

*RULES ADOPTED BY THE BOARD OF REGENTS OF THE UNIVERSITY OF HAWAII  
MAY 21, 1948 WITH REGARD TO THE REPRODUCTION OF MASTERS THESES*

- (a) No person or corporation may publish or reproduce in any manner, without the consent of the Board of Regents, a thesis which has been submitted to the University in partial fulfillment of the requirements for an advanced degree.
- (b) No individual or corporation or other organization may publish quotations or excerpts from a graduate thesis without the consent of the author and of the University.

THE ORCHIDS OF MICRONESIA

Monandreae-Basitonae; Monandreae-Acrotonae-Acranthae;  
and Monandreae-Acrotonae-Pleuranthae- through -Duplicatae-Sympodiales  
of Pfitzer

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE  
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE

JUNE 1950

By  
Irwin Elton Lane

Approved by

Harold St John  
(Chairman)

Marion L. Johnson

Officeris  
E. Butten

51-1271

Hawn.  
Q111  
H3  
no.128  
cop.2

TABLE OF CONTENTS

INTRODUCTION	1
TAXONOMIC CHARACTERS	5
TAXONOMIC CATEGORIES	9
TAXONOMIC TREATMENT	
KEY	13
ENUMERATION	19

## INTRODUCTION

Micronesia is the vast area of the Pacific extending from just west of the Philippines eastward nearly to Hawaii, and primarily north of the equator. It is composed of five groups of islands; the Caroline, the Mariannas, the Marshall, the Gilbert, and the Ellis Islands. The Gilbert Islands, a group of many small, low atolls, extends south of the equator. The Ellis Islands, also a group of many small, low atolls, lie completely south of the equator, south of the Gilberts. The Marshalls, a vast scattered group of thirty-two atolls is in the eastern portion, north of the Gilbert and Ellis Islands. Extending westward from the Marshalls in a long arc are the Carolines; isolated groups of mountainous islands. Northward from the eastern-central portion of the Carolines lie the Mariannas, also mountainous rugged islands. They all are within the tropic zone.

The Gilbert and Ellis islands are small, very low, coral and sand atolls, nearly or quite unknown botanically. It seems probable that their flora is similar to the adjacent areas of Micronesia and Polynesia. The Marshalls are also low coral and sand atolls. Dr. Harold St. John, who has made several collecting trips into that area and is studying the flora, states that he knows of no wild orchidaceous plants in that group; nor is there any record of them occurring there. Hence it may safely be inferred that likewise, the Gilbert and Ellis Islands, so very similar in make-up, have no wild orchids.

Guam, the largest of the Mariannas is also the southernmost. From it, they form a close, rather compact arc northward; with the higher islands in the northern sections. The Carolines, however, form a loose scattered arc from east to west. Ponape, in the eastern portion, is the highest with an elevation exceeding 2500 feet on the central mountain. Kusale, the easternmost, is somewhat isolated from the rest; as is the Palau group in the west. The central portion is dominated by Ponape in the Eastern part, Truk in the eastern central, and in the western end is Yap. Actually, the Palaus, 750 miles south and west of Yap form a distinct group which extends south from the main portion to within 350 miles of New Guinea and the Moluccas. The southern islands are, however, very small atolls. It is in the Mariannas and Carolines that the orchids of this region are found.

Since the time of Schlechter, there has been no general treatment of the orchids of Micronesia. However, many entities have been described since the time of his work. These descriptions have been in scattered journals. Some of these journals are difficult to secure. They frequently have valuable information included in the discussion; which in several journals is in Japanese. These data are not readily available. For this reason, an assemblage of the material into a single rather more available place was deemed useful.

New collections have been added to the numbers of specimens of many of the entities. These show variation and intergradation in some cases. With these additions an examination

and comparison of the different collections seemed proper to determine whether any entities were as yet undescribed, or the same population redescribed as new.

With the exception of the Gilbert and Ellis Islands, which are administered by the British government; the island groups of Micronesia are now under a trusteeship from the United Nations to the United States. It is the duty of the United States to administer these islands to the greatest advantage to their peoples. This can better be done with a fuller, more complete knowledge of the Flora. This work is a contribution to this end.

Schlechter published the first treatment of the orchids of Micronesia. This was based on reports of other workers, but primarily on the identification of the Ledermann collections of 1913-1914. There he reported thirty-seven genera and sixty-nine species. Then in 1932 started a series of contributions and additions to the flora by Hosokawa, Tuyama and other Japanese botanists who had collected or studied the plants of Micronesia.

## ACKNOWLEDGEMENTS

It was through the kindness of Marie C. Neal, Curator of the Herbarium of Bernice P. Bishop Museum, that many specimens were available for study. Whenever new Micronesian collections of orchids were discovered in newly acquired material, she very graciously set them aside for the author's inspection and study. Thanks are expressed to Mr. Sidney Grassman, of the Botany Department, University of Oklahoma, for making available his collections of orchids made during his stay on Ponape. Appreciation is expressed to the Royal Botanical Garden at Kew; the New York Botanical Garden, the National Museum at Washington D. C., and the University of California for their loan of materials, types and early collections and unidentified specimens for use in preparation of this work.

The Pacific Science Board of the National Research Council, in cooperation with the Bureau of Naval Research, made it possible for the author to spend nearly four months in the Palau islands. While there it was possible to study many of the orchids in the natural habitat as well as collect specimens.

## TAXONOMIC CHARACTERS

## The Genus:

In a group as large and diverse as the Orchidaceae, presenting so many of the intermediate conditions between groups, the selection of those characters with which to define the genus is of utmost importance.

The pollen is closely compacted into masses called pollinia. The pollinia may be either granular, that is composed of several to many irregularly shaped lumps; or waxy, where each mass is smooth and solidly held together. The number of masses, if waxy, as well as the texture, has been used to differentiate genera. Also variable within the family, but constant in a group is the relative position of the locule in which the pollinia are found, and their attachment to a stalk that frequently connects them to a glandular disc. The position of the anther may be perpendicular to the axis of the column, or in varying degrees from that position. Also, the locules may be approximate or distinct or the apices may converge or diverge.

Other portions of the column, the restellum, or sterile modified dorsal stigma and the clinandrium or column tip on which the anther is situated, have been used to distinguish genera. Primarily, the basic position of these structures has been used; the size and shape are considered of lesser importance. The presence or absence, and the length, of a foot formed by the downward projection of the base of the column is another structure considered of generic importance.

In a group such as the orchidaceae, all degrees of fusion are found. It has always been considered of a more fundamental importance than to separate species. While it may break down in a few instances, it is hardly to be expected that in such a group there would be complete constancy of value in any single character for all parts of the group. So fusion of the labellum to the column, fusion of two or more of the sepals, and appression of petals to the sepals are here considered to be of generic importance. Doubtless of generic import is the fusion of both sepals and petals, either including or excluding the labellum in that fusion.

Another character which has been used to differentiate genera is whether the inflorescence is lateral or terminal. This character, even more than the preceding ones seems to be variable in importance. Thus in the Genus *Dendrobium*, the inflorescence may be either terminal, subterminal or distinctly lateral. However, *Bulbophyllum* is most easily and quickly separated from *Dendrobium* in that *Bulbophyllum* has the inflorescence arising from the rhizome or the base of the pseudobulb. That condition never exists in *Dendrobium*. The use of the terms "basal or sub-basal" and "Terminal and/or lateral," would probably more accurately represent the condition. The vernation of the leaves is of fundamental importance. The type of growth, whether monopodial with the stem elongating indefinitely, or sympodial, with the new growth arising lateral or basal, is a basic concept.

### The Species:

The shape and size of the lip is the single most utilized set of characters in distinguishing species within any genus. The range of variation is extreme, from suborbicular through pluri-lobed to linear-lanceolate. The lobes may be erect or spreading, projecting forward, lateral, or to the rear. The lip may be geniculate and strongly bent or nearly flat. The ornamentation may be almost as extreme. It may be restricted to either the inside or the outside; lacking, or covering the entire surface. The form of ornamentation is nearly as varied as the degree. It may be in the form of calluses, or ridges, to tubercles and pubescence. Also variation on the margin and shape of the base and apex add more variables to the distinguishing of species.

In some of the genera there are groups of species which have an identical or nearly identical labellum. But frequently the sepals or petals or both are quite varied in shape and margins. These, especially when correlated with vegetative or inflorescence characters are frequently used to separate species.

Variation in the length of the column, and especially in the column foot seem to be constant; as do variations on the size and margins of the clinandrium. Another character of specific rank is the vegetative condition; such as the presence or absence, and the shape of pseudobulbs. Admittedly the vegetative appearance of a plant is varied to a remarkable degree by the environment. But the number of

leaves present, when strongly discontinuous or when of disjunct shapes seems to be due more to the inherent nature of the plant than to environmental factors. The length and thickness of the inflorescence and its floriferousness are at times valuable in distinguishing between species. Floral bracts their size and shape have been considered of specific rank; however it seems that the differences, unless rather large, may be considered to be due to the individual variation and the effect of environment. Thus, unless the variation is discontinuous or the overlapping is very small the size and shape of floral bracts are not considered, by themselves, in separating populations as species.

## TAXONOMIC CATEGORIES

## The Genus:

However indefinable the species may be, the genus seems to be so very much more intangible and abstract. A genus is established on certain characters, what those characters are depends upon the group and grouping of the material. That does not, however, mean that other genera are defined by a distinctiveness of those same characters, although there will be, necessarily one character of major importance separating each group of entities. Other genera may have both conditions, but the various species may be so obviously closely related that to separate them would be to impair grossly the concept of the genus as a group of species. Thus it may readily be seen the characters used to separate genera need not be, in fact, usually cannot be consistent within a family of any great size. Thus any single character of generic importance does not merely separate that genus from the rest, but separates a group of genera from any other group. Any other single character usually is not restricted to one or the other, but occurs in both groupings. So a series of fundamental morphological characters gradually build a framework on which groups of species may be placed. Those groups are genera.

It may seem upon examination of the material included in this report that the interpretation of a genus may be too broad in certain instances; that few or several genera could be formed from one. The interpretations here are not limited to these species, but it is hoped are sufficiently broad to

include all species which have a closer relationship to each other than to any other group of species. The intermediates which frequently are not present in a regional study of a genus, are included in this interpretation, and provide for the inclusiveness of the concept.

