omitted] Tab. LVIII, 95.

(latin diagnosis)

Dutch New Guinea : Perameles Range, alt. c. 1100m, growing terrestrially on limestone (A. Pulle no. 412, flowering in Nov. 1912).

The species is closely related to C. arachnites Bl. and two Papuan ones described by Schlechter. C. apiculata J.J. Sm. is distinguished from all these by the pronounced lip apex.

According to the collector, the flowers are green, the lip red-brown with spots, the leaves with black spots.

The description is from two herbarium specimens.

Cryptostylis sigmoidea J.J. Sm., in Fedde Rep. XI (1913), 553.

Tab. LIX, 96.

(latin diagnosis)

Dutch New Guinea : Giriwo River, in forest (R. F. Janowsky no. 205,

flowering in July 1912).

A species characterized predominately by the dense inflorescences, small flowers and the labellum. The callus formation on the hypochile is also noteworthy.

According to the collector, the flowers are red, the labellum yellow.

Cryptostylis arfakensis J.J. Sm., in Fedde Rep. XI (1913), 553.

Tab. LIX, 97.

(latin diagnosis)

Dutch New Guinea : Arfak Range, on a summit, alt. c. 1400m, in poor humus on decomposed granite (K. Gjellerup no. 1026, flowering in Apr. 1912 ).

According to the description, the species differs from C. fulva Schltr. in longer stemmed, dark green-spotted leaves, pointed at the base, and with an expanded, triangular, pointed labellum; from C. papuana Schltr. in spotted leaves, obtuse sepals and petals and appreciably larger labellum. The description, particularly that of the latter species, is, however, somewhat uncertain and it is not clear whether the dimensions given refer to the expanded or non-expanded parts.

According to Gjellerup, the leaves are slightly glossy green with dark green spots, the petiole brown-violet and yellowish white, the peduncle with small brown dots, the flowers pale green with a yellowish white-brown-red spotted labellum:

The alcohol-preserved flowers were unsuitable for preparing a drawing.

Cryptostylis carinata J.J. Sm., in Fedde Rep. XI (1912), 134.

Tab. LX, 98.

(latin diagnosis)

Dutch New Guinea : Gautier Range, on the north slope, alt. c.



800m, in open forest on humus overgrown with moss on limestone rocks  
(K. Gjellerup no. 874, flowering in Nov. 1911).

The species is easily recognised by the robust longitudinal keel  
on the lower half of the lip.

The flowers are pale green and the lip spotted red-brown, particular-  
ly towards the base.

Epipogum Gmel.

Epipogum nutans Rchb.f., in Bonpl. V (1857), 36; etc.

Dutch New Guinea : Giriwo River, in forest (R.F. Janowsky no. 199,  
flowering in July 1912). Geographic distribution : Tropical Asia  
and Australia.

Lecanorchis Bl.

Lecanorchis javanica Bl., Mus. Bot. Lugd. Bat. II, 188; etc.

A specimen collected by Schlechter in Feb. 1908 in the forests of  
the Kani Range, Kaiser-Wilhelms-Land (collection no. missing) and tagged  
as L. papuana Schltr. (for which the Buitenzorg Herbarium thanks the  
collector) is identical with the one originating from our Territory.  
Thus L. papuana Schltr. should be united with L. triloba J.J. Sm. and  
L. javanica Bl., as I still believe.

Pterostylis R. Br.

Pterostylis papuana Rolfe, in Kew Bull. 1899, 112.

Tab. LXI, 99.

(latin diagnosis)

Dutch New Guinea : Ravine between the Wichmann and Hubrecht  
Ranges, alt. c. 2800- 3000m, growing terrestrially in primary  
forest (A. Pulle no. 2405, leg. G.M. Versteeg, flowering in Feb.  
1913).

I consider this plant to be P. papuana Rolfe, since his description agrees very well, particularly with regard to the flower, but the leaves of Versteeg's specimen are broader.

There is unfortunately only a solitary dried specimen.

According to Versteeg the flowers are reddish.

Vanilla Sw.

Vanilla ramosa J.J. Sm., in Fedde Rep. XI (1912), 130.

Tab. LXII, 100.

(latin diagnosis)

Dutch New Guinea : Hollandia, in forest, in areas covered with Imperata, on laterite mixed with humus, alt. c. 50m (K. Gjellerup no. 706, flowering in Sept. 1911).

After Schlechter recently identified three species in German New Guinea, this genus has now appeared in our Territory.

V. ramosa J.J. Sm. is distinguished from all the Malayan and Papuasian species by the branched very tortuous inflorescences.

According to Gjellerup, the leaves are thickly carnose and pale green, the flowers fragrant, greenish brown-yellow, with a brown-violet labellum.

Galeola Lour.

Galeola torana J.J. Sm., sp. nov.

Tab. LXIII, 101.

(latin diagnosis)

Dutch New Guinea : Berkombor on the Tor River, alt. c. 25m, growing in humus in the forest, scandent on a tree (K. Gjellerup no. 766, flowering in Oct. 1911).

Initially, I considered this a variety of G. pterosperma Schltr. However, of late I have become doubtful whether all those plants

designated as G. Hydra Rchb.f. and G. pterosperma Schltr. really belong to one species, and since I know of no plants from the East Indies, and those illustrations I am familiar with are not definitive enough, I have listed this plant as a new species.

G. torana J.J. Sm. differs from G. pterosperma Schltr. described in Bulletin du Jardin Botanique de Buitenzorg IX (1913), 10 in much more-pointed sepals and petals and a lip strongly concave, particularly at the base, beset less densely inside with papillae and with differently shaped calli, as well as a fimbriated clinandrium.

According to the collector the solitary plant found was 4m tall, the stem and scales brown with a rose-red flush, the flowers pale yellow.

Aphyllorchis Bl.

Aphyllorchis arfakensis J.J. Sm., in Fedde Rep. XII (1913), 394.

Tab. LXIII, 102.

(latin diagnosis)

Dutch New Guinea : Arfak Range, alt. c. 1200m, in a clearing in moist forest, growing in humus on granite (K. Gjellerup no. 1061, flowering in Apr. 1912).

Initially I believed that I was contemplating A. elata Schltr., which is of the same size with equally large flowers. However, the description of Schlechter's species indicates that the lobes of the hypochile are quite differently shaped, with the lip-lamina undivided. The latter, in the case of A. arfakensis J.J. Sm., generally is similar to that of A. pallida Bl. and A. torricellensis Schltr., so that the plants cannot be identical. Furthermore, according to the description the colour appears to differ.

According to Gjellerup, the flowers are Isabel [buff]-yellow, the petals with a long longitudinal violet stripe, the hypochile violet, the apex of the labellum yellow with brown transverse lines, the

column violet at the base, yellow at the apex, the inflorescence and young fruits pink and violet-striped and faded.

The description is from herbarium specimens.

Spiranthes L.C. Rich.

Spiranthes angustilabris J.J. Sm., in Fedde Rep. XII (1913), 394.

Tab. LXIII, 103.

(latin diagnosis)

Dutch New Guinea : Arfak Range at the Angi Lake, alt. c. 1900m, growing on stony moist ground, on poor humus (K. Gjellerup no. 1191, flowering in Apr. 1912).

This species differs from the related ones in the very narrow lip. Initially I believed that a peloric form was present, but a close examination of the poor specimens available, only in the dried state, showed this not to be the case. Only when further specimens become available will it be possible to decide. That no calli could be established is perhaps also due to the poor condition of the specimen.

According to Gjellerup, the leaves are a matt bluish green, the flowers red.

Vrydagzynea Bl.

Vrydagzynea Schumanniana Krzl., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 86; Schltr., Orch. Deutsch-Neu-Guinea (1911), 87. (excl. syn. V. triloba J.J. Sm.).

V. paludosa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 39; in Nova Guinea VIII (1909), 12, t. IV, 11.

Dutch New Guinea : Gautier Range, on the north slope, in the bed of the Tor River, alt. c. 400m, between moss on large limestone rocks (K. Gjellerup no. 877, flowering in Nov. 1911).

Vrydagzynea elongata Bl., Fl. Jav. I, 61, t. 28, f. 1.

V. rectangulata J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XII (1914), 54.

Hetaeria elongata Miq., Fl. Ind. Bat. III, 726.

Dutch New Guinea : Temenimbor, on the Tor River, alt. c. 75m, growing in the forest on somewhat swampy humus (K. Gjellerup no. 787, flowering in Oct. 1911); Armopa (Bonggo), terrestrial in forest (R.F. Janowsky no. 632, flowering in Jan. 1914).

Both flowering and in-fruit specimens of Gjellerup's no. 787 are present. The inflorescences are short and dense, but then extend later to c. 8.25 cm.

According to Blume's description, V. elongata Bl. should differ from V. rectangulata J.J. Sm. in the inflorescence which extends during flowering, in the spur not compressed at the apex, the stemmed glands at the base of the column being free, and in differently coloured flowers. On the Type in Leiden I established that the flowers had already been converted to fruit and the glands at the base of the column were not free. Therefore, even now, I do not doubt we are considering Blume's species.

Also I cannot distinguish between V. pachyceras Schltr. in regard to Schlechter's no. 14039 from the Bismarck Range, of which there is one specimen at Buitenzorg; and V. elongata Bl. Weinlands' no. 203 from the Markham River, in Kaiser-Wilhelms-Land [sent] from Berlin is correctly retained at Buitenzorg as V. elongata Bl.

#### Cystopus Bl.

Cystopus fimbriatus J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. X [1907] 3; in Nova Guinea VIII (1909), [16], t.V, 14.

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near Wape, growing terrestrially in forest (R.F. Janowsky no. 360, flowering in May 1913).

Macodes Lindl.

Macodes Sanderiana Rolfe, in Kew Bull. 1896, 47; etc.

Dutch New Guinea : Hinterland of Hollandia, alt. c. 300m, in forest on sand mixed with humus (K. Gjellerup no. 681, flowering in Sept. 1911).

Most probably belongs here.

Zeuxine Lindl.

Zeuxine amboinensis J.J. Sm., in Ic. Bog. II (1905), 259; etc.

Dutch New Guinea : Arso, alt. c. 60m, in forest, growing in sand mixed with humus (K. Gjellerup no. 649, flowering in Aug. 1911).

Hetaeria Bl.

Hetaeria falcata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 16. [26].

H. gautierensis J.J. Sm., in Fedde Rep. XI (1913), 553.

Zeuxine falcata Schltr., Orch. Deutsch-Neu-Guinea (1911), 77.

Dutch New Guinea : Gautier Range, on the north slope, alt. c. 500m, in forest, growing in sparse humus on limestone and basalt (K. Gjellerup no. 841, flowering in Nov. 1911); Giriwo River, in forest (R.F. Janowsky no. 208, flowering in July 1912).

The differences which induced me to establish H. gautierensis J.J. Sm. do appear to be too weak to maintain it beside H. falcata J.J. Sm. Since the only existing plant, furthermore, appears to be a very weak specimen, I believe it best to unite it for the time being with H. falcata J.J. Sm. Hopefully, further specimens will later be collected on the Gautier Range.

Hetaeria pauciseta J.J. Sm., in Fedde Rep. XI (1912), 134.

(latin diagnosis)

Dutch New Guinea : On the middle Tor River, alt. c. 25m, in humus in forest (K. Gjellerup, mixed with no. 736, flowering in Oct. 1911).

An almost withered specimen of this species was mixed with a specimen of Goodyera confundens J.J. Sm. It differs from H. Erimae, with which it appears to be related, in the very few bristles at the base of the lip and in the much more pointed anther.

Hetaeria oblongifolia Bl., Bijdr. (1825), 410, tab. fig. 14; etc.

var. papuana J.J. Sm., in Nova Guinea VIII (1909), 17, t. VI, 16.

Dutch New Guinea : On the middle Legarei River (R. F. Janowsky no. 50, flowering in June 1912).

Although I am now convinced that the plant should not be considered as a variety of H. oblongifolia Bl., I have nevertheless listed it under that name since it is possible, but not definite, that it is identical with H. latipetala Schltr. Schlechter represents the anther as being much shorter than for all those specimens I have seen.

#### Goodyera R. Br.

Section : Otosepalum

Goodyera confundens J.J. Sm., sp. nov.

G. Waitziana J.J. Sm. (nec Bl.), in Nova Guinea VIII (1909), 17.

Tab. LXIV, 105.

(latin diagnosis)

Dutch New Guinea : On the middle Tor River, alt. c. 25m, growing on humus in the forest (K. Gjellerup no. 736, flowering and fruiting in Oct. 1911); on the Lorentz River, terrestrial in Metroxylon swamps (G.M. Versteeg no. 1070, flowering and fruiting in May 1907); in the same place (Djibdja, living plant in cultivation earlier at Hort. Bog.).

The material collected by Gjellerup is better than Versteeg's , in

that the solitary pressed plant was less withered, and the inflorescence was preserved in alcohol. I have been able to establish that the plant definitely belongs to the said species.

G. confundens J.J.Sm. is very similar in appearance to G. Waitziana Bl., since the two plants have the long relatively dense inflorescence in common. The flowers of the Papuasian species are, however, somewhat larger and after pollination are almost in a horizontal position, which does not apply for G. Waitziana Bl. The flowers of this species, furthermore, have a relatively much shorter labellum with very few soft bristly appendages, a different column and shorter anther.

