

# ***Some Orchids of West New Guinea***

**John van Bodegom**

**A translation into English of**

## ***Enige Orchideeën van West Nieuw Guinea***

**as published 1973**

**with introduction, contents, place name listing, references and index.**

**G Nieuwenhoven & J T Simmons**



**Paphiopedilum praestans  
(syn. P. bodegomensis & P. bodegomii)**



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



*The Australian Orchid Foundation*





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***van***

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by

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Translation: G. Nieuwenhoven

Editor: J. T. Simmons

Manuscript completed: 1985

First published: 1990 (hardcopy)

with the approval of Mrs Bodegom-Endert, Enschede, Netherlands

Digital version: 2021

Publisher: The Australian Orchid Foundation

[www.australianorchidfoundation.org.au](http://www.australianorchidfoundation.org.au)

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INTRODUCTION TO THE ENGLISH EDITION

John van Bodegom died on 27th October 1977 after a short illness, at the age of 67. During his lifetime, he had established himself as a first class naturalist, with an enquiring mind and an eye for detail, both of which are reflected in his writings.

His particular interest and dedication was the collection and study of orchids. This interest had developed in his earlier formative years, as he grew up in northern Sumatra, where his father had been a planter.

He was educated and trained in India, as an Administrative Officer in the Dutch Government Civil Service. In 1953 he was appointed to the position of Resident Commissioner at Manokwari, in Dutch New Guinea, a position he held until 1962, when the Territory was ceded to Indonesia and became Irian Jaya.

During his service at Manokwari, he actively pursued the collection and study of orchids from many parts of Dutch New Guinea, including the offshore islands. His residence at Manokwari has been described as resembling a miniature Botanic Garden. It was during this period, that he became a regular contributor of articles and illustrations to the periodical 'Orchideeën', a practice which was to continue up to the time of his death.

On his return to the Netherlands from Dutch New Guinea, he was appointed Head of the Personnel Department of the Technical High School at Enschede, a position he held until he retired in 1972. During this period at Enschede, his extensive notes, illustrations and photographs of orchids from Dutch New Guinea, became the subject of this volume, produced in 1973 by the staff and students of school. It was treated as a private printing, limited to a modest number of copies and distributed gratis to botanists, taxonomists and herbaria interested in New Guinea orchids.

Van Bodegom made no pretensions of having produced a 'botanical work', although he made good use, for comparative purposes, of the work of J.J. Smith and Rudolf Schlechter and perhaps to a lesser degree, that of Dakkus, Latif and Holtum.

In editing a translation, particularly one covering a scientific subject such botany, it becomes a major obligation to ensure that the finished work is a fair and accurate expression of the views of the author, and not what the

translator or editor believes the author should have said. Mindful of these constraints, a degree of latitude has been taken to give the English text better clarity, than the literal translation would normally provide. The author in his original text made little use of descriptive botanical terms, and in other areas used words, for example 'stem' and 'stalk', quite correctly, but with very wide meaning. Terms such as 'lance-shaped', 'spatula-shaped', 'club-shaped', have become 'lanceolate', 'spathulate', 'clavate' etc., and where 'stem' or 'stalk' occurs, the appropriate botanical term has been substituted, so the use of 'petiole', 'peduncle' and 'pedicel' are the editor's not the author's. Where species names used by the author, have been reduced to synonymy, the currently accepted name, sometimes with an editorial note, has been added in square brackets. Author citations, which were sparsely used in the original text have been included without comment.

Although the collection described here was made in Dutch New Guinea, including the offshore islands, there are numerous references to other parts of New Guinea. The northern section to the east and including the Bismark Archipelago, was formerly German New Guinea, which became the Mandated Territory of New Guinea after the 1914-18 War. The territory to the south, which had originally been British Papua and later the Territory of Papua, was combined with the Mandated Territory and became Papua New Guinea when independence was granted in 1975. For clarity, the name Papua New Guinea has been used for all areas, other than Irian Jaya.

Three appendices have been added to this English edition. One is a list of the major collection locations mentioned in the text, with their appropriate co-ordinates, where they could be located. Since the transfer of Dutch New Guinea to Indonesia in 1962, and the subsequent name change to Irian Jaya, many names of Dutch origin, which had been used for physical features, have been changed. This applies particularly to rivers, mountain ranges, lakes etc. On the other hand, many towns and villages whose nomenclature derivations were Melanesian or possibly Malayan have been retained. The notable exception here is Hollandia, which was changed to Jayapura, probably because of its Dutch association. The second appendix lists the major non-serial book references, used by the author. These have been checked and in a few cases, corrected without comment. Unfortunately, access to the serial publications, and in particular the pre-war publication in Java of 'De Orchidee' was not available to the editor, so the author's original citations have been re-quoted without checking. Finally, a scientific index of genera and species mentioned in the text has been added.

J.T. Simmons

Adelaide-November 1985.

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FOREWORD

The manuscript of these descriptions was started in west New Guinea between 1954-1962, with notes made from orchids collected in this part of the world.

When the material increased, and to aid my memory, photographs and drawings were made, it occurred to me to share this knowledge with others interested in orchids. Encouraged by the interest shown by the former Governor, Dr. P. J. Platteel and also Prof. Dr. H.J. Lam, at that time Director of the Government Herbarium in Leiden, this manuscript was prepared as a Government publication, However, through the handover of west New Guinea [now Irian Jaya] to Indonesia this plan was never realised.

I have largely to thank the committee of the Technical College Twente at Enschede for the fact that after more than ten years a print was produced, enabling me with their willing help and some enthusiastic helpers in the typing room and Reproduction Department, to make this book a reality.

At this point I would like to thank Miss W.G. Bakker and her team, also Messrs. A. van Dam and E. Verbeek, the former the Head, and the latter the Photographer of the Reproduction Department. I often felt it was through their perseverance rather than mine, that this work was brought to a finish.

J. van Bodegom

For the many hundreds of orchids found in New Guinea (east and west) there are botanical descriptions available, although the list is probably nowhere near complete. Some species have found their way into popular books and periodicals. Although the botanical works are indispensable, they are generally unavailable to the interested public, through their rarity, cost or inaccessibility. However, I have mentioned the two most important works pertaining to the Mandated Territory of Australian New Guinea [now Papua New Guinea] - 'Die Orchidaceen von Deutsch-Neu-Guinea' by Dr. R. Schlechter and the descriptions of Dr. J.J. Smith in 'Nova Guinea' as follows :

Vol. VIII	Part I	Page	1-148
Vol. VIII	Part III	Page	522-611
Vol. XII	Part I	Page	1-108
Vol. XII	Part III	Page	173-272
Vol. XII	Part IV	Page	273-477
Vol. XIV	Part III	Page	337-516
Vol. XVIII	Part I	Page	9-85

Schlechter's works include an atlas which is now very rare. [Ed. Facsimile edition published in 1974.]

'Nova Guinea' contains excellent drawings for each plant described for the first time. The scientific expeditions which included orchid collecting, however, covered only part of this island and never reached the far western area. Fak Fak, the Vogelkop and the coastal islands, the interesting over-bridging area between New Guinea and Malesia, was never covered. Therefore the collector can expect a few surprises. Other books which barely cover New Guinea, but could be of considerable use are the works of P.M.W. Dakkus, 'Orchideeën in Ned-Indië Gekweekt Kunnen Worden' (1931) 2nd edition, (1935) 3rd edition, S.M. Latif's 'Bunga Anggerik' (1953), the 'Flora of Malaya' Vol. 1 'Orchids' by R.E. Holttum (1953) 1st edition, (1957) 2nd edition (1964) 3rd edition and the pre-war Indonesian publication, 'De Orchidee'.



## GENERAL COMMENTS

Since it would take too long to undertake a complete classification of the genera in this book, the terminology, cultural methods, diseases and other items of interest are referred to in the above mentioned works. One is expected to be critical at all times, especially regarding the drawings and plates; this is also valid for the contents of this book.

No description is ever perfect or complete. Observation of many plants under a variety of circumstances is needed to give a somewhat reliable approximation, particularly regarding the apparent plant features. Particularly, the description of plant dimensions is a risky business. The orchids of New Guinea, particularly the *Dendrobiums*, show a tendency to variation, an observation also noted by J.J. Smith. Partly through their variability, probably more separate species have been made [named] than is completely justifiable. The author of this book has not been prepared to tread this path. Even though the average amateur has no great interest in explanation of botanical detail, it cannot be completely ignored. Through long handling of popular books by i.e. Dakkus and Latif, one finds that the over-all description of apparent features hardly ever leads to identification. Therefore, there has been an attempt to try and illustrate plant and flowers of every species clearly with photographs beside a description of botanical details. Unfortunately, not all the photographs, which were made with a simple reflex camera to assist my own documentation, were found to be suitable for reproduction.

A few comments about pests and diseases may be of assistance. Referring to the general comments in the book by Dakkus - unfortunately, it has been found that all the insects and fungi he mentioned also occur in New Guinea. Especially the caterpillars of the Blue Orchid-Butterfly

can do a great deal of damage, which will interfere with flowering. Flowering periods are sometimes mentioned. However, in areas of a not very pronounced wet and dry seasons these may not always apply.

In addition to this, as is well known, plants that are diseased or have been recently collected, will often flower completely out of season. Due to circumstances, mainly low-land plants have been described. These are in many areas more easily cultivated and more readily available. Even regarding these orchids, the collection of described genera that could be of interest to the hobbyist is far from complete.

## DESCRIPTION OF GENERA

The description of the genus described herein has been done in the usual sequence of classification of the genera.

Paphiopedilum Pfitz.

Included are the generally known P. praestans (Rchb.f.) Pfitz. and the likewise well described P. violascens Schltr. Further, a Paphiopedilum occurs at the Wissel Lakes, which appears to be similar to P. praestans (Rchb.f.) Pfitz. but is almost certainly a closely related new species. A fourth species described is a 'slipper' from the Arfak Mountains which was described in 1967 by Dr. G. Schoser and named P. zieckianum Schoser after the discoverer J.U. Zieck.

Interestingly, it has fairly recently been reported from Bougainville in the Solomon Islands that Paphiopedilum wentworthianum Schoser et Fowlie has been discovered there which appears to be similar to P. zieckianum. It is fairly certain that other undescribed, mottled leaved species occur in western New Guinea. Reports have come from the Waigeo and Misool Islands and the Vogelkop area to confirm this.

Macodes Bl.

Macodes sanderiana (Krzl.) Rolfe occurs very frequently in the lowlands and could therefore not be excluded from this book. On Roon Island in Geelvink Bay there occurs an undetermined species with emerald green leaves. In Schlechter's book four other species are mentioned, mostly mountain plants.

Coelogyne Lindl.

Included are C. asperata Lindl., C. beccarii Rchb.f., C. veitchii Rolfe and a variety of C. fragrans Schltr. These are easily recognised by their flowering habit and plant characteristics. C. veitchii Rolfe and C. fragrans Schltr. are mountain dwellers. Schlechter mentions five species of Coelogyne, one of which - C. pustulosa Ridl. - is said to be identical to C. asperata Lindl. - this however seems doubtful.

Calanthe R. Br.

Of the Calanthes, three are dealt with, the well known Calanthe veratrifolia (Willd.) R.Br. occurs very widely with varieties, the rarer but beautiful C. engleriana Krzl. which can be likened to a very large edition of C. veratrifolia (Willd.) R. Br. and an as yet undescribed small species from the Arfak Mountains.

Phaius Lour.

A close relation of Calanthe, with four species represented in New Guinea. Phaius tancarvilliae (Banks) Bl. has widespread occurrence and is to be found in most handbooks. Phaius amboinensis Bl. occurs in the Moluccas and New Guinea.

Phaius montanus Schltr. likewise Phaius tancarvilliae (Banks) Bl. is a savannah plant, the other two forest plants. In the Arfak and Cyclops Mountains P. flavus (Bl.) Lindl. also occurs.

Spathoglottis Bl. (related to Phaius and Calanthe).

This is a commonly found species with numerous varieties. The generally occurring species is regarded as Spathoglottis plicata Bl., although some botanists state that the common New Guinea plant actually differs from the S. plicata Bl. from Indonesia. Besides S. plicata Bl. three other species are mentioned in 'Nova Guinea' of which one, S. altigena Schltr., a mountain species, is included.

Dendrobium Sw.

The extensive sub-tribe Dendrobiinae could easily warrant a publication on its own. The genus is separated into several sections which are not all represented in this publication. Although not all plants included have outstanding flowers, it seemed appropriate to give examples of some other sections besides the larger flowering Latouria and Ceratobium. These are Diplocaulobium, Flickingeria, Euphlebiium, Calcarifera, Grastidium, Crumenata, Eudendrobium, Pedilonum and Platycaulon. As a rule, the sections of greatest interest are the

Latouria and Ceratobium of which there are six and twenty three representatives respectively included.

The most difficult plant in the section Latouria is D. macrophyllum A. Rich. Although some varieties have been brought together by the author it is admitted that not all three belong together and it appears that the beautiful species from the Cyclops Mountains should be undoubtedly be regarded as a separate undescribed species. There are in existence several other beautiful species which are closely related to D. macrophyllum A. Rich. Amongst the most appealing in this section are D. johnsoniae F.v.M. and D. atrovioleaceum Rolfe. Both are unfortunately relatively rare plants which do not occur near the coast.

In the section Ceratobium there are various unnamed species and under these conditions the author is not entitled to establish definite names. With the nine unnamed Ceratobium species the unknown number has certainly not been exhausted. More plants have been observed, photographed and cultivated, especially in southern New Guinea, which are undescribed, including some very beautiful ones.

The arrangement of the species in the section Ceratobium has been selected purposely. The first six species have plant and flower characteristics which relate to D. antennatum Lindl. The new species of Dendrobium from Ajamoroe is treated separately like D. trilamellatum J.J. Sm. Then follow D. conanthum Schltr. and two unknown species which belong together. The D. undulatum R. Br., D. mirbelianum Gaud., D. schulleri J.J. Sm. form the next group after which follow the somewhat diverse large and very large specimens. Nevertheless it remains extremely difficult to set up a classification and prove the undoubted presence of natural hybrids as long as not all plants of this section are known and many crossing trials have taken place.

Eria Lindl.

Only two of approximately ten known species have been included.

Bulbophyllum Thou.

Similar comments apply to Bulbophyllum of which many species occur in New Guinea. Because of its curious flowers and floriferous habit B. grandiflorum Bl. is a gratifying species. Unfortunately photographs [of the inflorescence] of the representative of the section Macrobulbon could not be obtained. This section has been included for its unusual form rather than the somewhat unattractive flowers.

Grammatophyllum Bl.

The two known species have been included. Whether G. stapeliiflorum (T. & B.) J.J. Sm. occurs in New Guinea has yet to be established. There are indications that this plant occurs in the Radja Ampat Islands (south Waigeo).

Geodorum Jacks.

Geodorum pictum (R. Br.) Lindl. is an individual genus and species which occurs frequently.

Bromheadia Lindl.

It is likely that on the south side of the Cyclops Mountains B. palustris Lindl. var. papuana J.J. Sm. occurs and at least one other species. While on Misool the author found yet a third species which is a very large plant with small white flowers.

Dipodium R. Br.

As far as is known there are two known species in New Guinea. Besides D. pandanum Bail., D. elatum J.J. Sm. has also been described.

Acriopsis Reinw.

This well known plant I have called A. javanica Reinw., although some authors prefer to separate the New Guinea species as A. nelsoniana Bail.

Thrixspermum Lour.

With this genus a separate group of orchids is introduced - the Sarcanthinae. These do not possess a pseudobulb, but an endlessly growing stem. The discovery of T. amplexicaule (Bl.) Rchb.f. in New Guinea was a surprise because this plant had not been described for this island before.

Phalaenopsis Bl.

Phalaenopsis amabilis Bl. occurs far more often than has been mentioned in earlier literature.

Renanthera Lour.

Renanthera edelfeldtii F.v.M. et Krzl. has one representative in New Guinea, as has the next genus.

Ascoglossum Schltr.

This also has one representative, Ascoglossum calopterum (Rchb.f.) Schltr. These genera are closely related, but A. calopterum (Rchb. f.) is the most beautiful representative of this group.

Vanda R. Br.

So far only one representative of the genus is known, provided at least that V. hindsii Lindl. and V. truncata J.J. Sm. are identical as Schlechter suggests, However, surprises are not to be excluded, since in 1962 at Manokwari a variety of V. truncata J.J. Sm. was discovered. Beside that, still another Vanda was found which, according to its discoverers, has different colours and markings.

Vandopsis Pfitz.

Under this name plants of very diverse plumage have been brought together, like V. muelleri Krzl., V. lissochiloides Pfitz. and V. pantherina J.J. Sm. virtually identical with V. prealta J.J.Sm., V. curvata J.J. Sm., and V. warocqueana (Rolfe) Schltr. Vandopsis lissochiloides Pfitz. from the Radja Ampat Islands was a surprise and not described from New Guinea previously. V. longicaulis Schltr. is

supposed to be a very beautiful plant which has a long stem and short leaves. It is from eastern New Guinea.

Pomatocalpa Breda.

As a matter of interest, two species of this genus have been included and the plants remind one of Vanda or Renanthera. It is appreciated that many plants which one would commonly come across will not be found in this collection by the orchid enthusiast. There was neither time nor opportunity to include some of the Goodyera, Anoectochilus or some examples of Microstylis and the leafless Taeniophyllum.

Finally, sincere thanks is expressed towards all those in New Guinea during my stay there and in the Netherlands, through their interest, encouragement and active support, by supplying plants and help with investigations, by giving access to literature - in short, to all those who have contributed in many possible ways towards this publication.

Manokwari 1962

Enschede 1973 J. van Bodegom.



Euphiopedilum praestans Pfitz.

This 'slipper' is the most common representative of the genus in New Guinea and belongs to the section *Caryopedilum*. The plant is robust and strong. There is no pseudobulb and the root system is so short that the new growths are appressed against the mother plant. They are up to 40cm long and 4.0cm wide, green to dark green, and the lorate leaves are spread, fan-shaped. At the time of flowering, a plant would have five to seven leaves. The 30-50cm long peduncle forms in the apex of the plant and carries a maximum of five successively opening flowers, after which they all remain open together. The peduncle is coloured brown-green and covered in fine white hairs. The pedicel, including the ovary, is 5.0-6.0cm long and stands in a purple-brown striped, fairly large, folded and pointed bract. This is glabrous, coloured green, with pallid purple ribs.

The flower is very large and somewhat variable in colouring. Flower dimensions range from 9.0cm, measured vertically between the end of the sepals and measured horizontally, 16cm between the ends of the petals. These are quite normal. The dorsal sepal is approximately ovate, with an elongated acute apex. On the whole, the dorsal sepal is bent forward and is concave. However, the undulating margins are reflexed. The background colour is white to pale yellow to beige, with many (10-12) thick, red-purple to red-brown parallel veins. At the back of the dorsal sepal these veins, especially the centre vein, are pronounced and coloured green. The measurements are  $\pm 5.5$  cm long and  $\pm 2.9$ cm at its widest. The single sepal stand retrorse and has the same shape and dimensions as the dorsal sepal; being two connate lateral sepals, and it has two pronounced veins on the back. The number of parallel veins are fewer than on the dorsal sepal, giving therefore, the appearance of being lighter. The petals are long and narrow, deflexed, as well as being twisted like a corkscrew for two-thirds of their length. The first third section has undulating margins, which contain dark purple warts, covered in black hairs. The colour is pallid yellow to brown-green, and along the length, run five dull purple parallel veins. The 'slipper' is long and fairly narrow, the margin of the tip being deflexed, otherwise the margins near the column are inflexed, hiding the stigma. The 'slipper' is altogether 5.0 cm long and 1.8cm, at the extreme width, near the apex. It is pale yellow to yellow, with purple parallel veining, running from front to rear, turning and going upwards on the apex of the 'slipper'. The interior is covered in fine brown hairs. The column is pale yellow and ends in a large, long staminode which is smooth in the middle and shiny yellow, trimmed with two bands and covered in fine brown hairs. At the top, two knobs are found. The twin external, brown pollinia on either side of the column are visible.

Varieties : There are some varieties, one of which has paler colouring and a more delicate flower. There are probably more, depending on habitat. It seems there are plants with the petals inflexed and with a different marking of spots, instead of veins. A description and very good photographs of this variety can be found in the periodical, 'De Orchidee', 1933, page 214 and 1938 pages 157-159. Locality has been reported to be Fak Fak.

Locality and habitat : The plant is found on limestone rocks at or near Waigeo I., Misool I., P.Pandjang (opposite Fak Fak) and Namatotte near Kaimana, in full shade to nearly full sun. It grows in humus and weathered limestone soil, often surface rooted and therefore perfectly drained; the latter is essential. The plants are usually found in association with Vandopsis lissochiloides Pfitz. and Spathoglottis plicata Bl. at Misool I. and Waigeo I., and generally are found in large numbers. Place the plant in a medium size pot in a humus-rich limestone soil, mixed with pieces of limestone, and place in half shade. If possible, find a place underneath other plants. In common with other New Guinea Paphiopedilums, the plants are prone to diseases in the growing tip.

Literature : A description with illustrations can be found in 'Nova Guinea' Vol. XII, Part I, page 2, tab. I.

Schlechter's 'Orch. Dtsch. Neu-Guinea' mentions it only on pages 1 and 2.

Dakkus, 2nd Edition, pages 52-53; 3rd Edition, page 66 (including illustration).

Latif, page 117 (including illustrations).

The above-mentioned numbers of 'De Orchidee' and also 1932, page 30 (crossing) and page 187; 1934, page 273.

It has also been named as Cyripedium gardneri or C. glanduliferum Bl. The names, according to Smith, should be regarded as synonyms.

Paphiopedilum sp. nov.

Closely related to P. praestans Pfitz., is a 'slipper' that is found by the Wissel Lakes at 1700m above sea level. The structure of the plant, the shape of the leaves, etc., are identical but smaller than that of P. praestans Pfitz. It often has a clearly noticeable root stem. The largest leaves measured 10cm long and 3.5cm wide.

It is multi-flowered, although so far no plants have been observed with more than two flowers per stem. This peduncle is covered with fine brown hairs.

Flower : The colours are generally darker than those of P. praestans Pfitz., and the background colour of the flower segments is a pronounced yellow. The bract is pallid yellow with red-purple stripes. The flower is smaller; the dorsal sepal is 40mm long and 24mm wide, the lateral sepal measures 40mm by 20mm. The lip (slipper) is more strongly coloured with brown-red veins on dull yellow background. The margins of the opening of the lip are inflexed. The lip does not hang down at an angle, but stands out horizontally. The staminode has a more-or-less square shape and a wart-like surface.

Locality : The plant is found on the southern shores of Tigi Lake at 1700m above sea level. It grows in heavy clay-like soil on limestone rocks.

Literature : None available. This orchid was mentioned in a book by J.K. van Eechoud, 'Met Kapmes en Kompas Door Nieuw-Guinea' ('With Machette and Compass through New Guinea').

Comment : In some regards the flower has similarities to P. philippense Pfitz. (synonym Cypripedium laevigatum Batem.), of the Philippines. In the above description, this new Paphiopedilum is compared to P. praestans Pfitz., which grows strictly near the coast. So far there appears to be nothing that connects the places where they are found. In this case, the comparison is made with the fact that in west New Guinea, in inland fresh-water lakes, animals are found whose closest relatives live in the sea. Could it be that this Paphiopedilum of the Wissel Lakes, is identical to P. praestans Pfitz. of the coast, but in times long ago, when the central mountains were being formed, it was lifted up 1700m ?

[Ed. - For a number of years this species has carried the horticultural or grex epithet Paphiopedilum 'Bodegomii', not having been formally described, but named in honour of the author of this volume. For details refer :- Bennett K.S. (1984) 'The Tropical Asiatic Slipper Orchids', Angus & Robertson, Sydney.]

Paphiopedilum violascens Schltr.

This 'slipper', belonging to the section *Blepharosepalm*, has mottled leaves and is single flowered. The colour of the veins and mottling between the veins, is a greyish blue-green on the top of the leaves, and an even grey-green underneath. The leaves do not have much substance and are delicate.

At the foot the two halves of the leaf are pressed together to form a petiole. The centre vein is deeply depressed, forming a rib underneath. On either side of the centre vein, there are four to five parallel veins, depending on the width of the leaf. The shape of the leaf is like an elongated-oval, emarginate in the pointed apex. Leaf measurements of these plants in centimetres are :-

Length	Width	Veins for half-leaf
15.5	2.3	4
17.5	2.3	4
16.5	3.5	5
17.0	3.0	5 & 6
18.0	3.1	5
19.0	3.1	5

The measurements, both length and width, are therefore fairly variable. The number of leaves per flowering plant is four to five. The mottled patches are created through either the presence of uneven filling of the green-white spaces between the parallel veins, or it could be put another way; green-white spaces between the blue-green filling of the space between the side veins.

The peduncle is 29cm long, with a diameter of 3.0mm and appears in the apices of the plant. The peduncle is purple-green and closely covered with red-purple to red-brown hairs. The pedicel, mainly the ovary, stands in a folded bract, 2.3 to 4.0cm long and 2.0 to 3.0mm wide. This bract is cymbiform, covered with light green, light purple to purple-grey hairs, tinted red-brown where it connects with the stem. The pedicel and ovary is 5.0cm long, 5.0mm in diameter, and provided with six grooves, coloured green and covered in light brown hairs. The flowering period is probably three to four weeks.

The flower is 6.5cm high, between the tip of the dorsal sepal and the end of the 'pouch', and approximately 5.0cm wide between the ends of the petals. The colouring is as follows : The dorsal sepal is white, with light green colouring in the centre, and two violet-red markings on the widest part. The lateral sepal is light green and the veins of both sepals are green. The dominating colour of the petals is violet-red, with blotches in the same

colour. The 'pouch' is light green with darker green colourings and a net-work of veins. The column is mainly green.

Flower segments :

- a. Dorsal sepal : This is cordate, concave, and stands at an angle. It is 3.0cm high, 3.0cm wide (flattened out), with numerous (more than 20) parallel veins, the outer ones branched.
- b. Lateral sepal : This is cymbiform, with a flat centre, 2.4cm long and 1.5 cm wide (flattened out), and has six parallel veins.
- c. Petals : These are oblong, angled-oval (banana-shaped, with a blunt tip), and concave. The main vein runs through the centre, and there are many other parallel veins.
- c. Petals : These have pale light brown hairs around the edges and are 4.0cm long, by 1.5cm wide.
- d. The lip : The lip 'pouch' has a total length of 5.0cm and a diameter of nearly 2.0cm. The margins are inflexed near the opening, surrounding the stigma, otherwise the 'pouch' is open.
- e. Column : Altogether, the column is approximately 2.5cm long, the staminode in two parts, 0.7cm wide. The stigma is in the shape of a 'collar-stud'.

Location and habitat : It is found near Hollandia, on the foothills of the Cyclops Mountains, approximately 200m above sea level, growing in loose humus and in shade.

Literature : The description of P. violascens Schltr., is found on page 2 of his work, 'Orch. Dtsch.Neu-Guinea' and a drawing in Feddes Repertorium, Beihefte, Band XXI [Figuren Atlas]. The example from Hollandia described here, differs in several details from the original description :- colour, form, staminode, dimensions of sepals and lip. Besides, Schlechter gives various locations, which all lie 1000m or more above sea level. The variety from Hollandia is found much lower.

In 'Nova Guinea' Vol. XII, Part III, on page 175, Smith describes a variety from the Gautier Mountains, which he names P. violascens Schltr. var.

gautierense J.J.Sm.

In the periodical 'De Orchidee' 1934, page 334, a photograph is reproduced of Paphiopedilum 'Frau Fleischmann', found by Stüber. This is probably the variety of P. violascens Schltr., which is described above.

Paphiopedilum zieckianum Schoser

This mottled leaved Paphiopedilum like P. violascens Schltr., belongs to the section Blepharosepalum. The five to six leaves are oblong-oval to broad-lanceolate, fairly carnose, and a pale to dark yellow-green colour. On either side of the depressed main vein, five to six parallel veins are found, which contain dark mottling between them. The mottling does not show any tendency to regularity. The underside of the leaf is pallid light green, without marks and the leaves are rather firm and carnose. Dimensions noted were, 17.5cm long by 4.2cm wide to 22cm long, with the widest part 3.5cm.

The single flowered peduncle, appears in the top of the plant. The peduncles were measured at 25cm and 28cm long, and 2.5 to 3.0mm across. After a brown-purple beginning, the colour turns light green to light yellow-green, the peduncle covered in light purple-brown hairs. The pedicel, mainly ovary, appears in a 15mm high bract, which is covered in fine, short purple hairs. The ovary is 4.0 to 6.5cm long, bluntly-triangular and ribbed. These are 6.0 to 9.0mm across, and the very fine hairs are purple in colour. The flower described below is probably not a very large example. It measured 7.0cm across the extended petals. The main colour impression is violet and purple, with a shiny yellow-green dorsal sepal. The dorsal sepal stands obliquely forward, the petals stand sideways, and the 'slipper' points horizontally forward. The lateral sepal is appressed against the 'slipper' and is not visible.

## Flower segments :

- a. Dorsal sepal : This is practically round, with an acute apex, concave, with a fold over the centre vein, where it is somewhat thicker. The measurements are; base 6.5mm, height 24mm and the widest part (flattened), 26mm. At the front the colour is a shiny yellow-green, with lighter coloured margins. In relief, there are many faint veins visible, six to eight on either side of the centre vein. The veins are prominent on the back, which is evenly dull-coloured and covered in very fine hairs, brown-purple in the centre and white on the margins.
- b. Lateral sepal : This is ovate, strongly concave and cymbiform. The colour is a pallid yellow-green and it is covered with fine purple hairs on the underside. There are two main veins, and on either side of those, three parallel veins. The measurements are; base 9.0mm, length 16mm and the greatest width, 13mm.
- c. Petals : The petals measure; base 5.0mm, length 41mm and the greatest width 17mm. The shape is oblique, oblong and broadly spatulate. The bottom margin is slightly undulate, the whole being slightly concave. The margins

are ciliated, near the tips. The petals are separated into two parts by a centre vein. At the front, the upper half is light green where it begins, dark purple near the top, and two-thirds covered with dark purple speckling. The lower section shows parallel veins on a pallid yellow background, gradually turning purple towards the top. At the back, the picture is different. Starting green, with fine speckling on the lower half, the margins are dark purple and the top pallid purple. There are  $\pm$  10 veins visible in relief, tinted purple.

d. 'Slipper' : This is 25mm long, 17mm high and measured across the 'wings', 14mm wide. It points horizontally forward, is round at the front, and coloured purple on a green background. The impression is a pallid purple. Each half possesses seven veins, starting from the base and turning towards the opening. The 'slipper' is covered in fine purple hairs, and those on the edge of the cordate opening are clearly visible and the margins are slightly inflexed. On the inside, some fine purple spotting is seen.

e. Column : Unfortunately, the column examined was no longer completely intact. The staminode is 6.0mm wide, dark green in the centre and light green near the edge. The 'wings' finish with a reflexed tip. The whole of the column is 9.0mm long.

Location and habitat : This new 'slipper' was discovered by Engineer J.U. Zieck, on the eastern slopes of the Arfak Mountains, above the Ngaboet Lake, at approximately 1100m above sea level, in a rather sunny position. This is the first known location.

Literature : This Paphiopedilum is definitely not a variety of P. violascens Schltr., but a separate species. The colour of the leaves and flower, and also the shape and size of the smaller flowers are different. The discovery of this new species was recorded by the author in 'Orchideeën' 1963, pages 160-161. Subsequently, the description has been done by Gustav Schoser in 'Die Orchidee', February 1967, pages 1-7. Schoser named the species Paphiopedilum zieckianum, after its discoverer.

[Ed :- For further details of this species, readers are referred to :-  
Bennett K.S. (1984) 'The Tropical Asiatic Slipper Orchids', Angus & Robertson,  
Sydney.]

Macodes sanderiana (Krzl.) Rolfe

Although the cultivation of 'Leaf' or 'Jewel' orchids is more demanding than epiphytes and normal terrestrial species, with some care it is quite possible. For this reason, the most common Macodes has been included in this collection.

The rhizome usually creeps over the ground in the humus. The upright section carries four to six leaves, and the plant is usually surface rooted. The leaves are petiolate, off-standing, thin and ovate, with a slightly concave pointed apex. The leaf is coloured light brown and finely waved. Next to the centre vein, there are usually two parallel main veins. The colour is very difficult to describe, and in many young leaves somewhat variable, partly associated with the light intensity of its growing position. The main veins range from bright to pallid green. The irregular, connecting veins are copper-coloured. The areas between the veins are black-green to black-brown and pallid black. The whole surface has a velvet-like appearance. With the older leaves, the colours are a velvety pallid green and pallid black. The peduncle emerges at the apex of the plant.

Habitat and locality : This species grows in the lowlands, up to and near the sea, in full shade and in humus-rich locations, which never completely dry out. To cultivate, place the plant in a pot on a layer of pressed down humus, the roots covered with a thin layer of moss. Water daily. This species can be found at Hollandia (including the gulleys of the suburbs), Seroei, 'neck' of the Vogelkop, lowlands of Teminaboean and Maroeni near Manokwari. It is quite common. Flowering time for plants from Hollandia and Manokwari is usually in July.

Literature : Schlechter's 'Orch. Dtsch. Neu-Guinea' page 71.

'Nova Guinea' Vol. VIII, Part I, page 16; Vol. XII, Part III, page 191; Vol. XIV, Part III, page 348.

In articles published so far about orchids from New Guinea, it is incorrectly accepted that the most common Macodes found in west New Guinea is M. petola (Bl.) Lindl. However, M. petola (Bl.) Lindl. and M. sanderiana (Krzl.) Rolfe are closely related.



Dendrochilum longifolium Rchb.f.

This plant which has the appearance of a small slender Coelogyne, belongs to the sub-tribe Coelogyninae. Although the flowers are not very spectacular, to complete the collection, this plant and Pholidota pallida Lindl. [synonym P. imbricata Lindl., used by author] have been included by way of introduction to Coelogyninae.

The rhizome is short and the pseudobulbs are closely packed. The pseudobulb is 4.0-6.0cm long, virtually round in section, with two rounded corners. The maximum width is 1.2 to 1.5cm. The pseudobulb is light yellow-green to pale green, finely sulcate length-wise and carries one leaf. The leaf is petiolate, glabrous on top and pallid green underneath, lanceolate, with a pointed apex. The centre vein is depressed, forming a rib underneath, next to which are four clearly visible parallel veins. The leaf stands upright, slightly bent at the tip. A new pseudobulb, including the convolute leaf, forms virtually at the base of the old pseudobulb, in a series of light green to red-brown sheaths, to a height of 9.0cm. The leaf is 22 - 30cm long (including petiole of 4.0 - 5.0cm) and 2.7 to 3.0cm wide. The inflorescence forms simultaneously with the new pseudobulb in leaf, and develops ahead, before the leaf and pseudobulb have matured; these continue growing after flowering has finished. The same applies to Coelogyne beccarii Rchb.f. and C. asperata Lindl.

The peduncle is very thin, light green and delicately curved and 18cm long. Then follows for 1.0cm, a threesome of imbricate bracts. The flowers follow after a further 11cm. The section carrying the flowers is angular, and runs in a light flexuose pattern. The twenty-four flowers alternate on either side of the stem, and the distance between the pedicels that follow each other is a very regular 0.5cm. On either side the flowers are separated by a 1.0cm gap, and do not touch each other.

Flower : The pedicel is 4.5mm long, with a thickened green ovary. The flower is like a miniature Coelogyne flower, opening quite well, with all the flower segments in the same light yellow-green colour. Only the lip shows different colours, pallid orange for the pointed lateral lobes, and light yellow for the middle lobe. Between the tips of the sepals, the flower is an equal triangle with sides of 1.0cm.

Flower segments :

a. Dorsal sepal : This is ovate, with a pointed tip and a keel on the outside, concave on the front and with convex margins. It measures 8.0mm long and

3.0mm wide.

b. Lateral sepal : This is similar to the dorsal sepal, although somewhat angled and has a length of 8.0mm by 2.5mm wide.

c. Petals : These are ensiform, lightly concave with an acute tip, and measure 6.5mm long and 2.0mm wide.

d. Column : This is transparent white, 4.0mm long, widening strongly near the top and notched, capping the anther. On either side of the stigma, the column has two appendages with double ends. These appendages are the identification mark for the genus Dendrochilum. The anther is chalk-white in colour.

e. The lip : The lip has slightly pronounced lateral lobes, which end in a pointed, pallid orange tip; the middle lobe widens, and ends in a pointed tip. The lip is appressed to the column, with the lamina and the middle lobe reflexed. The lamina has one clearly visible ridge, extending to the middle lobe, and less distinct ridges on either side. Flowering lasts for approximately six weeks.

Localities and habitat : This plant is an epiphyte and is found 300 to 2000m above sea level. It grows well in a pot with fern-root and fern-peat. The plant described here, is from the Ajamaroe Plain, 300m above sea level. Also found near the Anggi Lakes, 1800m above sea level, in the Cyclops Mountains, 900m above sea level, and on the Lorentz River (elevation unknown), also in northern Papua New Guinea. Flowering period in April, 1962.

Literature : 'Nova Guinea' Vol. VIII, Part III, page 527; Vol. XII, Part I, page 11 and Vol. XII, Part III, page 196 give literature details, localities and comments. Smith was originally of the opinion, that in some plants, which deviate from the TYPE (smaller), he could detect a variety. However, he later withdrew this assumption. Smith deems D. longifolium Rchb.f. to be identical with D. bartonii (Ridl.) Schltr., mentioned in Schlechter's 'Orch. Dtsch. Neu-Guinea' on page 106.

In Part I of 'Flora of Malaya' on page 229, a short description is given, and on page 230, a drawing.

[Ed. :- Schlechter also acknowledges the similarity between D. longifolium Rchb.f. and D. bartonii (Ridl.) Schltr. However, he keeps them separated because of noted differences in the structure of the flowers, particularly in the column.]

Pholidota pallida Lindl. var. papuana J.J.Sm.

Syn. P. imbricata Lindl.

This species is closely related to Coelogyne, and from casual observation is difficult to separate from Coelogyne. The New Guinea variety is a more robust plant in growth and flowering, than examples from other localities.

The pseudobulb is 8.0 - 10.0cm long, round, four cornered and 3.0 - 4.0cm across. It is pallid to light green and single leaved. The short-stemmed, convex leaf is plicate, hard and thick, green on top and pallid green underneath, with three clear main veins. The canaliculate petiole is 4.0 - 7.0cm long, and the leaf of some flowering pseudobulbs, including the petiole are :-

Length	Width
42cm	5.8cm
51cm	6.0cm
51cm	5.5cm

The curved and afterwards pendulous inflorescence develops with the young pseudobulb, therefore the development of the peduncle takes a long time, up to four months. The inflorescence, including the young bulb, is surrounded by two hard green sheaths; these dry out later and remain for a long period. The plant described here, had an inflorescence 61cm in length, with the thin, flat, oval-shaped peduncle, 35cm long (in two sections), after which came a section 5.0cm long, with several brown, fading bracts. Then came a flower-carrying section of approximately 20cm, having on one plane, on either side, two rows of closely positioned small flowers. Before the flowers appear, this section is a thin oval roll of alternating sheaths. The described inflorescence carried 2 x 24 flowers. The folded bract is comparatively large, light brown to light green, pointed, and 10.0 - 11.0mm long, so that the tip of the bract reaches up to the dorsal sepal.

Flower : The flower is half open, triangular in shape, 10.0mm wide and 7.0mm high, and very light yellow-green in colour. The pedicel is 5.0mm long and coloured brown-green. The flower segments reach forward, the middle lobe of the lip is reflexed.

Flower segments :

- Dorsal sepal : This is wide, oval and concave, with a pointed tip, 7.0mm long and 5.0mm wide.
- Lateral sepal : This is cymbiform in shape, with a sharp external rib and is 8.0mm long.
- Petals : These are angled, lanceolate, sharply pointed, very thin and concave. They are 6.0mm long.

d. The lip : This is hollow, tri-lobed, with strongly developed, rectangular lateral lobes, with a brown-orange spot on the lip base. The middle lobe is turned, diptherous, with some orange stripes. The length is 9.0mm, width 10.0mm in a flattened position.

e. The column : The column is 3.5mm long, 3.0mm wide, with strongly developed wings, forming a hood over the anther. The anther is brown, with a brown-orange frame around the stigma.

The plant and flowers are not particularly spectacular. This Pholidota is one of the few Coelogyninae that occur in the lowlands. J.J.Smith referred to the New Guinea species as variety papuana, because the plant is larger in all respects, than is normal.

Locality and culture : The plant is found as an epiphyte, but also grows on limestone rocks, in half shade to virtually full sun. Found in southern and northern Dutch New Guinea and also Papua New Guinea. The described plant came from Manokwari, near the coast. From the mountains in the hinterland at Manokwari, at up to 500m above sea level, very robust plants have been collected, with peduncles 60 to 80cm long, carrying about 80 flowers along a 20 to 30cm section. Cultivation in a pot using pieces of fern-root and limestone, has been found satisfactory. Flowering at Manokwari was observed during February/March.

Literature : In Smith's 'Nova Guinea', only literature and locality are mentioned. Merauke, Digoel R., Hollandia. See Vol. VIII, Part I, page 21; Vol. VIII, Part III, page 527; Vol. XII, Part I, page 11; Vol. XIV, Part III, page 349 (var. papuana J.J.Sm.).

In Schlechter's 'Orch. Dtsch. Neu-Guinea', mentioned on page 109, with two varieties :- var. montana and var. longifolia.

In 'Flora of Malaya', Vol. I, on page 237 a short description. The species name P. pallida Lindl., has been taken from 'Flora of Malaya', other references using the synonym P. imbricata Lindl.

Coelogyne asperata Lindl.

This is a robust plant. The light to dark green pseudobulb is oblong and ovate lengthwise. The sides are somewhat flattened and sulcate. Pseudobulbs on flowering plants, have a length of 13.0cm and are 5.0cm in diameter.

The pseudobulb carries two large, firm leaves. The leaf, more than 50cm long and 10.0cm or more wide, has a canaliculate petiole, stiff clear veins on the back, and is plicate on the top. It is green to dark green.

Flowering occurs as a prelude to new growth. Surrounded by five, stiff olive-green bracts, the stiff and curved light green peduncle rises from underneath the still leaf-carrying pseudobulb. The peduncle is in sections and carries flowers on the nodes. Each flower stands in a substantial olive-green bract, which liberally surrounds the peduncle. The peduncle is 30cm long or longer, and carries ten or more flowers. The flowers alternate on either side of the peduncle, on one plane, on a 3.0cm long pedicel. The flowers have a honey-like perfume.

## Flower segments :

The sepals and petals are an even cream colour, slightly green on the back. The sepals are thickened in the middle, and are concave and canaliculate inside. The dorsal sepal leans forward and covers the lip, and the lateral sepals lean forward and sideways. They are wide at the base, have an oval shape, and end in a point. The petals are narrow at the base, lanceolate, with a pointed apex and stand sideways; the apex turns slightly backwards. The large lip is tri-lobed. The outside is completely white, the inside marked brown-orange and finely speckled. The lateral lobes have four stripes that begin at the rear, do not go right to the margin, and finish in a patch of the same colour. The middle lobe is yellow in colour towards the rear, going over into a small white area, containing two strongly elevated white ridges, and in between these, three slightly pronounced ridges. The narrow, slightly elevated centre ridge, continues to the end of the middle lobe. From the ridges running beside this, including the two strongly elevated ribs going out, originate two tuberosus appendages, curving towards each other. These are evenly coloured and speckled orange-brown. The thickening and the markings do not go up to the margin of the middle lobe, but leave a white clear edge all around, which is undulate. Between the left and right undulated margins, the middle lobe ends in a blunt tip. The 14mm long column is white, with a bright orange patch near the base. The cap of the anther is light green, and the stigma white. Measurements of the sepals, petals and lip of a reasonably large flower, in mm, are as follows :-

	Base	Greatest width	Length
Dorsal sepal	8.0	19.0	40.0
Lateral sepal	6.0	13.0	36.0
Petal	3.0	9.0	36.0
Lip	-	27.0	30.0

Localities and habitat : The species grows epiphytically in the forks of trees, but also on rocks on the ground, in reasonably shady locations. It is found throughout west New Guinea and in the north of Papua New Guinea, from sea level to above 1000m. The plant flourishes best in a roomy pot, filled with a layer of gravel in the bottom, on a mixture of humus and chopped fern-fibre. It thrives on old, well-rotted manure as a fertiliser. It prefers shade, but with good light. Well established specimens of this orchid can form large clumps, and take up a rather large space.

Literature : 'Dakkus', 2nd Edition, pages 58 - 60 (the photograph on page 63 does not correspond with the description under it). 'Dakkus' 3rd Edition, pages 75 - 76.

'Latif' on pages 90 - 91, coloured reproduction of flower opposite page 81.

'De Orchidee', 1934, pages 44 - 45; 1936, pages 304 - 305.

'Nova Guinea' Vol. VIII, Part I, page 20; Vol. VIII, Part III, page 527; Vol. XII, Part I, page 10; Vol. XII, Part III, page 196, mention of literature and localities.

Schlechter's 'Orch. Dtsch. Neu-Guinea', page 105 (see C. pustulosa Ridl.).

Schlechter puts forward the assumption that C. asperata Lindl. is the same as C. pustulosa Ridl., which is most unlikely.

[Ed. :- This statement is not quite correct. Schlechter nominates that C. pustulosa Ridl. and C. edelfeldtii F.v.M. et Krzl., are conspecific. He merely points out that C. asperata Lindl., may belong there.]

Coelogyne beccarii Rchb.f.

The young pseudobulbs are angular, ovate, up to 10.0cm long and 3.0cm wide. The older, leafless pseudobulbs, show with shrinkage, four to six furrows, lengthwise. The colour is green to light green. The pseudobulbs are closely packed on a creeping rhizome, supported by the hard fibrous roots, which are at times, exposed to the light. The pseudobulb has two leaves, which are green, somewhat plicate, and have a short canaliculate petiole. The measurements, including the petiole of 2.0cm, are 34 to 44cm long and 5.0 to 7.5cm wide, with a tuber length of 9.0 to 12.0cm. On larger pseudobulbs, the leaf measurements are also larger. The leaf margins are undulating.

The peduncle appears together with two young, slightly lighter green leaves, before the pseudobulb is formed beside the older pseudobulb, on a newly formed rhizome. The green upright peduncle stands in a hollow between the leaves, whereby the inflorescence also stands between the leaves. The peduncles have widely differing lengths, and show a large difference in the number of flowers. Measurements of ten peduncles, showed lengths between 28 and 67cm, with four to nineteen flowers. A length of 24 to 40cm is normal, with four to eight flowers. Since the flowers follow one another within a short distance, the flowerless part of the stem is long. The spent stem remains on the top of the pseudobulb, even after the leaves have dropped. The flowers appear in sequence, whereby the flowering period is fairly long; each flower remains fresh for a considerable period.

