

Revision of the Orchids of German Samoa

Rudolf Schlechter

A translation into English of

Revision der Orchidaceen von Deutsch-Samoa

as published in

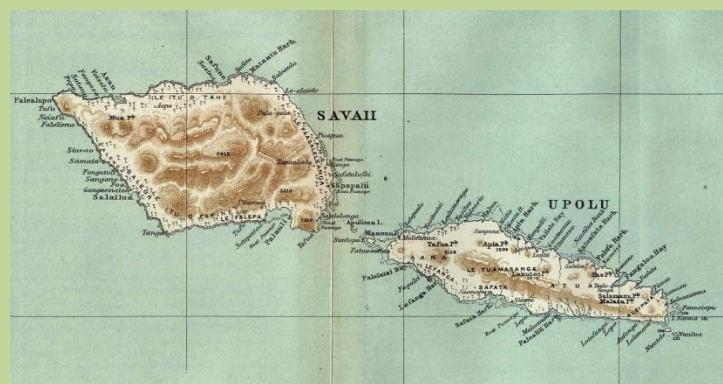
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Vol IX (1910), pp 82-96 & (1911), pp 98-112

with genera index, locality listing and maps.

H J Katz & J T Simmons



Rudolf Schlechter
(1872-1925)



Samoa

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SCHLECHTER : REVISION OF THE ORCHIDS OF GERMAN SAMOA (1911).

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REVISION OF THE ORCHIDS OF GERMAN SAMOA

A collection of orchids from Samoa, handed to me by Dr. Vaupal for investigation, induced me to conduct a critical survey of the species so far known from there. A few years ago, indeed, such a treatise had appeared, viz. Kränzlin's list of Samoan Orchids in 'Bearbeitung der Flora von Samoa' by [F.] Reinecke, in Engl. Jahrb. Vol. XXV [1898, pp. 598-603], but unfortunately it became apparent that a whole series of species was omitted and, furthermore, my opinions of the various species were so different from those of Kränzlin, that I decided to publish my findings as a revision of the orchids of German Samoa.

The number of new species proved to be appreciably greater than I initially had envisaged. This is attributed to the fact that a whole series of species which had previously been classed with those of the neighboring Fijian and Tongan Islands, on closer examination, showed differences which made it desirable to consider them as separate species.

A publication on Samoan orchids by H. Fleischmann and K. Rechinger appeared when this manuscript was almost complete. As far as I was able, it was considered, but I could not decide on several of the species mentioned there, since the material was not available to me.

Unfortunately, I have also not been able to see all Kränzlin's species of the Reinecke collection, since many of these are missing in the Berlin Herbarium and so these have not been considered in the compilation of specimen numbers.

Rudolf Schlechter
circa 1910.

Habenaria Willd.

1. *Habenaria cyrtostigma* Schltr., sp. nov.

*Herba erecta, simplex, gracilis, 35–45 cm alta; radicibus crassiusculis, villosulis; caulo stricto vel substricto, tereti, glabro, basi vaginis paucis laxe amplectentibus donato, medio foliato; foliis 4–6, patentibus, lanceolatis vel elliptico-lanceolatis, acuminatis, utrinque glabris, basi caulinis vaginantibus, 5–12 cm longis, medio fere 1,2–2 cm latis; supra folia vaginulis paucis bracteiformibus dissitis; spica laxe 10–20-flora, elongata, 9–14 cm longa; bracteis erectis, lanceolatis, acuminatis, glabris, ovario nunc aequilongis, nunc brevioribus; floribus viridibus illis *H. bambusetorum* Krzl. similibus, tamen paulo minoribus; sepalo intermedio oblongo-ovato, obtuso, dorso apice minute apiculato, glabro, 2,5 mm longo, lateralibus patentibus subfalcato-oblongis, apice dorso apiculatis, glabris, intermedio aequilongis; petalis erectis oblique ellipticis, obtusis, margine anteriore cum anthera et processibus stigmatiferis connatis, sepalo intermedio paululo brevioribus; labello tripartito, partitionibus lateralibus patentibus lineariformibus, apice incurvis, 3,5 mm longis, intermedia lineariformis ligulata subacuta, vix 1,5 mm longa, calcare patulo filiformi, apicem versus vix ampliato, c. 4–5 mm longo; anthera humillima canalibus erectis, loculis subaequilongis; rostello humillimo; processibus stigmatiferis falcatis, permagnis pro magnitudine antherae; ovario gracili, cylindrico, apice subrostrato, 0,8 cm longo.*

Habenaria tradescantiiifolia H. Fleischmann et Rech., in Denkschr. d. Math.-

Naturw. Akad. Wien. LXXXV, p. 36, t.II, f. 7 (nec Rchb.f.).

Upolu I. : On [Mount] Lanutoo, alt. c. 700m - L. & K. Rechinger no. 732.

Savaii I. : In scrub between Taga and Sili - Vaupel no. 584, flowering on 18th Oct. 1906; in forest near Patamea - L. & K. Rechinger no. 1146.

Very closely related to H. bambusetorum Krzl. (Peristylus gracilis Bl.), but differing in smaller flowers, narrow segments of the labellum and in the column. Differing appreciably from H. tradescantiifolia Rchb.f., in the long lateral segments of the labellum, but perhaps closer related to H. cryptostyla Rchb.f. Reichenbach states emphatically that the lateral tips of the labellum are shorter.

2. *Habenaria monogyne* Schltr., in Fedde Repert., III (1906), p. 45.

Haberaria supervacanea H. Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 76, t. II, f. 5 (nec Rchb.f.).

Upolu I. : [E.] Betche; in the forests of Mount Vaia, alt. c. 300m - L. & K.
Rechinger no. 1392, in June.

Savaii I. : Near Olonono - VaupeL no. 69. flowering on 1st July 1905.

3. *Habenaria samoensis* F.v.M. et Krzl., in Engl. Jahrb., XVII [1893], p. 487.

Habenaria dolichostachya Krzl., in Engl. Jahrb., XXIII [XXV (1898)], p. 598
(nec Thw.).

Habenaria superflua H. Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad.
Wien, LXXXV, p. 76, t. II, f. 4 (nec Rchb. f.)

Upolu I. : Near Apia, frequent in the mountains - E. Betche no. 112, Mar. 1880.
Savaii I. : In forests near Patamea, alt. c. 200m - L. & K. Rechinger no. 81,
in June.

This species belongs to the affinity of *H. salaccensis* Bl. and is closely

related to H. superflua Rchb.f., with which H. Fleischmann and Rechinger united it.

4. Habenaria Vaupelii Schltr., sp. nov.

Herba erecta, valida, simplex, 100–150 cm alta; radicibus filiformibus elongatis, puberulis; caule stricto vel substricto, tereti, glabro, bene foliato, tortia parte basilaris vaginis arcte amplectentibus laxe obpresso; foliis erecto-patentibus lanceolato-ligulatis acuminatis, utrinque glabris, basi caulem vaginantibus, internodia multo excedentibus, 12–18 cm longis, medio fere 3–3,5 cm latis, superioribus sensim in bracteas aequantibus; spica cylindracea, elongata, subdense multiflora, 30–45 cm longa, c. 3 cm diametente; bracteis erectis, lanceolatis, acuminatis, glabris, inferioribus vulgo flores paulo superantibus, superioribus brevioribus; floribus in genere inter mediocres, erecto-patentibus; sepalo intermedio erecto, ovato, obtuso, glabro, 0,6 cm longo, concavo, lateralibus deflexis, oblongo-ligulatis, apiculatis, intermedio fere aequilongis, sed paulo angustioribus; petalis erectis obliquis, late ovatis, obtusis, margine anteriore medio ampliatis, sepalo intermedio aequilongis, medio fere 0,4 cm latis; labello tripartito, glabro, partitionibus lateralibus divaricatis, anguste linearibus, obtusis, 0,9 cm longis, intermedia linearis obtusa, 0,4 cm longa, calcare deflexo subfiliformi, apicem versus paululo ampliato, 0,9 cm longo; anthera humili, canalibus erecto-patentibus; processibus stigmatiferis amplis, canales antherae duplo fere superantibus; ovario cylindraceo, glabro, apice rostrato, c. 1,5 cm longo.

Savaii I. : Below [Mount] Mangaloa, at alt. c. 800m – Vaupel no. 465, flowering on 30th Aug. 1906.

Probably placed best in the Commelinifoliae group.

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Corysanthes R.Br.

5. Corysanthes Betchei F.v.M., in Wing's South Sci. Rec., 1881, p. 171.

Upolu I. : E. Betche.*

*[Footnote by author : Recently the name has been written incorrectly as 'Betsche'. The collector is E. Betche of Sydney, the much regarded specialist of Australian flora].

The sole species known from the region. Apparently it has not been collected again.

Cryptostylis R.Br.

6. Cryptostylis alismifolia F.v.M., in Wing's South Sci. Rec., 1881, p. 172.

Upolu I. : E. Betche.

Likewise, not collected again since Betche's time.

Nervilia Gaud.

7. Nervilia Aragoana Gaud.

Upolu I. : Malifanua, in primary forest – Reinecke no. 198, flowering in Nov. 1898.

Savaii I. : In scrub between Aopo and Asan [Asau] – Vaupel no. 508, flowering on 6th Oct. 1906; coastal scrub, quite common, Oct. 1894 – Reinecke, L. & K. Rechinger nos 1948, 5271.

8. Nervilia grandiflora Schltr., sp. nov.

Terrestris, erecta, c. 35 cm alta; rhizomate generis globoso, depresso; radicibus filiformibus puberulis; folio longipetiolato erecto, lamina subreniformi-cordata, breviter acuminata, undulato-plicata, utrinque glabra, 7–8 cm longa, basi 10–11 cm lata, petiolo glabro, c. 12 cm longo; scapo stricto vel substricto, tereti, glabro, vaginis paucis dissitis, arctissime amplexentibus obsesso, apice bifloro; bracteis mox deciduis; floribus pro genere magnis, erecto-patentibus patulis; sepalis lanceolatis acuminatis, dimidio superiore paululo dilatatis, glabris, longitudine 3 cm subattentibus, supra medium 4,5 mm latis, lateralibus paulo obliquis; petalis sepalis valde similibus, acuminatis, c. 2,4 cm longis; labello indiviso, elliptico, apice subtruncato-obtusissimo, glabro, linea media intus paulo incrassata ornato, columnam amplexente, c. 1,8 cm longo, medio fere 0,8 cm lato; columna semitereti, glabra, apicem versus paulo incrassata, clinandrio trilobato, lobis lateralibus irregulariter crenulatis, c. 1 cm longa; ovario pedicellato oblongoideo, 6-costato, glabro, pedicello brevi inclusu c. 1,3 cm longo.

Savaii I. : On the Puapua track – Vaupel no. 590, flowering on 20th Oct. 1906.

Related to N. holochila Schltr. (Pogonia holochila F.v.M.). Characterised by the large flowers, shape of the lip, and by the short column.

Didymplexis Griff.

9. Didymplexis samoensis Schltr.

Didymplexis minor J.J.Sm. subsp. samoensis Fleischm. et Rech., in Denkschr.

d. Math.- Naturw. Akad. Wien, LXXXV, p. 77, t. I, f. 7.

Savaii I. : Near Olonono – Vaupel no. 600, flowering and fruiting on 30th Aug. 1905; between Sasina and Aopo, in the shade of forest shrubs – L. & K. Rechinger no. 1641.

The plant differs sufficiently from D. minor J.J.Sm. of Java, to be considered as a separate species.

Goodyera R.Br.

10. Goodyera anomala Schltr., sp. nov.

Goodyera Waitziana Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Adak. Wien, LXXXV, p. 80 (nec Bl.).

