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OBSERVATIONS ON SOME SPECIES OF THE ORCHID
GENUS RENANTHERA LOUREIRO

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ABSTRACT

A partial revision of *Renanthera* based on specimens preserved in Herbarium Bogoriense, Rijksherbarium Leiden and living collections maintained in Bogor Botanic Gardens is carried out. Nine species are treated including the newly proposed variety *R. coccinea* var. *holttumii*. Complete descriptions and illustrations as well as key to species and varieties treated are presented. *R. sarcanthoides* is excluded from *Renanthera* and transferred to *Porphyrodesme*,

ABSTRAK

Marga *Renanthera* direvisi berdasarkan specimen yang disimpan di Herbarium Bogoriense, Rijksherbarium Leiden dan koleksi hidup dari Kebun Raya Bogor. Sembilan jenis dipelajari termasuk satu di antaranya diusulkan untuk dipecah menjadi varietas baru yaitu *R. coccinea* var. *holttumii*. Pertelaan lengkap, gambar-gambar serta kunci identifikasi jenis dan varietas berdasarkan morfologi disertakan. *R. sarcanthoides* dikeluarkan dari *Renanthera* dan dipindahkan ke *Porphyrodesme*,

INTRODUCTION

The genus *Renanthera* was established by Loureiro in 1790 based on *R. coccinea* from Cochin China. Some years later Hasskarl (1844) published *Nephranthera* with *N. matutina* Hassk. as the type based on *Aerides matutina* Bl. Nowadays these two well-known species are generally accepted as congeneric. A number of species were later added to the genus *Renanthera* but in spite of the fact that they are important horticulturally, they have not been subjected to a monographic treatment for a long time. Consequently the uncertain status of *R. sarcanthoides* as well as the known existence of a new variety of *R. coccinea* seemed to have gone unnoticed. No modern extensive descriptions of the rest of species are available in recent literatures so that one has to refer to popular accounts to verify the identity of newly acquired collections. Therefore in the following a partial revision of the genus *Renanthera* is presented, based on a study of specimens preserved in Herbarium Bogoriense (BO) and Rijksherbarium Leiden (L) as well as the living collec-

tions maintained in Bogor Botanic Gardens. As in many other showy orchids, *Renanthera* have been neglected by collectors of herbarium specimens so that they are very poorly represented in the herbaria.

I should like to thank the Director of Rijksherbarium, Leiden, the Keeper of Herbarium Bogoriense and the Curator of Bogor Botanic Gardens for allowing me to study the specimens of their respective institutes. I am also under deep obligation to Dr. E.F. de Vogel of Rijksherbarium, Leiden for his guidance, continuous interests and especially for going through the manuscript critically.

RENANTHERA Lour.

Renanthera Lour., FL Coch. : 636. 1793; Lindl., Gen. Sp. Orch. Pl.: 217. 1840; Reichb. f. Xen. Orch. 1 : 86. 1858; Stein, Orch.: 532. 1892; Smith, Orch. Jav. 6 : 587. 1905; Schlechter, Orch. Deutsch Guin.: 974. 1914; Dakkus, Orch. : 300. 1935; Quisumb., Philipp. Orch. 2: 44."1950; Holttum, Orch. Malaya: 633. 1964; Grant, Orch. Burma: 262. 1966; Backer & Bakhuizen v.d. Brink f, FL Jav. 3: 433. 1968.

Nephranthera Hassk., Cat. Hort. Bog.Cult.: 44. 1844.

Armodorum Breda, Orch. Kuhl & Hassk.: 1827.

Arachnanthe Bl., Rumphia 4: 55. t. 196. 1828.

Arrhynchium Lindl. mPaxt., Flow. Gard- 1: 142. 1851.

Plant epiphytic. Roots aerial, branched or not, perforating the leaf-sheath. Stem woody. Leafsheaths tubular around the stem and appressed to it, overlapping or not. Leafblades elliptic to linear elliptic, herbaceous; tips more or less distinctly asymmetrically emarginate, midribs somewhat prominent below. Inflorescence sprouting from anode or well above it, perforating the leafsheath at an acute angle to almost perpendicular to the stem, branched or not; flowers several to many, open almost simultaneously. Peduncle with a few nodes; peduncular bracts tubular, membranous, their tips broadly acute to rounded. Rachis straight to slightly zig-zag. Floral bracts broadly ovate to semi-orbicular, persistent, patent to recurved, their tips broadly acute to rounded. Ovary angular. Sepals and petals membranous, in one species fleshy. Lips 3- or 5-lobbed. Hypochilium consisting of a saccate spur with 2 or 4 erect or laterally recurved lateral lobes. Epichilium elliptic, ovate to obovate, straight, patent, attached at an acute angle to the spur or recurved; tip acute, rounded or truncate, in one species with keels above.. Column short and sturdy to long and slender. Viscidium concave, membranous; stipes flat, margins recurved, transparent. Pollinia 4, arranged in two pairs, reniform or semiglobose, two larger than the other two. Anthers concave, membranous. Fruit a capsule, ellipsoid, angular.

DISTRIBUTION : Assam, Burma, Laos, Vietnam, Thailand, Malay Peninsula, the Philippines, Indonesia and New Guinea.

ECOLOGY : Epiphytes in primary and secondary forests, along the trails of disturbed evergreen forests, edges of fresh water lagoon, on ultrabasic soil, limestone hill, over rocks and roots, open places, in partial shade; altitude 0-1400 m.

TYPE SPECIES : *Renanthera coccinea* Lour.

KEY TO SPECIES TREATED

1. a. Epichilium of the lip with 3 short keels at the back.....1. *R. imschootiana* Rolfe'
 - b. Epichilium of the lip smooth, without keels.....2
2. a. Lateral lobes of the lip as long as or longer than the spur.....3
 - b. Lateral lobes of the lip much shorter than the spur.....4
3. a. Lateral lobes of the lip about as long as the spur. Spur triangular in outline.....
 -2. *R. coccinea* Lour.
 - b. Lateral lobes of the lip much longer than the spur. Spur funnel-shaped.....
 -3. *R. storiei* Rchb. f.
4. a. Sepals with a keel or cusp at the top of the blade.....5
 - b. Sepals without any appendage at the top of the blade.....6
5. a. Lateral lobes of the lip erecto-patent and clasping the column, hardly recurved. Petals with a keel at the top of blade. Back of the column papillose, its top margin with long papillae.....4. *R. bella* J.J. Wood
 - b. Lateral lobes of the lip laterally recurved, not clasping the column. Petals without keels. Column smooth, glabrous.....5. *R. matutina* (Bl.) Lindl.
6. a. Epichillium with retuse top. Lateral lobes of the hypochilium 4, broad ones in front.....6. *R. edelfeldtii* F.v.M. & Kranzl.
 - b. Epichilium with acute to obtuse top. Lateral lobes of the hypochilium 2.....7
7. a. Column very slender. Lateral lobes of the hypochilium obliquely broadly falcate, ca 3 mm long, the top acute.....7. *R. histrionica* Rchb. f.
 - b. Column short and sturdy. Lateral lobes of the hypochilium a narrow, more or less recurved band, 1—1.5 mm long, the top obliquely truncate.....8
8. a. Spur not tapering to the broadly rounded top. Lateral sepals less than 8 mm long.....8. *R. elongate* (Bl.) Lindl.
 - b. Spur distinctly tapering to the top. Lateral sepals more than 10 mm long.....
 -9. *R. moluccana* Bl.

1. RENANTHERA IMSCHOOTIANA Rolfe

Renanthera imschootiana Rolfe. in Kew Bull.: 200. 1891; Dakkus, Orch.: 302. 1935; Curtis, Orch. Descr. Cult.: 162. 1950; Holttum, Orch. Malaya: 636. 1964; Backer & Bakhuizen v.d. Brink f, Fl. Jav. 3: 433 — 434. 1968.