## Flower segments :

The green-white pedicel, including the ovary, is 25mm long, 5.0mm wide and five-sided. The dorsal sepal is 40 to 45mm long and 20mm wide, the lateral sepals 40 by 15mm. The sepals are concave, running to a point and stand forward. Along the middle of the sepals, on the back, runs a ridge, so they are channeled on the inside. The petals thrust somewhat sideways, and are 35 to 40mm long and 4.0mm wide. The colour of the sepals and petals is greenish to yellowish white. The lip is tri-lobed and between the lateral sepals, curling downwards. The middle lobe is wide (14mm), and contains four clear, and one less pronounced flat tuberos ridges, which are coloured terracotta to brown, and cover half the middle lobe. The front, curled part of the middle lobe shows, where the ridges end, a brown frayed patterning. The thin, undulating, blunt apex of the middle lobe (with small tip), is white. The lateral lobes are terracotta coloured inside and out. The 22mm column is white on the back. Half the length of the front is coloured terracotta-brown. The pollen-flap, placed under the cap of the column, is light

yellow. The pollinia are yellow.

Localities and habitat : For localities, New Guinea is usually mentioned. Known locations are the surroundings of Sorong, Batanta Island and the district of Teminaboean. 'Nova Guinea' mentions also the Tor River, north side of the Gautier Mountains, Arfak Mountains, Lorentz River, therefore in north and south New Guinea as well as Papua New Guinea. The plant is epiphytic. It will grow in a pot containing fern-fibre, moss etc. It reacts favourably to a fertilizer of very weak liquid cow manure. It should not be placed in full sun, but must be provided with plenty of light.

Literature : 'Dakkus', 2nd Edition, page 60; 3rd Edition, page 76.

'Sanders Orchid Guide', under the name C. Micholitzii.

[Ed. :- The author possibly means C. Micholitziana Krzl., which Schlechter nominates as a synonym of C. beccarii Rchb.f.]

'Nova Guinea' Vol. VIII, Part I, pages 20 and 136; Vol. XII, Part III, page 196. In Vol. VIII, Part I, page 136, a description and on page XLV-151 an illustration.

'Orch. Dtsch. Neu-Guinea' page 103, mention and statement of variety tropidophora, on which the seven to nine ridges are deformed less.



Coelogyne veitchii Rolfe

The rhizome is very short, so that the pseudobulbs are placed very close to one another. The pseudobulb is 10.0cm long, oblong, 'cigar' shaped, 2.0 - 4.0cm across at the widest, and olive-green to brown-green in colour. The older pseudobulbs are strongly sulcate lengthwise. The emerging pseudobulb is protected by tough, overlapping sheaths, brown-green in colour. The pseudobulb has two petiolate leaves, and the young growing leaves are tinted dark brown-green. The leaves are oblong-oval, with a pointed apex, convex, glabrous on top and dull underneath. They are green and have five parallel veins, which form pronounced, stiff, light green ribs underneath. The petiole is coloured brown-yellow to light brown. The leaf is 30 to 37cm long, of which 6.0 to 9.0cm is petiole, and has a width of 5.5 to 6.5cm.

The pendulous inflorescence rises at the foot of the pseudobulb, which is still carrying leaves. The thin peduncle is, at the base, held in a scape, formed by a series of imbricate, hard brown-green sheaths, over a length of 7.0cm. The observed inflorescences were 18 to 19cm long, of which 11 to 12cm carried thirty closely packed flowers, arranged all around the stem. The flower is completely white and measures 16 x 16mm. The pedicel is 15mm long, light green near the ovary, completely hidden in a folded olive-green bract, which is 15mm long and flattened out, 10.0mm wide. The flower segments stand obliquely to the front. The sepals are bent and strongly concave, with a rib along the middle. The petals are slightly concave and are provided with an only slightly visible ridge, along the middle. The lip is very stiff and arched, and the lateral lobes form a stiff tube, which completely hides the short column. The middle lobe is concave, with undulating margins.

## Flower segments :

- a. Dorsal sepal : This is concave, oblong-oval, with a pointed apex, 12mm long and 5.0mm wide.
- b. Lateral sepals : These are concave, angled oblong-oval, with the lower margin slightly undulating. They are 14mm long and 5.0mm wide.
- c. Petals : The petals are narrow, spathulate, with a pointed apex and 13mm long, with 3.0mm being the greatest width.
- d. The lip : This is very stiff and difficult to open up. In a closed position, it is 13mm long and 5.0mm across the tube of the side lobes. Flattened, it is 15mm long and 13mm wide. The lamina is completely white and has three ridges, the middle one short, and the outer ones widening.
- e. Column : The column has a curious shape. The length is 7.0mm and in diameter, initially 1.5mm. The top fans out, three sectional, 5.0mm wide and the 'wings' at the apex are emarginated. The anther is tinted brown,

otherwise the column is white.

The plant described here was a specimen with fully developed pseudobulbs and leaves, although no flowers were present. According to Rolfe, the pendulous peduncles reach 30 to 60cm.

Localities and habitat : The plant is epiphytic and found in mountain areas. The described plant came from the Arfak Mountains. According to information, the species is also found in the Cyclops Mountains and near the Wissel Lakes. According to Schlechter, it is found in Papua New Guinea, between 600 and 1200m. It may be grown in a tree-fern pot, with good drainage, but should not dry out completely. Flowering time at Manokwari was November/December in 1961, and the flowers stay fresh for several weeks.

Literature : It was first described by Rolfe in the Kew Bulletin 1895, page 282.

Further, a description and good illustration occurs in 'Curtis Botanical Magazine' CXXVII (1901), tab. 7764.

Schlechter in 'Orch. Dtsch. Neu-Guinea', mentioned on page 104.

'The Orchid Review' 1925, page 219 and illustration.

Strangely, mentioned only once in 'Nova Guinea' in Vol. VIII, Part I, page 20.

Coelogyne fragrans Schltr. var. nov.

The slender, green pseudobulbs are strongly sulcate and often bent, 11 - 12cm long and 1.5 to 1.8cm across the widest point. They are spaced loosely on a rhizome, at a distance of 1.5 to 3.0cm and carry a single leaf. This leaf, including the short, firm, canaliculate petiole, is 32 to 36cm long and 6.0 to 8.0cm wide. It is provided with firmly recessed, parallel veins, which form pronounced ribs underneath.

The inflorescence begins, like C. beccarii Rchb.f., before the leaf and pseudobulb are fully formed, the flowers appear successively. The peduncle is green, flattened, 22cm long or longer, and produces three to five flowers. The general colour of the flower is light yellow to greenish yellow, with orange-brown to chestnut-brown markings, to the centre portion of the lip. The flower opens half to three-quarters, the sepals stand forward, the petals bent wholly to the rear. Viewed from the front, the flower gives a high, narrow impression. The measurements are, 35 to 45mm high, with a base of 25 to 30mm, measured between the tips of the lateral sepals. The glabrous pedicel is bent, clavate, deeply furrowed and coloured light to dark green.

## Flower segments :

- a. Dorsal sepal : The dorsal sepal covers the column. It is strongly concave, with convex, undulating margins, oval, with a pointed apex and thickened centre rib. The length is 37 to 38mm and width 15mm.
- b. Lateral sepals : These are angled oval, with pointed tips, otherwise they are identical, with the dorsal sepal. They are angled sideways and downwards, with a length of 35 to 37mm and a width of 13mm.
- c. Petals : These are narrow, ribbon-like, slightly wider in the upper half, with a pointed apex. The base is light yellow, otherwise an even greenish yellow. The length is 35mm and width 3.5 to 4.0mm.
- d. The column : This is typical Coelogyne form, bent, clavate, rounded on the back and flattened underneath, a wide notched end, with strongly-arched, transparent, white margins. The colour is light yellow-green near the base, with narrow red stripes along the margins. The anther has a pointed cap, the rostellum also pronounced, with a pointed apex; the anther pale yellow, while the rostellum and the band around the stigma are brown. The column length is 23mm and the greatest width, 7.0mm.
- e. The lip : The lip is slightly baggy where it is connected, tri-lobed, with rounded lateral lobes, erect at the front. These are 14mm long and 3.5mm high, for two-thirds of their length, appressed to the column. Flattened, the lip is 31mm long and 17mm wide across the lateral lobes. The middle lobe is comparatively large. The lamina begins between the lateral lobes and the

ridges run well into the middle lobe, which is cordate and ends in a sharp point. The ridges consist of a smooth, elevated mid-section, with a double-notched, elevated ridge on either side, which at first veers away from the mid-section, but then bends towards it again. The front margins of the lateral lobes, the spaces between the ridges and the beginning of the middle lobe, are coloured a clear chestnut-brown. On the inner and outer parts of the lateral lobes, run five to six speckled, broken-red, parallel lines. The white apex of the middle lobe has undulating margins.

Localities and habitat : It has been brought in from the Baliem Valley from 1200 to 1500m above sea level. It grows as an epiphyte, presumably in light shade.

Literature : A description in Schlechter's 'Orch. Dtsch. Neu-Guinea' on page 102. The plant and flowers correspond well with Schlechter's description, except for two points. The flowers open successively and not simultaneously, as Schlechter generally observed, and the flowers which he called strongly scented, had no fragrance. The last point is inconclusive evidence, since other orchid species at times have, at other times do not have, scented flowers. According to Schlechter, C. fragrans Schltr. is related to C. rumphii Ridl., from Ambon (C. psittacina Rchb.f.). In connection with the noted difference, it is assumed the Baliem Coelogyne is a variety of Schlechter's plant.

Calanthe triplicata (Willem.) Ames[Synonym Calanthe veratrifolia (Willd.) R.Br.]

A well known, often described terrestrial orchid. Although it grows in the primary forest, it is easily cultivated in a lightly shaded spot. The genus is somewhat variable, which in particular, applies to New Guinea. Although plants of greatly varying sizes are found, the flower characteristics are practically the same, so that only one name is adhered to. The most beautiful plant in this sub-genus, Eu-Calanthe, is no doubt Calanthe engleriana Krzl., described in this collection.

The pseudobulb is short, green, and has two to three internodes, altogether 2.5 to 3.0cm long. The roots are quite fleshy, 3.5mm across. The bright to dark green leaf has a broad petiole, is oblong-oval, with a pointed apex and is plicate lengthwise. Including the pedicel, it is approximately 30cm long and 8.0cm in width. On the top, as well as underneath the leaf, very fine, long white hairs occur. The number of leaves is usually six; first, two short undeveloped leaves appressed to the stem, and after that, four true leaves.

The peduncle stands upright and is in sections, with a bract on the nodes, 40 to 60cm long. Flowering occurs on the fourth internode and forms into a cone-shaped raceme, the flowers opening successively, with about eight flowers being open at the same time. Altogether, between 20 and 30 flowers are carried. Each flower has a cordate shaped green bract 15mm long and 8.0mm wide. The buds are arranged in such a way, that the spur is on top, since in the opened flower, the spur is underneath the pedicel, twisting of the pedicel occurs. The buds are white, with a green tip, the green colour disappearing after the opening of the flowers.

The general colour of the flower, including the pedicel and spur, is at first vivid white, later cream-coloured and finally discolouring to light yellow. The tuberos ridges on the middle lobe of the lip, are bright orange-yellow. The flowers are arranged all around the peduncle, the general measurements being 30mm high, and 22mm wide, measured across the petals. The pedicel is 22mm long, the spur 15mm.

## Flower segments :

- a. Dorsal sepal : This is reverse-ovate, with a pointed tip, standing upright, 13mm long, and 7.5mm wide.
- b. Lateral sepals : These are oblong-oval, with a pointed tip, positioned horizontal, front downwards and angled towards the rear in line with the spur.

Measurements : 13mm long and 6.5mm wide.

c. Petals : The petals are rhombic-shaped, sharp tip, and positioned sideways.

Measurements : 6.5mm long, 4.5mm wide.

d. Column : The stigmatic column is short, white, 5.0mm long.

e. The lip : The lateral lobes are completely adnate with the stigmatic column, whereby a hollow is created, which is continued into the spur. At the beginning of the four-'winged', deeply cleft middle lobe, occurs a complex tuberos protuberance, bright orange-yellow to egg-yellow in colour. The middle lobe of the lip is deflexed, making an angle of 90 degrees to the column.

f. Anther : The anther-cap is white, in older flowers, turning black.

Habitat and localities : This Calanthe is, as mentioned at the start, very variable in size. The described plant came from Biak, but the species is probably found throughout the whole of western New Guinea and also in Papua New Guinea. In general, it is found in the primary forest. Plant in a soil mix, mostly made up of humus. Water regularly.

Literature : Calanthe veratrifolia (Willd.) R.Br. has been described often, and is known by several other names.

[Ed. :- It is currently considered (circa 1985) by botanists and taxonomists that C. veratrifolia (Willd.) R.Br. is a synonym of C. triplicata (Willem.) Ames].

Description in 'Dakkus', 2nd Edition, pages 119 - 120, (and page 13, fig. 5); 3rd Edition, pages 144 - 145, (photo.).

'Latif' pages 86 - 87.

'Nova Guinea' Vol. XIV, Part III, page 359, besides mention in other sections.

Schlechter in 'Orch. Dtsch. Neu-Guinea', page 380.

Finally, in the periodical 'De Orchidee' 1933, page 68.

Calanthe engleriana Krzl.

This orchid, which is very similar to C. veratrifolia (Willd.) R.Br., is also a terrestrial species. The pseudobulb is short and surrounded by sheaths, so that on a plant in leaf, they are not immediately noticeable. The number of leaves on a mature plant, capable of flowering, is five, plus one which does not develop. The sizes in succession, starting from outside, one undeveloped leaf, two larger leaves, and one small leaf. The leaves have a canaliculate petiole and fan out wide, plicate lengthwise. The measurements of a 'large' leaf (including petiole), are 70cm long and 20cm wide. It is coloured green to dark green.

The peduncle appears at the base of the pseudobulb, therefore between the bottom (outside) leaves. The peduncle can reach 85cm and is sectioned, while at each node there is a yellow bract. Because of the size of the leaves and their bending sideways, the firm peduncle reaches well above the plant. Flowering takes place on a fully developed plant. On a peduncle 85cm long, flowering begins at 58cm. Over a distance of 27cm, there appears successively approximately 25 flowers, all around the peduncle, each one rotating one third in a spiral upwards. At different stages of flowering, there are a maximum of seven flowers open at one time. Altogether, with the developing buds, the inflorescence forms a cone, with a pointed tip.

The flower of this species is large. The white pedicel, surrounded with a bract 37mm long and 5.0mm wide, is 85mm long and slightly twisted lengthwise. The whole flower is coloured creamy white apart from the bright yellow warts, near the stigma. The specific characteristics of this flower are :-

- a. The long hollow spur. This is 50mm long.
- b. The lip and column are adnate.
- c. The highly cut middle lobe of the lip, of which the measurements are 30mm wide and 20mm long.

Spur, stigmatic column and lip are placed in one line.

In a recently opened flower, the dorsal sepal and the petals are completely plumb with the horizontal axis of the pedicel and ovary; the dorsal upwards, the lateral sepal sideways. The lateral sepals quickly turn to the rear. After a time, the dorsal sepal and the petals bend forward and cover the column. The measurements of the pointed flower segments are :-

Dorsal sepal : 29mm long and 11.0mm wide.

Lateral sepals : 27mm long and 10.0mm wide.

Petals (slightly spathulate) : 26mm long and 8.0mm wide.

Localities and habitat : The plant grows in the primary forest, on the ground

in humus. Since it occurs in the forests of the Vogelkop, on the Noord River (northern) and in Papua New Guinea, it is probable that it is found across the whole of New Guinea.

Cultivation : In a mix, rich in humus, in pots or tins in a shady place. The plant is easily grown.

Literature : 'Nova Guinea' Vol. VIII, Part I, page 24, with illustration. Smith, to some extent, doubts that the plant described by him, is the same as the one described by Kränzlin for Papua New Guinea. The plant described by the author differs slightly also, from the example described by Smith. Despite this, there are enough similarities, taking into account, some variants that occur in Calanthe, to keep the name C. engleriana Krzl., for the plant described by me.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' mentioned on page 380.

Although the similarity to C. veratrifolia (Willd.) R.Br., in the shape of the flower is considerable, Schlechter and Smith appear to conclude it is a new species, because of the considerable difference in size of plant and flower.



Calanthe sp. nov.

The twin-leaved plant is small, the pseudobulb barely noticeable. The canaliculate, petiolate leaf is dark green, ovate-oval, with a pointed tip. The centre vein, and to a smaller degree, the two veins on either side, are indented. Between these veins, the leaves are undulating and plicate. The underside is a pallid green. Some leaf measurements in cm are :-

	Petiole	Length	x	Width
1st leaf	3.0	9.0	x	7.0
2nd leaf	4.5	11.0	x	6.0
2nd leaf	3.0	11.0	x	7.0

The second leaf is larger than the first one.

The inflorescence rises between the first leaf and the stem. The length of the peduncle in the illustrated example is 29cm, 2.5mm across, and in three sections. Each node has a 1.0cm long green bract, surrounding the peduncle. The colour of the peduncle is purple-green, and it gives a brown-green impression. Flowering takes place along 4.5cm of the third internode, having a total of nine flowers, with two together at the top. The flowers are placed in a right-handed spiral, on the peduncle. Each pedicel has a bract, formed like a true leaf, 11.0 x 6.0mm, with an acute tip. The flowers open successively, with two flowers generally open at once. (End of flowering three flowers). The pedicel, including ovary, is 23 to 25mm long, 1.5mm across; light red-purple on a white foundation. It turns 180 degrees to place the flower upright, with the spur underneath. The pedicel is placed at an angle, the last 10.0mm curved gracefully.

The flower, which stays fresh for approximately two weeks, is medium in size, the measurements between the petals being 33mm, between the dorsal sepal and the end of the middle lobe of the lip, 30 to 32mm. The colour on the back of the sepals is red-purple, accentuating the centre vein. On the front the sepals are white, together with the petals and lip. The wartlike growth at the beginning of the middle lobe of the lip is yellow, the 'wings' of the middle lobe and spur, are mildly tinted red-lilac. The flower segments are placed as follows; the dorsal sepal points obliquely to the front, with the tip upwards. The lateral sepals are horizontal and twisted, so that the front points down, with the tips upwards. The petals are angled forward. The middle lobe of the lip is angled downwards, the 'wings' are folded to the rear. The lip is largely adnate with the column. It has a 29mm long spur, 1.5 to 2.0mm across, curved and stretching to the rear.

Flower segments : The dorsal sepal is wide, lanceolate, convex, with an acute

apex, 16mm long, with a greatest width of 9.0mm. The lateral sepals have the same shape, are convex with an acute apex, 16mm long, with a maximum width of 8.0mm. The petals have the same shape as the sepals, but are slightly narrower, 15mm long and 5.0mm wide. The 'flag' of the lip is spatulate, with an incised tip, finishing in two round sections, which partly overlap, and are concave. Closely beneath the stigma, is a yellow callus, three sectioned, and finishing in a flexuose appendage, 2.0mm long. This 'flag' is 11.0mm long and at its widest, near the end, 7.0mm. The retrorse 'wings' are rounded, 6.0mm long and 2.5mm wide. The stigmatic column is short (5.0mm), and white, widening and concave. The white anther-cap is triangular, with a tip pointing downwards.

Locality and habitat : The plant was discovered in April 1960 by Ing. d'Audretsch in flower, in the valley of the Momi River (Ransiki), at approximately 800m above sea level, on the edge of the river, in shade. The plant is fairly strong and grows well in a loose soil mix, rich in humus.

Literature : Not described by Schlechter or Smith.

Phaius tancarvilliae (Banks) Bl.

To orchid lovers, a well known and often described plant, therefore a detailed description seems unnecessary. Like the species Calanthe engleriana Krzl., described in this collection, Phaius is a closely related genus and is terrestrial. Whereas, Calanthe occurs in the shaded forest, Phaius tancarvilliae (Banks) Bl. is a savannah plant.

The rhizome is below the surface soil and short, so the not very large, oblong pseudobulbs are fairly closely packed. It generally has five leaves. These lanceolate leaves are green to dark green, plicate at the beginning and narrowing into a canaliculate petiole, approximately 20cm long, with a total leaf length (leaf and petiole) of 90cm and width of 9.0 to 10.0cm.

The peduncle appears from underneath the pseudobulb, beneath and adjacent to where the leaves are attached, and stands as if it were next to the plant. The green, firm, upright peduncles vary from 70 to 110cm in length, and are sectioned. At each node (six to nine flowerless nodes), the peduncle has a surrounding, light green bract, 6.0cm long and 2.0cm wide. The flowers, which appear all around the last quarter of the peduncle, also have a pale greenish white bract, 5.0cm long and 1.2cm wide. In contrast to the permanent bracts of the non-flowering section of the peduncle, the flower bracts fall with the flower. The flowers open successively. On an inflorescence, which has from eight to thirteen flowers, only four flowers are open, at any one time. The greenish white pedicel is 35mm long and, after a thinner section, thickens to a maximum of 4.0mm. It is sulcate on the thickened section. The lanceolate sepals and petals, which end in a pointed, inflexed apex, are angled towards the front. The sepals are slightly larger than the petals, and both sepals and petals are coloured white on the back. On the inside, the general impression is a bronze colour for the sepals, and more of a purple-red-brown, for the slightly darker coloured petals. On close inspection, the markings are as follows :-

a. Sepals : A yellow base, with a narrow white margin, and a white, pointed apex. From this base run six, red-brown, diffuse, spreading stripes, in the middle, a yellow stripe or clear section. The overall impression is bronze coloured.

b. Petals : On an almost completely covered yellow base, run six purple-red, very diffuse, spreading stripes, giving a pale red-brown impression. There is also a clear centre vein.

The measurements of the sepals and petals in mm are :-

	Base	Max. width	Length
Dorsal sepal	6.0	13	51

	Base	Max. width	Length
Lateral sepals	8.0	14	54
Petals	2.0	13	46

The lip is large, rolled around the column and connected to the base of it. Spread out, the measurements are 44mm long and 39mm wide. On the inside, the lip is coloured pale yellow at the back, covered in fine hairs, and shows three raised ribs, of which the two outstanding ones, form a ridge. The three ribs come together at the end of the lip, forming a small point at the apex. Running outwards from this thickened section of the lip, is a purple-red marking of parallel stripes, running obliquely forward to the pleated margins of the tip, which is white, except for the markings. The pleated margins of the tip curve outwards. The outside of the tip is yellow at the beginning, otherwise white, with two purple-red patches, near the pleated margin. The column is completely white and 21mm long. Flowering occurs in July/August.

Localities and habitat : As previously mentioned, a savannah plant which is usually found in along fields (Imperata). Known localities in west New Guinea, are the Kebar Plains (500 - 600m above sea level), Ransiki (0 - 5m), Wissel Lakes (1400 - 1500m), and the Baliem Valley. However, it is undoubtedly much more widespread from sea level to 1500m. The plant thrives in a good rich humus, in moist but well drained soil. If a shady location is not available, it should not be placed in full sun, but perhaps surrounded with other plants with a height of 70 - 80cm. Although not particularly suitable as a cut flower, it is worthwhile growing in a corner of the garden.

Literature : 'Latif' page 153, (with a somewhat dark coloured picture opposite page 160.)  
 'Dakkus' 2nd Edition, pages 115 - 116, with photograph; 3rd Edition, page 140.  
 'De Orchidee' 1934, pages 391 - 392.  
 'Nova Guinea' Vol. XII, Part III, page 202. A literary statement and a short description of the variety papuanus, which is reputed to be smaller in stature. Considering the large plants from the Kebar Plains, which are certainly not smaller, including the flowers, than the species occurring in Indonesia, a variety was probably somewhat hastily created, on the grounds of differing dimensions. There are however, varieties. From the Wariori River (Arfak Mountains  $\pm$  1000m above sea level), a plant was brought in, with much lighter-coloured, yellow-brown flowers, a pallid yellow lip and wider petals.

Phaius amboinensis Bl.

The pseudobulb of this species is of an unusual length, up to 60cm. The example described here measured 21cm. It is sectioned and six sided, the internodes are somewhat thickened, the apical internode being shorter than the five preceding ones, and it has a blunt apex. The cross section of the first internode of the pseudobulb is 12 to 13mm, the penultimate internode 14 to 16mm, and the apical one 17 to 18mm, so it is slightly clavate. The pseudobulb is green in colour. The roots are thick and succulent, 4.0mm in cross section, white, but coloured green near the light.

The leaves are appressed to the stem and have a short canaliculate petiole. They are glossy green to dark green, thin, plicate and oblong-oval, with a pointed apex. The described plant had eight leaves which, including the petiole, had the following measurements in cm.

	Width	x	length		Width	x	length
1st leaf	2.5		8.0	5th leaf	10.5		33.0
2nd leaf	5.0		19.0	6th leaf	11.5		39.0
3rd leaf	7.5		23.0	7th leaf	11.0		42.0
4th leaf	9.5		25.0	8th leaf	9.0		45.0

Robust plants have leaves that top 55 to 80cm, and have a width of 12.5 to 14.0cm.

The peduncle rises from the middle nodes up to and including the penultimate internode of the pseudobulb, and is surrounded by a bract. The green peduncle has a cross section of 8.0mm, and is 60 to 70cm long. It is sectioned, with large green bracts at the nodes which surround the peduncle, measuring 50mm long and 20 to 30mm wide. They are pointed and slightly darker in colour than the peduncle. Flowers emerge from the sixth node. Each flower has a large broad deciduous bract measuring (flattened) 40mm long, by 20mm wide. In all a flowering peduncle has 10 to 20 flowers, opening successively, with three to four flowers being open at the one time.

The flower : While in bud, the flower is in an upright position, with the underside appressed to the peduncle, to enable it to assume the correct position while opening. The pedicel turns, and it is furrowed into five sides. The pedicel, initially white, is coloured light green near the flower, 36mm long, and at its thickest, 5.5mm in cross section. The flower is fairly large and measures 55mm, between the ends of the petals when completely opened. The normal position of the flower petals is obliquely forward, so that the flower is only about three-quarters open. The sepals are creamy white, inside and outside, without any markings. The petals are also white

on the outside, and inside, along the length, are a light yellow in the middle. The lip is light yellow at the foot of the column, inside and outside a bright yellow. The column is completely white.

Flower segments :

a. Dorsal sepal : Oblong-oval, with a blunt apex, concave, a clear centre vein with three veins on either side. They are 4.0mm at the base, with a maximum width of 12.0mm and a length of 32mm.

b. Lateral sepals : Oblong-oval, concave, one half of the blade slightly shorter than the other. They have a blunt apex, and the veins are similar to the dorsal sepal. The base measures 4.5mm, with a maximum width of 12mm, and a length of 31mm.

c. Petals : Oblong, lanceolate and slightly spathulate, with a blunt apex. Also slightly concave. The centre vein is clear, with two veins on either side. The base measurement is 1.5mm, with a maximum width of 8.0mm and a length of 31mm.

d. Lip : This is rolled around the column. The lateral lobes are broad, and the middle lobe short, with only a slight division, between the lateral and the middle lobes. Against a yellow background, the lamina is light yellow to white. It contains three ridges which widen in the centre and, at this point, are almost white. The middle ridge is divided into two by a groove, and this ridge runs through into the middle lobe, and ends in a point. The lamina and adjacent parts of the lateral lobes are covered in fine white hairs. Measurements of the lip (flattened) are, length 27mm and a maximum width of 30mm.

e. Column : This is 24mm long, at the base 4.0mm and 6.0mm in cross section at the top, therefore clavate, and a creamy white in colour. The shape is three sided and at the top, rounded with the margins inflexed, particularly near the top. The anther-cap is chalk-white and there is no spur.

Localities and habitat : The species may be found in the forest in fairly moist terrain, behind the village of Windessie (neck of the Vogelkop) and in the forest reserve at Tafelberg near Manokwari. The plant is robust and grows strongly in a mix of clay, sand, leaf-mould and some old manure, preferably in a shaded position. The specimen flowered in April 1960, main flowering in September/October 1961, and again in April 1962. New growths appear in the autumn, after the dry season in the middle of the year.

Literature : Described in the 'Flora of Buitenzorg', Part VI, 'Die Orchideen von Java' by J.J.Smith, pages 189 - 199.

Mentioned in J.J.Smith's 'Die Orchideen von Ambon'

Localities mentioned being East Java, Ambon and Celebes.

In Schlechter's 'Orch. Dtsch. Neu-Guinea', page 375.

Smith is of the opinion that the species from New Guinea is a variety, and mentions a species with a completely white lip. Although the plants found in New Guinea show some slight differences, they are undoubtedly Phaius amboinensis Bl. The species described by Smith is slightly larger in dimensions, but this does not appear to be definitive enough.

\* More important is what Smith submits regarding the labellum lamina :-

'innen in der Mitte verdickt, am Grunde schwach 3-rippig, gegen die Spitze mit 2 platten Leisten und mit Langsfurche, besonders auf den Leisten dichtmehlig weiss behaart, ausgespreizt  $\pm$  3.5cm lang, 3.2cm breit, hellgelb, innen am Grunde und der Mittellappen rot punktiert.'

In principle, there is no difference, except in colour.

\*Thickened in the middle, weakly three-ribbed at the base. Towards the apex, two flat crests, with a longitudinal groove and floury white hairs on the crests. Spread out  $\pm$  3.5cm long, 3.2cm broad, pale yellow inside at the base and at the middle lobe.

Phaius montanus Schltr.

The following description has been made with data and drawings by J.F. van Horn of Hollandia.

The pseudobulb is approximately 4.0cm long and up to 2.0cm across. After several undeveloped, sheath-like, pallid green leaves, the pseudobulb carries four petiolate leaves, which stand upright and curve outwards near the apex. Measurements of four leaves in cm are :- 53.0 x 8.0, 57.0 x 6.0, 66.0 x 5.5, 98.0 x 11.0, giving the length and greatest width. The dark green leaves are plicate lengthwise, along the seven sharply marked parallel veins. The light green peduncles rise from the hollow of the leaves. Occasionally, a plant will have two peduncles at one leaf. The peduncle is 40 to 70cm long and carries the flowers loosely, having  $\pm$  20 flowers, which are regularly spaced around the peduncle. The flowers open from the bottom upwards successively, with seven to ten being open at once. The flower is large and measures  $\pm$  8.0cm across the lateral sepals. Sepals and petals are positioned in one plane and are identically coloured, on the back greenish yellow, and on the front a red-brown. The lip is initially yellow-green, the front part of the lateral lobes wine-red, and the middle lobe wine-red, with darker red patches. The flower opens up well, with the sepals and petals virtually in one plane, and at an angle of about 60° to the axis of the lip. The lateral lobes of the lip are rolled around the column, adnate for about 8.0mm and form a hollow. There is a short, very large spur. The pedicel is 3.0cm long and green in colour.

## Flower segments :

- a. Dorsal sepal : Lanceolate, pointed, 47mm long, 12mm wide. Coloured red-brown on the inside, with darker parallel veins, the top slightly lighter in colour.
- b. Lateral sepals : Angled, lanceolate, acute apex, 54mm long, 12mm wide. Colour similar to dorsal sepal.
- c. Petals : Narrow, angled, lanceolate, truncated, 47mm long, 9.0mm wide. On the inside, an even red-brown, with a yellow stripe in the middle, the top yellow-green.
- d. Lip : Tri-lobed and overall 45mm long and 28mm wide, across the flattened lateral lobes. Initially adnate with the column, the lateral lobes are obliquely oblong, squared. The middle lobe is almost square, with undulating margins. At the front, the lip is yellow-green on the outside. The front side of the lateral lobes and the middle lobe are wine-red. The flat lamina has three ridges; two short outer ridges in the middle, and in between these, a longer centre ridge, which carries on into the middle lobe. The ridges are



white, with wine-red stripes in between. Back inside, the lip is pale yellow-green.

e. Column : 20mm long, pale yellow-green, white on top.

Localities and habitat : The described plant is found in the valley behind Kota Nica, near Hollandia, at  $\pm$  200m above sea level. Also the Legare River and Lorentz River. It grows in humus in full shade and is easily grown in a shady spot in the garden. Flowering period in 1962 was April/June.

Literature : Schlechter in 'Orch. Dtsch.Neu-Guinea' page 374.

'Nova Guinea' Vol. XII, Part III, pages 203 - 205.

'Dakkus' 3rd Edition, page 139 (var. seransis).

J.J.Smith's 'Orchidaceae seranenses' pages 106 - 108 (var. seranicus).

Spathoglottis plicata Bl.

The genus Spathoglottis, and in particular the above species, are well known and very common orchids in Malaya, Indonesia and New Guinea, and deserve more attention than they generally receive. There are some varieties which are certainly worth cultivating. Spathoglottis, belonging to the same group [sub-tribe Blettiinae] as Phaius and Calanthe, is a terrestrial, which occurs in more-or-less open terrain and fern or Imperata fields. The pseudobulb is strongly compressed into a more-or-less ovate tuber, which varies in shape and size, within the different varieties. The pseudobulb carries three to six oblong leaves, plicate lengthways, and light to dark green, but sometimes purple-green in colour, and end in a pointed apex. No measurements are given, since these are quite variable, and the size of the plant is strongly dependent on the growing conditions. There are obvious varieties, which have considerable differences in size of pseudobulbs and leaves, as well as the peduncle and flowers.

The peduncle appears at the base of the pseudobulb, it stands upright or slightly bent and has bracts at the nodes. The flowers are in a bunch and open successively. The pedicel has a fairly large concave bract where it joins the peduncle, and this dries up after the flower has withered. A peduncle which has been flowering for a long time may carry these bracts for a good part of its length. The bracts in general are inclined to be the same colour as the flower, except for the apex.

The flower has a regular shape. The sepals are concave, ovate to wide lanceolate, with a pointed apex, the petals are virtually oval with a point, and sometimes slightly concave. The column is long, clavate, and is deflexed. The lip is firmly fixed to the foot of the column and is clearly tri-lobed. The lateral lobes point obliquely sideways, forward and upwards, inflexed towards the column. Immediately past the point where the lateral lobes originate, the middle lobe has two elevations, and underneath two lateral appendages. The middle lobe narrows into a small stalk, after this, flaring out into a wide horizontal, cordate-shaped 'flag'. The colour of the petals and sepals is usually identical, and the same colour, as a rule, applies to the back of the column and the 'flag' of the middle lobe of the labellum. As the flowers are tinted lighter, a colour nuance is created between the flower petals, the column, and the 'flag'. These are of a darker tint. The middle section of the lip, the lateral lobes, the ridges, the narrow bridge, and the beginning of the 'flag', are principally yellow. At the lateral lobes, the yellow ground colour merges with the main flower colour (usually pink to lilac) so that these lateral lobes are coloured a diverging dark orange to magenta.

Otherwise, the yellow mid-section is often speckled a cinnamon colour. The middle section of the lip, including the elevations and lower appendages, are more-or-less covered with fine white hairs. The flower has no fragrance and the colour varies from stark white (always excepting the yellow section of the lip) to dark red-purple, with all the variations in between.

Varieties : This is a difficult point with Spathoglottis. The author is of the opinion, that as long as the main characteristics are the same, and in particular, the lip answers to a particular form, variations of habit and colour, should only lead to the recognition of a variety, and no new species name should apply. When applying these rules on an amateur basis, we can distinguish the following varieties :-

1. Common variety : Leaves 40 to 100cm long, by 4.0 to 7.0cm wide. Peduncle 60 to 100cm long. Flower 4.0 to 5.0cm wide, otherwise shaped as in the previous description, flower bract beige, blushed with colour of flower, 20 x 14mm. Colour of flower, from stark white to red-lilac, with all shades in between. (Commonly found.)
2. A variety, which as a rule is of smaller dimensions, and has thin, shorter peduncles. It is covered with fine hairs near the inflorescence. The pedicel is also covered in very fine hairs, and the flower petals point more to the front. Width across the petals, is up to 4.0cm. Colour is pink-lilac to red-lilac, more finely shaded than in variety 1. Bract pallid yellow with purple stripe, 11.0 x 6.0mm. Leaf dimensions 40.0 x 4.0cm. Does not have the same profusion of flowers. (Ajamaroe and surrounding areas).
3. A beautiful variety, with flowers that open well, and which are 5.5cm across the petals, deep lilac. No trace of yellow is present on the lip, the middle section of which is white, marked deep lilac. Leaves 40.0 x 9.0cm (wider than usual). Peduncle 60cm, green. Bracts deep lilac, 18 x 12mm. (Islands near Roemberpon in Geelvink Bay).
4. A beautiful, very robust variety from Rombobo Island near Sorong. Average leaves measure 150 x 7.0cm, the peduncles are also 150cm long, and 5.0 - 7.0 mm in diameter. The flowers which open up well, are lilac-pink to red-lilac and large, up to 6.0cm between the petals. The flower bracts are a similar colour to the flowers, except for the green apex. It measures 24 x 11mm, up to 34 x 14mm. Each flower head has six to eleven flowers open at once, and the total number of flowers, flowering successively, is very large. (100 - 200).
5. A slender plant with white flowers. The leaves measure 80.0 x 5.0cm. The peduncle is green, up to 60cm long and 2.0mm thick. Near, and inside the flower bunch, it is covered in fine hairs. The pedicel is coloured light lilac-brown and is also covered in fine hairs. The 14.0 x 6.0mm flower bract is green with a black tip. The flower, which measures 4.7cm between the

petals, is not so robust. The sepals and petals are narrower. The 'flag' of the middle lobe of the lip is small, 6.0mm wide, compared with previous varieties which are approximately 10.0 to 13.0mm.

6. A beautiful variety which is found at Hollandia, growing on laterite. The leaves are rather long, up to 70cm, but narrow, 2.5cm wide. The flower is smaller than previously described varieties and measures 36 to 38mm across the petals. The colour of the flower petals and the 'flag' of the lip is a beautiful bright red-lilac colour. The 'flag' of the lip is strongly convex, except for the reflexed tip. It is wide but short, so that the cordate shape is less evident. More varieties are no doubt in existence.

The yellow species [form] of S. plicata Bl., has not been found in west New Guinea, by the author.

There are a number of other species, and reported in 'Nova Guinea' are :-

Vol. VIII, Part III, Spathoglottis obovata J.J.Sm., page 529.

Vol. XVIII, Part I, Spathoglottis wariana Schltr., page 18.

Vol. XVIII, Part I, Spathoglottis doctersii J.J.Sm., page 18.

Schlechter reports S. chrysantia (small leaves, large yellow flowers),

S. grandifolia Schltr. (large plant, deep purple flowers),

S. pulchra Schltr. (deep red-lilac flowers, see above sub-variety 4.)

Localities : Across the whole of New Guinea. Culture is not difficult and the plant, which often occurs on very poor clay and sandy soils, appears grateful for a decent soil mix. In the sun, and if possible, shaded by ferns or other ground cover up to 40cm high.

Literature : 'Dakkus' 2nd Edition, page 123; 3rd Edition, page 148.

'Nova Guinea' Vol. VIII, Part I, page 25; Vol. VIII, Part III, page 529;

Vol. XII, Part I, page 14.

Schlechter's 'Orch. Dtsch. Neu-Guinea' pages 393 - 401.

'De Orchidee' 1932, page 159.

'Flora of Malaya' Vol. I, page 166. And other works.

[Latif, page 174, with illustration].

Spathoglottis altigena Schltr.

This concerns a small, slender Spathoglottis from the mountains. The closely spaced pseudobulbs are small, 1.5cm high and approximately 1.0cm across, carrying four leaves of unequal length. The leaves are rather long, green and lightly plicate lengthwise. The dimensions of the largest, the third of the four leaves are, length 45cm, and greatest width 3.0cm.

The peduncle arises from the side of, and near the base of the pseudobulb. It is sectioned and smooth, coloured deep red-purple, approximately 50cm long, and carries successively, approximately eight well spaced flowers. The flower bracts are tinted bright red-purple, deeper in the centre, oval with a sharp point, concave, 13.0mm long and 6.0mm wide. The wholly bright red-purple tinted flower opens well. The pedicel, including ovary, is coloured deep red-purple and 30mm long. The flower measures approximately 2.0 x 2.0 cm. The sepals are concave, the petals concave in the middle, and convex at the margins. The pre-eminent identifying point is the lip, of which, firstly, the lateral lobes point forward then sideways, and secondly, the middle lobe is short, widely stalked with a virtually round 'flag' and pointed tip. The lateral and middle lobes are also evenly coloured red-purple, the mid-section with two sparingly hirsute calli, is coloured egg-yellow.

## Description of the flower segments :

- a. Dorsal sepal : Concave, oval with a pointed apex, several parallel veins, of which three are clearly visible. Base 2.5mm, greatest width 7.0mm and a length of 19.0mm.
- b. Lateral sepals : Angled oval, strongly concave, base 1.0mm, greatest width 6.0mm, length 18.0mm. Veins are barely noticeable.
- c. Petals : Wide oval, margins convex, base 1.5mm, greatest width 8.5mm, length 19.0mm.
- d. Column : Usual Spathoglottis form, in curved position 10.0mm long, on the back deep red-purple, lighter colour underneath.
- e. Lip : Lateral lobes curved forward, middle lobe short with wide stalk and rounded 'flag', ending in a point. Only two calli on top. Middle section egg-yellow, with two red-purple stripes above and below the calli.

Dimensions : Length from the top to the end of the middle lobe 11.5mm, across the flattened lateral lobes 14.5mm, width of 'flag' 5.0mm. The flower is, except for a few hairs near the calli, glabrous. Each flower remains open for three days, two or three flowers being open at the same time.

Localities and habitat : Found near the Wissel Lakes, at approximately 1700m above sea level. Habitat unknown, however, it grows well in the shade and

requires a lot of moisture.

Literature : Schlechter's 'Orch. Dtsch. Neu-Guinea', page 396, with an illustration of the flower in the 'Figuren-Atlas' under No. 522. The species belongs to a small group of mountain Spathoglottis, recognisable by the shape of the middle lobe of the lip and the position of the lateral lobes. They are usually plants with very small pseudobulbs and narrow leaves. The described plant S. altigena Schltr., was cultivated and flowered at Manokwari at sea level and differs slightly from the Type specimen, the flowers seeming slightly larger. Schlechter reported that an inflorescence contained 10 - 15 flowers.

Dendrobium compressicolle J.J.Sm.

This species belongs to the extensive section *Diplocaulobium*, the pseudobulbs of which consist of only one internode, thickened at the base, and only one leaf is present without a sheath. The flower which opens for only one day, appears from a folded, dry flower sheath at the apex of the pseudobulb. The plant is recognisable by the shape of the thickened part of the pseudobulb, this has a 'streamlined' shape, rounded on one side and sharply flattened on the other, with one side bulbous and the other hollow. The bulbous side of the next pseudobulb is pressed against the hollow side of the first one. The pseudobulb is yellow-green, 20 to 30cm long and initially has membranous sheaths up to 7.0 to 8.0cm high, these later wither. The non-thickened part of the pseudobulb is oval with angular edges. The apex widens slightly. On top of this stands the oblong-oval, light green to green, thin leaf. It is concave and the pointed apex is emarginated slightly. An average leaf is 2.5 - 3.5cm wide 11.5 to 16.0cm long. A light brown sheath at the apex of the pseudobulb is 2.5cm long. From this rises the peduncle with one, but seldom two flowers. The peduncle is 2.5cm, the pedicel 10.0 to 11.0cm long, so that the whole is about as long as the leaves. The peduncle and petiole are cylindrical, 1.5mm across, light green at the beginning and turning to a light pink-brown near the top.

The flower is completely open and has very slender flagelliform petals which curve backwards. All the flower tepals are the same colour. Initially, over 15mm light yellow, merging into wine-red and lilac-red.

## Flower segments :

- a. Dorsal sepal : Base 4.0mm, very slender, 50mm long.
- b. Lateral sepals : Base 5.0mm, slender, 52mm long.
- c. Petals : Wholly flagelliform, base 1.0mm, length 40mm.
- d. Column : 3.0mm long, elongated column-foot 5.0mm long. At the front of the column are two patches, the bottom one yellow, the one above (below the stigma) is wine-red. The anther is chalk-white.
- e. The lip : This is tri-lobed. The lateral lobes are speckled red-purple and the margins are marked deep purple. The middle lobe starts narrow and flares out. The widest section is folded, egg-yellow with a few deep red flecks. The labellum lamina contains two ribbed, egg-yellow ridges, which run into the middle lobe.

Flowering takes place regularly and all plants flower simultaneously. Each bulb flowers many times. Although the flowers remain open for only one day, many *Diplocaulobiums* have relatively large flowers and a flowering size plant

is certainly worth cultivating.

Localities and habitat : The plant is epiphytic and should be placed in a pot with fern-fibre, in half shade. It is easy to cultivate. The described example came from the Karst Plains at Ajamaroe.

Literature : 'Nova Guinea' Vol. XII, Part I, page 39, with illustration XI-29, locality Hollandia, 50m above sea level.



Dendrobium hydrophyllum J.J.Sm.

As the second representative of the extensive section *Diplocaulobium* (32 species in west New Guinea), another easily identifiable species is included, for it has a suprisingly beautiful flower. The pseudobulb consists of one internode and has one very narrow leaf. The red-brown pseudobulb is initially thickened for the first 1.6cm, with a cross section of 7.0mm. The total length is 10.0 to 14.0cm and the thinner section is 1.5mm across. Immature pseudobulbs are brownish green, later changing to a deep brown-red. The thickened part in older pseudobulbs is wrinkled. The bulb carries one leaf which is green to deep green, 10.0 to 12.0cm long and 5.0 to 6.0mm wide and it is 'V'-shaped and curved near the apex.

Flowering takes place from a dried, approximately 13mm long and 2.0mm wide folded sheath at the apex of the pseudobulb. Usually only one flower is present. The flower is rather large and reaches a height of 60mm, between the the end of the upward and sideward hanging sepals. The petals are reflexed. When it opens, the colour of the short-lived (ephemeral) flower is white at the start, and egg-yellow in the top half. During the day the colours change to yellow at the start, the next third section lilac-pink, and the top section yellow to egg-yellow. The lip has very deep blood-red lateral lobes and a delicate middle lobe initially white, and later a very light purple. The two transparent, raised ridges carry through into the middle lobe.

## Flower segments :

- a. Dorsal sepal : At the base, 3.0mm reducing to 1.5mm wide, 29mm long, concave over the whole length. It stands upright.
- b. Lateral sepals : Concave, curved, base 5.5mm wide, 29mm long and positioned sideways and downwards.
- c. Petals : Very narrow, bent backwards, base 1.0mm further on 1.5mm wide, 27mm long and totally concave.
- d. Column : The column is pale yellow, 3.5mm long. The elongated foot is bent, 7.0mm long and strikingly marked on the inside, beneath the pale yellow stigma is a dull red patch, underneath that, a bright red patch consisting of fine red speckles.
- e. Lip : This is clearly tri-lobed, the upstanding lateral lobes are separated from the middle lobe, and have rounded tips which are coloured a very deep blood-red. The lateral lobes are 9.0mm long. The middle lobe is 6.5mm long and 6.5mm wide with pleated margins. It is very frail.