Herba terrestris, e basi decumbente erecta, simplex, c. 50 cm alta; rhizomate decumbente, radicante, tereti, glabro; caule valido, dimidio inferiore bene foliato, glabro, supra vaginis amplexentibus pluribus sensim in bracteas abeuntibus vestito, inflorescentiam versus glandulosopuberulo; foliis erecto-patentibus 5–8, lamina oblique elliptica acuminata, basi acutata, glabra, c. 7–10 cm longa, medio fere 4–5,5 cm lata, petiolo sulcato basi valde dilatata caulem vaginante, 5–6 cm longo; spica dense multiflora cylindrica, 10–15 cm longa, vix 2,5 cm diametente; bracteis lanceolatis acuminatis, glandulosopuberulis, inferioribus flores paulo excedentibus, superioribus sensim minoribus; floribus erecto-patentibus, illis G. rubentis Bl. fere aequimagnis; sepalis oblongis obtusis, glandulosopuberulis, 0,6 cm longis, lateralibus quam intermedium latioribus, obliquis; petalis e basi linearili-ligulata rhomboidis, obtusis, dorso sepallo intermedio intus adhaerentibus, aequilongis; labello concavo, late ovato, apice deflexa, ligulato-angustato, obtuso, intus dimidio inferiore appendicibus brevibus subulatis ornato, nervo medio incrassato, longi-

tudine sepala aequante, latitudine 0,4 cm attingente; columna mediocri, triandra, facie incrassato-carinata, rostello alte bifido; antheris lanceolatis acutis, lateralibus quam intermedia paululo minoribus; ovario cylindraceo, glanduloso-puberulo, c. 1 cm longo, basi apiceque paululo attenuato,

Savaii I. : Near Olonono - Vaupel no. 405, flowering on 16th Aug. 1905; forest near Sasina, alt. c. 200m - L. & K. Rechinger no. 94.

Previously, already one Goodyera, with three fertile anthers is known in the island region of the South Seas, viz. G. triandra Schltr. from the New Hebrides [Vanuatu]. Like that one, the one to hand is doubtless related to G. rubens Bl., but differs from G. triandra Schltr. in the shape of the labellum.

Platylepis Bl.

11. Platylepis heteromorpha Rchb.f., in Ot. Bot. Hamb., p. 52.

Corallioky phoscandidissimum Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 78, f. 6, t. III, f. 1.

Herba e basi decumbente erecta, valida, c. 50 cm alta; rhizome decumbente, tereti, glabro; radicibus filiformibus elongatis, villosis; caule valido tereti, glabro, dimidio inferiore bene foliato, supra vaginis paucis ventricoso-amplectentibus, dissitis obpresso, spicam versus glanduloso-puberulo; foliis c. 9, erecto-patentibus, lamina obliqua elliptica, acuminate vel acuta, basi acutata, 10-14 cm longa, medio sere 4-5 cm lata, petiolo sulcato basi valde dilatata, cucullato-amplectente, 6-7 cm longa; spica cylindracea, dense multiflora, c. 2,5 cm diametente, 5-8 cm longa; bracteis erecto-patentibus, lanceolatis acutis, minutissime glanduloso-puberulis vel subglabratis, floribus brevioribus; floribus in tribu inter maiores; sepalis oblongis obtusiusculis, glandulis subsessilibus extus ob sessis, 1 cm longis, lateralibus paulo latioribus quam intermedium, obliquis; petalis e basi linearis-unguiculata oblique ellipticis subacutis, glabris, apice cohaerentibus, dorso sepallo intermedio intus adhaerentibus, aequilongis sere; labello infra medium abrupte constricto, hypophilio subgloboso, intus utrinque fasciculo verrucarum ornato, epichilio ovato acutiusculo margine leviter undulato, nervo medio in labelli basi incrassato, labello toto 1 cm longo, epichilio infra medium 5,5 mm lato; columna cum rostello alto 0,7 cm alta, antice carinata, marginibus stigmatis conspicuis; anthera ovato-lanceolata, cordata; ovario sessili cylindraceo, glanduloso-puberulo.

Upolu I. : In the primary forest, at the crater-lake Lanutoo, alt. c. 750m - L. & K. Rechinger no. 707, in July.

Savaii I. : Behind [Mount] Mangaloa - Vaupel no. 406, flowering on 29th Nov. 1905.

The genus, of which I discovered two new species during my last journeying in New Guinea, shows a certain approach to the genus Cystorchis, in that the labellum structure is divided, in a way, by a definite at the base into hypochile and epichile. However, Cystorchis, due to the completely different column formation, has quite a different relationship within the [Group] Physurinae, belonging closer to Zeuxine, whilst Platylepis should be placed together with Goodyera, Erythrodes and Moerenhoutia.

The species is appreciably larger [in size] and quite different in floral characters, from the New Guinea species. The best known species within the genus

is P. glandulosa Rchb.f., which is widely distributed in Africa.

Erythrodes Bl.

12. Erythrodes Lilyana Schltr., nov. sp.

Physurus Lilyanus Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 79, t. I, f. 3.

Herba e basi decumbente erecta, 25—35 cm alta, simplex; rhizomate decumbente radicante, tereti glabro; radicibus flexuosis, villosis; caule djmidio inferiore foliato, glabro, inflorescentiam versus glandulosopuberulo; foliis 3—5 erecto-patentibus patentibusve, oblique oblongo-lanceolatis, acuminatis, utrinque glabris, lamina basi acuta 5—7 cm longa, medio fere 1,5—2 cm lata, petiolo basi vaginante glabro, 2—3 cm longo; squamis lanceolatis 3—4 dissitis in pedunculo bracteiformibus; spica laxa 6—12-flora cylindrica; bracteis erectis lanceolatis, acuminatis, inferioribus flores aequantibus vel paulo superantibus, superioribus sensim minoribus; floribus illis E. Blumei Schltr. fere aequimagnis suberectis; sepalis oblongo-ligulatis, concavis, extus glandulosopuberulis, c. 0,7 cm longis, intermedio acuto erecto, lateralibus acuminatis, obliquis; petalis, e basi linearis-unguiculata in laminam oblique rhombream subacutam dilatatis, glabris, dorso sepalo intermedio aequilongo agglutinatis; labello saccato, lamina lanceolata acuminata glabra, apice deflexa, sacco a dorso paulo compresso, apicem versus paulo ampliato, apice breviter exciso, c. 0,4 cm longo; columna erecta sepalo intermedio breviore, antice incrassata, rostello bifido; anthera lanceolato-cordata acuta, glabra; ovario cylindraceo, glandulosopuberulo, c. 1,8 cm longo.

Savaii I...: On the south face of [Mount] Mangaloa, at alt. c. 1300m — Vaupel no. 654, flowering on 17th Sept. 1906; in the forests of Mount Manugaafi, alt. c. 1200—1300m — L. & K. Rechinger no. 1590; in forest between Aopo and Asan [Asau], alt. c. 750m — L. & K. Rechinger no. 63, in July.

A close relative of E. oxyglossa Schltr. from New Caledonia, but differing on closer examination in the column and the pouch of the labellum, which is expanded towards the apex. So far it is the most eastern known species of the genus.

Hetaeria Bl.

13. Hetaeria samoensis Rolfe, in Kew Bull., 1898, p. 199.

'Samoa' : Walter.

14. Hetaeria Whitmeei Rchb.f., in Journ. Bot., XV (1877), p. 133.

Upolu I. : Rev. Whitmee.

15. Hetaeria similis Schltr., sp. nov.

Hetaeria oblongifolia Krzl., in Engl. Jahrb., XXV, [1898], p. 599 (nec Bl.).

Rhamphidia tenuis Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 254, t. II, f. 1, t. IV, f. 1 (nec Lindl.).

Herba terrestris, e basi decumbente, erecta, 30—40 cm alta, simplex; rhizomate decumbente radicante, tereti, glabro; radicibus flexuosis, filiformibus, villosis; caule e basi valido sensim attenuato, tertia vel quarta parte basilari foliato, glabro, supra vaginulis paucis dissitis lanceolatis, acuminatis, bracteiformibus obsesso, inflorescentiam versus glanduloso

puberulo; foliis erecto-patentibus patentibusve, lamina oblique ovato-elliptica acuminata, basi acuta, 5–7 cm longa, medio fere 2–3 cm lata, petiolo basi valde dilatata caulem cucullato-vaginante, 2–2,5 cm longo; spica dense multiflora, elongata, usque ad 15 cm longa, c. 0,7 cm diametente; bracteis erecto-patentibus anguste lanceolatis, acuminatis, glanduloso-puberulis, vulgo flores paulo excedentibus, nunc paulo brevioribus; floribus erectis illis *H. oblongifoliae* Bl. paululo minoribus, more generis inversis; sepalis porrectis, ovalis obtusiusculis, concavis, 0,4 cm longis; extus glanduloso-puberulis, intermedio antico, lateralibus conniventibus paulo obliquis, quam sepalam intermedium paulo latioribus; petalis porrectis oblique linear-ligulatis, supra medium paululo margine anterio dilatatis, oblique acuminatis, glabris, sepalis paulo brevioribus; labello naviculari concavo, circuitu ovato, marginibus incurvis, breviter et obtusiuscule acuminato, glabro, intus basi, appendicibus 2 falcato-cornutis, instructo, linea media paulo incrassato, petalis aequilongo; columna brevi, antico brachiis incurvis, anthera late ovata, breviter acuminata; ovario cylindraceo, glanduloso-puberulo, apice paulo attenuato, 0,7 cm longo.

Savaii I. : Near Olonono – Vaupel no. 657, flowering on 23rd Aug. 1905; Satana – L. & K. Rechinger no. 102; between Aopo and Asau – L. & K. Rechinger no. 1884; above Patamea, alt. c. 250m – L. & K. Rechinger no. 1147.

Very similar to *H. Erimae* Schltr. (*Goodyera Erimae* Schltr.), as well as *H. discoidea* (Rchb.f.) Schltr. (*Rhamphidia discoidea* Rchb.f.), but differing from both in the column and the short acuminate lip, inside with only two appendages. Furthermore, *H. discoidea* Schltr. has much broader petals.

Cystopus Bl.

16. Cystopus Funkii Schltr., sp. nov.

Goodyera biflora Krzl., in Engl. Jahrb., XXV, p. 600 (nec Hook.f.).

Herba e basi decumbente erecta, 12–16 cm alta; rhizomate decumante, tereti, radicante; radicibus brevibus teretibus, villosis; caule stricto vel substricto, tereti, glabro, foliato; foliis lanceolato-vel ovato-ellipticis, acutis vel acuminatis, basi nunc rotundatis, nunc in petiolum abruptius angustatis, utrinque glabris, 2,5–5 cm longis, 1,3–2,3 cm latis; pedunculo brevi, vaginis paucis lanceolatis, acuminatis, amplectentibus vestitis; racemo laxe 3–6 floro, 3–5 cm longo; bracteis lanceolatis, anguste acuminatis, glabris, ovarium vulgo duplo excedentibus; floribus in genere inter majores, ut videtur albidis; sepalis lanceolato-ligulatis obtusis, usque supra medium connatis, tertia parte inferiore sparsim pilosulis, caeterum glabris, 1,5 cm longis, lateralibus basi margine anterio ampliatis, saccum semiglobosum obtusissimum formantibus; petalis oblique linearibus, apicem versus angustatis obtusiusculis, glabris, usque ad dimidium cum sepalis connatis, sepalorum fere longitudine; labello c. 2 cm longo, glabro, e basi ovato-saccata in unguem linearem crenato-incisum producto apice in lobum elliptico-ovatum acuminatum dilatato, sacco c. 0,4–0,5 cm longo, ungue 0,8 cm longo, lamina apicali medio fere 0,3 cm lata; columna brevi, facie alis 2 quadratis donato, rostello elongato apice bifido; anthera lanceolata longerostrata, polliniis clavatis, in stipitem longum productis; ovario cylindraceo, glabro, torto, 0,8–1 cm longo.

Upolu I. : Dr. Funk, anno 1902; at Lake Lanoto, alt. c. 370m – Hochreutiner no. 3267, flowering in March 1905; mountain slope above Lotogo – Reinecke no. 217, flowering in Jan. 1894.

[Savaii I.] : Above Aopo – Vaupel no. 543, flowering on 10th Dec. 1905.

Amongst the previously described species, this one is probably most closely related to C. fimbriatus J.J.Sm. from New Guinea. At this opportunity it should be mentioned that Anoectochilus montanus Schltr., described by me from New Caledonia is likewise a Cystopus and therefore should be renamed Cystopus montanus Schltr.