There may also be questions concerning the validity of some of the established genera, as the components of several appear too closely related to be distinct genera. This appearance again is possible with the narrow perspective of parts of genera.

Whenever there have been any questions as to the validity of maintaining genera, it has been the author's policy to fall back to the traditional view and, for the present, accept that interpretation.

#### The Species:

The species is a group of individuals more similar to each other than to any other group, which as a category certainly exists, but a description of it is difficult. To further limit it, as is frequently done, is to change it from a dynamic, living concept to a hard and rigid category.

In work with any single genus a fairly definite feeling and concept of the species is necessary for a consistent, workable interpretation of the population. But on a change to another genus, that idea must be altered to fit the new characters and variation of characters present. From these experiences it is possible to obtain a composite consciousness of the species as an entity. But probably no genus would conform to that pattern. Practically, though, it has

an application in serving as a guide in obtaining the sense of the species in a new genus.

Although the present work is composed of many genera, certain basic statements of interpretation may be made. The species here is considered to be a population with distinct morphological characters, usually of floral parts, not possessed in the same combination by any other population in the genus. A grouping based primarily on size is avoided, although it is necessary at times to take relative size in consideration. The length of floral parts may logically be compared to the length of other floral parts. That is considered a size relationship. On the other hand the length of the lateral lobes of the labellum may be compared as shorter than or exceeding the length of the terminal lobe. That is considered a morphological or form relationship.

The spur, as here interpreted and applied, is a portion of the column extended into a foot protruding beyond the edges of the receptacle and fused to it, the labellum, at least at its tip. The sepals may be fused to it and the sides of the labellum may also be fused to it. The sac is here considered to be an extension or protrusion formed by the labellum alone.

A key to the Orchidaceae of a region is necessarily complex and complicated. This is primarily due to the technical parts and means of separating genera. The following key, based on Schlechter's key to the genera, has been changed in many places. Its scope has been increased to include new genera found within the region. Changes in interpretation have caused a revision in many places.

The key was made as simple as practical and still maintaining accuracy and suitability. It may be used primarily with the species of the genera known to occur in Micronesia, and cannot be considered as a strict generic key. The genera will be discussed in the order in which they appear in the key. Only those synonyms under which Micronesian species have been placed will be listed, as a complete synonymy would be too cumbersome and out of place in a work like this.

There are 121 species in the forty-seven genera of orchids in Micronesia. Of these, 19 species in 11 genera are not included in this report, they being of the division Monopodiales of the Monandrae-Acrotonae-Acrantuae-Duplicatae. In the 102 species here enumerated, two new combinations and three new entities are proposed. One of the proposed species is the type of a proposed new genus.

## TAXONOMIC TREATMENT

## Key:

- A. Pollinia granular in character. . . . . B
- B. Pollinia appendaged at their base. . . . . C
- C. Pollinia strongly converging at apex, sepals and  
petals free. . . . . Peristyllis
- CC. Pollinia parallel, sepals and petals fused. . . . .  
. . . . . Disperis
- BB. Pollinia appendaged at their apex . . . . . D
- D. Anther on ventral side of column (adnate or  
incumbent). . . . . E
- E. Tall climbing plants, exceeding 2 meters . . . F
- F. Brownish Saprophytic; column not enclosed by  
lip . . . . . Galeola
- FF. Plant Green; lip enclosing the column . . . . .  
. . . . . Vanilla
- EE. Small terrestrial plants less than 1 meter . . G
- G. Green, not saprophytic, sepals and petals  
free. . . . . H
- H. Sepals and petals filiform . . . . Corybas
- HH. Sepals and petals not filiform. . Nervilia
- GG. Pale saprophyte; sepals and petals fused into  
an urceolate, two lipped tube. . Didymoplexis
- DD. Anther erect or dorsal. . . . . I
- I. Herbs with soft succulent stems. . . J
- J. Saprophytic, perianth fused into a  
two-lipped tube. . . . . Labiolla

JJ. Not saprophytic, perianth not forming a tube. . . . . Y

K. Labellum definitely saccate. . . . .  
. . . . . Vrydagzenia

KK. Labellum very obscurely or not saccate. . . . . L

L. Column with finger like appendages. . . Chierostylis

LL. Column without finger like appendages. . . . . M

M. Pollinia with long stips to gland. . . . . Zeuxine

MM. Pollinia attached directly to the gland. . . . . N

N. Stigmas one . . . . .  
. . . . . Moerenhoutia

NN. Stigmas two. . Hetaeria

II. Erect shrubby herb with stiff stems, plicate, thin but firm leaves; anther completely free from column. . . . .  
. . . . . Corymborchis

AA. Pollinia waxlike in character. . . . . O

O. Sympodial growth. . . . . P

P. Inflorescence terminal or along the upper portions of the pseudobulb. . . . . Q

Q. Vernation of the leaves convolute . . . Coelogyne

QQ. Vernation duplicate . . . . . R

- R. Leaves not articulate to the sheath or stem  
. . . . . S
- S. Lip smooth and erect . . . . . T
- T. Leaves plicate, herbaceous. . . . .  
. . . . . Microstylis
- TT. Leaves fleshy, ensiform, equitant . . .  
. . . . . Oberonia
- SS. Lip geniculate, bent downward . . . Liparis
- RR. Leaves articulated. . . . . U
- U. Pollinia 4, each 2 packed together into a  
tight mass. . . . . V
- V. Flower with a distinct spur . . . . .  
. . . . . Dendrobium
- VV. Flowers without a spur. . . . . W
- W. Plant with pseudobulbs. . . Cestichis
- WW. Plant without pseudobulbs, scandent  
. . . . . Pseuderia
- UU. Pollinia 4-8, not firmly packed together  
. . . . . X
- X. All sepals fused into a tube. . . . .  
. . . . . Mediocalcar
- XX. Sepals at least partly free . . . . . Y
- Y. Column footless. . . . . Z
- Z. Pollinia 8. . . . . 1
1. Sepals free. . . Agrostophyllum
- 1a. Lateral sepals fused. . . . .  
. . . . . Glomera

- ZZ. Pollinia 4. . . . .
- . . . . . Aglossorrhyncha
- YY. Column footed. . . . . 2
2. Many-leaved plant, without pseudobulbs, leaves thin. . . . . Appendicula
- 2a. Few- to several-leaved plant, with pseudobulbs, leaves coriaceous. . . Eria
- PP. Inflorescence basal, appearing at base of stem or along lower portion. . . . . 3
3. Leaves plicate. . . . . 4
4. Flower unspurred . . . . . 5
5. Pollinia 2. . . . . Eulophia
- 5a. Pollinia 8. . . . . Spathoglottis
- 4a. Flowers spurred. . . . . 6
6. Column free from lip. . . . . 7
7. Lip spoon-shaped, concave. . . Geodorum
- 7a. Lip flat expanded. . . . . Phajus
- 6a. Column fused to labellum. . . . Calanthe
- 3a. Leaves leathery, not plicate. . . . . 8
8. Plants with pseudobulbs or 1-3 leaves on a growth . . . . . 9
9. Column fused to the labellum. . Acriopsis
- 9a. Column free from labellum. . Bulbophyllum
- 8a. Plants without pseudobulbs, several leaves on a growth. . . . . Phreatia

00. Monopodial growth; flowers always axillary. . . . . 10
10. Column footed. . . . . 11
11. Column with divaricate subulate projections  
leafless. . . . . Chiloschista
- 11a. Column without projections, leafed . . . . .  
. . . . . Thrixaspernum
- 10a. Column footless. . . . . 12
12. Labellum without distinct sac . . . . . 13
13. Labellum flat, leaves terete, inflorescence  
sessile. . . . . Luisia
- 13a. Labellum geniculate, leaves flat, inflor-  
escence long, branched. . . . . Vandopsis
- 12a. Labellum with distinct sac . . . . . 14
14. Plant nearly stemless and leafless,  
of green flattened clasping roots . .  
. . . . . Taeniophyllum
- 14a. Plant with distinct stems, leafy, and  
with round roots. . . . . 15
15. Inflorescence sessile or sub-  
sessile. . . . . Trichoglottis
- 15a. Inflorescence pedunculate. . . 16
16. Sac with distinct internal  
longitudinal ridge. . . . .  
. . . . . Sarcantua
- 16a. Sac without distinct longi-  
tudinal ridge inside. . . 17

17. Lip strongly saccate,  
lateral lobes dis-  
tinctly ascending. . .  
. . . . . Robiquetia
- 17a. Lip with short out-  
wardly tuberculate sac,  
lateral lobes scarcely  
ascending. . . . . 18
18. Lip free from  
column. . . . .  
. . . Saccolabium
- 18a. Lip fused with the  
column. Dipodium

## PERISTYLIS, Blume

Bijdr. 404, t 30, 1825.

Habenaria, Willdenow, Sp. Pl. 47 ed. 4, 4: 44, 1805.

Petals and sepals fused to labellum hypochil:  
labellum fused to the column. Sepals and  
petals subequal Labellum three-lobed or sub-  
entire: produced at base into a sac. Column  
short, clinandrium a little dilated. Pol-  
linia appendaged at base; spices of locules  
converging. Pollen granular. Terrestrial  
herbs form a cluster of fusiform roots.  
Leaves semimembranaceous, cauline, articu-  
lated to a closely surrounding sheath. Ra-  
ceme several-to many-flowered. Flowers  
shortly pedicellate.

After study of the few species within Micronesia and an  
inspection of some of the species of Habenaria in adjacent  
regions, the genus Peristylis seems to be a natural group.  
It is closely allied to Habenaria, but sufficiently distinct  
to form a separate genus. It may readily be separated from  
Habenaria in the fact that the petals and lateral sepals are  
fused to the lateral edges of the lip, which is also fused to  
the margin of the column.

There are four species in Micronesia, restricted to the  
Caroline Islands. The genus is found in Micronesia, Melan-  
esia, and in the Indo-Malayan region.