Habitat and Locality : The plant is easily cultivated in a small pot of fern-

peat and fern-roots which are well drained. It prefers a light but shaded position. Found at Waigeo Island (Majalabit Bay), Vogelkop and the eastern Cyclops Mountains behind Hollandia.

Literature : In 'Nova Guinea' Vol. VIII, Part I, pages 56 - 57, illustration XXI-65. The description matches in every detail, except the plant described by Smith is smaller in all respects. We are either dealing with a variety or Smith has described an inferior flower, caused by unseasonable flowering. The author has studied many flowers and plants from Waigeo Island and the Cyclops Mountains, which flowered several times. These always had larger flowers than Smith indicated.

[Schlechter mentions this species in 'Orch. Dtsch. Neu-Guinea' page 466, in general comments on the section Diplocaulobium.]

Dendrobium comatum (Bl.) Lindl.

This species belongs to the section Flickingeria and the main characteristic of this is the branching pseudobulb, while the leaves do not have a sheath.

**Pseudobulb :** The first pseudobulb usually has four internodes and the apical internode is pronounced, oval shaped, thickened and sulcate, carrying one leaf and without a sheath. This first pseudobulb is approximately 15cm long, with the largest cross section 2.3 to 2.7cm. At a node between the third and fourth internode, a sectioned side branch originates, having up to ten internodes, these becoming thicker towards the apex. The first internodes are round and smooth, the terminal internodes round and sulcate. This side branch branches again, and at the end of each branch stands one leaf. The pseudobulb and branches are a shining red-brown colour.

**Leaf :** The leaves are thin, parchment-like, convex-oval and slightly emarginate at the apex. They are dark green in colour, with light green veins. There are five to six parallel veins beside the main vein. The dimensions of the first leaf are, length 12 - 13cm, width 5.0 - 7.0cm. The pseudobulbs and the side branches have light green, membranous sheaths, which wither and disappear.

**Flowering :** This only takes place at the apex of the side branches, from pockets of small dry sheaths. Sometimes, four to six of these are grouped together. Flowering takes place several times a year on the whole of the plant simultaneously. It is suspected that flowering takes place after large fluctuations in temperature.

**Flower :** The flowering period is short, slightly less than two days and the flower has no perfume. The 2.0cm long pedicel is light yellow with a greenish ovary.

The dorsal sepal is very light yellow to beige and points obliquely forward. It is narrow, ending in a point, with the margins curling backwards. From the base, halfway up, it is spotted red-purple. The length is 12.0mm and the width 3.5mm.

The lateral sepals point obliquely sideways and are slightly wider than the dorsal sepal. Otherwise, colour and markings are identical. The dimensions are, base 7.0mm, length 13.0mm.

The petals are very narrow and point forward from the base up to half the length, they are finely speckled purple. Length is 12.0mm, width 1.0mm.

The lip is narrow and long, clearly tri-lobed, although the lateral lobes are small, compared to the long middle lobe which ends in a fringe of fine hairs. The dimensions are, across the lateral lobes 7.0mm, the length up to the

fringe 15mm, and the length of the fringe hairs  $\pm$  6.0mm. The base colour of the lip is pale yellow, with fine purple parallel lines running from front to rear along the lateral lobes. The middle lobe has two very pronounced light yellow ridges, with a third less clearly defined between them. The two main ridges carry through into the middle lobe where they meander, zig-zagging away and contain fine combs, tinted purple. The fine fringe hairs are pale yellow.

Habitat and localities : The species is an epiphyte and prefers to be grown dry. It will tolerate strong light and sun. It is probably found across the whole of New Guinea and can be grown in a pot of fern-roots. The plant illustrated came from Waigeo Island.

Literature : 'Nova Guinea' Vol. VIII, Part III, page 551. Further J.J.Smith in 'Die Orchideen von Java' page 313.

'A Revised Flora of Malaya', page 266 (with illustrations).

'Botanical Register' 1844, page 41.

A close relation is D. thysanochilum Schltr., which has five ridges on the lip. Schlechter in 'Orch. Dtsch. Neu-Guinea' page 454, tab. 571.

Dendrobium rhipidolobum Schltr.

[Flickingeria rhipidoloba (Schltr.) Hawkes]

As the second representative of the section *Flickingeria*, this plant which virtually every orchid lover has come across, is described here. Like in D. comatum (Bl.) Lindl., the pseudobulb branches. However, the creeping rhizome forms pseudobulbs every 2.5 to 3.0cm, so the upright branches stand further apart. Sometimes the distance apart is up to 5.0 to 7.0cm, whereby the plant requires a lot of room. The first pseudobulb begins with five thin, yellow-green internodes, approximately 7.0 to 10.0cm long and 3.0 to 4.0cm across. Following this is a sixth internode which is thickened. This pseudobulb is 6.0cm long, light green, sulcate, oval with angular sides, 6.5 x 9.5 to 8.0 x 11.0mm across. It carries an upright, sheathless, oblong oval, green leaf, firm, thin and pointed. The leaf tip has only a slight or no emargination. A leaf is 12.5 to 15.0cm long and 3.2 to 4.0cm wide, with a depressed mid-vein forming a rib underneath. On either side of the main vein, three or four light green, parallel veins are visible. At the top of the thin fifth internode, or at the foot of the thickened sixth internode, again rises a pseudobulb, with five thin and one thickened internodes, also carrying a single leaf. This second series and the following third series are in all respects, slightly smaller than the first pseudobulb series. The pseudobulb of each series is surrounded initially by a light brown sheath that soon withers. The whole plant is about 30 to 40cm high.

Flowering takes place from a pocket of small dry sheaths at the apex of the thickened internode of a pseudobulb series, usually one flower, seldom two flowers at once. The flower lasts one day and all plants flower simultaneously. The flower is coloured an even pale yellow, front and rear, the petals coloured slightly lighter than the sepals. The middle lobe of the lip is white, the lateral lobes yellow. The shape of the flower is triangular, through the lateral sepals being positioned horizontally sideways. The tips of the flower petals are bent slightly backwards. The flower is 2.0cm wide and 1.5cm high. The pedicel is 7.0mm long, pale green-yellow with fine deep purple speckling, which carries on to the base of the sepals.

Flower segments :

- a. Dorsal sepal : Lorate, convex, ending in a point. No visible veins, 10.0 mm long, 4.0mm wide.
- b. Lateral sepals : Oblique-triangular, slightly oval, with a pointed apex. At the beginning slightly concave and further down convex. Base 7.0mm, sides 10.0 and 13.0mm, width 4.0mm.
- c. Petals : Slightly spatulate, with a pointed apex, convex, 9.0mm long and

greatest width 3.0mm.

d. Column : Short, anther white, with three parallel grooves.

e. Lip : Tri-lobed, with pronounced pointed lateral lobes which bend slightly towards the column. The middle lobe is comparatively large, white, with strongly pleated edges which end in two round lobes, with a groove in between. There are three ridges, yellow and smooth on the mid-section, the outer ridges carry through into the middle lobe, where they become pronounced and meander zig-zagging away. Flattened, the dimensions of the lip are, total length 13mm, width across the lateral lobes 6.5mm, and across the middle lobe 8.5mm. Flowering was observed in April/May.

Localities and habitat : The species occurs widely. Found at Waigeo Island, Ajamaroe, Jautefa Bay, Noord River, generally in Papua New Guinea and in the bordering Indonesian regions, up to 350m above sea level. It grows easily on limestone blocks with humus, and prefers light shade.

Literature : Description in 'Nova Guinea' Vol. VIII, Part I, page 60, illustration XXII-70.

Mentioned in Schlechter's 'Orch. Dtsch. Neu-Guinea' on page 455.

In the 'Flora of Malaya' Vol. I, page 257 (with a good illustration).

D. lacinosum Ridl. is described, which closely resembles D. rhipidolbum Schltr.

[Ed. :- Dendrobium rhipidolbum Schltr. is one of the species from the section Flickingeria transferred to the genus Flickingeria Hawkes. An excellent paper on the new genus is found in 'Orchid Genera in Thailand' Vol. IX, (1980), by Gunnar Seidenfaden in Dansk Bot. Arkiv bd. hft. I.]

Dendrobium inequale Rolfe

This Dendrobium belongs to the section Euphlebiium and is included as an example in this collection.

The pseudobulb is initially yellow-green and covered with grey-brown sheaths, later yellow, it is sectioned and clavate, 20 to 25cm long, carrying two to three leaves at the apex. Since the shape of the pseudobulbs is a fairly good identification point, the following is also mentioned. After three or four oval internodes, 2.5cm across, it gradually thickens and diminishes again slightly, near the apex. This thickened part is four sided and rhombic in cross section. Two sides of the 'diamond' have an elevated rib and the other two sides are furrowed, producing an inflorescence on every other node. Each 20cm pseudobulb can carry seven inflorescences, three of which are on each of the two sides of the oblique square, and one on a short apical internode. The pseudobulb stands upright or curves.

The leaves number two or three, placed together on a short apical internode. It is oblong-oval, with a pointed tip, not emarginate, thin parchment-like, with a strongly depressed mid-vein and pronounced rib underneath, yellow-green to green. The leaves are convex when grown in the shade, and curved at the apex; plants grown in more light have a 'V'-shaped leaf. The dimensions of the leaf are, length approximately 11.0cm, greatest width 3.0cm.

Flowering takes place on a short, 9.0mm long, light green peduncle, which is surrounded with a few loose transparent white, gossamer bracts. The peduncle as a rule has only one flower. On the plant described here, which had a pseudobulb that flowered for the first time from the apical internode, two flowers were produced; these flowered one day apart. After flowering, the peduncle withers and drops, leaving a depression in the pseudobulb. This is a typical identification mark.

The flower : This is fairly large, about 4.5cm high by the same width, opening well, all flower segments being an even pale cream to pale canary-yellow colour without markings. Only the slightly darker yellow tube-shaped lip is marked with red-brown to chestnut-brown along the edge of the short, pointed middle lobe, and on the labellum lamina. Unfortunately, the flower only remains completely open for six or seven hours, one morning. The petals and sepals are positioned virtually in one plane, sideways in a regular windmill shape, with the petals in line with the opposite sepals. The pedicel is 25mm long, pale yellow; the bract is gossamer-like, white, 12mm long.

Flower segments :

- a. Dorsal sepal : Positioned slightly forward and then vertical, lingulate, with a blunt apex, convex, length 26mm, width 10.0mm.
- b. Lateral sepals : Positioned slightly forward and then sideways-downwards, convex (the tip sometimes concave), strap-like, blunt tip, length 28mm, width 12mm.
- c. Petals : Rather wide base, spathulate with pointed tip. First two-thirds convex, with the tip sometimes concave. Dimensions, base 3.5mm, greatest width 8.5mm, length 25mm.
- d. Lip : Tri-lobed, with strongly developed round lateral lobes, which form a tube towards, and sometimes over the top of the short column. Middle lobe short, running into a pointed triangle. Flattened, the lip is ovate, with a pointed appendage at the blunt end (the middle lobe). In the back of the lip is a callus in the shape of a free-standing arrowhead. Then follows a block of ridges. The middle one is a smooth rib and next to it are two sharply raised ridges, which have pointed protuberances. Next to these ridges are a further two ridges, which carry the same pointed projections, a total of five ridges therefore, which end in between the lateral lobes, and form into five plus two lines. These run into the middle lobe. On the lateral lobes there are colourless veins running towards the margins. The callus-block is speckled, shining chestnut-brown, the labellum lamina and the seven strips are marked a pallid yellow-brown (cinnamon), including the band along the margin of the middle lobe.
- e. Column : Pale cream, short. Anther, chalk-white.

The plant described above, differs slightly from the original description, the colours of the lip are usually stated as being red or red-purple, and no mention is made of double flowers.

Localities and culture : The described plant was found near Ajamaroe, also Hollandia. According to the literature, the western part of New Guinea, up to 900m above sea level. Place in a pot with fern-roots and fern-peat, in half shade. Although the plant often stands or hangs at an angle in its natural habitat, it will also grow upright.

Literature : Described by Rolfe in the 'Kew Bulletin' 1900.

Also with a description in English in the 'Botanical Magazine' of 1900, under No. 7745.

Mentioned in Schlechter's 'Orch. Dtsch. Neu-Guinea', page 478 - 480.

In 'Nova Guinea' Vol. VIII, Part I, page 63; Vol. XII, Part I, page 40.



Dendrobium lancifolium A.Rich. var. papuanum J.J.Sm.

This terrestrial orchid belongs to the section Calcarifera. The pseudobulbs are thin, very elongated, sectioned stems, which reach a height of 1.7m, with a maximum cross section of 0.5cm. They have a strong tendency to branch out, this occurring in particular if the plant is damaged. It can also happen frequently through the plant being brittle. It is therefore, an untidy looking plant even in nature. The leaves are placed in one vertical plane on either side of the stem. The leaf sheaths, which surround the stem remain for quite some time, and their grey-brown colour obscures the brown-red colour of the stem. The leaves are convex, thin and have a depressed mid-vein, with a clearly visible parallel vein on either side. After a wide-oval start it finishes in a narrower end, the apex being rounded and unevenly emarginated. The colour of the leaves is a glabrous green to deep green on top, grey-green, sometimes blushed purple on the underside of young top leaves. The dimensions are quite variable, dependent on the dimensions of the main stem and side branch. The average measurement is 7.5 x 1.5cm.

Flowering takes place on the apical internode of the main stem and side branches. The short, 1.0 to 2.0cm long, purple tinted peduncle, appears from the nodes and has two to four flowers.

Flower : The main colour is red-lilac. The flower shape is a half-arch, dimensions between the lateral sepals is 3.5cm and between the dorsal sepal and the lip, 2.5cm. The purple-brown pedicel is 2.5cm long. The flower appears to be three-quarters open, the forward-pointing, convex flower petals curve upwards and sideways, the middle lobe of the lip, curves downwards. The segments have the following shape and dimensions.

- a. Dorsal sepal : Ovate, with a blunt end. Base 6.0mm, greatest width 8.0mm and length 13.5mm. The mid section is tinted pale, the margins and apex, a deeper red-lilac. There are five, sometimes six veins.
- b. Lateral sepals : Oblong-triangular, the ends where they are connected are connate. Base 17.5mm, long margin 22mm, short margin 16mm. Tinted a deep red-lilac near the top, are five veins.
- c. Petals : Diamond shaped, spatulate, frayed to slightly apex, seven veins, lighter near the base, otherwise bright red-lilac. Dimensions are, base 4.0 mm, greatest width 9.0mm, length 15.5mm.
- d. Column : Short and white, the anther-cap red-lilac. The elongated column-foot is 15mm long, concave and flecked red-lilac.
- e. The lip : This is connected to the curved end of the column-foot by a separate protuberance. The lip is concave and curved. The lateral lobes point forward and are an angular shape. The middle lobe is as long as it is

wide, 9.0mm, with a wrinkled round edge at the end. Ribs or ridges are not evident. Underneath and inside, the lip is covered with red-lilac flecks and is speckled on the lateral lobes. Along the middle, and into the middle lobe are two irregular shaped, oblong red-lilac patches. The front half of the middle lobe is tinted evenly red-lilac, with a few barely visible, slightly deeper coloured parallel lines. Dimensions of the lip (flat), 16mm across the lateral lobes, 25mm long.

Localities and habitat : Found on limestone soils and limestone rocks at Waigeo Island, Ajamaroe, Biak Island, around Hollandia and undoubtedly other places. Grows easily in a somewhat humus rich, well drained soil mix, with the base of the plant in the shade.

Literature : Smith mentions a variety papuanum J.J.Sm. for New Guinea, in connection with the large half round middle lobe of the lip, which was discovered at the Anggi Lakes by Gjellerup, see 'Nova Guinea' Vol. XII, Part IV, page 325.

A drawing of D. lancifolium A.Rich. is present in the 'Bulletin du Jard. Bot. de Buit.', Series III, Vol. II (1930 - 1934). It also occurs on Ambon, Ceram, Buru, and the Celebes. The flower can also be white or a lighter colour than that described here.

See further 'De Orchidee', 1936, page 350.

The flower colour and shape seem to be somewhat variable.

Dendrobium insigne (Bl.) Rehb.f.

Although this is not an orchid with a long stemmed inflorescence, it is still an attractive species to cultivate, because of its profuse multi-flowering habit. A large clump may flower on 30 to 40 stems at once, with seven to eight pairs of flowers present on each stem.

The closely arranged, thin, strong sectioned pseudobulbs are 40 to 130cm long and form a thick bunch of somewhat stiff, but thin (4.0mm across), and flexible stems. The internodes are initially 2.0cm long, and after the leafy internodes, shorten to 1.0cm.

The roots are brown and fairly thick.

The formation of the leaves is unusual. The stem initially has a number of small leaves, after which the true leaves start. On a pseudobulb 60 to 100 cm long, a 20 to 30cm long section will consist of true leaves. The leaves are carnose, oval and have a pronounced, uneven, emarginate apex. The dimensions of the largest leaves are, 6.5cm long by 3.5cm wide. After a number of leaves, from 10 to 14, follows a section of the pseudobulb that quickly drops its small, 0.5 to 0.25cm long leaves. On this part which is bare shortly after growth has finished, the internodes are shortened to 1.0cm.

Flowering sometimes takes place on pseudobulbs in leaf, in between the leaves, but usually flowering occurs on the bare section of the pseudobulb, after the leafy part, and also on the completely bare pseudobulbs. On this part of the pseudobulb, flowering fundamentally takes place from every node, between the internodes, alternately on either side of the pseudobulb. The peduncle is short, approximately 1.0cm and has a small brown bract. At the top of this peduncle appear two flowers on a pale yellow coloured pedicel, 1.5cm long. The flowers are coloured deep egg-yellow to orange-yellow, with brick-red, regularly placed, angular spots on the sepals and petals, although the colours can be much paler, pale yellow with faint red spots. The dimensions of the flower are, diagonally from the top of the dorsal sepal to the tip of the lateral sepal, 3.5cm, greatest width, measured across the lateral sepals, 2.5cm. The dorsal sepal and the petals are oblong-lanceolate. The lateral sepals are concave, triangular, and bend downwards in a falcate form. The dorsal sepal stands upright and forwards, the petals obliquely sideways. The flowers have a fresh lemon fragrance and remain open for two days.

The dimensions of the flower tepals are in mm.

	Base	Length
Dorsal sepal	4.0	22
Petal	2.0	20
Lateral sepals	7.0	20

The lip is tri-lobed and appressed to the column in an arch. The shape is

oblong, finishing in a sharp point. The greatest width is 4.0mm, the length 18mm. The lateral lobes are not fully developed and present themselves as two white, pointed appendages, placed against the column. Along the lip run two ridges, and the labellum lamina is covered with fine white hairs. At the sides of the middle lobe occur two thin, upright protuberances. The colour of the lip is pale pink inside, on the front, egg-yellow with red spots of the same shade and structure as on the petals and sepals.

The column is short (0.5cm), concave, coloured pale yellow at the apex, and with red markings on the underside. A peculiarity is the 5.0mm long, clavate appendage, which stands upright at the base of the column and partly blocks the entrance to the stigma. The small cap of the anther is coloured pale yellow.

Localities and culture : The described plant came from the area around Sarmi, further found at Ajamaroe, in the 'neck' of the Vogelkop and near Sorong (Strait Sele). According to old descriptions, it is found all over New Guinea. In accordance with its epiphytic growing habit, it should be placed on a large upright piece of porous tree-fern about 70cm long. It should be cultivated in half shade to full sun.

Variety : At Sorong a variety occurs with a pale yellow base colour, with barely visible markings on the petals and sepals, and pronounced protuberances at the margins of the middle lobe of the lip.

Literature : 'Nova Guinea' Vol. VIII, Part I, page 74 and a good illustration on page XXV-80.

'De Orchidee' 1935, pages 290 - 292. It concerns a well known, and often described plant under various names. The species belongs to the section *Grastidium* (*Dianthe*). Varieties are mentioned in 'Nova Guinea' Vol. VIII, Part III, pages 565 - 564, with illustrations. It concerns *D. insigne* Rchb.f. var. *aruensis* (many purple-tinted protuberances on the lip) and *D. insigne* Rchb.f. var. *subsimplex* J.J.Sm.

[Ed. :- No reference to a variety *aruensis* occurs in 'Nova Guinea' Vol. VIII, Part III, or for that matter any other volume of 'Nova Guinea'.]

Mentioned in 'Orch. Dtsch. Neu-Guinea', on page 624, which places it in a separate section, *Dichopus*.

Dendrobium papilioniferum J.J.Sm. (var. nov.)

The above name, is that being currently used and applies to a species well known at Ambon, Ceram, Buru and the Kei Islands, which looks very similar to the Indonesian 'dove' orchid. There are however, some differences which could place the plant described here as a separate species or at least a variety.

Besides the colour, which for the pseudobulbs is deep red-brown, the flower appears to be very similar to D. crumenatum Sw. The pseudobulb begins slender and after a few centimetres, swells markedly for three internodes. The pseudobulb is 12 to 20cm long, to the end of the larger diameter internode, which is circular, multi-furrowed and coloured deep red-brown. After the thickened section, comes a lengthened part that carries seven to ten leaves, and after that, a long thin section which is leafless, because the under-developed, 0.5 to 0.75cm leaves, drop rather quickly. The thin section of the pseudobulb is 50 to 100cm. The pseudobulbs frequently produces branches in leaf, as well as bare ones. After the pseudobulb withers, the thickened part will remain intact for a long period. The leaves are deep green, leathery, oval, with an unevenly lobed, blunt apex. The length varies from 7.0 to 9.0cm by a width of 2.5cm. Mention has already been made of the barely developed small leaves on the thin section of the pseudobulb, which quickly fall.

Flowering : The flowers appear from a bract at the terminal of the pseudobulb on a barely noticeable peduncle, and also from the nodes and side branches. Flowering takes place several times a year on all plants at once, as observed from its habitat.

Flower : The shape of this 4.5cm flower is virtually identical to Dendrobium crumenatum Sw. The flower is not pure white however, but has pale red-lilac markings on the ends of the petals and sepals. The lip is tri-lobed, the lateral lobes have pale lilac veins, the middle lobe is marked a diffuse pale lilac. Along the middle of the lip run three keels. The middle keel is coloured lilac towards the back, turning yellow in the front. The other two keels are completely yellow. On the front of the lip, the three keels form a bright yellow patch. The flowers remain fresh for two to two and a half days, and have no fragrance. The anther is coloured red-lilac.

Locality and habitat : The only known locality so far is south-east Misool, on the islands in the Bay of Fanfanlap. The plants grow in low trees and shrubs, and receive a lot of sun. The plant is not easy to grow in cultivation and does best on a piece of tree-fern. The aspect must be sunny, without

receiving the full mid-day sun.

Literature : Descriptions can be found in J.J.Smith's 'Die Orchideen von Ambon', pages 42 - 45. The most important difference with the Ambon species is that the variety from Misool has no fragrance. According to Smith, there is another variety, D. papilioniferum J.J.Sm. var. ephemerum J.J.Sm., the flowers of which remain fresh for only one day, as in D. crumenatum Sw. 'Dakkus' 3rd Edition, reports this variety as ephemerum on page 183. Since D. crumenatum Sw. and D. papilioniferum J.J.Sm. occur together on Ambon as their natural habitat, Smith does not rule out the possibility that the var. ephemerum is a natural hybrid. The variety from Misool, where, as far as it is known, D. crumenatum Sw. does not occur, should undoubtedly be placed under D. papilioniferum J.J.Sm. The above mentioned description is printed in the periodical 'Orchideeën' under the incorrect name D. ephemerum J.J.Sm.

Dendrobium anosmum Lindl.

Where it concerns a well known and often described plant, an extensive description appears unnecessary. This Dendrobium is also well known in Indonesia, and in connection with its unusual, strong fragrance from the flowers, it is called the 'mustard' orchid. Although the flower stems are not suitable as cut flowers, it is well worth cultivating. The sectioned, circular, pseudobulbs reach 80 to 100cm long, and after a thin start, the pseudobulb swells gradually until a cross section of 6.0 to 9.0mm is reached, which remains so until almost the end. The pseudobulbs are pale green to green, covered in dried, grey, papery sheaths. In times of stress, the pseudobulbs form 'keikis' on the nodes. The leaves begin after the lower third part of the pseudobulb. They are rather thin, carnose, oblong-oval, with a blunt, emarginated tip. They are located alternately on either side of the pseudobulb, and turn towards the light until they are positioned in one plane. The pale green to green leaves are 6.0 to 8.0cm long and 2.5cm wide.

The flowers : These appear on very short peduncles from the nodes of leafless pseudobulbs, two to four flowers per peduncle. Flowers appear along about half the length at once, on plants that grow in full shade, particularly from Hollandia; flowers are also produced on pseudobulbs in leaf. The delicately curved pedicel is green and a good 3.0cm long. The flower is large, beautiful and pyramid shaped. With a line between the ends of the lateral sepals as a base, the flower is contained between lines which can be drawn from the ends of the lateral sepals to the dorsal sepal. The flower petals and sepals which are white, with a pink-red tinted margin, have edges turning outwards and point forward. The tips of the sepals and petals are turned outwards. The lip is large and for the greater part, coloured carmine-red. The lateral lobes are curved towards each other and form what appears to be a funnel-shaped tube. The middle lobe is not very well developed, coloured white and turned downwards. Along the middle of the lip run five parallel, deep purple lines (keels), but these are not always clearly visible. The dimensions of the flower, between the lateral sepals is 5.5cm, and between the ends of the lateral sepals and tip of the dorsal sepal, 6.0cm. The flowers have an unusual, strong fragrance.

Variety : The species is variable. Plants occur with lilac-pink flowers, wherein, particularly the parallel veins of the sepals (seven) and petals (five connected to each other in a ladder pattern), are coloured, clearly visible, lilac-red.

Localities and habitat : Probably occurs across the whole of New Guinea. Personally found at Kokas (Fak Fak, white variety), Jensei River (pink variety), Hollandia (white variety, with pale carmine-red margins of the sepals and petals), Markham Valley (Papua New Guinea). Should be placed on a piece of tree-fern about one metre long, upright, in half shade.

Literature : 'Dakkus', 2nd Edition, page 141, with a good photograph; 3rd Edition, page 172.

'Latif', page 124, coloured illustration.

'Nova Guinea', Vol. XII, Part IV, page 351; Vol. XIV, Part III, page 422. Further the periodical 'De Orchidee', December 1932, good photograph; 1933, page 192; 1935, page 130.



Dendrobium smilliae F.v.M.

This commonly occurring orchid is sometimes called the 'pineapple orchid', through the likeness of the inflorescence to a small pale coloured pineapple. It is epiphytic and can grow into a large plant with hanging, or obliquely curved and positioned pseudobulbs. The pseudobulbs are sectioned, circular and sulcate, being up to 110cm long and 2.0cm across. After a thin beginning it thickens, and only very gradually diminishes again towards the end of the pseudobulb; at the nodes they are more or less strongly constricted. The leafless pseudobulbs are coloured deep green or red-brown.

The leaves are placed alternately on either side of the pseudobulb, horizontal to it. They are oblong-oval, often convex, thin, leathery, with slightly transparent veins (four on either side of the main vein), pointed and vaguely emarginate. They are green in colour. Following some small ones, come the larger leaves, 14.5cm long by 6.5cm wide, which become slightly smaller towards the top of the pseudobulb. The leaf sheaths surround the pseudobulb continuously and completely.

Flowering is in the form of a closely packed bunch of flowers which appear from the apical internode of the pseudobulb, no more than two or three bunches in total, and one bunch per pseudobulb, per flowering. On a peduncle 11cm long, and 6.0mm wide, more than 100 flowers were observed which were placed in vertical rows, underneath one another, sometimes also in a slight spiral, which explains the popular name. Flowering lasts one to two months.

The flower is placed on a delicate, double bent pedicel, 28mm long. The ovary in cross section is 3.0mm, the pedicel is pink-lilac, while the ovary is coloured very pale green-yellow. The pedicels at the end of the flower are shorter. The flower has an oblong shape and is of the half opening type with carnose, waxy, shiny flower petals and sepals. They are pale yellow-green, with a green apex and have transparent parallel veins. The sepals and petals are placed in an imbricate fashion and point obliquely forward. Viewed from the front they form a broad circular arc, in the middle of which is a strongly contrasting and curiously formed, coloured lip. The lateral sepals are partly connate for 7.0mm and form a pocket, in which the beginning of the lip, which is formed into an arcuate extension of the elongated column-foot, is enclosed. In this pocket a sweetish nectar occurs.

Some dimensions are :

- a. Dorsal sepal : Ovate, with a blunt tip, base 4.0mm, greatest width 8.0mm, length 14mm.
- b. Petals : Spathulate, base 2.5mm, greatest width 7.5mm, length 15mm.
- c. Lateral sepals : The petal part oval, base and width 10.0mm, length 15mm.

Including the pocket part, which continues into the rear, with the column-foot, 27mm long. The petal part is coloured the same as the petals and sepals, the pocket is coloured lilac-pink and veined. The lip is long and narrow and forms, because of the curious connection, as it were a continuation of the column-foot. It is stiff and carnose, in all 22mm long and 6.0mm wide, measured across the upright lateral lobes. The lateral lobes are strongly developed, carnose, shiny, deep olive-green, placed in a round stiff and upright arch. Because the middle lobe is not developed, it leaves an opening through which the pale green, short column and anther-cap are visible. The cap is purple on the inside. The white pollen grains have a hard purple shield.

Localities and habitat : The plant occurs across the whole of New Guinea. Growth is epiphytic and fairly dry. It is a tough species, with strong powers of rehabilitation. Flowering was observed in January/March at Manokwari.

Literature, varieties : There is some controversy about D. smilliae F.v.M. According to Schlechter, who mentions the plant on pages 502 and 510 - 511 in 'Orch. Dt̂sch. Neu-Guinea', D. smilliae F.v.M. is the same as D. hollrungii Krzl., which differs in that the purple colouring of the flowers is completely missing, and is a variety. Concerning this, see 'Nova Guinea' Vol. XII, Part IV, page 338, and further Vol. VIII, Part I, page 80 (description of D. smilliae F.v.M.), Vol. VIII, Part III, page 566 and Vol. XIV, Part III, page 433.

Further 'De Orchidee' 1936, pages 111 - 113.

The author is of the opinion that Smith is correct. There is no obvious difference between the variety hollrungii Krzl. and the original D. smilliae F.v.M., apart from the total lack of red-purple tints in the variety. The whole of the plant is also tinted slightly paler and is possibly slightly more slender. The variety hollrungii Krzl. is found in the eastern part of Geelvink Bay, including Japen Island, up to and in Hollandia.

Dendrobium fulgidum Schltr. var. nov.

This plant belongs to the section Pedilonum. The pseudobulbs have short internodes, begin very thin, and then gradually thicken, before diminishing again near the apex. The pseudobulb is deep brown-red and its grey, dried leaf sheaths persist for a very long time. The pseudobulb stands erect, or curves sideways, or hangs sideways, depending on the way the plant is positioned. It is flexuose to a degree. Dimensions of some pseudobulbs are:

Length	Base cross section	Greatest cross section
cm	mm	mm
46	3.0	5.0
49	3.0	6.0
54	3.0	6.0

The leaves are narrowly lanceolate, clearly emarginated at the apex, initially concave, later flat and deflexed. The leaves which are positioned in one plane on either side of the pseudobulb, are somewhat carnosose and dark green. The mid-vein is depressed and on either side, three paler coloured parallel veins are visible. A leaf on a 50cm long (approximately) pseudobulb, is 7.0cm long and 1.5cm wide.

Flowering : This takes place from the apical internodes. The peduncle is short, a 12mm peduncle carried 11 flowers. The peduncle is a deep red-purple on green. The flowers are placed all around the peduncle and have 3.0mm long, clear red-lilac bracts.

Flower : The most striking part is the colour, which is bright orange for the pedicel (including ovary), and the whole of the flower, without any other colour markings. Otherwise the flower is not very attractive. It belongs to the barely-opening species, the dorsal sepal of which points obliquely upwards, the lateral sepals and petals point straight forward, and the lip points obliquely downwards, so that a small tip just sticks out between the lateral sepals. The pedicel is gracefully bent in two places, 22mm long and 2.0mm across near the ovary.

## Flower segments :

- a. Dorsal sepal : This is sharply ovate, 10.0mm long, 4.0mm at the base, 5.0mm wide in the middle, lightly concave, with four barely visible veins.
- b. Lateral sepals : Because of the 8.0mm long column-foot, the total length of the lateral sepals is 18.5mm by a greatest width of 5.0mm. They are oblong, lanceolate, pointed and concave, with a groove along the middle.
- c. Petals : These are lanceolate, spathulate, finishing in a point. Greatest

length 9.0mm, width 3.0mm.

d. The lip : This has a very narrow attachment (1.0mm) and is diamond shaped. Total length 15mm, greatest width 3.0mm. The lateral lobes are barely developed. At the lateral lobe the lip is concave, so that it has an oblong-cymbiform shape. It finishes in a point and has no keels or markings.

e. Column : This is short and the anther-cap pale orange.

Habitat and localities : The described plant came from Ajamaroe, near the village of Mefkadjem, at an altitude of 300m, in the forest, among moss on limestone rocks. It grows with a fine root system, on trees. It should be placed in a tree-fern pot. It showed a capacity at Manokwari, for rehabilitation under fairly dry circumstances. It also occurs in the Arfak Mountains and the eastern part of the Cyclops Mountains, above the Hollandia watershed. It flowers May/July.

Literature : 'Orch. Dtsch. Neu-Guinea' page 505.

'Nova Guinea' Vol. XII, Part IV, page 337, illustration CXXI-222.

Smith separates the specimen from the northern side of the Gautier Mountains, found by Gjellerup, as variety angustilabre J.J.Sm. The example described here from Ajamaroe, is slightly more robust in plant and flower, than the specimen described by Smith.

Dendrobium sp. nov. [section Platycaulon]

This plant belongs to the section Platycaulon and is identified by the peculiar, wide, flattened pseudobulbs. The closely spaced, sectioned pseudobulbs begin narrow and widen up to 2.6cm, at the point where they normally thicken. It is however, only 0.6cm thick at the point where it is 2.6cm wide. On the pseudobulbs, at a maximum length of 50 to 60cm, 10 to 11 internodes are flattened and carry leaves. The colour is yellow to green-yellow. The leaf sheaths, appressed to the stem, remain as a white covering after the leaves have dropped, and cover part of the internode. The plants, as a rule, have pendulous pseudobulbs.

The maximum of ten yellow-green to pale green leaves are thin, oval with an acute apex which is not emarginated. With a maximum length of 10 to 11cm, the width is 4.5 to 5.5cm. The leaf sheath, which covers half of the internode, is coloured pallid yellow. The leaves are placed on either side of the pseudobulb in a rotated position, in such a way that the top of the leaves are in one plane with the flattened part of the pseudobulbs. The margins of the leaves are often undulating. Flowering takes place on the last five internodes of the pseudobulbs in leaf, and also from bare bulbs, although usually on the three apical internodes. Each pseudobulb can have more than one peduncle. One case was observed where four peduncles were present, with five to eight flowers each. As a rule, peduncles have three to five flowers and are a maximum of 5.0cm long. The flowers are placed all around the peduncle.

The flower : This is pale yellow and white, and belongs to the half-opening type, with a comparatively long pseudo-spur, which is already noticeable when the flower is in bud. This 'spur' is flattened, has a double-rounded, flat end and is 16mm long, with a total length of the flower, from the end of the spur to the tips of the flower petals and sepals, of 26mm. The height is 16mm. The sepals are initially pale lemon-yellow, later colouring to bright pale yellow. The petals are yellow at the base, otherwise white. The lip is pale yellow to lemon-yellow in the throat, including the lamina, otherwise white.

## Flower segments :

- a. Dorsal sepal : Oblong-oval, pointed, strongly concave, base 5.0mm, greatest width 8.0mm, length 16mm.
- b. Lateral sepals : Triangular, pointed, strongly concave, base 17mm, sides 16 and 17mm.
- c. Petals : Oval, round top with a pointed tip, slightly concave, base 2.5mm,

greatest width 8.5mm, length 17mm.

The dorsal sepal has three clearly visible veins (keels). On the inside near the lateral sepals, there are five barely visible veins. The lip is slightly concave and flattened, 22 to 25mm long and 15 to 18mm wide across the lateral lobes, which form a whole with the semi-circular middle lobe, which has pleated margins. The labellum lamina has five, clearly visible, shining pale green keels, with two less obvious, shorter keels next to it. The lip is loosely connected to the long, elongated column-foot. The inside of the column-foot is yellow to pale yellow, with a green stripe in the middle. The column is 3.0mm long, blunt, and the anther-cap is white.

Habitat and locality : The plant grows on the edge of the Ajamaroe limestone plateau, near the coast, as well as in the hill country of Ajamaroe, among shrubs and low trees. The position is dry and the roots fibrous. The plant grows well in a pot with coarse pieces of tree fern in half shade.

Literature : The plant is described as a new species of the section *Platycaulon*. The closest relation appears to be *D. remiforme* J.J.Sm. (See 'Nova Guinea' Vol. XII, Part IV, page 316, Tab. CXIV-209). The difference lies in the shape of the lip and the different placement of the seven keels on the lip.

Dendrobium confusum Schltr.

The plant forms a bunch of closely arranged, thin pseudobulbs which initially grow erect, but as they grow taller, take on a pendent habit. The pseudobulbs are in short sections and the internodes are slightly flexuose on top of one another. The internodes are thinner at the bottom than they are at the apex. The lower internodes are approximately 3.0cm long, the apical one 1.8cm. They are slightly flattened, with a greatest cross section of 3.0mm. When the long, persisting, dried leaf-sheath has decayed, it will be seen that the pseudobulb is coloured yellow. The pseudobulbs have from 25 to 30 internodes and reach 60cm. Waning pseudobulbs often form rooted 'keikis' at the nodes.

The leaves are unusual. The two halves of each leaf are connate, whereby a carnose, 'knife'-shaped leaf is created, which ends in an acute point. After a few small, quickly falling leaves, the rest are placed regularly and alternately in one plane on the pseudobulb, and they point obliquely towards the apex. They are 30 to 33mm long and approximately 6.0 to 8.0mm wide by a cross section of 3.0mm.

Flowering takes place on pseudobulbs in leaf, usually at the apex, on bare pseudobulbs, on up to six apical internodes. The flowers appear at nodes from stiff, dry sheaths; two to six of these flower nodes are placed together, from which as many flowers are produced. Flowering occurs periodically from all nodes at once, probably after large temperature fluctuations, as in D. crumenatum Sw. or D. papilioniferum J.J.Sm., or Dendrobiums of the section Diplocaulobium.

The flower is not large; measured in profile, from the tip of the elongated column-foot to the tips of the lateral sepals, 2.5cm; the opened flower, between the ends of the sepals, 1.5cm. The flower is of the half-opening type, i.e. with oblique forward pointing petals and sepals. The pedicel is pale yellow, including ovary, 14mm long; the ovary is clearly thickened, striped purple-brown, and is placed at right-angles to the pedicel. The flower is white, with vague red-purple stripes on the petals; on the back, from where it is connected, run two clearly raised elevations, along the outside of the lateral sepals. These elevations are surrounded with a red-purple line. Viewed from the front, the flower is completely white, except for a bright yellow-patch on the middle lobe of the lip.

The shape and dimensions of the flower segments are :

- a. Dorsal sepal : Oblong-oval; blunt tip, base and width 3.5mm, length 9.0mm, five transparent veins.
- b. Petals : Narrow lanceolate, slightly spatulate, base 1.0mm, greatest width

2.5mm, length 9.0mm, veins cannot be observed, apart from the beginning of a transparent mid-vein.

c. Lateral sepals : Base wide, measured along the very elongated, bent column-foot, 20mm, length 9.0mm, blunt tip, seven barely visible transparent veins.

d. Column : Very short, 1.5mm, white; anther-cap chalk-white. Column-foot bent, 20mm long, white mid-vein.

e. Lip : This is tri-lobed, arcuate, follows the column-foot. The lateral lobes are not coloured or marked, and merge into the middle lobe, without being split or cut; the margins of the middle lobe are wrinkled, and it has a pronounced incision in the tip. Along the middle of the lip runs a pale yellow band, with two barely visible keels, which run into the middle lobe and up to the incision, and are then coloured bright yellow to orange-yellow and form a patch.

Dimensions : Greatest length, 22mm, width across the flattened lateral lobes, 7.0mm, width across the middle lobe, 10.0mm.

At the end of the column-foot, where the lateral sepals are inflexed (without becoming deformed), a pocket is formed wherein a sweet nectar is found.

The flowers remain fresh for about a week. Flowering took place for the author in August 1969 and in February 1961. The plant belongs to the section *Strongyle*.

Habitat and localities : The plant grows dry on branches and receives a fair amount of light. Found by the author on Roemberpon Island in Geelvink Bay. Apparently, it also occurs in Papua New Guinea.

Literature : Described by Schlechter in 'Fedde Repertorium', Beiheft LXXIV, Tab. 29 (1933).

Further in 'De Orchidee', 1937, page 88 and pages 102 - 103, with illustration. The name *D. confusum* was initially also used by J.J. Smith for a completely different species in the section *Pedilonum*, also described in this collection, see *D. capituliflorum* Rolfe.



Dendrobium capituliflorum Rolfe

This plant commonly occurring in the lowlands, belongs to the section Pedilonum. Although the closely packed bunches of small flowers are not very spectacular, because of its floriferous habit on bare pseudobulbs, the effect it creates is quite appealing and makes the plant well worth cultivating. It is suggested that there are two varieties of this plant, one which shows red-purple tints; a., in the pseudobulbs, b., in the leaves, along the margins of the leaves, and on the underside. The varieties will therefore be described separately. The differences in the flowers are so minimal that they can be ignored.

I. Completely green plant. The sectioned yellow-green, sometimes lightly flexuose pseudobulb is virtually circular, sulcate along its length, 7.0 to 20.0cm long and 1.0 to 1.4cm across, and carries three to six leaves of different dimensions. The thin, leathery leaf is oblong-oval, with an unevenly lobed, slightly emarginated apex. The leaf sheaths initially dry up into brown-white sheaths; these eventually disintegrate. The leaf colour is pallid green, with a depressed mid-vein and clearly visible parallel veins (four clearly, in between these slightly more vague parallel veins on either side of the main vein). The leaves are pallid pale green underneath, paler than the top, and the parallel veins are only barely visible. Leaf measurements, 6.0 to 12.0cm long and approximately 3.5cm wide.

II. Red-purple tinted plant. This appears to be rather more robust than the wholly green one. The pseudobulbs, sectioned and obliquely erect, are 7.0 to 20.0cm long and 1.0 to 1.5cm across, sulcate lengthways, coloured purple-brown and carry four to seven leaves of very uneven size. On the top, the leaves are a slightly deeper pallid green than in variety I. Sometimes the depressed mid-vein and leaf margins are red-purple. The underside of the leaves is sometimes spotted purple, sometimes tinted complete red-purple. Red-purple tints also occur on the leaf sheaths. Leaf measurements are, maximum 13.5cm long and 4.0cm wide.

The flower clusters appear on leafless pseudobulbs and are short, the peduncle which carries 30 to 50 flowers, is 1.5 to 2.0cm long and appears from the nodes. Flowering can occur from virtually all of the nodes of the five to nine internodes. The buds are pale green, the flowers white. The peduncle is green and the pedicel white. The short column is bright green underneath, also the thickened mid-section of the lip.

No detailed description of the flower segments will be given since this is not

necessary for identification. The flower is 7.0mm long. The pointed flower petals and sepals are placed obliquely sideways, with the tips forwards. The lateral sepals are connate for 4.0mm, forming a pseudo-spur. The margins of the sepals and of the middle lobe of the lip are more or less finely frayed or dentate. The lip has barely visible lateral lobes, and no keels can be observed on the green mid-section.

Localities and culture : In 'Nova Guinea', south New Guinea as well as Hollandia and Mamberamo, are mentioned. Found by the author in the District of Teminaboean. It also occurs in south and north Papua New Guinea, always in coastal areas. It should be placed in a pot with pieces of tree-fern, fern-peat and pieces of limestone. It grows easily in half shade. It is found on top of branches of fairly large trees.

Literature : Two varieties of one species have created some confusion for J.J.Smith. In 'Nova Guinea' Vol. VIII, Part I, page 79, the plant with wholly green leaves is described as D. constrictum J.J.Sm. In 'Nova Guinea' Vol. VIII, Part III, page 568, D. constrictum J.J.Sm. is again described, and next to it on page 570, D. confusum J.J.Sm., a slightly larger plant with purple colouring, especially on the underside of the leaves.

In 'Nova Guinea' Vol. XIV, Part IV, page 433, Smith combines both the above-mentioned plants, under the older name D. capituliflorum Rolfe, with their own names as synonyms. In this Smith admits there is no essential difference between the varieties.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' reported on page 506, with Smith's names as synonyms.

Dendrobium bracteosum Rchb.f.

A pleasing small Dendrobium, the flowers of which have various colours, and remain fresh for a very long time. It belongs to the section Pedilonum. The pseudobulbs are from stiffly erect to pendulous, depending on the aspect of where the plants grow. The pseudobulbs are sectioned, circular and finely sulcate, up to 40cm long and 5.0 to 8.0mm across. After a thin start, they gradually thicken and diminish again towards the apex. The colour of the pseudobulbs is from yellow-green to deep red-brown, the colour being hidden however, by the silvery, dried leaf-sheaths. Leaves occur on the upper half of the pseudobulb. The pale green to green, thin leaves are oblong-lanceolate, with a bluntly pointed, unevenly bi-lobed apex. They reach a length of 10.0cm by a width of 12.0mm.

Flowering as a rule, takes place on leafless pseudobulbs. The peduncle, which carries a bunch of eight to ten flowers, is about 15mm long. The flowers are therefore closely spaced. The flowers are only small, but the bunches of brightly coloured flowers on bare pseudobulbs, give a nice effect. The petals and sepals, plus the rather large flower-sheath are one even colour. The colour varies from white to yellow-white, very pale yellow, pale pink, rose-red, pale to deep lilac-red, with all kinds of shades in between. The dorsal sepal and the petals have approximately the same shape, slightly spatulate, with a pointed apex, 14mm long and 4.0mm wide. The lateral sepals are slightly longer and wider, 15.0mm by 5.0mm. Sepals and petals point forwards. The lip is only slightly developed, with undeveloped lateral lobes. It is hornlike, firm, juts forward and terminates in a point. Initially the same colour as the petals and sepals, the lip is further, irrespective of the flower colour, tinted yellow to deep orange.

Habitat : The plant is often found in areas with a high rainfall, so the very fibrous roots are often covered by various mosses. Because of this, they are difficult to transplant, and it is advisable to collect with a piece of the branch it is growing on, and to place this branch in a pot on top of a piece of tree-fern, on which one wishes to cultivate the plant. Although the species occurs in wet areas, one should ensure that the roots are not continuously kept damp.

Localities : The species is probably found across the whole of New Guinea. Known localities are, West Waigeo, Misool, plains of Ajamaroe, Roemberpon and Lae in Papua New Guinea. From the coast to an altitude of 700m.