R. papilio King & Prain in Journ. As. Soc. Beng. 2: 328. 44. 1895.

Inflorescence up to 45 cm long, unbranched, flowers many, open simultaneously. Peduncle terete, more than 12 cm long, ca 2 mm diam.; internodes ca 4 cm long, sometimes those at the base much shorter. Peduncular bracts tubular around the peduncle, membranous, 3—4.5 mm long, tips broadly acute to rounded. Floral bracts broadly ovate, persistent, patent to recurved, ca 2.5 by 3 mm, tips acute. Ovary angular, ca 0.5 mm diam. Median sepal narrowly obovate, membranous, ca 17.5 by 4 mm, base ca 1 mm wide, tips acute, nerves 5. Lateral sepals slightly obliquely spatulate, membranous, undulate, ca 3 by 1.2 mm, claw ca 1.5 mm wide, tips rounded, nerves 5. Petals linear obovate, membranous, ca 12.5 by 2 mm, base ca 1 mm wide, tips rounded, nerves 3. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur; lateral lobes erecto-patent, ca 2 by 3.5 mm, in front ca 2 mm high and drawn out in the acute top, near the place of attachment of the lip to ca 1 mm high, at the back broadly rounded near the place of attachment; spur shorter than wide, laterally compressed, in lateral view obliquely triangular, top pointing to the front, ca 2 by 3 mm; inside in front, starting from the base of the lateral lobes on either side with a membranous, relatively large piece of tissue which continues inwards and is attached inside the spur to a lateral nerve, its top margin irregularly incised, its back margin more or less entire. Epichilium ovate, patent to at a right angle to the spur, membranous, ca 2.4 by 2 mm, base ca 0.4 mm wide, tip rounded, keels 3, ca 0.5 mm high, lateral ones ca 0.5 mm long, the median ones ca 1.2 mm long. Column ca 2 by 1 mm; stigma cavity ca 0.6 by 0.5 mm; rostellum very pronounced, after removal of the pollinia consisting of rounded lobes. Viscidium broadly obovate. Stipes transparent, downcurved at both sides of the margin, ca 1.3 by 0.4 mm. Pollinia 4, in two pairs, reniform, the two larger ones ca 0.4 by 0.2 mm, the other two somewhat smaller. Anthers concave, obovate, membranous, ca 1 by 1 mm. Fruit not seen.

DISTRIBUTION. Secondary forest above 500 m alt. in Burma, Assam, Indo China, Laos and Vietnam.

NOTE. The species is characterized by the chin-like spur which has 3 keels on the upperside epichilium.

INDONESIA: Cult. Hort. Bog., s. dat., s. coll. (BO).

2. RENANTHERA COCCINEA Lour.

Renanthera coccinea Lour., Fl. Coch. : 637. 1793.

Plant epiphytic, stem woody. Leaf sheaths tubular around the stem and appressed to it. Leafblades narrowly to linear elliptic, herbaceous, tips more or less distinctly asymmetric, emarginate, midrib somewhat prominent below. Inflorescence branched. Flowers many, open simultaneously. Peduncle terete; internodes sometimes those at the base much shorter. Peduncular bracts tubular around the peduncle, membranous, tips broadly acute to rounded. Rachis straight to slightly zig-zag, terete. Branch bracts, broadly ovate to tubular around the branch, membranous, tips broadly acute. Floral

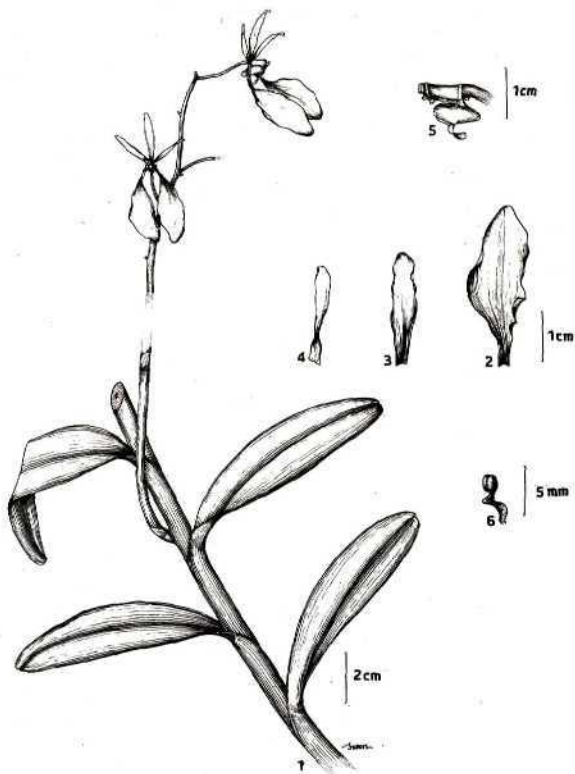


Fig. 1. *Renanthera coccinea* Lour. var. *coccinea* 1. habit; 2. lateral sepal; 3. median sepal; 4. petal; 5. lab and column; 6. pollinia. From Tsang Wai-Tak 17044.

bracts broadly ovate, persistent, patent to recurved, tips acute. Ovary angular. Median sepal linear obovate, membranous, undulate. Lateral sepals membranous, undulate, nerves 5. Petals membranous. Lips 3-lobed. Hypochilium consisting of two laterals lobes and a spur; lateral lobes erectopatient, inside with two keels, one parallel along front margin of the lobe, ca 2 mm high, top rounded; spur drawn out to the top, ca 4 by 4 mm, its top laterally compressed, obtuse. Epichilium membranous, base ca 1 mm wide. Column short and slender, ca 3.5 by 2 mm, laterally on either side with a wing-like margin with is near the base drawn out in front and continuing into median basal part of the lateral sepal; stigma cavity more or less quadrangular in outline, ca 2.5 by 2 mm; rostellum bilobed, hooding of the stigma cavity; viscidium more or less circle ca 1 mm diam., attached between tips of the rostellum lobes. Stipes transparent, ca 3 by 1 mm, margin curved down ward. Pollinia 4, in two pairs, semi-globose, the two larger ones ca 1 by 0.5 mm, the other two somewhat smaller. Anther concave, membranous, ca 3 by 2.5 mm. Fruit not seen.

KEY TO VARIETIES

1. a. Tips of lateral sepals rounded, the projections spatulate; incision of leaf tips 1—4 mm deep; epidermal cells 43.75 — 106.25 by 20 — 36.25 μ m; stomata anomositic; guard cells 31.25 — 47.50 by 31.25 — 38.75 μ m.....*R. coccinea* var. *coccinea*
- b. Tips of lateral sepals obliquely acute, the projections S- shape; incision of leaf tips 4.5 - 7 mm deep; epidermal cells 28.75 — 32.50 by 22.50 — 27.50 μ m; stomata tetrasitic; guard cells 23.75 — 62.50 by 15 — 31.25 μ m.....*R. coccinea* var. *holttumii*

2a. RENANTHERA COCCINEA Lour. var. COCCINEA - Fig. 1.

Renanthera coccinea Lour., Fl. Coch.: 637. 1793; Lindl., Gen. Sp. Orch. Pl. : 217. 1840; Reichb. f. Xen. Orch.: 87. 1858; Stein. Orch.: 533. 1892; Dakkus, Orch.: 300. 1935; Curtis, Orch. Descr. Cult.: 162. 1950; Holtum, Orch. Malaya: 637. 1964; Grant, Orch. Burma: 263. 1966; Backer & Bakhuizen v.d. Brink f. Fl. Jav. 3: 433 434. 1968 — Type: *Loureiro s.n.* from Cochinchina (n.v.).

Plant ca 1.80 m long. Roots 2.5 — 3.8 mm diam., perforating the leaf-sheath. Stem 4 — 7 mm diam.; internodes 2.6 — 4.5 cm long. Leafsheath 1.6 — 3.7 cm long, 4.5 -- 7 mm diam., overlapping or not. Leafblades 8.6 — 12 by 1.8 — 2.3 cm, tips incision 1 — 4 mm deep. Inflorescence ca 45 cm long. Peduncle 16.3 — 25.3 cm long, ca 4 mm diam., internodes 3.1 — 8.1 cm long. Peduncular bracts 4—6 mm long. Rachis 30 — 50 cm long, parts between the branches 4.5 — 6.3 cm. Branch bracts 4 — 4.5 mm long. Floral bracts 2.5 — 3 mm long. Ovary ca 0.8 mm diam. Median sepal ca 21 by 4 mm, base ca 1 mm wide, tip rounded. Lateral sepals obliquely spatulate, 30 — 52 by 8 — 10 mm, claw ca 2 mm wide, tips rounded. Petals more or less distinctly asymmetric, linear obovate, ca 18 by 3 mm, base ca 1 mm wide, tips round-

ed, nerves 3. Lateral lobes of lips wider than long, ca 3 by 3.5 mm, top margins flat, one of inside blade keel parallel at the base near the lobe connection with epichilium, 1 — 1.5 by 1 — 1.5 mm. Epichilium ovate, 5.2 by 2.5 mm, tip acute, nerves 3, lateral ones more short and thin than the median one.