- A. Lateral sepals with setiform processes . . . P. setifera
- AA. Lateral sepals unappendaged . . . . . B
- B. Terminal lobe of lip shorter than lateral lobes . . C
- C. Petals rhomboid ovate, plant tall . P. carolinensis
- CC. Petals narrow linear-ovate, plant short . . . .
- . . . . . P. palawensis
- BB. Terminal lobe produced into a long filiform tip . .
- . . . . . P. filiformis

Peristylis setifera, Tuyama

Bot. Mag. Tokyo 54: 276, 1940.

This is the species referred to by Schlechter with insufficient material to describe. No specimens referable to this species have been seen.

Yap.

Peristylis carolinensis, (Schlechter) Tuyama

Bot. Mag. Tokyo 54: 276, 1940

*Habenaria carolinensis*, Schlechter Engl. Bot. Jahrb.  
56: 445, 1921

A tall densely flowered plant from Panape.

The only specimen seen was: Kanehira 814 (NY).

Peristylis palawensis, (Tuyama) Tuyama

Bot. Mag. Tokyo 54: 276, 1940

*Habenaria palawensis*, Tuyama Bot. Mag. Tokyo 53: 53,  
1939

No specimens referable to this species were seen, nor was it observed in the field.

Palau

Peristylis attenuata, Lane sp. nov.

Herba terrestris ad 45 cm. alta; radicibus fusiformibus carnosis, caule erecto tereto, parte inferiore cum basibus foliorum obtecta; foliis 4-5 ellipticis vel lineari-ellipticis acutis, 6-10 cm. longis, 1.5-2 cm. latis, tenuis chartaceis; bracteis triangularibus longe acuminatis, ad apicem in amplitudine imminuto; bracteis florum 3-7 mm longis; floribus approximatis viridibus; sepalo dorsalo ovato obtuso, 3 mm. longo, 1 mm. lato; sepalis lateralibus ovatis falcatis obtusis, 3.5 mm. longis, 1 mm. latis; pedalis late ovatis, 3 mm. longis, 2 mm. latis cum supalis lateralis cum hypochila labelli adnatis. Labello ad columnam adnato 3-lobatis; lobis lateralis parvulis late divaricatis falcatis, acutis marginibus lateralibus petalorum non excedentibus, intus tuberculatis. Lobo terminale triangulare ad apicem longo filiforme ad 7 mm. longo. Labello ad basim in sacco longo 7 mm. producto. Columna parvula, clinandrio minime dilatata.

Terrestrial herb to 45 cm. tall. Roots fleshy fusiform. Stem erect terete in lower parts covered by sheathing bases of leaves. Leaves 4-5, elliptic to linear-elliptic, acute, 6-10 cm. long, 1.5-2 cm. wide, thin chartaceous, Raceme erect, thin several flowered. Bracts long triangular acuminate, diminishing in width toward the tip. Floral bracts

1/3 to 1/2 length of ovary, 3-7 mm. long. Flowers approximate, green. Dorsal sepal ovate obtuse, 3 mm. long, 1.5 mm. wide. Lateral sepals ovate-falcate, obtuse, 3.5 mm. long, 1 mm. wide. Petals widely ovate 3 mm. long, 2 mm. wide, obtuse, fused along basal portion with lateral sepals to hypochil of labellum. Labellum fused to column, 3-lobed, lateral lobes small wide divaricate, falcate, acute, not exceeding lateral edges of petals, tuberculate on upper surface. Terminal lobe triangular, produced into a long attenuata-filiform apex, 7 mm. long. Labellum at base extended into a long cylindrical sac, 7 mm. long. Column short, clinandrium slightly ciliated.

It was only after much consideration that it was thought advisable to describe this species on the basis of this single plant. It is so very distinct however, in its extremely small lateral lobes of the labellum and the very long filiform tip to the terminal lobe, that a description and a name should be given it, as no known species seems to correspond.

Type: Arakabesan, in open shade on wet springy slope, flowering in June, is the only collection, Lane 49-152. After extensive searching of the area at the time of collection and again at later times, it was not possible to locate more material in flowering condition. A few plants presumed to be seedlings of this species were seen in the close vicinity of the original collection, but were not collected.

## DISPERIS, Swartz

Vet. Acad. Handl. Stockh. 21: 218, 1800

Dorsal sepal and petals fused to form a helmet.  
Lateral sepals fused along the proximal margins.  
labellum geniculate, fused to column, anther  
erect, finger-like lateral projections beside  
anther; rostellum forward projecting. Terres-  
trial, succulent small herb with a tuber and  
small membranaceous leaves.

Only one species known: from Palau

Disperis palawensis. (Tuyama) Tuyama

Bot. Mag. Tokyo 54: 267, 1940.

*Stigmatodactylis palawensis*, Tuyama Bot. Mag. Tokyo  
53: 57, 1939.

This is a very interesting small terrestrial growing in  
the medium forest. It is not easily seen but usually occurs  
in a scattered loose colony of several individuals. It seems  
to thrive best in deep humus.

Palau

Specimens seen: Lane 49-89 (Cornell); Lane 49-435 (BISH).

## GALEOLA, Loureiro

Fl. Cochinch. 2: 520, 1790

Sepals and petals free, subequal, flower only  
partially opening. Labellum 3 lobed or entire,  
not surrounding column. Anther incumbent, pol-  
linia apically appendaged, granular. Tall

1/3 to 1/2 length of ovary, 3-7 mm. long. Flowers approximate, green. Dorsal sepal ovate obtuse, 3 mm. long, 1.5 mm. wide. Lateral sepals ovate-falcate, obtuse, 3.5 mm. long, 1 mm. wide. Petals widely ovate 3 mm. long, 2 mm. wide, obtuse, fused along basal portion with lateral sepals to hypochil of labellum. Labellum fused to column, 3-lobed, lateral lobes small wide divaricate, falcate, acute, not exceeding lateral edges of petals, tuberculate on upper surface. Terminal lobe triangular, produced into a long attenuata-filiform apex, 7 mm. long. Labellum at base extended into a long cylindrical sac, 7 mm. long. Column short, clinandrium slightly ciliated.

It was only after much consideration that it was thought advisable to describe this species on the basis of this single plant. It is so very distinct however, in its extremely small lateral lobes of the labellum and the very long filiform tip to the terminal lobe, that a description and a name should be given it, as no known species seems to correspond.

Type: Arakabesan, in open shade on wet springy slope, flowering in June, is the only collection, Lane 49-152. After extensive searching of the area at the time of collection and again at later times, it was not possible to locate more material in flowering condition. A few plants presumed to be seedlings of this species were seen in the close vicinity of the original collection, but were not collected.

## DISPERIS, Swartz

Vet. Acad. Handl. Stockh. 21: 218, 1800

Dorsal sepal and petals fused to form a helmet.  
Lateral sepals fused along the proximal margins.  
labellum geniculate, fused to column, anther  
erect, finger-like lateral projections beside  
anther; rostellum forward projecting. Terres-  
trial, succulent small herb with a tuber and  
small membranaceous leaves.

Only one species known; from Palau

Disperis palawensis, (Tuyama) Tuyama

Bot. Mag. Tokyo 54: 267, 1940.

*Stigmatodactylis palawensis*, Tuyama Bot. Mag. Tokyo  
53: 57, 1939.

This is a very interesting small terrestrial growing in  
the medium forest. It is not easily seen but usually occurs  
in a scattered loose colony of several individuals. It seems  
to thrive best in deep humus.

Palau

Specimens seen: Lane 49-89 (Cornell); Lane 49-435 (BISH).

## GALEOLA, Loureiro

Fl. Cochinch. 2: 520, 1790

Sepals and petals free, subequal, flower only  
partially opening. Labellum 3 lobed or entire,  
not surrounding column. Anther incumbent, pol-  
linia apically appendaged, granular. Tall

climbing saprophytic plant with fleshy, branched roots. Inflorescence a few-branched raceme. Seeds ovoid, surrounded by a large cordate wing.

A plant frequently confused with the genus Vanilla, it is known only from Ponape. The various genera of the subsection Vanillineae are not too distinct from each other, but the saprophytic mode of life and the unsurrounded column seem to separate this group rather satisfactorily from the others.

Galeola ponapensis, (Kanehira et Yamamoto) Tuyama

Jour. Jap. Bot. 16: 631, 1940.

*Vanilla ponapensis*, Kanehira et Yamamoto Trans. Nat. Hist. Soc. Formosa 25: 21, fig. 2, 1933.

Ponape

Specimens examined: Kanehira 773 (NY)

#### VANILLA, Willd.

Gardener's Dictionary 8 ed. n. 1 1768.

Sepals and petals free, subequal, flower only half opening. Labellum large, three lobed or entire completely surrounding the column but free from it. A tall scandent plant with or without leaves. Fruit an indehiscent capsule, seeds ovoid, wingless.

Although no flowers or fruit were found on the specimens examined, it is known that the Japanese introduced the vanilla into the Palaus and also into Ponape, very close to the area of collection. This vanilla is the one used in

cultivation for the preparation of vanilla extract. Only one is used commercially. That is the one that has gone by the name of V. planifolia, Andrews, or V. fragrans (Salisb.) Ames.

Recently in checking, for class work, the nomenclature of Vanilla, some interesting points were discovered. Linnaeus described a plant as Epidendrum Vanilla. In 1768, Miller took up the name Vanilla and described the plant from Mexico, V. mexicana, which was used as a flavoring. In 1799, Swartz described V. aromatica, the plant was aromatic. All three descriptions cited the plate published by Plumier in Genera, (25 Mss. 3 t 100), but failed to note that actually it was illustrating some foreign elements with the plant concerned. However, Miller's description did not contain the foreign elements. Swartz's description was a direct transfer of Linnaeus's E. Vanilla.

In 1807 Salisbury described, under the genus Myroboma, (not Myobroma, a genus in the Leguminosae, as cited by Rolfe), a plant, M. fragrans, and figured the plant. Then in 1808 Andrews figured and described Vanilla planifolia. V. planifolia was in use as the name for the plant until 1924, when Ames showed that Salisbury's name had priority, Myroboma being a direct synonym of Vanilla; both Andrews and Salisbury figured the same specimen.