Literature : Not in 'Latif', 'Dakkus', or 'Nova Guinea'.

[Ed. See 'Nova Guinea' Vol. XII, Part III, page 335.]

Described in 'Sander's Orchid Guide' (1927).

Schlechter's 'Die Orchideen' (1927), page 251.

Williams' 'The Orchid Growers' Manual', page 328.

Reported in 'Orch. Dtsch. Neu-Guinea', page 503.

Dendrobium bifalce Lindl.

This commonly occurring species belongs to the section *Latouria*, and somewhat resembles D. spectabile Miq. Although every collector has at times, brought the plant home, and experienced the disappointing, not very spectacular flowering, very few know its name.

The pseudobulbs are pale green to brown-green, circular to oval, sulcate, and have, as a rule, four to six internodes, thickened like a spool, with a three-some of three very short apical internodes, which carry a firm leaf. The pseudobulbs are 17 to 30cm long and 1.6 to 2.0cm across.

The leaves are as mentioned, very firm, oblong-oval, with a bi-lobed emarginate apex, which is not acute. The mid-vein is canaliculate. The average leaf dimension is 14 to 19cm long by a width of 5.0 to 6.5cm. The colour is yellow-green to a very glabrous deep green, depending on the aspect.

Flowering takes place from the three apical nodes of the pseudobulbs. The peduncles are sectioned, often three long, circular, smooth sections up to 40cm long and 2.0 to 3.0mm in cross-section. The closely spaced inflorescence appears for 2.0 to 5.0cm on the fourth section. The number of flowers varies from four to ten. The flower is 28mm wide and 22mm high, on a white to pale green pedicel 4.0cm long. The carnosse, stiff sepals and petals are coloured yellow-green to pale green, and marked with parallel rows of red spots. The lip is tri-lobed, with long, erect lateral lobes, and a widely constructed, diffuse brown-red to purple-red marked middle lobe. Between the lateral lobes and running up to the beginning of the middle, is a pronounced white callus, in two parts. The flower segments can be characterised as follows :

- a. Dorsal sepal : This stands erect and is convex, wide and running into a point, 10.0mm long and 6.0mm wide.
- b. Lateral sepals : They are positioned sideways, arch once on the underside, are lightly concave, and very wide, virtually forming a triangle, and finish in a point. The dimensions are, base 13mm, shortest (top) side also 13mm, bottom side 16mm.
- c. Petals : These are narrow, slightly spathulate, ending in a point. Base and width 3.5mm, length 11.0mm. They are positioned obliquely sideways.
- d. The lip : It is loosely fixed to the 10.0mm long, elongated column-foot, which is finely striped purple-red, the lowest part green and slightly hollow. The first part of the lip is, as it were, a connecting membrane, 3.0mm long and 3.0mm wide, which merges into a glossy white, sharply elevated block of two keels. The half-falcate, erect lateral lobes, placed slightly forward, are marked on the inside with five brown, parallel lines, coloured brown on the outside on a green background. They are 9.0mm long and 2.0mm wide.

middle lobe is 12mm long and 13mm wide, unevenly round and flat, with  
 ating edges and finishing with an incision. The base colour is green-  
 w, with a diffuse red-brown to purple-red, overlaid colour and vague  
 ng. From the lamina run three, vague purple-red parallel lines towards  
 front. Between the two protruding parts of the callus, the keels, is a  
 red-purple speckling. On the underside, the lip is initially white,  
 green-yellow with a fine red-purple speckling. The column is blunt and  
 e, pale green with a purple margin around the pollinia. The cap is pale  
 and is held in place by a claw on the column.

at and localities : A coastal plant, which occurs very often across the  
 e of New Guinea. A plant with a strong surface root system, which,  
 ough it can grow in full sun, grows best in light shade.

erature : Reported a few times in 'Nova Guinea', see Vol. XII, Part IV,  
 e 318, (literature statement); Vol. XIV, Part III, page 417, (a variety)  
 Vol. VIII, Part I, page 64. [Ed. Last reference quoted concerns not  
bifalce Lindl. but D.biloculare J.J.Sm.]  
 ther 'Orch. Dtsch. Neu-Guinea', page 488.  
 iodical 'De Orchidee', 1938, page 281, (description, photograph and  
 ments by J.J.Smith).

Dendrobium johnsoniae F.v.M.

This species belongs to the section Latouria, and to the most valuable and decorative plants, with exceptionally large flowers. The erect pseudobulbs are spool-shaped, sulcate lengthwise and coloured green-yellow. After a thin start, 4.0mm across, a gradual thickening takes place along a few internodes up to 10.0 to 12.0mm, after which it diminishes again in the two to three, leaf carrying apical internodes. The length of a pseudobulb is 18 to 25cm. The three to four coriaceous, yellow-green leaves are closely spaced on the apical internodes. The measurements are 10.0cm long by 3.0 to 3.5cm broad. At the top the oblong-oval leaves are unevenly lobed and usually slightly emarginate.

The inflorescence arises from the apical internodes, sideways between the leaves. They are fairly short, approximately 10.0cm, sectioned and coloured pale green. At the apex, the peduncle carries about four flowers along 2.0cm. The flowers are very large, open up well and simultaneously. They measure 8.0 to 10.0cm across the petals, when stretched sideways. Except for the markings on the lateral lobes of the lip, the whole flower is stark-white, including the back. All sepals are positioned in the same way, curved upwards and sideways, and after that backwards. The large petals are positioned initially forwards and then sideways. The lateral lobes of the likewise large lip, form an arch around the column, the middle lobe points forward, with the tip slightly deflexed. The 28mm long pedicel is white and slightly bent near the faintly green-white ovary.

## Flower segments :

- a. Dorsal sepal : Oblong-triangular, with a pointed apex, length 35mm, width 9.5mm, concave, five barely visible parallel veins.
  - b. Lateral sepals : Oblong-triangular, acute, base 15mm, greatest length 39mm, concave, five parallel veins.
  - c. Petals : Parallelogram, with a pointed apex, base 3.5mm, greatest width 20mm, total length 52mm. Triangle of the point has slightly undulating margins, convex, near the apex slightly concave. Veins, approximately three, observed with difficulty.
  - d. Lip : The lateral lobes form a tube and have approximately five purple to red-purple parallel veins halfway up to the margin. The margins of the lateral lobes are curled outwards and have three to six red-purple parallel lines on the back. The middle lobe is slightly diamond-shaped, with a sharp apex. The lamina is stiff, coloured yellow-green. The number of keels is three, the outside ones form an upstanding double tooth.
- Dimensions : The total length of the lip is 50mm, and 30mm wide across the

completely flattened lateral lobes. The middle lobe is 20mm long, with a greatest width of 16mm.

e. Column : This is short and blunt, with broad wings and next to the stigma, some purple stripes. The wings form combs, clearly visible on either side of the creamy white anther. The flower has no fragrance and remains fresh for many weeks.

Localities and culture : Found on Japan Island, the Wandamen Peninsula (900m altitude) and near Hollandia. Reported from the 'neck' of the Vogelkop, north and south Papua New Guinea. The endemic centre in west New Guinea has not yet been determined. A surface rooting plant with moisture-sensitive roots. Grows in a well drained pot filled with pieces of tree-fern. Does not always flower well near the coast. It probably thrives best between 300 - 1000m above sea level, in half-shade. Flowered April/May 1962.

Literature : The first description is in 'Wing's Southern Science Record' II, (1882), page 95.

Also virtually simultaneously in 'Gard. Chronicle' 1882, page 520, by Reichenbach fil, under the name D. MacFarlanei.

Reported in Schlechter's 'Orch. Dtsch. Neu-Guinea' on page 492, found by Schlechter between 200 - 1200m, flowering time July.

In the periodical 'De Orchidee' 1937, October, pages 245 - 246, an article by J.J. Smith about this plant.



Dendrobium atrovioleaceum Rolfe

This is a beautiful representative of the section Latouria. It concerns a not very large plant with fairly large, beautifully marked and coloured flowers. The following describes a still immature plant. For normal plant and leaf dimensions, refer to the end of this description.

Pseudobulb : This is of the D. macrophyllum A.Rich. form, but more slender, and not so long. The described plant included two flowering size pseudobulbs, of which the one flowering was 11cm long and the newer one 15cm, with the greatest cross-section across the thickened part, 1.0cm. The pseudobulb is sectioned, clavate, with a slightly flattened part, strongly sulcate lengthwise, and coloured yellow-green.

Leaf : The pseudobulb carries two, seldom three top leaves. These are thin and leathery, concave, with a depressed mid-vein, arching, green on top, pallid pale green underneath. The shape is elliptic, the tip unevenly lobed and slightly incised. Dimensions are, 9.0cm long by 3.7cm wide.

Flowering takes place from the apical nodes. The peduncle initially stands erect and is, where the flowers are placed, slightly curved. Flowering occurs on a year old, viz., the penultimate pseudobulb. The peduncle is very pale green, finely spotted purple, sectioned with small, appressed bracts. In the described plant, the peduncle was 12cm long and 2.0mm across, with five flowers along the last 5.0cm, arranged all around the stem.

Flower : This opens well, 5.5cm wide across the virtually horizontally-stretched petals, and 3.0 to 3.5cm high. The flower is of the D. macrophyllum A.Rich. form, but flower and pedicel are completely glabrous. The sepals are pale yellow, with visible lemon-yellow veins, on the back principally covered with purple spots. The petals are unusually wide, white to cream coloured, provided with visible, yellow, parallel veins, and with purple spots on the back and also, though less so, spots on the front. The lip strongly resembles that of D. macrophyllum A.Rich., but the colour is more beautiful. The lateral lobes, which are curved around the column, are coloured an intense red-purple on the inside and somewhat similarly on the outside. The middle lobe is green, with thick purple stripes from the lamina to the margins and the tip. When it opens, the colour of the lip is blue-purple (pansy-blue), later more red-lilac.

Flower segments :

a. Dorsal sepal : Elongated-oval, with an acute apex, initially convex, the apex concave. Dimensions are, base 8.0mm, greatest width 14mm, length 24mm,

positioned, forward and upward.

b. Lateral sepals : Curved triangular, with a pointed apex, concave, base 13.5mm, longest side 25mm.

c. Petals : Wide, round-spathulate, acute apex. For two-thirds convex, whereby it appears narrower. Base 4.0mm, greatest width 20mm, length 26mm.

d. Lip : Very stiff, carnose, cannot be flattened. Lateral lobes oblong-angular, with a notched margin. Middle lobe cordate, with a pointed apex, margins inflexed. Along the middle, three purple, strongly elevated keels, ending in a rounded white callus near the beginning of the middle lobe. The whole lip is curved into a half circle. Dimensions in this position, from connection to the tip of the middle lobe, 14mm, from connection to edge of lateral lobes, 19mm.

e. Column : Short, blunt, triangular in cross-section. Anther white. On the underside, and on the elongated column-foot, red-purple markings. The flower is beautiful, and easily distinguished from D. macrophyllum A.Rich. by the lack of hairs, the spots on all petals and sepals, and the intense colour of the lip.

Habitat and localities : Grows easily in a pot with tree-fern fibre and peat, in a sunny location. Presently known location is Cyclops Mountains, surrounding Hollandia.

Literature : 'Dakkus' 2nd Edition, pages 145 - 146. [3rd Edition, page 175].  
'De Orchidee' 1934, page 287.

Schlechter in 'Die Orchideen' (general works), page 249.

Not in 'Nova Guinea' or in Schlechter's 'Orch. Dtsch. Neu-Guinea'.

[Ed. - Mentioned on page 483, 'Orch. Dtsch. Neu-Guinea'].

Descriptions with illustrations in 'Botanical Magazine' CXX (1894), 7371 and in 'The Orchid Review' 1895, 1901, 1908.

In the descriptions mentioned above, the following information is recorded :-  
length of pseudobulb, up to 30 - 35cm, leaf length, up to 15cm, inflorescence 15 to 20cm long, with 10 to 20 flowers.

Dendrobium spectabile Miq.

This beautiful representative of the section *Latouria* is generally known and often cultivated. The Indonesian name 'tjoemi-tjoemi' (octopus) is often used as its common name. The erect to inclined, firm pseudobulbs carrying four to eight leaves, are 30 to 90cm long, sectioned circular and sulcate lengthwise. Initially yellow-green, after that brown-green, the pseudobulbs are finally coloured deep red-brown underneath the slowly disintegrating, grey sheaths.

The green leaves are oblong-oval, thick parchment-like, mildly unevenly bilobed, and slightly emarginate in the blunt apex. Depending on the available light, the leaves are concave or open and bent. The mid-vein is depressed, forming a pronounced rib on the underside of the leaf. Next to the mid-vein many parallel veins are visible. The peduncles appear from the leaf-carrying short apical nodes of the pseudobulbs, between the leaves. The peduncle is stiff, sectioned, green with paler green bracts, in all up to 40cm long, and carrying six to twenty flowers, which are placed all around the peduncle.

The flower is large and gives a bizarre impression, through its shape and colouring. The pedicel is pale greenish white to very pale yellow, 44mm long and the 10.0mm ovary is thickened, ribbed and pale green. The sepals are marked pallid-red to lilac-red, with highly serrated, yellow margins. These sepals are curled completely backwards. The petals have the same colouring as the sepals, but are narrower and do not curl backwards, but are twisted like a corkscrew. They point sideways or even forwards, with a thin tapering shape, and a pointed apex. The lip is very large. The lateral lobes are placed in an arch around the column, and are connate. They are white, with a pronounced red-purple colouring and veining. The lamina has three white keels, sharply elevated, which end in a clear three-toothed elevation, near the beginning of the middle lobe. The middle lobe is very long, up to 10.0cm. Initially wide, white, with lilac-veining and a band of stripes across the middle, the largest part is narrow, with serrated margins, deep lilac-red on a pallid yellow base, ending with an acute apex. The column is white, short and wide, the anther pale green.

Flower segments : The measurements were taken from flattened segments where possible.

a. Dorsal sepal : Triangular, with an acute apex, 45mm long, with a greatest width of 14mm. The approximately seven pallid red-purple lines, usually merge into a coloured band for 30mm. The 15mm long, pointed tip is coloured pale yellow, with 30mm highly serrated margins, also yellow.

- b. Lateral sepals : In conformity with the dorsal sepal, but with an inclined base, 18mm wide.
- c. Petals : In the beginning like the sepals, but much narrower, lightly turned corkscrew-wise and not curled up. Length 57mm, greatest width 8.0mm, the 32mm long acute apex is coloured pale yellow.
- d. Lip : Normal length, from the top of the closed circle of the lateral lobes to the pointed tip of the middle lobe, 60 to 70mm. The lateral lobes and the lamina are very stiff, and are difficult to flatten out. The white lamina of three keels, emanates from a double block of 2 x 3 keels at the foot of the lip. The beautifully veined, white inside of the middle lobe is 15mm wide. In the centre of the middle lobe, it is still 7.0mm wide, becoming narrower towards the tip.
- e. Column : This is 4.0mm long. The column-foot is wide, 12mm long and coloured red-purple. The anther is half-moon shaped, with the points turned down. The flowers are highly fragrant.

Habitat and localities : The plant occurs over the whole of New Guinea and in the Solomon Islands, from the coast to fairly high in the mountains (900m altitude). In the lowlands it is always epiphytic, in the mountains it sometimes occurs on peaty layers between rocks. Grows in half shade to full sun. A strong plant, which grows well in a roomy tree-fern pot, which is well drained. Often occurs in areas with high precipitation. Known localities in western New Guinea are, Waigeo Island, Makbon, Ajamaroe Plateau (often), in the upper Wariori Valley in the Arfak Mountains, Mios Waar, Mios Noem, Hollandia, Wildman River, Wissel Lakes (?).

Literature : 'Nova Guinea' Vol. VIII, Part I, page 64, (literary statement). Schlechter's 'Orch. Dtsch.Neu-Guinea' pages 492-493. 'Dakkus' 2nd Edition, page 169; 3rd Edition, page 200 (photograph). 'Latif' pages 133-134. 'De Orchidee' 1933, pages 167, 278 (D. Alexandrae Schltr.); 1934, page 297; 1937, page 172. 'Orchideeën' October, 1935.

Variety : A beautiful variety occurs along the Wariori River in the Arfak Mountains. The markings on the sepals and petals merge far less. The most important difference is the middle lobe of the lip, the elongated, long apex of which is 16mm wide, and beautifully marked with red-purple stripes on a pallid yellow base. The elongated column-foot is also more obviously marked. Possibly, this variety has been regarded as D. Alexandrae Schltr. The plants grow on rocks in full sun.

[Ed. :- The speculation that the variety described may be D. Alexandrae Schltr. must be regarded with scepticism. Schlechter described his specimen as having dark red spots on the yellowish sepals and petals and there does not appear to be a collection of the species since Schlecht's original collection in the Waria Valley, in June 1909. There is one current 'school of thought' among taxonomists that D. Alexandrae Schltr. may be a putative hybrid between D. spectabile (Bl.) Miq. and D. macrophyllum A.Rich.]

Dendrobium macrophyllum A.Rich.

The following descriptions have, as a starting point D. macrophyllum A.Rich., a plant which is, however, very variable, so that there is a tendency to keep separating them into new species. Observation of many plants however, gives rise to the opinion that it concerns varieties rather than new species. For example, identical flowers are found on plants which differ in general dimensions, sometimes have dark brown and sometimes have bright yellow pseudobulbs. On non-flowering plants it is impossible to tell which variety it concerns. Some characteristics are, a thin beginning, after a few internodes, pronouncedly clavate and thickened, sulcate, oval pseudobulb with, by comparison, large coriaceous leaves on some shortened apical internodes. New pseudobulbs are covered by highly developed sheaths, which later dry out. The pedicel and ovary are, as a rule, covered in fine white hairs, sometimes similarly on the back of the firm sepals. The petals are finer and thinner, and as a rule, coloured lighter than the sepals. Markings occur on the back of the sepals and possibly on the back of the petals. The lip is large, carnose and beautifully marked. The lateral lobes are well developed and form an arch over the column. The middle lobe is large, deflexed and usually folded. Around the junction of the lateral and middle lobes, the lip has a white bilobed callus.

Variety I : This is virtually identical with the plant referred to as D. macrophyllum A.Rich. var. veitchianum (Lind.) Hook.f., except that the pseudobulbs are deep brown. This variety is beautiful and the flowers large, 4.5 to 5.5cm wide. The thickened pseudobulbs are yellow-green to olive-green, later discolouring to red-brown, 30 to 35cm long and at the oval cross-section, 25 x 18mm. The two to three parchment-like leaves, are a maximum of 27cm long by 8.5cm wide. The peduncles are sectioned with fairly large, free-standing bracts at the nodes. A robust peduncle is 29cm long, and flowers on the third section, with eight flowers along 16.5cm. The flower is large. The sepals are yellow, spotted purple on the back, and to some extent, covered with with rigid hairs. The petals are white to pale yellow, initially convex, later concave, sometimes having some purple spots on the back. The lip is nile-green, with purple to red-purple veining on the arching lateral lobes, and a few spots in lines on the reflexed, slightly folded, large middle lobe. The block of three keels is white, and ends in a blunt, slightly bilobed elevation. The column is short, the elongated column-foot tinted pale red-purple. Sometimes the flowers have a fresh fragrance in the middle of the flowering period.

Variety II : This cannot be distinguished from Variety I, but is often slight-

ly larger than the latter, with pseudobulbs 40cm long and 3.0cm at the greatest width. At the apical internodes, the pseudobulb carries three to four coriaceous leaves, the largest of which is 22cm long and 9.0cm wide. The peduncles are identical to Variety I, 25 to 40cm long, however, as a rule, having about twenty flowers. The flower is 2.5 to 3.0cm wide, being the same colour and shape as Variety I. The impression however, is much smaller, because the lip is much smaller, and is less obviously marked. The veins and spots are duller. The white lip-lamina has three keels and ends fairly clearly, tri-lobed. This variety occurs much more often than Variety I. Plants with yellow pseudobulbs also occur.

Variety III : This plant originating from Hollandia, has the most beautiful flowers. The pseudobulbs are robust, 40cm long and 28 x 18mm across at the oval, thickened part. The colour of the pseudobulb is dark brown. The parchment-like leaf is often also large, 27 to 29cm long and 10 to 12cm wide, convex and green. The peduncles are 30 to 40cm long and 6.0mm across, provided with two or three loose bracts. Flowering, as a rule, takes place on young pseudobulbs, still leaf-carrying. The flower is large and measures 5.0 to 7.0cm, between the tips of the petals. The sepals are yellow to green-yellow, barely hirsute on the back, and spotted bright purple-red. The petals are wide, spathulate, white to pale yellow, sometimes spotted on the back or patched purple-red, sometimes completely without spots. The lip is white to yellow, with magnificent wine-red to purple-red markings on the middle lobe; the beginning of the middle lobe being completely coloured. The lateral lobes enclose the column in an arch, the middle lobe is concave and reflexed. The lamina containing three keels is white, the two outside keels form into two striking, white, 2.0mm long teeth. Sometimes the flowers have a faint fragrance.

Localities and habitat : Variety I is found near Sorong, on Salawati and Misool Islands, but undoubtedly is more widespread. Without being rare, the plant occurs far less than Variety II, which, as far as is known, occurs across the whole of western New Guinea. Variety III comes from the Cyclops Mountains. Cultivation is not difficult. It should be placed in a tree-fern pot, with pieces of tree-fern, loose humus and fern-peat, in half shade.

Literature and comments : Dendrobium macrophyllum A.Rich. presumably forms a whole complex of varieties which are probably not new species, although they are branched off. The great diversity of form makes it difficult to choose. It seems correct to accept at least one definite identification mark, which the author finds in the block of three white keels. At Hollandia a truly

gigantic variety occurs, with the characteristics of Variety I as described above, also known from Ambon. The pseudobulbs reach 60cm long, the leaves measure 33 x 12cm, with peduncles 50cm long, and flowers which are 8.0cm wide. Of Variety II, very large plants are also found with pseudobulbs 70cm long, leaves which are 30cm long and 10 to 12cm wide, and peduncles 40cm long, with 17 to 20 flowers. (Biak Island, Arfak Mountains). The hairs on the back of the sepals, the pedicel and the ovary, are denser on this plant. Variety III from Hollandia could be regarded as a new species. The form and the end of the lamina are different, and the flowers are also coloured and marked differently from D. macrophyllum A.Rich. The plant was discovered by Stüber at Hollandia before 1942. As far as is known, no description of a new species has been made.

Descriptions : Complete descriptions are difficult to find, see 'Flora of Malaya' Vol. I, pages 278-279.

'Nova Guinea' gives several localities and Smith separates also a variety subvelutinum from Hollandia, whose sepals are more hirsute.

See further Vol. VIII, Part I, page 64; Vol. VIII, Part III, page 552; Vol. XII, Part IV, page 318; Vol. XVIII, Part I, page 49.

Further 'De Orchidee', July 1935, pages 278 - 279, (var. giganteum) from Hollandia.

'Die Orchideen von Ambon' pages 55-56.

'Dakkus' 2nd Edition, pages 158-159; [3rd Edition, page 191].

'Latif' page 129.

Schlechter in 'Orch. Dtsch. Neu-Guinea' gives two closely related species, D. musciferum Schltr. and D. finisterrae Schltr.

In the periodical 'De Orchidee' are descriptions and photographs included in 1934, page 301 (variety I), 1935, page 287 (variety III), and 1935, page 186 (very large flower, Hollandia).

[Ed. Although D. finisterrae Schltr. is considered a valid species within the section Latouria, D. musciferum Schltr. is regarded as a synonym of Dendrobium macrophyllum A.Rich., see :-

Cribb P.J. (1983) 'A Revision of the Dendrobium section Latouria', Kew Bull. Vol. 38 (2).]



Dendrobium rhomboglossum J.J.Sm. var. latisepalum J.J.Sm.

The strongly sectioned pseudobulbs, which carry five to eight leaves at the apical nodes, stand erect and reach a length of 70cm. The pseudobulbs have a thin circular beginning and thicken gradually until the upper third, where there is a thickened oval, sulcate section. The leafless internodes are covered with dried, thin grey sheaths. Underneath these sheaths, the pseudobulb is yellow-green, the uncovered part is dark red-brown. The roots are thick, 4.0mm across, and when exposed, white.

The hard, coriaceous leaves, which have no sheath, occur on the five to six apical nodes. They are oblong-oval and finish in a barely uneven and slightly incised apex. The depressed mid-vein is, on the underside, dark green to purple shaded. Next to the mid-vein on either side, four paler coloured parallel veins are visible. These are intense, dark (yellow) green on top, pallid green on the underside.

The stiff peduncles arise from the apical nodes and stand erect. They are round, sectioned, with thin appressed, sheath-like bracts, tinted deep red-purple on green. The flowers arise from the fifth to sixth sections and are placed fairly close together, about 1.0cm after one another, arranged all around the peduncle. By a cross section of 3.0mm, the length is 25 to 30cm, carrying six to ten flowers.

Flower : These are coloured strikingly, red-purple on the outside. They are only half opening, with the opening pointing downwards. Length and width are about 2.5cm. The pedicel stands in a 10.0mm long, narrow pointed, pallid purple bract, the pedicel is bright violet, the clearly outstanding ovary is deep violet. The ovary begins after the thickening of the pedicel.

Dimensions are, pedicel 28mm, ovary 6.0 to 7.0mm. The sepals are coloured bright red-purple (violet) on the outside, on the inside white, through the red-purple on the outside, pale violet-pink. They are concave and have an acute apex which curves away. The petals are, on the outside, pale violet with white margins, on the inside, white to lilac-pink. The lip is lilac-pink with red-purple parallel veins towards the lateral lobes and the middle lobe. The latter is tinted pale green.

Flower segments :

a. Dorsal sepal : Oblong-lanceolate, pointed, carnose with a thickened mid-vein, towards the tip especially concave, with five obvious, deeper coloured parallel veins, particularly noticeable on the outside. Dimensions are, 26mm long, 7.0mm wide.

b. Lateral sepals : The mentum forms a right angle with the ovary. These sepals are curved lanceolate, carnose with the concave bottom edge slightly

undulating, 26mm long, 7.0mm wide, five to six parallel veins.

c. Petals : Wide-spathulate, pointed, highly concave, especially towards the apex. Outside spotted bright pale red-purple, with a white margin, inside white. Veins barely visible. Dimensions are, base 3.0mm, greatest width 8.0mm, length 23mm.

d. Lip : This is clearly tri-lobed. The erect lateral lobes curve towards the column, but do not touch each other. These lobes are lilac-pink, with deep red-purple parallel veins running towards the margin and they are branched at the top. The middle lobe is pointed, concave and marked with five spreading, branching parallel veins which are coloured mainly pale yellow-green. The lamina is elevated, well marked, and the three keels which end abruptly in a clavate shape on the middle lobe, are marked red-purple.

e. Column : The column is short, wide, and white with a creamy white coloured anther.

Habitat and localities : The plant belongs to a sub-group [section] *Latouria*, which grow high in the mountains as terrestrials in an open position, between 2000 and 3500m above sea level. See, *D. acutisepalum* J.J.Sm., *D. guttatum* J.J.Sm., *D. rhomboglossum* J.J.Sm., *D. terrestre* J.J.Sm.

The above species seem somewhat variable with overbridging forms. The plant described here occurs in wet, heath-like terrain on clay soil at Anggi Lakes at  $\pm$  1900m above sea level. Although the plant gives a strong tough impression, it is probably difficult to cultivate in the lowlands.

[Ed. The species *D. guttatum* J.J.Sm., is now considered to be a synonym of *D. rigidifolium* Rolfe and the variety *latisepalum* J.J.Sm. described here, has not been sustained, so the species should be regarded as *D. rhomboglossum* J.J.Sm.]

Literature : 'Nova Guinea' Vol. XII, Part I, page 44, Tab. XIII-34, the variety *latisepalum* J.J.Sm. in 'Nova Guinea' Vol. XII, Part IV, page 320. There is in existence yet another, as far as is known, undescribed variety with substantially larger flowers and whose sepals are only vaguely tinted purple on the outside. Likewise, this is found at the Anggi Lakes.

Dendrobium antennatum Lindl.

The following description concerns the 'antelope' which is found in the areas of Sorong, in the Radja Ampat Islands, and around Geelvink Bay. Plant and flower are, depending on circumstances, substantially variable in size. Plants on open trees or dead branches are short and squat. Flowering is fairly abundant, but the inflorescence is short. In contrast, plants which grow in a more shaded and apparently better aspect, are longer and more slender, with long peduncles.

Plant : The yellow to green-yellow pseudobulb begins thin and after a few centimetres, thickens along three to five internodes. This thickening has an irregular diamond shape in young pseudobulbs, in older pseudobulbs the thickening is also sulcate. After the thickening, the pseudobulb gradually becomes thinner until it is only a few millimetres across, at the apex. Normal mature plants have pseudobulbs 60 to 90cm long, with 20 to 28 leaves. On West Waiego Island, plants have been found 140 to 160cm long, with 40 to 45 leaves. The carnose leaves differ in shape, depending on their position on the pseudobulb. The first and often largest are ovate-oval, with a pointed, uneven, incised tip. Near the apex of the pseudobulb, the leaves gradually become smaller and narrower, i.e., on a pseudobulb 62cm long, with 20 leaves, and the first leaf at 18cm : Largest, bottom leaf, 8.0cm long, 3.5cm wide. Four top leaves, 4.0cm long, 0.5cm wide.

Flowering : Fundamentally, the rigid, obliquely placed peduncles can occur where leaves are placed, in other words, along about two-thirds of the pseudobulb. As a rule, the inflorescence appears from the apical nodes.

Some examples :

- I. Stem 142cm, 19 flowering remains, first flowering 58cm from base.
- II. Stem 60cm, 6 flowering remains, first flowering 33cm from base.

The last mentioned peduncle had not yet finished flowering. Flowering will occur from both leafless and pseudobulbs in leaf. The peduncle is stiff, sectioned and coloured yellow. The flowers are placed well apart on relatively long peduncles. For example :-

Peduncle length	Number of flowers	First flower at	Distance between flowers
34cm	7	11cm	$\pm$ 4.0cm
23cm	5	10cm	$\pm$ 2.5cm
34cm	8	10cm	$\pm$ 3.0cm
19cm	4	10cm	$\pm$ 2.0cm

The first flower generally appears approximately 10.0cm from the beginning of the peduncle, the last flower is placed a few millimetres from the apex. The distance between the flowers is variable, but where it concerns small flowers,

still roomy enough, so that the flowers stand well apart from one another. The maximum number of flowers counted on a peduncle is 12. The pedicel is not placed in, but above the small bract.

Flower : The sepals are white, the prominently twisted petals initially white for half their length; after that, soft green to yellow-green. The lip is marked red-purple. The sepals have curled margins and are therefore channelled. Initially the margins curl outwards; half-way however, they turn inwards. Because of the change in tension, the sepals suddenly change direction, the dorsal sepal, which is first placed stiffly forwards, then arches backwards. The lateral sepals are initially placed sideways, 90° on the plane of the lip and arch forward somewhat. After the change in tension, they curl in a half arch backwards. The sepals are pointed and measure :

Dorsal sepal : Base 4.0mm, length 27mm.

Lateral sepals : Base 7.0mm, length 26mm.

The petals are slightly spathulate and finish in a pointed apex. They make three to four right-hand revolutions. Dimensions are, base 2.0mm, greatest width 3.0mm, length 53mm.

The tri-lobed lip has erect, small lateral lobes which are connected to the short column. The dimensions are (flattened), 11mm wide across the lateral lobes and 20mm long. The lateral lobes are initially provided with fine, lilac-red veins, near the labellum lamina. The erect wings are vaguely tinted purple. The middle lobe is concave, however, sometimes convex, cordate, pointed and veined red-violet. The five keels are marked red-lilac, turning into a small red-lilac flag at the tip. The centre keel however, loses its lilac colour once it reaches the middle lobe, and turns into a white, and after that again, a red-lilac comb, which continues on quite a distance. The two keels next to the centre keel are shorter, the two outside ones the shortest, ending near the clear cleft between the lateral and middle lobes. On the underside of the lip the markings are transparent; on the extreme ends of the lateral lobes, there is a pronounced lilac spot on the back. The column is white, the cap of the pollinia, pale yellow.

Localities : The localities extend through to the whole of the north and west coast of New Guinea. Plants, as a rule, occur in trees along the coast, in half shade. They grow well on a piece of tree-fern. It is a profusely flowering plant, which is well worth cultivating; well grown robust pseudo-bulbs produce beautiful long racemes, with seven to twelve flowers, which make excellent cut flowers.

Literature : Although Dendrobium d'albertisii Rchb.f. has been described

several times, this is not the case with Dendrobium antennatum Lindl.

Dakkus and Latif did not mention this actually more beautiful species.

In 'Nova Guinea' there are two reports, mainly concerning localities, i.e. in Vol. VIII, Part I, page 66 (Ingaroroemi near Windessie) and Vol. XIV, Part III, page 422 (Soepiori, Biak).

J.J. Smith in 'Nova Guinea' makes some observations on the otherwise slight difference between D. antennatum Lindl. and D. d'albertisii Rchb.f. Further D. antennatum Lindl. and D. d'albertisii Rchb.f. have a short description in the article by J.J. Smith, about the section Ceratobium in 'The Orchid Review', 1935.

In 'Orch. Dtsch. Neu-Guinea' Schlechter reports D. antennatum Lindl. on page 546. The author [Schlechter] is of the opinion that D. antennatum Lindl.

and D. d'albertisii Rchb.f. should be combined under one name.

See also 'Orchideeën', April 1959.

[Ed. - It is now generally accepted that the species are not specifically different and D. d'albertisii Rchb.f. is regarded as a synonym of Dendrobium antennatum Lindl.]

Hybrid : On Salawati Island, near Sorong, a plant has been collected, which can probably be regarded as a natural hybrid between D. mirbelianum Gaud. and D. antennatum Lindl. The plant has the form of a robust D. antennatum Lindl. However, the young growths are not pure pale green as in D. antennatum Lindl., but spotted red-purple as in D. mirbelianum Gaud. The flower has the form of D. antennatum Lindl., the dorsal sepal has five, and the lateral sepal five pale red-purple veins. The petals are coloured purple on a green-yellow background, giving a lilac-brown impression. Further, the petals are slightly wider than in D. antennatum Lindl. The form and size of the middle lobe of the lip are identical to D. mirbelianum Gaud., but the purple veins are on a white background. The lamina is the same as in D. antennatum Lindl. At the location both parent plants mentioned occur together.

Dendrobium sp. nov. (section Ceratobium) Dorehkar Island, Ajau Group.

The plant described below, belongs to the group of D. antennatum Lindl. and D. d'albertisii Rehb.f., being closest to D. antennatum Lindl. The plant conforms completely with the named species, apart from differences in dimensions. The flower is however, not as beautiful.

**Plant :** The yellow coloured, sectioned pseudobulbs reach approximately 60cm in length and carry up to 24 leaves. After a thin beginning, a thickening occurs along three or four internodes of the pseudobulb, after which it gradually becomes thinner. A slightly shrivelled pseudobulb is diamond shaped, angular and sulcate. Leaves start after the first third leafless part of the pseudobulb, approximately at the sixth or seventh node. The leaves are oblong, carnose and finish in a pointed, unevenly lobed tip. The first leaves are more ovate-oval. From the beginning to the end of the pseudobulb, the leaves gradually become smaller. A large leaf is 12cm long and 4.3cm wide, small leaves near the top of the pseudobulb are 5.0 x 1.0cm.

**Flowering :** The peduncles appear principally along the whole leafy section of the pseudobulb, opposite a leaf. On a 57cm long pseudobulb with 22 leaves, 16 flower remains were counted; on a pseudobulb 48cm long, 11 flower remains, beginning respectively 28 and 23cm from the beginning of the pseudobulb. Flowering takes place both on pseudobulbs still in leaf, and also leafless ones. The stiff peduncle is pale green, with the maximum number of flowers present (six), the peduncles measured respectively 10 and 11cm. The peduncle is sectioned and flowers appear from the second or third node, at 3.0 to 3.5cm from the beginning of the peduncle. At the nodes, and at the junction of the peduncle, small yellow-green bracts can be observed.

**Flower :** The pedicel is white, the darker parts pale green; the junction on the peduncle is supra-axillary, viz. growing above an axis. The mentum is also pale green. Otherwise the flower gives a completely white impression. The sepals are completely stark white, without any markings; also visible are the transparent parallel-running veins. The petals are white at the base, but then the colour fairly quickly into pale green, and keep this colour up to the pointed tip. They are narrow (greatest width 1.8 to 2.0mm), 35mm long, turned at the most for half a turn, and end in an acute point.

**Sepals :** These initially point slightly outwards, and are then concave; in other words, the margins are turned outwards, then halfway, the margins turn inwards. This gives the sepals a kink, and they bend outwards again. Often the pointed ends of the sepals are placed closely together, so the flower gives a half-open impression. The sepals are 26mm (dorsal) and 29mm (lateral) long.

**Lip :** The tri-lobed lip is principally coloured white, and only slightly

marked. Near the beginning of the keels the colour is green. The keels are visible, only under a magnifying glass, and are marked purple. The erect lateral lobes are, it appears, only marked with uncoloured veins, however, near the labellum lamina, the beginning of purple veins is visible. The concave middle lobe, very clearly separated from the lateral lobes, is sagittate, the margins stand upright. On the middle lobe, sometimes occurs a purple edge shading, and sometimes the remains of red-purple marking occur, and again two straight purple lines coming from the keels which lie next to the centre keel. From the three inside keels come straight parallel veins, going towards the tip. The lamina consisting of five keels is very stiff. The middle keel is the longest and ends halfway into the middle lobe. The following keels are slightly shorter, the outside keels, again slightly shorter than the previous ones. The course of the keels can barely be observed with the naked eye.

Locality : Up to now, only found on Dorehkar Island of the Ajau [Ajoe] Isl. Group (North of Waigeo), on coastal trees in light shade.

Literature : None available. (The previous description has been included in 'Orchideeën' April 1959). Although it clearly concerns a new species, the close relationship with D. antennatum Lindl. is apparent.

Dendrobium d'albertisii Rchb. f. var. nov. [= D. antennatum Lindl.]

On the face of it, the plant described below belongs completely to the group which contains D. antennatum Lindl., D. stratiotes Rchb.f. and some other species and varieties. However, for comparison and reference, a complete description is provided.

**Pseudobulb :** The segmented pseudobulb reaches a length of 80 to 90cm and stands firmly erect or at a slight angle. After a few lower internodes with a cross section of 5.0 to 7.0mm, follows a thickening for three or four internodes, length 10 to 12cm, with a cross section of 15 to 17mm. These internodes are squared, the nodes lightly constricted. After the thickened part the pseudobulb gradually becomes thinner and the internodes shorter; at the apex, the cross section is at the most 2.0mm. The colour is green-yellow to yellow.

**Leaf :** The carnose leaf is oblong-oval and finishes in an uneven bi-lobed pointed tip. The first leaves, which begin after the thickening of the pseudobulb, are slightly wider than the following ones, steadily diminishing towards the apex. The largest leaves are 3.5cm wide and 9.0cm long. The pseudobulb has one leaf per node, and the leaves are placed in one plane alternately on either side. On a 55cm pseudobulb 18 leaves, and on a 70cm one, 21 leaves were counted. The colour of the leaves is pale green.

**Peduncle :** The yellow-green peduncle is sectioned and stiff and the nodes have small bracts. As a rule, the first three internodes produce no flowers. The proportions between the length of the whole peduncle and the flower carrying part is as follows :

Peduncle length - 26.0cm, first 3 sections - 10.0cm, then 7 flowers									
"	"	27.5cm,	"	3	"	10.0cm,	"	8	"
"	"	29.0cm,	"	3	"	9.0cm,	"	9	"
"	"	31.0cm,	"	4	"	14.0cm,	"	7	"

The peduncle is 1.8mm across. The flower carrying section of the peduncle is slightly flexuose. Principally, the peduncles can occur on nodes which carry, or have carried a leaf, on leaf carrying or bare pseudobulbs, opposite a leaf or where a leaf has been. As a rule, flowering begins on the apical nodes of the pseudobulb. On pseudobulbs between 50 and 80cm long, between four and nine peduncles or remains were found, on a robust pseudobulb 80cm long, fourteen flowering remains, of which only one leaf carrying node had not flowered.

**Flower :** In form, it is closest to D. d'albertisii Rchb.f. from south New Guinea, but appears slightly larger and more slender. The petals are longer. The most important differences are, however, found in the markings and colours of the lip. The pedicel is 2.5cm long and white in colour. The wholly



white sepals which end in a pointed apex, have slightly undulating margins; they are placed forward for a short distance and sideways, and then bend backwards, the dorsal sepal being curled over. The petals are spatulate with a pointed apex; at the beginning white to pale green, then pale green to yellow-green, in older flowers nearly yellow. The petals make a half turn ( $180^{\circ}$ ). The lip is tri-lobed with erect lateral lobes and a convex middle lobe, which ends in a deflexed tip. The lateral lobes are marked with fine red-purple stripes, which end 1.0mm from the margin; this margin is white. The complex of five keels is coloured yellow-green, the keels themselves are marked with a fine dull purple stripe. The middle keel stems from between the complex of the combined beginnings of the outside keels. The middle keel is the longest and goes through far into the middle lobe, sometimes with an interruption. The keels following are slightly shorter, the outside keels the shortest. The middle lobe is white and the markings red-lilac. These markings consist of veins in relief, but only a small part of this is coloured in such a way, it appears that five red-lilac stripes come from the keels and run towards the front.

The column is pale green, the anther-cap yellow.

The dimensions of the perianth segments are (flattened) :

	Base	Greatest width	Length
Dorsal sepal	5.0mm	7.0mm	21mm
Lateral sepals	10.0mm	7.0mm	22mm
Petals	1.5mm	5.0mm	41mm

Locality and habitat : Found in trees along the beach, south of Manokwari (Laimoeti), in a very light location, but not in the full mid-day sun. Should be cultivated on a piece of tree-fern stem. The plant has short rest periods, but otherwise flowers at all times throughout the year.

Literature : 'Dakkus' 2nd Edition, pages 142-143; 3rd Edition, page 173. 'Latif' page 123. Both give a description of Dendrobium d'albertisii Rchb.f. Latif reports south New Guinea as locality.

In 'Nova Guinea' a few notations can be found in Vol. VIII, Part I, page 67. Localities at Merauke and Okaba and in the area between Geelvink Bay and Bintoeni Gulf [neck of the Vogelkop], Vol. XII, Part IV, page 325. Locality on the north coast near Armopa (Bonggo) and the mouth of the Mamberamo River. In notations about D. antennatum Lindl., Smith suggests correctly that D. d'albertisii Rchb.f. and D. antennatum Lindl. appear to be much alike. Smith notes as differences, a rolled back sepal in D. d'albertisii Rchb.f., a thicker column, the convex middle lobe of the lip and a generally more slender form of the flower. It is also mentioned that there are forms which

cannot easily be placed with either one species. Further, Smith gives a short description of D. d'albertisii Rchb.f. and D. antennatum Lindl. in 'The Orchid Review', 1935.

In the periodical 'De Orchidee', 1939, pages 139-140, there is a short description of D. antennatum Lindl., with a photograph. The portrayed flower is, however, identical to the variety of D. d'albertisii Rchb.f. from Manokwari described here.

See finally the statement at the end of the description of D. antennatum Lindl. in regard to Schlechter's conception of the placement of D. d'albertisii Rchb.f. as a variety of D. antennatum Lindl.

See also the periodical 'Orchideeën' April, 1959.

Besides the above described variety from Manokwari, along the whole north coast there occur deviations of D. antennatum Lindl., which can be incorporated in D. d'albertisii Rchb.f. Since some D. antennatum Lindl. varieties show typical D. d'albertisii Rchb.f. characteristics, the rolled back sepals and the wide, convex middle lobe of the lip, it is often impossible to establish with which species one is confronted. For identification of Dendrobium d'albertisii Rchb.f. from Merauke, photographs of plant and flower are reproduced. This plant has somewhat thicker pseudobulbs and less slender flowers.

[Ed. - As stated previously, it is currently considered that the two species are conspecific and D. d'albertisii Rchb.f. reduced to synonymity].

Dendrobium sp. nov. (section Ceratobium) Hollandia

This orchid called 'pink antelope' at Hollandia, belongs to a group of plants, which on external characteristics is closely related to the 'antelopes' (D. stratiotes Rchb.f., D. antennatum Lindl., D. d'albertisii Rchb.f.) in one way, but on the other side, seems to form an overbridging towards the larger Dendrobiums, namely D. veratrifolium Lindl. etc.

The plant described in this paragraph is much like a robust, rough plant of Dendrobium antennatum Lindl. After a thin beginning (8.0mm across), four internodes of the pseudobulb are thickened, angular and sulcate (greatest cross-section 16 to 22mm), after that the pseudobulb, with short internodes, gradually becomes thinner and at the end is only 3.0 to 5.0mm across. The colour of the pseudobulb is yellow-green and brown-red where it receives a lot of light. The length of a fully grown pseudobulb will reach up to 80cm. The carnose leaf is oblong-oval, finishing narrowly with an uneven bi-lobed tip, but not as acute as in D. antennatum Lindl. and others. The colour is green. Towards the end, the leaves, which start after the thickened part of the pseudobulb, become smaller; this occurrence is also not as pronounced as in D. antennatum Lindl. Some dimensions of the leaves :

	Length	Width
Bottom leaves	11.0cm	4.5cm
Top leaves	9.0cm	2.5cm
Top leaves	7.0cm	1.8cm

Flowering takes place from the top half of the pseudobulb, corresponding more with D. veratrifolium Lindl. and D. mirbelianum Gaud., than with Dendrobium antennatum Lindl. On older pseudobulbs, at the most, six to eight flowering remains were counted.

**Peduncle :** The peduncle is stiff and positioned sideways, it is sectioned and coloured red-purple. One observed peduncle in flower, was 30cm long, 3.0 to 4.0mm thick and had seven flowers. The flowers are initially placed 4.5 and later 4.0cm apart, alternately on either side of the peduncle.

**Flower :** At the junction of the pedicel on the peduncle there is a 6.0 to 7.0 mm long, brown bract present. The pedicel is 35mm long, with the last 5.0mm bent at right-angles. The colour is pale lilac-red and the flower gives a typical 'Ceratobium' image. The sepals, ending in a point, have two undulations along the margins and bend back. The dorsal sepal is also curled one turn to the right. The sepals are greenish white, with red-lilac parallel veins on the background; on the dorsal sepal, five, and the lateral sepals, six. These stripes are also visible on the back. Because the stripes are

slightly diffuse, the sepals give the impression of being provided with a lilac-red band with white margins. The spatulate, pointed sepals make a half corkscrew twist ( $180^{\circ}$ ). They are tinted lilac-pink at the base, for the remaining part, deep red-lilac on a green background, the impression is brown-lilac. There is a very narrow green margin.

Along the petals run five parallel veins in relief. The dimensions of the perianth segment are, flattened, in mm.