Zeuxine Lindl.

17. Zeuxine androcardium Schltr., sp. nov.

Herba terrestris e basi decumbente erecta, simplex, 35—50 cm alta; rhizomate decumbente radicante, tereti, glabro; radicibus flexuosis villosis; caule dimidio vel tortia parte inferiore laxe foliato, glabro, supra vaginulis paucis bracteiformibus dissitis, obpresso, -spicam versus glanduloso-puberulo; foliis patentibus vel erecto-patentis, lamina oblique lanceolato-vel ovato-elliptica acuta, glabra, 6—10 cm longa, medio vel infra medium 2,5—3,5 cm lata, petiolo sulcato, basi valde dilatata caulem vaginante, 2,8—4 cm longo, glabro; spica subdense multiflora, cylindrica 10—17 cm longa, c. 1,5 cm diametente; bracteis erecto-patentibus, lanceolatis acuminatis, vulgo ovarii longitudine, minutissime glanduloso-puberulis, floribus illis Z. samoensis Schltr. paulo majoribus erectis vel erecto-patentibus; sepalis ovatis obtusis, extus minute glanduloso-puberulis, 0,5 cm longis, lateralibus paulo obliquis; petalis dorso intus squalido intermedio concavo agglutinatis oblique ovatis apicem versus angustatis obtusis, sepali longitudine; labello e basi naviculari-concava, intus breviter bisquamata, circuitu lanceolata, marginibus incurva, antice in laminam transverse oblongam brevissime apiculatam dilatato, glabro, sepalis aequilongo, lamina apicali 0,4 cm lata, vix 0,2 cm longa; columna brevi, antice incrassata, apice globoso-ampliata, rostellum alto bifido; anthera cordata, breviter acuminata; polliniis falcato-pyriformibus brevibus, glandula ampla oblonga; ovario cylindraceo basi apiceque paulo attenuato, glanduloso-puberulo, c. 0,7 cm longo.

Savaii I. : Near Olonono, together with Hetaeria similis Schltr. and Zeuxine samoensis Schltr. — Vaupel no. 287, flowering on 23rd Aug. 1905.

Easily distinguished from Z. samoensis Schltr. by more robust growth and larger flowers. It has appreciably broader petals and the anther is much shorter.

18. Zeuxine Betchei Schltr., sp. nov.

Herba e basi decumbente, erecta, c. 50 cm alta, simplex; rhizomate decumbente, tereti, glabro, radicante; radicibus filiformibus teretibus, villosis; caule stricto vel substricto, usque ad medium c. 8-foliato, glabro, supra medium vaginis parvulis 3—5 ovato-lanceolatis, acuminatis, dissitis in bracteas decrescentibus obpresso, -spicam versus glanduloso-puberulo; foliis erecto-patentibus oblique lanceolatis acuminatis, glabris, basi acutis, lamina 10—13 cm longa, medio fere 2—2,5 cm lata, petiolo sulcato, basi valde dilatato, caulem cucullato-amplectente, c. 3 cm longo; spica dense multiflora cylindrica, elongata, 10—15 cm longa, c. 1,5 cm diametente; bracteis erecto-patentibus ovato-lanceolatis, acuminatis, extus minuto glanduloso-puberulis, inferioribus flores aequantibus, superioribus sensim minoribus; floribus illis Z. flavae Bth. fere aequimagnis, suberectis; sepalis extus sparsim pilis retrorsis glandulosis obpresso, c. 5 cm longis, ovatis, obtusiusculis, concavis, lateralibus obliquis; petalis subfalcato-linearibus, medio vix dilatatis, obtusis, glabris, sepalo intermedio intus margine adhaerentibus; labello e basi subsaccato-ovoidea, marginibus incurvis, apice contracto et subito in laminam transverse oblongam apiculatam dilatato, glabro, intus supra basin appendicibus 6 parvulis uniseriatis, linearibus, apice 2—3 dentatis ornato, 0,4 cm longo, hypochilo 0,3 cm longo, c. 0,2 cm lato, lamina 0,1 cm longa 0,2 cm lata; columna brevi, sub-

globosa, facie bialata, rostello bifido, segmentis apice paulo incrassatis; anthera lanceolata, basi loculis cordato-elongatis, acuminata; ovario cylindrico, retrorsim glanduloso-puberulo, c. 0,6 cm longo.

Upolu I. : Near Apia - Betche no. 57, flowering in Sept. 1880.

In habit, the plant has a certain similarity to Zeuxine androcardium Schltr., but has narrower leaves and there are definite differences in the labellum.

19. Zeuxine samoensis Schltr., in Bull. Herb. Bois., 1906, p. 29.

Upolu I. : Rev. Whimtee, E. Betche.

Savaii I. : Near Olonono - Vaupel no. 656, flowering on 23rd Aug. 1905.

20. Zeuxine stenophylla Benth. ex Krzl., in Engl. Jahrb. XXV [1898], p. 599.

Monochilus stenophyllum Rchb.f., in Ot. Bot. Hamb., p. 52.

Upolu I. : In the forests of Mount Lanutoo - L. & K. Rechinger (ex H. Fleischm. et Rech.) no. 1825.

Savaii I. : Jatuilla - Wilkes, United States Expedition.

21. Zeuxine plantaginea Schltr.

Monochilus plantagineus Rchb.f., Ot. Bot. Hamb., p. 52.

'Samoa' : Wilkes, United States Expedition.

23. Zeuxine sphaerochila Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad.

Wien, LXXXV, p. 251, t. II, f. 6.

Upolu I. : Forest above Utumapu - L. & K. Rechinger no. 1663.

Savaii I. : In the vicinity of a new crater above Vaipouli - L. & K. Rechinger no. 3710.

Vrydagzenia Bl.

24. Vrydagzenia samoana Schltr., sp. nov.

Vrydagzenia Whitmeeri Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 253 (nec Schltr.).

Herba terrestris pusilla, e basi decumbente erecta, 10–15 cm alta; rhizomate breviter decumbente, radicante, tereti, glabro; radicibus flexuosis villosis; caule simplici, basi vaginato, medio foliato, supra vaginulis paucis mox in bracteas abeuntibus donato, omnino glabro; foliis eructo-patentibus patentibusve, lamina lanceolata vel lanceolato-elliptica, acuta vel acuminata, glabra, basi acuta, 2,5–4,5 cm longa, medio fore vel infra medium 1,2–1,7 cm lata, petiolo sulcato, basi valde ampliata cucullato-vaginante, 0,7–1,2 cm longo, glabro; spica oblongoidea dense 12–20-flora, 1–1,8 cm longa, c. 0,8 cm diametente; bracteis lanceolatis acuminatis, glabra, floribus aequantibus vel paulo brevioribus; floribus illis V. elongatae Bl. similibus aequimacisque, erectis; sepalis ovatis obtusis, apice incrassatis, glabris, 3,5 mm longis, lateralibus obliquis, paulo decurrentibus; petalis oblique quadrato-oblongis obtusis, glabris, sepalo intermedio dorso intus adhaerentibus, aequilongisque; labello calcarato, lamina late ovata, marginibus incurvulis, antice obtuso-acuminata, medio

— paululo incrassata, calcare conico apice obliquo, lateraliter paululo compresso, glabro, 0,4 cm longo, lamina sepalis subaequilonga; columna brevi, medio sulcata, brachiis falcato-excurvatis brevibus; anthera brevi, late ovato-cordata acuta.

Savaii I. : Near Olonona growing with Vrydagzenia Whitmeei Schltr. — Vaupel no. 655, flowering on 1st July 1905; in shady forest near Patamea — L. & K. Rechinger no. 1145.

Related to V. elongata Bl., but well characterised in the spur and column.

The specimens listed by Kränzlin as Vrydagzenia albida Bl. var. purpurascens Krzl., in Engl. Jahrb. Vol. XXV [1898], p. 599, probably belong here.

24. Vrydagzenia Whitmeei Schltr., in Bull. Herb. Boiss., 1906, p. 296.

Savaii I. : Near Olonono — Vaupel no. 517, flowering on 30th Jan. 1905.

Eucosia Bl.

25. Eucosia carnea is stated by Fleischmann and Rechinger to come from the island of Savaii. I have not seen the material and would not like to accept the validity of this determination without question.

Corymbis Thou.

26. Corymbis veratrifolia Bl. ?

Savaii I. : Near Olonono — Vaupel no. 327, flowers overblown on 19th May 1905. The flowers were too far damaged to allow a definite determination.

Tropidia Bl.

27. Tropidia effusa Rchb.f.

Savaii I. : Hinterland of Patamea — Vaupel no. 531, flowers overblown on 7th Jan. 1907.

Coelogyne Lindl.

28. Coelogyne lycastoides F.v.M. et Krzl., in Oesterr. Bot. Zeit., XLV, p. 179.

Upolu I. : E. Betche, flowering on 24th Nov. 1880; near [Mount] Lanutoo — Vaupel no. 460, flowering on 26th July 1905.

A beautiful, large-flowered species which deserves to be cultivated.

Oberonia Lindl.

29. Oberonia Betchei Schltr., in Bull. Herb. Boiss., VI (1906), p. 303.

Oberonia iridifolia Krzl., in Engl. Jahrb., XXV [1898], p. 601 (nec Lindl.) Fleischm. et Rech., l.c. p. 256.

Oberonia verticillata Krzl., l.c., p. 601 (nec Wight).

Upolu I. : On palms at Suga — Reineke no. 214, in Feb. 1894; crater of Mount Falevoa [Falevao].

Reinecke no. 240, in Apr. 1894; Le pua - Reinecke no. 628, in May 1895; near Malifa - L. & K. Rechinger no. 1202.

Savaii I. : On coconut palms near Matanta - Vaupel no. 234, flowering on 17th March 1905.

30. Oberonia glandulosa Lindl.

Upolu I. : Ridge of [Mount] Vailele - Reinecke no. 184, flowering in Dec. 1893.

Savaii I. : Besides the creek behind Avao - Vaupel no. 159, flowering on 13th Jan. 1906.

31. Oberonia heliophila Rchb.f., in Ot. Bot. Hamb., p. 56.

Upolu I. : Graeffe.

I suspect that Reichenbach was considering the plant described by me as O. Betchei Schltr., but which appears to differ from that of the Fiji Islands, since Reichenbach's description of the labellum (apice trilobulo) does not agree with O. Betchei Schltr.

Microstylis Nutt.

32. Microstylis Reineckeana Krzl., in Engl. Jahrb. Vol. XXV [1898], p. 600.

Upolu I. ↗ Letogo, river area - Reinecke no. 311, flowering in Apr. 1894.

Savaii I. : Olonono - Vaupel no. 279, flowering on 17th Feb. 1905; above Tapuelede, alt. c. 500m - Vaupel no. 597, flowering on 8th Sept. 1906.

The plant of this name as illustrated by H. Fleischmann et Rechinger definitely does not belong here, if the illustration of the labellum is correct.

33. Microstylis samoensis Schltr., sp. nov.

Herba pusilla erecta, 15–17 cm alta; radicibus filiformibus flexuosis villosis; caule brevi incrassato, foliato; foliis erecto-patentibus distichis, anguste lanceolatis acuminatis, basi in petiolum sensim angustatis, glabris, textura tenuibus, 5–8,5 cm longis, medio fere vel infra medium 0,7–1,2 cm lati, petiolo basi dilatata caulem vaginante 1,5–2,5 cm longo; scapo stricto vel substricto, vaginulis paucis obsesso, glabro; spica cylindrica, brevi, c. 2 cm longa, subdense pluriflora; bracteis lanceolatis, acuminatis, glabris, pedicello aequilongis vel paulo brevioribus; floribus in genere inter mediocre, erecto-patentibus; sepalis oblongis obtusis, glabris, concavis, c. 0,3 cm longis, lateralibus obliquis, intermedio paulo latioribus; petalis oblique spathulato-oblanceolatis, obtusis, sopalis aequilongis, supra medium c. 15 mm latis; labello rotundato, lobo apicali alte bifido, partitionibus oblique lanceolatis acutis, 1,5–2 mm longis, utrinque laciniis 3 longis filiformibus c. 2 mm longis et denticulo triangulari acuminato donato, auriculis falcato-ovatis, acutis vel subacutis, labello toto e basi usque ad apices lobi intermedii 0,4 cm longo, medio fere 0,4 cm lato, auriculis 0,2 cm longis, callo obscuro hippocropiformi ad basin laminae, medio foveolato; columna brevi, biauriculata; anthera late ovata obtusiuscula; ovario pedicellato hexangulari, pedicello inclusu 0,4–0,5 cm longo, glabro.