DISTRIBUTION. Growing along a stream in Hainan: Fung Shue Shan.

COLLECTOR'S NOTES. The margin of sepals and petals magenta spotted.

THAILAND: Hainan, Haiphong, April 1909, *Zoumin 6944* (L); Taam Chan, 6 May 192*?. *Tsang Wai-Tak 17044* (L).

2b. *Renanthera coccinea* Lour var. *holttumii* Mahyar var. *nov.* ~ Fig. 2.

R. coccinea var. *coccinea* simile sed: Sepalum medium linearo-obovatum. Sepala lateralia angusto-elliptica, S-formis. Petala oblique linearo-obovate, ca 24 mm longa 2 mm lata. Labia lateralia ca 5 mm longa 4 mm lata, apice angusto-obtusa. Epichilium obovatum inductus, ca 4.5 mm longum 3 mm latum, apex obtusum, nervus 1 tenuis. Columna brevis, gracilis, ca 3.5 mm longum 2 mm latum.— TYPUS: *R. Geesink & T. Santisuk 4966* (L).

Stem 3 — 4.5 mm diam.; internodes 2.6 — 3.0 cm. Leafsheaths 2.1 — 2.3 cm long, 4 — 4.7 mm diam. Leafblades linear elliptic, 7.6 — 9.4 by 1.3 — 1.7 cm, tips incision 4.5 — 7 mm deep. Inflorescence ca 49 cm long. Peduncle ca 17.3 cm long, ca 3.5 mm diam; internodes 3 — 7.2 cm. Peduncular bracts 5 — 6.5 mm long. Rachis somewhat straight, parts between the branches ca 5.8 cm. Branch bracts ca 4.5 mm long. Floral bracts ca 2 mm long. Ovary 0.5 — 1 mm diam. Median sepal ca 32 by 3 mm, base ca 2 mm wide, tip acute. Lateral sepals narrowly elliptic, S-shape, ca 36 by 10 mm, base 1.5 — 2 mm wide, tip obliquely acute. Petals obliquely linear obovate, ca 24 by 2 mm, base ca 1.5 mm wide, tips obtuse. Lateral lobes of hypochilium ca 5 by 4 mm, drawn out to the top, one of the inside of keel adnate parallel near the lobe of the connection part with epichilium. Epichilium somewhat elliptic in outline, ca 4.5 by 3 mm, distinctly drawn out at the top, tip rounded, nerve 1.

DISTRIBUTION. Disturbed evergreen forest near the coast, Thailand: Ranong.

COLLECTOR'S NOTES. Tepals dark orange-red with white dots. Colour slide in L.

NOTE. Holttum (1964), reported the differences of the flower habit of *R. coccinea* from southern part of Siam, but decided that they were hardly distinguishable from those of the typical form. However the two forms are easily separable both from flower characters, as well as the details of lateral sepals and epichilium of the lip. Moreover their leaf anatomy shows also some differences (Mahyar in *Floribunda* 1, 6 : 23 — 24. 1988) so that it is proposed here to treat them as two distinct varieties.

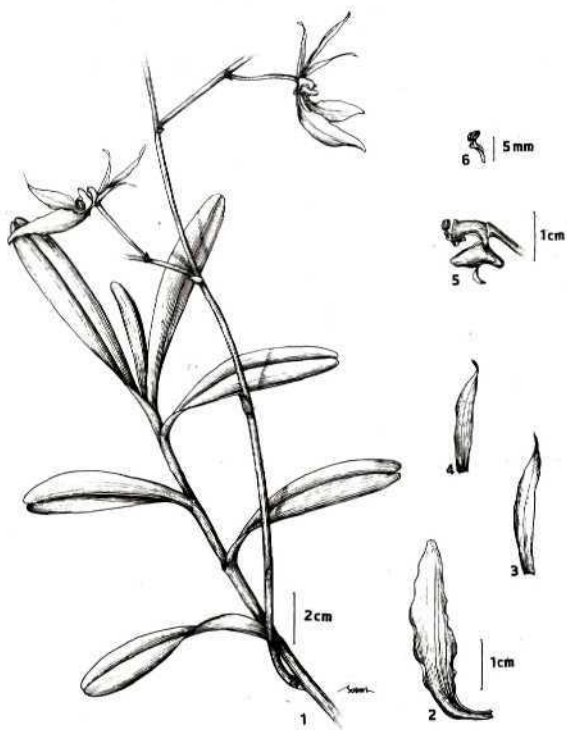


Fig. 2. *Renanthera coccinea* Lour. var. *holtumii* Mahyar : 1. habit; 2. lateral sepal; 3. median sepal; 4. petal; 5. lip and column; 6. pollinia. From Geesink & T. Santisuk 4966.

THAILAND: Ranong, Khlong Kam Puang, 26 April 1973, *R. Geesink & T. Santiauk 4966 (L).*

3. RENANTHERA STORIEI Reich b. f.

Renanthera storiei Reichb. f. in Gard. Chron. 2: 298. 1880; Stein, Orch.: 534. 1892; Dakkus, Orch.: 303. 1935; Curtiss, Orch. Descr. Cult.: 162. 1950; Quisumb., Philipp. Orch. 2: 45—46. 1950; Holtum, Orch. Malaya: 636. 1964; Backer & Bakhuizen v.d. Brink f., Fl. Jav. 3: 433—434. 1968.

Plant epiphytic. Roots 2.8 — 4.3 mm diam., perforating the leafsheath branched. Stem woody, 6 — 7 mm diam.; internodes ca 2 cm long. Leafsheath tubular around the stem and appressed to it, overlapping, 3 — 3.5 cm long. Leafblades narrowly to linear elliptic, 11 — 18.6 by 2.2 — 3.7 cm, herbaceous, tips more or less distinctly asymmetric, emarginate, midrib somewhat prominent below. Inflorescence sprouting from a node, periorating the leafsheath with an acute angle to the stem, 56 — 67.5 cm long, up to 4 branches, flowers many, open simultaneously. Peduncle ca 16 cm long, 3.5 — 5.5 mm diam.; internodes 6 — 10.7 cm, sometimes those at the base much shorter. Peduncular bracts tubular around the peduncle, membranous, ca 6.5 mm long, tips broadly acute. Rachis straight to slightly zig-zag; part between the branches 4 — 7.3 cm. Branch bracts broadly ovate, membranous, 3 — 6 mm long, tips broadly acute. Floral bracts broadly ovate, persistent, patent to recurved, ca 3 by 3 mm, tips acute. Ovary angular, 0.5 — 0.7 mm diam. Median sepal narrowly to linear obovate, membranous, 20 — 27 by 4 — 5 mm, base ca 2 mm wide, tip acute, nerves at the base 3, the median one thin, the lateral ones prominent at the base for ca 3 mm, beyond each nerve branched into 2, at the middle of sepal branched again, near the top all three united into one nerve again at ca 3 mm from the tip, there prominent again, median one prominent ca 1 mm at the base, ca 7 mm from the base divided into twin keels which end ca 7 mm before the tip, keels ca 0.3 mm high. Lateral sepals obliquely obovate, membranous, undulate, 19—34 by 7.5—14 mm, base ca 1.5 mm wide, tips rounded, nerves 5, lateral ones ending 10—13 mm before the tip, the middle 3 connected to each other at ca 3.5 mm before tip. Petals obliquely obovate to narrowly obovate, membranous, 12—21 by 4—5 mm, base ca 1.7 mm wide, tips acute, nerves 4, 3 among them thicker and reaching near the tip. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur, lateral lobes erectopatient, obliquely ovate, 5—7 by 2.8—5 mm, their base near the attachment of the lip folded, their tips rounded, inside in front at the base on either side with horizontal crescent-like keel, ca 2 by 0.5 mm; spur more or less funnel-shaped, ca 4.5 by 4.5 mm, narrowing to the middle, top laterally compressed, broadly rounded ca 2 mm wide. Column rather short and sturdy, 5-6 by 1.5—2.5 mm, laterally on either side with a wing-like margin which is near the base drawn out in front and continues into the median basal part of the lateral sepal; stigma cavity 2 — 2.5 by ca 1.6 mm; rostellum consisting of a broad band, split in the middle after removal of the pollinia. Viscidium concave, membranous, ca 1.5 mm long, attached to the middle of above front upper margin of the rostellum: stipes distinctly bent, membranous, ca 1.5 mm

long; anther concave, membraneous, ca 3.5 mm long, ca 1.5 mm high. Pollinia 4, in two pairs, reniform, the two larger ones ca 1.2 by 0.5 mm, the other two somewhat smaller. Fruit not seen.