) G. rubicunda Lindl. which, likewise, is very similar in habit, is recognised by the laxer inflorescences with fewer, but larger flowers, narrower clawed petals, the lip extended to a longer apex, and the column constricted at the base and thinner-keeled, with hardly any longitudinal ribs.

In the 'Orchideen von Java' I described and illustrated the apex of the lip of G. rubicunda Lindl. as pointed, according to notes made earlier from a plant cultivated at the Botanical Gardens at Buitenzorg. The specimens examined later and originating from the surroundings of Buitenzorg all had, however, a blunt lip. Whether perhaps a different species or variety was present is difficult to say at the moment.

) I am not completely sure whether the specimens described in 'Orchidaceen von Deutsch-Neu-Guinea' as being G. rubicunda Lindl. really belong to this species.

G. papuana Ridl. clearly is closely related, likewise, to G. confundens J.J.Sm. and to the other species mentioned above. Unfortunately, the description is very incomplete, so that a more exact comparison is impossible. It is clear that the species cannot be identical with G. confundens J.J. Sm., since it is reported to have a pointed lip with the column hirsute below.



It is regrettable that Schlechter, who clearly knows the species, never gave a comprehensive description.

According to Gjellerup the flowers are whitish salmon-coloured, the lip a strong yellow with salmon-coloured apex, the column yellowish white.

The description was made from the Gjellerup specimen.

Section : Batiola

Goodyera arfakensis J.J. Sm., in Fedde Rep. XI (1913), 554.

Tab. LXIV, 106.

(latin diagnosis)

Dutch New Guinea : Arfak Range, alt. c. 1900m, in forest on a mountain slope in humus with granite debris in swampy locations (K. Gjellerup no. 1041, flowering in Apr. 1912).

The species differs from the likewise Papuan-related G. brachiorhynchos Schltr. in the smaller relatively broader leaves, broader, differently shaped petals and lip, and in other respects. It would appear to be closely related to G. glauca J.J. Sm. from Java, but differs, for example, also in the shape of the petals and column, and in the hirsute ovary.

The leaves, according to Gjellerup, are matt bluish green, the flowers greenish white with salmon-coloured sepal apices.

Tropidia Lindl.

Tropidia Janowskyi J.J.Sm., in Mededeel. Herb. Leiden no. 23 (1915),

[No page no.].

Tab. LXV, 107.

(latin diagnosis)

Dutch New Guinea : Kuria (Bonggo), growing terrestrially in forest (R.F. Janowsky no. 616, flowering in Jan. 1914).

The species differs from the related T. disticha Schltr., in larger flowers, a pointed lip with calli not continuing to the apex,

a broad ovate, not obcordate, anther and differently shaped pollinia.

According to Janowsky, the flowers are yellow with a white lip.

Only a few cut, dried branches with flowers, and a branch without flowers, preserved in alcohol were available.

Coelogyne Lindl.

Coelogyne Beccarii Rchb. f., in Bot. Centralbl. XXVIII (1886), 345;

Pfitz. et Krzl., in Pflanzenr. Heft 32 (1907), 32; J.J. Sm., in Nova Guinea VIII (1909), 136, t. XLV, 151.

C. Micholitziana Krzl., in Gard. Chron. 1891, II, 300; in Xenia Orch. III (1892), 100, t. 256; in Pflanzenr. l.c. fig. 8, A - E.

C. Rumphii Schltr. (nec. Lindl.), in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 96.

Dutch New Guinea : Temenimbor on the Tor River (K. Gjellerup no. 793, flowering in Oct. 1911); Gautier Range, on the north slope, alt. c. 500m (K. Gjellerup no. 832, flowering in Nov. 1911); Arfak Range (K. Gjellerup no. 1084, flowering in Apr. 1912); Lorentz River near Kloof Bivouac, alt. c. 30m, epiphytic in primary forest (A. Pulle nos 210 and 242, flowering in Oct. 1912); (J.B. Sitanala nos 11211 and 11233, flowering in Jan. 1913).

In the collection from the Arfak Range a solitary inflorescence, preserved in alcohol, was found. The herbarium specimen with descriptive label was missing.

Coelogyne asperata Lindl., in Journ. Hort. Soc. IV (1849), 221; etc.

Dutch New Guinea : Hinterland of Hollandia on a spur of the Cyclops Range, alt. c. 250m, numerous specimens on trees in small valleys on the upper Mbaai River (K. Gjellerup no. 1007 flowering in Feb. 1912); On the Giriwo River (R.F. Janowsky no. 213, flowering in July 1912); on the upper Van der Sande River, alt. c. 100m, epiphytic in primary forest (A. Pulle no. 394, flowering in Nov.

1912); Lorentz River near the Kloof Bivouac (J.B. Sitanala nos 11225 and 11230, flowering in Jan. 1913).

Dendrochilum Bl.

Dendrochilum longifolium Rchb. f., in Bonpl. IV (1856), 329; etc.

var. papuanum J.J. Sm., in Nova Guinea VIII (1911), 527.

Dutch New Guinea : Arfak Range near the Angi Lake, alt. c. 1900m, on shrubs in granite debris (K. Gjellerup no. 1083, flowering in Apr. 1912); Lorentz River near the Kloof Bivouac (J.B. Sitanala no. 11238, flowering in Feb. 1913).

I could not establish any differences between these plants and those collected earlier at a much lower altitude.

D. Bartonii (Ridl.) Schltr. probably belongs here as a synonym.

Chrysoglossum Bl.

Chrysoglossum papuanum J.J.Sm. in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 7; in Nova Guinea VIII (1911), 527, t. LXXVIIA.

Nephelaphyllum papuanum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 96.

Collabium papuanum Schltr., Orch. Deutsch- Neu-Guinea (1911), 98.

Dutch New Guinea : Arfak Range, alt.c. 1400m, growing in poor humus on decomposed granite (K. Gjellerup no. 1023, flowering in Apr. 1912).

Tainia Bl.

Tainia parviflora Schltr., Orch. Deutsch-Neu-Guinea (1911), 100.

Dutch New Guinea : Arfak Range, alt. c. 800m, in forest, growing in poor humus on decomposed granite (K. Gjellerup no. 1019, flowering in Apr. 1912). Geographic distribution : German New Guinea.

The species is closely related to T. trinervis Rchb.f. if not identical.

Plocoglottis Bl.

Section : Euplocoglottis

Plocoglottis Lowii Rchb.f., in Gard. Chr. 1865, 434, Xenia Orch. II, 142, t. 154; Hallier f., in Ann. Buit. XIII (1896), 318, t. XXVIII, fig. 2A - F.

P. porphyrophylla Ridl., in Trans. Linn. Soc. ser. II, Bot. III (1893), 368; Journ. Linn. Soc. Bot. XXXII, 317; Mat. Fl. Mal. Pen. I (1907), 113.

var. papua J.J. Sm., nov. var.

Dutch New Guinea: Hinterland of Hollandia, on spurs of the Cyclops Range, alt. c. 300m (K. Gjellerup no. 100, flowering in Feb. 1912).

Here I have separated only one variety, since the differences from the specimens from Borneo and Ambon appear insignificant. Unfortunately, I lack material from these localities preserved in alcohol, so that an exact comparison is not possible. In the main, there appear to be small differences in flower colour.

P. atroviridis Schltr. differs in green leaves, whilst with Gjellerup's specimens, as well as those from Borneo and Ambon, they are coloured violet. P. pubiflora Schltr. from German New Guinea has dark violet flowers.

Description from herbarium and alcohol-preserved specimens and from a living plant in cultivation at Buitenzorg.

Plocoglottis sphingoides J.J. Sm., in Fedde Rep. XI (1913), 554.

Tab. LXV, 108.

(latin diagnosis)

Dutch New Guinea : Giriwo River, in forest (R.F. Janowsky no. 186, flowering in July 1912).

The plant belongs to the closer relatives of P. acuminata Bl., but differs from it appreciably, however, in relative dimensions, narrower sepals and petals and a differently shaped lip. Amongst the previously known Papuan species it has the longest sepals and petals, and is characterized particularly by the long extended apex of the lip.

According to Janowsky, the flowers are yellow with red spots.

Description only from an alcohol-preserved specimen, the sterile herbarium specimen collected under the identical number does not belong here.

Section : Phyllocaulos

Plocoglottis torana J.J. Sm., in Fedde Rep. XI (1912), 135.

Tab. LXV, 109.

(latin diagnosis)

Dutch New Guinea : Berkombor on the Tor River, alt. c. 40m, in forest on a small hill, on sand mixed with humus (K. Gjellerup no. 769, flowering in Oct. 1911).

Amongst the related species, P. kaniensis Schltr. and P. maculata Schltr. also have a hirsute column. The new species differs from P. kaniensis Schltr. in the smaller number of leaves, flowers hirsute inside, an appreciably larger lip; from P. maculata Schltr. in much larger five-veined leaves, multi-flowered inflorescences, larger flowers also hirsute inside.

Unfortunately, only a single stem without base, and the apex of an inflorescence, are to hand.

From the collector's notes I take the following details : The plant reaches a height of 90 cm. The leaves are matt dark green, initially red-violet, the flowers pale brown-yellow with many close-standing brown-red spots and dots, the lip pale yellow and the column a somewhat deeper yellow.

Plocoglottis Janowskyi J.J. Sm., in Fedde Rep. XI (1913), 555.

## Tab. LXVI, 110.

(latin diagnosis)

Dutch New Guinea : Giriwo River, in forest (R.F. Janowsky no. 197, flowering in July 1913).

The species appears to resemble P. maculata Schltr. in the short column, but differs completely otherwise, in size, multi-flowered inflorescences, larger flowers, hairiness, a labellum broadened at the apex, etc.

Also, P. pseudo-moluccana Schltr. has a somewhat short column (0.5 cm) besides equally large flowers, possessing, however, longer leaves, a narrower labellum with a barely longer apex, a bare column, etc.

The collector described the flowers as red with a yellow lip.

Only a solitary dried leaf stem and the apex of an inflorescence preserved in alcohol are to hand.

The plant mentioned earlier in Nova Guinea VIII (1909), 22 as P. moluccana Bl. is just as vaguely related to Blume's species as are Schlechter's specimens of the same name in Nachtr. Fl. Deutsch. Schutzgeb. Südsee, 145. It is similar to P. maculata Schltr. in the shape of the lip, but does not agree completely in other regards, so that without comparative material, it cannot be decided whether or not Versteeg's plants represent a separate species.

Gjellerup, under no. 860, collected three different Plocoglottis species, of which two were represented by only a piece of inflorescence, the third by a petiole and an inflorescence which, however, did not carry any good flowers.

Plocoglottis latifrons J.J.Sm., in Fedde Rep. XI (1912), 135.

## Tab. LXVI, 111.

(latin diagnosis)

Dutch New Guinea : Hinterland of Hollandia, on a spur of the Cyclops

Range, alt. c. 300m, on a serpentine hill covered with open forest, growing scattered in humus (K. Gjellerup no. 1006, flowering in Feb. 1912).

A species of the section Phyllocaulos, easily recognised amongst its relatives by the lip appreciably broadened at the apex.

According to Gjellerup, the flowers are yellow, spotted brown-red except at the tips, the lip a pure yellow, the column yellow with a few brown spots at the base and a green spot at the apex.

Description from herbarium and alcohol-preserved specimens.

The species flowered later on in the Buitenzorg Garden.

Phaius Lour.

Section : Euphaius

Phaius Tankervilliae (Tankervillei) Bl. [tancarvilliae (Banks) Bl.],

Mus. Bot. Lugd. Bat. II (1852), 177; Fl. Jav. nov. sér. I (1858), 3.

P. grandifolius Lindl. (nec. Lour.), Gen. et Sp. Orch. (1831), 126.

P. grandifolius var. superbus Van Houtte, Fl. d. S. VII (1851 - 52), 259, t. 38.

P. Blumei Lindl., Gen. et Sp. Orch. (1831), 127; De Vr. III, Orch. cum tab.; Bl., Mus. Bot. Lugd. Bat. II (1852), 178; Fl. Jav. nov. sér. I (1858), 4, t. 1., t. 5D.

P. Wallichii Hook. f. (pp.), Fl. Br. Ind. V (1890), 816.

P. Incarvillei O.K., Rev. Gen. Pl. II (1891), 675; J.J. Sm., in Fl. Buit. VI, Orch. (1905), 194, Atl. Fig. CXLV.

Limodorum Tankervilliae Ait., Hort. Kew. 1st. ed. (1789), III, 302, t. 12; L'Hérit. (vel. Banks in L'Hérit.), Sert. Angl. (1788), 28; Lam., Enc. Bot. III (1789), 516; Sw., in Nov. Act. Ups. VI, 79; Willd., Sp. pl. IV (1805), I, 122; Redouté, Liliac. (1802 - 16),

43; Schneev., Ic. (1793), 5; Bot. Repos. 426; Von Gheel, Sert. Bot. cum tab; Roxb., Fl. Ind. 466.

L. Incarvillei Pers., Syn. Pl. II (1807), 520; Bl., Bijdr. (1825), 374.

Bletia Tankervilleae R.Br., in Hort. Kew 2nd Ed. V (1813), 205; Misc. Works II (1867), 487; Lodd. Cab. Bot. no. 20; Bot. Mag. XLIV (1817), t. 1924; Lindl. et Bauer, Ill. Orch. Pl., fasc. I (1830), t. 1. t. 6.

Pachyone spectabilis Salisb., in Transac. Hort. Soc. I (1820), 261. var. papuanus J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Probably Humboldt Bay (K. Gjellerup, living plant in cultivation at Hort. Bog. under no. 466).