Upolu I. : - Betche.

A plant collected in 1896 by Francis on the Fiji Islands, probably also belongs here, but the specimen is damaged. The species is related to M. arachnoidea Schltr. and M. pectinata J.J.Sm., but in habit is more reminiscent of M. taurina Rchb.f.

34. Microstylis tetraloba Schltr., sp. nov.

Herba terestris, erecta, c. 30 cm alta; radicibus filiformibus, elongatis, flexuosis, puberulis; caulis (i. e. pseudobulbis) cylindraceis, vaginis foliorum omnino obtectis, 5—7 cm altis, 1—1,3 cm diametentibus; foliis erectis vel erecto-patentibus, ellipticis, acuminatis, glabris, textura tenuibus, nervosis, basi sensim in petiolum latum basi caulem vaginantem abeuntibus, lamina 10—15,5 cm longa, medio fere 4—6 cm lata, petiolo tenui, 4—6 cm longo; scapo pseudo-terminali, angulato, vaginulis paucis bracteiformibus, linear-lanceolatis acuminatis dissitis obpresso, glabro; spica subdense pluriflora cylindracea, c. 5 cm longa, 1,5—1,8 cm diametente; floribus inversis patentibus, illis *M. Rheedii* Bl. paulo majoribus; sepalis patentibus, oblongis, obtusis, glabris, vix 0,5 cm longis, lateralibus paulo obliquis; petalis linearibus, obtusis, glabris, patentibus; labello trilobato, lobis basilaribus (auriculis) reflexis, falcato-oblongis obtusis, lobo intermedio late cuneato, bilobulato, lobulis oblique rhombatis, irregulariter crenulatis, lobo medio et basi labelli usque ad apices loborum 0,5 cm longo, et basi labelli ad apicem loborum laterarium 0,5 cm longitudinis, toto glabro, basi foveolato; columna generis; ovario pedicellato, clavato, 0,5 cm longo, glabro, leviter 6-costato.

Upolu I. : - Betche.

Distinguished amongst all the species from the Pacific Islands, by the shape of the labellum. Reminiscent of M. quadriloba Schltr. (Malaxis quadriloba Ames) and M. mindorensis Rendle.

Liparis L.C.Rich.

35. Liparis savaiensis Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad.

Wien, LXXXV, p. 255.

Savaii I. : Near Matantu — L. & K. Rechinger.

All those plants from this region designated as 'L. longipes' clearly belong here.

36. Liparis phyllocardium Schltr., sp.nov.

Herba terestris, 15—25 cm alta; rhizomate decumbente, tereti, vaginis obtecto, radicante; radicibus filiformibus, flexuosis, villosulis; pseudobulbis haud longe distantibus ovoideis, paulo compressis, 2,5—3 cm longis, infra medium 1,2—1,5 cm latis, vagina ovata acuminata et folii singuli petiolo obtectis; folio singulo basiliari, lamina late ovata cordata, breviter acuminata, 12—16 cm longa, medio fere 11—12 cm lata, glabra, textura tenui, petiolo lato, sulcato, basi paulo dilatato, 10—12 cm longo; scapo ad apicem pseudobulbi nato, gracili, 13—15 cm longo, tereti, glabro, basi ^{vagina} ancipiti breviter acuminata protecto; inflorescentia racemoso-subumbellata, pluri-(10—20) flora; bracteis lanceolatis acutis, glabris, pedicello multo brevioribus; floribus illis *L. montanae* Ldl. paulo majoribus ut videatur cleistogamis, clausis, erecto-patentibus erectis; sepalis triangulo-lanceolatis obtusiusculis, glabris, c. 1 cm longis, lateralibus paulo obliquis; petalis linearibus subacutis, glabris, sepolorum longitudine; labello lato obovato, apiculato, margine minute serrulato, basi callo parvulo dupli ornato, linea media basi paulo incrassata, c. 1 cm longo, supra

medium 0,8 cm lato; columna semitereti, basi paulo dilatata, 0,4 cm longa, alis apice haud bene evolutis; anthera ovato-rotundata obtusa, glabra; ovario pedicellato clavato, glabro, pedicello inclusu c. 1,7—2,3 cm longo.

Savaii I. : Behind [Mount] Mangaloa, alt. c. 1200m — Vaupel no. 393, on 11th Oct. 1905.

A very interesting novelty of the section Rachidibulbon, of which previously only two Malayan species L. montana Lindl. and L. comelinifolia Lindl. were known. L. phyllocardium Schltr. is distinguished from both by the floral characters.

Var. minor Schltr., var. nov.

Differt a forma typica foliis minoribus et angustioribus, ovato-lanceolatis ovatisve.

Savaii I. : Near Mataana — Vaupel no. 11, Oct. 1905 (fruiting).

37. Liparis stricta Schltr., spec. nov.

Herba erecta, terrestris, 30—35 cm alta; rhizomate valde abbreviato, pseudobulbis obsesso; radicibus fliformibus elongatis glabris; pseudobulbis cylindraceis vaginis 3—5 laxe amplectentibus, mox siccis, oblongis, obtusis omnino obtectis, apice bifoliatis, teretiusculis, glabris, 7—8 cm longis, 0,5—0,8 cm diametentibus; foliis erecto-patentibus vel erectis, elliptico-ovatis, acuminatis, basi in petiolum brevem angustatis, glabris, textura tenuibus, 8—15 cm longis, medio fere 5—7 cm latis, petiolo c. 2 cm longo; scapo terminali stricto, leviter angulato, glabro, folia excedente; racemo laxe 8—15-floro, quaquaverso; bracteis patulis lanceolatis parvulis, ovario pedicellato multo brevioribus; floribus in genero inter majores, illis L. atropurpureae Ldl. fere aquimagnis, erecto-patentibus; sepalis lanceolato-oblongis, obtusis, glabris, c. 1 cm longis, lateralibus obliquis, petalis reflexis linearibus obtusiusculis, glabris, sepolorum longitudine; labello arcuato, cuneato-ovato, apiculato, diuidio anteriore serrato, basi callo duplice cruribus falcatis obtusis ornato, 1 cm longo, supra medium 0,7 cm lato; columna leviter arcuata e basi semitereti anguste alata, apice breviter trilobulata, glabra; anthera suborbiculari, antice truncata; ovario pedicellato hexagono, glabro, c. 1,2 cm longo.

Savaii I. : Near Mataana — Vaupel no. 134, flowering on 20th Sept. 1906.

Probably closest related to L. longicaulis Ridl. from Madagascar and L. atropurpurea Wight from Ceylon. Similar species of this affinity occur, furthermore, in New Guinea. This species is distinguished by the column.

Lobogyne Schltr.

38. Lobogyne bracteosa Schltr., in Bull. Herb. Boiss.

Appendicula bracteosa Rchb.f., in Seem., Fl. Vit., p. 295.

Appendicula pendula Krz1., in Engl. Jahrb., XXV [1898], p. 601 (nec Bl.), Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 256.

Upolu I. : Graeffe; ridge of [Mount] Letogo — Reineke no. 370, in May 1894; above Tutumapu — L. & K. Rechinger no. 82; near Tiavi, alt. c. 400—500m — L. & K. Rechinger no. 426.

Savaii I. : Central region, alt. c. 1200m — Reinecke no. 307a, flowering in Oct. 1894; [north-west of Sili — Vaupel no. 284, flowering on 18th May 1906].

Glomera Bl.

39. Glomera Reineckeana Schltr. [comb. nov.]

Agrostophyllum Reinekeanum Krzl., in Engl. Jahrb., XXV [1898], p. 602.

Glomera samoensis Rolfe, in Kew Bull., 1908, p. 414.

Upolu I. : [Mount] Lanutoo - Reinecke no. 277, flowering in May 1894; near Apia - Dr. Funk; near Maliolio, alt. c. 1200m - Vaupel no. 466, flowering on 25th Oct. 1905.

The species is closely related to G. montana Rchb.f. from Fiji.

Agrostophyllum Bl.

40. Agrostophyllum megalurum Rchb.f., in Seem. Flor. Vit., p. 296.

Appendicula bracteosa Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 257, t. IV, f. 2 (nec Rchb.f.).

Upolu I. : - Betché.

Savaii I. : Above Tapuelele, alt. c. 400m - Vaupel no. 547, flowering on 10th Oct. 1906.

Earina Lindl.

41. Earina samoensium F.v.M. et Krzl., in Osterr. Bot. Zeit., XLIV (1894), p. 211.

Upolu I. : - Betché; [Mount] Lanutoo - Reinecke no. 614, flowering in May 1895; near [Mount] Lanutoo - Vaupel no. 544, flowering on 26th July 1905.

Mediocalcar J.J.Sm.

42. Mediocalcar paradoxum Schltr. [comb. nov.]

Eria paradoxa Krzl., in Engl. Bot. Jahrb. XXV [1898], p. 606.

Upolu I. : [Mount] Lanutoo - Reinecke no. 300, flowering in May 1894.

Undoubtedly, the plant is a Mediocalcar. Unfortunately, the plant lent to me from Breslau is completely without flowers, but the whole structure indicates that it is from the affinity of M. bicolor J.J.Sm. Kränzlin's description of the flowers assured me immediately, that the plant should be considered as Mediocalcar.

Epiblastus Schltr.

43. Epiblastus sciadanthus Schltr., in K. Schum. et Lauterb., Nachtr. Fl. Deutsch. Schutzg. Südsee, p. 137.

Bulbophyllum sciadanthum F.v.M., in Wing's South Sci. Rec. 1882.

Eria ornithoides Krzl., in Engl. Jahrb., XXV [1898], p. 606.

Upolu I. : - Betché; Laulii, river area, alt. c. 600m - Reinecke no. 313.

: Phaius Lour.

44. Phaius Graeffei Rchb.f., in Seem. Fl. Vit., p. 299.

Phaius Blumei Krzl., in Engl. Jahrb. XXV [1898], p. 602 (nec Lindl.).

Upolu I. : - Graeffe; above Moa-Moa, in forest - L. & K. Rechinger no. 25; in forest near Tiavi, alt. c. 500-600m L. & K. Rechinger nos 366, 404.

Savaii I. : Central ridge - Reinecke no. 456, flowering in Oct. 1894.

Calanthe R.Br.

45. Calanthe anomcentrum Schltr., sp. nov.

Herba terrestris, elata, usque ad 1,20 cm alta; rhizomate valde abbreviato; radicibus filiformibus, flexuosis, puberulis; foliis basilaribus 3-5 erecto-patentibus, lanceolatis vel lanceolato-ellipticis, acuminatis, glabris vel subglabris, plicatis, basi in petiolum sensim angustatis, usque ad 80 cm longis, medio laminae usque ad 10 cm latis; scapo ex axillis foliorum exteriorum gracili, tereti, praesertim apicem versus puberulo, vaginis paucis dissitis, glabratis obpresso; racemo cylindraceo elongato, subdense multifloro, usque ad 20 cm longo, c. 3 cm diametente; bracteis patulis lanceolatis, acuminatis, vulgo glabratis, quam flores plus minusve brevioribus; floribus in genere inter minores, illis *C. flavae* Hassk. fere aequimagnis; sepalis reflexis ovatis, breviter acuminatis, extus minute puberulis, c. 0,6 cm longis, lateralibus obliquis; petalis reflexis oblique linearispathulatis, obtusis, glabris, sepalis subaequilongis; labello trilobo, lobis lateralibus semiovato-rhombeis obtusis, intermedio circuitu oblongo, usque ad medium fere bifido, segmentis subfalcato-conniventibus anguste oblongis obtusis, lobos laterales subduplo superante, verrucis numerosis ad ostium calcari, lamina tota 0,7 cm longa, inter apices loborum lateralium 0,8 cm lata, lobo medio 2,5 mm lato, calcare adscendente cylindrico, puberulo, c. 1 cm longo; columna brevi glabra, antice utrinque in lobum quadratum producta, unguis labelli adnato; ovario pedicellato clavato, puberulo, 1,3-1,5 cm longo.