DISTRIBUTION. Philippines: Bataan (Luzon).

PHILIPPINES: Luzon, Bataan, Lamao River, 1904, *T.E. Borden FRI20110* (BO); 6 May 1900, *A. Loher e.n.* (BO.L).

4. RENANTHERA BELLA J.J. Wood

Renanthera bella J.J. Wood in *Orchid Review*: 116. 1981. -TYPE : *Lamb SAN 89640* (K, holotypus; SAN, isotypus, n.v.).

Plant epiphytic. Roots ca 3 mm diam., perforating the leafsheath. Stem woody, ca 4 mm diam.; internodes ca 1 cm long. Leafsheaths 1.4 — 2 cm long, rough, distinct to leafblade, overlapping. Leafblades linear elliptic herbaceous, 11.5 — 13.5 by ca 1 cm, longitudinally folded midrib, cross section V-shaped, tips more or less distinctly asymmetric emarginate; midrib somewhat prominent below. Inflorescence sprouting from a node, perforating the leafsheath with an acute angle to the stem, ca 30 cm long, unbranched, flowers ca 5, open simultaneously. Peduncle 18.5 — 20.5 cm long, ca 2 mm diam., internodes 4 — 8.3 cm long, sometimes at the base much shorter; peduncular bracts tubular around the peduncle, membraneous, ca 3 mm long, tips broadly acute to rounded. Rachis straight to slightly zig-zag. Floral bracts broadly ovate, 2.5 — 3 mm long, patent to recurved. Ovary angular, ca 1 mm diam. Median sepal narrowly ovate, membraneous, somewhat undulate, ca 27 by 9 mm, claw ca 2 mm wide, tip acute, somewhat concave, slightly undulate, nerves 7, keel only developed at the top of the blade for ca 10 mm long, with acute tip, ca 1.5 mm high. Lateral sepals narrowly ovate, membraneous, undulate, ca 36 by 11 mm, claw ca 4 by 2 mm, tips acute, somewhat concave, nerves 6, keel only developed at the top of blade for ca 9 mm long with acute tip, ca 2 mm long. Petals narrowly-ovate, membraneous ca 25 by 7.5 mm, claw ca 2 mm long, tips acute, somewhat concave, nerves 7, keel only developed at the top of the blade, ca 8 mm, with acute tip, ca 1 mm high. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur; lateral lobes erect to patent, ca 3 mm wide, clasping the base of the column; spur in lateral view triangular, oblique, ca 5.8 by 2.2 mm, front margin much shorter than the back margin, its base connected to the dorsal base of the lateral sepals, ca 1 mm wide, its top flattened. Epichilium ovate, membraneous, ca 3 by 1.5 mm, patent to the spur, base ca 1 mm wide, tip rounded, recurved, nerve 1, median. Column short and sturdy, ca 5 by 2 mm, papillose especially at the back along the top margin with row of hair-like papillose, laterally on either side with a wing-like margin which is at the base continuing into the midrib of the basal part of the lateral sepal; stigma cavity triangular, ca 1 by 1 mm; rostellum about as wide as the top part of the column, band-like, bilobed when the pollinia removed. Viscidium ovate, rather thick, ca 1 by 0.7 mm. Stipes ca 1.8 by 0.5 mm, transparent, margins curved downward, narrowed to the top. Pollinia 4, in two pairs, reniform, the two larger ones ca 0.8 by 0.5 mm, the other two somewhat smaller. Anther concave, membraneous,

papillose, ca 2 mm long, ca 1 mm high, broadly attached base at the back top of column. Fruit not seen:

DISTRIBUTION. Submontane forest in Borneo: Sabah.

COLLECTOR'S NOTES. Epiphyte on trees bole, flowers 5, petals spotted red, lower lips yellowish red.

NOTE. The tepals of this species are somewhat similar to those of *R. matutina*.

MALAYSIA: Borneo, Ranau, Bukit Ampuan, 20 November 1978, SAN 89454 (L).

5. RENANTHERA MATUTINA (Bl.) Lind.

Renanthera matutina (Bl.) Lindl., Gen. Sp. Orch. Pl.: 218. 1840; Morel, Kult. Orch.: 120. 1856; Reichb. f., Xen. Orch. 1: 88. 1858; Stein, Orch.: 534. 1892; Smith, Orch. Jav. 6: 587. 1905; Dakkus, Orch.: 302. 1935; Curtis, Orch. Descr. Cult.: 162. 1950; Quisumb., Philipp. Orch. 2: 45. 1950; Holttum, Orch. Malaya: 636. 1964; Backer & Bakhuizen v.d. Brink f., Fl. Jav. 3: 433. 1968. — *Aerides matutina* Bl., Bijdr.: 366. 1825. — *Nephranthera matutina* (Bl.) Hassk., Cat. Hort. Bog. Cult.: 44, 1844.

Renanthera angustifolia Hook. f., Fl. Brit. Ind. 6: 49. 1890.

Plant epiphytic. Roots 1.7 — 2.3 mm diam., perforating the leafsheath, branched. Stem woody, 3 — 5.5 mm diam.; internodes 2.1 — 4.6 cm. Leafsheath tubular around the stem and appressed to it, 2.2 — 4 cm long, 3.3 — 5.8 mm diam. Leafblades narrowly to linear elliptic, herbaceous, 6.4 — 24.2 by 0.8 — 1.8 cm, tips more or less distantly asymmetrically emarginate, sometimes acute; midrib somewhat prominent below. Inflorescence sprouting from a node, perforating the leafsheath with an acute angle to the stem, 45 — 87 cm long, up to 6 branches, flowers several to many, many open simultaneously. Peduncle 32 — 55 cm long, 1.5 — 4.5 mm diam., internodes 4 — 13.5 cm, sometimes those at the base much shorter; peduncular bracts tubular around the peduncle, membranous, 4 — 6 mm long, tips broadly acute to rounded. Rachis straight to slightly zig-zag, terete, to 5.5 cm long, parts between the branches 1.2 — 7.8 cm. Branch bracts broadly ovate to tubular around the branch, membranous, 3 — 5 mm long, tips broadly acute. Floral bracts broadly ovate, persistent, patent to recurved, ca 2 by 2.5 mm, tips broadly acute. Ovary angular, ca 0.5 mm diam. Median sepal linear elliptic, membranous, 25 — 32 by 3 — 3.5 mm, base ca 1.5 mm wide, margins distinctly recurved, tip cuspidate, ending in a cusp ca 0.7 mm long, top margin drawn out in a hoodlike, cavity ca 0.7 mm long, nerves 5, at the base most prominent, ca 6 mm long, become thin to the top; a low rounded keel present in the upper part of the sepal; inside minutely papillose. Lateral sepals ovate, turned inside out, membranous, 22 — 28 by 8 — 10 mm, margins undulate, reflexed, sometimes the margins of the same sepal connate, claw ca 2.5 mm wide, blade near the base deepest, asymmetric concave, tip cuspidate in outline, cusp ca 1.5 mm long, top margin drawn out in a hoodlike, ca 0.5 mm long, nerves 9, prominent at the base, become thin to the top, inside minutely papillose. Petals linear, 21 — 25 by 2.3 — 2.7 mm, base ca 0.9 mm wide, tips obtuse, nerves 5, prominent at the base, becoming