The variety differs from the Javanese form only in smaller dimensions and a relatively somewhat shorter middle lobe of the lip.

The nomenclature of this widely distributed plant is not yet completely certain. The oldest name for one of these plants is Limodorum Tankervilleae, whose author always is named Aiton with the publication of the species in Hort. Kew. However, it had already been published a year earlier by L'Héritier (or Banks ex L'Héritier) in Sert. Angl. These books are missing at Buitenzorg, so that I cannot finalise the matter. Likewise, it is impossible, due to lack of specimens and literature, to find out whether perhaps several of the named plants should not be separated as varieties or forms.

Phaius grandifolius Lour. [Lindl.] is considered by many authors as belonging to the above species; however, Loureiro states explicitly, as already raised by Blume, that the plant has a stem which he even describes in considerable detail.

P. Wallachii Lindl. [Hook.f.] is, for the time being, united with P. Tankervilleae, but according to the description and illustration, the



lip has an appreciably longer spur and middle lobe.

Even if the latter two plants should not be specifically different P. Tankervilliae Bl. has priority.

[Ed. Currently (1984) the accepted nomenclature and author citation is Phaius tancarvilliae (Banks) Bl. ; P. grandifolius Lindl. and P. Wallachii Hook.f. are considered synonyms].

Phaius montanus Schltr., Orch. Deutsch-Neu-Guinea (1912), 374.

(latin diagnosis)

Dutch New Guinea : Hinterland of Hollandia, on spurs of the Cyclops Range, alt. c. 300m, on a serpentine hill covered with forest, growing in humus (K. Gjellerup no. 1004, flowering in Feb. 1912, also living plant in cultivation at Hort. Bog.); On the middle Legare River, alt. c. 80m (R.F. Janowsky no. 40, flowering in June 1912); Lorentz River near the Kloof Bivouac, in primary forest (J.B. Sitanala no. 11248, flowering in Feb. 1913).

I do not doubt that this plant is P. montanus Schltr., even though there are some differences from the description. With the plant from our Territory, the lateral lobes of the lip cannot be called short, the third ridge on the middle lobe is warty, the column clearly broadened in front and hirsute whilst the anther [also] is hirsute.

According to Gjellerup's notes, the flowers are pale yellow or creamy yellow outside, pale orange inside flushed with brown-red, the lip pale creamy yellow, violet with diffused spots and lines, and white ridges at the apex and margin of the distal half; the column is white.

Description of the flowers from alcohol-preserved specimens.

I made the following notes from a specimen which flowered at Buitenzorg: Flowers thin and carnose c. 8.75 cm broad. Sepals and petals outside pallid yellow-green with a more pallid margin, inside chestnut-brown with pale yellow apex and margin, the petals furthermore with a narrow pale yellow longitudinal line. The lip white, purple

in front with a narrow white margin, the lateral lobes flushed inside with pallid purple, the middle lobe purple inside, the two ridges white with a purple longitudinal stripe, the warty third ridge white. The column white, below barely flushed purple.

Section : Bulbophaius

Phaius flavus Lindl., Gen. et Sp. Orch. 128; Bl., Mus. Bot. II, 179;

Miq., Fl. Ind. Bat. III, 671; J.J. Sm., Fl. Buit. VI, Orch. 192;

Atlas t. CXLIV; etc.

var. papuanus J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea: Arfak Range, at the Angi Lake, alt. c. 1900m, between shrubs at the lake bank (K. Gjellerup no. 1098, flowering in Apr. 1912).

The plant differs from P. flavus Lindl. in smaller size of the vegetative segments, the leaves being extremely narrow. It is possible that the most robust shoots were not chosen for pressing. The flowers also are smaller than for the robust Javanese specimens.

The colouring appears to be usual, being described by Gjellerup as sulphur-yellow, the labellum with a brown margin.

The description is from sparse alcohol-preserved material.

P. flavus Lindl. is generally placed in a section together with P. Tankervilleae Bl. and its relatives. However, the species is so varied, that I consider it advisable to base a special section on it defined as follows:

Section : Bulbophaius - Pseudobulbs more strongly developed than for Euphaius, leaves with long sheaths surrounding each other to form a mock stem.

Section : Pesomeria

Phaius amboinensis Bl., Mus. Bot. Lugd. Bat. II, 180; Fl. Javae Orch. 8;

Miq., Fl. Ind. Bat. III, 672; J.J. Sm., in Fl. Buit. VI, Orch.

198; Atlas fig. CXLVIII

P. Zollingeri Rchb. f., Xenia Orch. II, 201, t. 76, II; Miq., l.c. 740. Rumph., Herb. Amb. VI, 113, t. 4, f. 3.

Dutch New Guinea : Giriwo River, in forest (R.F. Janowsky no. 183, flowering in July 1912).

Geographic distribution : German New Guinea, Ambon, Celebes, Java.

Although the flowers indicate several differences, I have for the present not established a variety, since the specimens are poor. Thus only quite small stems were pressed and these do not give a true picture of the plant. The plant is not identical with var. papuanus Schltr., which is characterized by small pure white flowers, but perhaps with the form collected by Schlechter in 1908 at Djawer.

Calanthe R.Br.

Section : Caulodes

Calanthe Versteegii J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 55.

Tab. LXVII, 112.

(latin diagnosis)

Dutch New Guinea : Oranje Range, near the Waterval Bivouac, alt. c. 3400 - 3500m, on a kind of grassy plain (A. Pulle no. 2485. leg. G.M. Versteeg, flowering in Feb. 1913).

A very interesting species of the section Caulodes. Together with Peristylus ciliolatus J.J. Sm. and a few other species it is one of the orchids found at the greatest altitude in the mountains. It differs from the other two species of the section in narrower leaves; the flower characters are also different.

According to Versteeg, the flowers are yellow-white, the pollinia orange.

A few dried specimens with a good inflorescence, as well as a

fairly strongly pressed, alcohol-preserved flower were to hand.

Section: *Rhodochilus*

*Calanthe rhodochila* Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 143.

Janowsky collected a *Calanthe* on the Jabi Range which differs from *C. breviscapa* J.J. Sm. in shorter-stemmed, multi-flowered inflorescences, longer bracts, less strongly bent flowers with a longer, narrower lip-lamina; the latter being reminiscent of *C. rhodochila* Schltr. However, since it has a definite callus and the description of the lip does not agree in other respects, the determination of the plant must remain uncertain for the time being.

Section : *Styloglossum*

*Calanthe chrysantha* Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 141.

*C. tunensis* J.J. Sm., in Nova Guinea VIII (1909), 25 (planta papuana).

Dutch New Guinea : Lorentz River, Nepenthes Hill, at the border of *Metroxylon* swamps on trées in primary forest (G.M. Versteeg no. 1343, flowering in July 1907); Arfak Range, alt. c. 1200m, on decomposed granite, covered with humus in primary forest (K. Gjellerup no. 1060, flowering in Apr. 1912); On the Giriwo River, in forest (R.F. Janowsky no. 151, flowering in July 1912).

Geographic distribution : German New Guinea.

I have listed this very common plant in New Guinea temporarily under the above name, since I am not completely sure that it is identical with the species from Ambon; I think, however, that in the long run they cannot remain separate.

Section : *Eucalanthe*

*Calanthe Pullei* J.J. Sm., in Bull. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 55.

Tab. LXVII, 113.

(latin diagnosis)

Dutch New Guinea : On the upper Van der Sande River, alt. c. 80m, in primary forest on loamy sand (A. Pulle no. 367, flowering in Nov. 1912).

In the shape of the lip this species resembles C. coiloglossa Schltr., C. bicalcarata J.J. Sm. (C. brevicealcarata Schltr. sphalm. (non J.J. Sm.) Orch. Deutsch-Neu-Guinea 379) and C. kaniensis Schltr., but differs from all these in the lacking of a pouch behind the spur, and from the two Schlechter specimens in hairiness, etc.

Only a solitary dried plant with the inflorescence having just buds, was available; the lower buds were just starting to open, but were insect-attacked.

The flower colour was given as green.

Calanthe reflexilabris J.J. Sm., in Fedde Rep. XI (1913), 555.

Tab. LXVIII, 114.

(latin diagnosis)

Dutch New Guinea : Arfak Range, alt. c. 800m, in forest, growing scattered in sparse humus on decomposed granite (K. Gjellerup no. 1020, flowering in Apr. 1912).

An easily recognised species of the section Eucalanthe with a non-tri-lobed labellum, the lamina being so strongly bent longitudinally, that it is almost completely folded over and surrounding the lateral sepals and the spur.

In the case of one inflorescence the spur was bent almost to an 'S'-shape; with another, it was bent upwards in a hook-like manner at the upper end.

The spurs all appear, however, to be somewhat damaged, so that the different manner of bending can perhaps be ascribed to an insect bite.

According to Gjellerup, the flowers are yellowish green, the lip

with dark brown spots on the distal half.

Since my C. Preptanthe J.J. Sm. differs no more from the old Eu-Calanthe section than does the latter, for example, from Styloglossum, Caulodes, etc., I retain this name for section Calothyrsus. Calanthe Engleriana Krzl., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 142; J.J. Sm. in Nova Guinea VIII (1909), 24, t. VIII, 24.

C. veratrifolia Schltr. (nec R. Br.), in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 145.

Dutch New Guinea : On the Noordwest River, on the plains, growing in humus in the forests (J.A.W. Coenen no. 40); On the lower Legarei River (R.F. Janowsky no. 78, flowering in June 1912; Lorentz River, near the Kloof Bivouac, alt. c. 30m, in humus in the primary forest (A. Pulle nos 149 and 211, flowering in Oct. 1912); near Mankeba, alt. c. 50m (A. Pulle no. 238, flowering in Oct. 1912).

The specimen collected by Janowsky had smaller flowers than I had previously seen.

Calanthe truncata J.J. Sm., in Fedde Rep. XI (1912), 130.

Tab. LXVIII, 115.

(latin diagnosis)

Dutch New Guinea: Gautier Range, on the north side, alt. c. 300m, in forest in swampy places, between mountain spurs, growing in humus on limestone (K. Gjellerup no. 887, flowering in Nov. 1911).

Amongst the Papuasian species related to C. triplicata Ames, this one is characterized by the markedly shortened middle lobe, and spur inflated in a clavate manner. The hairiness of the inflorescences is of a two-fold nature; in alcohol-preserved material one finds nearly everywhere protruding very short colourless hairs, also somewhat longer, appressed, pale brown hairs.

The flowers are white.

Calanthe villosa J.J. Sm., in Fedde Rep. XI (1912), 130.

Tab. LXVIII, 116.

(latin diagnosis)

Dutch New Guinea : Gautier Range, on the north side, alt. c. 900m, on a thin layer of humus on a tree trunk, in forest (K. Gjellerup no. 850, flowering in Nov. 1911).

Only a solitary alcohol-preserved specimen of this plant is to hand; the flowers had already started to fruit. The individual floral segments were, however, so well retained that the description is nearly complete. It remains to be established whether the plant is always so small as given above.

The plant is easily recognised by the dense hairiness, which is reminiscent of Chrysoglossum villosum Bl. Amongst the relatives of C. triplicata Ames it is, furthermore, characterized by the short lateral lobes, as for example with C. crenulata J.J. Sm. from Borneo, and by the simple ridge formation of the lip.

According to statements, the flowers are green-yellow, however, the colour probably changed on withering.

In my opinion Schlechter's recent classification of the genus (Orch. Deutsch-Neu-Guinea, 376) is unsatisfactory, so also is his sub-genus Preptanthe which is more closely related to the section Calothyrsus of the sub-genus Eu-Calanthe than, for instance, to Styloglossum. The resurrection of a genus Preptanthe is, in my opinion, without foundation.

Schlechter incorrectly describes the hairiness of Eu-Calanthe; if present, it is frequently far protruding.

Calanthe geelvinkensis J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915),

[No page no.].

Tab. LXVIII, 117.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range, near

Wape, terrestrial in forest (R.F. Janowsky no. 308, flowering in May 1913).

Apparently there is quite a range of plants in New Guinea related to this species.

This species differs from C. camptoceras Schltr. in the narrower, yellow-spotted leaves, very lax inflorescences, far protruding bracts, differently coloured flowers, differently shaped ridges on the lip, and a shorter column.

It differs from C. torricellensis Schltr. in longer leaves, hairy, lax, many-flowered inflorescences, differently shaped petals, lip and anther. This species also has yellow-spotted leaves.

It differs from C. Wernerii Schltr., the description of which I could not trace in Fedde's Repertorium, but which according to statements under the headings of other species is smaller, has differently coloured flowers, and a shorter spur.

Calanthe arfakana J.J. Sm., in Fedde Rep. XI (1913), 555.

Tab. LXIX, 118.

(latin diagnosis)

Dutch New Guinea : Arfak Range, alt. c. 1900m, in swampy forest, at creeks on a mountain slope, growing in small groups, in granite debris mixed with humus (K. Gjellerup no. 1072, flowering in Apr. 1912).

The species belongs to the relatives of C. flava Hassk. Outwardly already, it is easily recognised by the extremely long inflorescences in relation to the length of the leaves.

Acanthophippium Bl.

Acanthophippium splendidum J.J. Sm., in Nat. Tijdschr. Ned. Ind. LVIII (1898), 360, t.V, fig. 1 - 4.

