NOTES ON PLATYCERIUM DESV. II
P. WILHELMINAE-REGINAE v.A.v.R. REDUCED TO P. WANDAE RAC.

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INTRODUCTION

In 1902 Raciborski (6) described an epiphyte of huge dimensions from New Guinea under the name of *Platycerium wandae*.

In 1908 van Alderwerelt van Rosenburgh (1) described the well-known *P. wilhelminae-reginae*, also a large-sized epiphyte occurring in that region.

The question arises whether these two might be conspecific. Miss Barbara Joe (4) recently discussed the identity of *P. wandae* and, after having considered several alternative explanations, expressed as the most likely opinion that *P. wandae* might represent only an aberrant form of what is generally known as *P. wilhelminae-reginae*; in spite of this she kept *P. wandae* in her key, even wide apart from *P. wilhelminae-reginae*.

To facilitate the discussion I will first consider *P. wilhelminae-reginae* and give a full description of it, after which what is known of *P. wandae* will be compared with it.

DESCRIPTION OF PLATYCERIUM WILHELMINAE-REGINAE v.A.v.R. — **Fig. 1—2.**

Though only in rather recent years *P. wilhelminae-reginae* can be found in horticultural collections, mainly in the United States, confusion with other species, notably with cultivars of *P. bifurcatum* (Cav.) C. Chr., is still rampant. Only in a few horticultural papers, and especially in Joe's recent revision of the genus (4) a good account of this most attractive species is given.

Van Alderwerelt gave a careful description and two plates of *P. wilhelminae-reginae* in the initial publication (1) which was repeated in his well-known 'Handbook' (2) a year later, and again referred to in his Supplement I (3). His original observations were based on cultivated material in the Botanic Garden at Buitenzorg, but in the 'Supplement' he mentioned additional collections.

The following new description is based on material kindly sent on loan to the Rijksherbarium at Leyden by Herbarium Bogoriense, Indonesia, and by the Botany Division at Lae, Territory of New Guinea.

Large epiphyte; fronds strongly dimorphic; nest fronds forming a huge humus collecting bracket; foliage fronds consisting of a specialized fertile lobe and a frondose, copiously divided pendent part; sporangial areas mostly two, one on the underside of the lobe and in fully mature specimens one below the first sinus of the frondose part.

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Compare fig. 1—2. *Rhizome* stout but short, clothed at the tip with large (2—3 cm) linear-lanceolate, acuminate, brownish scales, broadly attached at the base and with a darker pseudo-costa; margins minutely ciliate.

Nest fronds sessile, from a reniform, appressed basal part elongated upwards and recurved from the substratum, forming a large, humus-collecting bracket; total frond 0.7—1(—1.2) m long and somewhat less wide; upper part deeply and irregularly 2—3 times dichotomously incised to ± halfway; segments coarse and primary divisions 10—15 cm wide; ultimate segments blunt and more strap-like, up to ± 5 cm wide; margins of notched base round the rhizome and of the inner basal part of the nest frond fringed by conspicuous, sometimes forked laciniations, up to 3 cm long; otherwise margin entire to repand. Frond fleshy-coriaceous, green when young, only after a considerable time becoming brown and dry with projecting main veins.

Foliage fronds in pairs, longer than nest fronds (up to 2 m) and of flaccid-coriaceous texture; petiole well developed, striated, ± 10 cm long, dividing into two very unequal parts: 1) outer part sticking out ± horizontally from substratum, the stalk gradually expanding into a prominent (30—50 cm wide) triangular to crescent-shaped, specialized fertile lobe, flanked by two short, blunt to sub-acute horns which are hanging down, the lobe thereby convex as seen from above; distal margin slightly rounded and wavy; 2) inner part frondose, limply pendent, from a cuneate basal part 4—5 times dichotomously divided into a regular pattern of coarse segments which narrow down to the strap-like ultimate segments; in fully developed specimens the first sinus of this part becoming wide and projecting. When fully mature, there are two sporangial areas: one large patch (up to 25 by 50 cm) covering the under surface of the specialized lobe, extending towards the distal margin, but leaving the sides uncovered by a wide band; a second smaller patch is found below the first sinus of the frondose branch in fully mature plants. In young plants the horns of the specialized lobe are sometimes becoming strap-like and are rarely provided with an initial dichotomy; also, the sinus of the frondose branch is then not fertile.