	Base	Greatest width	Length
Dorsal sepal	5.0		21
Lateral sepals	12.0		27
Petals	1.5	4.0	34

The lip is tri-lobed with erect lateral lobes. The greatest length is 24mm, the width measured across the flattened lateral lobes, 15mm and across the middle lobe, 9.0mm. The middle lobe has a green background with five keels along the middle. From the lamina, there runs a fine purple veining towards the margins of the lateral lobes which are tinted evenly purple. The middle lobe is level, lightly undulating along the margins and ends in a point; it is heavily veined in a vivid red-lilac colour. The outside keels of the lamina end near the incision between the lateral and middle lobe in a slightly pronounced elevation. The two keels lying within are longer, and go into the middle lobe; they end in a triangular, pointed, white edge. The centre keel is again longer than the two previous ones, and ends in a larger triangular, white, pointed tooth. The column is largely coloured green, the anther-cap yellow. The spur has an undulating line and bends downwards; in bud it appears that the end of the spur is kinked. The flower remains fresh for weeks.

Locality : According to a report by Mr. Timmerans, florist, 'Felix' at Hollandia, from whom the plant was obtained, it was found at Demta, west of Hollandia, in a tree on the coast. The plant is robust and it appears to prefer a fairly sunny location. So far only one plant has been found.

Literature : It is not a simple matter to ascertain whether the above plant has been described or not. There are several species with an approximately similar habit, some of which have been described. (D. leporinum J.J.Sm. and D. devosianum J.J.Sm.), but from the descriptions and photographs, found for example, in the early Indonesian periodical 'De Orchidee', it is clear that there are still undescribed species and varieties.

See also the periodical 'Orchideeën', August 1959, where at the given locality D. antennatum Lindl. and D. veratrifolium Lindl. occur together, the possibil-

ity cannot be excluded that we are concerned here with a natural hybrid. The flower resembles a D. d'albertisii Rchb.f., with tinted petals, but with a D. veratrifolium Lindl. lip. Such a hybrid is reported by Schlechter on page 552 in 'Orch. Dtsch. Neu-Guinea' under the name D. x schumannianum Schltr.

Dendrobium sp. nov. (section Ceratobium) South New Guinea.

Like the previously described 'pink antelope', the plant described below, appears to belong to a sub-group, which on the features displayed, appears placed between D. antennatum Lindl., D. d'albertisii Rchb.f., etc. and the D. veratrifolium Lindl., D. undulatum R.Br. group. The plant is slightly more robust than D. antennatum Lindl. and the pseudobulb does not finish as thinly. The leaves are slightly wider and not as pointed. The course of the keels on the lip is reminiscent of D. d'albertisii Rchb.f.

The prominently sectioned, angular-oval pseudobulb is, at the beginning, 9.0 to 11.0mm across, then a thickening follows for three to four internodes, with a greatest cross-section of 18mm. In older pseudobulbs this thickening is sulcate. After the thickening, the leaves begin and the pseudobulb gradually becomes thinner, until at the top it is 5.0mm across. Fully grown pseudobulbs are 60 to 85cm long, coloured green-yellow.

The roots earn special mention. For a plant of this group, they are unusually thick, white, with a cross section of 2.0 to 3.0mm. The thick carnose leaf is oblong-oval, somewhat 'V'-shaped, unevenly bi-lobed and pointed, although not as pointed as in D. antennatum Lindl., etc. The colour is pale green to green. Near the apex of the pseudobulb, the leaves become smaller.

Some measurements are :

Bottom leaves	4.5cm	wide,	12.0cm	long.
"	"	4.4cm	"	11.0cm
Top leaves	2.2cm	"	6.0cm	"

The inflorescence appears from the apical nodes. On a peduncle 80cm long, four remains of inflorescences were counted at 13cm from the apex. The peduncle is sectioned and has bracts at the nodes, and at the flowers; it is 2.0mm across. The colour is green, touched with brown here and there. Flowers begin after the third section, at 6.0cm from the beginning of the peduncle. A peduncle 23cm long carried 11 flowers, placed all around the peduncle at uneven distances.

Flower : The pedicel is completely white, approximately 1.0mm thick and 40mm long. Near the flower, the pedicel is at right angles for 5.0mm. The flower is 3.0cm wide and 5.5cm high. The general colour impression is lilac-pink for the sepals, brown for the petals and dull yellow for the lip. The sepals are striped, diffuse lilac-pink, but the stripes are barely separated, so that the impression created, is of a lilac-pink band with a narrow white margin. The dorsal sepal initially is placed 5.0mm forward and then upwards or obliquely forward; it is twisted corkscrew-like 360°. The sepals have prominently undulating margins, are placed obliquely sideways and bend backwards. The upright petals are spatulate, finishing in a point; they are

twisted three-quarters of a turn ( $270^{\circ}$ ). The colour is lilac-pink at the base and along a length of approximately 10.0mm, otherwise the colour is brown-yellow or yellow on a pink background.

Measurements of the sepals and petals in mm are :

	Base	Greatest width	Length
Dorsal sepal	5.0	6.0	27
Lateral sepals	14.0	14.0	25
Petals	2.0	4.0	41

The lip is tri-lobed: the lateral lobes stand erect and the front part bends outwards, whereby the lip has an open look. The throat of the lip has a white background with green-yellow marking at the connection near the hollow spur. The outside margins and front part of the lateral lobes, including the middle lobe, are pallid yellow. At the back of the lip, the fine veining of parallel stripes coming from the lamina, is bright lilac-red, otherwise the markings and veining are pallid purple on a dull yellow background. The lamina has five keels which are marked red-lilac for two-thirds of their length. The second and fourth keels are prominently elevated in the back of the lip. Further forward the keels are white, with a few purple markings in between them. The outside keels are the shortest, the second and fourth slightly longer, the centre keel, which goes through into the middle lobe with the second and fourth keels, the longest. The keels end in a blunt elevation. The pattern of the keels shows great similarity with those of D. d'albertisii Rchb.f. The middle lobe is small and ends in a downward pointing tip.

Locality and habitat : The described plant was obtained from the collection of F.M.A. Oosterman of Merauke and originated from south New Guinea. From its appearance the plant can stand strong light. Judging by the thick, succulent roots, it is probably best cultivated in a pot with broken crock, crushed tree-fern and spagnum moss.

Literature : No description of this beautiful Dendrobium was found. The above description is included in the periodical 'Orchideeën' of October 1959. After the above description was completed on the strength of one plant, it became apparent that more examples are known, and also varieties. Although the probability that it is a natural hybrid is lessened, the plant shows typical characteristics reminiscent of varieties of D. undulatum R.Br., but also of D. d'albertisii Rchb.f., both plants which occur in the area where it has been located.

Dendrobium sp. nov. (section Ceratobium) Strait Sophia

The third of the group of plants which appears to fit between the group of D. antennatum Lindl. and the large Dendrobiums, is described here as another new species.

The firm pseudobulbs are of the 'antennatum'-group form. After a thin beginning, a pronounced thickening occurs and then a thinner extension of the pseudobulb, but the build is much more robust. The pseudobulb is initially round, and after the thickening, oval. Where the leaves have dropped however, it is angular and sulcate on the thickening. Underneath the persisting dried leaf-sheaths, it is coloured yellow-green. Robust pseudobulbs are more than 70cm in length, with an initial cross-section of 1.0cm and then 2.3cm across the thickened part. The dark green, thick, carnose, concave leaves, with a depressed mid-vein are oblong-oval, with a pronounced unevenly lobed tip. Near the apex the leaves become smaller. A pseudobulb 70cm long had 20 leaves, the largest of which was 13.5cm long and 6.5cm wide.

Flowering : As in D. antennatum Lindl., flowering often occurs from pseudobulbs still growing. Sometimes flowering begins at the apex, in immature pseudobulbs usually in the middle. The peduncle is round, thin, pale green, sectioned with small, thin, closely appressed bracts. The flowers begin on the fourth or fifth sections, after 8.0 to 10.0cm. Good peduncles are 30 to 32cm long, with 10 to 14 flowers all around the peduncle, along approximately 22cm. The pedicel stands in a miniscule bract, but not above it, as in the 'antennatum'-group.

The flower : This is of the 'antelope' type, with undulating lateral sepals bending backwards; an erect dorsal sepal turned on its own axis, and a long upright or oblique-upright, narrow, spathulate petals, twisted corkscrew-like. The middle lobe of the lip is divergent and more like those of the large Dendrobiums.

The colours are : Sepals completely white, petals very pale yellow with fine lilac-red, parallel veins, the lip is finely striped and veined light purple on the lateral and middle lobe.

The dimensions are : From the tip of the lip to the top of the petals, 5.5 to 6.0cm, the greatest width between the lateral sepals, 3.5cm. The pedicel is 3.5cm long, white and kinked near the junction.

Flower segments :

a. Dorsal sepal : This is positioned forwards and erect, turned on its own axis, lanceolate with a sharp apex with five parallel veins which are sometimes tinted vaguely purple on the back.

Dimensions : Base 4.0mm, greatest width 5.0mm, length 21mm.

b. Lateral sepals : These bend sideways and backwards, the margins undulating,



concave, finishing in a point, turned up or down, completely white, with five transparent veins.

Dimensions : Base 11.0mm, length 21mm. Form : Elongated-triangle, pointed apex.

c. Petals : Oblong-spathulate, broadening in the top half, pointed apex, twisted corkscrew-like ( $360^{\circ}$ ). Near the beginning white, turning into pale yellow; five parallel veins, the three inside ones tinted purple.

Dimensions : Base 2.0mm, greatest width 5.0mm, length 44mm.

d. The lip : The lip is tri-lobed, with open lateral lobes, the middle lobe stretched forwards and a pointed tip which is reflexed. The lamina is pressed against the column. The connection of the lip is adnate along 5.0mm with the elongated column-foot, coloured green, forming a hollow spur. The lamina has five keels, three of which are initially pronounced and striped dull purple. The keels end in rounded-off combs in the front. The length of the keels is as in D. antennatum Lindl., the middle ones long, the two following shorter, and the two outside ones the shortest. From the lamina run, on a pale yellow background, fine purple, parallel veins towards the edge of the lateral lobes, ending in fine spotting. The middle lobe is white and relatively large. It broadens where the keels end, has undulating margins and a pointed tip. From the lamina, on a completely white background, come three parallel veins and two side veins. These flare out in a fine, bright, pale purple tinted network of veins.

Dimensions (flattened) : Length 29mm, across the lateral lobes 14.5mm. The purple patches (spots) of the lateral lobes and the veins on the middle lobe are also tinted purple on the underside.

Locality and habitat : This plant comes from Strait Sophia, opposite Namatotte Island, near Kaimana. Culture is probably the same as for D. antennatum Lindl. In a tree-fern pot it grows well in half shade, the position being important to obtain good flowering. It has excellent powers of regeneration.

Literature : It has not been described before. Like other *Dendrobiums* of the 'in between' form, the question arises whether the plant is a natural hybrid, in this case between D. antennatum Lindl. and a very large, not described, but mentioned in this collection, *Ceratobium* from the same area, with a large middle lobe of the lip. See pages 141-142. [of the original text].

Dendrobium sp. nov. (section Ceratobium) Ajamaroe District

[= D. hamiferum Cribb (1981)]

The Dendrobium described here forms a separate type. The pseudobulb is comparatively long, 70 to 110cm, thin, initially very thin, but in the middle some thickening occurs. Nevertheless, the largest diameter is 5.0mm. On the plant described here, besides one pseudobulb in leaf, three older, still living, leafless pseudobulbs were present and one of these, 30cm long, had flowered once. The 75cm pseudobulb in flower, did so for the second time. The pseudobulbs stand erect or at an angle.

Leaves are at the top half of the pseudobulb. At a guess, a pseudobulb has seven to twenty-five leaves which stand rather far apart, about 4.0cm on the thin pseudobulb. The leaves are firm and carnose, oblong and unevenly bilobed at the tip. The colour is green to dark green. The largest measured leaf was 6.5cm long and 1.9cm wide.

The stiff peduncle appears at the apex of the pseudobulb. It is green, 1.0cm thick and 16cm long. The example described here carried eleven flowers over a distance of 10.0cm on the peduncle. Another example was 38cm long, with 31 flowers.

The flower : The general colour is beige to pale orange-yellow, with a pale purple marked lip. The pedicel is greenish white. The sepals initially stand upwards and sideways and then bend forward in an arch. Due to the outward bending of the margins, these sepals are concave. Because of this, the sepals appear to be narrower than they really are. The colour is beige to orange-yellow, including the back. The sepals are ribbed on the inside (five ribs), coloured identically to the petals. The petals are erect and stand slightly apart sideways, or bend towards each other, they are twisted for half a turn. The petals are initially orange-yellow, but finish off-white near the rounded tip. The dimensions are 28mm long and a greatest width of 1.8mm. The dimensions of the pointed sepals are (flattened), dorsal sepal 22mm, with a greatest width of 5.0mm, lateral sepals 9.0mm at the base, width in the middle 6.0mm, length 22mm.

The lip is clearly tri-lobed, in an outspread position 18mm long, and 10.0mm wide measured across the lateral lobes, which are yellow and faintly veined. The wide middle lobe is marked pale lilac on a pale yellow background. The lip has three keels, pale yellow in the back of the lip and towards the front (into the middle lobe) more pronounced, and finishing in protuberances with fine white tassels. The column is beige-yellow, the spur orange-yellow. The flowering period at Ajamaroe is always July.

Localities and culture : Found in the bracken-plains of Ajamaroe (west New

Guinea), on a rock island near Pana-pana Strait (Fafanlap, Misool Island) and at Biak. The plants grow on low shrubs, sometimes just above the ground, often with aerial roots. From this growing habit, it follows that we are concerned with a difficult cultural subject. The plant requires particularly large amounts of moisture, without being wet. It can be kept alive by placing it on a hollow piece of tree-fern, so that the roots can attach themselves, or hang loosely. Place the whole on the ground in light shade. By preference, when it is collected, a reasonable piece of the branch on which it is growing, should be taken.

Literature : Not previously described. This orchid forms a separate category in the section *Ceratobium*. It is suspected that the plant occurs most commonly in the Karst area of Ajamaroe, but even there, only solitary examples occur. The three known, widely separated localities, are always in limestone areas, with a high precipitation.

[Ed. When the author published this volume, the species was undescribed. It was formally described and published by Dr. P.J. Cribb in the 'Orchadian' Vol. 6, No. 12, June 1981, pages 274-276, *D. hamiferum* Cribb. It should also be pointed out that the section name *Ceratobium* has been suppressed and replaced by the older name *Spatulata*].

Dendrobium trilamellatum J.J.Sm.

This Dendrobium belonging to the section Ceratobium, diverges in some ways from the usual form, especially concerning the plant itself. Pseudobulbs coming into flower, are 15 to 60cm long and stand firmly erect. After a thin beginning, the segmented, circular pseudobulb, which is lightly constricted at the nodes, swells, this thickening gradually diminishes towards the apex. The pseudobulb is therefore rather more spool-shaped than in the larger Dendrobiums, and is like Dendrobium phalaenopsis Fitzg. The internodes are a maximum of 4.0cm long, but the four or five apical internodes are very short, viz. four internodes along 3.0 to 4.0cm. The swelling of the pseudobulbs can sometimes be very pronounced, for example, 2.0cm across by a length of 28cm. As a rule, pseudobulbs 35 to 40cm long are 1.0 to 1.75cm across. The colour of the pseudobulbs is yellow-green to olive-green. The leaves are lanceolate, thick and carnose; they begin half-way up the pseudobulb. The comparatively very long and narrow leaves have an uneven bi-lobed tip and they become smaller towards the top.

Dimensions : A large leaf is about 16cm long and 1.8cm wide. The colour is pale green to green. The peduncle appears from the short apical internodes of the pseudobulb. For a relatively small plant the peduncles can be quite long. In the described example, the 27cm pseudobulb had on the third top internode, a peduncle 46cm long with 19 flowers. The first flower stood at 10.0cm from the beginning of the peduncle, which is deep purple and thin (1.8mm). The peduncle is sectioned, and on the first four flowerless nodes, provided with thin, papery bracts, 9.0mm in length. The bracts at the pedicels are small (2.0mm).

Flower : The daytime-fragrant flower is moderately large and regularly formed; it measures approximately 3.5 x 3.5cm. The overall colour impression is brown-yellow and yellow. An important difference between this and other Ceratobium species, is not only the petals, but also the sepals are twisted corkscrew-like. The pedicel is coloured pale green-yellow, 28mm long, with the last 5.0mm at a 90° angle. After a wide base, the sepals finish into a point; they are yellow at the base, then brown-yellow and finally light brown. The dorsal sepal stands erect, makes a half turn (180°) and is marked with five to six fine, red-brown, parallel veins. The lateral sepals are coloured slightly paler than the dorsal sepal; they are placed sideways and downwards, carry four to five red-brown veins and also make a half turn. The petals are lightly spatulate, finishing in a point and the same colour as the dorsal sepal. They are twisted one full turn, corkscrew-like (360°) and marked with three, fine red-brown veins.

Dimensions are :

	Base	Greatest width	Length
Petals	2.0mm	4.0mm	27mm
Dorsal sepal	5.0mm	-	28mm
Lateral sepals	8.0mm	-	25mm

The lip spread across the lateral lobes measures 10.0mm and is 21mm long. The lateral lobes are not wide. On a pale yellow, almost transparent background, from the lamina, fine red-brown stripes run towards the red-brown tinted margin. The middle lobe is convex, cordate, stiff and coloured bright yellow, without veins or other colouration. Along the middle of the lip runs a stiff block of three yellow keels, which end on the middle lobe as three pronounced yellow appendages, with the one on the middle keel the largest. The spur is 7.0mm long, the column 4.0mm. The column is vaguely coloured purple-brown on the top. The anther-cap is pale yellow.

Habitat and localities : The seemingly robust plant is difficult to cultivate and is very sensitive to an excess of moisture, fungi, and an incorrect aspect. It should be placed on a piece of tree-fern in a location receiving morning sun. Found in the hinterland of Merauke. In 'Nova Guinea' the 'neck' of the Vogelkop is reported as a locality, but this seems doubtful.

Literature : Described in 'Nova Guinea' Vol. VIII, Part I, page 69, drawing no. XXIV-76.

Further in the periodical 'De Orchidee', 1934, pages 208-209.

In 1937, pages 283-286 the related species D. johannis Rchb.f., with varieties, is dealt with.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' reported on page 545.

Dendrobium conanthum Schltr.

This is a well known orchid in north and south New Guinea, which is often collected without the owners being aware of its name. The pseudobulb is slender and has a slightly flattened, oval shape. A 150cm length is normal, but vigorous plants will reach 2.5m. The width of the pseudobulb varies, depending on the habitat of the plant, from 12 to 18mm, thus only a slight thickening occurs, after which the pseudobulb gradually thins out. The colour is red-brown. The thick, bright green to dark green coloured, carnose leaves are oblong-oval, with a rounded, unevenly bi-lobed tip. An average leaf measures 9.0 x 4.2cm, and the leaves gradually become smaller towards the apex of the pseudobulb.

The sectioned peduncles occur mostly in the apical internodes of the pseudobulb. The peduncles reach a length of more than 50cm and the flowers appear initially, after the first 20cm. The number of flowers placed all around the peduncle varies, depending on its length. For example :

Peduncle 37cm long,	13 flowers
Peduncle 39cm long,	15 flowers
Peduncle 40cm long,	15 flowers
Peduncle 51cm long,	26 flowers

Flower : This measures approximately 3.0 x 3.0cm and the general impression of the colour is pallid yellow. The pedicel is approximately 4.0cm long. The sepals are about 25mm long, are wide at the base and finish in a point. On a yellow background, run parallel brown to red-brown stripes. The sepals have undulating margins and the tips are turned backwards and rolled up. The petals are nearly 30mm long and have a maximum width of 4.0mm. The colour is identical to that of the sepals, the brown marking merges into a band, except for the yellow margins. The petals are twisted corkscrew-like to the right, with a curled tip. On the back of the sepals, the colour is lilac-brown, edged with a narrow yellow margin. The lip is tri-lobed. The comparatively large, lateral lobes are initially pressed against the column and then fan outwards. On a bright yellow background, run red to lilac-brown parallel veins, half-way up to the margins of the lateral lobes. The margins themselves, slightly undulating, are finely spotted red to lilac-brown. The middle lobe is small, bright yellow, with more-or-less brown-red veining and it finishes in a pointed which is retrorse. The lamina contains three clearly visible white keels. Next to it run two red-brown to lilac-brown stripes, and veins run from these to the lateral lobes. The middle keel runs through into the middle lobe and forms a triangular white tooth. In the back of the lip, the space between the keels is coloured bright purple. The dimensions of the lip are (flattened), 28mm long and 16mm wide, across the lateral lobes.

The column is short and blunt, the top pallid white, with two red-purple markings. On the inside, the elongated column-foot is tinted red-purple. The stigma is transparent white, the anther-cap yellow. Although not attractively coloured, a nice orchid to cultivate on a firm piece of tree-fern. The plant, and especially the roots are sensitive to moisture so pot culture is therefore not recommended. The plant can tolerate virtually full sun. Flowering occurs in September/October, but the main flowering period is January/April.

Localities : Spread across a large part of west and Papua New Guinea, on the north as well as the south coasts. In west New Guinea, known from Waigeo Island, the bottom section of Teminaboean, the Schouten Islands, Japen Island, suspected also from behind Hollandia, Eilanden River and Merauke.

Literature : As far as can be ascertained, not described in popular works. See 'Nova Guinea' Vol. XII, Part I, pages 47-48, illustration XIV-38. Schlechter in 'Orch. Dtsch. Neu-Guinea' page 550. Further reported with photograph, in the periodical 'De Orchidee', 1938, page 348-349 and 1938, pages 136-137 (the illustrated flower is, however, not D. conanthum Schltr.)

Dendrobium sp. nov. (section Ceratobium) Kepi River

This very tall and slender Dendrobium, comes from the swamp region between the Kepi and the Eilanden River, in south New Guinea. It is, as far as is known, an undescribed species.

Plant : The pseudobulb is very tall and thin, without any noticeable thickening. A 320cm length has been measured, by a greatest width of 1.7cm. The colour underneath the white, withered, sheathing bracts, is deep red-brown. Initially the pseudobulb is virtually circular, later slowly becoming thinner, more oval and flattened, at the apex, it is only about 0.5cm across. Through its length, compared to the slight width, the pseudobulb requires some support and probably winds through the branches of the host tree.

Leaf : The leaves begin at approximately 50 to 70cm from the base of the pseudobulb. The first leaves are oblong-oval, with a blunt uneven bi-lobed tip, 13cm wide and 15cm long. [sic] The colour of the thick, carnose leaves is yellow-green to green, with a deep purple margin; on the underside the mid-vein is also marked deep purple. The leaves gradually become smaller towards the top of the pseudobulb.

Peduncle : This appears on the apical internodes of the pseudobulb. It is stiff, multi-flowered and coloured very deep red-purple. The peduncle is sectioned, with small membranous bracts on each node, 2.0 to 3.0mm thick at the beginning, gradually becoming thinner. The flowers begin after the third and up to the sixth section, depending on the length of the peduncle. The greatest number of flowers on three plants was 20, as follows :

Length of peduncle 24cm, 10 flowers

Length of peduncle 32cm, 18 flowers

Length of peduncle 40cm, 20 flowers

The flower : These are placed all around the peduncle and they begin on a 40cm peduncle at 15cm. The dimensions of the flower is 4.5cm diagonally and 4.0cm across. The general impression is deep burgundy-red, with a yellow background on the lip. Viewed from below, the dominant colour is yellow, viz. the back of the lip and the part of the lateral sepals connected to the spur. The pedicel is brown-green to deep red-purple. The flower is of the form, with prominently corkscrew-like, twisted, narrow petals, an erect dorsal sepal standing between the petals and turned on its own axis, and sideways and downward twisted lateral sepals. The lip is open and the narrow, but relatively long middle lobe, is curled downwards and backwards. The position and shape of the lip are virtually identical to the lip of Dendrobium conanthum Schltr. and the markings have a strong resemblance, except that part which is deep wine-red, is fine red-brown in D. conanthum Schltr.



Flower segments : The petals are positioned obliquely sideways and upwards and make two full corkscrew-like turns ( $720^{\circ}$ ). They are coloured an even, slightly glossy, deep wine-red, without margin colouration or visible veins. They are, from the beginning to the pointed ends, virtually of parallel width, 3.0 to 3.5mm and are 37mm long. The dorsal sepal is, at the beginning, marked wine-red on a lighter base, further on, deep wine-red with a narrow yellow margin. At the beginning 7.0mm wide, this sepal gradually narrows and ends after 27mm, in a blunt tip. The lateral sepals are 15mm wide at the base, gradually narrowing into a blunt tip, the length is 25mm. The colour at the base is half wine-red and half yellow, where this sepal joins the spur. The yellow colouring is fairly rapidly replaced, and becomes evenly wine-red with a yellow margin. The column is short and wide, coloured yellow with pale red markings and on the underside, the elongated column-foot is marked red-lilac. The tri-lobed lip, measured across the lateral lobe, is 16mm wide and 30mm long (middle lobe : 13mm). The lateral lobes stand erect and sideways which gives the lip an open appearance. The bright, purple marked block of three keels, running from the back of the lip, has veins running sideways towards the lateral lobes. In the back of the lip they are purple, but further towards the front, they are wine-red. The veining is short and finishes in wine-red spotting, which colours the whole of the lateral lobes. This marking is coarse, compared to that of D. conanthum Schltr. Where the deep purple of the three keels finishes at the point where the column ends, there begins a pale to bright yellow background, against which the three red-lilac keels are contrasted. The keels run past the incision between the lateral lobes and middle lobe and into the middle lobe. The centre keel ends in a slight thickening, the side keels finish in the wine-red definitions and diffuse markings of the middle lobe, which ends in a pointed tip. The white tooth of the centre keel of D. conanthum Schltr. is therefore missing. This orchid appears to be a relation of D. conanthum Schltr., which has been used as a comparison. D. conanthum Schltr. also has a long thin pseudobulb, but not as long as in its wine-red relation. The flowers show a similarity in the lip, the petals are however, curled straight corkscrew-like and not on their own axis. The sepals also, which are curled over in D. conanthum Schltr., are twisted on their own axis in the new Dendrobium. Although it does not carry a large or brightly coloured flower, it is a strikingly deep coloured flowering member of the section Ceratobium [Spatulata].

Locality and habitat : The plant requires a lot of light, but not full sun. Growth is strong and it grows well on a slab of tree-fern. The locality has already been mentioned at the beginning.

Literature : As far as is known, not described before.

Dendrobium sp. nov. (section Ceratobium) Waigeo - Sorong

As far as could be observed in a threesome, this plant also is very similar to Dendrobium conanthum Schltr., and indeed, this new orchid appears to be related to it. The plant is however, more slender than D. conanthum Schltr. and the appressed sheathing bracts have darker stripes and markings. The described example is mature, but not a plant of maximum size. The sectioned pseudobulb is very slender, 72cm long and had a bottom width (circular) of 0.7cm and a greatest width (slightly flattened, oval) of 0.9cm. The pseudobulb is a deep red-brown, with grey, withered leaf sheaths. Other examples of this orchid had pseudobulbs 150 and 180cm long. The carnose leaf is oblong-oval, with an uneven bi-lobed, indented tip and the leaves become smaller towards the apex. Dimensions of an average leaf are, 8.5cm long by 3.5cm wide.

Flowering : The sectioned, very deep red-lilac coloured peduncle arises from the apical internodes, is long and thin, loose, multi-flowered with flowers all around the peduncle. A small example in flower, had a sectioned peduncle 27cm long, 2.5mm across, carrying six flowers along the fifth section for 3.0cm.

The flower : It is deeply coloured, fairly large, 3.0cm wide (between the rolled-up lateral sepals) and more than 5.0cm high (from top petal to lateral sepal). It stays fresh for weeks, without any fragrance. The lip is reminiscent of D. conanthum Schltr., without the white tooth of the centre keel. The sepals are undulating and twisted or curled on their own axis. The petals are positioned sideways and upwards, are prominently twisted corkscrew-like, narrow, and very deep purple-red. The lateral lobes of the lip are turned outwards and the pointed middle lobe is turned downwards and backwards. The number of keels on the lip is three. The pedicel is 3.0cm long, 1.5mm thick, green then turning into purple, bent near the ovary.

Description of the flower segments :

a. Dorsal sepal : Oblong, becoming narrower towards the apex, tip pointed, positioned obliquely forward and upward. After 0.5cm, undulation occurs and after that, the sepal turns on its own axis. Length is 25mm, width at the base, 7.0mm. Marked with five obvious, dull red veins which finally merge, tinted with yellow along the margin.

b. Lateral sepals : Wide base, pointed, convex. After 1.0cm, an undulation, after which the sepal curls forward or backward.

Marking : Three clear veins on top, underneath pale yellow green. The veins turn into a purple-red band, with narrow yellow margining. Base 7.0mm, length 23mm.

c. Petals : Linear, concave and narrow, tip pointed. Initially, bright lilac-red, later very deep lilac-red. The middle section shows two twists (360°),

the top section is turned a quarter. The length is 37mm, the width 3.0mm. d. The lip : It is adnate for 3.0mm to the elongated column-foot. It is movable, tri-lobed, coloured yellow, with bright red-lilac marked keels and dull red veins on the lateral and middle lobes.

Dimensions, flattened : Length 25mm, width across the lateral lobes, 9.0mm. The lip has three keels which are initially bright red-lilac, later marked dull red. The keels turn without any elevation on the middle lobe, into the middle lobe veining.

e. Column : It is short (5.0mm), wide, flattened underneath. The stigma is oblong-oval, pale green. The column is finely spotted pallid red, with a pale yellow background. The elongated column-foot is tinted red-lilac, the anther-cap, pale yellow.

Flowering : Majalibit Bay, May 1961; Sorong plants, December/January 1961-62.

Localities and habitat : Found on Beeuw Island in Majalibit Bay, Waigeo Island. One very large example (2.0m long, three flowering branches of + 45cm), found in the Bay of Fafanlap, Misool Island, but a second example has never been found. Also at Sorong, in the forest, just behind the town, a variety of this orchid has been found which is coloured slightly paler than the Waigoe example. The pseudobulbs of these plants are up to two metres long, and slender in the same manner as in D. conanthum Schltr. It grows in low trees, at hand height, between the branches, the position usually is very light, without being in full sun. As is often observed, the top of the pseudobulb and the peduncle are exposed to the sun. Cultivate dry on a tree-fern slab.

Literature : Not described. As was already reported, plant and flower show comparison with D. conanthum Schltr., but the plant is more slender, the leaves more oblong, the marking deep lilac-red to dull red in place of brown and brown-red, the petals are much more 'antelope' form-like and the white tooth of the lip is missing entirely.

Dendrobium undulatum R.Br. [= Dendrobium discolor Lindl.]

The plants described as Dendrobium 'undulatum' are so variable in flower, that it can become extremely difficult to identify them. Although Smith separated three varieties, there are certainly many more. Compared with existing descriptions and illustrations, it was established that the plant described here, is identical to the orchid originally distinguished as D. undulatum R.Br. The plant shows many similarities to D. mirbelianum Gaud. The sectioned pseudobulbs are 120cm (or more) long, yellow-green to olive-green in colour and initially, prominently thickened. The width at the bottom is approximately 1.0cm, the thickened section of three to six internodes, 2.5cm across and then thins out to about 0.25cm diameter. Initially circular, after the thickening the pseudobulb flattens into an oval. The leaves are thick, carnose, oblong-oval with a reasonably pointed, uneven bilobed tip. The colour is green to pale green. On plants in the shade, the mid-vein on the underside of the leaves and the leaf margins are tinted deep purple.

The peduncles emerge from the top half of the pseudobulb. They are stiff, stand sideways and are coloured deep lilac-red. The peduncle is sectioned and at the nodes, carries a thin brown bract. The flowers start from the fourth section. Each pedicel is provided with a thin papery, brown bract, 13mm long. The peduncle described here measured 33cm; the first flower stood at 12cm from the beginning of the peduncle which, in all, carried 19 flowers, placed apart at a regular distance. The peduncles can, however, be much longer, up to 50cm. The flowers are placed all around the stem.

Flower : The pedicel is stark white and is highly contrasted against the dark colour of the peduncle and the dull yellow impression of the flowers. The pedicels of the first flowers are rather long, 50mm, those of later flowers shorter, 30mm. The highly serrated and twisted flower makes a bizarre impression.

The sepals finishing in a pointed tip have prominently serrated margins, and on top of this, are strongly curled over. The dorsal sepal curls over three turns to the right, the lateral sepals are initially folded backwards and then curled over, upwards or downwards (sometimes one sepal upwards and one curled downwards). The sepals are striped red-brown on the front, initially have six clearly visible stripes which later fade, except for a striking, narrow yellow margin. On the back, the sepals are coloured diffuse pallid yellow. The petals are placed erect or slightly obliquely upwards. They are spatulate and also finish in a point, which however, is so severely curled over that the tip appears incised. The margins are prominently serrated along the whole length, the petal is so excessively twisted cork-

screw-like, that it makes two full 360° turns. Besides the striking yellow margin, the colour impression is pallid yellow-brown, stripes and veins are so diffused that they cannot be distinguished as such with the naked eye. For as far as it is possible to flatten the petals and sepals, the dimensions are :

	Base	Greatest width	Length
Dorsal sepal	5.0mm	6.0mm	35mm
Lateral sepals	9.0mm [sic]	6.0mm	31mm
Petals	2.0mm	10.0mm	45mm

The tri-lobed lip is relatively small. The lateral lobes are veined pallid red-purple in the back, going over into a red-purple patch towards the margin, the front part of the lateral lobes is wider and bright yellow. These lengthened wings curl over inwards and surround the front part of the column, even so much that the lateral lobes form, as it were, a tube. The middle lobe is evenly brown, with a very narrow yellow margin; this lobe is so highly 'V'-shaped and curled downwards, that it cannot be flattened out. The stiff lamina carries five red-purple marked keels, the three middle ones of which end in a separated white claw, which bends downwards. The bent, elongated column-foot is only 3.0mm long. The dimensions of the lip are (flattened), across the lateral lobes 12mm, length 18mm. The column is short, 5.0mm long and coloured yellow, except for the connection near the petals and sepals; a red-purple margin and a brown marking near the surrounding of the pale yellow anther-cap. The hollow stigma is coloured very pale green, with a red-lilac marking underneath. The flowers, because of the heavy petals, are somewhat limp. Because of the weight of the flowers on the relatively thin peduncle, it bends so that the inflorescence often arches downwards.

Habitat and locality : Found in south New Guinea in the surroundings of Merauke. It should be treated as for D. mirbelianum Gaud., it is a strong grower. Place it on a firm piece of tree-fern stem. It stands a lot of sun.

Literature : Reported in 'Dakkus', 2nd Edition, page 171; 3rd Edition pages 206-207.

In 'Latif' on pages 137 and 171.

Further a short description by Smith in 'The Orchid Review' 1935.

In 'Nova Guinea' Smith describes two varieties, var. d'albertisii and var. gracile (Vol. XII, Part I, page 47, with illustrations). The unusual variability has produced several reviews, for example in the Indonesian periodical 'De Orchidee', well illustrated with photographs, 1936, page 163 (var. d'albertisii ?); 1939, pages 172-173, blue (!) undulatum from

Sorong. This last variety does not appear impossible.

The author once saw a plant from south New Guinea, the flowers of which were clearly of the 'undulatum' form, but coloured evenly fine pale purple. In Schlechter's 'Orch. Dtsch. Neu-Guinea' not described but only named, on page 545.

Periodical 'Orchideeën', October 1936.

[Ed. Taxonomists today regard Dendrobium undulatum R.Br. as a synonym of D. discolor Lindl. There is little doubt that the species is very complex and variable, giving rise over the years to the publication of a number of varietal names, both in regard to New Guinea and Australian material. The author, in his conclusions, was certainly influenced by the opinions expressed by J.J.Smith in his publications. Smith and perhaps to a lesser degree Schlechter must be regarded as must be regarded as 'splitters' without using the term in any derogatory manner].

Dendrobium undulatum R.Br. var. d'albertisii F.v.M. [D. discolor Lindl.]

A short description of the variety d'albertisii F.v.M. mentioned previously in D. undulatum R.Br., is given here. As far as the plant and leaves are concerned, reference can be made to the description of D. undulatum R.Br. Flowering takes place both on pseudobulbs in leaf and from bare pseudobulbs. On a 75cm pseudobulb, six flowering remains were present, with the bottom one [peduncle], about halfway up the pseudobulb. The peduncle is stiff, 30cm or more long and carries from 12 to more than 20 flowers.

The flower is fairly large, 6.0cm across and has typical 'windmill-blade' form. The background colour is yellow for the whole flower; when the flowers fade, they become darker in colour. The sepals and petals have fine red-brown veins lengthwise; these veins are connected to each by small veins, in such a way, that a 'ladder' effect is created or, a merging red-brown band in the sepals, with a narrow yellow margin. The sepals and the petals have serrated margins, but not as pronounced as in D. undulatum R.Br. The dorsal sepal is 33mm long and 8.0mm wide and curls backwards. The lateral sepals are 28mm long and 8.0mm wide at the base, lean sideways and then curl backwards. The 'corkscrew-like', twisted petals are spatulate, 3.0mm at the base, 10.0mm wide, near the top and 42mm long. The lip is a good identification point. Compared with the previous species, the yellow lateral lobes are open, with the margins turned outwards, they have a fine red-purple veining. The purple-brown middle lobe is very small, 5.0mm long and 3.0mm wide and turned downwards. The total length of the lip is 23mm, the width across the flattened lateral lobes, 16mm. The lamina is completely white. The three middle keels are pronounced, run through up to the beginning of the middle lobe, and end there in a white, projecting tooth. Next to this block of three keels, another two keels are visible, which end before reaching the middle lobe. The column is blunt, tinted pallid red-brown on the upper side, on the underside, pale yellow with a pale green, large, hollow stigma. The elongated column-foot has a groove, which is closed off by the triangular lip connection, so forming a hollow spur. The anther-cap is yellow.

Locality and habitat : The plant originates from the Merauke area. A strong plant which stands a lot of sun. It should be placed on a robust piece of tree-fern stem.

Literature : Described in 'Nova Guinea' Vol. XII, Part I, page 47, with illustration.

Further mentioned in 'Dakkus', 2nd Edition, page 171; 3rd Edition, page 207.

'Latif', pages 137 and 144.

See further the articles in the periodical 'De Orchidee' quoted in the previous article.

This variety is certainly not constant. Except for the above-mentioned flower characteristics, the flowers differ considerably in size and tint.



Dendrobium undulatum R.Br. var. gracile J.J.Sm. [= D. discolor Lindl.]

This is a beautiful variety of D. undulatum R.Br., with large flowers. The flower petals and sepals are less serrated along the margins, compared with the previous varieties.

The pseudobulb typifies the normal type of large Dendrobiums. In the described example the largest pseudobulbs, which as a rule, had flowered seven to nine times from the apical nodes, were 100 to 120cm long, dark brown underneath grey, withered leaf sheaths, prominently sectioned, thickened and oval. On the thickened part, the measurements of the greatest diameter was 28 x 25mm. Towards the apex, the flattening increases, at two-thirds length the measurements of the diameter are 15 x 11mm.

The leaves are green, elongated-oval, thick and leathery. A leaf measures 14 x 8.0cm. Towards the apex of the pseudobulb, the leaves gradually become smaller. The leaf sheaths are tinted deep purple.

Flowering usually, but not always, occurs in the apical internodes. The peduncle is sectioned, circular, pale green, with purple spots. The described example was 65cm long and carried 39 flowers. After three relatively short sections, flowering began on the fourth section, with the first flower at 12cm from the beginning of the peduncle. The flowers are placed all around the peduncle. The 51mm long, white pedicel, has an appressed, thin papery bract, 10.0mm long and it is bent near the ovary.

Flower : The flowers which are pendulous at the front, are large and slightly lax. The form is not always constant, because the petals adopt different positions. As a rule, the sepals are lightly undulating along the margins and curled over in broad arches. The long petals stand sideways, upwards and then are horizontally arched. The lip is open. The sepals are coloured pale cream, with a close network of pallid red, spreading veins. Along two-thirds of the length, highly serrated along the margins and corkscrew-like twisted petals, the pallid brown network of veins occurs on a yellow background. Sepals and petals have a cream or yellow margin. The visible part of the upright lateral lobes of the lip is yellow, the long, narrow middle lobe is pallid purple on yellow (pallid brown), with a downwards and backwards turned tip. The lamina and the keels are marked bright purple, the middle keel ends in a large white claw. The keels on either side are shorter and the claw is smaller. The outside keels are shorter still and can hardly be distinguished. The flower can, between the tips of the petals, in total be 7.0cm, by a height of 3.5cm. It is much larger than the flower of D. undulatum R.Br. or the variety d'albertisii F.v.M.

Flower segments :

- a. Dorsal sepal : Lingulate, with a pointed apex, gradually becoming narrower. Length 40mm, greatest width 5.5mm. Margins moderately undulating, curled up in broad arches.
- b. Lateral sepals : Lingulate, gradually narrowing, pointed apex. Base 14mm length 42mm. Margins moderately undulating, curled up in broad arches.
- c. Petals : Beginning narrow, gradually widening, then narrowing again, finishing in a point. Along one-third of the margins smooth, then undulating and serrated. Twisted corkscrew-like, base 2.0mm, greatest width 7.0mm, length 50mm.
- d. Column : Short and wide, 7.0mm long, with pallid purple marking on the back. Anther pale green, held in two pointed protuberances of the column. Column-foot long and narrow.
- e. Lip : Lateral lobes in an upright arch, not touching the column. The lateral lobes irregularly formed, yellow, veined purple-red in the back. Middle lobe long, the three middle keels running up to the middle lobe and ending in a white claw. The middle lobe is narrow and long, ends in a point and has undulating margins. The lamina consisting of five keels is white. Between the keels and on the elevated parts, there are bright purple stripes. The total length of the lip is 24mm, the width across the lateral lobes 14mm. The middle lobe is 11mm long and 4.0mm wide. This variety can easily be distinguished from the two others by its much larger flowers, which are of a paler colour and by the lip, including the claws of the three middle keels.

Locality and habitat : Found in south New Guinea, near Merauke. Should be placed on a firm piece of tree-fern stem. Tolerates a lot and presumably even full sun.

Literature : 'Nova Guinea' Vol. XII, Part I, page 47, illustration XIII-37. The variety illustrated in the periodical 'De Orchidee' 1935, page 95, is probably var. gracile F.v.M.  
[Also 'Dakkus' page 207].

Dendrobium mirbelianum Gaud.

In the coastal areas of the whole of Dutch New Guinea this orchid, next to D. antennatum Lindl. (or D. d'albertisii), is the most commonly occurring. Although not as beautiful as the 'Nieuw Guineetjes' (D. veratrifolium Lind.) from Hollandia, the plant is still well worth growing, because of its floriferous habit and easy culture, especially the paler coloured varieties. This species is very variable in appearance and flower. There is a variety with brown flowers and a sub-variety which is rather unsatisfactory, because the flowers set seed fairly quickly. A paler brown, virtually beige variety, with much larger flowers is more pleasing. The showiest ones are the green-yellow, bright yellow and orange-yellow varieties, the flowers of these are also large.

The variability makes it difficult to give an accurate description. It is not only the flower which shows differences in size and colour, but the plant also has variations. Since plants with particular characteristics do not always have the same flowers, the determination of a variety on outward appearances of the plant is certainly not possible. The plant has the same appearance as most of the large Dendrobiums. A pseudobulb with thickening will reach 1.6m in length and the thick leathery leaves which, as a rule are oval, have a blunt, uneven bi-lobed tip. Further, leaves begin after the first [lower] third part of the pseudobulb: peduncles commence opposite the leaves, on small plants in the top internodes. In robust, well grown examples on the top half of the pseudobulb. The peduncle is stiff and multi-flowered. To this, one can add that as a general rule, under the same lighting conditions, plants with paler coloured flowers have paler coloured pseudobulbs.

Pseudobulb : This sometimes has a prominent thickening and sometimes a barely visible one. The colour varies from bright yellow to green-yellow, brownish green, brown and very dark brown. Examples of variation :

cream flower : bright yellow pseudobulb, normal thickening (Meos Noem)

yellow flower : bright yellow pseudobulb, barely thickened (Kabare)

yellow flower : brown-greenish pseudobulb, prominently thickened (4.0cm across) (Manokwari, Bintoeni)

beige flower : brownish pseudobulb, normal thickening (Manokwari)

brown flower : brownish pseudobulb, normal thickening (Sorong)

brown flower : dark red-brown pseudobulb, normal thickening (Manokwari)

brown flower : greenish yellow pseudobulb, 3.0cm across (Ransiki)

dark brown flower : dark red-brown pseudobulb, normal thickening (Teminaboean)

Leaf : As a rule, the leaves are oval, with dimensions for the largest leaf being 8.5cm wide by 13cm long. Sometimes however, the leaves are longer and

narrower. The colour, as a rule, is fairly pale green.

**Peduncle :** This appears opposite the place where a leaf is placed and is stiff. The peduncle can reach a length of 65cm carrying 37 to 40 flowers. As a rule, the peduncles are approximately 40cm long, with 20 to 22 flowers. The peduncle is sectioned and has four sections, provided with a small pale-coloured bract; the first three sections are short and cover about a quarter of the stem, the flowers appear on the fourth section. The colour of the peduncle is pale green to brown-green, sometimes red-brown. The flowers are placed in irregular groups around the peduncle, sometimes two, sometimes three together.

**Flower :** As was mentioned above, there are three main colours that can be distinguished, with the necessary shadings in between, definite yellow, biscuit-coloured (beige) and brown (brown-yellow). The difference needs to be taken into consideration, between the background colour of the petals and the colour of the stripes which run parallel lengthwise along the petals, as these help to determine the colour impression. The dimensions of the flowers of different varieties are not constant. Four examples will be given below. The flower is, as a rule, hardly curled or turned (a specimen found on Roemberpon has petals turned one complete spiral, and a dorsal sepal turned one-half spiral). The dorsal sepal, finishing in a blunt tip, initially points forward and then bends back. The lateral sepals also finishing in a point, point forward and then bend sideways and backwards. The lightly spathulate petals also end in a point, they are turned a quarter to half a turn. The petals sometimes make the impression of being unevenly bi-lobed; sometimes next to the pointed end, there is even an incision. The lip is tri-lobed, with upright lateral lobes. The middle lobe is long, covering more than half the total length and ends in a pointed tip, which is tinted greenish. The middle lobe bends downwards. Along the middle of the lip run three clearly visible, white keels, next to these lie two much less obvious white keels. Of the three clearly elevated keels, which run far into the middle lobe, the centre one is somewhat serrated and zig-zags.

continued overleaf

VARIETIES IN COLOUR AND DIMENSIONS

Characteristics	Varieties			
	Yellow	Beige	Dull Brown	Yellow Brown
1. Background colour	Greenish yellow	Biscuit colour	Greenish brown	Dark yellow brown-yellow
2. Colour of stripes on sepals & petals	Colourless, visible as veins	Lilac-red	Rust	Pronounced lilac-red
3. Colour of veins & side lobes of lip	Dull purple	Purple to light purple	Red-purple	Red-purple
4. Colour of veins on mid-lobe of lip	Dull red-purple	Dull purple	Rust	Brown-red
5. Dimensions in mm :				
a) Dorsal sepal				
Base	6.0	7.0	7.0	7.0
Length	28.0	27.0	23.0	22.0
b) Lateral sepals				
Base	12.0	11.0	11.0	13.0
Length	28.0	26.0	24.0	25.0
c) Petals				
Base	3.0	3.0	3.0	3.0
Greatest width	8.0	7.0	7.0	7.0
Length	40.0	40.0	30.0	34.0
d) Flattened lip				
Width	17.0	15.0	16.0	17.0
Length	26.0	25.0	22.0	26.0

The beautiful beige and yellow varieties clearly have the largest flowers. There is also a self-pollinating variety. Flowering times are variable and depend on rainfall distribution. A spring and autumn flowering can clearly be distinguished in the first half of the year and at the end of the dry period.