Dutch New Guinea : Lorentz River, near the Kloof Bivouac, in primary



forest (J.B. Sitanala no. 11226, flowering in Jan. 1913).

This plant differs from the Ambon specimens only in the relatively higher, outermost ridges of the lip. Alcohol-preserved material of the plant from the Celebes is at present not to hand for comparison. As is known, Schlechter considers the Papuanian plant as a separate species.

Geodorum Jack.

Geodorum pictum Lindl., Gen. et Sp. Orch. (1833), 175; etc.

Dutch New Guinea : Hollandia, alt. c. 5m, on a hill covered with Imperata, growing in laterite mixed with humus (K. Gjellerup no. 949, flowering in Jan. 1912). Geographic distribution : German New Guinea, Australia.

In agreement with Schlechter I have accepted this name for the Papuanian species, but I am still in no way convinced that this plant should be considered as a separate species.

Eulophia R. Br.

Eulophia Dahliana Krzl., in Notizbl. Berl. I (1897), 243, (nec. l.c. II, 105).

E. imperatifolia Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 148.

Dutch New Guinea : Berkombor on the Tor River, alt. c. 25m, in swampy, frequently water-logged forest, in sandy humus (K. Gjellerup no. 781, flowering in Oct. 1911).

According to Schlechter, E. emperatifolia Schltr. and E. Dahliana Krzl. are identical.

Eulophia macrostachya Lindl., Gen. et Sp. Orch. (1833), 183; etc.

Dutch New Guinea : Arso River, alt. c. 60m, in forest, on the river bank, in humus mixed with sand (K. Gjellerup no. 597,

flowering in Aug. 1911); Sawia, alt. c. 5m on the sea-shore, growing in humus mixed with sand (K. Gjellerup no. 935, flowering in Nov. 1911).

To judge from the description and illustrations I do not consider that E. macrostachya Lindl. and E. emarginata Bl. are specifically different.

Bromheadia Lindl.

Bromheadia pulchra Schltr., Orch. Deutsch-Neu-Guinea (1912), 367.

B. palustris Lindl. var. papua J.J. Sm., in Nova Guinea VIII (1909), 26, t. IX, 26.

Dutch New Guinea : Hinterland of Hollandia, alt. c. 300m, on a hill covered with grass and shrubs, on laterite veined with iron, covered with a thin layer of sand mixed with humus (K. Gjellerup no. 660, flowering in Sept. 1911).

The specimen agrees completely with the one collected earlier by Versteeg and probably is also identical with Schlechter's B. pulchra Schltr.; I have listed it, for the time being, under the latter name, otherwise a new name would have to be created, since B. Finlaysoniana (Lindl.) Rchb.f. has priority over B. palustris Lindl. The differences between B. pulchra Schltr. and B. Finlaysoniana (Lindl.) Rchb.f. are only minor and I am still of the opinion that they are only varieties. Hopefully, I may some time be able to compare them in the living state.

Oberonia Lindl.

Oberonia alipetala J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 56.

Tab. LXIX, 119.

(latin diagnosis)

Dutch New Guinea : Beaufort River, epiphytic. (Franssen-Herderschee

Expedition 1912 - 13, without collector's details or number, flowering in Jan. 1913).

Schlechter would presumably place this plant in his section Otoglossum.

At present I do not know of a closely related Papuasian plant. According to a note by the collector, the flowers are red-brown. Description is from alcohol-preserved material.

Oberonia diura Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 111.

Tab. LXX, 120.

Dutch New Guinea : Temenimbor, on the Tor River, alt. c. 75m, epiphytic in forest (K. Gjellerup no. 791, flowering in Oct. 1911). Geographic distribution : German New Guinea.

According to the description, this plant is O. diura Schltr.

Oberonia forcipera Schltr., Orch. Deutsch-Neu-Guinea (1911), 154.

Tab. LXX, 121.

Dutch New Guinea : Berkombor on the Tor River, alt. c. 20m, epiphytic in forest (K. Gjellerup no. 734, flowering in Oct. 1911). Geographic distribution : German New Guinea.

There is good agreement with Schlechter's description; the leaves (preserved in alcohol), however, are up to 0.95 cm broad and the wings of the rachis, as well as the ridges of the fruit, are finely serrated.

Oberonia torana J.J. Sm., sp. nov.

Tab. LXX, 122.

(latin diagnosis)

Dutch New Guinea : Berkombor, on the Tor River, alt. c. 25m, epiphytic in forest (K. Gjellerup no. 777, flowering in Oct. 1911); Gautier Range, on the north slope, alt. c. 300m, epiphytic in forest on limestone and basalt (K. Gjellerup no. 912, flowering in Nov. 1911).

This plant is very closely related to O. repens Schltr., but according to the description and a copy of Schlechter's sketch, differs in a pointed dorsal sepal, petals less narrowed at the base, relatively coarsely serrated petals, and a less distinct bi-lobed labellum with a shorter middle lobe. It could perhaps later be considered as a variety of O. repens Schltr.

Number 912 differs in the somewhat longer (up to 2.0 cm long) peduncles and the somewhat more distinct bi-lobed middle lobe. The description was prepared exclusively from no. 777, of which only a few detached flowering peduncles and a piece of rhizome were present.

Gjellerup describes the flowers of no. 777 as purple-brown, those of no. 912 as pale red-brown.

Oberonia inversiflora J.J. Sm., in Fedde Rep. X (1912) [sic], 487; in Nova Guinea XII (1913), 14.

Dutch New Guinea : Kloof Bivouac, epiphytic in primary forest (J. B. Sitanala no. 11228, flowering in Jan. 1913).

Oberonia asperula J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 20; [30]. etc.

Dutch New Guinea : Kloof Bivouac (J.B. Sitanala no. 11210, flowering in Jan. 1913).

#### Hippeophyllum Schltr.

Hippeophyllum alboviride J.J. Sm., in Fedde Rep. XI (1912), 135.

Tab. LXXI, 123.

(latin diagnosis)

Dutch New Guinea : At the middle Tor River, alt. c. 25m, on the tops of tall trees (K. Gjellerup no. 744, flowering in Oct. 1911).

The species appears to differ from the two so far described from German New Guinea, viz. H. micranthum Schltr. and H. papillosum Schltr., in the many-leaved stems, the hairiness of the inflorescences, apprec-

iably longer-stemmed, somewhat larger, differently coloured flowers, the not approximately circular anther, etc.

H. hamadryas (Ridl.) Schltr. from British New Guinea, according to the description, has shorter leaves and differently coloured flowers. There are no details regarding the size of the flower, tubercles of the lip, nor length of the flower pedicels.

According to Gjellerup, the flowers and pedicels are white, the lip and column green.

Microstylis Nutt.

Section : Pseudoliparis

Microstylis Zippelii J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 17.

M. moluccana J.J. Sm. var. sagittata J.J. Sm., in Nova Guinea VIII (1909), 32, t. X, 32.

M. moluccana Schltr. (non J.J. Sm.), in Schum. et Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905), 100.

Dutch New Guinea : Near Mankeba, alt. c. 50m, growing on loam (A. Pulle no. 257, flowering in Oct. 1912).

Microstylis wappeana J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915) 3. Tab. LXXI, 124.

(latin diagnosis)

Dutch New Guinea : Geelvink Bay, Jabi Range near Wape, growing terrestrially in forest (R.F. Janowsky no. 317 and without number, flowering in May 1913).

The plant is closely related to M. Zippelii J.J. Sm., but apart from other respects, is recognised by the shape of the lip and the subulate, blunt, non-truncated column-auricles.

According to Janowsky, the flowers are yellow.

Description from herbarium and alcohol-preserved material.

Microstylis epiphytica Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 99; J.J. Sm., in Nova Guinea VIII (1909), 28.

Pseudoliparis epiphytica Finet, in Bull. Soc. Bot. France LIV (1907), 537.

Dutch New Guinea : Gautier Range, on the north slope, alt. c. 400m, in forest on limestone covered with humus (K. Gjellerup no. 891, flowering in Apr. 1911); Giriwo River (R.F. Janowsky no. 164, flowering in July 1912).

Microstylis tubulosa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. V (1907), 1; in Nova Guinea VIII (1909), 35. t. XI, 36.

Dutch New Guinea : Sawia, alt. c. 100m, in forest (K. Gjellerup no. 620, flowering in Aug. 1911).

Microstylis Rhinoceros J.J. Sm., in Bull. Dép. Agric. Néerl. XXII (1909), 21; [sic] etc.

Dutch New Guinea : Beaufort River, alt. c. 80m, in primary forest, growing on loamy soil (A. Pulle no. 302, flowering in Nov. 1912).

Microstylis heliophoba J.J. Sm., in Fedde Rep. XI (1913), 556.

Tab. LXXI, 125.

(latin diagnosis)

Dutch New Guinea : Gautier Range, north slope, alt. c. 700m, in deep shade, in forest, on a thin layer of humus on limestone and basalt (K. Gjellerup no. 865, flowering in Nov. 1911).

The closest relatives of this species are M. undulata Schltr. and M. latipetala J.J. Sm. From the first, according to the description, it differs in the more wavy leaves, many-flowered inflorescences, recurved bracts, ovate sepals, a shorter lip with shorter, narrow, triangular pointed auricles and by a differently shaped swelling; also by the column, which at its base has a short laterally compressed keel, terminating in a tooth. From M. latipetala J.J. Sm. it differs in

longer auricles and a lip with a differently shaped swelling, a different column and shorter anther.

According to the collector, the flowers are Isabel [buff] - coloured, the leaves dark green.

The description is from alcohol-preserved specimens and a few sterile dried ones.

Section : Hololobos?

Microstylis carinatifolia J.J. Sm., in Fedde Rep. XI (1912), 131.

Tab. LXXII, 126.

(latin diagnosis)

Dutch New Guinea : Hinterland of Hollandia, alt. c. 300m, on hills in forest on serpentine (K. Gjellerup no. 969, flowering in Jan. 1912; also living plant in cultivation at Hort. Bog.)

A characteristic species with long, narrow leaves such as for M. stenophylla Schltr., M. graminifolia Schltr. and M. caricifolia Schltr., but with a very differently shaped labellum. In floral structure it is reminiscent of M. Wallichii Lindl., etc., on account of the labellum tri-lobed in front with a bi-lobed antrorse middle lobe.

The flowers are pale yellow-brown or yellow-orange, the leaves pale green or bluish green.

Description from alcohol-preserved as well as dried material.

Section : Crepidium

Microstylis fasciata Schltr., Orch. Deutsch-Neu Guinea (1911), 129.

Dutch New Guinea : Hollandia, alt. c. 50m, in forest borders towards an Imperata covered hill, on laterite covered with a thin layer of humus (K. Gjellerup no. 945, flowering in Jan. 1912).

Geographic distribution : German New Guinea.

I believe that this plant is M. fasciata Schltr. One could take it to be a luxuriant, large-flowered specimen of M. retusa J.J. Sm., or perhaps be considered better as a variety of this species.

Microstylis arachnoidea Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 98.

Dutch New Guinea : On the middle Tor River, alt. c. 20m, in forest, growing on humus (K. Gjellerup no. 715, flowering in Oct. 1911).

Geographic distribution : German New Guinea.

Liparis L.C. Rich.

Section : Hologlossum

Liparis caespitosa Lindl., in Bot. Reg. sub. t. 882; Gen. et Sp. Orch.

32; etc.

Dutch New Guinea : Arfak Range, alt. c. 1600m, epiphytic in forest (K. Gjellerup no. 1108, flowering in Apr. 1912).

Although found at a greater altitude, these specimens do not differ from those collected earlier by Versteeg. At present it cannot be decided whether a variety should be separated.

It is not yet finally decided whether L. caespitosa (Thou.) Lindl. and L. minima (Bl.) Lindl. are con-specific.

I do not know whether the plant described by Schlechter as L. neo-guineensis Schltr. belongs here. In general the description and illustration agree very well with it, except that Schlechter's plant is supposed to have a fairly large basal callus, which is missing in the Javanese and Papuan specimens I have seen and replaced by two small, narrow, widely-separated supra-basal calli.

According to Gjellerup the pseudobulbs, leaves and flowers are pale green.

Section : Platychilus

Liparis latibasis J.J. Sm., in Fedde Rep. XI (1913), 556.

Tab. LXXIII, 127.

(latin diagnosis)

Dutch New Guinea : Gautier Range, north slope, alt. c. 400m,



epiphytic in forest, on limestone and basalt (K. Gjellerup no. 901, flowering in Nov. 1911).

This species follows on best near to L. sympodialis Schltr. and differs from it in shorter, broader, closely juxtaposed, much compressed pseudobulbs, strongly convex sepals and petals, and a lip with a small callus and distinct apex.

According to Gjellerup, the flowers are pale orange.

Only a solitary specimen was collected and preserved in alcohol.

Liparis Pullei J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér XII (1914),

56.

Tab. LXXIII, 128.

(latin diagnosis)

Dutch New Guinea ; Foothills of the Hellwig Range (L.S.A.M. von Römer no. 1335, flowering in Dec. 1900); Beaufort River, alt. c. 100m, epiphytic in primary forest (A. Pulle no. 272, flowering in Nov. 1912).

Schlechter would probably place the species in his section Platychilus. In floral characteristics it is similar to L. cinnabarina J.J. Sm., but is distinguished by size, closely placed extended pseudobulbs and especially by the quite differently shaped column and anther.

Von Römer's specimen consists only of a solitary inflorescence and hence it has not been described.

According to Pulle, the flowers are brown with a green column.