thin to the top, midrib near the top swollen into a rounded keel, ca 5 mm long, outside minutely papillose. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur; lateral lobes wider than long, ca 2.5 mm wide, highest in the middle, ca 1.5 mm high with recurved margin, in front on either side with a curved, ca 0.8 mm long, longitudinal appendage where the lateral lobe become horizontal, front part of the lateral lobes separated from the back part by somewhat swollen ridge starting from the base of appendage and continuing to the base of the epichilium margin; spur in lateral view ca 4.5 by 2.5 mm, in front from one third from the margin towards the top distinctly narrowed; top laterally compressed, obtuse, inside on each side with a vertical short and low keel near place of attachment to the column. Epichilium elliptic, slightly thickened, 2 — 2.4 by 1 — 2 mm, patent at the right angle to the spur, margin more or less erose, recurved, base ca 0.8 mm wide, in the middle widened or not, tip obtuse, recurved, median nerve sunked above, somewhat prominent below. Column rather short and sturdy, ca 4 by 2 mm, papillose, at the back top edge with stiff hairs; stigma cavity ca 1 by 1.5 mm; rostellum curved downwards, when pollinia removed deeply emarginate. Viscidium more or less orbicular, ca 0.9 by 0.9 mm attached on the upper front of rostellum. Stipes flat, transparent, ca 1 by 0.3 mm. Pollinia 4, in two pairs, reniform, the two larger ones ca 1 by 0.5 mm (fresh ones ca 1.2 by 0.9 mm), the other two somewhat smaller. Anther concave, irregularly orbicularly in outline, in front narrowed into the broad, truncate top, membranous, ca 2 by 2 mm, ca 1 mm high. Fruit not seen.

DISTRIBUTION. Java: Preanger, W. Java; Sumatera: Bengkulu, Lampung, Liwa; Malay. Penin.: Pahang. Altitude 500 — 1.400 m.

INDONESIA: Java: Preanger, Cilulumpang, Cadas Malang, Cidadap, Cibeber, 15 Sept. 1916, *R.C. Bakhuizen u.d. Brink 1022* (BO); G. Beser, 15 Sept. 1917, *W.F. Winckel 1117B and 1118B* (BO); Cianten, 1 Sept. 1918, *J.G.B. Beumée A 47* (BO); Sukabumi, 6 Jan. 1940, no coll. (BO). Sumatra: Liwa[^]Jan. 1924, *Bouan Houtsman 14* (BO). Lampung Oct. 1927, *Ch. Bernard* (BO); 1 Jan. 1927, *J.A. Lörzing 12556* (BO); Bengkulu, Sekincan-Belirang, 14 Aug. 1936, *F.W. Rappard 78* (BO); *Ajoeb C.H.B. 883* (BO); 15 Nov. 1920, *J.A. Lörzing 7953* (BO).

MALAYSIA: Pahang, Sungai Telom, 23 Aug. 1930, *E.J. Strugnell SAN 23927* (BO).

6. RENANTHERA EDELFFELDTII F.v.M. & Kranzl.

Renanthera edelfeldtii F.v.M. & Kranzl. in Oest. Bot. Zeitschr. 44: 460. 1894; Schlechter, Orch. Deutsch Guin.: 74. t. 1323.1914; Bodegom, En. Orch. West N. Guin.: 181. 1973; Millar, Orch. Papua N. Guin.: 84. 1978.

Plant epiphytic. Roots 2.5 — 3.0 mm diam. perforating the leafsheath, unbranched. Stem woody, 5 — 6 mm diam.; internodes 3.5 — 4.9 cm. Leaf-sheaths tubular around the stem and appressed to it, not overlapping, leaving the stem free up to ca 1.6 cm, 2.9 — 3.2 cm long, ca 6 mm diam. Leaf-blades linear elliptic, herbaceous, 12.4 — 13.4 by 1.5 — 2.0 cm, tips more or less distinctly asymmetric emarginate; midrib somewhat prominent below.

Inflorescence sprouting from a node, perforating the leafsheath, base with an acute angle to right to the stem, more than 39 cm long, up to 4 branches, flowers many, open simultaneously. Peduncle ca 4 mm diam.; peduncular bracts tubular around the peduncle, membranous, 3 — 5 mm long, tips broadly acute. Rachis straight, terete, up to 37 cm long; part between the branches 5.0 — 6.7 cm. Branch bracts broadly acute to tubular around the branch, membranous, 3 — 4 mm long, tips broadly acute. Floral bracts ovate, persistent, patent to recurved, 2 — 3 by 1.5 — 2 mm, tips acute. Ovary angular, ca 3 mm diam. Median sepal spatulate, membranous, ca 14 by 4 mm, somewhat undulate, claw ca 1.8 mm wide, tip rounded, nerves 5, median 3 reached near the tip. Lateral sepals more or less distinctly asymmetric spatulate, membranous, undulate, ca 13 by 5.5 mm, claw ca 1.2 mm wide, tips rounded, nerves 5, median 3 reached near the tip. Petals obliquely linear spatulate, membranous, ca 11.5 by 2.5 mm, claw ca 1.5 mm wide, tips rounded, nerves 5, prominent at the base, becoming thin to the top, median 1 reached and branched to 2 near the tip. Lips 3-lobed. Hypochilium consisting of four lateral lobes and a spur, erecto-patent, undulate; lateral lobes, the back one triangular, smaller than the front one which is quadrangular, the front lobe ca 1.5 by 2.5 mm. Epichilium obovate, ca 2.4 by 1.7 mm, base ca 1 mm wide, tip retuse, nerve 1, median, branched to two ca 0.5 mm before the tip; spur "U" like in outline from side, top rounded, inside surface folded at along of the front margin lobe and the middle front. Column ca 3.5 by 3.5 mm, short and sturdy (developed); rostellum bilobed. Viscidium not seen. Stipes not seen. Pollinia not seen. Fruit not seen.

DISTRIBUTION. Celebes and N. Guinea.

COLLECTOR'S NOTES. Sepals and petals with orange spotted.

NOTE. So far this species has been reported from New Guinea only. The Celebes specimen neatly agrees with the existing description of this species so that it is; referred here.

INDONESIA: Celebes, Timampu, Njiha, Soroako, 12 April 1984, Ramlanto 182 (BO).

7. *RENANTHERA HISTRIONICA* Reichb. f.

Renanthera histrionica Reichb.f. in Gard. Chron. 2: 74. 1878; Holttum, Orch. Malaya: 634. 1964. — *Renantherella histrionica* (Reichb.f.) Ridl. in Jour. Linn. Soc 32: 355. 1896.

Plant epiphytic. Roots ca 2 mm diam., perforating the leafsheath. Stem woody, ca 3 mm diam., internodes ca 1.2 cm long. Leafsheaths tubular around the stem and appressed to it, overlapping at the base, ca 1.5 cm long. Leafblades linear elliptic, 7—7.5 by 0.5—0.6 cm, tips narrowly acute, midrib somewhat prominent below. Inflorescence sprouting from a node, base with an acute angle to the stem, perforating the leafsheath, ca 6 cm long,

unbranched, flowers ca 5, open simultaneously. Peduncle ca 2.2 cm long, ca 1 mm diam., internodes 7—16 mm, sometimes those at the base much shorter. Peduncular bracts tubular around the peduncle, membranous, ca 1.5 mm long, tips broadly acute. Rachis slightly zig-zag. Floral bracts semiorbicular, ca 1 mm diam., patent to the rachis, tips rounded. Ovary angular, ca 0.4 mm diam. Median sepal narrowly obovate, fleshy, ca 11 by 3 mm, base ca 1 mm wide, tip broadly acute, somewhat concave near the tip, nerves 5 at the base, lateral one branched at the middle, prominent. Lateral sepals obliquely asymmetric obovate, fleshy, ca 8 by 3.5 mm, recurved (reflexed), sometimes the margins of the same sepal connate for ca 4 mm, base ca 0.8 mm wide, tips broadly acute, nerves 7, prominent. Petals obliquely narrowly obovate, fleshy, ca 8.5 by 2 mm, base ca 1 mm wide, tips distinctly asymmetric broadly acute, nerves 3 at the base, each, lateral one with a branch from the base. Lips 3—lobed. Hypochillium obliquely erecto-patent, ca 2 mm wide, spur laterally compressed, drawn out from base to the top, ca 2 by 3 mm, tops rounded; lateral lobes clasping the column, obliquely pointing forward. Epichillium narrowly obovate, fleshy, pendulous from the base, ca 3.5 by 1 mm, base ca 1 mm wide, tip broadly acute. Column long and slender, curved at the tip, ca 6 by 0.8 mm; stigma cavity ca 1 by 1.2 mm; rostellum bilobed, pointing forward, covering like a hood part of the stigma cavity. Viscidium broadly obovate in outline, ca 0.7 mm long, ca 0.4 mm high, fleshy, attached at the front between the rostellum lobes. Stipes flat, transparent, ca 0.8 by 0.4 mm. Pollinia 4, in two pairs, the two larger ones, ca 0.6 by 0.4 mm, the other two somewhat smaller. Anther concave, distinctly 2 lobed with median keel, ca 1.5 by 1.5 mm, top margin retuse, recurved. Fruit not seen.