Savaii I. : Below [Mount] Maugaloa, alt. c. 800m - Vaupel no. 89, flowering on 3rd Dec. 1905.

A species of that group of Eu-Calanthe gathered around *C. flava* Hassk. and to which it is closely related, but easily distinguished by the shape of the labellum.

46. Calanthe bigibba Schltr., sp. nov.

Herba terrestris erecta, usque ad 60 cm alta; rhizomate valde abbreviato, radicibus filiformibus elongatis, flexuosis, puberulis; foliis basilaribus erecto-arcuatis, lanceolatis, acuminatis, glabris, plicatis, basi in petiolum latum sensim angustatis, usque ad 60 cm longis, lamina medio fere usque ad 6 cm latis; scapo basilari ex axillis foliorum exteriorum validiusculo, foliis vulgo breviore, tereti, glabro, vaginis paucis 3-4, dissitis, amplis, cucullato-amplectentibus, acuminatis, glabris obpresso, inflorescentia inclusa 30-40 cm alto; racemo dense multifloro, cylindraceo-oblongo; bracteis lanceolatis acuminatis, mox caducis; floribus illis *C. corynigoidis* Ldl. fere aequimagnis, aureis, patulis; sepalo intermedio ovato acuminato, glabro, 0,8 cm longo, lateralibus oblique oblongo-ovatis, acuminatis, glabris, intermedio aequilongis; petalis elliptico-ovatis, acuminatis, obliquis, glabris, sepalis paululo brevioribus, subaequilatis; labello trilobo, lobis lateralibus parvulis rhomboeoblongis, intermedio late-cuneato obovato breviter acuminato, lateralia plus duplo excedente, 3,5 mm longo, infra apicem 2,5 mm lato, callis 2 semi-ovatis brevibus ad ostium calcari, lamina tota longitudine 0,5 cm subattingente, calcare cylindraceo, subarcuato-recurvo, apicem versus paulo clavato-ampliato, obtuso, glabro, 0,9 cm longo; columna brevi glabra, apice leviter trilobata; ovario pedicellato clavato, glabro, pedicello gracili inclusu c. 1,5 cm longo.

Savaii I. : Mataana - Vaupel no. 359, flowering on 4th Nov. 1905.

A species of the section *Styloglossum* from the affinity of *C. curculigoides* Lindl. and *C. speciosa* Lindl., differing in the labellum and column.

47. *Calanthe lutescens* Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 257, t. I, f. 2.

Upolu I. : Ridge area of Mount Lanutoo, in forest, alt. c. 700m - L. & K. Rechinger no. 1826.

48. *Calanthe nephroglossa* Schltr., sp. nov.

Planta terrestris, erecta, valida, usque ad 1 m alta; rhizomate brevissimo; radicibus filiformibus elongatis, puberulis; foliis basilaribus erectis arcuatis, lanceolatis, acuminatis, glabris, plicatis, basi in petiolum satis longum basi vaginantem sensim angustatis, usque ad 80 cm longis, lamina medio fere usque ad 9 cm lata; scapo ex axillis foliorum exteriorum nato valido, foliis breviore, vaginis dissitis, mox in bracteas abeuntibus, acuminatis obsesso, minute puberulo, folia paulo superante; racemo subdense multifloro, 20—25 cm longo; bracteis persistentibus erecto-patentibus, lanceolatis, acuminatis, minute puberulis, inferioribus ovario pedicellato aequilongis, superioribus sensim brevioribus; floribus in genere inter majores, albidis, erecto-patentibus; sepalo intermedio oblongo, acuminato, glabro, 1,7 cm longo, 0,9 cm lato, lateralibus aequilongis, oblique ovatis, glabris, 0,8 cm latis; petalis oblique lanceolato-ligulatis, acutis, glabris, sepalorum longitudine; labello reniformi, margine leviter undulato, apice lobulato-apiculato, glabro, ad ostium calcaris callis 3 oblongis instructo, lineis 3 verruculorum antepositis usque ad medium laminae decurrentibus, lamina 0,8 cm longa, medio fere 1,5 cm lata, calcare dependente filiformi, puberulo, 3,8 cm longo; columna brevi antice utrinque in lobulum quadratum extensa, glabra; ovario pedicellato clavato, puberulo, calcari fere aequilongo.

Savaii I. : South of Mataana, alt. c. 1000m - Vaupel no. 413, flowering on 17th May 1906.

A very characteristic species of the section Eu-Calanthe, distinguished by the labellum from all the related species.

49. *Calanthe Vaupeliana* Krzl., in Notizbl. Kgl. Bot. Gart. Berl., 1909, p. 111.

Calanthe clavata Krzl., in Engl. Jahrb., XXV [1898], p. 603 (nec Lindl.).

Herba terrestris, erecta, valida, usque ad 70 cm alta; rhizomate valde abbreviato; radicibus filiformibus elongatis, glabris; foliis basilaribus 4—6, erecto-patentibus, arcuatis, lanceolatis, acuminatis, plicatis, basi sensim in petiolum sulcatum attenuatis, glabris, petiolo inclusio 30—70 cm longis, medio 2—6 cm latis; scapo in axillis foliorum exteriorum nato, erecto, 40—50 cm alto, vaginis paucis dissitis ventricoso-amplectentibus, breviter acuminatis, glabris obsesso, tereti, glabro; racemo cylindraceo subdense multifloro, usque ad 20 cm longo, c. 3 cm diametente; bracteis ovato-lanceolatis acuminatis, floribus aequilongis vel longioribus, mox caducis, glabris; floribus erecto-patentibus illis *C. speciosae* Ldl. paulo majoribus; sepalis ovato-oblongis, concavis, glabris, breviter acuminatis vel apiculatis, 1,1 cm longis, medio fere 0,6 cm latis, lateralibus obliquis; petalis sepalis similibus sed paulo latioribus, obliquis, 1 cm longis, medio fere 0,7 cm latis; labello trilobo, lobis lateralibus parvulis oblongo-quadratis, intermedio cuneato-ligulato apiculato, lateralia multo excedente; lamina tota labelli 0,7 cm longa, nuda, calcare cylindraceo, apice subampliato, recurvato, obtuso, basin versus paululo ampliato, glabro, c. 1,2 cm

longo; columna ungui labelli adnata, brevi, clinandrio leviter denticulato; ovario pedicellato, clavato, usque ad 2,4 cm.

Savaii I. : Central region - Reinecke no. 455, flowering in Sept. 1894; on the south face of [Mount] Maugaloa, alt. c. 1200m - Vaupel no. 358, flowering on 29th June 1906.

To be placed in the section *Styloglossum* next to *C. speciosa* Lindl. Well characterised by the broader petals and by the labellum.

50. *Calanthe veratrifolia* R.Br., in Bot. Reg., sub t. 573.

Savaii I. : In the scrub of [Mount] Mu, near Aopo - Vaupel no. 409, flowering on 5th/6th Jan. 1905.

Spathoglottis Bl.

51. *Spathoglottis pacifica* Rchb.f., in Seem. Fl. Vit., p. 300.

Spathoglottis plicata Krzl., in Engl. Jahrb., XXV [1898], p. 603 (nec Bl.).

Upolu I. : Mount Vailele - Reinecke nos 185, 586, flowering in Mar. 1895; Utumapu - Reinecke no. 185a, in Jan. 1895; L. & K. Rechinger no. 1672.

Savaii I. : On volcanic soil (tuff) in the coastal region, near Vaipouli - Vaupel no. 476, flowering on 24th Aug. 1906.

Appears to be widely distributed in the region and very common.

Geodorum R.Br. [Jacks.]

52. *Geodorum tricarinatum* Schltr., sp. nov.

Geodorum fucatum Krzl., in Engl. Jahrb., XXV [1898], p. 603 (nec Lindl.).

Herba erecta, habitu omnino specierum aliarum generis; foliis fasciculatis 3-4, lanceolatis vel lanceolato-ellipticis, acutis vel acuminatis glabris, plicatis, basi in petiolum vaginantem angustatis, usque ad 35 cm longis, medio fere usque ad 5 cm latis; scapo basilari apice nutante, foliis fere aequilongo, tereti, glabro, vaginis 3-4 dissitis arctius amplectentibus obpresso, valido, c. 1 cm basi diametricente; racemo nutante abbreviato, dense 10-20-floro demum paulo elongato; bracteis lanceolatis acuminatis, inferioribus floribus nunc aequilongis, superioribus sensim brevioribus; floribus illis specierum aliarum generis valde similibus aequimagnisque, pallide roseis; sepalis oblongo-ligulatis apiculatis, glabris, 1 cm longis, medio fere 0,4 cm latis, lateralibus obliquis; petalis sepalis similibus obtusis, aequimagnis fere; labello e basi ovata saccato-concava tertia parte apicali angustiore in lobum quadratum, antice obtuse truncatum, retusum, minute apiculatum extenso, sacculo inclusu 1 cm longo, infra medium 0,7 cm lato, lobo apicali 0,4 cm lato, carina triplici e basi usque supra medium labelli decurrente, glabra, carina intermedia lateralibus tonuiore; columna semitereti, apice obscure trilobato, rostello exciso, 0,5 cm longa, pede brevi; ovario cylindraceo subclavato, glabro, 0,8 cm longo.

Savaii I. : Vaipouli - Vaupel no. 285, flowering on 28th Jan. 1905

Distinguished from all the other species in the region by the three keels on the lip. The genus urgently requires a new survey, the individual species differ very little amongst themselves.

Dendrobium Sw.

53. Dendrobium biflorum Sw., in Nov. Act. Ups., VI, p. 84.

Savaii I. : Behind Matautu [village] - Vaupel no. 545, flowering on 6th Aug. 1905.

54. Dendrobium Reineckei Schltr. [nom. nov.].

Dendrobium gemellum Krzl., in Engl. Jahrb., XXV [1898], p. 604 (nec Lindl.).

Upolu I. : On the Letogo River - Reinecke no. 234, in Mar. 1894.

The species differs completely from D. gemellum Lindl., being much closer to D. samoanum Schltr., described below.

55. Dendrobium fililobum F.v.M., in Wing's South Sci. Rec., 1882.

Upolu I. : - Betché.

Savaii I. : [Mount] Mataulanu - Vaupel no. 578, on 9th Jan. 1907.

56. Dendrobium Mohlianum Rchb.f., in Bot. Zeitg., 1862, p. 214.

Savaii I. : Central district - Vaupel no. 180, flowering on 29th Sept. 1905; northern central region - Reinecke no. 437, in Sept. 1894.

57. Dendrobium tysanochilum Schltr., in K. Schum. et Laut., Nachtr. z. Flor. Deutsch Schutzg. Südsee, p. 172.

Savaii I. : Behind Matautu [village] - Vaupel no. 283, flowering on 6th Aug. 1905.

Even with a more precise check, I cannot separate this species from the New Guinea plant.

58. Dendrobium Vaupelianum Krzl., in Notizbl. Kgl. Bot. Gart. Berl., 1909, p. 109.

Dendrobium biflorum Krzl., in Engl. Jahrb. XXV [1898], p. 604 (nec Sw.).

Dendrobium involutum Krzl., in Engl. Jahrb. XXV [1898], p. 603 (nec Lindl.).

Dendrobium lepidochilum Krzl., in Engl. Pflanzr., IV. 50. II.B. 21, p. 186.