The description is from alcohol-preserved material.

Section : Blepharoglossum

Liparis spectabilis Schltr., Orch. Deutsch-Neu-Guinea (1911), 204.

Tab. LXXIII, 129.

Dutch New Guinea : Oroh Valley, alt. c. 1200m, epiphytic in secondary forest (A. Pulle no. 1188, flowering in Feb. 1913).

Geographic distribution : German New Guinea.

According to the description and sketch this cannot be distinguished from L. spectabilis Schltr. The flowers are somewhat smaller than given in the description of the Type, but Schlechter also mentions a variety with somewhat smaller flowers. With the specimen collected by Pulle the lip is not simply ciliated, but a narrow margin carries dense and short hairs.

The flowers are salmon-coloured, the lip darker, the column pale green.

Herbarium and alcohol-preserved material was to hand.

Liparis indifferens J.J. Sm., in Fedde Rep. XII (1913), 24.

Tab. LXXIV, 130.

(latin diagnosis)

Dutch New Guinea : Hollandia (K. Gjellerup, living plant in cultivation at Hort. Bog. under no. 310).

An insignificant species of the relationship of L. pallida Lindl., etc. with erect inflorescence and small flowers. The labellum is neither broadened nor narrowed towards the apex, the apex slightly crenate with a small tooth in the sinus.

Liparis microblepharon Schltr., Orch. Deutsch-Neu-Guinea (1911), 205.

Dutch New Guinea : Giriwo River, epiphytic in forest (R.F.

Janowsky no. 189, flowering in July 1912).

Schlechter's description and sketch agree very well with this plant.

Liparis riparia J.J. Sm., in Fedde Rep. XI (1913), 557.

L. parviflora J.J. Sm. (nec. Lindl.), in Nova Guinea VIII (1909), 38.

Tab. LXXIV, 131.

(latin diagnosis)

Dutch New Guinea : On the Noord River, in Pandanus and Metroxylon swamps (G.M. Versteeg no. 1089, flowering and fruiting in May 1907); at the foot of Nepenthes Hill, epiphytic in forest on the river

bank (G.M. Versteeg no. 1348, flowering in July 1907); at the mouth of the Reiger River (Djibdja, living plant in cultivation at Hort. Bog. under no. 273).

The delimitation of the species grouped around L. parviflora Lindl. and L. confusa J.J. Sm. is, as already noted by Schlechter (Orch. Deutsch-Neu-Guinea, 266), not so easy. I have reviewed all the material at Buitenzorg, as well as my notes, and have arrived at the following conclusion :

L. parviflora Lindl. is distinguished by robust, thick, carnose, closely packed, two-leaved pseudobulbs, small lanceolate, broadened towards the top, then fairly narrowed, always pointed leaves and long, lax, surrounding inflorescences.

L. confusa J.J. Sm. has a long creeping rhizome, widely-separated, much extended, thin, only slightly swollen towards the base and usually single, sometimes two-leaved pseudobulbs; narrow blunt leaves (if two leaves are present the uppermost one is blunt); erect or only slightly inclined, non-cohesive inflorescences and smaller flowers.

Schlechter remarks that the species, most likely, is identical with L. vestita Rchb.f. from Assam; however, according to the description, Reichenbach's species has close pseudobulbs and pointed leaves, so that the plants probably cannot be con-specific. Furthermore, the plant I described as L. clavigera Ridl. (in Bull. Dép. Agric. Ind. Néerl. XLIII, 34), although probably not identical with this species, is without doubt different from L. confusa J.J. Sm.

As stated above, the typical L. confusa J.J. Sm. has single-leaved pseudobulbs. Often one finds forms which are two-leaved, but do not differ otherwise at all from the Type. I should like to distinguish this two-leaved form as var. bifolia J.J. Sm.

In Buitenzorg a plant from Borneo, collected by A.W. Nieuwenhuis, is being cultivated. It looks different, with robust, two-leaved

pseudobulbs and broader leaves looking fairly different, but in my opinion is not specifically different from L. confusa J.J. Sm.; I suggest it be named var. latifolia J.J. Sm.

As a third variety I consider L. confusa J.J. Sm. var. papuana J.J. Sm., described below. I cannot say whether it agrees with the number given by Schlechter (Orch. Deutsch-Neu-Guinea, 206).

I must agree with Schlechter when he states (l.c.) that the plants listed in Nova Guinea VIII (1909), 38, as L. parviflora Lindl., are not this species, but perhaps L. confusa J.J. Sm., or a new species. The plant is similar in habit to a small L. parviflora Lindl., but differing in smaller flowers and fruit, and a less slender, only slightly bent column. It certainly differs more from L. confusa J.J. Sm., and apart from the floral characters, is easy to distinguish by the shape of the leaves. Initially, I considered perhaps identifying it with L. persimilis Schltr. However, the leaves are narrower and the lip fairly different; furthermore, L. riparia J.J. Sm. was found approximately at sea-level, whilst L. persimilis Schltr., was collected at c. 1000m altitude.

Liparis confusa J.J. Sm., in Fl. Buit. VI, Orch. 275; Atlas Fig. CCXI.

var. papuana J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Sawia, alt. c. 100m, epiphytic in forest (K. Gjellerup no. 600, flowering in Aug. 1911); Arfak Range, in the Ransiki Valley, epiphytic in forest, alt. c. 400m (K. Gjellerup no. 1218, flowering in May 1912); Giriwo River, epiphytic in forest (R.F. Janowsky no. 156, flowering in July 1912).

The variety differs from L. confusa J.J. Sm. var. bifolia J.J. Sm. mainly in the broader leaves, which, however, are narrower than for var. latifolia J.J. Sm. from Borneo. The colouring also does not appear to be quite identical.

I considered it desirable to give a comprehensive description so that the variety is clearly defined.

According to Gjellerup the flowers are pale yellow, the lip a stronger yellow.

Section : Distichon

Liparis Gjellerupii J.J. Sm., in Fedde Rep. XI (1913), 557.

Tab. LXXIV, 132.

(latin diagnosis)

Dutch New Guinea : Gautier Range, on the north slope, alt. c. 400m, on a moss covered tree on a river bank (K. Gjellerup no. 881, flowering in Nov. 1911).

A clearly distinguished species which is best located next to L. Govidjoae Schltr. The almost linear, very blunt petals and the triangular column strongly constricted at the apex, together with other characters, are probably the main differences.

The flowers are orange, the leaves pale green.

Schlechter describes all the pseudobulbs of his species of section Distichon, in Orchidaceen von Deutsch-Neu-Guinea, as starting from a swollen base and narrowing down to the shape of a stem. In none of the known species of the above affinity are the pseudobulbs extended, they are always short. I therefore suspect that the compressed leaf-sheath was considered by Schlechter as a component of the pseudobulb. The facts previously were stated correctly by this author for L. pseudo-disticha Schltr.

Liparis geelvinkensis J.J. Sm., in Fedde Rep. XII (1913), 395.

Tab. LXXV, 133.

(latin diagnosis)

Dutch New Guinea : East coast of Geelvink Bay on the Giriwo River, epiphytic in forest (R.F. Janowsky no. 100, flowering in July 1912).

The species differs from the related L. Gjellerupii J.J. Sm., in

broader leaves, longer bracts and larger flowers.

The shape of the lip is fairly similar to that of L. miniata Schltr., but has a different column.

The described flower had wide-spreading sepals and petals, but it is not definite whether the flower was already fully open.

According to a note of the collector, the flowers were red with a white lip, an unusual colouring within the group; however this needs to be confirmed.

Liparis gautierensis J.J. Sm., in Fedde Rep. XI (1912), 186.

Tab. LXXVI, 134.

(latin diagnosis)

Dutch New Guinea : Gautier Range, on the north slope, alt.c. 700m, epiphytic in forest on limestone and basalt (K. Gjellerup no. 875, flowering in Nov. 1911).

The closest relatives of this species appear to be L. trachyglossa Schltr., L. Govidjoae Schltr. and L. miniata Schltr. The first has much longer and narrower pseudobulbs, differently coloured flowers and a differently shaped lip. L. Govidjoae Schltr. differs in the shortened rhizome, likewise much longer and narrower pseudobulbs, smaller leaves, much shorter rachis, relatively longer bracts, and shorter-stemmed flowers, whilst L. miniata Schltr. is recognised by the much longer and narrower pseudobulbs, shorter leaves, much longer-stemmed flowers, fairly pointed petals, an appreciably larger lip and a relatively much shorter column.

According to Gjellerup, the flowers are pale brown-orange.

Liparis Janowskyi J.J. Sm., in Fedde Rep. XII (1913), 395.

Tab. LXXVII, 135.

(latin diagnosis)

Dutch New Guinea : Giriwo River, epiphytic in forest (R.F. Janowsky no. 210, flowering in July 1912).

Differs from the closely-related L. gautierensis J.J.Sm. in shorter leaves, larger differently coloured flowers and in particular the broad lip.

According to Janowksy the flowers are yellow.

Agrostophyllum Bl.

Section : Dolichodesme

Agrostophyllum mucronatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XIX (1908), 2; in Nova Guinea VIII (1909), t. XIV, 44.

Dutch New Guinea : At the upper Digul [River] (B. Branderhorst, 1909, living plant in cultivation at Hort. Bog. under no. 1); on the way to Mount Goliath (A.C. De Kock, living plant in cultivation at Hort. Bog. under no. 121).

The plant collected by De Kock is a peloric form.

Agrostophyllum lamellatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XXXIX (1910), 1; etc.

Dutch New Guinea : Ridge of the Hellwig Ranges, alt. c. 2600m, epiphytic in primary forest (A. Pulle no. 754, flowering in Jan. 1913).

The solitary flower preserved in alcohol had a non-bi-lobed lip lamella, whilst the latter was beset at the base with two convex longitudinal swellings.

Agrostophyllum cyclopense J.J. Sm., in Fedde Rep. XI (1913), 558.

Tab. LXXVIII, 136.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the east slope, alt. c. 1500m, epiphytic in forest (K. Gjellerup no. 530, flowering in June 1911); Jabi Range, on the south coast of Geelvink Bay, near Wape, epiphytic in forest (R.F. Janowsky no. 361, flowering in May 1913). Closely related to A. lamellatum J.J. Sm., but differs in longer,

thinner, entire-margined leaves with long extended teeth, the former being separated from the sheath by a bent, not straight line. Furthermore differing in smaller flowers, the middle lobe of the lip being broadened upwards, a very differently shaped column, and the column-foot without a longitudinal groove.

The yellow-white flowers were not well enough preserved to enable a sketch to be made.

The column of the flower of A. lamellatum J.J. Sm., previously described by me, had somewhat contracted, as I was able to establish after comparing the plant with A. cyclopense J.J. Sm. In the illustration it is therefore represented as too small and the swelling on both sides of the column at the level of the appendages below the stigma are much too indistinct. Furthermore, the excavation below the said appendage is much less distinct than described and illustrated. I include a new sketch to the illustration of A. cyclopense J.J. Sm.

The specimen from the Jabi Range differs from the Type in somewhat narrower leaves and the almost complete lacking of a tip to the vein. Perhaps a variety may need to be separated off later on when further specimens are to hand.

Section : Euagrostophyllum

Agrostophyllum uniflorum Schltr., in Schum. et Laut., Nachtr. Fl. Deutsch.

Schutzgeb. Südsee (1905), 129; J.J. Sm., in Nova Guinea VIII (1909), 42, t. XV, 47.

Dutch New Guinea: South slope of the Hellwig Range, alt. c. 1750m, epiphytic (A. Pulle no. 784, flowering in Dec. 1912); south coast of Geelvink Bay, Jabi Range, near Wape, epiphytic in forest (R.F. Janowsky nos 309 and 357, flowering in May 1913).

Agrostophyllum brachiatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 1; in Nova Guinea VIII (1909), 38, t. XIII, 42.

var. latibrachiatum J.J. Sm., nov. var.



(latin diagnosis)

Dutch New Guinea : Gautier Range, on the north slope, alt. c. 300m, epiphytic in forest on limestone and basalt (K. Gjellerup nos 827 and 888, flowering in Nov. 1911; also living plant in cultivation at Hort. Bog.)

The somewhat shorter and therefore broader arms at the column appear to be a decisive characteristic. The colour, as far as I have been able to determine, is the same for the cultivated specimen as for the Type.

Agrostophyllum curvilabre J.J. Sm., in Fedde Rep. XI (1912), 274.

Tab. LXXIX, 137.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, on the east slope, alt. c. 1500m, epiphytic in forest (K. Gjellerup no. 512, flowering in June 1911).

Among the species with capitate inflorescences A. compressum Schltr. appears to stand closest to this new species. According to the description, A. compressum Schltr. differs, however, in a different leaf apex, larger flower heads, glabrous flowers, blunt petals, and the column of a less complex structure. The two longitudinal ribs on the middle lobe appear to be missing in Schlechter's species.

With the flowers investigated, the rostellum was missing indicating the possibility of self-pollination.

According to Gjellerup, the flowers are white, the base of the lip pale yellow-brown.

Agrostophyllum patentissimum J.J. Sm., in Mededeel. Herb. Leid. no. 23

(1915), 4.

Tab. LXXX, 138.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near Wape, epiphytic in forest (R.F. Janowsky no. 306, flowering in

May 1913).

This species is evidently closely related to A. fragrans Schltr. and A. verruciferum Schltr., however, apart from some smaller differences in the flowers it is distinguished at once from both by the horizontal protruding leaves.