DISTRIBUTION. Malav. Penin.: Selangor. Altitude 200 m.

COLLECTOR'S NOTES. Flowers 4—5 in each inflorescence. Petals yellowish with submarginal purple spots. Throat of spur with a spot of pale orange.

NOTE. The details of the flower characters of this species are markedly different from other species in this genus, so that Ridley placed the taxon in *Renantherella*. Since basically the essential floral structures are similar to the typical members of *Renanthera*, I agree with Holttum to retain this species in *Renanthera*.

MALAYSIA: Malay Penins., Selangor, Gua Batu Limestone Hill, 27 July 1971, S.C. Chin 1244 (L).

8. RENANTHERA ELONGATA Lindl. — Fig. 3.

Renanthera elongata Lindl., Gen. Sp. Orch. Pl.: 218. 1833; Reichb. f. Xen. Orch. 1:88. 1958; Stein, Orch.: 533. 1892; Smith, Orch. Jav. 6: 589. 1905; Dakkus, Orch.: 301. 1935; Ames in Oroh. 5: 224. 1915; in Bot. Mus. Leafl. Harv. Univ. 2: 31. 1934; Quisumb., Philipp. Orch. 1: 330. 1950; 2: 45. 1950; Holttum, Orch. Malaya 634: 1964. Backer & Bakhuizen v.d. Brink f., Fl. Jav. 3: 433. 1968; Holttum in Kew Bull. 41(2): 347. 1986. — *Porphyrodesme elongata* (Bl.) Garay in Bot. Mus. Leafl. Harv. Univ. 23(4): 191. 1972;

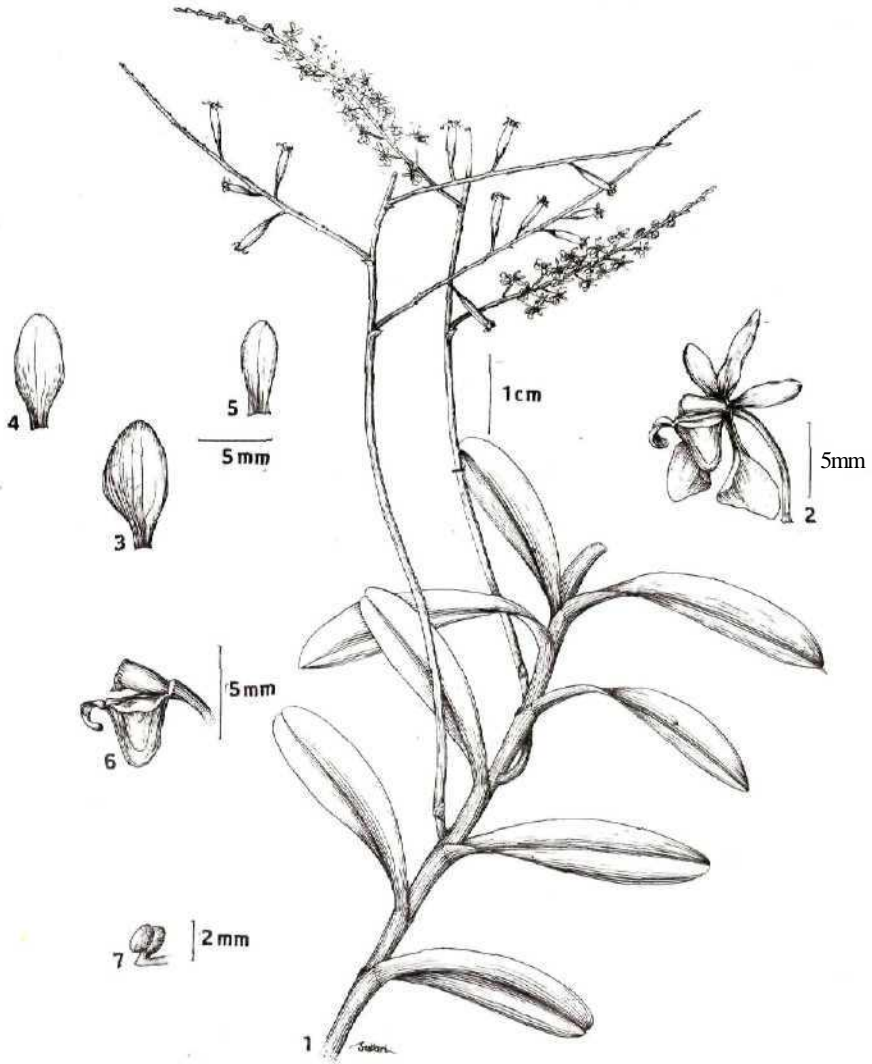


Fig. 3. *Renanthera elongata* Lindl.: 1. habit; 2. flower; 3. lateral sepal; 4. median sepal; 5. petal; 6. lip and column; 7. pollinia. Habit from *Afriastini 934 B*; flower from *Docters van Leeuwen —Reynvaan 14198*.

Seidenfaden in Bot. Tidsskrift 70: 92. 1975.— *Aerides elongata* Bl., Bijdr.: 367, 1825 — TYPE: Java, Kuripan, *Blume* 1052 (L, n.v).

Renanthera matutina sensu Lindl. in Bot. Reg. 29: t. 41. 1843, non *Aerides matutina* Bl. 1825.

R. micrantha Bl. in Mus. Bot. Lugd. Bat. 1: 60. 1849; Reichb. f., Xen. Orch. 1: 87, pi. 35, fig. 2. 1858.

Plant epiphytic. Roots 2.5—3 mm diam., perforating the leafcheath, unbranched. Stem woody, 4—11 mm diam.; internodes 1.3—5.8 cm. Leafcheaths tubular around the stem and appressed to it, not overlapping, leaving the stem free up to 2.7 cm, 1.5—3 cm long, 4.3—11.3 mm diam. Leafblades elliptic to narrowly elliptic, 3—15.3 by 1.3—4.3 cm, tip more or less asymmetric emarginate, midrib somewhat prominent below. Inflorescence sprouting from a node, perforating the leafcheath at the very base, with an acute to somewhat right angle to the stem, 11—61 cm long, either or not branched, up to 9 branches, flowers many, open simultaneously. Peduncle 5.3—27.5 cm long, 1—7 mm diam.; internodes 1.4—9.2 cm, sometimes those at the base much shorter. Peduncular bracts tubular around the peduncle, membranous, 2—7 mm long, tip broadly acute to rounded. Rachis part between the branches straight or somewhat zig-zag, each node bearing a branch, internodes between the branches 4 mm to 8 cm, branches and top part of the rachis about straight, each bearing 20 to 70 flowers. Branch bracts broadly ovate to tubular, 1—2 mm long, membranous, tip broadly acute. Floral bracts broadly ovate, persistent, patent to recurved, 0.8—1 by 1—1.5 mm, tip acute. Ovary angular, c. 0.2 mm diam. Median sepal spatulate, 6.5—8 by 2.5—3 mm, membranous, somewhat undulate, base c. 1 mm wide, tip rounded, nerves 5, prominent at the base, becoming thin to the top, the middle 3, longer than lateral ones. Lateral sepals asymmetrical, relatively broadly, spatulate, membranous, undulate, 6.5—10 by 3—3.5 mm, claw ca 1.5 by 0.8 mm, tips rounded, nerves 3, 4, or 5, prominent at the base becoming thin to the top. Petals obliquely narrowly obovate, membranous, 5—6.5 by 1.5—2 mm, base c. 1 mm wide, tip obtuse, nerves 4 or 5, prominent at the base, becoming thin to the top. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur, lateral lobes small, much wider than long, ca 0.3 by 1.5 mm, margin entire, recurved; spur ca 2.2 by 1.5 mm its top laterally compressed, obtuse. Epichilium obovate, 1.5—2 by 0.9—1 mm, membranous, somewhat undulate its base, ca 0.4 mm wide, tip broadly acute, nerves 3, lateral ones shorter than the median one, joined or parallel. Column short and slender, ca 2 by 0.8 mm, laterally or either side with a wing-like margin with is near the base drawn out in front and continuing into the median basal part of the lateral sepal; stigma cavity more or less triangular in outline, ca 0.4 mm long; rostellum curved downward with two distinct longitudinal ridges. Viscidium elliptic, ca 0.4 by 0.2 mm, attached at the front of rostellum. Stipes ca 1 by 0.2 mm, transparent, margins curved downward. Pollinia 4, in two pairs, semi-globose 0.4—0.8 by 0.2—0.4 mm. Anther obovate ca 1.5 by 1 mm, top rounded. Fruit a capsule angular ellipsoid, 2.2—3.2 by 0.5—0.7 mm; seeds about ellipsoid, ca 0.2 by 0.05 mm, capsule further filled with long, terete, curved, dark yellow, chartaceous fibres.