Epiphytic, erectum, 30—45 cm altum; rhizome valde abbreviato; radicibus flexuosis, fliiformibus, elongatis, glabris; caulis erectis, bene foliatis, teretibus, vaginis foliorum omnino obtectis, vix 0,4 cm diametentibus; foliis ligulatis obtusis, basin versus paululo dilatatis, basi ipsa rotundatis, 6—8 cm longis, infra medium 1,5—2,3 cm latis, vaginis caulem arctissime amplectentibus minute granulosis; floribus binis more sectionis, foliis pseudo-oppositis, primum vaginula protectis; illis D. acuminatissimi fere aquimagnis, flavis; sepalum intermedio linearis apicem versus angustato-elongato, c. 1,7 cm longo, lateralibus e basi triangula linearis elongatis apicem versus angustatis, basi margine anteriore valde ampliatis, cum columnae pede mentum obtusum c. 0,7 cm longum formantibus, 1,7 cm longis; petalis oblique linearis-elongatis apicem versus angustatis, sepolorum longitudine; labello e basi cuneata trilobo, lobis lateralibus oblongo-rotundatis, margine antice denticulato-crenulatis, lobo medio lateralia subdupo superante ovato-lanceolato, longius acuminato, margine lacerato-fimbriato, intus appendicibus subulatis sparsis obsesso, carina serrulata e basi labelli usque ad basin lobii intermedii decurrente, dimidio inferiore labelli intus verrucis brevibus transversis verruculoso, labello toto

c. 1 cm longo, inter apices loborum lateralium 0,3 cm lato, lobo intermedio 0,5 cm longo, basi 0,2 cm lato; columna mediocri, apice utrinque lobulo obtuso donata, dorso (filamento) dente ornata; anthera cucullata; ovario breviter pedicellato, clavato, glabro, 0,8 cm longo.

Savaii I. : Mount Paia -Reinecke no. 218, in Sept. 1894; in scrub on [Mount] Mu, near Aopo - Vaupel no. 286, flowering on 5th/6th Jan. 1905; Letogo River region - Reinecke nos 232, 233, in Mar. 1894; Taumafa - Reinecke no. 394.

Belonging to the section *Grastidium*, which is synonymus with my section *Dianthe*. Probably most closely related to *D. cyrtosepalum* Schltr. from New Guinea.

I have investigated flowers of the Types of all the synonyms listed here and have arrived at the conviction that they all belong here. Specimen no. 235 of Reinecke's plant, which he determined earlier as *D. biflorum* Sw. has been given a further new manuscript name by Kränzlin in the Berlin Herbarium. I will not state it here, so as to avoid a further synonym. Clearly the author has overlooked that he published *D. Vaupelianum* Krzl. several years ago, since in his present monograph we did not see the earlier publication cited, rather the plant is described again as spec. nov.

59. *Dendrobium scirpoideum* Schltr., sp. nov.

Epiphyticum, erectum, gracile, 15—20 cm altum; rhizomate valde abbreviato polyrhizo; radicibus filiformibus elongatis, flexuosis, glabris; caulibus supra basin internodio secundo paulo incrassatis, sulcatis, fusiformibus, supra gracillimis, laxe 5—8-foliatis, apice paucifloris, internodio incrassato medio c. 0,3 cm diametente, caule caetero vix 1,5 mm diametro attingente; foliis erecto-patentibus, nunc subfalcatis, subulatis, 3,5—8 cm longis, 1—1,5 mm diametentibus, glaberrimis, vaginis internodiis vulgo paulo brevioribus arctissime caulem amplectentibus, glabris, usque ad 2,3 cm longis; floribus ad apicom caulis in inflorescentia fasciculiformi, vaginis mox emarcescentibus circumdatis, singulatim natis, more fasciculorum *D. crumenati* Sw., illis *D. davipes* Hk. f. fere aequimagnis; sepalis ovato-lanceolatis acuminatis glabris, 0,5 cm longis, lateralibus basi margine anteriore valde ampliatis, mentum conicum obtusum, 0,5 cm longum formantibus; petalis oblique linearibus acutis, basin versus paulo dilatatis, sepolorum fere longitudine; labello e basi cuneata elliptico apice breviter acuminato, indiviso, glabro, margine antice undulato, lamellis 2 parallelis e basi usque supra medium decurrentibus, 0,9 cm longo, supra medium vix 0,4 cm lato; columna brevi, apice tridentata, pede longius producto; anthera cucullata, antice emarginata, glabra; ovario pedicellato glabro, clavato, pedicello inclusu 0,7 cm longo; capsula ellipsoidea c. 1 cm longa, 0,5 cm diametente.

Upolu I. : - Betche.

The most easterly representative of the section *Crumenata*, so far known only as far as New Guinea. *D. plebejum* J.J.Sm. from Celebes is regarded as the closest relative, but shows substantial differences in the shape of the labellum.

60. *Dendrobium Tokai* Rchb.f., in Hamb. Gartenz., 1865, p. 293; Seem. Fl. Vit., t. 92, p. 304.

Dendrobium sylvanum Krzl., in Engl. Jahrb., XXV [1898], p. 605 (nec Rchb.f.); Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 259.

Upolu I. : Near Apia - Reinecke no. 231, in Mar. 1894.

Savaii I. : On Thespesia populnea near Matautu - Vaupel no. 282, flowering on 19th Mar. 1905; above Patamea, alt. c. 200m - L. & K. Rechinger no. 91.

61. Dendrobium triviale Krzl., in Engl. Jahrb., XXV [1898], p. 604.

Savaii I. : On inocarpus - Reinecke no. 422, flowering in Sept. 1894; near Matautu - Vaupel no. 281, flowering on 16th Nov. 1907; in the crown of tall trees - L. & K. Rechinger no. 995.

62. Dendrobium vagans Schltr., sp. nov.

Epiphyticum, flexuosum, e ramis truncisque arborum dependens; rhizome flexuoso, ima basi tantum radicante, rigido, tereti, pseudobulbis (sicet appellare) perlaxe obpresso; radicibus filiformibus elongatis, flexuosis, glabris; pseudobulbis, rigidis cylindraceis, brevissimis, internodiis rhizomatis vix crassioribus, 0,4 cm altis, 0,2 cm diametentibus, apice unifoliatis; foliis filiformi-subulatis 14—26 cm longis, ut videtur haud sulcatis, siccis c. 2,5 mm diametentibus, basi paulo attenuatis; racemis ad basin pseudobulborum vel e rhizome natis, graciliter pedunculatis laxe 6—10-floris; floribus illis *D. teretifolii* R. Br. fere aequimagnis albido-roseis; sepalis anguste lanceolatis acuminato-elongatis, glabris, 2 cm longis, lateralibus basi margine anteriore latissime dilatata mentum conicum obtusum 0,5 cm longum cum columnae basin formantibus; petalis sepalo intermedio simillimus sed paulo obliquis, fere aequilongis; labello e basi cuneata circuitu anguste lanceolato, 2 cm longo, e medio trilobo, lobis lateralibus parvis brevibus, obtusis, erectis, intermedio anguste lanceolato elongato-acuminato, margine undulato-crispato, 1,2 cm longo, carinis 3 parallelis apicem versus altioribus undulatis, abrupte terminatis e basi labelli usque ad medium lobi intermedii decurrentibus; columna brevi, clinandrio lacerato-dentato, pede elongato; ovario graciliter pedicellato, glabro, pedicello filiformi inclusu 2,5 cm longo.

Savaii I. : Near Falealupo - Vaupel no. 651, flowering on 30th Dec. 1906.

This plant represents a species which previously has always been designated as 'D. crispatum Sm.' in Samoa. A close comparison with the plant from Tahiti shows that the leaves of our plant are larger, the flowers larger and extended further in length, and the labellum has enough characteristics to make the plant into a separate species.

Eria Lindl.

63. Eria consimilis Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 86, t. II, f. 11.

Upolu I. : Ridge region above Utumapu - L. & K. Rechinger no. 96.

It is possible that this species will prove to be identical with E. curvipes Krzl., listed below.

Fleischmann and Rechinger, furthermore, list also E. aeridostachya Lindl. and E. Vieillardii Rchb.f. as Samoan species. The former is endemic to Java, the latter to New Caledonia. I would therefore assume that both these will differ from the Samoan species. Unfortunately, I have not seen the material of Reching-

er's plants.

64. Eria dolichocarpa Schltr., sp. nov.

Epiphytica, erecta, valida, c. 60 cm alta; rhizomate perbrevi; radicibus filiformibus elongatis, flexuosis, glabris; pseudobulbis fusiformi-cylindraceis, paulo compressis, vaginis amplis late amplectentibus 3-5, mox caducis primum obsessis, apice 4-6-foliatis, glabris; 15-22 cm altis, medio fere 2-3 cm latis; foliis erecto-patentibus lanceolato-loratis, apice oblique subacutis vel subacuminatis, basin versus sensim angustatis, 30-40 cm longis, medio fere 3-4 cm latis; racemis versus apicem pseudobulborum lateralibus, erectis, sublaxe multifloris, elongatis, 10-20 cm longis, rhachi stellato-puberulis; bracteis patulis ovatis, acutis vel subacutis, minute stellato-puberulis; floribus in sectione inter minores, erecto-patentibus; sepalis late ovatis obtusis, extus brevissime stellato-puberulis, 0,3 cm longis, lateralibus obliquis; petalis oblongis apiculatis, glabris, sepalis subaequilongis, obliquis; labello e basi cuneata trilobo, lobis lateralibus falcato-rotundatis obtusis, parvulis, intermedio semiorbiculares, amplio, margine leviter undulato, fascia incrassata e basi usque infra medium labelli decurrente, lobis lateralibus latere carnosulo lobum intermedium separante inter se conjunctis, labello toto glabro, 0,3 cm longo, inter apices loborum lateralium 1,5 mm latitudine vix excedente; columna brevi, crassiuscula; anthera reniformi-cucullata; ovario brevissime stellato-tomentoso, clavato, pedicello inclusu 0,6 cm longo, mox elongato; capsula valde elongata, nondum matura jam 4 cm longa.

Savaii I. : On [Mount] Fuluaso - Vaupel no. 564, flowering and withered on 28th July 1906.

A species of the section Hymeneria, well characterised by the structure of the labellum.

65. Eria curvipes Krzl., in Notizbl. Kgl. Bot. Gart. Berl., 1909, p. 110.

Epiphytica, erecta, 25-35 cm alta; rhizomate brevissimo; radicibus filiformibus elongatis, flexuosis glabris; pseudobulbis cylindraceis paululo compressis, demum rugulosis, 16-20 cm altis, 0,8-1,3 cm latis, primum vaginis mox emarcidis 3-4 arcte obtectis; apice 4-6-foliatis; foliis erectis vel erecto-patentibus ligulatis, apice obliquis, obtusiusculis, basi subpetiolato-angustatis, glabris, textura coriaceis, 12-15 cm longis, medio fere, 1,2-1,8 cm latis; racemis versus apicem pseudobulborum lateralibus, erecto-patentibus, sublaxe multifloris, foliorum longitudine vel paulo longioribus; pedunculo paucivaginulato; bracteis ovatis acuminatis, erecto-patentibus, ovario 3-4-plo brevioribus; floribus in genere inter minores, illis *E. polyurae* Ldl. fere aequimagnis; sepalis ovato-lanceolatis subacutis, glabris, 0,5 cm longis, lateralibus paulo-obliquis; petalis sepalis similibus, obliquis, obtusis, sepalis paulo brevioribus; labello rhombeo, angulis obtusis, apice obtusa, infra medium marginem versus lamellulis 2 brevibus parallelis intus ornato, glabro, petalis aequilongo, 0,3 cm infra medium lato; columna brevi, apice leviter trilobata, glabra pede pro genere brevi, pro sectione bene evoluto; ovario pedicello inclusu c. 0,8 cm longo, glabro; capsula cylindracea elongata, nondum matura jam 2 cm longa.

Upolu I. : On [Mount] Lanutoo - Vaupel no. 416, flowering on 26th July 1906.

I suggest that the species grouped around Eria polyura Lindl. be collected together as a separate section, Polyura. This section is distinguished by the usually undivided, small, flat labellum, which sometimes has two small ridges. A whole series of these species is endemic to the Philippines, where the group has

its main distribution. Our species is related to E. Vieillardii Rchb.f.

Bulbophyllum Thou.

66. Bulbophyllum Betchei F.v.M., in Wing's South Sci. Rec., 1881, p. 173.

Bulbophyllum atroviolaceum Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 261, t. II, f. 8.