The flowers, according to Janowsky, are white.

Description from herbarium material.

Section : Oliganthe

Agrostophyllum superpositum Schltr., Orch. Deutsch-Neu-Guinea (1912), 278.

Tab. LXXXI, 139.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near Wape, epiphytic in forest (J.F. Janowsky no. 362, flowering in May 1913).

I consider this very characteristic species to be A. superpositum Schltr., even though Schlechter's comprehensive description differs in several aspects from my observations. The stems are appreciably much shorter than given by Schlechter, but perhaps the specimen collected by Janowsky is only a weak one. Schlechter describes the sepals as oval-longish, but in my copy of Schlechter's sketch they are ovate. I have found only two calli on the base of the lip-lamina, whilst Schlechter describes three of them. Furthermore, in my assessment, the column was of a more complex structure than described by Schlechter.

According to Janowsky's notes, the plant is 30 cm long and has white flowers.

Description is from herbarium material.

Section : Appendiculopsis

Agrostophyllum costatum J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 1; in Nova Guinea VIII (1909), 39, t. XIII, 43.

Dutch New Guinea : East coast of Geelvink Bay at the Giriwo River  
(R.F. Janowsky no. 106, flowering in July 1912).

Aglossorhyncha Schltr.

Aglossorhyncha viridis Schltr., Orch. Deutsch-Neu-Guinea (1912), 321.

Tab. LXXXI, 140.

(latin diagnosis).

Dutch New Guinea : Arfak Range, alt. c. 1700m, epiphytic in forest,  
common at this location (K. Gjellerup no. 1038, flowering in Apr.  
1912).

I believe this species to be A. viridis Schltr., the description generally and, in particular Schlechter's sketch, agree very well. However, in my plant a few small differences are apparent which are lacking in Schlechter's description. Thus the leaves are clearly constricted below the apex and the whole length finely serrated, also the sheath opposite the apex of the lamina has usually a distinct blunt tooth. The margins of the front part of the lip are markedly bent inwards and this part therefore cannot be folded out properly.

The flowers, according to Gjellerup, are green-white.

Aglossorhyncha jabiensis J.J.Sm., in Mededeel. Herb. Leid. no. 23  
(1915), 4.

Tab. LXXXII, 141.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near  
Wape, epiphytic in forest (R.F. Janowsky no. 404, flowering in June  
1913).

The species differs from the description of its most probable  
closest relative, A. viridis Schltr., in the more lanceolate, broader  
leaves, leaf-sheaths beset with a tooth, non-recurved flowers, pointed  
lip, straight column and a much shorter rostellum.

The new species furthermore, is distinguished from the specimen collected by Gjellerup under no. 103B, which I take to be A. viridis Schltr., by broader stalks and longer internodes.

The flowers, according to the collector, are green.

Herbarium and alcohol-preserved material were available.

Aglossorhyncha fruticicola J.J. Sm., in Fedde Rep. XI (1913), 560.

Tab. LXXXII, 142.

(latin diagnosis)

Dutch New Guinea : Arfak Range, Angi Lake, alt. c. 1900m, on low shrubs on granite covered with swampy humus, on the lake shore (K. Gjellerup no. 1115, flowering in Apr. 1912).

In habit this species is distinguished from all others so far described, in much-branched stems whose outermost little branches at times carry leaf-sheaths only. The dimensions of the flowers are different here; the petals blunt, the lip not-pointed and the leaf colour is different.

The lateral sepals were not cohesive; neither is this so with A. biflora J.J. Sm. I do not know whether they became detached as a result of preservation, but this would appear unlikely.

The species of the genus Aglossorhyncha Schltr., which are well separated from Glomera Bl. by the lateral sepals not connate at the base, the labellum not attached to the column, and by the pointed winged column, appear to vary very little in floral characters. However, in habit they are more characteristic.

The flowers of A. fruticicola J.J. Sm., according to Gjellerup, are pale greenish white.

Aglossorhyncha biflora J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 1; in Nova Guinea VIII (1911), 542, t. LXXXV.

Dutch New Guinea : Arfak Range, Angi Lake, alt. c. 1900m, on trees in forest at the lake shore (K. Gjellerup no. 1156, flowering in

Apr. 1912).

Glomera Bl.

Section : Euglomera

Glomera subracemosa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX

(1910), 15; in Nova Guinea VIII (1911), 535, t. LXXXIA.

Dutch New Guinea : Noordwest River, alt. c. 2000m, on a large moss-covered tree (J.A.W. Coenen no. 36).

Glomera sublaevis J.J. Sm., in Fedde Rep. XI (1912), 274.

Tab, LXXXIII, 143.

(latin diagnosis)

Dutch New Guinea : Cyclops Range, east slope, alt. c. 1700m,  
epiphytic in forest (K. Gjellerup no. 519, flowering in June 1911).

This species is closely related to G. subracemosa J.J. Sm., but differs in the non-warty leaf-sheaths, the sepals connate for an appreciable distance, narrower petals, as well as in the shape of the lip and column. According to the description, it appears to be very similar to G. rugulosa Schltr., differing however, in size of the flowers and the shape of the lip and column.

Furthermore, the colour appears to differ from that of the species named. Gjellerup describes it as yellowish white with a large intense orange-yellow spot on the lip.

Glomera jabiensis J.J. Sm., in Mededeel. Herb. Leid. no.23 (1915) 5.

Tab. LXXXIV, 144.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range, near Wape, epiphytic in forest (R.F. Janowsky no. 367, flowering in May 1913).

As far as can be gathered from the description, this species appears to be similar to G. fruticulosa Schltr. It can be distinguished

by the anisophyllous pointed two-toothed leaves, closely warty sheaths toothed at the apex, a longer lip-lamina, the anther not compressed, and by a shorter ovary.

According to the collector, the plant is up to 0.5 cm long, the flowers white, with the lip red at the apex.

Description from herbarium and alcohol-preserved material.

Glomera longicaulis J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915),

5.

Tab. LXXXIII, 145.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range, near Wabe, epiphytic in forest, high up on a tree (R.F. Janowsky no. 403, flowering in June 1913.).

In habit this species is very similar to G. jabiensis J.J.Sm., but has larger leaves and multi-flowered inflorescences. The smaller flowers, however, have larger differences, the sepals being broader and the lateral ones taller, the spur is much shorter, the lip-lamina differently shaped, and the anther compressed at the apex.

According to Janowsky, the stems reach a length of 1.5m and the flowers are white with a red lip.

Only a single piece of dried stem was available.

Glomera Dekockii J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911),

2; etc.

Dutch New Guinea : Hubrecht Valley, alt. c. 3000m, growing terrestrially in swampy primary forest (A. Pulle no. 2456 leg. G.M. Versteeg, flowering in Feb. 1913).

The plant is more robust than the Type. The stems are much branched, the leaves when dry, up to 3.7 cm long and 0.525 cm broad.

Glomera keytsiana J.J. Sm., in Fedde Rep. XI (1913), 558.

(latin diagnosis)

Dutch New Guinea : Johannes Keyts Range, alt. c. 2000m, growing on mossy rocks (J.H.I. le Cocq d'Armandville no. 242, flowering in Dec. 1911).

The plant is very similar to G. Dekockii J.J. Sm., particularly in the flowers, but is easily recognised by the larger, much thinner leaves with the sheath having fewer warts. There are also many differences in the flowers.

According to the collector, the flowers are white with a carmine lip apex and a black apex to the column.

Description is from material preserved in formalin.

Glomera rubroviridis J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 57.

(latin diagnosis)

Dutch New Guinea : Summit of the Wichmann Range, alt. c. 3000m, epiphytic, common (A. Pulle no. 1055, flowering in Feb. 1913).

The closest relatives of this species are G. Dekockii J.J. Sm. and G. keytsiana J.J. Sm.

It differs from G. Dekockii J.J. Sm. in the drooping stem, barely warty sheaths, thinner leaves, different flower colouring, a triangular lip-lamina, etc.; and from G. keytsiana J.J. Sm., likewise in pendent stems with shorter internodes, thicker leaves, with leaf-sheaths bearing a distinct tooth opposite the lamina, differently shaped lateral sepals, and a triangular lip-lamina.

However, I must stress that only a solitary stalk with a single inflorescence was present and that the flowers were too strongly pressed to resume their shape exactly, on soaking.

According to Pulle, the plant is common in the Wichmann Range, but

had almost completely finished flowering. The flowers were pale green with a red lip apex.

Glomera manicata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 15; etc.

Dutch New Guinea : Ridge of the Hellwig Range, alt. c. 2600m, growing terrestrial in primary forest (A. Pulle no. 867, flowering in Dec. 1912).

The stem to hand is 67 cm long and with a few branches.

Glomera transitoria J.J. Sm., in Fedde Rep. XI (1913), 558.

Tab. LXXXV, 148.

(latin diagnosis)

Dutch New Guinea : Arfak Range, at Angi Lake, alt. c. 1900m, epiphytic in forest, on rocks at the east side of the lake shore (K. Gjellerup no. 1160, flowering in Apr. 1912).

An interesting species to be placed directly next to G. manicata J.J. Sm., since it has capitate inflorescences and ciliated leaf-sheaths. However, the plant is more robust than G. manicata J.J. Sm. and has dense multi-flowered inflorescences.

According to Gjellerup, the flowers are yellowish white with a pale red margin to the lip.

Section : Glossorhyncha

Glomera uniflora J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 25; in Nova Guinea VIII (1909), 43, t. XV, 49.

Glossorhyncha uniflora Schltr., in Orch. Deutsch-Neu-Guinea (1912), 295.

Dutch New Guinea : Gautier Range on the north slope, alt. c. 300m, epiphytic in forest on limestone and basalt (K. Gjellerup no. 821, flowering in Nov. 1911); Giriwo River (R.F. Janowsky no. 127, flowering in July 1912); Lorentz River, near the Kloof Bivouac, epiphytic in primary forest (A. Pulle no. 119, flowering in Oct.



1912).

Glomera dubia J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914),

58.

Tab. LXXXVI, 149.

(latin diagnosis)

Dutch New Guinea : Cyclops Range on the east slope, alt. c. 1100m, epiphytic in the forest (K. Gjellerup no. 510, flowering in June 1911).

I have been in doubt whether this plant could perhaps be identical with G. hamadryas (Schltr.) J.J. Sm.. However, this species does not appear to be completely certain yet and the description in many respects does not agree with Gjellerup's plant, apart from [the plant] not being entire, perhaps it is better to consider it as a separate species.

It differs from G. hamadryas (Schltr.) J.J. Sm. in short, compressed stems, broader leaves (Schlechter's dimensions must refer to the dried plant), and as far as can be judged from the description, a differently shaped lip and pear-shaped pollinia.

The flowers are white.

Only a solitary specimen was collected and preserved in alcohol.

G. hamadryas (Schltr.) J.J. Sm. is represented in Buitenzorg by only a solitary sterile specimen.

Glomera geelvinkensis J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915)

6.

Tab. LXXXVI, 150.

(latin diagnosis)

Dutch New Guinea : Geelvink Bay (south coast), on the upper Mino River, epiphytic (R.F. Janowsky no. 396, flowering in June 1913).

The species is probably most closely related to G. adenocarpa (Schltr.) J.J. Sm. According to the description, it differs in shorter

stems, an ovate, shorter and broader lip-lamina, and a shorter spur.

It is noteworthy that the thickening of the lip-lamina is not truncated at the base, but protrudes in a triangular manner.

The flowers are white.

There are dried, as well as alcohol and formalin-preserved specimens to hand.

Glomera rhombea J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 5; etc.

Dutch New Guinea : Dromedaris Range, alt. c. 1250m, epiphytic in primary forest (A. Pulle no. 607, flowering in Dec. 1912);

Bijenkorf Bivouac on the south slope of Mt. Hellwig [Range] alt. c. 1750m, epiphytic in primary forest (A. Pulle no. 696, flowering in Dec. 1912).

Glomera Pullei J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 58.

Tab. LXXXVII, 151.

(latin diagnosis)

Dutch New Guinea : Summit of Wichmann Range, alt. c. 3100m, epiphytic (A. Pulle no. 1025, flowering in Feb. 1913); Ridge of the Kajan Range, alt. c. 3200m semi-epiphytic (A. Pulle, mixed with no. 2472, leg. G.M. Versteeg, flowering in Feb. 1913).

This species is very similar to G. latilinguis J.J. Sm. in floral characteristics, but differs in the thicker stems, broader leaves, non-ciliated leaf-sheaths, larger flowers and the petals strongly contracted at the base.

According to a note of the collector, the flowers are white with a small black stripe on the apex of the lip.

Description from herbarium and alcohol-preserved material.

Glomera fimbriata J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 14; in Nova Guinea VIII (1911), 539, t. LXXXIIC.

Glossorhyncha fimbriata Schltr., in Orch. Deutsch -Neu-Guinea  
(1912), 295.

Dutch New Guinea : Ridge of the Hellwig Range, alt. c. 2500 and  
2600m, usually epiphytic in primary forest (A. Pulle nos 586 and  
866, flowering in Dec. 1912).

var. gracilis J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Kajan Ridge, alt. c. 3200m, semi-epiphytic (A.  
Pulle no. 2472, leg. G.M. Versteeg, flowering in Feb. 1913).

I have described this plant as a variety of G. fimbriata J.J.Sm., since  
it gives the impression of being a weak specimen of that species.  
The dried specimen to hand is insufficient to make a decision with  
certainty as to whether it is specific. The lip of the flower  
examined was insect-damaged.