Rolfe, in his revision of the genus Vanilla, did much to clarify the situation in regards to the correct interpretation of E. Vanilla of Linnaeus. It was a mixture of V. planifolia and V. inodora, Schiede (1829). Also V. aromatica Swartz contains those same elements. If the plate cited by

Miller is included in the interpretation, then it too contains those elements.

Miller was the first to give a name to a population which is usable in the genus. If the plate is excluded, as it seems it should be in order to clarify the situation, then V. mexicana, the Vanilla used as a flavoring, is the correct name.

Since Epidendrum Vanilla contained two entities, the identity of the second one must then be established. Following Rolfe, it has been called V. inodora. Since, however, Swartz gave a description and a transfer of the Linnaean species to Vanilla, unless that name is superfluous, or by other reason invalid, it should be applicable. By restricting the interpretation of the Miller species to the description, that permits the Swartz name to be valid, it being one of the earlier names, and not a homonym or otherwise invalid. Thus the second part of Epidendrum Vanilla becomes V. aromatica, even though it may not be fragrant, and V. inodora Schiede is a synonym. The synonymy is as follows:

Vanilla aromatica, Swartz Nov. Act. Soc. Sc. Upsal. 6: 66, 1799.

Epidendrum Vanilla, Linnaeus Sp. Pl. 952, 1753.

Vanilla mexicana, Miller Gard. Dict. ed. 8, 1768; plate citation only.

V. inodora, Schiede, Linnaea 4: 574, 1829.

Not Micronesian

Vanilla mexicana, Miller Gard. Dict. 8 ed., n. 1, 1768; excl. plate citation.

*Epidendrum Vanilla*, Linnaeus Sp. Pl. 952, 1753.

*Vanilla aromatica*, Swartz, Nov. Act. Soc. Sc. Upsal.  
6: 66, 1799.

*Vanilla planifolia*, Andrews, Bot. Repos. 8: t 538, 1808.

*Myroboma fragrans*, Salisb. Parad. Lond. t 82, 1807.

*Vanilla fragrans*, (Salisb.) Ames, Sched. Orchid. 7: 36,  
1924.

Ponape, Palau. (cultivated or escape).

Specimens from Micronesia seen: Lane 49-187 Palau (BISH).

#### CORYBAS, Salisbury

Parad. Lond. t 83, 1805.

*Corysanthes* R. Brown Prod. 328, 1810.

Dorsal sepal much shorter and distinct from the lateral sepals which are filiform. Petals also filiform. Lip geniculate, various shapes, more or less fused to the column. Inflorescence appearing with the leaf, one-to few-flowered.

Very small terrestrial plants with one cordate leaf arising from a succulent tuber and a few fleshy roots.

*Corybas ponapensis*, (Hosokawa et Fukuyama) Hosokawa et  
Fukuyama

Jour. Jap. Bot. 13: 199, 1937.

*Corysanthes ponapensis*, Hosokawa et Fukuyama Trans.  
Nat. Hist. Soc. Formosa 25: 17, 1935.

Ponape

Specimens seen: Hosokawa 5699 (isotype) (BISH).

## NERVILIA, Commerson ex Gaudichaud

Bot. Frey. Voy. 421, 1826.

Sepals and petals free, lip simple or three lobed, free from column. Flowers not widely opening. Column long terete, pollinia two, granular, each arranged into a two-rowed structure. Terrestrial leaves one or infrequently two, reniform to ovate deltoid, inflorescence appearing separate from the leaf, one-to many-flowered. Both leaf and inflorescence arising from an orbicular to oblong fusiform tuber.

- A. Leaves pilose above . . . . . N. ignobilis  
 AA. Leaves glabrous above, or at most sparsely pilose at  
 the junction with the petiole . . . . . B  
 B. Leaves strongly cordate . . . . . C  
 C. Raceme 1-2 flowered . . . . . N. palawensis  
 CC. Raceme many flowered . . . . . N. Aragoana  
 BB. Leaves not cordate, or only slightly so . . . N. ovata

Nervilia ignobilis, Tuyama

Bot. Mag. Tokyo 54: 295-296, 1940.

*Nervilia Umenoi*, Fukuyama Trans. Nat. Hist. Soc.

Formosa 30: 439, 1940; and 31: 290, 1941.

*Nervilia trichophylla*, Fukuyama Trans. Nat. Hist. Soc.

Formosa 30: 428-429, 1940.

After close comparison of the description of N. trichophylla Fukuyama and N. ignobilis, Tuyama; and field work in the Palau Islands, it is the opinion of the author that the

two plants are essentially the same. The differences in size of floral parts most probably are due to an increase in size of perianth after anthesis. This phenomenon does occur in this genus as has been commented on by Tuyama in reducing N. oxyglossa, Fukuyama to synonymy of N. palawensis, Schlechter. In selecting the proper name, N. ignobilis has priority, it was published 20 August, 1940; N. trichophylla was published later.

Yap, Palau

Specimens examined: Lane 49-145, Palau (BISH).

Nervilia palawensis, Schlechter

Engl. Bot. Jahrb. 56: 447, 1921.

Nervilia oxyglossa, Fukuyama Trans. Nat. Hist. Soc. Formosa 27: 279-280, 1937. Tuyama Bot. Mag. Tokyo 54: 274, 1940.

Palau

Specimens examined: Lane 49-88; (BISH): Lane 49-250 (BISH).

Nervilia Aragoana, Gaudichaud

Freyc. Bot. Voy. 422 t 35, 1826.

Only sterile specimens have been seen. As with the other species of this group, the flowers frequently appear at a different time than the leaves.

Guam, Japan, Formosa, Philippines, Timor, New Guinea, and Samoa.

Specimens examined: Rodin 666, Guam (UC).

Nervilia (?) ovata, Gaudichaud

Freye. Bot. Voy. 422, 1826.

This plant was collected on Rota by Gaudichaud, and has not been seen in the field, or collected and positively identified as such, since then. Recent collections from the Marianas (Guam) contain two different kinds. One is easily referable to N. Aragoana, the other kind has leaves that are pilose on the under surface and near the petiole and are scarcely cordate neither are the margins undulate, as in N. Aragoana. However, the leaves are not ovate-oblong, but ovate-suborbicular. Even so, it is possible that they are referable to this species. Further collections, and especially flowering material would greatly clarify the situation. From the generic description it would imply that the plant in question would have a several to many-flowered raceme; this would make it distinct from N. ignobilis should the piloseness be found to be more generally distributed.

Specimens examined and possibly referable to this species are: Rodin 636 (Guam) and Steere 34, which is noted as collected at the same place and time as the Rodin specimen.

#### DIDYMOPLEXIS, Griffith

Calc. Jour. Nat. Hist. 4: 383, t 17, 1844.

Sepals and petals, excluding labellum, are fused into a bilabiate, campanulate tube, dorsal sepal and petals forming upper labium with two lateral lobes, lateral sepals forming the lower labium

which is bilobed. Lip free, expanded, Column produced into more or less of a foot. Pollinia four, granular and packed together. Saprophytic, small herbs; pedicel much lengthening after fertilization.

A. Labellum less than 3 mm. wide, densely papillate . . .  
 . . . . . D. fimbriata

AA. Labellum more than 4 mm. wide, openly papillate . . .  
 . . . . . D. trukensis

Didymoplexis fimbriata, Schlechter

Engl. Bot. Jahrb. 56: 449, 1921.

Bot. Mag. Tokyo, 54: 267, 1940 Tuyama description amended.

A wide-spread much dispersed plant found in dense forest in deep humus. Flowering plants especially difficult to see because of their small size and dull coloration. In original description the labellum was described as fimbriate; in none of the collections made by the writer was that at all pronounced. Since the description agrees in the other points, the collections are considered to belong to this group.

Specimens examined: Lane 49-73, (BISH); Lane 49-128, (BISH).

Didymoplexis trukensis, Tuyama

Jour. of Jap. Bot. 17: 515-516, 1941.

This species is known to the author only by the type description. It seems to be recognizable from the preceding and is thus treated.

## LABIOLLA, gen. nov.

Anthera erecta, pollinifis granulatis, in apice stipite affixa; basis columnae in pedem arcuatam producta, sepalis pede adnatis, labello et basi pedis columnae adnato; columna cum alis lateralibus; sepalis petalisque labelloque membranaceis omneibus tubo bilabro cylindro adnatis; sepalo dorsalo cum petal; superiore labro, sepalis lateralis cum labello inferiore adnatis labrum formantibus; apicibus sepalis petalisque liberatis; apice labelli geniculato reflexo, incrasso; periantho in columna quo cum perianthum in fructum persistente colapso exaritoque. Nudato pallido saprophytico.

This genus is superficially very similar to Didymoplexis, Griffith, but differs in having the labellum fused with the sepals and petals to form the tube; and the tip of the labellum geniculate and thickened. It also has an erect anther, this places it close to Gastrodia, but the labellum is free in that genus, and the petals are much diminished in size. The name is derived from the Latin labium, Lip; and olla, urn or vessel. It alludes both to the prominent Tip of the labellum which forms a Lip to the fused perianth; and to the fusion of the Lip with the perianth to form the urn-shaped tube.

Labiolla turgida, sp. nov.

Herba erecta pusilla, saprophytica, pallida; ca. 8-10 cm. alta, radicibus nondum observatis  
 Caule gracile succulento, tereto flexuoso interdum ramoso, bracteis caulorum paucibus lanceolatis, 1.5 mm. longis non obtectis, racema ad anthesi erecta condensata, 4-5-florifera; bracteis florum ovatis vel suborbicularibus obtusis glabris vel minute verrucosis 2 mm. longis, 1.5-2 mm. latis minoribus quam pedicellis 5-7 mm. longis, ovario ca. 5-7 mm. longo, flori roseofulvo; sepalis oblongis ligulatis, apice acuto cum petalis ligulatis acutis labelloque adnatis et tubo campanulato-cylindricam formantibus; sepalo dorsalo petalisque labro superiore, labello sepalisque lateralibus labrum inferiorem formantibus, sinu inter labros tertia parte tubi inciso; sepalis petalisque membranaceis, sepalo dorsalo 3-nervatis, petalis 1-nervatis, sepalis lateralibus 3-nervatis pede columnae emergentibus; sepalis 1 cm. longis, 2 mm. latis, petalis 8 mm. longis, 1 mm. latis; labello ligulato in apice dilatato 1 mm. lato in pede columnae, 2.5 mm. lato in basi parte dilatato et geniculato; hypochilo 3-nervatis cum cristam latam, limbo quadrato 4.5 mm. longo, 1 mm. crasso, margine involuta; margine nervisque incrassatis in

cristis partitis et lamina coriacea formato,  
 margine undulata; columna 5 mm. longa, dorsali-  
 ventrali-compressa, cum alis longis decurren-  
 tibus hyalinis apice distale dilatata, anthera  
 ovata, 5 pollinia ovoida vel subglobosa granu-  
 latis laxè conjunctis. Pede columnae arcuata,  
 ca. 2-3.5 mm. longa, capsula ovale in sex segu-  
 mentis dehiscenta, pedicello ante anthesi 5-7  
 mm. longo, post fertilisationem 3-12 cm. longo  
 crescano.