Savaii I. : Near Laau momu (Patamea) - Vaupel no. 537, flowering on 9th Jan. 1909; ridge area of [Mount] Maungaafi - L. & K. Rechinger no. 617.

Upolu I. : - Betche; ridge area above [Mount] Lanutoo, alt. c. 750m - L. & K. Rechinger no. 1824; primary forest at Tiavi, alt. c. 600m - L. & K. Rechinger no. 441; ridge area above Utumapu - L. & K. Rechinger no. 105, in June.

67. Bulbophyllum sp. aff. membranaceo Teijsm. et Binnend.

Bulbophyllum Betschei Fleischm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 261.

Bulbophyllum Prenticei Krzl., in Engl. Jahrb., XXV [1898], p. 607 (nec F.v.M.).

Savaii I. : On a tree on [Mount] Fuluasoa - Vaupel no. 412, without flowers on 28th July 1905.

Upolu I. : Ridge area of [Mount] Lanutoo, alt. c. 750m - L. & K. Rechinger no. 1842; ridge area above Utumapu - L. & K. Rechinger nos 592, 1682.

68. Bulbophyllum savaiense Schltr., sp. nov.

Epiphyticum, pusillum, erectum, 2,5—4,5 cm altum; rhizomate valde abbreviato, erecto, dense pseudobulbis obpresso; radicibus filiformibus elongatis, flexuosis, superioribus rhizomati appressis; pseudobulbis parvulis angusto ovoideis, demum leviter rugulosis, 0,4—0,6 cm longis, infra medium 0,2—0,3 cm diametentibus, unifoliatis, vaginis mox fissis aequilongis primum obtectis; foliis erectis, elliptico-vel oblongo-ligulatis, apice inaequalibus, apiculatis, glabris, basi subpetiolato-angustatis, 1—1,5 cm longis, medio fere 0,3—0,5 cm latis; scapis ad basin pseudobulborum natis erectis, gracillimis, filiformibus, vaginulis 2—3 minutis, dissitis obsessis, apice laxe 3—6-floris, inflorescentia inclusa 3—3,5 cm longis; bracteis minutis, ovato-cucullatis, breviter acuminatis, glabris. ovario bene brevioribus; floribus in genere inter minimos ut videtur albidis; sepalis ovatis subacutis, glabris, intermedio vix 0,1 cm longo. lateralibus obliquis paulo longioribus; petalis subfalcatis linearisubspathulatis obtusis, sepalo intermedio paulo brevioribus; labello circuitu rhomboideo-ovato, angulis et apice obtusis, carnosulo, basi apiceque tenuiore, sepalo intermedio duplo fere breviore; columna minuta, brachiis dentiformibus inter se lamella conjunctis; anthera cucullato-reniformi, antice emarginata; ovario subsessili clavato glabro, vix 0,1 cm longo.

Savaii I. : Above Tapueleele [village], alt. c. 700m - Vaupel no. 596, flowering on 8th Nov. 1906.

One of the smallest-flowered species of the genus of whose affinity I know only an undescribed species from New Guinea. Very characteristic in the filamentaceous stems of the raceme and erect growth.

69. Bulbophyllum samoanum Schltr., sp. nov.

Epiphyticum, in ramis arborum decumbens, c. 15 cm altum; rhizomate valde abbreviato, pseudobulbis dense obsesso; radicibus filiformibus elongatis, flexuosis, glabris, numerosis; pseudobulbis ovoideis, glabris, apice unifoliatis, 1.2—1.4 cm altis, supra basin 0.7—0.8 cm diametentibus: folio erecto, ligulato, obtuso, basi subpetiolato-angustato, 10—12 cm longo, medio fere 1.7—2 cm lato; floribus ad basin pseudobulborum natis pluribus, pedunculis erectis, unifloris, folio bene brevioribus, teretibus, glabris, gracilibus, basi vaginulis 2—3 minutis donatis: bractea ovato-cucullata, apiculata, minuta; pedicello gracili elongato; floribus in genere mediocribus, sepalo intermedio concavo, lanceolato, apiculato, dorso carinato, glabro, c. 1,1 cm longo; lateralibus oblique oblongis, apiculatis, glabris, 1.5 cm longis medio fere 0,4 cm latis; petalis minutis, ligulatis subacutis, basi margine anteriore paulo ampliato-decurrentibus, 2,5 mm longis, glabris; labello arcuato, carnosus, linguiformis, superne sulcato, basi cordato, subtus medio carinato-incrassato, glabro, nudo, c. 2,5 mm longo; columna semitereti, c. 0,3 cm alta, brachiis 2 subulatis apice subantenuato-obtusatis, antheram paulo excedentibus; anthera ovato-cucullata antice apiculata, glabra; ovario cylindraceo, glabro, pedicello gracili perlongo inclusu c. 6,5 cm longo.

Upolu I. : - Betché; [Mount] Lanutoo - Vaupel no. 546, flowering on 26th July 1905.

The plant belongs to a small Papuan-Pacific group, characterised by the long pedicels and sepals of varying length, as well as by the small labellum. To date, none of these species appear to have been described.

70. Bulbophyllum praealtum Krzl., in Notizbl. Kgl. Bot. Gart. Berl., 1909, p. 109.

Epiphyticum, in ramis truncisque arborum decumbens, longe repens: rhizomate elongato tereti, vaginis mox fissis primum dense obtecto, polyrhizo, pseudobulbis laxe obsesso; radicibus filiformibus elongatis, flexuosis, glabris; pseudobulbis oblique ovoideis sulcato-rugulosis, 2,5—3 cm longis, infra medium 1,2—2,5 cm latis, unifoliatis; folio erecto oblongo-ligulato, subacute, basin versus subpetiolato-angustato, 18—21 cm longo, medio fere 3,5—4 cm lato; scapis gracillimis, erectis vel adscendentibus, rigidulis, teretibus, glabris, vaginulis paucis dissitis, mox caducis obsessis, inflorescentia inclusa usque 70 cm longis; rhachi paulo incrassata; bracteis persistentibus late ovatis, concavis, obtusis, dorso carinatis, ovario pedicellato vulgo brevioribus; floribus illis *B. stellula* Ridl. fere aequimagnis, more sectionis singulatim natis; sepalis lanceolatis acuminatis, dorso carinatis, c. 3 cm longis, glabris, lateralibus obliquis, basi margine anteriore dilatata mentum breve obtusum formantibus; petalis minutis obliquis, late ovatis irregulariter lobulato-dentatis, apice aristato-acuminatis, glabris, vix 0,4 cm longis; labello circuitu anguste lanceolato, apice subulato, basi auriculis 2 erectis, triangularibus, obtusis donato, medio sulcato, et basi lamellis 2 brevibus ornato, margine grosse crenato-dentato, c. 2 cm longo; columna subtereti, brachiis bidentatis, dente antico subulato, brevi; 0,5 cm alta, ovario pedicellato clavato, glabro, c. 1,2 cm longo, capsula obtuse 6-costata, fusiformi-cylindracea, c. 5 cm longa, medio fere 0,8 cm diametro.

Savaii I. : On a mangrove in a coastal swamp, behind Matautu [village] - Vaupel no. 322, flowering on 28th June 1905.

The species belongs to the section *Intervallata* and is best placed next to *B. elasmatopus* Schltr., but differing from it in the labellum.

Phreatia Lindl.71. Phreatia obtusa Schltr., sp. nov.

Epiphytica erecta, 30–40 cm alta; rhizomate valde abbreviato, dense pseudobulbis obsessa, polyrhizo; radicibus filiformibus elongatis, flexuosis, glabris; pseudobulbis globosis, primum vaginis amplis interdum foliis simillimis obtectis, demum rugulosis, vulgo bifoliatis, c. 1,2 cm diametentibus; foliis loratis apice obtusatis, inaequaliter bilobulatis, ad vaginam brevem articulatis, basin versus paulo angustatis, 16–25 cm longis, medio fere 1,5–2,2 cm latis; scapis ad basin pseudobulborum natis, gracilibus, erectis vel adscendentibus, teretibus, glabris, vaginis 5–7 distantibus, cucullato-amplectentibus, apiculatis obsessis, nunc foliis aequilongis, nunc longioribus; racemo subsecundo, dense multifloro, c. 7–10 cm longo; bracteis oblongis obtusiuseulis, ovarium amplectentibus, floribus paulo brevioribus; floribus niveis, illis *P. sacciferae* Schltr. similibus; sepalis ovatis obtusis, glabris, concavis, vix 0,3 cm longis, lateralibus obliquis, basi margine anteriore paulo ampliatis, mentum breve obtusum formantibus; petalis obliquis, ovato-lanceolatis, obtusis, sepalis paululo brevioribus; labello ovato, basi rectangulari-truncato, intus basi praesertim medio minute pilosulo, apicem versus mox glabro, obtuso, sacco subgloboso, porrecto, brevi, labelli laminæ plus 4-plo breviore, lamina ipsa c. 2 cm longa, basi latitudine 1,5 mm subattingente; columnæ brevi, rostellò alto, bifido, clinandrio leviter lobulato; anthera subglobosa; polliniis 8, stipite anguste linearis, polliniis subduplo longiore, glandula minuta; ovario pedicello inclusu c. 3,5 mm longo, clavato, glabro.

Savaii I. : Fatugase – Vaupel no. 527, flowering on 10th Nov. 1906.

Related to P. saccifera Schltr. from New Mecklenburg [New Ireland, Bismarck Archipelago, New Guinea] with which, on account of the lip-pouch, it forms a group easily distinguished from the other Phreatia and to which I assign the section name of Sacco-Phreatia.

72. Phreatia Reinecke Schltr., sp. nov.

Phreatia minutiflora Krzl., in Engl. Jahrb., XXV [1898], p. 607 (nec Lindl.).

Epiphytica, pusilla, 10–15 cm alta, subacaulis; radicibus filiformibus elongatis, flexuosis, glabris; foliis 6–10, linearibus, obtusis, basi angustatis, 6–9 cm longis, 2,5–3,5 mm latis, vaginis nervosis basin versus bene dilatatis amplectentibus, imbricantibus; racemis axillaribus erectis vel suberectis, usque supra basin floriferis, basi ipsa vaginulis 2–3 amplectentibus acuminatis vestitis, foliis vulgo paulo brevioribus, interdum subaequilongis; bracteis patulis lanceolatis acuminatis, glabris, inferioribus floribus longioribus, superioribus sensim minoribus; floribus in genere inter minimos inversis, vulgo patulis; sepalis late ovatis breviter acutatis, glabris, vix 0,5 mm excedentibus, lateralibus obliquis, margine anteriore basin versus paulo ampliatis; petalis oblique oblongis breviter acutatis, glabris, sepalis paulo sed distincte brevioribus; labello e basi late cuneata subquadrato, apice leviter bilobulato, denticulo parvo interjecto, sepalis aequilongo, concavulo; columnæ brevi, rostellò bifido, clinandrio dorso bene evoluto, obtuso, rostellum superante; anthera subreniformi-cucullata, medio gibbo donata, glabra; ovario breviter pedicellato, clavato, glabro, pedicello inclusu 0,1 cm longitudine subattingente.

Savaii I. : On a coconut palm, beside a stream near Matautu – Vaupel no. 658, flowering on 28th Dec. 1904; [Mount] Mataulanu – Reinecke no. 587, in Oct. 1894.

Upolu I. : Letago River – Reinecke no. 239, in Jan. 1894.; Laulii, river area – Reinecke no. 292, in Jan. 1894.

One of the smallest-flowered species of the genus, most closely related to P. inversa Schltr. and P. brachystachys Schltr., both from New Mecklenburg [New Ireland, Bismarck Archipelago, New Guinea]. It differs in the longer leaves and inflorescences, and in the shape of the labellum.

73. Phreatia samoensis (Krzl.) Schltr., in Fedde. Repertor., III (1907), p. 320.

Thelasis samoensis Krzl., in Engl. Jahrb., XXV [1898], p. 607.

Phreatia macrophylla Fleichm. et Rech., in Denkschr. d. Math.-Naturw. Akad. Wien, LXXXV, p. 260 (nec Schltr.).