According to Versteeg, the flowers are white.

Glomera conglutinata J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II  
(1911), 4; in Nova Guinea XII (1913), 25, t. VI, 17.

Glossorhyncha conglutinata Schltr., Orch. Deutsch-Neu-Guinea (1912),  
275.

Dutch New Guinea : Oroh Valley, alt. c. 1100m, epiphytic in primary  
forest (A. Pulle no. 1204, flowering in Feb. 1913); south coast  
of Geelvink Bay, Jabi Range, near Wape, epiphytic in forest (R.F.  
Janowsky no. 355, flowering in May 1913).

It is not quite definite that the plant belongs here.

Glomera salicornioides J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> XIII  
(1914), 59.

Tab. LXXXVIII, 152.

(latin diagnosis)

Dutch New Guinea : Summit of the Wichmann Range, alt. c. 3100m,  
epiphytic (A. Pulle no. 1026 and mixed with no. 1025, flowering

in Feb. 1913).

The labellum and column of this very characteristic plant look very much like those of G. sarcosepala J.J. Sm.; in other respects, however, the plants are so different that a mix-up is out of the question.

On softening in ammonia, the leaves did not revert completely to their normal shape; they are, however, almost terete.

The colour of the flowers is somewhat variable; Pulle describes it as pale green with a dark green column.

Description from herbarium material.

) Glomera Versteegii J.J. Sm., in Bull. Jard. Bot. Buit. 1<sup>e</sup> [2<sup>e</sup>] sér.

XIII (1914), 59.

Tab. LXXXIX, 153.

(latin diagnosis)

Dutch New Guinea : Hubrecht Range, alt. c. 3100m, epiphytic in primary forest (A. Pulle no. 2428 Type, leg. G.M. Versteeg, flowering in Feb. 1913); gorge between the Hubrecht and the Wichmann Ranges, alt. c. 3000m, epiphytic in primary forest (A. Pulle no. 2441, leg. G.M. Versteeg, flowering in Feb. 1913).

) The species is related to G. scandens J.J. Sm., but from which it differs in protruding, not very protruding [sic] and non-two-toothed leaves, appreciably larger flowers, quite differently shaped lateral sepals, narrower petals, longer lip-lamina, and non-compressed spur.

Of both specimen numbers, only a dried piece of stem is to hand, so that the length of the plant, which must be appreciable, is not given. Furthermore, the flower examined had been pressed so strongly that the lip and column did not revert to the natural shape, hence the description is somewhat uncertain.

For no. 2458 Versteeg noted the colour of the flowers as green-white, and for no. 2441 yellow-green.

Glomera compressa J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XLV (1911),  
2; in Nova Guinea VIII (1911), 540, t. LXXXIII, A.

Glossorhyncha compressa Schltr., Orch. Deutsch-Neu-Guinea (1912),  
293.

Dutch New Guinea : Noordwest River, alt. c. 2700m, growing in damp  
moss on limestone (J.A.W. Coenen no. 42); Ridge of the Hellwig  
Range, alt. c. 2600m, epiphytic in primary forest (A. Pulle, mixed  
with no. 866, flowering in Dec. 1912); Ridge of the Treub Range,  
alt. c. 2400m, epiphytic (A. Pulle no. 1064, flowering in Feb. 1913).

Section : Giulianettia

) Glomera grandiflora J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX  
(1910), 14; etc.

Dutch New Guinea : Ridge of the Hellwig Range, alt. c. 2600m,  
epiphytic (A. Pulle no. 865, flowering in Dec. 1912).

The flowers are the same size as those of the Type, but the leaves  
are shorter.

Glomera Fransseniana J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII  
(1914), 60.

Tab. XC, 154.

(latin diagnosis)

) Dutch New Guinea : Gorge between the Wichmann and the Hubrecht  
Ranges, alt. c. 2800 - 3000m, epiphytic in primary forest (A.  
Pulle no. 2404, leg. G.M. Versteeg, flowering in Feb. 1913).

The species differs from G. grandiflora J.J. Sm. especially in  
the smaller flowers, and a shorter, broader lip-lamina, making an  
obtuse angle with the spur; also from the likewise related G. carnea  
J.J. Sm., in longer leaves, larger flowers and likewise, in the short,  
broad lip-lamina, making an obtuse angle with the spur. Due to  
strong pressing, the shape of the components of the column could only  
partially be determined.

Only dried material was available.

According to Versteeg's statements, the flowers were a pallid pink-brown, the bracts pale brown.

I have dedicated the species to Captain A. Franssen Herderschee, the leader of the Third South-New-Guinea Expedition.

Mixed with the above material were three little branches in fruit, which I assumed belong elsewhere.

Glomera fruticula J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. II (1911), 5; etc.

Dutch New Guinea : Summit of the Wichmann Range, alt. c. 3000m, (A. Pulle no. 994, flowering in Feb. 1913); Ridge of the Kajan Range, alt. c. 3200m, epiphytic (A. Pulle no. 2468, leg. G.M. Versteeg, flowering in Feb. 1913).

The flowers of no. 994 are somewhat smaller than those of the Type.

Glomera salmonea J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 60.

Tab. XCI, 155.

(latin diagnosis)

Dutch New Guinea : Ridge of the Hellwig Range, alt. c. 2600m, in primary forest (A. Pulle no. 894, flowering in Jan. 1913).

The species is closely related to G. fruticula J.J.Sm. and can immediately be recognised by the larger leaves which give the plant a quite characteristic appearance. Furthermore, G. salmonea J.J. Sm. has somewhat smaller flowers with thinner sepals and petals, more markedly curled back at the margins, a small lip with an appreciably shorter and thinner spur, a thin column, more extended at the apex, and with a rough crenate clinandrium; and with thinner and more delicate bracts, all of about the same length.

The flowers, as often the leaves, are according to Pulle's notes, salmon-coloured, the apex of the lip black.

Description from herbarium specimens.

Glomera microphylla J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII  
(1914), 61.

Tab. XCII, 156.

(latin diagnosis)

Dutch New Guinea : Ridge of the Treub Range, alt. c. 2400m,  
epiphytic (A. Pulle no. 1065, flowering in Feb. 1913).

This very characteristic species is placed in the section  
Giulianettia, even though the delicate nature of the flowers is more  
reminiscent of Glossorhyncha. It has the smallest leaves of all the  
species of this relationship so far described; noteworthy also are the  
very short bracts and the very long, thin spur.

According to Pulle, the flowers are pale green, the labellum with  
muddy-brown margins.

Mediocalcar J.J. Sm.

Mediocalcar cluniforme J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915),  
6.

Tab. XCIII, 157.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near  
Wape, epiphytic in forest (R.F. Janowsky no. 417, flowering in  
June 1913).

This species appears to be very similar to M. robustum Schltr.  
in floral structure and differs furthermore in the more compressed  
pseudobulbs, smaller leaves, single, differently-coloured flowers, and  
the column-foot with larger auricles.

According to Janowsky's notes, the rhizome is 0.5m long, the  
flowers red with yellow tips.

Description from herbarium and alcohol-preserved material.

Mediocalcar bifolium J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX  
(1910), 17.

Dutch New Guinea : Ridge of the Hellwig Range, alt. c. 2600m,  
epiphytic in primary forest, common (A. Pulle no. 858, flowering  
in Dec. 1912).

The uppermost pseudobulbs are single-leaved.

Mediocalcar alpinum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. XIII  
(1914), 62.

M. bifolium J.J. Sm. var. validum J.J. Sm., in Nova Guinea XII  
(1913), 30.

(latin diagnosis)

Dutch New Guinea : Mount Goliath, alt. c. 3200m, on rocks covered  
with mossy humus, growing in shady locations, common, in groups  
(A.C. De Kock no. 68 and 143, flowering in Mar. 1911).

The differences from M. bifolium J.J. Sm. are too large to regard  
the plants as varieties, so that I have been compelled to set up a new  
species.

The differences from the very closely related, but habitually  
different looking, M. dependens J.J. Sm. have been stated under the  
latter.

The flowers, according to De Kock, are bordeaux-red, with a green  
margin.

The specimens to hand were preserved in formalin.

var. spathipetalum J.Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Gorge, between the Wichmann and the Hubrecht  
Ranges, alt. c. 3000m, epiphytic in primary forest (A. Pulle no.  
2445, leg. G.M. Versteeg, flowering in Feb. 1913).

In habit this plant is similar to no. 68 of De Kock, but the  
shape of the petals is different. Only dried material was to hand.



The ovary and flowers, according to Versteeg, are red, green towards the top.

Mediocalcar dependens J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII (1914), 62.

(latin diagnosis)

Dutch New Guinea : Ridge of the Treub Range, alt. c. 2300m, epiphytic (A. Pulle no. 1059, flowering in Jan. 1913).

The closest relatives of this species are probably M. bifolium J.J. Sm. and especially M. alpinum J.J. Sm., where the flower colour is similar.

It differs from M. bifolium J.J. Sm. in longer, narrower leaves, a different flower colour, shorter sepal tips, the lip with a larger claw and narrower pouch and short anther; and from M. alpinum J.J. Sm., in smaller dimensions, thinner pseudobulbs and rhizome, narrower leaves and smaller flowers. Furthermore, M. alpinum J.J. Sm. appears to have a creeping rhizome, while with M. dependens J.J. Sm. it is pendent.

The three species named appear initially to be different, but especially for M. bifolium J.J. Sm. and M. alpinum J.J. Sm. only very scanty material was available, so that the constancy of characters of these closely related plants would need to be proved from further material.

I have already stated several times that with the same species or specimens of Mediocalcar the number of oversize flowers varies, the larger ones being the older. Clearly these flowers, as well as those of several other orchids, continue to grow after opening.

According to Pulle, the flowers are red, with pale green tips.

Only formalin-preserved material was to hand.

Mediocalcar arfakense J.J. Sm., in Fedde Rep. XI (1913), 559.

(latin diagnosis)

Dutch New Guinea : Arfak Range, alt. c. 1600m epiphytic in forest  
(K. Gjellerup no. 1071, flowering in Apr. 1912).

According to Schlechter's classification, this plant belongs to section Eu-Mediocalcar. The two-flowered species of this German New Guinea section are distinguished from it [M. arfakense J.J. Sm], by the following characteristics:

M. robustum Schltr. has longer, slightly pointed leaves, an approximately round lip-lamina, longer spur, and different colour.

M. kaniense Schltr. has pointed lateral sepals, linear-lanceolate petals, a short column-foot, blunt anther, and likewise a differently coloured apex.

For M. stenopetalum Schltr. the petals are falcate, the column-foot almost non-existent, and the anther with a short apex.

M. latifolium Schltr. is distinguished in particular by the shape of the pseudobulbs and broader leaves.

Finally, M. angustifolium Schltr. has shorter pseudobulbs, ovate-lanceolate lateral sepals, and a pointed lip.

According to Gjellerup, the creeping stems grow to 1.0m long and are brown, the leaves pale green, and the flowers red-orange with yellow tips.

The description was made from herbarium and alcohol-preserved young shoots.

Mediocalcar bulbophylloides J.J. Sm., in Fedde Rep. XI (1913), 560.

Tab. XCIII, 159.

(latin diagnosis)

Dutch New Guinea : Arfak Range at Angi Lake, alt. c. 1900m, epiphytic in forest (K. Gjellerup no. 1110, flowering in Apr. 1912).

This species differs from all single-leaved ones so far described

from German New Guinea, in the combination of two inflorescences, and the lip having a short pouch.

The recorded colour, pink, is unusual in the genus.

Mediocalcar crassifolium J.J. Sm., in Fedde Rep. XI (1913), 559.

Tab. XCIV, 160.

(latin diagnosis)

Dutch New Guinea : Arfak Range, at Angi Lake, alt. c. 1900m, epiphytic in forest (K. Gjellerup no. 1089, flowering in Apr. 1912).

Schlechter would probably place the species into his section Microcalcar. However, it differs from the two species placed there, in the differently shaped mentum, the markedly inwards-bent column-foot and in the labellum, which on account of the shape of the pouch, is intermediate between the two Schlechter species.

The creeping stems, according to Gjellerup, are 30cm long, the flowers brown-red with yellow tips.

Mediocalcar geniculatum J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. III (1912), 18; in Nova Guinea XII (1913), 31, t. VIII, 22.

Dutch New Guinea : Arfak Range, alt. c. 1600m (K. Gjellerup mixed up with no. 1071, flowering in Apr. 1912).

Probably belongs here.

#### Epiblastus Schltr.

Epiblastus cuneatus J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 22; in Nova Guinea VIII (1909), 45, t. XVI, 51.

Dutch New Guinea : Noordwest River, alt. c. 2300m, on damp very mossy ground, on limestone (J.A.W. Coenen no. 31, flowering in June 1912).

The specimen is incomplete.

var. unguiculatus J.J.Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Kajan Ridge, alt.c. 3200m (A. Pulle no. 2470, leg. G.M. Versteeg, flowering in Feb. 1913).

I have described this plant provisionally as a variety of E. cuneatus J.J. Sm. It differs from the Type in larger flowers, but especially in a wavy lip with a much longer claw attached higher up the column-foot, and suddenly with a much-broadened lamina. Furthermore, the flowers of the Type are described as carmine-red; those of the variety, violet. It is possible that this plant could later on be separated as a species. The above-mentioned specimen collected by Coenen is, in general, similar to the Type, but has larger flowers, described as being dark violet.