Herb, weak, erect, saprophytic, light tan, 8-10 cm. tall.  
 Roots not known. Stem slender, succulent, round, flexuose  
 many branch, cauline bracts, few, not sheathing, 1.5 mm. long.  
 Raceme condensed at anthesis, 4-6-flowered, erect, bracteate.  
 Bracts ovate or suborbicular obtuse, glabrous or minutely ver-  
 riculose, 2 mm. long, 1.5-2 mm. wide, much shorter than pedi-  
 cel which is 5-7 mm. long. Ovary 5-7 mm. long, flowers rose-  
 tan. Sepals oblong ligulate, apex acute, fused to the ligulate  
 acute petals with the labellum into a cylindrical campanulate  
 tube. Dorsal sepal and petals, free at the tip, forming upper  
 labium, labellum and lateral sepals forming lower labium,  
 sinuses between labia incised to 1/2 length of tube. Sepals  
 and petals membranaceous, dorsal sepal 3-nerved, petals 1-  
 nerved, lateral sepals 3-nerved, arising from along column  
 foot. Dorsal sepal 1 cm. long, 2 mm. wide, petals 1 mm.  
 wide, 8 mm. long, lateral sepals 2 mm. wide, 1 cm. long.

Labellum dilating, ligulate, 1 mm. at column foot, 2.5 mm. wide at base of expanded portion, geniculate immediately after becoming free from perianth tube, hypochil bearing 3 primary veins with crests, limb quadrate, 3.5 mm. long, 1 mm. thick, inturned edges and veins with crests divided and thickened to form a leathery tip, margins undulate. Column 5 mm. long, dorso-ventrally compressed, with long decurrent hyaline lateral wings, dilating distally. Anther ovate, covering 4 ovoid or subglobose pollinia composed of closely associated granules. Rostellum squarish, bilobed at tip, projecting forward, column foot bowed, 2-3.5 mm. long, capsule oval, splitting into six segments, releasing many seed, before anthesis the pedicel is 5-7 mm. long, after fertilization elongation to 3-12 cm. long, segments contracting and bowing on drying. Perianth wilting and collapsing on column, all persistent on mature fruit.

Type: Ngardok Lake in Melekiok on Babeldaob, Palau, where it was growing close to the lake in deep humus in dense shade. (Lane 49-72). Only three plants were found. An interesting plant known only from this one collection.

Although the flower collapsed, thus making it difficult to work with, it was possible by dissection to check on the notes made when the plant was discovered.

#### VRYDAGZENIA, Blume

Orch. Archip. Ind. 71: t 17, 19, 20, 1858.

Sepals and petals free, petals closely appressed to dorsal sepal, lip entire, produced into a sac.

Column very short, anther large, cordate, persistent, 2-celled, pollinia granular, granules clavate, fasciculate, with very short stipe to gland. Rostellum projecting forward, stigmas 2. Succulent terrestrial with several cauline membranaceous leaves, flowers in bracteate dense or subdense racemes.

Vrydagsonia micronesiaca, Schlechter

Engl. Bot. Jahrb. 56: 445, 1921.

A widespread diminutive plant, not especially plentiful in any one location.

Palau, Ponape, Kusaie.

Specimens examined: Ledermann 14443b (BISH); Palau; Ledermann 14574a Palau (BISH); Ledermann 13777 Ponape, (BISH); Ledermann 18840b, Ponape (BISH); Fosberg 26424, Ponape (BISH); Lane 49-439 (Cornell).

CHEIROSTYLIS, Blume

Bijdr. 413 t 16, 1825.

Sepals fused to each other, petals appressed-fused to inner surface of dorsal sepal. Lip 3 lobed, middle lobe bifurcate fused to column. Column with finger-like projections on either side of stigma, rostellum long. Terrestrial herb with basal rosette of leaves, succulent rhizome, leaves with reticulate venation.

Cheirostylis Raymundi, Schlechter

Engl. Bot. Jahrb. 56: 452, 1921.

Palau, Yap

Specimens seen: Tuyama Aug. 9, 1939, Palau (BISH).

## ZEUXINE, Lindley

Orchid. Scel. 9 1826.

Sepals and petals free, petals closely appressed to dorsal sepal, lip entire or three parted, not saccate, but with margins turned up. Anther dorsal with a long caudicle between the pollinia and the gland on the rostellum, with an acuminate tip. Succulent terrestrial with membranaceous leaves and sheathing bases.

This and the following two genera are but very imperfectly understood at the present time. Included in this genus by other authors are:

Zeuxine Fritzi, Schlechter

Engl. Bot. Jahrb. 56: 450, 1921.

Ziuxine palawensis, Tuyama

Bot. Mag. Tokyo 53: 58, Fig. 5, 1939.

Zeuxine palawensis var. variegata Tuyama

Bot. Mag. Tokyo 54: 280, 1940.

## MOERENHOUTIA, Blume

Orch. Archip. Ind. 99 t 28,42, 1858.

A terrestrial group not understood with the lack of collections and the amount of work accomplished. This genus includes the following species recorded from Micronesia:

Moerenhoutia Hosokawae, (Fukuyama) Tuyama

Bot. Mag. Tokyo 54: 273-274, 1940.

Moerenhoutia leucantha var. Hosokawae, Fukuyama

Trans. Nat. Hist. Soc. Formosa 29: 97, 1939.

Moerenhoutia laxa, Schlechter

Engl. Bot. Jahrb. 56: 451, 1921.

Moerenhoutia leucantha, Schlechter

Engl. Bot. Jahrb. 56: 450, 1921.

Moerenhoutia leucantha var. glabrata, Schlechter

Engl. Bot. Jahrb. 56: 451, 1921.

Moerenhoutia leucantha var. minor, Tuyama

Bot. Mag. Tokyo 54: 274, 1940.

## HETAERIA, Blume

Bijdr. 409, t 14, 1825.

This genus and the preceding genus are so closely related that at present they are indistinguishable to the author. Much more work will be necessary before the position of the preceding several genera is clearly established. This genus is recorded as containing the following species from Micronesia.

*Corymbis Ledermannii*, Schlechter Eng. Bot. Jahrb.  
56: 456, 1921.

Specimens studied: Kanehira 490 (NY); Lane 49-377 (BISH);  
Takamatsu 1131 (BISH); Tuyama Aug. 30, 1939 (BISH).

*Corymborchis trukensis*, (Tuyama) Tuyama

Trans. Nat. Hist. Soc. Formosa 31: 289, 1941.

*Corymbis trukensis*, Tuyama Bot. Mag. Tokyo 54: 266, 1940.

This species is known to the author only by the type description. However, it seems to be recognizably distinct.

#### COELOGYNE, Lindley

Collect. sub t 33, 1825.

Sepals and petals free, sepals much narrower than petals. Labellum three-lobed, lateral lobes erect, lip saccate at base, with three long crests. Column terete, apically dilating, subfalcate. Leaves convolute from top of pseudobulbs. Inflorescence terminal.

- A. Terminal lobe of lip suborbicular . . . . *C. guamensis*  
AA. Terminal lobe of lip obovate . . . . *C. guamensis* var. *palawensis*

*Coelogyne guamensis*, Ames

Philip. Jour. Sci. 9 Bot. :11, 1914.

This species includes the *C. sp.* of Schlechter. It is a somewhat variable species so far as the vegetative condition is concerned. The flowers are large cream colored with a bright orange-brown mark in the throat.

## Guam, Rota

Specimens examined: Fosberg 25151, Rota (BISH); Lane 49-37, Guam (BISH); Necker RS 2, Rota (UC).

Coelogyne guamensis, var. palawensis, (Tuyama) Tuyama

Jour. Jap. Bot. 17 19: 505, 1941.

Coelogyne palawensis, Tuyama Jour. Jap. Bot. 17: 506, 1941.

This variety was observed only on the coral-limestone areas; though localities of other collections indicate that it is not restricted to those portions.

## Palau

Specimens examined: Kanehira 110 (NY); Kanehira 1940 (NY); Lane 49-59 (BISH).

## MICROSTYLIS, Nuttall

Gen. Am. 2: 196, 1818.

Sepals and petals widespreading, lip various, not saccate nor geniculate. Column usually short, pollinia waxlike, leaves plicate, herbaceous, inarticulate, Inflorescence terminal many flowered, growth sympodial.

- A. Labellum simple or 2-3 lobed . . . . . B  
 B. Labellum strongly concave . . . . . M. Volkensii  
 BB. Labellum nearly flat . . . . . C  
 C. Labellum 3-parted at apex, column fairly long,  
 more than 1 mm. long . . . . . M. palawensis

- CC. Labellum 2-lobed, column very short, less than  
.5 mm. long . . . . . M. calcarca
- AA. Labellum cut into several segments . . . . . D
- D. Pedicel short, hardly longer than flower width . . E
- E. Ultimate segments oblong . . . . . M. Kerstingianum
- EE. Ultimate segments of labellum linear-filiform . .  
. . . . . M. trukensis
- DD. Pedicel much longer than flower diameter . M. setipes

Microstylis Volkensii, Schlechter

Engl. Bot. Jahrb. 56: 458, 1921.

Microstylis Wallichii, Volkens Engl. Bot. Jahrb.  
31: 461, 1901; (non Lindley).