Habitat and localities : D. mirbelianum Gaud. is a robust plant with excellent regeneration capabilities. Place it on a firm piece of tree-fern or in a roomy pot with crushed tree-fern and pieces of limestone in light shade to virtually full sun. Yellow varieties are to be found on north Waigeo [I.], near Manokwari, Roemperpon [I.] and a beautiful butter-yellow to orange-yellow variety at the top of the Bintoeni Gulf. Very beautiful is a cream coloured variety, with pallid purple markings on the lip found on Meos Noem Island.

Literature : Reports in 'Nova Guinea' Vol. VIII, Part I, page 69; Vol. XII, Part IV, page 322 and Vol. XIV, Part III, page 419.

Further in Schlechter's 'Orch. Dtsch. Neu-Guinea', page 548.

Popular descriptions in 'Dakkus' 2nd Edition, page 159, 3rd Edition, pages 191 - 199.

See also 'De Orchidee' 1934 and 'The Orchid Review' 1935.

[Also 'Latif' page 130].

Dendrobium schulleri J.J.Sm.

This orchid is related to D. mirbelianum Gaud. The most important difference is to be found in the different structure of the flower. It has much wider flower petals and displays differences in the lip. The plant is of the usual moderately large Dendrobium-form. Mature, tall caned, flowering pseudobulbs measure between 110 and 150cm. The pseudobulb has a belly-like thickening, coloured olive-green to brown-green. At the thickening it is 2.0 to 2.5cm across. On a 150cm pseudobulb the first leaf begins at 50cm, on a stem 110cm long, at 40cm, on average therefore, two-thirds of the pseudobulb carries leaves. A 150cm pseudobulb carries 23 to 25 leaves.

The leaves, green to dark green, are carnose, thick and firm, oval to ovate, with an uneven bi-lobed blunt tip. Oblong, large leaves measure 7.5 by 15cm, the ovate leaves 9.0 by 14cm. Towards the top the leaves gradually become smaller. On average, the leaves are wider and more rounded than in D. mirbelianum Gaud.

Flowering takes place from the upper nodes of the pseudobulb. The peduncle is placed obliquely erect away from the plant, it is stiff and multi-flowered. The peduncle has four to five segments and is provided with a thin papery bract. The colour of the peduncle is purple-brown. The flowers begin on the fifth segment and are placed at irregular distances from each other. The pedicel also has a small bract. The length varies, on several lengths the number of flowers is :

Length of peduncle, 35cm - number of flowers 15

Length of peduncle, 43cm - number of flowers 19

Length of peduncle, 56cm - number of flowers 22

The flowers therefore, stand further apart than in the sometimes closely packed peduncles of D. mirbelianum Gaud.

Flower : Petals and sepals have the same colour, greenish yellow to yellow, with seven red-brown veins. Of these veins, the middle ones are wide, sometimes slightly twisting and clearly visible, the outside veins are barely coloured and only mildly visible. On the sepals, the veins are irregularly connected to each other by side veins, creating a network. On the back of the flower petals the uncoloured veins are also visible. The sepals placed forward are wide and lightly spatulate, they end in a rounded tip, but nevertheless, with a small point. The petals stand obliquely sideways, being more prominently spatulate and end in a round tip, with a miniscule sharp tip. The dimensions are :

	Base	Greatest width	Length
Dorsal sepal	7.0mm	11.0mm	30mm
Lateral sepals	12.0mm [sic]	11.0mm	30mm

	Base	Greatest width	Length
Petals	4.0mm	13.0mm	36mm

The petals have a weak tendency to twist a quarter of a turn, the lateral sepals have one undulation on the underside. The background of the lip is pale green (lateral lobes) to yellow-green (middle lobe). The erect lateral lobes are marked with a very regular purple-brown veining, coming from the complex of keels. Towards the margin of the side lobes, this veining branches out and carries on as a diffuse purple-brown colouring on the margin of the lateral lobes; these patches are also visible on the outside. The middle lobe has serrated margins and is initially provided with purple-brown veins up to where the keels go. The front part of the middle lobe, which ends in a small point, is coloured brown, except for a small green area near the tip. The lip carries five keels along the middle. These are white, but for two-thirds of the length, coloured with lilac spots and stripes, even between the keels. The middle keel is the longest, the one following slightly shorter and the two outside, less pronounced keels, 1.0mm shorter again. The keels end in an upright triangular white flag, particularly clear in the three middle keels. On the underside, along the middle of the lip, runs a white coloured depression. The dimensions of the lip (flattened) are, 20mm wide and 27mm long. The flower is mildly perfumed.

Locality and culture : Noemfoo Island, possibly also Japan and Biak. Grows in trees near the coast, light position, but not in full mid-day sun. A strong plant, to be placed on a firm piece of tree-fern stem in light shade.

Literature : 'Latif' gives a description on page 133 of his book and a coloured illustration opposite page 144, which does not make a particularly good impression.

'Dakkus' reports on this plant in the 3rd Edition on page 198.

'Nova Guinea' has, in Vol. XII, Part IV, on page 323, a description and a good illustration (CXVII). In Vol. XIV, Part III, page 418, are some notes, for example, noting the occurrence of varieties.

See further 'The Orchid Review' 1935.

The periodical 'De Orchidee' 1936, page 59, and the periodical 'Orchideeën' of August 1960.



Dendrobium veratrifolium Lindl. [= Dendrobium lineale Rolfe]

This beautiful orchid, whose common name in west New Guinea is 'Nieuw Guineetjes', is often praised and described. The plant is robust. As a rule, the thin beginning, then prominently thickened and sectioned pseudobulb, is variable in colour, yellow, yellow-green to olive-green and dark green. The length can reach up to three metres. By a length of 150 to 170cm, the width of the round, thickened part is 3.5 to 4.0cm. The initially circular pseudobulb, gradually decreases in diameter and after the thickened part, flattens into an oval.

The green to dark green leaves are thick, carnose, oblong-oval, with a blunt, uneven bi-lobed tip. The first leaves (pseudobulb length  $\pm$  150cm), which begin after the thickening, measure 14cm by 7.0cm; towards the end of the pseudobulb, the leaves gradually become smaller, but still 8.0cm long by 3.0cm wide.

The peduncles appear mostly from the top half of the pseudobulb. Flowering is very abundant, and several peduncles on one pseudobulb is not a rare occurrence. The peduncles are, like the pseudobulb, very variable in colour, from pale green to deep purple. The peduncle is sectioned and each node carries a thin papery bract. The first flower appears 10 to 20cm from the beginning and on the fourth to sixth section. It is hardly possible to quote a peduncle length. They are unusually long in proportion to the size of the plant and compared to the inflorescences of other *Dendrobiums*. A 50 to 60cm pseudobulb, already has a 60cm peduncle, carrying 25 flowers. The peduncles can reach a length of 80 to 100cm.

Flower : Here also, only a general average picture as to dimensions and colour can be given, since the variations are particularly large. They are almost white, with a pale red-purple lip marking. Flowers with yellowish to yellow petals, flowers with beautiful purple petals and deep purple veins on the lip, and there is also, a completely white variety. As a rule, the sepals are tinted pale red-purple and the petals coloured slightly darker. The lip has a marking of parallel lines from the lamina to the erect lateral lobes, resulting in a diffuse colouring of the margin; the background colour of the lateral lobe is pale green. The middle lobe into which the keels run, has a diffuse veining on a white background. The lines and veins are pale to deep pink to purple.

The spatulate, virtually erect standing petals, which are turned a quarter to half, corkscrew-like, finish in a round top, with a small pointed tip or in a blunt tip. The colour is diffuse. The dorsal sepal stands erect and turns backwards. It ends in a pointed tip and has five parallel veins. The lateral sepals, which also finish in a pointed tip, are placed sideways and

curled backwards; they carry six veins. The margins of the sepals are slightly undulating. Dimensions in a flower of average size are :

	Base	Width	Length
Petal	1.5-2.0mm	5.0-6.0mm	40mm
Dorsal sepal	4.0mm	6.0mm	21mm
Lateral sepal	13.0mm	6.0mm	22mm

The pedicel is 45mm long. The lip measures 18mm across the flattened lateral lobes by a length of 26mm. The middle lobe, whose margins are slightly undulating, finishes bluntly or in a small point. The lamina has three elevated, clearly visible keels, and next to these, two keels, which are more of a purple stripe. The three middle keels finish in a triangular flag, with the middle keel pronounced. The keels are marked with the same colour as the lateral and middle lobes; the flags are white.

Locality and habitat : This Dendrobium is found in the Hollandia area, the vicinity of Sentani Lake and further in eastern areas, as well as in Papua New Guinea. It is a robust plant which will stand full sun, but it will flourish better in light shade. The plant also occurs on rocks. It can be placed in a roomy pot or a half drum, but practically also on a heap of rocks on the ground. On a large piece of tree-fern, growth is excellent.

Literature : Descriptions in 'Dakkus', 2nd Edition, page 172; 3rd Edition, page 208.

'Latif' page 138.

Notations about localities in 'Nova Guinea' Vol. VIII, Part I, page 71; Vol. XII, Part IV, page 325 and Vol. XIV, Part III, page 422.

Further, often mentioned in periodicals, for example in 'De Orchidee' 1932, page 204; 1933 page 277 and 217; 1934 page 336 (completely white variety) and 1937 pages 172-178.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' to be found on page 547.

'Orchideeën', October 1936.

[Ed. It is generally considered by botanists and taxonomists working on New Guinea material that D. veratrifolium Lindl. is a synonym of D. lineale Rolfe]

Dendrobium lasianthera J.J.Sm.

Plants in this group of Dendrobium are all very robust varieties. The pseudobulbs reach a length of more than two metres and according to earlier descriptions, the pseudobulbs can reach a length of four metres. The plant described below came from the Eilanden River in south New Guinea.

Pseudobulb : This was, in the observed examples  $\pm$  2 metres long. The pseudobulb is, for one third of the total length, thickened. However, in tall examples the thickening is not as pronounced as in, for example, Dendrobium veratrifolium Lindl. or D. mirbelianum Gaud.; as a rule, the diameter of robust pseudobulbs is 20mm and they are coloured red-brown. The leaf sheaths are tinted and striped dominantly, deep purple, so that the apical internode of the pseudobulb has a very dark appearance. After the thickening, the pseudobulb is flattened quite markedly and oval in shape.

Leaf : Leaves begin after about one third up the pseudobulb and are placed in one plane, alternately on the pseudobulb. The first leaves are the largest and towards the apex of the pseudobulb, the leaves gradually become smaller. The following are some dimensions from a robust plant (length 150cm).

1st leaf at 60cm : length 10.0cm : width 6.5cm

12th leaf at 110cm : length 7.5cm : width 4.5cm

22nd leaf at 145cm : length 3.5cm : width 2.5cm

The leaves are carnose, thick, clearly unevenly lobed, ovate with a blunt tip. The colour is dependent on the aspect and plants that have grown in the shade have dark green leaves.

Flowering : The inflorescence appears from the upper third of the pseudobulb, usually beginning in the apical node. As was observed in other Ceratobiums, more peduncles appear lower down on the plant, when it is a robust example. On a robust pseudobulb 150cm long, not yet flowering and still in leaf, ten flowering remains were counted. The peduncle appears opposite a leaf, on leaf-carrying and leaf-less pseudobulbs. The deep purple coloured, stiff peduncle is 35 to 45cm long and carries 25 to 30 flowers.

Flower : Some characteristics of this flower, are the predominant red-lilac to brown-lilac colour, the long spur and the obvious bright purple keels of the lip. The spur is already clearly noticeable in the bud. The bud is coloured pallid yellow-green with reddish longitudinal stripes. Some plants have lightly perfumed flowers, which disperse a sweet nutmeg-like fragrance.

Sepals : There are two points of tension in the sepals which create undulations and twisting. The dorsal sepal first has a backward kink, and the makes a half right-hand turn. The lateral sepals first point forwards, then kink backwards and curl upwards. The colour of the sepals is white-yellow at

the base, changing into wine-red to lilac-red or lilac-brown, with a narrow yellow margin.

Dimensions (flattened) :

Dorsal sepal : Base 6.0mm, greatest width 10.0mm, length 30mm

Lateral sepals : Base 20 to 21mm, average length 37mm

Petals : These make one and a half turns, corkscrew-like, 40mm long, base 3.0mm, greatest width 6.0mm, finishing in a blunt tip. The colour is like that of the sepals, yellow at the base, further wine to lilac-red, with a sharply defined narrow yellow margin.

Lip : The tri-lobed lip is exceptionally large. Flattened, the dimensions are, greatest length 44mm, greatest width 24mm. The lateral lobes are highly developed, the middle lobe is relatively small. Along the middle run three elevated, bright red-lilac keels, which continue into the middle lobe. The keels are completely even in colour, as well as form i.e. (without any twisting fringe or elevations). The marking of the lip displays the usual 'Ceratobium' pattern. On a green-yellow background, are two red-lilac stripes next to the keels. From these stripes, further stripes go obliquely forward, turning into veins on the middle lobe, towards the erect lateral lobes. The lateral lobes themselves are tinted brownish red-lilac, the middle lobe which ends in a small point, is yellow with red-lilac veining. Seen from the back, the lip is green-yellow, with red-lilac tinted margins of the lateral lobes. The column is 5.0mm long, the elongated column-foot 10mm. The colour is white-yellow, with red-lilac markings. The anther is pale yellow and is enclosed by three sharp points of the column, like a jewel in a ring, held in place by pointed metal claws.

Variety I : This variety comes from the Hollandia area and is commonly called 'boenga boor' up there. Although it seems hardly possible that it concerns the same plant from such widely separated areas, like south New Guinea and Hollandia, because of the complete similarity of the structure and marking of the lip, any doubt is out of the question. There are some minor differences, such as :

- a) Colour of the flower. On the outside, whiter with red-purple markings.
- b) The sepals are less subject to twisting, but rolled backwards evenly.
- c) Yellow tints not present. The red-lilac marking is brighter.

However, in the south there occurs a variety with glossy brown petals and sepals, with a very narrow yellow margin.

Variety II : Of this species, there exists yet another variety coming from south New Guinea, which is not mainly coloured red-purple, but yellow to green-yellow, whilst the flower petals are twisted less. The sepals of this

variety are yellow and sometimes show a trace of red-brown near the end. The dorsal sepal points forward and obliquely upward and makes one turn. The lateral sepals are positioned sideways and curve forward. Near the tip the bottom edge is under tension, whereby the sepal curves forward. The petals are much narrower than in the lilac-red variety and make a maximum of one ( $360^{\circ}$ ) twist, corkscrew-like; they are yellow and have along the middle, a narrow red-lilac or red-brown stripe. The lip is large, predominantly coloured yellow and the ends of the lateral lobes, which are in an open position, are glossy pale brown. The keels are lilac-red, becoming paler towards the front, and carrying through on to the small pale green middle lobe. The markings of the column are pink. Some dimensions are :

	Base	Greatest width	Length
Dorsal sepal	7.0mm	7.0mm	23mm
Lateral sepals	15.0mm	15.0mm	35mm
Petals	3.0mm	4.0mm	36mm
Lip	-	22.0mm	30mm

Habitat and localities : Previously, two areas are mentioned where this species occurs in west New Guinea, the hinterland of Hollandia and south New Guinea, particularly the Eilanden River. Further found in the hinterland of Sarmi and on the Siriwo River. The plant is strong and can stand a lot of light. Culture is more difficult than for Dendrobium veratrifolium Lindl. or D. mirbelianum Gaud., through less regeneration capacity, at least in different climatic circumstances.

Literature : The first description of D. lasianthera by J.J. Smith, can be found in 'Feddes Repertorium' Part XXXI of 1933. It concerns a plant from Hollandia.

Further notations in 'De Orchidee' 1934, pages 114-115 and 119; 1935, page 202. D. lasianthera J.J.Sm. is often mentioned under the commonly used unofficial name of D. 'Stuberi'.

In the periodical 'Orchideeën', August 1937, a crossing of D. lasianthera J.J.Sm. with D. phalaenopsis Fitzg. is described.

In the border regions of Papua New Guinea, a plant occurs which was described by H.M.R. Rupp in 'The Australian Orchid Review' of June 1953, page 58, named D. ostrinoglossum. This author flowered a small example obtained from Lae, simultaneously with D. lasianthera J.J.Sm. Apart from the more beautiful colouring of pink and lilac-red on a white background, no real difference could be observed, particularly in the structure of the flower and lip, as compared to D. lasianthera J.J.Sm. In any case these two plants are very closely related. [Ed. D. ostrinoglossum Rupp is a synonym of D. lasianthera J.J.Sm.]

Dendrobium aries J.J.Sm.

This Dendrobium belongs to the more robust section of the genus. The pseudobulb, thickened for the first half and coloured red-brown, will reach a length of 250cm. The leathery, ovate leaves, with a blunt tip, begin after the lower third of the pseudobulb, where the thickening starts to diminish. Initially the leaves are 12 to 18cm long and 5.0 to 8.0cm wide, although they become smaller towards the apex of the pseudobulb, which steadily diminishes in width towards the apex. On robust plants, flowering occurs on the whole of the top half of the pseudobulb. Twenty-two flowering remains were counted on a 250cm long pseudobulb. From this, it can be concluded that four or more peduncles flowering simultaneously occur. The peduncle is up to 40cm long and has up to 32 flowers, which are placed fairly closely together. Before opening, the buds are pallid white, so it comes as a surprise to see dark brown flowers developed from these.

Flower : The dorsal sepal is 2.5cm long, 8.0mm wide at the base and gradually finishes into a point; this sepal curls backwards. The lateral sepals are 3.0cm long, 1.0cm wide at the base; these also curl backwards for half a turn. The sepals end in a blunt point. The colour on the back of the sepals is white to pallid yellow, with a transparent stripe or stripes; on the front red-brown or striped red-brown to lilac-brown, on a pallid yellow background. The lower half of the lateral sepals, where the spur is enclosed, is yellow; on the front they have very narrow yellow margins. The petals are prominently spathulate, at the base 3.0mm, at the top 12mm wide and twisted approximately 1.5 corkscrew-like turns. The top of the 3.5cm long petals are round, but folded into a 'V'-shape, so it appears as if they finish into a point or groove. The colour on the back of the petals is evenly deep yellow-brown. On the front, where they are connected there are two red-lilac stripes, which soon change into a glabrous red-brown colour. On the front are five stripes, which can be so pronounced on the widest part of the petal, that they appear to stand out in relief. The lip is 3.0cm long, tri-lobed, with three keels which carry through into the middle lobe. The keels are initially red-purple; this colour turns nearly into white on the middle lobe. The centre keel is highly elevated (to 3.0mm) and for one third of its length runs in a flexuose pattern. The lateral lobes are veined purple in the back on a yellow-green background, the outer edges being evenly brown, with a yellow-green sheen. The middle lobe has glossy brown veining on a green-yellow background. The top is round with a small point. The colours mentioned can vary considerably in the flowers, from glossy dark brown to yellow-brown and red-brown. As the flower ages, the colours become paler.

Habitat and localities : A plant which grows in a sunny aspect, with a highly developed root system. The roots are sensitive to moisture. It should be placed on a large piece of tree-fern stem. Found by the author at Waigeo Island, East Salawati (Sele Strait), near Sorong and in the lowlands of Teminaboean, always at, or near the sea.

Literature : Described in 'Nova Guinea' Vol. XII, Part IV, page 324, with illustration CXVII-214. Reported in 'Nova Guinea' Vol. XIV, Part III, page 418, found at the Pionier Bivouac. [On the Mamberamo River]. Further in 'Dakkus' 2nd Edition, page 145; 3rd Edition, page 174. Reported in the periodical 'De Orchidee' 1934 (variety); 1936, page 90; 1939, page 110, wrongly as a variety of D. lasianthera J.J.Sm. Smith is of the opinion that D. aries J.J.Sm. should be placed next to D. conanthum Schltr., which appears quite incorrect.

Dendrobium ionoglossum Schltr. [= D. nindii W.Hill]

Although it possibly concerns a variety, this Dendrobium for the time being, is placed under the above name. As expected, the differences, particularly concerning colouring of the petals and sepals will, when compared, be seen to be minimal.

This widespread, but not commonly occurring Dendrobium, belongs to the large species of the genus. The flower is considered to be one of the most beautiful. The dark brown pseudobulbs will reach more than two metres and the thickening is not always pronounced. Leaves commence after approximately 80cm from the base of the pseudobulb. They are thick carnose, green to dark green, oblong-ovate and are 5.5 to 6.5cm wide by 12cm long. Towards the apex of the pseudobulb, the leaves become regularly smaller. Flowering takes place from the upper half of the pseudobulb. The green coloured, sectioned peduncle is 4.0 to 5.0mm thick and can be 50cm long, carrying 35 flowers along a 30cm length.

Flower : The pedicel is 47mm long, 1.0mm thick and coloured white. It carries a small bract and at the end of the pedicel, depending on the position of the flower, it is sometimes sharply bent. The flower is, generally speaking, white, with a purple lip; seen from the back, the colour is white with purple markings along the back of the spur. Also around the point where the pedicel joins the peduncle, is a deep purple marking. Measured between the tips of the petals it is 5.0cm wide, and from the top of the curled dorsal sepal to the tip of the lip, 3.0cm high. The sepals initially lean forward, but at two-thirds of their length, bend over backwards; because of the tension in the sepals, the margins undulate. The petals are placed at a  $45^{\circ}$  angle sideways and upwards. They make one ( $360^{\circ}$ ) corkscrew-like turn. Along the petals run three clear and two less clear purple veins; as such they give the impression of having a purple band along the middle, with a white margin. The margins of the sepals have a fine undulating pattern. Five veins run along the dorsal sepal, with the middle one being coloured very pale purple. The lateral sepals have seven veins, with five being clearly visible; the middle one is coloured very pale green. The dimensions of the sepals and petals are (flattened) :

	Base	Greatest width	Length
Dorsal sepal	7.0mm	11.0mm	27mm
Lateral sepals	17.0mm	(17.0mm)	32mm
Petals	2.5mm	6.0mm	32mm

The tri-lobed lip is, by comparison, very large and formed alightly different than in other Ceratobiums. The lateral lobes stand not only erect on either side of the column, but the front part bends outwards again, with an undulat-



ing margin, creating an open cup. The lateral lobes merge into the middle lobe, without any incision. Although the lateral lobes are diffuse pale purple, the usual veining, which is tinted delicate purple, only presents itself on that part of the lateral lobes, which bend sideways and outwards. The veining continues on into the middle lobe, without any change in pattern and which ends in two undulating lobes, with a very small point in between. The lip carries three highly elevated, deep purple coloured keels; the two outside keels begin in the back of the lip, the middle keel originates between these two. All keels run through on to the middle lobe; the middle keel however, with an interruption in the colour, so a white patch is observed. After this white patch, the middle keel resumes the purple colour, in the form of a small purple-coloured tooth. On the outside, the lip is coloured and veined delicately purple, the part which covers the 5.0mm long spur, is a pronounced purple. The column on the top has purple spots, on the underside, purple and green spots. The stigma is bright green. The anther-cap is coloured creamy white.

There is also a cleistogamous variety.

Flowering :	South New Guinea	:	December/January
	Inanwatan	:	February
	Manokwari	:	May/June (also plants from elsewhere)

Localities : As far as is known, the Eilanden River, the open swamp plains of south New Guinea. Further, on trees in the open swamps east of Inanwatan and finally in the hinterland of Manokwari. As far as was observed by me, the plant occurs as solitary examples only. Also reported from Papua New Guinea.

Habitat : In south New Guinea and near Inanwatan, this orchid occurs in (low) trees, which grow in swamps. Although the plant grows 'dry' and is exclusively surface rooting, while receiving a lot of sun, the evaporating swamps produce a considerably moist atmosphere. Therefore, it is recommended that the plant be cultivated on a substrata (firm piece of tree-fern), which is placed on the ground, surrounded by ground cover plants. The rehabilitation capacity of the plant outside its own surroundings, is moderate.

Literature : Described in Schlechter's 'Orch. Dtsch. Neu-Guinea', pages 551-552. Otherwise, Schlechter reports that the lip has two keels; his drawing shows three keels!! The question has arisen with the author, whether Dendrobium ionoglossum Schltr. is a variety or very close relative of some orchids, described under different names, namely D. tofftii Bail. (Sanders

Orchid Guide, 1927 , 'The Orchid Review', 1932 and 1935), and D. taurinum Lindl., which is coloured differently (Dakkus, 3rd Edition, page 204, illustration 93. See for D. tofftii F.M.Bail. Also 'De Orchidee' 1935, pages 229-231 and finally the periodical 'Orchideeën', February 1961. [Ed. Like D. ionoglossum Schltr., D. tofftii F.M.Bail. is currently considered to be a synonym of D. nindii W. Hill. D. taurinum Lind., although closely related, is still considered a valid species and is found mainly in the Philippines].

Dendrobium sp. nov. (section Ceratobium) Eilanden River

A Dendrobium not described before, from the medium size group of plants, is the orchid described below, a flowering example of which was grown at Manokwari; it comes from south New Guinea. The pseudobulb is of the form of D. mirbelianum Gaud. or D. undulatum R.Br., but appears slightly more slender. The colour underneath the withered leaf sheaths, is deep olive-green. Initially rounded, the width near the apex is lightly oval. The length of the observed flowering pseudobulb was 90cm, the width near the thickening, 1.3cm.

The leaves pale green to green, thick-carnose, concave and oblong-oval, with an unevenly lobed, rounded tip. The centre vein is depressed, with four to six parallel veins beside it. The leaves begin at one-third to one-half from the base of the pseudobulb, and the largest measured leaf was 15cm long and 6.5cm wide. Towards the top of the pseudobulb, the leaves become slightly smaller.

Flowering : According to flowering remains on three pseudobulbs, flowering takes place from the apical nodes. The peduncle is sectioned, stiff, positioned obliquely and loosely multi-flowered. The colour of the peduncle is green, tinted purple where it receives most light. Flowers occur on the fifth section and at the nodes, occur small, closely appressed, carnosely bracts. The observed peduncle was altogether 38cm long; the first flower stood at 21cm from the beginning, where the peduncle was 3.5mm across. Along 17cm the peduncle carried 18 flowers, around the stem in all positions.

The flower gives a striking impression, due to the exclusively bright, purple-marked lip, which is contrasted against the cream-coloured to pale yellow sepals and the darker yellow petals, which have red-purple veining. The flower, which is approximately 45mm wide and 45mm high, is completely open and has the typical 'windmill'-form. The sepals have lightly undulating margins and are mainly concave. The dorsal sepal leans forward and slightly upwards. The lateral sepals stand obliquely sideways and downwards. The petals, which are spatulate, with a pointed tip, are positioned obliquely upwards and are twisted approximately three-quarters of a turn ( $270^{\circ}$ ) cork-screw-like.

Flower segments :

a. Dorsal sepal : Lanceolate, pointed tip, undulating margins, lightly concave, pale yellow, with seven red-brown to red-purple parallel veins.

Dimensions : Base 6.0mm, greatest width 7.0mm, length 23mm.

b. Lateral sepals : Elongated-triangular, with a barely pointed tip, cream at the base, further pale yellow, seven red-purple tinted parallel veins.

Undulating margins.

Dimensions : Base 14mm, sides 23 and 26mm.

c. Petals : Spathulate, with a pointed tip, turned three-quarters corkscrew-like. Base pale yellow, further pallid yellow, five red-purple parallel veins.

Dimensions : Base 2.0 to 2.5mm, greatest width 6.5mm, length 32mm.

d. Column : Short, blunt with broad wings, tinted pallid purple on the back. Elongated column-foot tinted purple, striped on the inside.

e. Lip : This is tri-lobed and comparatively large. The lateral lobes are large and turned outwards, which creates an open lip. The middle lobe is also large and turned downwards. The margins of the lateral lobes and the middle lobe are separated by an incision and form a continuous, wide, bright purple band. From the lamina comes a fairly coarse purple veining, which merges into the purple margin. The block of keels and the mid-section of the lip are white. The lip has three pronounced keels, which run through into the middle lobe and end there in small triangular protuberances. Next to the block of three keels, are two less obvious white keels. These are shorter.

Dimensions : The pedicel which covers a hollow spur, 5.0mm long; otherwise flattened; 24mm long and 18.5mm across the lateral lobes. The middle lobe is 9.0mm long and 10.0mm wide, the tip is rounded, the margins slightly undulating.

Localities and habitat : Brought in from south New Guinea, probably the Eilanden River area. It should be placed on a robust piece of tree-fern stem in a light aspect. There is a marked similarity of the lip with that of D. ionoglossum Schltr., but the flower petals and the position, reminds one of D. mirbelianum Gaud., which also has the faint outer keels. It would not be surprising if the plant described above, is a beautiful natural hybrid. Both parent plants occur in the suspected place of origin.

Literature : None found. In the periodical 'De Orchidee' 1934, page 343, a photograph of a flower is reproduced, which looks very similar to the above described plant.

Dendrobium sp. nov. (section Ceratobium) Namatotte Island

This description refers to one of the most robust plants. The apparent size of the pseudobulbs and leaves are not inferior to those of D. violaceoflavens J.J.Sm. Of the described example, the pseudobulbs measured 2.0 to 2.5 metres; according to the collector, 3.0 to 4.0 metre lengths were observed. The pale yellow-green pseudobulb is initially circular and prominently thickened, with cross-sections of 3.5 to 4.0cm. After the thickening, the width diminishes and the shape is flattened into an oval, without losing much robustness. The thick carnose, light green leaves are very rigid. Leaves on 2.0 to 2.5 metre pseudobulbs begin 80cm from the base and are then from 15 to 17cm long by 7.0 to 8.5cm wide. They are ovate, with a blunt, non-pronounced bi-lobed tip. Only near the top of the pseudobulb are the leaves of a smaller size. Flowering takes place along the part of the pseudobulb after the thickening and peduncles occur approximately where leaves begin, therefore at 80cm from the base of the pseudobulb. Flowering is frequent, four to six peduncles at once can occur on a single pseudobulb in different places, in the top as well as halfway up the pseudobulb. The pale green peduncles are stiff, stand away from the pseudobulb and are sectioned, from 25 to 45cm long and a few millimetres thick. The rather short sections carry a thin bract. The flowers are irregularly spread all around the peduncle, sometimes together in groups of two or three, with the first flower appearing from the fifth or sixth node of the peduncle. The number of flowers varies, depending on the peduncle length.

Some examples :

Length of peduncle	:	27cm	:	16 flowers
		41cm	:	19 flowers
		42cm	:	23 flowers
		44cm	:	24 flowers

The flowers belong to the largest of the section Ceratobium, and are characterised by the exceptional dimensions of the middle lobe of the lip and the colour is white to very pale purple. Measured from petal to the tip of the lateral sepal the dimension is 7.5cm, between the tips of the petals, 5.0cm, between the lateral sepals 4.0cm wide.

Flower segments : The pedicel is 5.0cm long, white to very lightly tinted with green and purple. At the junction of the flower petals, the pedicel is pale purple, with a purple circle on the back of the sepals. The dorsal sepal stands erect and forward. It is turned more than  $360^{\circ}$  on its own axis and has five very pale coloured veins on a white background. The lateral sepals are white, with six to seven very pale purple coloured veins. Through tension in the margins, they are twisted, first to the right (half-a-turn),

then to the left (half-a-turn), so that the tips are placed backwards and sideways. They stand out sideways and downwards on the flower. The petals are placed obliquely erect and are turned 360° corkscrew-like. They are pathulate, with a pointed tip. The petals are tinted very pale purple and have barely visible veins. The dimensions of the sepals and petals in a flattened out form are :

	Base	Greatest width	Length
Dorsal sepal	6.0mm	8.0mm	34mm
Lateral sepals	12.0mm	-	33mm
Petals	2.0mm	6.0mm	53mm

The column is blunt and short, 6.0mm, tinted purple, on the top and bottom sides. The stigma is trapeziform and the anther-cap is coloured pale yellow-green. The short spur (7.0mm), is hollow and after removal of the lip, a copper-green (verdigris-like) colour becomes visible. Finally the lip, the unmistakable identification point of this Pendrobium. It is tri-lobed, coloured white, with pale purple lines and veins. The lateral lobes stand up and then bend outwards, giving the lip an open impression. The lateral lobes are patterned with purple, parallel lines, deep purple where the column is enclosed, coloured pale purple, where the lateral lobes open outward. The frontal outer margin of the lateral lobes is somewhat undulating. The middle lobe is exceptionally large. After a narrow beginning at the incision between lateral and middle lobes, the middle lobe fans out widely. The dimensions of the lip, from the beginning to the incision is 15mm; from the incision to the tip of the middle lobe, it is 22mm long and 19mm wide. The middle lobe is patterned with five pale purple, parallel lines, which come from the keels; from the two outer lines, comes a pale purple, clearly marked veining, which runs to the serrated edges of the middle lobe. The lamina of the lip has five keels; the middle three are clearly visible ridges, which just pass the incision of the lobes, level out, and turn into parallel lines. The two outer keels are less pronounced, shorter, and also turn into parallel lines, which form the base of the veins on the middle lobe. The lamina, where it is still covered by the column, is pale green, with thin purple lines which define the keels. The visible part of the lamina is pronounced yellow-green, producing a yellow patch from a distance. Flattened out, the dimensions of the lip are, across the lateral lobes, 25mm, length 37mm.

Locality and habitat : Found on limestone rocks along Strait Sophia (between the mainland and Namatotte Island), near Kaimana. Possibly also occurs in the Cape van den Bosch area, division of Fak Fak. The plants stand in full sun between the shrubbery.

Literature : None known. Possibly it concerns the same orchid whose photograph and notations have been published in the periodical 'De Orchidee' 1939, pages 172-173, and named therein 'blue undulatum' or Dendrobium 'sorongense'.

Dendrobium violaceoflavens J.J.Sm.

This plant is very large and even in cultivation 2.5 metre stems are not rare. The pseudobulb, according to literature, will reach 4 to 5 metres. This description concerns a two-metre pseudobulb, with a 2.5cm cross-section at the thickened part, which is circular. Towards the apex, the green to yellow-green internodes become thinner. The roots are white and 4.0mm thick. The carnose, dark green leaves are similarly very large. The lower leaves are oval, with a round, slightly incised tip and are 22cm long and 12cm wide. Near the top, the leaves become oblong, 11cm long and 4.5cm wide. Peduncles are sectioned, yellow-green, with a 3.5mm cross-section and a length of 30 to 36cm. The flowers begin on the fifth section at 12 to 15cm from the beginning. Four examples:

Peduncle length :	30cm	35cm	36cm	48cm
Distance 1st flower :	12cm	13cm	15cm	13cm
Number of flowers :	10	11	12	15

These fairly long peduncles carry only a small number of flowers, placed spaciouly all around the stem.

Flower : This is coloured cream to pale yellow, with stiff wax-like flower petals and a stiff, bright purple marked lip. Plants from south New Guinea, sometimes have greenish tinted flower petals. The sepals stretch sideways, the petals backwards, so the flower opens up well. The flowers remain fresh for a long time and finally lighten in colour, or become greener. Often, but not always, the flowers are perfumed.

The pedicel is initially 6.5cm; at the top flowers 5.0 and 4.5cm long, 2.5mm across, white with purple and green-purple colouring and depending on the position of the flower, bent at the ovary.

## Flower segments :

- a. Dorsal sepal : Stands erect in an arch, the margins undulate once, the apex is round and points slightly forward so that the top-half is concave. The length is 23mm, base 9.5mm, width 12mm. Tinted red-purple at the base and the beginning of the five obvious veins.
- b. Lateral sepals : Are placed straight, sideways, with one undulation along the margins. The tip is round with a small point. The base is 20mm, the sides 25 and 32mm long. There are seven clear veins; the base is tinted red-purple, including the beginning of three veins.
- c. Petals : These are prominently spathulate, with a round tip. The base is 3.5mm wide, the length is 25mm, the greatest width 10.0mm. The colour is yellow-green, purple at the base. There are five uncoloured veins.
- d. Column and column-foot : The column is blunt and wide, purple at the base and at the top, otherwise cream; coloured completely deep purple on the under-



side, likewise the 11cm long column-foot. Including the elongated column-foot, the length is 25mm. The anther-cap is pale yellow.

e. The lip : It is adnate with the elongated column-foot along the whole of its length (more than 11mm). Including this narrow connecting strip, the lip is 33mm long and flattened across the lateral lobes, 16mm wide. The lip is very stiff and virtually cannot be flattened. The connecting strip is green, otherwise the background colour is white. All markings are bright purple. The lateral lobes stand erect, are initially bent slightly inwards and later bend out and downwards, veined purple on the inside. The middle lobe is bent downwards and carries the end of the stiff block of keels; it is oval, with a small pointed tip, sometimes veined purple, sometimes without markings. The lamina is stiff, thick and pronounced. The two outer keels are wide and arched, with three ribs between them, all keels are marked purple. The middle keel, plus the two accompanying keels, form on the transition to the middle lobe, they are mainly white.

Locality and habitat : The plant grows epiphytic in shade to half-shade. Found in the hinterland of Hollandia, on the Mamberamo River (Pionier Bivouac) and lastly, is also found in south New Guinea (Becking River).

Literature : The first description, by J.J.Smith, can be found in 'Feddes Repertorium', September 1932.

See further 'Nova Guinea' Vol. XIV, Part III, page 420, illustration LXV-72; also Vol. XVIII, Part I, page 49.

'Dakkus' 3rd Edition, page 209 (photograph).

'The Orchid Review' 1935, pages 181 and 341.

'De Orchidee' 1934, pages 247 and 282; 1937, page 172; 1938, 67.

'Orchideeën' August 1940 (hybrid of D. phalaenopsis Fitzg.); August 1956.

['Latif' page 140].

[Ed. The first description of this species was published in 'Nova Guinea' Vol. XIV, Part III, in 1929 not 1932 as the author suggests].

Eria javanica Bl.

This is a commonly occurring plant which grows epiphytically, as well as in humus on limestone rocks. The size of the plant and flowering, depend to a great degree on the suitability of the aspect and fertility of the substrata. This Eria has a tuber-shaped pseudobulb and at first glance, looks like a Coelogyne. The pseudobulb is angular-oval, with two faint and two fairly sharp corners, 4.0cm high and about 1.8 x 2.5cm across. It is surrounded by two stiff, pale green, fairly long sheaths, which are brown when withered. On the top sections, the pseudobulb has two leaves, which have a 2.0cm long petiole. The petiole withers and remains long after the leaves have dropped. The canaliculate, petiolate leaves are smooth, oblong-pointed, 'V'-shaped, with convex margins, pale green to dark green, with a clearly depressed mid-vein and two sometimes, also depressed parallel veins. A medium sized plant has 30 to 35cm long leaves, which are 5.0 to 6.0cm at their greatest width (a very large plant can have leaves which are 70cm long by 7.0cm wide).  
 Peduncle : This is, depending on the plant, very variable in length, from 10.0 to 50cm, pale green to green, slightly angular-erect, carrying from six to forty flowers. The peduncle stands in the canaliculate petiole of the leaves at the top of the pseudobulb.

Flower : The pedicel stands in a thin brown, 1.0cm long bract; it is pale to dark green, the segments are marked and covered in short, dark hairs. The flower is fairly large, 33mm between the petals, 38mm between the tips of the dorsal and the lateral sepals; the flower petals point obliquely forward and then bend outwards. The sepals are pale beige, marked on the inside and outside, with purple-red parallel lines; the petals are transparent white, marked with colourless veins. The tri-lobed lip is mainly white, the lateral lobes are marked inside and outside with red-lilac parallel stripes and the margins are also coloured red-lilac.

## Flower segments :

Dorsal sepal : Lanceolate, with pointed tip, 25mm long, 4.5mm wide, marked with five, pale red-lilac, parallel lines.

b. Lateral sepals : Falcate, finishing in a point, 23mm long, 6.5mm wide at the base. Marked initially, with three parallel stripes, the two outer ones of which, split in two, producing five red-lilac parallel lines.

c. Petals : Lanceolate, slightly curved, pointed tip, width 3.5mm, length 24mm.

d. Lip : Arch-shaped, 13mm long and 6.0mm across the lateral lobes (flattened out). Along the middle, three keels, marked pale yellow-brown.

e. Column : This is short. The anther-cap is coloured red-purple. The stigma has, on the underside, a deep red-lilac margin; underneath that the

column-foot is striped, with fine parallel stripes. At the end of the elongated column-foot, near the connection of the lip, is an orange 'W'-shaped patch.

Localities and habitat : The plant occurs generally and very often in limestone areas such as Waigeo Island, epiphytic, but also on limestone. Plants occur in heavy shade and fairly bright places. It should be placed in a pot with fern-roots and humus.

Literature : Eria javanica Bl. is an often described plant.

'Dakkus' 3rd Edition, page 166, photograph number 65.

'Latif' page 143.

'De Orchidee' 1936, page 17.

'Nova Guinea' Vol. VIII, Part III, page 577; Vol. XVIII, Part I, page 36.

[also Vol. VIII, Part I, page 36].

J.J.Smith's 'Die Orchideen von Java' on pages 378-380 under Eria rugosa Lindl.

Eria papuana J.J.Sm.

The slender cylindrical pseudobulbs are closely spaced and, as a rule stand erect, although they are often bent or somewhat flexuose. The pseudobulb, which is carnose and supple, is coloured yellow-green, sectioned and finely sulcate; the length varies from 12 to 35cm, the width from 5.0 to 8.0mm. The immature pseudobulb is covered in sheathing bracts, which become brown when dried and in time wither. This Eria is placed in the section Hymenaria. Leaves occur only in the top internodes. The two to three carnose leaves are lanceolate and pointed, coloured green to dark green. The middle vein is slightly depressed, with four or more parallel veins on either side, which are not pronounced on the underside. The dimensions are 2.0 to 3.0cm wide by a very variable length, from 10.0 to 20cm. Flowering takes place from a hollow near the nodes in the top half of the pseudobulb, often several peduncles at one time, on recently matured pseudobulbs (two to four peduncles). After the peduncle has withered, it drops off, leaving a hollow in the pseudobulb. The peduncle arches and is placed horizontally. The non-flowering part, of approximately three sections, surrounded by brown sheathing bracts, is very short; following this is a flower carrying section, 7.0 to 8.0cm long, where 13 to 17 flowers are placed all around the peduncle and which open simultaneously, remaining fresh for three to five days. The peduncle is pale green and sparsely covered in fine brown hairs. The flowers are placed in fairly large (6.0 x 5.0mm), concave, yellow-green bracts, which are folded back. The 11mm long pedicel is pale green, with here and there, some very small brown hairs. The flower regularly formed is approximately 15mm wide and 13mm high, delicately pale yellow, with a hint of red-purple veins and is completely open.

The lip is tri-lobed, with normal lateral lobes and middle lobe. The lamina has three clear keels which run up to the middle lobe; the lateral lobes are coloured purple, the middle lobe egg-yellow. The middle lobe has folded-down margins and an incised tip.

Form and dimensions of flower segments :

- a. Dorsal sepal : Oval, 7.0mm long, 3.0mm wide, it is slightly concave with two to three veins.
- b. Lateral sepals : Oblique-triangular, base 5.0mm, longest side 8.0mm, three to four veins.
- c. Petals : Oblong-oval, 7.0mm long, 3.0mm wide, one vein. The parallel veins are coloured only at the beginning. The lip is more than 5.0mm long and flattened out, 5.0mm wide across the lateral lobes.

Localities and habitat : The described plant is found in the Ajamaroe area. Other localities are the Noord River (south New Guinea). Grows easily in a

tree-fern pot, in half shade.

Literature : Described in 'Nova Guinea' Vol. VIII, Part I, page 87, with illustration XXIX-94. Mentioned further in 'Nova Guinea' Vol. VIII, Part III, page 577.

Schlechter described a species Eria oligotricha Schltr., reported in 'Orch. Dtsch. Neu-Guinea' on page 666, and reduced E. papuana J.J.Sm. to a synonym. According to Smith, see 'Nova Guinea' Vol. XII, Part IV, page 354, the keels of E. oligotricha Schltr., are however different from those of E. papuana J.J.Sm. and display great similarities with some other Erias from the Indonesian territories and Moluccas, see E. flavescens Lindl. and E. xanthocheila Fidl.

Bulbophyllum blumei (Lindl.) J.J.Sm. var. longicaudatum J.J.Sm.

The rhizome is long, with the pseudobulbs spaced well apart, so consequently, the plant requires a lot of room. The surface-creeping rhizome is pale brown, sectioned and 3.0mm across. The distance between the pseudobulbs is, on average, 7.0cm. The roots are pale yellow-brown, 0.5mm across and they appear from the underside of the pseudobulb and the nodes of the rhizome. The pseudobulbs are oblong, yellow-green, curved falcate, sulcate and single leaved. The dimensions of a foursome of pseudobulbs are : varying lengths from 32 to 45mm, the width from 11 to 15mm.

Therefore mature pseudobulbs are approximately 4.0cm long and 12mm at their greatest width.

The leaves thin, carnose, oblong, pale green and blunt, with a symmetrical end. With the inclusion of a short, canaliculate petiole, the dimensions vary from 13 to 18cm long by 2.5 to 3.3cm width.

The peduncle rises from the foot of the pseudobulb and also from nodes on the rhizome. The peduncle is in all, approximately 16cm long, 1.0mm thick and sectioned, with fine bracts at the nodes. The first section is short (4.0mm) the second 32mm, the third section 12cm. It is single flowered.

Flower : This is fairly large, more than 10.0cm vertically, from the top of the dorsal sepal to the tips of the lateral sepals and 3.0cm wide, measured across the lateral sepals. In common with many *Bulbophyllums*, the sepals are well developed, while the petals are miniscule. The dorsal sepal stands erect. The shape is oblong-oval, becoming gradually narrower towards the top and ending in a thin 'whip'. The colour is deep lilac-red, with five parallel veins; the margin along the widened section consists of a white fringe. The greatest width is 7.0mm, the length 34mm.