DISTRIBUTION. Celebes: Klabatbaai; Java: Cisolok, Jampang, Preanger, W. Java: Malay. Penin.: Pat. Swettenhaw; Mentawai; Sumatera: Batang Palupuh, Kayu Tanam, Lampung, Medan, Sijunjung, Simalungun.

COLLECTOR'S NOTES. Creeping and climbing, ca 2 m tall, flowers blood-red, purple to brown-purple; in forest near waterfall.

NOTE. The taxonomic status of this species is confused. Garay (1972) transferred the species to the genus *Porphyrodesme* Schltr. based on the evidence of Ridley's observation only, and Seidenfaden (1975) supported the transfer based on his study of a specimen from the Terutau Isl., Thailand. Both of them did not study Blume's type or a specimen of Ridley. After studying the Leiden and Bogor specimens I agree with Holttum (1986), that this species should be retained in *Renanthera* because the number of pollinia is definitely 4.

INDONESIA: Borneo: Kapuas, *Teijsmann 10980* (BO); Sungai Samak, 4 April 1899, *Teijsmann 1555* (BO); Kutai, Tenggarong, *J.J.S. 29* (BO); Putusibau, Nangaera, 4 April 1983, *J.J. Afriastini 934A & 934B* (BO). Celebes: *no coll. 19* (BO). Java: Cisolok, Cipanas, 2 May 1932, *Docters van Leeuwen — Reynvaan 14198* (BO); Bogor, 1921 & 1923, *J.J.S. s.n.* (BO); Bandung, — (BO); Pelabuhan Ratu, Jampang, - (BO); Cicurug, Citibo, Cidadap, Cibeber, 29 March 1917, *no coll. 2913* (BO); 5 April 1917, *W.F. Winkel 2049B* (BO), 29 March 1917, *Bakhuizen v.d. Brink 2913* (BO); 31 March 1917, *Bakhuizen v.d. Brink 2965* (BO); Sukabumi, 1 April 1911 (BO); Bogor, 1904 (BO); CHB (2) (BO). Mentawai: 13 May 1918, — (BO). Sumatra: Siboga, 2049 (BO); Sijunjung, *J.J.S.* — (BO); Kayu Tanam, 21 Feb. 1934, *S.M. Latif* — (BO); Simalungun, Tinggiraja, 17 March 1935, *J.A. Lörzing 17023* (BO); Batang Palupuh, Agam, *Jacobson 1454* (BO); Lampung, 1907 & 1908, *J.J.S.* — (BO); Medan, 26 Feb. 1931, *J.A. Lörzing 16311* (BO). MALAYSIA: 25 March 1915, *Pat Swettenhaw SAN 728* (BO).

9. RENANTHERA MOLUCCANA BL.

Renanthera moluccana Bl., *Eumphia* 4: 54. t. 193. f. 2. et t. 197E. 1848; Miquel, *Fl. Ind. Bat.* 3: 699. 1859; Reichb. f., *Xen. Orch.* 1: 87. 1858; Smith, *Orch. Amb.*: 7. 1906.

Angraecum rubrum Rumph., *Herb. Amb.* 6: 101. t. 44. f. 2. 1750.

Plant epiphytic. Roots ca 1 mm diam., perforating the leafsheath. Stem woody, 9–10 mm diam., internodes 2–4 cm. Leafsheaths tubular around the stem and appressed to it, overlapping or not, 1.9–2.5 cm long, ca 10 mm diam. Leafblades elliptic to narrowly elliptic, 6.7–13 by 2.5–4 cm, tips more or less distinctly asymmetric emarginate; midrib somewhat prominent below. Inflorescence sprouting from a node, perforating the leafsheath with an acute angle to the stem, more than 32(–46) cm long, up to 5 branches, flowers many, many open simultaneously. Peduncle (10–) 19 cm long, 3.5–4 mm diam.; internodes 6.8–10.7 cm, sometimes those at the base much shorter; peduncular bracts tubular around the peduncle, membranous, ca 4 mm long, tips broadly acute to rounded. Rachis straight to slightly zig-zag, terete, up to 42 cm long; internodes between the branches 0.9–4.4 cm long. Branch bracts broadly ovate to tubular around the

branch, membranous, 2.5–4 mm long, tips broadly acute. Floral bracts broadly ovate, persistent, patent to recurved, ca 1.5–2.5 mm long, tips acute. Ovary angular, 0.6 mm diam. Median sepal obovate, membranous, 13–15 by 2–4 mm, base ca 1.3 mm wide, tip rounded, nerves 5. Lateral sepals obliquely spatulate, membranous, undulate, 1–14 by 3.4–5 mm, claw ca 1.7 mm wide, tip rounded, nerves 5. Petals obliquely slender spatulate, membranous, ca 12 by 2 mm, claw ca 1 mm wide, tips more or less distinctly asymmetric acute, nerves 5. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur; lateral lobes wider than long, ca 1.5 by 2 mm, erecto-patent, somewhat recurved; spur ca 3.5 by 2.5 mm, drawn out to the rounded top. Epichilium elliptic, ca 2.5 by 1.5 mm, slightly patent from the spur. Column short and sturdy, ca 3 by 1.3 mm; stigma cavity ca 0.6 by 0.6 mm; rostellum very pronounced, after removal of the pollinia consisting of two about triangular lobes. Viscidium more or less orbicular, membranous, ca 0.8 mm diam.; stipes flat, margins recurved, widened near the top, transparent, ca 1 mm long. Pollinia 4, in two pairs, reniform, the two larger ones, ca 0.7 by 0.4 mm, the other two somewhat smaller. Anther concave, ca 2 by 2 mm. Fruits angular ellipsoid, capsul, 35–43 by 4.5–7.5 mm.

DISTRIBUTION. Edge of fresh lagoon; altitude 0–800 m. in Ambon: Hutumuri; Buru: Na'Bes; N. Guinea: Sepik.

COLLECTOR'S NOTES. Flowers coral red, inside part of flowers light red.

INDONESIA: Ambon: Hutumuri, *Teijsmann* (BO); Hutumuri, *Zippelius* (L); July—November 1913, *C.B. Robinson* 20 (L); C.H.B. 246 (BO); QH.B. 1905, *J.J.S.* (BO); Buru: Na'Bes, 25 June 1921; *foxopeus* 240 (BO.L).

PAPUA N. GUINEA: Sepik, *Leitre*, 13 March 1964, *CD. Sayers NGF 18064* (L).

PORPHYRODESME Schltr.

Porphyrodesme Schltr., *Orch. Deutsch Guin.*: 974. t. 1334. 1914.