Collected in a colony of M. Volkensii and M. Kerstingianum was a single plant in which the characters of the two species were united. The description, with the probable derivation of the character indicated is:

Terrestrial herb, with erect spreading elliptic or elliptic-lanceolate leaves. Spike dense but fewer flowered, as in M. Volkensii. Bracts lanceolate 5 mm. by 1 mm., longer than 4 mm. pedicel as in M. Volkensii. Sepals erect elliptic to elliptic-lanceolate, as in M. Volkensii, but 1 mm. longer. Petals linear, straight, diverging and conspicuous as in M. Kerstingianum, not reflexed. Lip trifid; the two lateral lobes acute and nearly as long as the several times parted central lobe; general outline as in M. Volkensee; but with the lobes more acute and central lobe parted as in M. Kerstingianum. At base of Lip somewhat saccate as M. Volkensii but

broader and with bright red crests as in M. Kerstingianum. Flower color a green-yellowish red; M. Kerstingianum is dark red to greenish-red. M. Volkensii is greenish-yellow to yellow.

Since it was found in a mixed colony and was the only specimen in flower, it seems probable that it is of hybrid origin. In the opinion of the author, nothing is to be gained by the scientific naming of hybrids intentionally. However, the occurrence of suspected hybrids should be recorded, not only by specimens, but also by the literature. Hence, this note concerning one, is placed here following one of the presumed parents. The plant is deposited in the Bernice P. Bishop Museum (Lane 49-126).

Microstylis palawensis, Schlechter

Engl. Bot. Jahrb. 56: 459, 1921.

Specimens seen: Lane 49-279 (BISH).

Microstylis calcarca, Schlechter

Engl. Bot. Jahrb. 56: 460, 1921.

Palau

Specimens seen: Lane 49: 443 (BISH); Lane 49-159 (BISH)

Microstylis Kerstingianum, Schlechter

Engl. Bot. Jahrb. 56: 460, 1921.

Palau

Specimens seen: Lane 49-72 (BISH); Lane 49-280 (BISH).

Microstylis trukensis, Fukuyama

Trans. Nta. Hist. Soc. Formosa 28: 4-5, 1938.

Truk

Specimens seen: Fosberg 24461 (BISH); Kanehira 1290 (NY).

Microstylis setipes, Schlechter

Engl. Bot Jahrb. 56: 461, 1921.

Palau

Specimens seen: Lane 49-74 (BISH); Lane 49-437 (BISH).

## OBERONIA, Lindley

Gen. et Sp. Orchid. 15 1830

Flowers minute, on a terminal inflorescence.

Leaves fleshy, ensiform, inarticulate, equitant.

A very striking detail of this genus has been omitted from all of the references that have been seen. The inflorescence is determinate. The uppermost flowers of the many flowered peduncle open first. That fact has not been found to be mentioned, even though in all of the plates and photographs, as well as the specimens, it is plainly evident. In so far as the author has been able to determine, that is true for the entire genus, however, only a small number of species has been examined.

Sufficient study has not been made on the entities from Micronesia. There seem to be more than the four species at present recorded.

- A. Plant large, more than 20 cm. tall. . . . . O. Hosokawae  
 AA. Plant smaller, less than 20 cm. tall. . . . . B  
 B. Inflorescence pedunculate. . . . . O. rotunda  
 BB. Inflorescence not distinctly pedunculate . . . . . C  
 C. Labellum apex lacerate. . . . . O. palawensis  
 CC. Labellum apex not lacerate. . . . . O. ponapensis

Oberonia Hosokawae, Fukuyama

Trans. Nat. Hist. Soc. Formosa 31: 290, 1941.

Ponape

Oberonia rotunda, Hosokawa

Trans. Nat. Hist. Soc. Formosa 32: 101-102, 1942.

Palau, Yap

Oberonia palawensis, Schlechter

Engl. Bot. Jahrb. 56: 462, 1921.

Palau

Oberonia ponapensis, Tuyama

Bot. Mag. Tokyo 54: 275, pl. II 1, 1940.

Ponape

## LIPARIS, Richard

Mem. Mus. Paris 4: 43 1818

This genus has had only a slight amount of attention by the author. The following species are reported from Micronesia.

Liparis guamensis, Ames

Philip. Jour. Sci. 9 (Bot.): 11, 1914.

Guam, Palau

Liparis odorata, Lindley

Gen. et Sp. orch. 26, 1830.

Ponape, Japan to India and Malaysia

Liparis palawensis, Tuyama

Bot. Mag. Tokyo 54: 271-272, 1940.

Palau

## DENDROBIUM, Swartz

Nov. Act. Soc. Sc. Upsal. 6: 82 1799  
 Desmotrichium, Blume Bijdr. 329 t 35 1825

Dendrobium is a nomen conservandum over Ceraia, Loureiro.

Sepals and petals free, sepals fused to column foot to form a spur. Labellum free from sides of foot. Pollinia four, closely appressed into groups of two. Epiphytic herbs, stems 1-many-jointed, with or without pseudobulbs.

- A. Plants with pseudobulbs or thickened stems. . . . . B  
 B. Plants diminutive, less than 5 cm. tall, leaves 2 on  
 on a pseudobulb. . . . . D. violaceo-mineatum  
 BB. Plants at least 10 cm. tall when mature. . . . . C  
 C. Stems or pseudobulbs nearly uniform in thickness  
 throughout. . . . . D  
 D. Racemes axillary, short. . . . . E  
 E. Leaves oblong-ligulate, obtuse. . . . .  
 . . . . . D. Kraemeri  
 EE. Leaves lanceolate, acute. . . . .  
 . . . . . D. Kraemeri var. pseudo-Kraemeri  
 DD. Racemes subterminal, long. . . . . D. Okabeianum  
 CC. Pseudobulbs not uniform in thickness. . . . . F  
 F. Pseudobulbs ovoid, contracted into an attenuate  
 tip. . . . . G  
 G. Pseudobulbs all alike. . . . . D. flavicolle

- GG. Pseudobulbs of two kinds. . . D. elongaticolle
- FF. Pseudobulbs not contracted at tip. . . . . H
- H. Pseudobulbs 2-several-leaved. . . D. palawense
- HH. Pseudobulbs 1-2-leaved. . . . . I
- I. Stem not appearing branched or flexuose. . . . .
- . . . . . D. brachyanthum
- II. Stem appearing branched and flexuose . . J
- J. Pseudobulbs ovoid-compressed, margin of terminal lobe crenate, not dissected. . . . .
- . . . . . D. Kerstingianum
- K. Mesochil (isthmus between lateral lobes and terminal lobe) twice as long as terminal lobe. . . . .
- . . . . . D. Amesianum
- KK. Mesochil little longer than terminal lobe. . . . . D. scopa
- AA. Plants with uniform sized, thin stems. . . . . L
- L. Leaves terete. . . . . D. philippinense
- LL. Leaves flattened. . . . . M
- M. Sepals and petals long filiform attenuate. . . . .
- . . . . . D. implicatum
- MM. Sepals and petals not filiform attenuate, but may be linear. . . . . N
- N. Middle lobe of labellum not exceeding lateral lobes, leaves oblong. . . . . D. ponapense
- NN. Middle lobe exceeds lateral lobes, leaves lanceolate. . . . . O

- O. Middle lobe suborbicular, short obtuse apex  
 . . . . . D. carolinense
- OO. Middle lobe triangular-lanceolate, acute  
 apex. . . . . D. guamense

Dendrobium violaceo-minutum, Schlechter

Engl. Bot. Jahrb. 56: 470, 1921.

Dendrobium nanarauticola, Fukuyama Bot. Mag. Tokyo  
 51: 900 1937

A low small creeping plant with relatively large pretty flowers. After examination of several collections originally determined as D. nanarauticola, and comparison with D. violaceo-minutum, both specimens and description they are considered to be conspecific. The major difference separating the two was the proximity of the pseudobulbs. This distance varies, even on any single collection; the pseudobulbs being proximal or even crowded in portions, and distant in other parts. This is probably a reflection of the environment during growth of that particular portion of the plant.

Ponape

Specimens examined: Fosberg 26443 (BISH); Takezatsu  
 689 (BISH); Townes 2 (BISH).

Dendrobium Kraemeri, Schlechter

Engl. Bot. Jahrb. 52: 10-11, 1914.

Palau

Specimens examined: Kanehira 185 (NY); Kanehira 230 (NY);  
 Kanehira 325 (NY); Kanehira 377 (NY); Lane 49-201 (BISH).

Dendrobium Kraemerl var. pseudo-Kraemerl, (Fukuyama) Lane  
comb. nov.

Dendrobium pseudo-Kraemerl, Fukuyama Bot. Mag. Tokyo  
51: 902, fig. 3, 1937.

This plant differs from D. Kraemerl in having linear-lanceolate leaves and perianth parts less acute. The variation observed in D. Kraemerl in leaf shape and acuteness of perianth parts, indicate that this group should be considered of no more than varietal significance. Therefore it is reduced to that status.

Kusaie, Ponape

Specimens examined: Kanehira 1384 (NY); Kanehira 1438 (NY);  
Kanehira 1352 (NY).

Dendrobium Okabeianum, Tuyama

Jour. Jap. Bot. 17: 513, fig. 12, 13a, 1941.

Though known to the author only by the type description and figures, this is certainly an addition to the flora of Micronesia.

Truk

Dendrobium flavicolle, Schlechter

Engl. Bot. Jahrb. 56: 466, 1921.

This species and the following are very closely allied. They might be considered a species and variety. However, the dimorphous pseudobulbs and several small details of the labellum seem to distinguish the latter clearly.

Ponape.

Specimens examined: Ledermann 13406 (BISH); Ledermann 13448a (BISH); Takamatsu 995 (BISH).

Dendrobium elongaticolle, Schlechter

Engl. Bot. Jahrb. 56: 465, 1921.

Palau, Yap

Specimens examined: Ledermann 14053 et 14156 (BISH) isotypes; Kamiya 115 Yap (BISH); Lane 49-287 (BISH); Takamatsu 1304 (BISH); Takamatsu 1354 (BISH); Takamatsu 1197 (BISH); Takamatsu 1240 (BISH).