The lateral sepals which hang straight down, have an unusual shape; the first widened part is wide-falcate, narrowing to 1.0mm at about half-way and ending in a long elongation of the same width. The falcate part is 10.0mm wide and 30mm long; the total length, including the elongation, is 70mm. The wide part is deep lilac-red, with six barely visible veins. The inside margin, however, has a deep pallid yellow edge. Where the narrowing starts, the colour changes to white and the end of the 'whip' is pale green.

The petals are small, 5.0mm long and 3.0mm wide, oval and pointed. They are deep lilac-red and curved across the column. The column is approximately 2.0mm long, coloured purple-red on a white background; the miniscule lip, with small lateral lobes, is coloured the same way. The lip, the balancing attachment, is a very deep red-purple ball 2.0mm across, with a thin thread-like attachment 7.0mm long. This thread is initially yellow, turning deep purple at the end.

Locality and habitat : The described plant is found on the south-west coast of Batanta Island. It is a strong plant which easily forms new roots. The raceme stands away from the surface, so that it appears that the plant is standing on its roots. It should be placed on a fairly long piece of tree-fern, in the shade, but receiving a lot of light.

Literature : 'Nova Guinea' Vol. VIII, Part III, page 583.

Bulbophyllum grandiflorum Bl.

This large-flowered Bulbophyllum, with curious flowers, is one of the more easily cultivated plants of the genus and flowers regularly. It belongs to the section Hyalosema, which also includes the beautiful B. fritillariiflorum J.J.Sm.

The pseudobulbs are spaced fairly closely on the rhizome, which often branches, so that on a relatively small space, a large plant can grow. The pseudobulbs are squared, with concave sides which become sulcate fairly quickly; they are yellow-green, 3.0 to 3.5cm high and 2.0cm at their greatest width and have one leaf. The leaves have a short petiole, are oblong-oval, thick-carnose, pale green or yellow-green to green coloured, flat to convex, with a bent over, non-incised tip. The dimensions are, length 15 to 18cm, width 5.0 to 6.5cm.

Flowering takes place from the rhizome, usually near the junction of the pseudobulbs. The sectioned peduncle is pale green, carries large bracts at the nodes and is 10.0 to 15cm long, with one flower at the apex. The pedicel which arises from a large folded bract is 6.0 to 7.0cm long, thicker than the peduncle and grooved.

The flower is relatively very large and stands between the tops of the leaves, often reaching above them. Since the petals are barely developed, only the three sepals are visible, which have a difficult-to-describe, yellow-brown colour, with paler angular spots between the veins, like small windows. These spots are more pronounced on the dorsal than the lateral sepals. The dorsal sepal initially points backwards and then curves forward, in a graceful arch. It is hollow on the inside with convex margins. Seen from the outside, along the middle runs a sharp yellow ridge, with the margins of the sepal being curved upwards. The lateral sepals are placed forward in an arch, often with tips that cross over one another. The external dimensions of the flower are 5.0 to 7.0cm wide and 10.0 to 15cm long.

## Flower segments :

- a. Dorsal sepal : Flattened out, oval in shape, pronounced external-keeled middle vein, with at least four parallel veins on either side. Dimensions are base 0.7cm, length 10.0 to 12cm, width 5.0 to 6.5cm.
- b. Lateral sepals : Lanceolate, oblique foot, blunt tip, base 3.0mm, length 8.5 to 10.0cm, width 2.75 to 4.0cm.
- c. Petals : Triangular, 3.0mm long, green.
- d. Column : Short, also triangular, forming two 'wings' around the deeply located, small oblong stigma. Pale green, with purple spots on the inside of the forward reaching 'wings'. Column-foot bends forward, approximately 8.0mm



long, speckled fine red-purple on the inside.

e. Lip : 'Half-moon'-shaped, compressed sideways, elastically attached to the elongated column-foot. Pale green with purple colouring and spotting on the top, and on the compressed side surfaces, 7.0mm long, 2.5mm wide.

Flowering takes place several times a year.

Localities and habitat : A surface rooting plant, which grows in trees providing light shade. Should be placed on a piece of tree-fern in half shade. Found at Sorong, 'Neck' of the Vogelkop and at Mamberamo. Reported from all parts of northern New Guinea and Papua New Guinea.

Literature : In 'Nova Guinea' reported in Vol. XIV, Part III, page 479.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' reported on page 740.

Further 'Dakkus' 2nd Edition, page 176. [3rd Edition, page 215].

'Latif', page 79, with a coloured illustration of the flower.

'A Revised Flora of Malaya' Vol. I, page 464.

'De Orchidee', 1935, pages 164-165.

Bulbophyllum coloratum J.J.Sm.

The closely placed pseudobulbs are oval, 5.0cm long and 1.5 to 1.7cm at their greatest width. The colour is dark green with deep purple tints, where the pseudobulb is exposed to the light.

The pseudobulb carries one leaf, with a canaliculate, purple-coloured petiole. The leaves are thick, carnose, dark green, with a pronounced, depressed middle vein. It is oblong-oval, with a pointed, barely unevenly lobed tip. The dimensions are 15 to 18cm long (including petiole) and 3.5 to 4.0cm wide. Flowering takes place from the base of the pseudobulb and is not very spectacular, although the flowers are 3.0 to 4.0cm wide. The peduncle is short, 2.0cm, coloured purple-red and surrounded by several bracts at the beginning. The pedicel is 1.3cm long, with a pale green bract at the junction with the peduncle. The ovary is tinted purple-brown. A peduncle carries only one flower.

The flower is regularly formed, the dorsal sepal stands erect, the lateral sepals sideways. The small, pointed petals stand obliquely sideways, erect between the dorsal and lateral sepals. The clavate, rolled-up lip, juts straight out, the column is curved arch-like.

## Flower segments :

- a. Dorsal sepal : Lingulate, concave, with pointed tip. Three wide, purple-red parallel veins, connected to each other by cross-veins, creating a ladder effect. The margins are white. Dimensions are, length 14mm, width 4.0mm.
  - b. Lateral sepals : Concave, veining merged into a widened purple band, margins pallid white, blunt tip. Dimensions, length 14mm, width 4.0mm.
  - c. Petals : Small, oblong-triangular, with an acute apex. In the middle a wide purple stripe, margins white. Dimensions, base 2.0mm, length 6.5mm.
  - d. Lip : This thick, stalked and clavate. The club is created through the margins turning down, until they touch each other. Closely spotted deep red-purple, on an egg-yellow background, on the upper side. Egg-yellow underneath. The clavate part is 9.0mm long and 3.0mm thick.
- Flowering occurs at irregular intervals, but often.

Locality and habitat : Grows in the shade on trees, which support ferns and mosses. Grows easily in a pot, filled with a loose mix of chopped tree-fern. Found on the south coast of Batanta, near Sorong.

Literature : 'Nova Guinea' Vol. VIII, Part III, page 587, illustration CII-B.

Bulbophyllum :- section Macrobulbum

Although plant material only was available personally to me, I could not omit making some comments concerning flowering, relying on information obtained from orchid lovers in New Guinea, about the three well known representatives of this curious section, which is characterised by single-leaved pseudobulbs, with very large, thick-carnose, hanging leaves.

Bulbophyllum macrobulbum J.J.Sm.

The pseudobulb is shaped like an apple, 6.0 to 8.0cm high and 4.5 to 6.0cm across. The colour is pallid olive-green, with reddish and grey patches. The thick-carnose leaf is green to dark green, covered with a grey bloom and has red-tinted margins. According to descriptions, the leaf should be 55 to 63cm long, but I have found plants with leaves 90cm long, which were more than 10.0cm wide. The peduncle is short, with two to five unpleasantly smelling flowers,  $\pm$  6.0cm long, which have deep red and red-purple spots on a yellow background colour.

Locality : The first described plant was found in south New Guinea on the Lorentz [Noord] River. I found this species myself near Hollandia, in a gully. The plants were growing on mossy rocks, or were hanging out of reach on steep rock walls. Two further localities are reported in Papua New Guinea, at  $\pm$  300m above sea level.

Literature : Described by J.J.Smith in 'Bull. Dépt. Agr. Ind. Néerl.' XXXIV (1910), page 4.

Further in 'Nova Guinea' Vol. VIII, Part III, (1911), page 579, illustration XCVIII-B.

'The Botanical Magazine' 1920, tab. 8842.

'Orch. Dtsch. Neu-Guinea' page 760.

Bulbophyllum fletcherianum Rolfe

Very soon after B. macrobulbum J.J.Sm., a second species was described, which has much larger flowers, because of the lateral sepals, which are approximately 10.0cm long. The pseudobulb is slightly smaller than in the previous species, the colour more brown-green, wrinkled reddish, in older pseudobulbs. Here also, the bluish green leaf is large, more than 50cm long and 6.0 to 8.0cm wide, with a pronounced red margin. The inflorescence is short, with approximately six flowers. The colour of the flower is greenish yellow on the sepals, with a heavy red marking, the petals are red-purple.

Locality : Found in the Hollandia area, but the exact location is not known to me.

Literature : 'Gardener's Chronicle' Series III, LV (1914), page 321.

'Botanical Magazine' CCLI (1915), tab. 8600.

Bulbophyllum phalaenopsis J.J.Sm.

In 1937 a third species was described, without any mention of locality in New Guinea. In 1959 I was fortunate enough to obtain a plant and cultivate it. The pseudobulb has a slightly different shape, from the two previously described species. It is more than 6.0cm high, oval in shape, with a greatest width of 4.0cm. The colour is brownish olive-green and older pseudobulbs have a network of fine wrinkles. The thick, carnos leaf, of the illustrated plant, reached a length of 75cm by a 8.0cm width. The colour of the leaf is bluish green, with red-purple patches on top and underneath. The 'waxy' surface has a bloom over it. Also, in this species, the inflorescence is short, with four to ten flowers. The size of the flowers lies in between the previous species and the colour marking is approximately the same, except that the background colour is a clearer yellow. The important difference with the two other members of this section, is the pronounced hirsuteness on the outside of the lateral sepals, which occurs only on B. phalaenopsis J.J.Sm.

Locality : This plant came in from the Siriwo River, inland from central north New Guinea. The plant is not difficult to cultivate on tree-fern and recovers quickly.

Literature : Described by J.J.Smith in 'Bull. du Jardin Botanique de Buitenzorg' Series III, Vol. XIV (1936-1937), page 165.

Further by the same author in 'De Orchidee' March 1938, with a photograph of a flower.

Grammatophyllum papuanum J.J.Sm.

In both plant and flower, it is one of the largest tropical orchids known, commonly called 'giant' orchid (or 'tiger' orchid) and in Indonesia 'anggerak tebu'. The species described here is, however, not the Grammatophyllum speciosum Bl., from South East Asia, but a species with diverging flower characteristics, which was described by Smith as a separate species and named G. papuanum J.J.Sm.

The pseudobulbs are 3.5 to 4.0cm across and reach a length of more than three metres; some pseudobulbs can, however, grow up to four metres. The pseudobulbs of the illustrated plant, belonging to this description, are however, not more than 1.8m. The pseudobulb is firm but supple; the colour varies from green to yellow, depending on the aspect. It is prominently sectioned, a 1.7m pseudobulb had 82 internodes. Except for the bottom one, each internode carries a leaf. Apart from the normal roots, the plant has a close web of upright aerial roots.

The leaves have a stiff leaf-sheath around the pseudobulb, which persists long after the leaves have dropped. The green to yellow-green leaves are, at the beginning of the pseudobulb, short and gradually become larger, up to three-quarters of the length of the pseudobulb, then the top leaves are shorter again. The normal leaves are thin and tough, provided with a firm middle vein (which is clearly visible underneath) and finish in a point. Dimensions are 3.0cm wide and 40cm long.

The peduncle appears between the aerial roots and humus, collected around and at the base of the pseudobulbs. The 1.5cm thick, cylindrical, pale green shoots of the immature peduncles, remind one of thick asparagus spears. A peduncle carrying 46 flowers, will reach a length of 150cm.

As in G. scriptum Bl., the flowers which appear first, are irregular, apparently with two sepals and without a lip, while the column is astigmatic, nor does it produce any pollen. On several peduncles, three such flowers were present each time; they can be found at places where the inflorescence of other orchids is provided with a node and a bract, but no flower. The widespread placement along the beginning of the peduncle, appears to bear out this assumption, see the following dimensions :-

Irregular flowers	Regular flowers
1st flower at 20cm	6th flower at 107cm
2nd flower at 35cm	7th flower at 117cm
3rd flower at 60cm	8th flower at 120cm
4th flower at 85cm	9th/10th flower at 127cm
5th flower at 97cm	11th etc. beginning of the bunch

After the irregular, and large distances between the astigmatic flowers, the normal flowers are spaced much closer and are placed all around the peduncle,

forming a bunch.

Flower : The flowers have a long white to pale green pedicel, which in irregular flowers is 15.5cm long and being oval is 3.0 to 5.0mm across. The pedicel is placed in a robust, firm bract with a 45mm base and a length of 35mm. The total dimensions of an irregular flower are, 12cm along the sepals (vertical) and 12.5cm across the petals. The sepals and petals are concave, with slightly undulating margins, ovate to oval, with a rounded tip. The dimensions are :-

	Base	Greatest width	Length
Sepals	10.0mm	28mm	55mm
Petals	5.0mm	29mm	60mm

The colour of the flowers is yellowish green to pallid yellow, and crowded with deep red spots, which are coloured like congealed blood. The spots are more-or-less round and a maximum of 2.0mm across. The column is 20mm long, with the sides slightly compressed and with a thicker tip. As mentioned above, these incomplete flowers produce no pollen and the stigma is absent.

Regular flowers : The pedicel has a much smaller bract, 14mm at the base and 25mm long. The pedicel is green-white to pale green, oval with a width of 4.0 to 5.0mm, and a length of 9.0 to 10.0cm. The sepals and petals have the same colour (see above), are slightly concave and have undulating margins. Across the middle, the flower petals are thick-carnose and stiff. Initially the flower petals lean forward, in a completely open flower, sideways. Measured across the petals, the flower is then 10.0cm wide. Sepals and petals are wide, spatulate, with a round tip; this shape displaying itself to best advantage, with slightly wider petals. The dimensions are :-

	Base	Greatest width	Length
Dorsal sepal	7.0mm	25mm	48mm
Lateral sepals	8.0mm	24mm	45mm
Petals	5.0mm	28mm	48mm

The sepals have slightly fewer spots than the petals, beside this, the spots are more regularly spaced on the petals, they are arranged in even rows across the middle. The tri-lobed lip is elastically fixed at the base of the column. At the connection there is a hollow, created by the connecting strip of the lip, which is stretched across a hollow in the column-foot. The lip dull, pallid white to pallid yellow and all markings are red-brown. Six red-brown lines, run along the side lobes, from front to rear. The lateral lobes finish in a pointed elongation, these points curve towards each other across the top of the column. The middle lobe is only small, coloured brown-red, triangular, the margins bend downwards, whereby the middle lobe presents

itself as a pointed appendage. Along the middle of the lip, run three elevated round keels, which start abruptly about halfway as round knobs and towards the front, merge into the flat part of the middle lobe. Although Smith reports the presence of a few hairs on the middle lobe, none were observed by me. The 20mm long column is curved and hollowed out at the base. At the foot, near the connection of the lip, there is a hollow. The stigma is white, the anther-cap cream coloured. On the back, near the beginning, the column has some fine purple spots. The flowers remain fresh for a considerable period, but the lip withers quickly.

Localities and habitat : Often grows in the forks of giant forest trees, or on the butts of felled trees, then in full sun. Plants growing in full sun are usually coloured paler and are 'tougher', the pseudobulbs are stiffer and more erect, and do not become as tall as primary forest plants. According to information, it occurs across the whole of New Guinea. The plant can be cultivated in a half drum, on the ground (in a rockery for instance), or in the fork of a tree. In contrast to popular opinion, a well developed plant flowers every year, at Manokwari in May/June, although with a varying number of peduncles (3 to 42). Plants in full sun produce more flowers. It is grateful for some fertilizer.

Literature : 'Sander's Orchid Guide' (1927). Flower colour reported as being yellow and states that the middle lobe is somewhat hairy.

Schlechter in 'Orch. Dtsch.Neu-Guinea' on page 951.

'Nova Guinea' Vol. VIII, Part III, page 596, with illustration CVII. As far as the spots on the flower petals are concerned, the drawing is unfinished. The drawing shows the difference in the lip between G. papuanum J.J. Sm. and G. speciosum Bl.

'Dakkus' 2nd Edition, page 180 (photograph); 3rd Edition, page 221.

'Latif' pages 148-149, flower opposite page 160. These give descriptions of G. speciosum Bl.

In the periodical 'De Orchidee' with photographs in 1935, page 75; 1936, page 143.

Grammatophyllum scriptum Bl.

This is one of the commonly occurring, large flowered orchids, which however, many people know under the name 'tigger' orchid or something similar. The pseudobulb in this plant, has the form of a somewhat flattened, carnose, pale green to green 'tuber' and as a rule, stands in a mass of erect, pointed aerial roots.

The oval, sectioned, flattened pseudobulb is 15 to 20cm long and 7.0cm at its greatest width. The four to six leaves are placed opposite each other, in the same plane as the flattened sides of the pseudobulb. Apart from these developing leaves, a foursome of bracts occurs below, which wither after some time. The pseudobulb is divided into six to eight, clearly visible internodes.

The leaves, which end in a pointed tip, are 7.0cm wide and up to 45cm long. They have a firm middle vein, clearly visible on the underside of the leaves. Starting from the pseudobulb, the leaves are initially, prominently canal-iculate, diminishing later.

The peduncle appears from the base of the leaf-carrying pseudobulb, but sometimes from an already leafless pseudobulb. This is 8.0mm thick and 100cm long, or longer. It is sectioned, the first five internodes, which carry a bract, as a rule do not carry flowers. The 1.0m peduncle, carries approximately 28 to 30 flowers, which are 6.0cm across.

**Flower :** The 5.0cm long pedicel is pale green and has a 1.0cm long bract. The flower is coloured pale green to yellow-green and has dark red-brown or purple-brown markings, like large irregular spots. These spots are arranged on either side of the centre of the flower petal, to a certain extent. The sepals, which lean slightly forward, have a thickening along the middle which is clearly visible on the back, and is the reason why the flower petals are concave. The margins of the sepals and petals undulate slightly. The petals lean more to the side than the sepals and they are spatulate. The dimensions of the perianth segments are :-

	Base	Greatest width	Length
Dorsal sepal	8.0mm	17mm	32mm
Lateral sepals	5.0 to 6.0mm	15mm	32mm
Petals	2.0mm	12mm	32mm

From the dimensions, it can be seen that it concerns a regularly formed flower. For a flower of these dimensions, the lip is fairly small; across the flattened lateral lobes, the lip measures 20mm by a length of 18mm, from the beginning to the end of the middle lobe. The lateral lobes of the tri-lobed lip stand erect, enclosing the column; the short middle lobe points forward and bends downwards. The colour of the lip is white to green-white and green-yellow,



patterned with parallel purple-brown stripes. Along the middle of the lip run three white keels, separated from each other by thin, purple-brown stripes. The middle keel is the least developed; those on either side run into the middle lobe. The middle section of the lip, a part of the lateral lobes and the beginning of the middle lobe, are covered with fine white hairs. The column is small, 15mm long by 2.0 to 3.0mm wide. The colour is white, with red-lilac markings on top and underneath. The stigma, situated immediately beneath the anther, is pale green. The anther-cap is pale yellow. It should also be mentioned, that one or two of the bottom flowers on a peduncle, have a diverging-form, with four tepals instead of five, with the lip missing. During the day, the flowered are mildly perfumed.

Habitat : It mostly occurs as an epiphyte in trees on the coast, in the sun as well as in shade. Plants growing in the shade are more robust, although the flowers are no more attractive than those on plants growing in full sun. It is suggested that a compromise be taken and plants can be placed in roomy pots or a half drum, with pieces of rock mixed with rotted wood, tree-fern pieces and some humus.

Localities : On the Radja Ampat Islands, along the north coast of the Vogelkop and in Geelvink Bay, it occurs frequently. According to two notations in 'Nova Guinea', it also occurs in Merauke and in the northern part of Papua New Guinea. Therefore, a widespread plant.

Literature : In 'Nova Guinea', only two notations about localities, namely in Vol. XII, Part IV, page 428; Vol. VIII, Part I, page 103. In Schlechter's 'Orch. Dtsch. Neu-Guinea' on page 951. Further in 'Dakkus' 2nd Edition, page 179; 3rd Edition, pages 220-221. 'Latif' page 147. 'De Orchidee' 1936, pages 217-219; 1937, pages 172-178.

Geodorum pictum Lindl. [= Geodorum densiflorum (Lam.) Schltr.

Although it concerns only a modest terrestrial orchid, sooner or later, every collector or horticulturist will come across this plant, so included is a short description.

From a pseudobulb which is normally completely or largely underground, rises a foursome of leaves, with sheathing bracts. On top and next to it, comes the characteristic inflorescence with its bent tip, on which there are a few half-opening, lilac-pink flowers. The pseudobulbs, the leafy and waning ones, lie closely placed, next to each other. A leafy and flowering pseudobulb has the shape of an onion, 3.5cm high and 3.5cm across, white below ground and green where it is exposed on the surface. The thick white roots, grow from the side and underneath.

Of the four leaves, the bottom one is barely developed and the second is small, 7.0 to 9.0cm long and 2.5cm wide. The third and fourth are true leaves. They are green, petiolate, oblong-lanceolate, with a pointed tip and bent. The leaves have several depressed parallel veins, with ribs underneath. The dimensions vary from 23 to 40cm long and 5.5 to 6.5cm, at the greatest width. The peduncle arises from pseudobulbs still in leaf beside it. The peduncle is sectioned, pale green, and has 5.0 to 6.0cm long, closely appressed sheaths at the nodes. The whole peduncle, including the bent flower carrying section is 32 to 40cm long and, in the middle, 6.0mm thick. The pendulous, flower-carrying section of the peduncle is 3.5 to 4.0cm long and produces successively 10 to 18 flowers, approximately four being open at once.

Flower : The pedicel is pale green, 8.0mm long and 2.0mm across. It has a long, narrow, pointed bract. The flower is placed the correct way up on the downturned stem, with the lip on the lower side. The flower tepals are lanceolate, with a pointed tip, concave, with a rib on the outside, each one 13.5mm long and from 3.5 to 4.5mm wide, with the petals being the widest. They are tinted lilac-pink, with a paler almost white tip. The column has a foot. The lip is adnate with the edges of the column-foot, however, not the lateral sepals, and forms a pocket in the back. Flattened out, the lip is cordate, with an irregularly-shaped middle lobe. The flat block of keels consists of two flat keels which run into the middle lobe, and these are yellow. Otherwise the lip is purple, with purple to red-purple veins on the lateral lobes. The column is wide and flat, with a large stigma.

Habitat and localities : A terrestrial orchid which occurs in open terrain and keeps coming up, even after cultivation, or when its habitat is built upon. Easily cultivated in ordinary soil, in full sun. Found at Sorong, Manokwari and Hollandia. Further, north Papua New Guinea, occurs generally.

Literature : In 'Nova Guinea' only reported in Vol. XII, Part III, page 214. Smith doubts whether G. pictum Lindl. is a separate species. In Schlechter's 'Orch. Dtsch. Neu-Guinea' reported on page 420. The plant indeed looks very similar to Geodorum purpureum R.Br., as it is shortly described in Vol. I of 'The Flora of Malaya' on page 539. [Ed. It is generally considered by botanists and taxonomists that both Geodorum pictum Lindl. and G. purpureum R.Br. are synonyms of G. densiflorum (Lam.) Schltr.]

Bromheadia pulchra Schltr.

This terrestrial orchid has a sectioned underground rhizome, approximately 6.0mm thick, and the upright stems arise from this every 3.0 to 4.0cm. The stems are sectioned, round to lightly oval in circumference, coloured green to olive-green underneath the cover of sheathing bracts. The dimensions of the stems are 70 to 160cm long by 4.5 to 6.0mm wide.

The leaves are placed in one plane, alternating on either side of the stem and begin 20 to 40cm above the ground. They are placed obliquely erect on the stem, and are thin and leathery, narrow-oblong in shape, and they finish in a clearly bi-lobed tip with rounded lobes. The leaves are largest in the middle of the stem and are 13 to 18cm long and 2.2 to 2.8cm wide. The middle vein forms a narrow groove on the top, and a pronounced rib on the underside of the leaves. Four parallel veins can be seen on either side of the main vein, on the underside of the leaves.

The peduncle appears as a continuation of the pseudobulb. It is sectioned and has tightly enclosing brown sheaths, initially 3.0cm long, but becoming shorter towards the top. The peduncle is, depending on the length of the flowering plant, 40 to 70cm long and approximately 3.0mm across, coloured deep purple. In the apex of this peduncle, or in the branched sections, the flower-carrying section begins, where the flowers open progressively. This flowering section of the peduncle is flattened and runs flexuose, with permanent, pronounced, dentate bracts alternating on either side of the peduncle, the whole of which gives the impression of being a two-sided saw. The flowering section is 10.0 to 20cm long. A section measuring 9.5cm had 2 x 12 'teeth' and therefore produced 24 flowers. The dimensions of the flowering part are 9.0mm wide by 3.0mm thick. On a plant in flower there is usually one open flower and several buds in different stages of development to be seen. Since it takes about a week between the opening of successive flowers, the flowering period of each stem takes a considerable time.

The flower opens well, with the concave, regularly-formed flower petals, initially positioned sideways, then bending forward. Seen from the front, the colour is completely white, apart from a yellow section on the middle lobe of the lip. The 9.0mm long pedicel and the sepals are coloured red-purple on the back. The flower is not perfumed and only opens for one day. The dimensions are 4.5cm, measured between the petals, and also 4.5cm between the end of the sepals, which form a regular triangle.

Flower segments :

- a. Sepals : These are virtually evenly shaped, with the lateral sepals being lightly falcate. On the back, the sepals have a pronounced rib, which, like the pointed tip, is tinted slightly deeper red-purple. These sepals are oblong-oval, 22 to 25mm long and 8.0 to 9.5mm wide.
- b. Petals : These are widely oval, concave, with an outward bent tip. There is a middle vein, especially pronounced on the back. Dimensions are 21 x 12 mm. The margins are lightly undulating, the tip is slightly incised.
- c. Column : The column is fairly long, bent, concave on the underside, completely white to pale yellow at the column-foot, where a double, constricted violet spot can be seen. The anther is very pale yellow. The column is 13mm long, widest at the column-foot, 6.0mm.
- d. Lip : The lip is tri-lobed, with erect and slightly outward bent lateral lobes, which are appressed to the column. The middle lobe has serrated, erect margins and ends in a pointed tip. The block of keels between the lateral lobes is thick and hard, coloured pale yellow, apart from a purple-brown spot, at the connection of the column-foot. Keels cannot be observed on this section; the lamina is vaguely separated into two parts. Four wart-like yellow keels, occur on the middle lobe. The flattened lip is 19mm wide across the side lobes and 17mm long.

Localities and habitat : So far plants have been found on the lower slopes of the Cyclops Mountains near Hollandia and on Meos Noem Island, west of Japan. Plants grow between shrubs and grasses at the borders of the forest, on poor but very well draining, laterite soils. If natural growing habits are to be adhered to, it should be planted between hedge-plants, in well draining soils.

Literature : Described in Schlechter's 'Orch. Dtsch. Neu-Guinea' page 367, drawing number 493 of the Illustrated Atlas.

Reported in 'Nova Guinea' Vol. XII, Part III, page 215 and in Vol. XVIII, Part I, page 70.

Smith describes for the southern slopes of the Cyclops Mountains also Bromheadia palustris Lindl. var. papuana J.J.Sm. (see 'Nova Guinea' Vol. VIII, Part I, page 26, illustration number IX-26). It is not yet clear if this plant is identical with B. pulchra Schltr., as Schlechter assumes. In 'Nova Guinea' Vol. XVIII, Part I, page 70, it is reported that B. palustris Lindl. var. papuana J.J.Sm. is synonymous with B. pulchra Schltr.

[Ed. Currently, (1985), B. pulchra Schltr. is considered a valid species, with B. palustris Lindl. var. papuana J.J.Sm. a synonym. See Lavarack P.S. et al (1985), 'Tropical Orchids of Australia' page 73, Thomas Nelson, Melb.]

Dipodium pandanum Bail.

This description concerns a plant, which when not in flower, is not easily recognised as an orchid. The plant sometimes winds through the undergrowth, and often climbs along the trunks of trees up to a considerable height. Examples have been observed which were ten metres long, still living, and six metres of which were covered closely with leaves.

The stem is round, sometimes oval in cross-section, brittle, coloured yellow to pale green and 1.5 to 2.0cm across. It grows on endlessly and dies off from the bottom up. When damaged, side branches easily form. The roots are relatively short, white, and 2.0 to 4.0mm across. Because of the short roots, the plant is closely pressed against the sub-strata.

The leaves are placed alternately on either side of the stem in one plane, closely together, so that only two-thirds of each leaf is free standing. On plants which grow on the ground, or creep through the undergrowth, the stem sections are longer and the leaves are placed further apart. The leaves are oblong, with an undivided, pointed tip, and look like a pandanum or pine-apple leaf. They are highly concave. The middle vein is depressed, with a rib on the underside; next to the middle vein are other clearly visible, parallel veins, with 2 x 2 on either side of the pronounced main vein. The colour is dependent on the aspect, green to yellow-green. Leaves on a robust plant are approximately 45cm long and 7.5cm wide.

Flowering occurs in the top section of the plant. The long, thick peduncles appear between the leaves and because of the closely spaced leaves, one-third of its length is often not visible. The peduncle is sectioned, pale green to pale yellow, initially cylindrical, later angular, with a 8.0mm width. Flowers begin on the fifth or sixth section. At the nodes are appressed yellow-green bracts. Some measured peduncles produced the following data :-

Total length :	61cm	48cm
Number of sections :	6	4
First flower after :	28cm	21cm
Number of flowers :	25	24
Flowers along :	33cm	27cm

The flowers are placed all around the peduncle and gradually open from the bottom upwards. On strong plants, three to four peduncles in several stages of development have been observed.

The flower opens up well, and on plants receiving a lot of light, all the

flower petals are often bent backwards. The flower is approximately 4.0cm wide, between the lateral sepals and approximately 3.0cm high. Unusual is the fact that the full, wine-red to purple-red markings on the sepals and petals, occur on the outside. Seen from the front, the markings show vaguely through the translucent, off-white to cream-coloured, thick, wax-like petals. The flower is regularly formed. The dorsal sepal stands erect, the petals obliquely sideways and downwards, the lateral sepals obliquely sideways and downwards. The column is clearly visible and points straight out. The lip is adnate to the column for 3.0mm and also points straight out. The spots on the backs of the flower petals are irregularly formed, but usually round or oval, all flowers being marked differently.

Description of the flower segments :

- a. Dorsal sepal : Oblong-oval, round tip, 25mm long, 8.25mm wide, base 4.0mm.
- b. Lateral sepals : Oblong-oval, slightly oblique, round with a small acute tip, 25mm long, 8.0mm wide, base 3.5mm.
- c. Petals : Spathulate, round tip with a small acute point, 23.5mm long, greatest width 7.0mm, tip pale yellow.
- d. Lip : Tri-lobed, with small lateral lobes, partly adnate with the column. Flattened out, roughly diamond-shaped. Along the middle, a delicate white, hirsute band, wide at the column connection and at the top. Next to it, are two to three narrow, delicate white, hirsute, parallel bands, with pale purple stripes in between. The margins of the diamond-shaped, white to pale purple tinted middle lobe are turned downwards. Length is 20mm, 3.0mm of which is adnate with the column and 17mm free standing. Some dull purple-red spots can occur on the underside.
- e. Column : Clavate, white with a yellow tip, on the underside, a white hirsute area, 8.5mm long. At the place where the lip is adnate to the column there is a hollow. The sometimes, mildly perfumed flowers, remain fresh on the plant for more than four weeks, but cut stems wither quickly.

Habitat and localities : The plant occurs in swampy forest and apparently requires a humid atmosphere. It can be kept alive in cultivation, but is difficult to bring into flower. It grows best against a well shaped tree in a moist location. Found on Salawati Island (coastal swamp forest), Teminaboean (ditto), Ajamaroe (ditto on the lakes), FakFak (Werba Bay), Misool Island (Fanfanlap), Hollandia, including Maroeni and Andai, south of Manokwari, and in the 'neck' of the Vogelkop. Its distribution, as suspected, probably covers the whole of New Guinea.

Literature : In 'Nova Guinea' Vol. VIII, Part I, page 104, illustration

XXXV-115, Smith describes a variety album, without the red markings on the sepals. In 'Nova Guinea' Vol. XII, Part IV, page 429. Literature is mentioned and as a locality, Humboldt Bay.

Schlechter reports in 'Orch. Dtsch. Neu-Guinea' on page 952, a variety pilataenia.

The first description by Bailey is in the 'Queensland Agricultural Journal' VI (1906), with illustrations.

In 'Nova Guinea' Vol. VIII, Part I, page 103, another Dipodium is described. Dipodium elatum J.J.Sm.



Acriopsis javanica Reinw.

A well known orchid from India, Malaya and Indonesia, and in appearance like a miniature Grammatophyllum scriptum Bl. Every orchid-lover when searching for orchids, will, sooner or later, be confronted with this plant.

The pseudobulb is oblong-ovate, 4.5cm long and 2.5cm across, coloured pale to olive-green and at the top, carrying two or three hard, green (in the sun yellow-green), narrow, lanceolate leaves, which measure 20cm by a width of 1.7cm.

The roots are obvious. They are succulent, thick and coloured white. The pointed, erect aerial roots are a good identification mark. The peduncle, in comparison with the whole plant, is very long, 70cm and longer and is branched; a 70cm branch had three side branches after 40cm, they are 20 to 25cm long. The side branches are closely covered with small, graceful spread-out flowers. A 20cm long side branch can carry 30 to 50 flowers.

Flower : The pedicel is approximately 7.0mm long and the flower is approximately 9.0mm square. The two sepals, one dorsal and one lateral, and the two petals are placed cross-wise, the lateral sepals being completely connate. The sepals are pallid yellow, with a red-brown stripe along the middle. The petals are paler coloured, with a pale lilac-red band along the middle. The column is long, reaching out as far as the petals, and has two protuberances reaching forward. The colour is deep purple-brown, apart from the pale yellow tip. The lip is adnate with the column for half its length, trilobed and coloured pale purple.

This orchid is often found on rotting wood, for example, on the butts of felled trees, or on rotting scars of broken branches of trees, etc., usually in sunny locations. They are often found on pandanus or sago trunks in swamps. This orchid occurs across the whole of New Guinea.

Localities and habitat : Virtually found across the whole of New Guinea. Often occurring along the south coast of the Vogelkop, particularly along the rivers of the Bintoeni Gulf. Grows well in a pot with tree-fern and fern-peat in a light to sunny aspect.

Literature : In 'Nova Guinea' Vol. VIII, Part I, page 119 ; Vol. XII, Part IV, page 455 and Vol. XVIII, Part I, page 71, only mentioned with literature quote.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' on pages 949-950.

Smith considers the Acriopsis from New Guinea to be a variety.

Schlechter is of the opinion that the plant stands apart as Acriopsis javanica

and retains Bailey's Acriopsis nelsoniana.

See further Smith's 'Die Orchideen von Java' pages 537-538.

'De Orchidee' 1934, pages 293-295.

[Ed. The current opinion of taxonomists is that Bailey's A. nelsoniana is a variety only so we have Acriopsis javanica Reinw. var. nelsoniana (Bail.) J.J.Sm. see Dockrill A.W. (1969) 'Australian Indigenous Orchids' Vol. I, pages 616-617, Soc. Growing Austr. Pl., Sydney].

Thrixspermum amplexicaule (Bl.) Rehb.f.

The stem of this orchid grows on endlessly, with the living part reaching 2.0 metres in length. It is oval, with sharp edges, sectioned, 4.0 to 4.5mm across and brittle. Long, thin grey roots, which bore through the leaf sheaths, occur along the whole length of the stem. The plant, which winds itself through the undergrowth, or in swamp areas, winds through the 'bakoeng' barely attaches itself with these roots, which often hang down loosely. The largest part of the plant and particularly the top, stands in a fully lighted position, usually in full sun. In the shade, flowering is definitely not as prolific. The leaves are oblong-cordate, with an indistinct, unevenly lobed, down-turned tip. They are thick, carnose but brittle, and furrowed by a sharply depressed middle vein. The colour is yellow-green to green, with a red-brown colouration along the leaf margins in developing leaves, and also along the underside of the middle vein. \* Measured from a node, the leaf sheaths do not cover the entire section, and as a rule, the leaf sheaths are no more than 1.0cm of the 4.0 to 5.5cm long section. The leaves clasp the stem almost completely, so that it looks as if the stem stands in the foot of a leaf. They are placed alternately on either side of the stem, with the surface uppermost and the dimensions are, length 5.0 to 6.0cm, greatest width 3.0 to 3.8cm.

The peduncles rise from the nodes of the stem and stand erect. They are sectioned, oval, and the flower carrying section usually occurs after three sections, which are provided with closely appressed sheaths. The colour is purple-green (in shade) or brown-red to deep red-purple on examples standing in the sun. The peduncle diameter is 2.5mm and the length can reach 50cm. The length, and therefore the length of the flower carrying section, is very dependent on the strength of the plant. At a total length of 30cm, the flower carrying section occurs after 16cm, this part being flattened. The flowers form consecutively, no more than two at once, on either side of this section of the peduncle. This section of the peduncle is flexuose, the sheaths of the pedicel remain behind, after the flower has fallen. Since they are triangular and sharp pointed, the peduncle looks like a double-sided saw. The distance from 'tooth' to 'tooth' is approximately 8.0mm.

The flower is triangular, completely open, and apart from a purple colouration on the spur, completely white. The flower lasts only one day and has no fragrance. The pedicel is pale yellow, 19mm long and 1.5mm across.

## Flower segments :

a. Dorsal sepal : Oval, highly concave, particularly at the top, with a blunt tip. The length is 19mm, the greatest width 9.5mm, the base 3.0mm.

- b. Lateral sepals : Oblique oval, concave, with a blunt tip. Base 4.5mm, greatest width 11mm, length 18mm.
- c. Petals : Spathulate-oval, concave, with blunt tip. Base 2.5mm, length 17mm, greatest width 8.0mm.
- d. Lip : This is tri-lobed at the beginning, forming a 5.0mm spur. The dimensions are, flattened out, 16mm long and 10.0mm wide. The lateral lobes stand erect, are 12mm long and finish in a falcate, curved, pointed frontal section. The middle lobe is short, clavate. In the back of the lip is an indistinct complex of keels, covered in very fine, orange-red hairs. At the beginning of the middle lobe is a triangular elevation, and at this point, the change-over to the middle lobe is tinted pale yellow.
- e. Column : This is white and very short. The ovary is extremely long, 12cm by a 7.5 to 8.0mm width, pale green and erect.
- The species described here diverges to a small degree, from the form which has been described for Java and Malaya.

Locality and habitat : Found in the district of Teminaboean on the Vogelkop, in shrubbery on the Karst Plateau of Ajamaroe, as well as in the swamp areas east of Inanwatan. Should be placed with fairly open shrubs (hibiscus for example), so the roots and basal part of the stem are in the shade.

Literature : Strangely enough this plant, spreading across Malaya, Indonesia and the Philippines, has not previously been described for New Guinea.

See J.J.Smith's 'Die Orchideen von Java' pages 573-574.

'A Revised Flora of Malaya' Vol. I, page 602. Purple tinted flowers have not been observed.

[Ed. The author would appear to be correct regarding the non-recording of Thrixspermum amplexicaule (Bl.) Rchb.f. for New Guinea. In describing a new species, Thrixspermum oeonoides Schltr., Schlechter mentions it as a close relative of T. amplexicaule (Bl.) Rchb.f. and states that he observed a species of the same relationship in 1908, near Ngoye at the foot of the Finisterre Range. See 'Additamenta ad Orchideologiam Papuanum II' from 'Orchidaceae Novae et Criticae' in Fedde Repertor. Vol. XVI (1919) and Vol. XVII (1921)].

Phalaenopsis amabilis Bl. (variety)

The 'anggrek bulan' is an orchid which is so well known, that a description of its characteristics is unnecessary. It is not so well known, that this orchid occurs across virtually the whole of New Guinea. Localities known so far in western New Guinea are, from west to east, Waigeo Island, Salawati I., Sorong, Teminaboean, Ajamaroe, Kebar Plains, Manokwari, Ransiki, Miei, Fak Fak, hinterland of Sarimi, Rouffaer River, Digoel River, Mindiptana.

The New Guinea P. amabilis Bl. should be regarded as a variety of the Indonesian species. In the first place, the flowers are, on average smaller. Some noted dimensions are :-

Locality	Length and width of leaf	Length of flower stem	First flower	10 Flowers at	Height and width flower
Ajau Island	23 x 7.0cm	54cm	36cm	18cm	6.5 x 6.5cm
Kebar Plains	28 x 10.5cm	77cm	49cm	28cm	7.5 x 7.0cm

Of course, this data is not absolute, but gives some idea. Strong plants have much longer and branched peduncles. In the second place the New Guinea 'bulan' is lightly perfumed, and during the day, the flowers disperse a mild rose-like fragrance. This is never reported in the Indonesian 'bulan', also Schlechter does not mention it, so with this impression, there is no motivation to call this variety 'var. neo-guinensis'. Although this orchid does not tolerate full sun, it can stand a lot of light. It should be placed on a piece of tree-fern stem. At Manokwari the main flowering period is January/March.

Literature : 'Dakkus' 2nd Edition, page 193; 3rd Edition, page 240 (photograph). 'Latif' page 158.

'Nova Guinea' Vol. VIII, Part I, page 119; Vol. XII, Part IV, page 455; Vol. XVIII, Part I, page 74, localities.

Schlechter in 'Orch. Dtsch. Neu-Guinea' on page 968, mentions the foot of the Bismark Range, at 100m and several other places. Schlechter named the species discovered by him var. papuana and the reason stated by him as follows :- 'differta forma typica labelli callo humiliore et latiore, pollinarium glandula majore cordato incisa'. Flowers snow-white, the lip spotted at the base and striped, the callus and outer margins of the side lobes of the lip, gold-yellow. Schlechter is of the opinion that the P. amabilis Bl. found in Papua by F.M. Bailey, is synonymous with his variety.

See also 'Orchideeën' August 1959.

Renanthera edelfeldtii F.v.M. et Krzl.

The stem of this orchid, with leaves on either side in one plane, grows on endlessly branching, with living stem sections, metres long, scandent over rocks and through low shrubs and trees. The stem width is approximately 8.0mm, the colour olive-green to brown-green, underneath the grey, withered old leaf sheaths. The internodes are 2.5 to 4.0cm long. The roots grow from the nodes of the stem, perpendicular to the leaves, and where exposed to the air, are grey to brown-grey, 5.0 to 6.0mm across.

The leaves are coloured green to pale green, lingulate, 2.5 to 3.0cm wide and 12 to 15cm long. The tip is dominantly bi-lobed, with a deep incision between the two virtually even, rounded-off, leaf segments.

Flowering : The peduncle is circular, sectioned, with closely appressed bracts at the nodes, and branches after the fifth section. A well grown peduncle on an old plant, will reach 50cm long and have five branches. The width of the main peduncle before it branches, is approximately 2.5mm. Initially green, the peduncle, after its beginning, is coloured pallid yellow, and closely covered with oblong, orange-red spots. Flowering takes place on the section of the plant stem still in leaf, not far from the apex. On each side branch, and on the main peduncle, 10 to 15 flowers are present.

Flower : The flower is 3.0cm high and spread out, 2.8cm wide across the petals. The petals however, stretch obliquely backwards, so that gives a narrow impression. The 22mm long pedicel is coloured orange-red. The general colour impression of the flower is terracotta, or deep orange-red, and at close inspection, it is apparent the impression is created by small vermilion-red stripes, and deep orange-red background, closely covering the flower petals. Sepals and petals have margins which curve backwards, so making them appear narrower than they are. The spatulate dorsal sepal, which ends in a point, is 16mm long and leans slightly backwards. The lateral sepals are laid out in the form of a spade, and because of the curving of the margins, the wide part appears angular, with the inside corners of the sepals touching each other. The lateral sepals are 13mm long. The petals are narrow and stretch obliquely backwards, and they are 13mm long and 2.5mm wide. On the back, the flower petals are coloured evenly orange-red.

The column is short (3.5mm) and nearly 4.0mm thick, coloured evenly red-orange. The lip is tri-lobed; the carmine-red lateral lobes are vertical; the middle lobe is coloured the same, presenting itself as a curled attachment of the pocket of the spur, which points backwards, and is jammed between the lateral sepals. The spur is coloured deep pink-red. The middle section of the lip, between the lateral lobes, is deeply incised, pale yellow coloured groove.

Localities : This Renanthera was found in the Radja Ampat Islands by the author, also on the Jensei River (Bintoeni Gulf), flowering in the July/Sept. period; from the Eilanden River (south New Guinea) an example was also received. Further found on the Humboldt Bay and on the upper reaches of the Digoel River, and in Papua New Guinea. The plant grows exposed, as previously. J.J.Smith is of the opinion that the species displays similarities with R. elongata Lindl. and R. moluccana Bl.

Literature : 'Nova Guinea' Vol. XII, Part IV, page 461, with illustration. Schlechter in 'Orch. Dtsch. Neu-Guinea' page 974.

Ascoglossum calopterum (Rchb.f.) Schltr.

This species is closely related to Renanthera, and its habit suggests the same, except that the plant is more compacted, and the leaves placed closer together. Older plants with 70cm stems, are suspended from virtually bare branches in the sun. The purple-brown tinted roots, which have a grey velamen, are unusually thick and woody. The inflorescence is a panicle.

The stem-clasping leaves are particularly thick and leathery, coloured dark green and placed alternately in one plane on either side of the stem. They are angular, canaliculate, 10.0 to 12.0cm long and 2.0 to 2.5cm wide, clearly unevenly lobed at the tip. The distance between the successive leaves is slight; a stem carrying 22 leaves is only 20cm long. Plants standing in full sun are distinguished by a 'cactus-like' appearance.

The peduncle appears between the leaves; it is stiff, tinted purple-brown and 36 to 40cm long. The peduncle is branched and carries four to five side branches, 5.0 to 8.0cm long. The peduncle, including the side branches, carries 40 or more flowers. On a robust panicle, 100 or more flowers were counted.

Flower : The flower, in a flat outspread position, measures 2.5 by 2.5cm. Shortly after the flowers have completely opened, the sepals and petals stretch backwards, which gives the flower a smaller narrower appearance from the front. The dorsal sepal and petals are about evenly formed, being lightly spathulate, with a pointed tip and 1.0cm long. The lateral sepals are prominently spathulate and finish bluntly, 1.2cm long. The lip is 1.0cm long, indistinctly tri-lobed, the bottom part forming a pocket, with a protruding lip at the entrance. The colour of the whole flower, is a conspicuous carmine-red-lilac, without any markings or spots in a different colour. Only the lip of the pocket is tinted orange. A flowering panicle, with a multiplicity of brightly coloured flowers, is very conspicuous.