Clearly, as can be seen from Schlechter's statements, more abundant alcohol-preserved flowers and an exact description of the flower colour is essential before the species of this genus can be distinguished with certainty.

Of the variety described here, only a herbarium specimen and poorly alcohol-preserved flowers are available.

Epiblastus? lancipetalus Schltr., Orch. Deutsch-Neu-Guinea (1911), 137.

(latin diagnosis)

Dutch New Guinea : Gautier Range on the north side, alt. c. 500m, epiphytic in forest on limestone and basalt (K. Gjellerup no. 846, flowering in Nov. 1911).

I have listed this plant as E. lancipetalus Schltr., since no essential differences appear to exist. However, the peduncles described by Schlechter are up to 6.5 cm long, whilst for the Gjellerup specimen, they reach a length of 7.5 - 11.0 cm.

Judging by the descriptions, I believe, furthermore, that some of the species created by Schlechter are separated by insufficiently distinct characteristics for them to be retained as such in the long run.

Epiblastus Pullei J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> ser. XIV  
(1914), 57.

Tab. XCV, 161.

(latin diagnosis)

Dutch New Guinea : Ridge of the Hellwig Range alt. c. 2500m (A.  
Pulle no. 571, flowering in Dec. 1912).

In common with E. basalis Schltr., this species has a much-  
shortened rhizome. This specimen would appear to be a very young one  
that has just started to flower, so it is possible that the rhizome  
could extend later on.

) According to the floral characters, the plant definitely is most  
closely related to E. auriculatus Schltr., since they have in common  
the lip with basal auricles, but it differs in the much-compressed  
pseudobulbs, broader leaves, blunt, strongly concave sepals, a longer  
ovary, etc. Furthermore, E. Pullei J.J. Sm. was collected at a  
higher altitude than Schlechter's species.

Unfortunately, the leaf tips were missing; it appears that they  
had been cut off.

Pulle describes the colour of the flowers only as red.

) Description from an alcohol-preserved plant.

#### Ceratostylis Bl.

Section : Euceratostylis

Ceratostylis albiflora J.J. Sm., in Bull. Dép.Agric. Ind. Néerl. XIX  
(1908), 11; in Nova Guinea VIII (1909), 46, t. XVI, 52.

C. leucantha Schltr., Orch. Deutsch-Neu-Guinea, 245 (sphalm.).

Dutch New Guinea : Gautier Range, on the north slope, alt. c.  
500m, epiphytic in forest on limestone and basalt (K. Gjellerup  
no. 840, flowering in Nov. 1911).

Ceratostylis arfakensis J.J. Sm., in Fedde Rep. XII (1913), 394.

## Tab. XCV, 162.

(latin diagnosis)

Dutch New Guinea : Arfak Range, alt. c. 1800m, epiphytic in forest, common (K. Gjellerup no. 1037, flowering in June 1912).

Although clearly related to C. platychila Schltr., I cannot risk uniting the two plants without having seen a specimen. According to the description, the new species differs from C. platychila Schltr. in the clawed lip, non-crenate at the base, with short hairs on the margin and lateral ridges; in longer petals, and the anther not compressed at the apex.

The colour of the flowers, as stated, is white.

Herbarium and alcohol-preserved specimens were collected.

Ceratostylis ciliolata J.J. Sm., in Fedde Rep. XI (1912), 275.

## Tab. XCV, 163.

(latin diagnosis)

German New Guinea : On the upper Kaiserin-Augusta [Sepik] River, alt. c. 400m, epiphytic in forest (K. Gjellerup no. 410, flowering in Nov. 1910).

As described, this species differs from the closely related C. nivea Schltr. in shorter, thicker, small peduncles, thicker often furrowed leaves, a ciliated fairly pointed lip slightly thickened at the apex, and the anther not being two-toothed.

The flowers are very similar to those of C. albiflore J.J. Sm. (C. leucantha Schltr. sphalm. Orch. Deutsch-Neu-Guinea, 245); this plant, however, has smooth leaves.

The very sparse material was preserved in alcohol.

The flowers were pure white.

Ceratostylis humilis J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XIX (1908), 11; in Nova Guinea VIII (1909), 48.

Dutch New Guinea : East coast of Geelvink Bay on the Giriwo River.  
epiphytic in forest (R.F. Janowsky nos 120 and 147, flowering in  
July 1912).

The specimens have a slightly broader lip than the Type.

Ceratostylis indifferens J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.  
XXXIX (1910), 6; etc.

Dutch New Guinea : Lorentz River, near the Kloof Bivouac,  
epiphytic in primary forest (J.B. Sitanala no. 11216, flowering  
in Jan. 1913).

Ceratostylis recurva J.J. Sm., in Bull. Dép. Agric. Ind. Néerl. XXXIX  
(1910), 6; etc.

Dutch New Guinea : Lorentz River near the Kloof Bivouac (J.B.  
Sitanala no. 11215, flowering in Jan. 1913).

The plant is compact, the stems up to 0.9 cm long and 0.125 cm  
thick, the leaves up to 1.75 cm long and 0.12 cm thick.

Ceratostylis alpina J.J. Sm., in Bull. Jard. Bot. Buit. 2<sup>e</sup> sér. XIII  
(1914), 62.

Tab. XCVI, 164.

(latin diagnosis)

Dutch New Guinea : Gorge between the Hubrecht and the Wichmann  
Ranges, alt. c. 3000m, epiphytic in primary forest (A. Pulle no.  
2440, leg. G.M. Versteeg, flowering in Feb. 1913).

According to the description, the species appears to show the  
most similarity with C. phaeochlamys Schltr. The little floral  
clusters, however, are not multi-flowered, since always only one flower  
at a time opens, the flowers are smaller and have a broader lip and  
shorter column-foot.

Of all the known species, this one grows at the highest altitude  
in the mountains.

The flowers according to Versteeg's notes are red-brown.

Description from herbarium specimens and an alcohol-preserved end of a stem, and a somewhat compressed flower.

Ceratostylis formicifera J.J. Sm., Bull. Dép. Agric. Ind. Néerl. XXXIX (1910), 5; in Nova Guinea VIII (1911), 544, t. LXXXVIB.

var. giriwoensis J.J. Sm., nov. var.

(latin diagnosis)

Dutch New Guinea : Giriwo River, epiphytic in forest (R.F.

Janowsky no. 135, flowering in July 1912).

The variety differs from the Type in thinner leaves, furrowed above to the apex, and in the much-shortened tip of the lip.

According to the collector the flowers are pale violet.

Ceratostylis parciflora J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915),

7.

Tab. XCVII, 165.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near Wape, epiphytic in forest (R.F. Janowsky no. 356, flowering in May 1913).

The new species differs from the related C. formicifera J.J. Sm. in thinner stems, thinner leaves, furrowed to the apex, longer flowers with a straight, non bi-lobed mentum, and an almost straight non-auricled lip, convex at the apex.

Description from herbarium and alcohol-preserved material.

The colour of the flowers is given as violet with a yellow lip.

Ceratostylis acutilabris J.J. Sm., in Mededeel. Herb. Leid. no. 23 (1915),

6.

Tab. XCVII, 166.

(latin diagnosis)

Dutch New Guinea : South coast of Geelvink Bay, Jabi Range near Wape, epiphytic in forest (R.F. Janowsky no. 341, flowering in



May 1913).

The species appears to be fairly similar to C. resiana J.J. Sm. in regard to the flowers, but differs in the leaves.

The colour of the flowers, as stated, is pale carmine-red, with a yellow lip.

Descriptions from herbarium and alcohol-preserved material. All the tips of the leaves were missing.

Ceratostylis longicaulis J.J. Sm., in Fedde Rep. XI (1912), 275.

Tab. XCVII, 167.

(latin diagnosis)

Dutch New Guinea : Cyclops Range on the east slope, alt. c. 1500m, epiphytic in forest, fairly common (K. Gjellerup no. 516, flowering in June 1911).

This species is very closely related to C. acutifolia Schltr., but according to the description differs in a shorter mentum, longer middle lobe of the lip, shorter column; the anther reniform. Without comparing the plants, it cannot be established whether it is perhaps only a variety of C. acutifolia Schltr.

The flowers are pale yellowish pink with an intense yellow lip and yellowish white anther; the leaves are pale blue-green.

Ceratostylis longifolia J.J. Sm., in Bull. Dép. Agric. Ind. Néerl.

XXXIX (1910), 6; etc.

Dutch New Guinea : Ridge of the Hellwig Range, alt. c. 2500m, epiphytic in primary forest (A. Pulle no. 588, flowering in Dec. 1912).

Pseuderia Schltr.

Pseuderia Schltr., Orch. Deutsch-Neu-Guinea (1912), 644.

(latin diagnosis)

Schlechter has quite rightly separated the species grouped around

Dendrobium foliosum Brongn. as a separate genus, but his diagnosis of the genus is inaccurate in many respects, hence I consider it pertinent to give a new description.

It should be noted that the leaves are convolute.

The column, at least for those species known to me, is surrounded by the petals and labellum, which are parallel to it; sometimes it is markedly bent and constricted below the margin of the dentate clinandrium. The foot, although only short, is very distinct; Schlechter did not earlier describe it, but corrected it for Dendrobium simile Schltr. and D. frutex Schltr.

) Especially noteworthy are the pollinia. These are present in pairs, showing on the upper side a deep longitudinal groove, which does not continue to the end; underneath there is a longitudinal groove in the middle. Both grooves correspond at the middle, so that the two halves are independent. Initially, I thought that four pollinia were present, being cohesive at the base, in pairs, but with none of the three species investigated could they be separated without being damaged.

) The fruit is not cylindrical, but distinctly three-sided for P. foliosa Schltr. and P. diversifolia J.J. Sm. Pseuderia brevifolia J.J. Sm., in Fedde Rep. XII (1913), 121.

Tab. XCVIII, 168.

(latin diagnosis)

Dutch New Guinea : On the east coast of Kajo Bay near Hollandia, alt. c. 20m, in forest on a coral rock growing in sparse humus and scandent on a tree (K. Gjellerup no. 974, flowering in Jan. 1912).

This species is distinguished from all others by the short leaves and short ovary; and from Schlechter's species by the labellum, which is completely papillose, except for on the ridge. Furthermore, it is distinguished from P. frutex Schltr. by its fewer-flowered

inflorescences and not-pointed bracts; from P. similis Schltr. by the shorter sepals and distinctly narrower petals; from P. pauciflora Schltr., by the mostly widely protruding leaves, differently shaped bracts, very blunt lip, and entire dentate clinandrium; from P. floribunda Schltr. by the shape of the bracts and fewer-flowered inflorescences; from P. wariana Schltr. by the nowhere-near-equal length of the sepals; and finally from P. trachychila (Krzl.) Schltr. by the blunt lip.

According to Gjellerup, the plant reaches a height of 7m. The leaves are pale bluish green, the flowers fragrant, the sepals sulphur-yellow with numerous red dots, the petals yellowish white with less numerous violet dots, the lip at the apex with a large irregular yellow-brown spot, and the column apex is violet.

Pseuderia diversifolia J.J. Sm., in Fedde Rep. XII (1913), 121.

Tab. XCIX, 169.

(latin diagnosis)

Dutch New Guinea : Berkombor, Tor River, alt. c. 25m, on trees in forest (K. Gjellerup no. 760 (Type), flowering and fruiting in Oct. 1911); hinterland of Hollandia, epiphytic in forest (K. Gjellerup no. 661, flowering in Sept. 1911).

The species is related to P. trachychila (Krzl.) Schltr. on account of the large leaves, which, however, become appreciably smaller towards the apex.

The description was made only from no. 760. The flowers of no. 661 differ, in so far as the lip gradually narrows towards the apex, is not at all constricted, and the keel of the anther is straighter on the back.

According to Gjellerup, the plant climbs up to 3 - 4m, the old leaves are dark green, the young ones coloured violet, the flowers yellow with brown-violet dots. For no. 661, the flowers are described

as being white or pale pink with violet dots. From the preserved material it cannot be decided whether a variety could be separated off here.

Dendrobium Sw.

Section : Cadetia

Dendrobium ordinatum J.J. Sm., in Fedde Rep. XII (1913), 27.

Tab. XCVIII, 170.

(latin diagnosis)

[Ed. For possible priority considerations, it should be noted that genera and species described in Vol. XII, Part III, which terminates at this point, were published in 1915. The text in Vol. XII, Part IV, published in 1916, now continues from this point].

Dutch New Guinea : Hollandia, on the east side of Kajo Bay, epiphytic in forest on marine rocks (K. Gjellerup no. 973, flowering in Jan. 1912).

This plant I initially considered as D. funiforme Bl., but from which it differs, according to the description and illustration, in the tri-lobed labellum. In Leiden I have been able to establish that the lip of D. funiforme Bl. is actually undivided. D. ordinatum J.J.Sm., furthermore, has narrower leaves.

D. warianum (Schltr.) J.J.Sm., according to the description, can hardly be separated from D. funiforme Bl.

Dendrobium subradiatum J.J.Sm., in Fedde Rep. XII (1913), 27.

Tab. C, 171.

(latin diagnosis)

Dutch New Guinea : Arfak Range, at Angi Lake on bare rock walls, alt. c. 1900m (K. Gjellerup no. 1109, flowering in Apr. 1912).

This species also belongs to the relationship of D. funiforme Bl., but differs from it and its relatives in all segments.

The flowers are white.