Dendrobium palawense, Schlechter

Engl. Bot. Jahrb. 52: 10, 1914.

A very handsome plant with large pretty flowers. It is known only from the coral-limestone islands or parts of islands. The flower is creamy white with dark madder-purple splotches, the lip is bright green with madder-purple lines and splotches.

Palau

Specimens examined: Kanehira 1989 (NY); Lane 49-62 (BISH); Takamatsu 1129 (BISH).

Dendrobium brachyanthum, Schlechter

Engl. Bot. Jahrb. 56: 469, 1921.

The flowers are very waxy, but open only partly, creamy white with a pale purple lip.

Palau

Specimens examined: Kanehira 108 (NY); Lane 49-385 (BISH); Lane 49-442 (BISH); Ledermann 14550 (BISH); Takamatsu 1567 (BISH).

Dendrobium Kerstingianum, Schlechter

Engl. Bot. Jahrb. 56: 467, 1921.

Palau

Specimens examined: Kanehira 2314 (NY); Kanehira 1945 (NY); Kanehira 373 (BISH); Lane 49-202 (BISH); Tuyama Sept. 13, 1937 (BISH).

Dendrobium Amesianum, Schlechter

Engl. Bot. Jahrb. 56: 468 1921.

Ponape

Specimens examined: Kanehira 1540 (NY); Ledermann 13460 (BISH).

Dendrobium scopa, Lindley

Bot. Reg. Misc. 55, 1842.

Desmotrichium scopa, (Lindl.) Kranzlin Engl. Pflanzenr. IV 50 II 21: 349, 1910.

Guam, Philippines to New Guinea and Samoa

Specimens examined: Lane 49-36 (BISH); Nelson 287 (BISH); Rodin 789 (US).

Dendrobium philippinense, Ames

Philip. Jour. Sci. 8 (Bot.): 424, 1913.

Dendrobium oblongimentum, Hosokawa Trans. Nat. Hist. Soc. Formose 32: 12-14, fig. 1, 1942.

Though the type material of either D. philippinense or D. oblongimentum has not been seen, there seems to be little doubt that they are the same. The plants from the Mariannas are slightly larger than D. philippinense as it occurs in the

Philippines. This is noted on the specimen Moore 271 by C. S. Schweinfurth.

Dendrobium implicatum, Fukuyama

Bot. Mag. Tokyo 51: 904, 1937.

Dendrobium patenti-filiforme, Hosokawa Trans. Nat. Hist. Soc. Formosa 32: 11-12, 1942.

Observations made in the field have led to the conclusion that the spiral tangling of the sepals and petals, and the fusion of those parts, varies in different flowers. Also the twisting of the perianth parts is associated with the old age and death of the flower. Herbarium study confirmed these observations, when it was found impossible to distinguish between the two. For these reasons, D. patentifiliforme is relegated to synonymy.

Palau

Specimens examined: Fosberg 25745 (NY); Kanehira 324 (NY); Lane 49-256 (BISH); Tuyama Sept. 5, 1939 (BISH); Tuyama Sept. 7, 1939 (BISH).

Dendrobium ponapense, Schlechter

Engl. Bot. Jahrb. 56: 471, 1921.

Ponape, Truk

Specimens examined: Takamatsu 161 Truk (BISH).

Dendrobium carolinense, Schlechter

Engl. Bot. Jahrb. 56: 472, 1921.

Ponape, Kusaie

Specimens examined: Kanehira 813 (NY); Takamatsu 642 (BISH); Hosokawa 7346 Kusaie (BISH); Takamatsu 386 Kusaie (BISH); Takamatsu 560 Kusaie (BISH).

Dendrobium guamense, Ames

Philip. Jour. Sci. 9 (Bot.): 14, 1914.

Guam, Rota, Saipan, Tinian

Specimens examined: Bryan Jr. 1136 Guam (BISH); Nelson 220 Guam (BISH).

CESTICHIS, THOUARS

Orch. Iles. Afr. t 90, 1822

Herbarium material is very scarce, but the species may be easily distinguished on the length of the pseudobulb.

- A. Pseudobulbs less than 6 cm. tall. . . . C. dolichostachya  
 AA. Pseudobulbs more than 10 cm. tall. . . . . C. Yamadae

Cestichia dolichostachya, (Fukuyama) Tuyama

Bot. Mag. Tokyo 53: 52, 1939.

Liparis dolichostachya, Fukuyama Trans. Nat. Hist. Soc. Formosa 28: 6-7, 1938.

Palau

Specimens seen: Kanehira 2336 (NY); Kanehira 818 (NY); Lane 49-116 (BISH).

Cestichis Yamadae, Tuyama

Bot. Mag. Tokyo 54: 265, pl. II n, 1940.

Although Tuyama gives an alternate name in *Liparis*, it seems obvious that he accepts Cestichis for this plant. He transferred the preceding species, and published this species as Cestichis. His alternate name, Liparis Yamadae, Tuyama, is invalid, he does not recognize that as the correct genus for the plant.

Palau

Specimens seen: Lane 49-371 (BISH); Takamatsu 1242 (BISH).

**PSEUDERIA, Schlechter**

Fedde Repert. Beih. 1: 644, 1912.

Lateral sepals fused to column foot and to each other, column footed, flower parts increase in size as fruit matures. A many leaved, scandent plant with lateral, few flowered raceme, leaves chartaceous.

*Pseuderia micronesiaca*, Schlechter

Engl. Bot. Jahrb. 56: 473, 1921.

Ponape, Palau

Specimens seen: Kanehira 816 Ponape (BISH); Kanehira 1610 Ponape (NY); Takamatsu 962 Ponape (BISH); Lane 49-80 Palau (BISH); Lane 49-192 Palau (BISH); Takamatsu 1634 Palau (BISH).

**MEDIOCALCAR, J.J. Smith**

Bul. Inst. Buitenz. 7: 3, 1900.

This genus is known only by the description of M. ponapense, and the description of the genus itself. One species is recorded in Micronesia.

Mediocalcar ponapense, Schlechter

Engl. Bot. Jahrb. 56: 475, 1921.

Known only from the type description.

Ponape

AGROSTOPHYLLUM, Blume

Bijdr. 368, t 53, 1825.

Sepals and petals free, lip saccate, column footless, pollinia 8, capsule containing hygroscopic, transparent hairs. Erect epiphytic herbs or subscandent. Pseudobulbs present or lacking, leaves distichous with sheathing bases. Inflorescence terminal, peduncles usually fasciculate 1-2-flowered; perianth and column persistent on fruit.

- A. Leaves small, less than 2 cm. long, stem terate. . . . .  
 . . . . . A. palawense
- AA. Leaves large, more than 3 cm. long. . . . .B
- B. Inflorescence long, ca. 8 cm. long. . . A. kusaiense
- BB. Inflorescence short, less than 2 cm. long. . . A. sp.

Agrostophyllum palawense, Schlechter

Engl. Bot. Jahrb. 56: 476, 1921.

This plant is separable from Agr. Hasseltii (Blume)

J. J. Smith, in having shorter, broader leaves; labellum with a dentate terminal lobe, and that lobe not erect, but definitely reflexed.

Palau

Specimens examined: Fosberg 25752 (BISH); Kanehira 302 (NY); Kanehira 1971 (NY); Kanehira 2761 (NY); Takamatsu 1113 (BISH); Takamatsu 1715 (BISH).

Agrostophyllum kusaiense, Tuyama

Bot. Mag. Tokyo 54: 261-262, 1940.

Kusaie

Specimens examined: Takamatsu 552 (BISH).

Agrostophyllum sp.

This plant is very distinct from the other species of the genus which occur in Micronesia. Unfortunately, no good flowering material has been collected, from the fruiting material it is possible to get some information on the flower. The raceme is 2-flowered, peduncles and pedicels covered with many brown chartaceous bracts, widely lanceolate, acute. From the persistent remains of the floral parts: Dorsal sepal at least 6 mm. long and 3 mm. wide, 3 nerved. Labellum with triangular lateral lobes at base of lip. Column 5 mm. long, bending forward onto itself after pollination.

Specimens examined: Kanehira 524 (NY); Lane 49-107 (BISH).

## GLOMERA, Blume

Bijdr. 372, t 68, 1825.

Distinguishable from *Agrostophyllum* in having the lateral sepals fused to each other.

Glomera carolinensis, L. O. Williams

Harv. Bot. Mus. Leaflet. 7: 142-143, 1939.

## AGLOSSORRHYNCHA, Schlechter

K. Schum. & Lauterb. Nachtr. Fl. Deutsch Sudsee 133, 1905.

Anterior margins of lateral sepals more or less coherent, labellum sessile footless. Clinandrium conspicuously developed, margin serrate. Pollinia 4, attached to 2 glands which are commonly more or less fused together. Epiphytic herbs, sub-scandent, branched, leaves ligulate articulate, flowers single terminal, with conspicuous bracts.

Aglossorrhyncha micronesiaca, Schlechter

Engl. Bot. Jahrb. 56: 477, 1921.

Palau

Specimens seen: Kanehira 327 (NY); Kanehira 492 (NY); Kanehira 92 (BISH); Kanehira 1930 (NY); Takamatsu 1292 (BISH).

## APPENDICULA, Blume

Bijdr. 297, t 40, 1825

Sepals and petals free, sepals fused to column foot and forming a small spur, labellum moveably jointed to column, with transverse backward projecting callus. Inner parts of perianth sparsely and minutely tuberculate. Pollinia 8. Column footed, racemes lateral and terminal, several- to many-flowered. Epiphytic herb, stems terete, sympodial, sheathed with persistent bases of leaves.

Appendicula reflexa, Blume var. palawense, Lane var. nov.

Appendicula reflexa, Blume Bijdr. 201 1825

sensu Schlechter, non Blume.

Ab Appen. reflexa in floribus minoribus, sed sepalis dorsalis majoribus quam partibus aliis perianthis, labello geniculato, apice reflexa, nervis crassibus differt.

This plant differs from Appen. reflexa in that the flowers are only 1/2 as large, the dorsal sepal is relatively larger than the rest of the perianth, and the lip is strongly geniculate, with the tip reflexed and the veins of the lip somewhat thickened.