Indumentum of the fronds: stellate fugacious, whitish, hairs 0.7 mm diameter; paraphyses likewise stellate, but much smaller (0.1—0.2 mm diameter) with a long stalk.

DESCRIPTION OF PLATYCERIUM WANDAE RAC.

Raciborski's description of *P. wandae* (6) runs as follows (translated):

Nest fronds of the fertile specimen 1.5—2 m long, more than 1 m wide, 1.5 cm thick at the base, upwards thin and deeply lobed, brownish at the base, upwards green, thus the largest nest fronds thus far known. The vegetative apex protected by very numerous lanceolate, brown scales 2—3 cm long, 0.5 cm wide, the apex entirely concealed in these scales, moreover covered by green, very thin, aphlebia-like frondose organs, these up to 6 cm long, several times dichotomously lobed. These aphlebia-like organs are part of the lower leaf-margin of the deeply cordately notched ('*ausgebuchtet*') nest fronds of which both basal lobes extend on the margin into numerous such aphlebia round the apex of the rhizome. *The fertile* (Raciborski writes 'sterile') *fronds* pendent, two times forked, smaller than the nest fronds, up to 1.2 m long, each of the 4 lobes broadened upwardly into the shape of a wedge, 20—40 cm broad at the apex which is not truncate but undulate or incised. The lower surface of the lobes covered with a thick, woolly layer of sporangia from the apex nearly to the base.

DISCUSSION

When reading Raciborski's description of *P. wandae* it appears that the plant he described agrees with *P. wilhelminae-reginae* and differs from all other species known by the combination of large size, conspicuously large, lobed '*aphlebiae*', and large rhizome scales. Furthermore, there is the colossal size of the wedge-shaped, sporangia-bearing lobes. This size is otherwise only reached in *P. coronarium*, but there the lobe is ellipsoid.

However, there are also some discrepancies between the description of *P. wandae* and the definition of *P. wilhelminae-reginae*.

Before going into this matter it should be realized that, though Raciborski performed a unique achievement on Malesian Pteridophytes in a remarkably short time, he was obviously not well acquainted with specific delimitation in *Platycerium*. For example what he called *P. grande* in his 'Flore de Buitenzorg' (5, p. 56) as cultivated in Java, is certainly a mixture of true Australian *P. grande* and *P. wilhelminae-reginae*, a statement which was already made by Van Alderwerelt van Rosenburgh (1) who even assumed that the whole of his '*P. grande*' was *P. wilhelminae-reginae*. But from his description it is clear that characters of both species were mixed.

Raciborski's insufficient understanding of the species of *Platycerium* and their diagnostics also appears from his notes under the description of *P. wandae*, where he says that the situation of the fertile parts of *P. wandae* reminds of that in *P. alcicorne* and *P. willinckii* and furthermore that he compares it with *P. grande* and '*P. aetiopicum* Hook. (= *P. stemmaria* Sw.)' from West Africa.

Furthermore, we must realize that the living material on which he made his observations was in a bad condition. It was sent to Bogor from Doréh, NW. New Guinea, south of Manokwari, forwarded by Mr. Meijwes in 1899, and arrived only a few months before Raciborski's departure from Java. It must have been underway for a long time (1—2 months) and arrived in poor condition ('*halbtodt*') and the plants could not be kept alive in the Bogor Botanic Gardens; from this material he made his drawing and notes serving for the description in his later publication.

Through these circumstances, there was a reasonable possibility for making errors in interpretation which may explain the discrepancies between the description of *P. wandae* and the characters of *P. wilhelminae-reginae*.

Unfortunately, no material of the original specimen of *P. wandae* is preserved in Herbarium Bogoriense and its garden herbarium, and in addition the notes and drawing of Raciborski could not be traced at Krakow, according to kind information provided by the late Prof. W. Szafer.

The discrepancies alluded to above are the following:

First, it is curious to observe that Raciborski's measurements of *P. wandae* for the nest fronds and their '*aphlebiae*' are twice the size of what is known in *P. wilhelminae-reginae*. I can only ascribe this discrepancy to the fact that Raciborski had, for his publication, to rely on his drawing and his memory, and believe he just made an error in his notes as to the scale of his drawing.