Localities and habitat : Found on Gag Island (Radja Ampat Group), near Sorong, near Manokwari, on the Kebar Plain, also on Mios Noem Island. On Gag Island, where many plants are found together, growing in virtually full sun, it was suspended from tree branches. It should be placed against a piece of standing tree-fern stem, in a sunny position. Kebar Plains plants have slightly more compact flowers, with wider flower petals.

Literature : Schlechter's 'Orch. Dtsch. Neu-Guinea' pages 974-975.

In J.J.Smith's 'Die Orchideen von Ambon' on page 103 under Cleisostoma cryptochilum F.v.M.

It is not yet clear whether the plant from Gag Island, as described here, is



identical with Ascoglossum calopterum (Rchb.f.) Schltr. Schlechter considers his plant to be identical with Cleisostoma cryptochilum F.v.M.

Smith also considers his Saccolabium purpureum J.J.Sm. to be identical with the above Cleisostoma cryptochilum F.v.M. According to Smith, there is only a difference in regard to the small lateral lobes of the lip, and the two species should really be regarded as varieties. Since the name calopterum is the earliest, it is the one used by me. Even so, closer comparison should take place.

The above description has been published under Renanthera sp. in the periodical 'Orchideeën' of February 1960.

[Ed. In his 'Orch. Dtsch. Neu-Guinea' Schlechter, in conjunction with H.N. Ridley, created a genus Ascoglossum to combine a number of heterogeneous genera. He recognised at the time, two species, Ascoglossum purpureum (J.J.Sm) Schltr. (Smith's Ambon species) and Ascoglossum calopterum (Rchb.f.) Schltr.]

Vanda truncata J.J.Sm. [= Vanda hindsii Lindl.]

This Vanda is probably the only one occurring in western New Guinea, at least none other has been described. The plant is not large, for the width measured across the tips of the leaves, does not quite reach 40cm.

Plant and leaves : The stem is approximately 1.0cm across and closely packed with leaves. The specimen described here counted respectively :-

7 leaves on one side, 8 on the other along 20cm.

9 leaves on one side, 8 on the other along 20cm.

The dimensions of the leaves are 20 to 22cm long, 3.2 to 3.5cm wide. They are placed in one vertical plane, alternately on either side of the stem. At the beginning, the two halves of the leaves are virtually completely pressed against each other, and only after the first, approximately 5.0cm, open up into a 'V' shape, which gradually opens up further. The leaf tips are round and unevenly bi-lobed. Their colour is dark green.

The roots are thick-carnose, cylindrical, and where exposed to the air, coloured grey-brown. The diameter is 5.0 to 7.0mm. The inflorescence appears from the base of the leaves, fairly close to the apex of the plant, and on the leafy section of 12cm, carry four to six flowers, which remain fresh for about two weeks. The peduncle has a 3.0 to 4.0mm diameter and is coloured green.

Flower : The pedicel is yellowish white, grooved, sometimes slightly turned, 6.0cm long and 2.0 to 3.0mm across. The flower measures 3.5cm across the petals and 4.5cm, from the dorsal sepal to the tips of the lateral sepals. Petals and sepals are coloured fairly evenly red-brown, with a narrow, pale yellow margin; the flower petals are coloured evenly, pale yellow on the back. The spatulate sepals and petals are also virtually evenly formed in such a way, that for the first three-quarters of a centimetre, the margins are so severely bent backwards, that a stalk, as it were, is formed. The dorsal sepal and the petals display on the tips, another undulation, whereby the round tips point forward. On the lateral sepals the tips are bent backwards. The petals stand, through a twist, with the upper edge forward, and the front of the flower petal downwards. The short column is completely white, apart from a red-lilac spot near the connection of the lip; the anther-cap is pale yellow. The lip is initially adnate with the column; the only small, lateral lobes are transparent white, the middle lobe is initially yellow, terracotta coloured in the middle, and at the tip, pale brown. Along the centre of the middle lobe, run three clear keels, on either side of these, two less pronounced pale yellow ribs, paler than the surrounding coloured ones. The middle lobe also displays one undulation of the margins, which are turned down approximately in the middle. The 0.5cm long spur is white, with red-

lilac markings on the top. The flowers disperse a faint, cinnamon-like fragrance.

Some dimensions : Petals and sepals are all 20mm long, the greatest width varies from 10.0mm (dorsal sepal), to 15mm (lateral sepals) and 12mm (petals). The lip is 15mm long and 10.0mm wide across the middle lobe. The column is 6.0mm long and 8.0mm wide at the base, where the lip is connected.

Localities and habitat : The described plant came from Merauke. In 'Nova Guinea', the hinterland of Merauke is mentioned as a locality. The plant likes medium-heavy shade and can be placed between some pieces of tree-fern, or in an open pot or basket, with pieces of tree-fern and rocks.

Literature : This Vanda is mentioned in 'Nova Guinea' Vol. VIII, Part I, page 121, illustration XLI-137. The drawing apparently concerns a freshly opened flower, where the petals have not yet turned.

Schlechter names Vanda hindsii Lindl. in 'Orch. Dtsch. Neu-Guinea' as the only representative Vanda in New Guinea, and considers V. truncata J.J.Sm. to be synonymous, see pages 970-971. The number of keels, actually stripes, on the middle lobe of the lip, which is apparently variable, is not considered by Smith to be a definite characteristic. This description of V. truncata J.J.Sm. is published in the periodical 'Orchideeën' of April 1960.

Variety : After the description of the above plant was finished, a variety of V. truncata J.J.Sm., was found on the Pravi Plain, in the hinterland of Manokwari. The plant was somewhat more robust in dimensions, than the described example from Merauke. The on-growing plant was 90cm long, with a stem width of 1.1cm. The leaves were 38cm long and 3.5cm wide. The peduncle is barely 23cm, but at the same time, carried 9 flowers along 7.0cm from the beginning, in three sections. The peduncle was pale yellow-green, the pedicel white. The pedicel was semi-limp and slightly drooping. The flower was 4.0cm high, between the top of the dorsal sepal and the lip.

The tepals, and especially the petals, stretch backwards and are not twisted. On a yellow background, the flower petals were virtually completely over-laid with a glabrous, bright brown-red colour, except for a spotty band in the middle. On the large middle lobe of the lip, four dull purple-red stripes (keels) were present, flaring out onto the large middle lobe. The short spur is compressed in the sides, tinted bright red-purple. On the back, the flower petals are creamy white to very pale yellow.

[Ed. Despite the authors comments Vanda truncata J.J.Sm. is currently considered to be a synonym of Vanda hindsii Lindl.]

Vandopsis lissochiloides Pfitz.

This plant, which has not been described for New Guinea previously, can be very robust under optimum growth conditions, which occur in plants growing in deeply shaded forest margins, where the soil is rich in humus. Meandering and branching plants 2.0 to 3.0 metres long are then possible, with 2.0cm stem widths, leaves more than 50cm long and 5.0cm wide. The colour is then dark green.

As a rule however, plants occur under less ideal circumstances, on limestone rocks providing little nutriment, on the coast in light shade to full sun. Often this Vandopsis occurs together in its localities with Paphiopedilum praestans Pfitz. and Spathoglottis sp. The following description concerns an average plant, growing in half shade under reasonable circumstances.

The stem is approximately 1.5cm across and 60 to 100cm long. The roots are 9.0mm across, thick-carnose, with a gray velamen where exposed to the air. The roots appear from the nodes, often two simultaneously, perpendicular to the leaves. On the leafless stem section between the roots, side shoots are often produced, which develop into new plants.

The leaves are placed alternately in one plane on either side of the stem. They are pale green to green, thick-carnose, lightly 'V'-shaped and have an uneven bi-lobed, round tip. The width is 4.5 to 5.0cm (outspread) by a length of 36 to 40cm. Towards the top the leaves become slightly narrower.

The unbranched, firm and erect peduncles, appear between the lower, still living leaves, opposite a leaf. They are terete, with a 4.0 to 5.0mm width, coloured green and sectioned. The length can be more than a metre. The peduncle described here, measured, not fully grown, 70cm. The first six sections, provided with small yellow-green bracts, carried no flowers; the first flower appeared at 45cm from the beginning of the peduncle. On this peduncle, four flowers opened at once and another ten buds were present. The flower carrying part of the peduncle is angular (flexuose).

Flower : The pedicel is 3.0cm long, 4.0mm across, coloured brown, grooved and rotated. The very evenly formed flower, measures 5.5cm across the petals and likewise 5.5cm from the tip of the dorsal sepal to the tips of the lateral sepals. The dorsal sepal stands erect, the petals slightly upwards and sideways, the lateral sepals obliquely downwards; all flower tepals lean forward at the same angle in respect to the column.

Form and dimensions : The sepals are oblong-oval, with a narrowing base, rounded off tip. The petals have a narrower base, broaden out, and have a sharper rounded off tip. Sepals and petals are thick-carnose, with a thickening of the flower petals at the tips.

The dimensions are :-

	Base	Greatest width	Length
Dorsal sepal	4.0mm	16mm	30mm
Lateral sepals	4.0mm	15mm	28mm
Petals	2.0mm	14mm	27mm

The margins of the flower petals, first bend lightly, when becoming older, steadily further backwards.

Colour : The buds are brownish lilac-red. The back of the flowers are lilac-pink, with a deeper patterning along the middle, the petals are spotted, very delicately lilac-pink on the back. Seen from the front, all the flower tepals have the same bright yellow background colour, on which orange-red to brick-red spots occur. The colour of the flower and of the spots, changes as they mature; the yellow background then discolours to bright green-yellow. The spots on the petals are regularly spread across the petal and remain regular in form.

The column is short, 4.0mm, and thick, 5.0mm across; it is spotted lilac-red. The anther-cap is red-lilac and is shaped like a tent. The cap is held in place by two claws at the top of the column. The lip is adnate to the column-foot and immovable; at the base it is yellow. The lateral lobes are barely developed, just enough, so that a hollow space is formed. The 15mm long, thick middle lobe points horizontally forward and at the tip, forms an upright, pointed tooth. The colour of the middle lobe is bright lilac-red. In the hollow between the lateral lobes, two small white attachments hang down; in the base of the hollow runs a highly elevated keel, with less-elevated ribs on either side, which produce three merging, evenly-formed, round ribs on the middle lobe. No spur is present.

Locality and habitat : The localities correspond with those of Paphiopedilum praestans Pfitz., at least in Islands of the Radja Ampat Group, otherwise Waigeo and Misool. At the beginning, mention has already been made of this aspect. Plants thrive in pots or small tubs, with gravel and pieces of tree-fern. They will also grow in the ground, preferably in a lightly shaded location.

Literature : 'Dakkus' and 'Latif' both provide a description of this Vandopsis. 'Dakkus' description is on page 211 (2nd Edition), and page 262 (3rd Edition), with the Moluccas, Celebes and the Philippines as places of origin. 'Latif' has a description on page 194 and a coloured illustration opposite page 192. The drawing of the flower is not quite the same as the New Guinea species. Latif mentions as localities also Bali and the Moluccas.

In 'De Orchidee', V. lissochiloides Pfitz., appears in 1935 on page 13; in 1938 on pages 274-275.

In Schlechter's 'Orch. Dtsch. Neu-Guinea' the species is not mentioned, or in 'Nova Guinea' either, because the occurrence of the plant in New Guinea was not known.

The above description was reproduced in the periodical 'Orchideeën' of June 1960.

[Ed. The author is not quite correct regarding knowledge of this species in New Guinea. A collection was made at Majalibit Bay, on Waigeo Island, by G. Stein in June 1931. It was recorded by J.J. Smith in his 'Neue Orchideen Papuasiens' published in Engl. Bot Jahrb. Vol. LXVI (1934)].

Vandopsis muelleri (Krzl.) Schltr.

Although the colour of the flowers is not exactly as Schlechter described it, without doubt it concerns the same plant, so that I use the same name as that used by Schlechter.

The plant is of the Vanda - Vandopsis - type, but in proportion to the very large leaves, the form is compacted. The stem is robust, approximately 2.5cm across and is surrounded by fairly long, withered, stem-clasping leaf remains. How long the stem becomes finally becomes, is not known. The roots are terete, carnose, 7.0mm across, and where exposed to the air, grey-brown. The arching, pendulous leaves are placed alternately on either side of the stem, in one plane. The leaves are thick and prominently 'V'-shaped, steadily becoming narrower towards the tip, and finishing in a very acute tip. A small plant already had 60cm long leaves and in a robust plant, leaves 110cm long were measured, which were 6.0 to 7.0cm wide.

The inflorescence marks this Vandopsis as one of the most remarkable orchids. While in a small plant, a 155cm peduncle was measured, a robust plant obtained later had peduncles 240cm long, at the base 1.0cm across, with 18 side branches and with the first seven also branching, producing in total 31 flowering branches. The peduncle is sectioned and carries at each node, a closely appressed, carnose bract. The colour of the stiff peduncle is brown-green, which after it dies down, becomes woody. The flowers appear one after the other, so that flowering can take a very long time; side branches were observed with 10 to 12 flowering remains. A 240cm peduncle will flower for more than a year, since flowering ceases during the dry season, and then continues again!!

Flower : The flower, which remains fresh for approximately six weeks, measures 3.0 by 3.0cm. The pedicel, 15mm long and 3.0mm across, is translucent white, with fine purple spots on the upperside, near the flower. The column is 6.0mm long, white, with a purple marking on the upperside. The stigma is margined white and the anther-cap is white. Sepals and petals are coloured and marked in the same way; at the base, the ground colour is very pale purple, further on, pale yellow. On the background, the flower petals are closely covered with more or less round, not clearly defined spots, which often merge. The colour of the spots is difficult to describe, lilac-red-brown is probably the closest to it. The backs of the flower petals are yellow, spotted pale purple, but not as crowded as on the front; the spots on the back are coloured pallid purple. The form of the dorsal sepal and the petals is irregular-spathulate, with a rounded tip, the lateral sepals being angular-spathulate. The overall shape of the flower is very regular; the dorsal sepal stands erect, the petals obliquely sideways, and the lateral

sepals obliquely downwards, while bending towards each other. The lip is movably fixed to the foot of the column, wide and short. The width is 10.0mm across the 'wings' and 6.0mm from the connection, to the tip of the middle lobe. The middle lobe curves up, like a tooth and also inwards. The 'wings' of the lip are provided with a wide, purple shadow-line along the margins, the inflexed middle lobe is coloured deep purple. The dimensions of the sepals and petals are :-

	Base	Width	Length
Dorsal sepal	3.5mm	10.0mm	20mm
Lateral sepals	3.0mm	11.0mm	17mm
Petals	1.0-2.0mm	9.0mm	17mm

Localities : Since the species has not been previously described for western New Guinea, its complete dispersion is not known. So far found at Sagewin (south coast of Batanta Island), Klasaman near Sorong, Bagaraga (Teminaboean). At these three locations in trees, further, on a large rock in full sun. On the Jensei River (Bintoeni Gulf). In Papua New Guinea reported from the banks of the Wabe River, at the foot of the Finisterre Ranges at 100m above sea level [Ed. Schlechter 1903]. As it occurs, it can be placed in a drum, with crock and pieces of tree-fern, in light shade. Found in flower in June/September. In September, a new peduncle formed, as thick as green asparagus.

Literature : Kränzlin (Vanda Muelleri) in 'Osterr. Bot. Zeitschr.' XLIV (1894), page 461.

Schlechter in 'Fedde, Repertor.' X (1911), page 196.

Further Schlechter in 'Orch. Dtsch. Neu-Guinea' page 972, with a drawing in the illustration atlas. Unfortunately this drawing is not completely accurate (as sometimes occurs in Schlechter). I cite finally what Schlechter writes :-

'One of the most peculiar orchids I have ever seen. Out of a very thick, strong stem, reminiscent of the structure and leaves of V. gigantea (Lindl.) Pfitz., a 5m tall inflorescence rises. This in time lignifies completely and the panicle clearly takes several years before it finishes flowering completely. Since the flowers only appear slowly and singly at long intervals, the plant, despite the enormous size of the panicle, always gives a dry, little attractive impression. The flowers are pale yellow with pale brown-spotted sepals and petals, the lip is white with yellow spots at the base, the lateral lobes have violet and brown markings and the column is white.'

Schlechter probably did not write from his own observations, as similarity is only distantly present. If one views Schlechter's drawing of the flower, the question arises whether Schlechter ever had live material on hand, or



whether he wrote and drew from memory in this case. Otherwise it is evident the giant panicles will become much taller than those the writer came across. Smith is of the opinion that Vanda muelleri Krzl. should be placed, rightly so, under Arachnis and names this plant Arachnis muelleri (Krzl.) J.J.Sm.; see 'Bulletin du Jardin Botanique etc.' 2nd series, Vol. XII, in 'Neue Orch. de Malay. Arch.' VII.

Vandopsis pantherina J.J.Sm.

Although the plant, because of its dimensions, can only be cultivated against a tree, it is still worthwhile, because of its attractive inflorescence. The plant consists of an endlessly growing stem, with successive leaves on either side of it in one plane. The older part of the stem gradually dies down as the stem grows on. Living stem sections will become many metres (4.5 metres and more) long and the plant winds along a tree trunk, through branches or over rocks scarcely covered in growth.

The stem is relatively robust, the width is usually 16 to 18mm, the colour underneath the withered leaf sheaths is yellow-green to olive-green.

Branching can occur. The leaves are leathery, thick, lingulate, coloured green to deep green. The length is 14 to 18cm, the width 4.0 to 4.5cm. The roots are terete, grey and 6.0mm across, they grow perpendicular to the leaves. Flowering takes place near the top of the stem on the leafy section and thrusts through the stem-clasping leaf sheaths. The peduncle is relatively robust, sectioned and forms a panicle. After the second or third section, with an appressed bract, side branches occur, also being provided with a yellow-green bract. A well developed peduncle for example, has five side branches and then flowers at the end of the main branch. One of these main branches is 40cm long and the side branches vary from 11 to 7.0cm. The number of flowers on these branches are successively :-

First side branch	- 10	Fourth side branch	- 9
Second side branch	- 13	Fifth side branch	- 9
Third side branch	- 13	End of main stem	- 14

68 flowers in all.

A robust plant has two to four panicles in flower at once.

Flower : The pedicel is 19mm long, triangular and often twisted at the beginning. The colour is pale yellow, spotted very delicate brown-red. The flower is 24mm wide across the petals, 18mm high and is regularly formed. The main colour of the sepals and petals is yellow, with the sepals slightly darker than the petals. The sepals are slightly concave and the tips curve forward. The petals are virtually flat and are placed sideways (horizontal). The flower tepals are thick, wax-like and closely covered with brown-yellow (petals) to red-brown (sepals) spots. The dimensions of the perianth segments are as follows :-

	Base	Greatest width	Length
Dorsal sepal	4.0mm	7.0mm	11.0mm
Lateral sepals	4.0mm	6.0mm	11.0mm
Petals	2.5mm	7.5mm	10.0mm

The lip is immovably connected to the column. It initially bends down and backwards (7.0mm) and then juts forward (10.0mm). The first part carries the barely developed lateral lobes and along the middle, a wax-like, white comb. The forward part has two elevations following one another. The marking on the margin of the lateral lobes and on the first elevation of the lip, is bright lilac-red, the last few millimetres of the lip are stark white. On the back of the lip, which ends in two rounded, angular sections, is delicately spotted lilac-red.

The column is short (3.0mm), white and lightly marked with lilac-red. There is no spur.

Habitat and localities : The plant climbs or creeps over rocks and needs a considerable amount of space. Although requiring a lot of light, as a rule, it is not found in full sun. The localities known so far, are on the coast, close to the sea. Tsiof Island, near Sorong and Mansinam Island near Manokwari. Flowering was observed in March.

Literature : 'Nova Guinea' Vol. XIV, Part III, page 493, with illustration.

Pomatocalpa marsupiale (Krzl.) J.J.Sm.

The plant is of the continuously growing form and looks somewhat like a Vanda. The stem is surrounded with rather long, dry leaf sheaths of fallen leaves, which stand outwards. The thick-carnose leaves are lingulate, clearly in two halves and the tip bi-lobed, with rounded-off lobes on the tip and a fairly deep incision. The colour is yellow-green to pale green, the dimensions being 3.5 to 4.0cm wide, by a length of 27cm. The peduncle arises, as it were, from the base of the leaf, below it, after thrusting through a sheath. This peduncle is terete, pale green with brown spots, sectioned with closely appressed pallid yellow bracts, sometimes branched. The length varies from 40 to 80cm, the width is 3.0 to 5.0mm. Flowering occurs progressively during many months, on the tip of the continually growing tip of the peduncle, with four or five open flowers on the outside of a thick bunch of buds, both large and small.

Flower : On the inflorescence, the flowers are placed with the front upwards and with the spur towards the middle of the scape. The flower is small, the width being 11mm, the height 13mm. Seen from the front, the carnosose perianth segments and the lip are the same greenish yellow colour. The sepals, petals and spur are delicately spotted purple-red, without any markings on the backs, and with the petals being less closely spotted than the other parts. As well, the petals are marked only halfway. They are carnosose, concave, curved forward, with a bent over tip. The lip forms a pouch, with square, upright lateral lobes and a cordate, pointed, small middle lobe. The pale green column is short, the anther-cap pale yellow, with two round sections, behind which sit the two pollinia on one stalk, with a very sticky foot. In the hollow of the spur, a protuberance stands forward from the back wall. The ovary is relatively large, 5.5cm long, 6.0mm across, six-sided, with the withered yellow-brown flower on the top.

## Flower segments :

- a. Dorsal sepal : Spathulate, 7.5mm long, greatest width 3.0mm.
- b. Lateral sepals : Spathulate, 6.0mm long, 3.5mm wide.
- c. Petals : Curved, spathulate, 6.5mm long, 2.5mm wide.
- d. Lip and spur : Width across the side lobes 2.5mm, diameter of the pocket-like spur 4.0mm, height 6.0mm.

Habitat and localities : As a rule, is found in a fairly light location.

Plant as for Vanda - like plants, in a roomy pot with crock and pieces of tree-fern. Found on north Salawati Island, Tatanta and Mamberano River at the foot of the Van Rees Mountains. Also Papua New Guinea.

Literature : Schlechter reports in 'Orch. Dtsch. Neu-Guinea' page 987.  
Drawing in 'Feddes Repertorium', Beiheft Band XXI (Figuren-Atlas zu den  
Orchideen von Deutsch-Neu-Guinea), number 1343.  
See also J.J.Smith in 'Nat. Tijdschrift Ned. Indië' LXXII (1912), page 35.  
Reported in 'Nova Guinea' Vol. XIV, Part III, page 497.

Pomatocalpa sp. nov.

The form of this plant is in between Vanda and Renanthera, with the stem not as stiff and running somewhat flexuose, with 4.0cm long sections. The leaves however, are much larger and particularly longer than in Renanthera. The stems are endless, but very long stems have not been observed, the maximum length would cover about one metre. The roots are 5.0mm thick, coloured grey.

The leaves are placed alternately in one plane; they are thick-leathery, lingulate, yellow-green to green, 3.5 to 4.3cm wide and 23 to 26cm long. The tip is unevenly-round, bi-lobed and slightly incised.

The peduncle is very long, often branched and thrusts through the leaf sheath, measured lengths of 1.5m were observed. It is stiff, terete, sectioned and initially the diameter is 6.0mm, after 1.0m length, 3.0mm. Closely appressed bracts occur at the nodes. The background colour of the peduncle is pale green, but it is closely covered with black-purple dots, so that an impression is created, of a pallid black stem with a delicate pale green marking. The bracts are dotted black-purple on a pallid yellow background.

Flower : Flowering occurs successively, with the opened flowers and buds placed so closely together, that it forms a screen, with four to seven of the outside flowers, being open at once. The overall colour impression of flowers and buds is pallid black, and only when one holds a flower against the light, does it become apparent that the thick-carnose sepals and petals are tinted a beautiful red-lilac. The flower is very regularly formed; all flower tepals are placed in one plane and curve slightly forward, so formed that one is reminded of an Arachnis. Sepals and petals are spatulate, with the lateral sepals being bent downwards. The dimensions of the flower tepals are :-

	Length	Greatest width
Dorsal sepal	10.0mm	3.5mm
Petals	8.0mm	3.0mm
Lateral sepals	6.5mm	3.0mm

The pedicel is 22mm long and evenly coloured brown. The column is short, (2.5mm) and coloured egg-yellow. The pouch-like lip is loosely connected to the foot of the column. The lateral and middle lobes are barely developed. The middle lobe is not much more than a yellow bulge on the edge of the pocket-like spur; although still separated by an incision, from the barely visible lateral lobes. The spur has the same colour as the flower. The column and the base of the lip and spur, are marked on the outside very deep red-lilac. The anther-cap is placed on top of the column, like a round cap. The two pollinia are translucent yellow and are separated on a 2.0mm high

'Y'-shaped, white stalk fixed with one foot. The ovary is fairly large (6.5cm long, diameter 6.5mm), sharply triangular, with round bars between the three corners; the colour is deep olive-green, with the brown withered flower on top.

Localities : Found at Ajamaroe and Kamboeaja, south of the Ajamaroe Lakes. A plant, not too large, can be placed in a roomy pot with pieces of tree-fern. However, it is preferred to place the plant against a piece of tree-fern at least 1.0m long, in a sunny position.

Literature : Not previously described.

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## APPENDIX I

## ANALYSIS OF PLACE NAMES AND COLLECTION

## LOCATIONS MENTIONED IN THE TEXT

Place names and features mentioned in the text have been identified and the co-ordinates given where it has been found possible.

Since the transfer of Dutch New Guinea to Indonesia when the territory renamed Irian Jaya, many of the physical features, such as mountains, lakes and rivers which formerly bore names of Dutch origin have suffered name changes. Conversely, the majority of towns and villages which bore names of native origin have been retained.

Where name changes can be identified the current Indonesian name is shown in square brackets.

		Co-ordinates	
		°E	°S
Ajamaroe :	[Fakar]		
This was a village situated on the Vogelkop		132 - 15	01 - 15
Ajamaroe Plain :			
Probably the area south of Ajamaroe near the upper reaches of the Waromge River			
Andai :			
On the north coast of the Vogelkop at Dore Bay just south of Manokawri		134 - 00	00 - 55
Anggi Lakes :			
Situated in the ranges west of Ransiki on Geelvink Bay and on the Vogelkop		134 - 00	01 - 25
Armopa :	(Bonggo) [Toronta]		
On the north coast to the west of Hollandia		139 - 35	02 - 15

## Bagaraga :

Unable to locate but believed to be in the 132-09 01-33  
vicinity of Teminaboean on the Vogelkop.

## Baliem Valley :

Probably the area just north of the Oranje 138-40 03-55  
Range between two main tributaries of the  
Baliem River.

## Batanta Island :

West of Sorong on the western extremity of 130-40 00-50  
the Vogelkop and divided from Salawati Island by  
the Sagewin Strait.

## Becking River : [Kepulauan River]

Rises in the Juliana Ranges and flows south- 139-45 05-25  
wards to join the Wildeman River which in turn  
becomes the Obaä River.

## Beeuw Island : Majalibit Bay - Waigeo Isl.

131-05 00-23

Assumed to be off the mouth of the  
Majalibit River in Dampier Strait.

## Biak :

On the south coast of Biak Island  
(Schouten Isl.)

136-00 01-10

## Bintoeni Gulf : [Bintuni Bay]

Situated at the eastern end of the 'neck' (133-30) (02-20)  
of the Vogelkop.

## Cape Van de Bosch : [Cape Papasor]

The coastal extremity S.S.E. of Fak Fak 132-55 04-05

## Cyclops Mountains :

On the north coast to the west of Hollandia (140-35) (02-30)

## Demta

On the north coast to the west of Hollandia 140-10 02-20

## Digoel River : [Digul River]

Rises in the Juliana and the Orion Ranges (140-30) (04-50)  
and flows into the Arafura Sea. 139-00 07-12

## Digoel :

Assumed to be a village in the Digoel Range (140-40) (05-10)  
near the headwaters of the Digoel River.

## Dorehkar Island : Ajau Group

Assumed to be on the northern side of the (131-10) 00-40N  
Ajau Group north of Waigeo Island.

## Eilanden River : [Kepulauan River]

Rises in the Goliath Range and flows into (139-40) (05-20)  
the Doegoe River.

## Fafanlap Island : Misool Group

Assumed to be one of the group on the east- (130-20) (02-01)  
ernside of Misool Island.

IV.

Gag Island : Raja Ampat Group

Situated to the west of Waigeo Island. 129-55 00-25

Gautier Range :

The Tor River has its headwaters in this (138-50) (02-40)  
range and flows north to the coast.

Hollandia : [Jayapura]

The major town in Dutch New Guinea on the 140-45 02-30  
west of the border of what was German New  
Guinea.

Humboldt Bay : [Humboldt Bay]

Hollandia on Humboldt Bay 140-45 02-35

Inanwatan : (Bira)

On the south coast of the Vogelkop facing 132-10 02-05  
Maccluer Gulf.

Ingaroroemi :

Believed to be a village near Windessie 134-15 02-25  
[Windehsi?]

Jensei River :

Unable to accurately locate but believed  
to flow into Bintoen Gulf near the neck of  
the Vogelkop.

## Jantefa Bay :

Unable to accurately locate.

## Japen Island : [Yapen Island]

A major Island in Geelvink Bay

(135-25) (01-35)  
(136-55) (01-48)

## Kaimana :

On the south coast

133-45 03-40

## Kamboeaja Village :

At the south Ajamarie Lakes possibly  
close to Atinjo

132-10 01-20

## Karst Plains :

Possibly on the track between  
Ajamaroe and Teminalbean

(132-10) (01-25)

## Keban Plains :

East of Andjai on the Vogelkop

(133-15) (00-50)

## Kei Islands : [Ewab Islands]

A group of small islands between  
the Taninbar Group and Dutch New Guinea

(132-45) (05-45)

## Kepi River : [Mappi River]

Rises near Masin and flows south to  
join the Obaä River.

(139-20) (06-30)

## Klasaman Village :

Unable to locate exactly but

(131-30) (01-03)

VI.

believed to be on the western end of the  
Vogelkop near Sorong

Kokas :

On the southern coast of the Maccluer Gulf 132-25 02-40

Kota Nica :

Unable to accurately locate but believed  
on the outskirts of Hollandia.

Laimoeti Beach :

Unable to locate exactly but believed (134-03) (00-56)  
south of Manokwari.

Legare River :

A small river flowing into Geelvink 135-45 03-05  
near Napan

Lorentz River :

Headwaters in the Emma Ranges and (138-43) (04-25)  
flows south into the Arafura Sea. Also  
called the Noord River.

Maialibit : [Majalibit]

On the south coast of Waigeo Island (130-56) (00-22)  
where the Maialibit River flows into Dampier  
Strait.

# VII.

## Makbon :

Not far from Sorong on the north-  
west coast of the Vogelkop 131-15 00-45

## Mamberamo :

On the north coast adjacent to Cape  
d'Urville and at the mouth of the  
Mamberamo River. 137-55 01-30

## Mamberamo River :

Has its headwaters in the Van Rees Ranges  
and flows north (138-00) (02-25)  
137-55 01-30

## Manokwari :

A major township situated on the north  
coast of the Vogelkop 134-05 00-50

## Mansinam Island :

Situated in Dore Bay not far from  
Manokwari and adjacent to Kwawi. 134-10 00-55

## Maroeni Village : [Moroeni]

Unable to locate exactly but believed  
to be just south of Manokwari. 134-03 00-57

## Mefkadjem Village :

Unable to locate exactly but believed  
to be between Ajamaroe and Teminaboean

## Merauke :

A town situated on the south coast at 140-25 08-30  
the mouth of the Merauke River.

## Mios Noem Island : [Mios Num Island]

A small island west of Japen in 135-15 01-30  
Geelvink Bay

## Mios Waar Island : [Mios War Island]

A small island in Geelvink Bay east 134-20 02-05  
of Amboear

## Mindiptomah Village :

Situated near the upper reaches of the 140-45 06-05  
Moi joe River and not far from the border of  
P.N.G.

## Misool Island :

A large island situated S.W. of the (130-10) (01-50)  
Vogelkop.

## South-east Misool Island :

One of the group situated in the (130-20) (02-02)  
Bay of Fafanlap of the south-east coast of  
Misool between Fafanlap and Lelintah.

## Momi River :

A small river flowing into Geelvink Bay 134-10 01-35  
at Momi, just south of Ransiki



## Namatotte Island :

Situated off the south coast near Kaimana 133-55 03-50

## Ngaboet Lake :

Situated in the Arfak Mountains on the (134-05) (01-10)  
Vogelkop

## Noemfoo Island : [Numfoor Island]

Situated at the mouth of Geelvink Bay 134-50 01-00  
between Biak and Manokwari

## Noord River :

Also called the Lorentz River -  
see remarks under this name

## North Salawati Island :

Divided from Salawati Island by the 130-40 00-50  
Sagewin Strait off the extreme western end of  
the Vogelkop

## Okaba :

Situated on the south coast west of Merauke 139-40 08-05

## Pana-Pana Strait :

Believed to be the strait between  
Misool and Salawati Island

## Pandjang [Island?]

Believed to be in the vicinity of FakFak 132-15 02-57

## Pravi Plain :

The hinterland of Manokwari.

(134-00) (00-50)

## Pioneer Bivouac

On the Mamberama River in the  
Van Rees Ranges.

138-00 02-15

## Raja Ampat Island [Group] [Rayaampat]

Situating west of Salawati and north  
of Misool Islands

(129-50) (01-12)

## Roemberpon Island : [Rumberpon Island]

Situating in Geelvink Bay just  
south of Momi.

(134-10) (01-50)

## Rombobo Island :

Situating in the Sele Strait between  
Sorong and Salawati Island

(131-08) (00-50)

## Roon Island :

Situating in Geelvink Bay just north of  
the Wandamen Peninsula

134-35 02-20

## Rouffaer River :- [Tariku River]

Has its headwaters on the northern side  
of the Nassau Ranges and flows east to  
become the Willigen River

(137-15) (03-05)

(138-10) (03-04)

Sami :

Believed to be on East Salawati Island (131-07) (01-02)  
in the Sele Strait.

Sagewin :

Believed to be on the south coast of (130-40) (00-54)  
Batanta Island facing the Sagewin Strait.

Salawati Island :

Near Sorong and divided from the (130-55) (01-10)  
western tip of the Vogelkop by the Sele  
Strait.

Schouten Island Group

Situated at the head of Geelvink (135-50) (01-00)  
Bay north of Japen Island. Biak is  
situated on the major island.

Sentani Lake :

Situated south-west of Hollandia 140-35 02-35  
on the southern side of the Cyclops Ranges.

Seroei : [Seroe]

On the south coast of Japen Island 136-15 01-50  
at the mouth of Geelvink Bay.

## Siriwari River :

Unable to locate

## Siriwo River :

Flows into Geelvink Bay just north of Napan. 135-53 02-58

## Sorong :

Situated at the extreme western end of the Vogelkop and facing Sele Strait. 131-15 00-50

Tafelberg : [A forest reserve] (131-12) (01-02)

Cannot be located with accuracy but believed to be near Manokwari

## Teminaboean:[Teminaeboean]

Situated on the south-west coast of the Vogelkop. 132-00 01-30

## Tigi Lake :

Situated in the Nassau Ranges near the headwaters of the Oeta River. 136-15 04-05

## Tor River :

Rises in the Gauttier Ranges and flows to the north coast near Maffin (138-52) (02-30)  
138-54 01-57

## Tsiof Island :

Cannot be accurately located but (131-12) (00-53)

believed to be one of the islands in the  
Sele Strait near Sorong.

Van Rees Mountains :

Situated south-west of Hollandia (140-10) (03-15)  
adjacent to the Nawa River.

Vogelkop :

The name given to the physical feature  
above the 'neck' formed by the Maccluer Gulf  
and Geelvink Bay.

Waigeo Island :

The large island off the north-west (130-45) (00-15)  
coast of the Vogelkop divided by the Dampier  
Strait

Wanderman Peninsula :

The feature formed on the western side (134-35) (02-40)  
of Geelvink Bay.

Wariari River : [Warjori]

Rises in the Arfak Range and runs to (133-25) (00-45)  
the north coast near Sidai

West Waigeo Island :

Probably the larger of the chain of (130-08) (00-00)  
islands to the west of Waigeo Island.

## Wildeman River :

One of the rivers rising in the  
Valentijn and associated Ranges and flowing  
south.

(139-15) (05-45)

## Windessie : [Windehsi] [Windesi]

On the 'neck' of the Vogelkop on Geelvink  
Bay.

134-15 02-25

## Wissel Lakes :

Situated just west of Enarotali  
in the Nassau Ranges.

(136-15) (03-50)

MAJOR REFERENCES QUOTED IN TEXT

Smith J.J. (1909 - 1935) *Die Orchideen Niederländisch Neu-Guinea* : 'Nova Guinea', Brill, Leiden

(1909) Vol VIII, Part I, pp. 1 - 148, t. I - XLVI

(1911) Vol VIII, Part III, pp. 521 - 611, t. LXXV - CXII

(1913) Vol XII, Part I, pp. 1 - 108, t. I - XXVIII

(1915) Vol XII, Part III, pp. 173 - 272, t. LV - XCIX

(1916) Vol XII, Part IV, pp. 273 - 477, t. C - CLXXXI

(1929) Vol XIV, Part III, pp. 337 - 516, t. XLI - LXXXVII

(1935) Vol XVIII, part I, pp. 9 - 85, t. III - XVI

[The first five parts of this text are in German and the last two in English.]

Schlechter R. (1911 - 14) *'Die Orchidaceen von Deutsch-Neu-Guinea'*, Fedde Repert. Beih., Berlin

Schlechter R. (1923 - 28) *'Figuren-Atlas zu den Orchidaceen von Deutsch-Neu-Guinea'* Fedde Repert., Berlin

[A reprinting of both Schlechter volumes was carried out in 1973 - 4 by Otto Koeltz Antiquariat - Berlin. In 1982 an English translation combining both volumes was published by The Australian Orchid Foundation - Melbourne]

Holttum R.E. (1964) *'Flora of Malaya'* Vol. I, 'Orchidaceae', Gov. Printing Office, Singapore.

Dakkus P.M.W. (1930) First Edition, (1931) Second Edition, (1935) Third Edition, *'Orchideeën Welke in Ned-Indië Gekweekt Kunnen Worden'*: A.C. Nix & Co. - Bandoeng.

[Text is in Dutch]

Latif S.M. (1953) *'Bunga Anggerik'* : W. Van Hoeve, Bandung.

[Text is in Indonesian]

FURTHER USEFUL READING

- Smith J.J. (1917) Orchidaceae in 'Gibb's Phytogeography and Flora of the Arfak Mountains' pp. 105-127.
- Smith J.J. (1934) 'Neue Orchideen Papuasiens' Engler Bot. Jahrb. Vol. LXVI. pp. 161-215.
- Schlechter R. (1919-21) 'Additamenta ad Orchideologiam Papuanum' I-IV., in 'Orchidaceae Novae et Criticae' Fedde Repert. Vols. XVI, XVII.
- Schlechter R. (1922-23) 'Neue Orchidaceen Papuasiens' Engler Bot. Jahrb. Vol. 58, pp. 50-154.
- Dockrill A. W. (1969) 'Australian Indigenous Orchids' I, Soc. Growing Aust. Plants., Sydney.
- Cribb P. J. (1983) 'A Revision of Dendrobium section Latouria (Orchidaceae)', Kew Bulletin, Vol. 38(2). pp. 229-306.
- Johns R. J. & Hay A.J.M. (1984) 'A Guide to the Monocotyledons of Papua New Guinea' Part 4 - Orchidaceae (in part) by N.H.S. Howcroft, University of Technology, Lae, P.N.G.
- Lavarack P.S. & Gray B. (1985) 'Tropical Orchids of Australia', Thomas Nelson, Melbourne.



## APPENDIX III

INDEX OF SCIENTIFIC NAMES*Acriopis* Reinw.*javanica* Reinw. 161, 162.*nelsoniana* F.M.Bail. 162.*Arachnis* Bl.*muelleri* (Krzl.) J.J.Sm. 177.*Ascoglossum* Schltr.*calopterygium* (Rchb.f.) Schltr. 168, 169.*purpureum* (J.J.Sm.) Schltr. 169.*Bromheadia* Lindl.*palustris* Lindl.var. *papuana* J.J.Sm. 157.*pulchra* Schltr. 156, 157.*Bulbophyllum* Thou.*blumei* (Lindl.) J.J.Sm.var. *longicaudatum* J.J.Sm. 142.*coloratum* J.J.Sm. 146.*fletcherianum* Rolfe 147.*fritillariiflorum* J.J.Sm. 144.*grandiflorum* Bl. 144.*macrobulbum* J.J.Sm. 147.*phalaenopsis* J.J.Sm. 148.*Calanthe* R.Br.*engleriana* Krzl. 21, 23, 24, 27.*triplicata* (Willem.) Ames 21, 22.*veratrifolia* (Willd.) R.Br. 21, 22, 23, 24.*Cleisostoma* Bl.*cryptochilum* F.v.M. 168, 169.*Coelogyne* Lindl.*asperata* Lindl. 9, 13, 14.*beccarii* Rchb.f. 9, 15, 16, 19.var. *tropidophora* Schltr. 16.*edelfeldtii* F.v.M. 14.*fragrans* Schltr. 19, 20.*micholitziana* Krzl. 16.*psittacina* Rchb.f. 20.*pustulosa* Ridl. 14.*rumphii* Ridl. 20.

*Coelogyne* Lindl.

*veitchii* Rolfe 17.

*Cypripedium* L.

*gardneri* Guill. 2.

*glanduliferum* Bl. 2.

*laevigatum* Batem. 3.

*Dendrobium* Sw.

*acutisepalum* J.J.Sm. 82.

*alexandrae* Schltr. 76, 77.

*anosmum* Lindl. 54.

*antennatum* Lindl. 83, 85, 86, 87, 88, 89, 90, 91, 94, 96, 97, 115.

*aries* J.J.Sm. 126, 127.

*atroviolaceum* Rolfe 73.

*bifalce* Lindl. 69, 70.

*biloculare* J.J.Sm. 70.

*bracteosum* Rchb.f. 67.

*capituliferum* Rolfe 64, 65, 66.

*comatum* (Bl.) Lindl. 43, 45.

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*conanthum* Schltr. 102, 103, 104, 105, 106, 107, 127.

*confusum* Schltr. 63, 64, 66.

*constrictum* J.J.Sm. 66.

*crumenatum* Sw. 53, 54, 63.

*d'albertisii* Rchb.f. [= *D. antennatum* Lindl.] 84, 85, 86, 88, 89, 90, 91,  
93, 94, 95, 113, 115.

*devosianum* J.J.Sm. 92.

*discolor* Lindl. 110, 111, 113.

*ephemerum* J.J.Sm. 54.

*finisterrae* Schltr. 80.

*fulgidum* Schltr. 59.

var. *angustilabre* J.J.Sm. 60.

*guttatum* J.J.Sm. [= *D. rigidifolium* Rolfe] 82.

*hamiferum* Cribb 98, 99.

*hollrungii* Krzl. 58.

*hydrophyllum* J.J.Sm. 41.

*inaequale* Rolfe 47.

*insigne* (Bl.) Rchb.f. 51, 52.

var. *aruensis* J.J.Sm. 52.

var. *subsimplex* J.J.Sm. 52.

*ionoglossum* Schltr. [= *D. nindii* W.Hill] 128, 129, 130, 132.

## Dendrobium Sw.

- johannis Rchb.f. 101.
- johnsoniae F.v.M. 71.
- laciniosum Ridl. 46.
- lancifolium A.Rich. 50.
  - var. papuanum J.J.Sm. 49, 50.
- lasianthera J.J.Sm. 123, 125, 127.
- leporinum J.J.Sm. 92.
- macfarlanei Rchb.f. [= D. johnsoniae F.v.M.] 72.
- macrophyllum A.Rich. 73, 74, 77, 78, 79, 80.
  - var. giganteum J.J.Sm. 80.
  - var. subvelutinum J.J.Sm. 80.
  - var. veitchianum (Lindl.) Hook.f. 78.
- mirbelianum Gaud. 85, 91, 108, 109, 115, 118, 119, 123, 125, 131, 132.
- musciferum Schltr. [= D. macrophyllum A.Rich.] 80.
- nindii W.Hill 80.
- ostrinoglossum Rupp [= D. lasianthera J.J.Sm.] 125.
- papilioniferum J.J.Sm. 53, 63.
  - var. ephemerum J.J.Sm. 54.
- phalaenopsis Fitzg. 100, 125, 137.
- remiforme J.J.Sm. 62.
- rhpidolobum Schltr. [= Flickingeria rhipidoloba (Schltr.) Hawkes] 45, 46.
- rhomboglossum J.J.Sm. 82.
  - var. latisepalum J.J.Sm. 81, 82.
- rigidifolium Rolfe 82.
- schulleri J.J.Sm. 119.
- X schumannianum Schltr. 93.
- smilliae F.v.M. 57, 58.
- spectabile Miq. 69, 75, 77.
- stratiotes Rchb.f. 88, 91.
- taurinum Lindl. 130.
- terrestre J.J.Sm. 82.
- thysanochilum Schltr. 44.
- tofftii F.M.Bail. [= D. nindii W.Hill] 129, 130.
- trilamellatum J.J.Sm. 100.
- undulatum R.Br. [= D. discolor Lindl.] 94, 95, 108, 110, 111, 113, 131.
  - var. d'albertisii F.v.M. 109, 111.
  - var. gracile J.J.Sm. 109, 113, 114.
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*bartonii* (Ridl.) Schltr. 10.

*longifolium* Rchb.f. 9, 10.

*Dipodium* R.Br.

*elatum* J.J.Sm. 160.

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*flavescens* Lindl. 141.

*javanica* Bl. 138, 139.

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*papuana* J.J.Sm. 140, 141.

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*xanthocheila* Ridl. 141.

*Geodorum* Jacks.

*pictum* Lindl. [= *G. densiflorum* (Lam.) Schltr.] 154, 155.

*purpureum* R.Br. 155.

*Grammatophyllum* Bl.

*papuanum* J.J.Sm. 149, 151.

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*Macodes* Bl.

*petola* (Bl.) Lindl. 8.

*sanderiana* (Krzl.) Rolfe 8.

*Paphiopedilum* Pfitz.

'*Bodegomii*' Hort. 3.

'*Frau Fleischmann*' Hort. 5.

*philippense* Pfitz. 3.

*praestans* Pfitz. 1, 3, 172, 173.

*violacens* Schltr. 4, 5, 6, 7.

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*zieckianum* Schoser 6, 7.

*Phaius* Lour.

*amboinensis* Bl. 29, 31.

*montanus* Schltr. 32.

*tancarvilliae* (Banks) Bl. 27.

*Phalaenopsis* Bl.

*amabilis* Bl. 165.

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