## Palau

Specimens seen: Fosberg 25746 (BISH); Kanenira 426 (NY);  
Kanehira 1946 (NY); Lane 49-83 (BISH).

## ERIA, Lindley

Bot. Reg. t 904, 1825

Eria is conserved over the earlier Pinalia.

Sepals and petals free, lip entire or lateral lobes free and erect, column short, produced into a foot. Lateral sepals with the foot form a spur.

Pollinia 8 in groups of four. Epiphytic herbs with flat coriaceous leaves, inflorescence terminal or sub-terminal several-to many-flowered.

- A. Raceme densely many-flowered. . . . . E. Uchiyamae  
AA. Raceme open, several-flowered. . . . . E. rostrifolia

Eria Uchiyamae, Tuyama

Bot. Mag. Tokyo 54: 269-270, pl.II, 1940.

Specimens seen: Lane 49-209 (BISH).

Eria rostrifolia, Reichenbach f.

Seem. Fl. Vit. 301, 1868.

Specimens seen: Moore 263 (US).

## EULOPHIA, R. Brown

Bot. Reg. t 686 1823

Sepals and petals free, flowers spurless leaves plicate, inflorescence basal, several-to many-flowered, pollinia 2, large terrestrial herb with small pseudobulbs.

- A. Flowers large, perianth parts 1.5 cm. long or longer  
labellum sub-entire. . . . . E. MacGregorii
- AA. Flowers small, perianth parts less than 1.5 cm. long  
labellum four-lobed. . . . . E. macrostachya

Eulophia MacGregorii, Ames

Philip. Jour. Sci. 9 (Bot.): 12, 1914.

Guam, Yap.

Specimens seen: Necker 125 Guam (US); Rodin 677 (US); Steere 35 (US).

Eulophia macrostachya, Lindley

Gen. et. Sp. Orch. 183, 1830.

Eulophia emarginata, Blume Bijdr. Fl. Jav. 152 1858

Eulophia guamensis, Ames Philip. Jour. Sci. 9 (Bot.): 12  
1914.

Specimens seen: Kanehira 522 Palau (NY); Lane 49-128 Palau (BISH); MacGregor 376 Guam (US); Moore 407 Guam (US).

SPATHOGLOTTIS, Blume

Bijdr. 400, 1825.

Sepals and petals free, labellum unspurred, pandurate, with two erect

large crests at base, column falcate,  
 large, pollinia 8. Terrestrial herb  
 with plicate leaves, inflorescence  
 basal, flowers with large, prominent  
 bracts.

- A. Rachis, ovary, and sepals minutely and densely tomentose  
 . . . . . S. micronesica
- AA. Rachis, ovary and sepals glabrous. . . . .  
 . . S. micronesica var. carolinensis

Spathoglottis micronesica, Schlechter

Engl. Bot. Jahrb. 52: 9, 1914.

Volkens misidentified this species as S. tomentosa Lindl.  
 As is frequently done, Schlechter listed this as a synonym,  
 of the above, inferring that it was as a homonym.

Palau, Yap, and Rota

Specimens seen: Fosberg 25707 Palau (BISH); Fosberg  
 25608 Yap (BISH); Lane 49-42, Palau (BISH); Lane 49-430  
 Palau (BISH).

Spathoglottis micronesica var. carolinensis, (Schlechter)

Lane stat. nov.

Spathoglottis carolinensis, Schlechter Engl. Bot. Jahrb.  
 52: 8, 1914.

The amount of pubescence present is quite variable,  
 Schlechter attempted to correlate it with the size of the  
 plant and coloration. From field work, during which it was  
 noted that seemed to be no correlation in size and pubescence,

and that the color varied from a very deep rose to a white barely flushed with pink, it seems that this plant is better treated as a variety than as a species.

In selecting this portion of the population to form the variety, the more restricted, less frequent plant is used. It also seems to be the less stable of the populations, hence can more readily be conceived as the variety.

Specimens seen: Hosaka 3310, Yap (BISH); Lane 49-233 Palau (BISH); Lane 49-290 Palau (BISH).

#### GEODORUM, Jackson

Andr. Bot. Rep. t 626, 1810.

Cymbidium, Swartz Nov. Act. Soc. Sc. Upsal. 6: 70, 1700.

This genus is reported in Micronesia, but the author has seen no specimens.

#### Geodorum pictum, (R. Brown) Lindley

Gen. et Sp. Orch. 175, 1833.

Cymbidium pictum, R. Brown Prod. 331, 1810.

This species is reported in Yap by Hosokawa.

#### PHAIUS, Loureiro

Fl. Cochinch. 529 1790

A large terrestrial found on Ponape and Kusaie.

#### Phaius amboinensis, Blume

Mus. Lugd. Bot. 2: 180, 1856

Ponape and Kusaie

Specimens seen: Fosberg (BISH); Takamatsu 968 Ponape (BISH); and Takamatsu 554 Kusaie (BISH).

CALANTHE, R. Brown

Bot. Reg. sub t 573, 1821.

Calanthe veratrifolia, R. Brown

Bot. Reg. t 573, 1821.

*Orchis triplicata*, Willem. Uster: Ann. Bot. 6 18: 52, 1796.

*Calanthe furcata*, Bateman Bot. Reg. Misc. 28, 1838.

*Calanthe triplicata*, (Willem) Ames Philip. Jour. Sci. 2 (Bot.): 336, 1904.

Nomenclaturally this genus is in a state of much confusion. The same could also be said concerning it taxonomically.

Guam, Truk, Rota, Fiji

ACRIOPSIS, Reinwardt

Blume, Bijdr. 376, 1825.

Sepals and petals free, dorsal sepal boat shaped, labellum fused to column tip 3-lobed, with two erect crests, column semiterete, with linear digital projections laterally, clinandrium well developed into a quadrate hood. Pollinia 4 appressed into groups of two. Epiphytic herbs, pseudobulbs with several leaves at apex, inflorescence long, loosely branched.

Acriopsis javanica, Reinwardt

Flora Litt. 2: 4

Acriopsis insulari-sylvatica, Fukuyama Trans. Nat.

Hist. Soc. Formosa 28: 1 1938

After comparison of a portion of the type collection of A. insulari-sylvatica with others determined as, and agreeing with the characters of A. javanica, it is the author's opinion that they are inseparable.

Palau, Philippines to Burma, to New Guinea.

Specimens seen: Kanehira 425 (NY); Kanehira 290 (NY); Kanehira 447 (NY); Kanehira 563 (NY); Lane 49-112 (BISH); Takamatsu 1316 (BISH).

## BULBOPHYLLUM, Thouars

Orch. Iles. Afr. t 93-97, 1822.

A large and complicated group in Micronesia, parts of which are rather easily grasped and understood, other parts have not received the attention necessary for an understanding of them. The following species are reported from Micronesia:

Bulbophyllum desmanthum, Tuyama

Bot. Mag. Tokyo 54: 262-263, fig. 6a, 1940.

Bulbophyllum Gibbonianum, Schlechter

Engl. Bot. Jahrb. 56: 483, 1921.

Bulbophyllum guamense, Ames

Philip. Jour. Sci. 9 (Bot.): 13, 1914.

Bulbophyllum Hatusimanum, Tuyama

Bot. Mag. Tokyo 54: 263-264, fig. 6 d, 1940.

Bulbophyllum kusaiense, Tuyama

Bot. Mag. Tokyo 54: 264, pl. II b, 1940.

Bulbophyllum longiflorum, Thouars

Orch. Iles. Afr. t 98, 1822.

Bulbophyllum micronesiacum, Schlechter

Engl. Bot. Jahrb. 56: 482, 1921.

Bulbophyllum ponapense, Schlechter

Engl. Bot. Jahrb. 56: 484, 1921.

Bulbophyllum profusum, Ames

Philip. Jour. Sci. 7 (Bot.): 128, 1912

Bulbophyllum Volkensii, Schlechter

Engl. Bot. Jahrb. 52: 11, 1914.

Bulbophyllum Volkensii var. aurantiacum, Tuyama

Bot. Mag. Tokyo 53: 52, 1939.

## PEREATIA, Lindley

Gen. et Sp. Orch. 63, 1830.

Rhynchopreatia, Schlechter Engl. Bot. Jahrb.  
56: 488, 1921.

Another large genus which has not been amply studied because of lack of time. It contains the following species?

Phreatia carolinensis, Schlechter

Engl. Bot. Jahrb. 56: 456, 1921.

Phreatia Kanehirae, Fukuyama

Trans. Nat. Hist. Soc. Formosa 28: 1, 1938.

Phreatia landronica, Tuyama

Bot. Mag. Tokyo 54: 277-278, pl. II f, 1940.

Phreatia palawensis. (Schlechter) Tuyama

Bot. Mag. Tokyo 54: 278, 1940.

Rhynchophreatia palawensis, Schlechter Engl. Bot. Jahrb. 56: 448, 1921.

Phreatia Ryozoana, Tuyama Bot. Mag. Tokyo 53: 54, 1939.

Phreatia pacifica, Fukuyama

Trans. Nat. Hist. Soc. Formosa 29: 100-101, 1939.

Phreatia pacifica var. minor, Fukuyama

Trans. Nat. Hist. Soc. Formosa 29: 101, 1939.

Phreatia ponspensis, Schlechter

Engl. Bot. Jahrb. 56: 487, 1921.

Phreatia pseudo-Thompsonii, Tuyama

Bot. Mag. Tokyo 54: 278-279, pl. II c, 1940.

Phreatia samoensis, (Kranzlin) Schlechter

Repert. Sp. Nov. Fedde 3: 320, 1907.

Thelasis samoensis, Kranzlin Engl. Bot. Jahrb. 25: 607, 1896.

Phreatia Thompsonii, Ames

Philip. Jour. Sci. 9 (Bot.): 15, 1914.

## OXYANTHERA, Brongniart

Duperrey Voy. Coq. Bot. 197, t 37, 1829.

Distinguishable from Phreatia by the  
large forward projecting rostellum and  
the larger fewer flowers.

Oxyanthera brachybotrya, Fukuyama

Trans. Nat. Hist. Soc. Formosa 28: 2 1938.

Palau

Specimens seen: Lane 49-56 (BISH).