Second, Raciborski claimed *P. wandae* to possess 4 fertile large wedge-shaped lobes. If one imagines that the sterile branched part of the foliage fronds of the half-dead plant were removed, or that after withering they were cut off, or removed before or during transport, one gets exactly the condition described by Raciborski who interpreted the whole as belonging to one frond. The distal, dichotomously divided segments are thinner in texture and would likely be the first parts undergoing damage. Thus the 2 specialized

lobes and the 2 basal fertile parts of the frondose part would exactly match the condition in fig. 2.

With four points distinctly in favour of the conspecificity and a reasonable explanation for two points which are at first sight against it, I think only one conclusion is possible, viz. to reduce *P. wilhelminae-reginae* to *P. wandae*. None of the possible other explanations offered by Miss Joe, also not the suggestion that *P. wandae* was an aberrant form of *P. wilhelminae-reginae*, are acceptable to me. Even if the latter were true *P. wandae* would have priority. The discrepancies are partly due to the inadequacy of Raciborski's material and through this to a misunderstanding of the structure of *P. wandae*.

The synonymy of the species and the material known to me is as follows:

Platycerium wandae Raciborski, Bull. Int. Ac. Sc. Cracovie 1902 (1902) 58; van Alderwerelt van Rosenburgh, Handb. (1909) 709; Joe, Baileya 12 (1964) 107. — Type: living plant, not preserved: *Meywes s.n.*, 1899, NW. New Guinea. 'Von Doreh an der nordwestlichen Küste des holländischen Neu Guinea . . .'.

Platycerium grande (non Presl.) Rac., Pteridoph. Fl. Buitenzorg (1898) 56, *pro parte*.

Platycerium wilhelminae-reginae van Alderwerelt van Rosenburgh, Bull. Dép. Agric. Ind. Néerl. 18 (1908) 24, t. 6—7; Handb. (1909) 708; Wigman, Teysmannia 21 (1910) 161, fig.; van Alderwerelt van Rosenburgh, Bull. Jard. Bot. Buitenzorg, sér. 2, no. 7 (1912) 23; Handb., Suppl. 1 (1917) 421; Joe, Baileya 12 (1964) 109. — Type: *van Alderwerelt van Rosenburgh s.n.*, 1908, from a specimen cultivated in Bogor (BO).

Distribution: South Moluccas (Aru Is) and New Guinea.

Ecology: Heliophilous to semi-shade epiphyte in everwet lowland mixed forests.

New Guinea. W. New Guinea. Southern part of W. New Guinea, sine loc.: *Zippelius 179* (L); Doreh, near Manokwari, *unknown coll.* (type of P. *wandae*), not preserved; Rouffaer R., *Docters van Leeuwen 10181* (BO, L). — NE. New Guinea. Bulolo, *Womersley NGF 15308* (L, LAE); Morobe Dist. Umi R., Markham Valley, *Brass 32651* (L). — SE. New Guinea. Sogeri R., *Forbes 152* (BM); Milne Bay Dist., Cape Vogel Peninsula, Menapi, *Brass 22070* (L). — Aru Is. Wokam I., Watubakar, *Buwalda 5026* (BO, L).

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REFERENCES

1. Alderwerelt van Rosenburgh, C. R. W. K. van. 1908. Bull. Dép. Agric. Ind. Néerl. 18: 24—25, t. 6—7.
2. —— 1909. Malayan Ferns: 708—709.
3. —— 1917. Ditto. Suppl. 1: 421.
4. Joe, B. 1964. Baileya 12: 107—110.
5. Raciborski, M. 1898. Flore de Buitenzorg, Pterid.: 56.
6. —— 1902. Bull. Int. Ac. Cracovie: 58—59.
7. Steenis-Kruseman, M. J. van. 1950. Cyclopaedia of Collectors. Flora Malesiana I, 1: 422.

Fig. 1. *Platycerium wandae* Rac. A full-sized specimen showing the bracket and the two symmetrical foliage fronds, each consisting of an outer specialized fertile lobe and an inner dichotomously divided frondose part. (*Brass 22070*).

Fig. 2. *Platycerium wandae* Rac. Same specimen as in fig. 1, close-up. The right margin of the outer nest frond shows the 'aphlebia'-like laciniations. Paper strip 15 cm long.