Plant epiphytic. Stem with simple leaves. Leafblades erecto-patent to the stem, linear ovate, fleshy, tip narrowly emarginate to acute, midrib somewhat prominent below. Inflorescence axilar, diagonal to erect, branches. Flowers many, open simultaneously. Peduncular bracts ovate, tip acute. Floral bracts triangular, persistent, tip acute. Ovary angular. Median sepal boat-like. Lateral sepals triangular when flattened, tip rounded mucronate. Petal ovate. Lip 3-lobed. Hypochilium consisting of two lateral lobes and a spur, lateral lobes more or less quadrangular. Epichilium straight to spur. Column short, straight or bent. Stipes membranous, transparent, A-shape cross section. Pollinia 2. Anther concave.

DISTRIBUTION. Sumatra & P.N. Guinea.

ECOLOGY. Found in upper part of rivers, altitude 300—1200 m.

TYPE SPECIES: *Porphyrodesme papuana* Schltr.

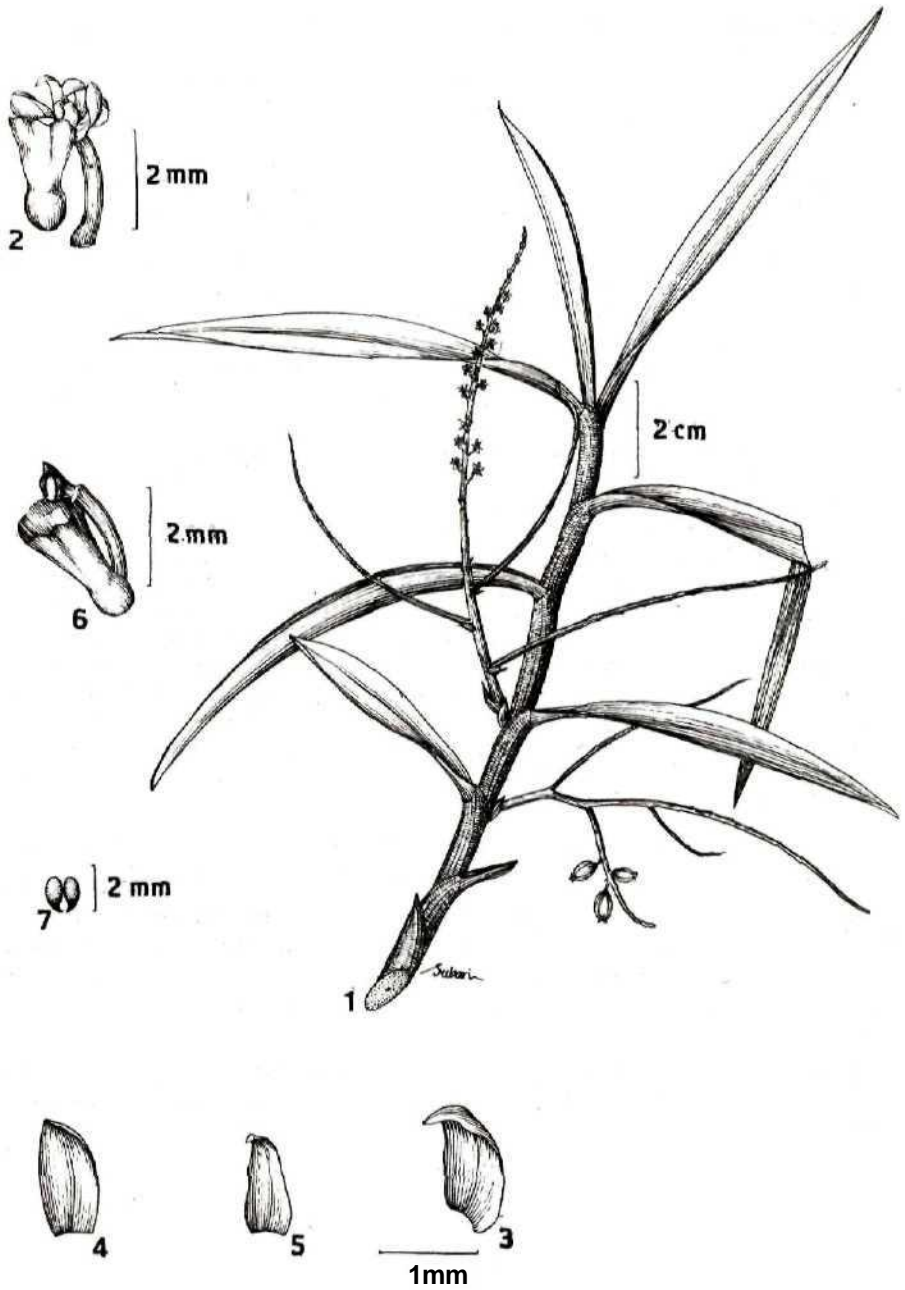


Fig. 4. *Porphyrodesme sarcanthoides* (J. J. S.) Mahyar : 1 habit; 2. flower; 3 lateral sepal; 4. median sepal; 5. petal; 6. lip and column; 7. pollinia. Habit from *W. Groeneveldt* 35; flower from *C H. B. II F 266*.

Porphyrodesme sarcanthoides (J.J.S.) Mahyar, *comb. nov.* — Fig. 4.

Renanthera sarcanthoides J.J.S. in Bull. Jard. Bot. Buitenz. 2. 25: 94. 1917; van Slooten in Bull. Jard. Bot. Buitenz. 3 (Suppl.), tab. 127, fig. 2. 1941; Holttum, Orch. Malaya: 635. 1964. - T y p e : *Ajoeb s.n.* (BO).

Plant epiphytic. Stem firm, 3.5—5 mm diam.; internodes ca 1 cm. Leafsheaths tubular around the stem and appressed to it, 1.2—2.6 cm long, 4—5.5 mm diam. Leafblades linear ovate, 5.9—12.9 by 0.6—0.8 cm, V[^]hape cross section, tip narrowly emarginate to acute when flattened; midrib somewhat prominent below. Inflorescence axilaris, diagonal to erect, ca 9.5 cm long, branches up to 3. Flowers many, open simultaneously. Peduncle ca 5 mm long, ca 0.7 mm diam., internodes ca 4 mm. Peduncular bracts ovate, tubular around the peduncle, ca 4.5 mm long, tip acute. Rachis, parts between the branches ca 8.5 mm, branch bracts ovate to triangular, 1.5—4 mm long, tip acute. Floral bracts triangular, persists, patent, ca 0.6 mm long, tip acute. Ovary angular, 0.1—0.2 mm diam. Median sepal boat-like, ca 1.5 by 0.7 mm, median nerve prominent. Lateral sepals broadly triangular when flattened, ca 2 by 1 mm, tips rounded mucronate, nerve 1. Petals narrowly ovate, ca 1.8 by 0.5 mm, tip acute, nerve 1. Lips 3-lobed. Hypochilium consisting of two lateral lobes and a spur; lateral lobes more or less quadrangular, ca 0.7 by 1.1 mm, straight from the spur. Spur shuttlecock like, ca 2.6 by 1.5 mm. Epichilium elliptic, ca 0.9 by 0.6 mm, straight. Column bent, ca 1.5 by 1 mm., at the half part with membraneous disk. Viscidium ovate, concave, ca 0.2 by 0.15 mm. Stipes membraneous, transparent, A-shape cross section, 0.5 — 0.6 mm long, 0.2 mm when flattened. Pollinia 2, bent eye-tears droop like, 0.25 by 0.2 mm. Anther concave, hood-like, ca 0.8 mm long, ca 0.5 mm high. Fruits ovate, 6 — 9 by 2.5 — 3.5 mm.

DISTRIBUTION. Celebes, Sumatera.

NOTE. As Holttum pointed out since this species has two pollinia only, it is very different from the other members of the genus *Renanthera*. Other differences can be observed in the column shape, the transparent ring-like struktur at the column and the overall small size of the flower. Therefore this species is excluded from the genus of *Renanthera* and from want of a better idea it is treated here as a species of *Porphyrodesme*.

INDONESIA: Celebes: Bolaang Mongondow, October 1917, *W. Kaudem, s.n.* (BO)L
Java: C.H.B. II F 266 (BO); Sumatera: Padang, Bovenland, Kajoe Tanam, *W. Groeneuerld.*
35 (BO).

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