Upolu I. : - Betsche; Le pua - Reinecke nos 606, 652, in May 1895; [near Tiavi, alt. c. 600m - L. & K. Rechinger no. 437; on trees near Laulii, alt. c. 100m - L. & K. Rechinger no. 957; ridge area above Utumapu, alt. c. 500-600m - L. & K. Rechinger no. 931].

Savaii I. : On bread-fruit trees near Olonono - Vaupel no. 155, flowering on 30th Jan. 1905.

74. Phreatia upoluensis Schltr., in Fedde Repert., III (1907), p. 319.

Upolu I. : - Betché.

Savaii I. : Near Safai - Vaupel no. 156, flowering on 24th Apr. 1905.

75. Phreatia limenophylax Benth.

Fleischmann and Rechinger report its origin as Savaii I.

Luisia Lindl. [Gaud.]

76. Luisia sp.

Savaii I. : Near Falealupo - Vaupel no. 650, fruiting on 30th Dec. 1906.

Unfortunately without flowers, hence it cannot be determined.

Saccolabium Bl.

77. Saccolabium Vaupelii Schltr., sp. nov.

Epiphyticum, e ramis arborum dependens, usque ad 30 cm longum; radicibus filiformibus elongatis, flexuosis; glabris; caule crassiusculo dense vaginis foliorum obtecto, c. 0,8 cm diametente; foliis erecto-patentibus, ligulatis apice inaequaliter ac obtuse bilobatis, glabris, textura crassiusculis, basi paulo angustatis, 10-18 cm longis, medio fero 2,7-3,8 cm latis; pedunculis foliis pseudo-oppositis, ut videtur patulis, vaginulis c. 3 distantibus, laxe amplectentibus, vulgo spicae ipsac fere aequilongis; spica dense multiflora elongata, usque plus 10 cm longa; bracteis reflexis lanceolatis, acuminatis, glabris, ut videtur vulgo ovarium excedentibus; floribus in genere inter minores, extus lepidoto-asperatis; sepalis late ovatis obtusis, 3,5 mm longis, lateralibus obliquis; petalis sepalis subaequilongis, oblique oblongis obtusis, glabris; labello breviter calcarato, trilobo, sepalis aequilongo, lobis lateralibus semi-oblongo-quadratis, antice truncatis, erectis, intermedio oblongo-ligulato obtusissimo, medio incrassato, lamella quadrata transversa, apice emarginata, in ostio calcaris, calcare conico a dorso paulo compresso, obtuso, ovario fere 3-4-plo breviore; columna brevi, antice apice dentibus

subulatis 2. brevibus ornata; anthera ovata, cucullata, antice subrostrata; polliniis globosis, stipite linearis, supra medium paulo dilatato, marginibus recurvis, glandula parvula rotundata; ovario sessili, cylindraceo, lepidoto-asperato, 2—2,5 mm longo.

Savaii I. : On [Mount] Panafu - Vaupel no. 323, flowering on 20th Apr. 1906.

A very characteristic species on account of the dense raceme of small flowers.

It is somewhat reminiscent of S. Wendlandorum Rchb.f., but quite different in the shape of the floral segments.

78. Saccolabium sp. aff. S. ramuloso Lindl.

Savaii I. : Above Sili [village], alt. c. 400m - Vaupel no. 652, 17th May 1906.

Cleisostoma Bl.

79. Cleisostoma spathulatum Bl.

Fleischmann and Rechinger give the origin as Upolu I.

Thrixspermum Lour.

80. Thrixspermum Graeffei Rchb.f., in Seem. Fl. Vit., p. 297.

Epiphyticum, e ramis arborum dependens; radicibus filiformibus elongatis, flexuosis, glabris; caule brevi, rarius elongato, tereti, vaginis foliorum arcto amplectentibus omnino obtecto; foliis lineari-vol anguste lanceolato-ligulatis, apice valde inaequalibus, vaginam versus paulo angustatis, 8—11 cm longis, medio vel infra medium 0,8—1,3 cm latis; scapis gracillimis, erectis vel erecto-patentibus, vulgo folia paulo excedentibus, filiformibus, rigidulis, teretibus, glabris; spica biseriata, dense multiflora, floribus singulalim apertis, usque ad 4 cm longa; bracteis triangularibus subacutis, equitanti-compressis, dorso carinatis, ovario bene brevioribus; floribus in genere inter minores, erecto-patentibus; sepalis oblongo-ellipticis, obtusis, glabris, concavis, 5,5 mm longis, medio fere 0,3 cm latis, lateralibus obliquis; petalis sepalis simillimis sed paululo minoribus; labello e basi breviter unguiculata subcordato, suborbiculari, antice sacculato incurvo, infra apicem pulvino incrassato, farinoso-puberulo, leviter bilobulato ornato, infra medium appendice minuto subulato, puberulo instructo, lamina tota c. 0,4 cm longa, medio fere 4,5 mm lata; columna brevi, pede producto; anthera late ovata, cucullata; ovario cylindraceo, c. 0,6 cm longo, glabro.

Savaii I. : Near Sili - Vaupel no. 151, flowering on 12th July 1904; near Sataua, on trees - L. & K. Rechinger no. 95; near Lealatele - L. & K. Rechinger no. 131.

Upolu I. : On trees near Laulii - L. & K. Rechinger nos 195 and 1700; ridge area above Utumapu, alt. c. 500-600m - L. & K. Rechinger no. 1684.

Micrototorchis Schltr.

81. Micrototorchis samoensis Schltr., sp. nov.

Epiphytica, subacaules, pusilla, usque ad 6 cm alta; radicibus filiformibus elongatis, flexuosis, glabris; caule subnullo, foliis 3—4 vulgo obtecto; foliis distichis erecto-patentibus; anguste oblanceolato-ligulatis, apiculatis, basin versus paulo angustatis, usque ad 1,5 cm longis, supra medium 2—2,5 mm latis, glabris; racemis breviter pedunculatis, folia saepius duplo vel plus duplo superantibus, basi vaginulis 2—3 minutis obsessis, angulatis. rhachi subflexuosa; bracteis ovatis acutis, dorso

carinatis, utrinque basi denticulo dentiformi auctis, glabris; floribus minutis virescenti-flavidis; sepalis lanceolato-ligulatis acuminatis, dorso carinatis, glabris, lateralibus margine superiore cum intermedio usque ad medium connatis, vix 0,2 cm longis, lateralibus obliquis; petalis dimidio inferiore unguiculato-linearibus cum petalis connatis, dimidio superiore in lobum oblique ovato-lanceolatum acuminatum, dorso carinatum extensis, sepalis aequilongis, glabris; labello concavo, ovato-elliptico, apice attenuato-acuminato, glabro. petalis aequilongo, calcare obovideo, apice gibbo donato, laminae plus duplo breviore; ovario breviter pedicellato triquetro, glabro, perigonio subaequilongo; capsula 6-costata falcato-incurva oblongoidea, c. 0,6 cm longa, 0,3 cm diametiente.

Savaii I. : On [Mount] Mataana - Vaupel no. 470, flowering on 20th Sept. 1906.

Since I have now collected ample material of my two genera Micrototorchis and Geissanthera in New Guinea, I have come to the conclusion that it would be best to unite them. This species here is most closely related to Micrototorchis tubulosa Schltr. (Geissanthera tubulosa J.J.Sm.). M. papuana Schltr. (Geissanthera papuana Schltr.) is much larger in all segments. M. compacta (Ames) Schltr. (Taeniophyllum compactum Ames), likewise belongs here.

Taeniophyllum Bl.

82. Taeniophyllum decipiens Schltr., sp. nov.

Epiphyticum, aphyllum, acaule; radicibus simplicibus, flexuosis, glabris, valde applanatis, elongatis, c. 0,2 cm latis; caule subnullo, more generis ad gemmam squamis vel potius vaginis squamiformibus obtectam reducto; racemis brevibus, sublaxe 4—7-floris, pedunculo basi vaginulis 1—2 bracteiformibus obsesso, asperatis, usque ad 2 cm longis, rhachi subflexuosa; bracteis late ovatis, obtusiusculis, extus carinatis, asporato-punctatis; floribus illis T. obtusum Bl. fere aequimagnis, erectis vel erector-patentibus; sepalis oblongo-ligulatis obtusis, glabris, extus medio praesertim apicem versus carinatis, asperatis, 2,5 mm longis, lateralibus paulo obliquis; petalis sepalis similibus, paululo brevioribus et angustioribus, obliquis, obtusiusculis; labello circuitu late ovato, a medio trilobato, concavo, lobis lateralibus rotundatis perbrevibus, intermedio late ovato obtuso, incrassatione bicuspidata, e basi ad medium et ad apicem labelli decurrente, lamina omnino 0,2 cm longa, calcare saccato obtuso perbrevi, laminae plus duplo breviore; columna perbrevi; ovario costato, costis asperatis, cylindraceo, longitudine 0,3 cm subattinge.

[Savaii I.] : In the scrub of [Mount] Mu, near Aopo and near Saleaula - Vaupel no. 278, flowering in Jan. 1906.

T. obtusum Bl. should be regarded as the closest relative of this species, but it differs in the undivided labellum and in non-irregular inflorescences.



SCHLECHTER : REVISION OF THE ORCHIDS OF GERMAN SAMOA (1911).CO-ORDINATES OF SAMOAN LOCALITIES

<u>SAVAI'I ISLAND</u>	S.	W.
Aopo, village.	13° 31'	172° 31'
Asau, village.	13° 30'	172° 38'
Aavao, village.	13° 25'	172° 21'
Falealupo, village.	13° 29'	172° 47'
Fatugase, village.	-	-
Fuluasoa, Mount.	-	-
Jatuilla, village.	-	-
Laau mumu, village, near Patamea.	-	-
Lealatele, village.	-	-
Mangaloa, (Maugaloa), Mount.	-	-
Mataana, Mount.	-	-
Matantu, Matautu, Matanta, village.	-	-
Mataulanu, Mount., now Mataulano.	13° 36'	172° 20'
Maungaafi, (Manugaafi), Mount.	13° 35'	172° 32'
Mu, Mount., probably Maugamua.	(13° 36')	(172° 25')
Olonono, (Olonona), (Ononono), village., possibly Ologogo.	(13° 30')	(172° 25')
Paia, Mount., (village).	(13° 27')	(172° 24')
Panafu, Mount.	-	-
Patamea, village.	13° 30'	172° 18'
Puapua, village.	13° 34'	172° 12'
Safai, village.	13° 25'	172° 20'
Saleaula, village.	13° 26'	172° 19'
Sasina, village.	13° 27'	172° 26'
Sataua, (Satana), village.	13° 30'	172° 41'
Sili, village.	13° 44'	172° 22'
Taga, village.	13° 46'	172° 30'
Tapuelele, Tapuelele, Tapuelede, village.	-	-
Taumafa, village.	-	-
Vaipouli, village.	13° 27'	172° 23'

UPOLU ISLAND

	S.	W.
Apia, Town.	13° 49'	171° 46'
Falevoa, Mount., now Falevao.	13° 55'	171° 33'
Lanoto, (Lanutou), Mount.	13° 54'	171° 47'
Laulii, village.	13° 51'	171° 42'

II.

	S.	W.
Le pua, village.	-	-
Letogo, (Lotogo), Mount.	13° 50'	171° 43'
Malifa, village.	-	-
Malifanua, forest area., now Mulifanua.	13° 51'	172° 02'
Maliolio, village.	-	-
Moa-Moa, village.	13° 52'	171° 47'
Suga, village.	-	-
Tiavi, village., now Taivea.	13° 58'	171° 29'
Tutumapu, village., see Utumapu.		
Utumapu, village.	13° 53'	171° 44'
Vaia, Mount.	-	-
Vailele, Mount., (village).	(13° 50')	(171° 43')

Co-ordinates taken from a Lands and Survey Department of Western Samoa map (L. & S. 15, 1966).

Multiple spellings of localities in the original text have been retained. Where the identity of the locality island was reversed, this has been corrected in square brackets.

The Editors

JTS

SAVAI'I ISLAND

