

The Problem of *Wissmannia*

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Wissmannia carinensis (Chiovenda) Burret is a little known palm of Somaliland and the Arabian peninsula. Its affinities are rather obscure, chiefly because it is very inaccessible and collections have formerly not been adequate enough for a complete description. Recently, however, it has been accurately described by Monod (1955) from new collections and the history of its discovery and nomenclature summarized. Initially *Wissmannia carinensis* was described as a species of *Hyphaene* based on a leaf specimen but Burret (1943), in creating the genus *Wissmannia*, suggested that it was a member of the subfamily Coryphoideae and not the Borassoideae to which *Hyphaene* belongs. Burret suggested that *Wissmannia* has affinities with *Chamaerops*, *Nannorrhops*, *Symphyogyne*, and *Trachycarpus*. On the other hand, Monod suggested that it is most closely allied to *Livistona*.

Having recently completed a survey of the palms from the standpoint of systematic anatomy (see the preliminary account in Tomlinson, 1957) I felt that it might be possible to glean some information about the relationships of *Wissmannia* from a knowledge of its leaf anatomy. Professor Monod very kindly supplied me with a few fragments of the lamina of *Wissmannia* from a herbarium specimen. Revival of this material by boiling in water with a little bleaching solution restored it to a consistency which allowed me to make preparations in which the major anatomical characters of the lamina could be observed. Examination of these at once indicated no close anatomical affin-

ity with any of the genera suggested by Burret to be closely related to *Wissmannia* but, on the other hand, the combination of anatomical characters which were observed did suggest *Livistona*. However, I was already aware that *Livistona* varied considerably in its leaf anatomy, although the anatomy of individual species was very uniform. More recently I was able to collect additional material of *Livistona* from palms cultivated in the Fairchild Tropical Garden, Florida and so was able to obtain a better picture of the range of anatomical variation shown by the genus. One fact which came out of this study was that some species of *Livistona*, e.g. *L. Robinsoniana* and *L. rotundifolia*, are almost indistinguishable anatomically from *Licuala* whereas other species, e.g. *L. chinensis*, are very unlike *Licuala*. Apart from this incidental observation it was possible to make a careful comparison of *Livistona* with *Wissmannia*.

The following anatomical leaf characters are common to both *Wissmannia* and *Livistona*:—Hairs almost absent; 2 kidney-shaped hypodermal cells around each substomatal chamber; strands of fibres mostly hypodermal or sub-hypodermal; longitudinal veins almost equidistant from each surface and rarely in contact with surface layers; phloem of large veins subdivided into 2 separate strands; transverse veins often running below longitudinal veins, each including 2 phloem strands; silica cells common adjacent to transverse veins.

A few of the features present in *Wissmannia* occur in only a few species of *Livistona*:—Leaf isolateral (*L. Woodfordii*); epidermal cell walls not sinuous

(*L. chinensis*) epidermal cell walls more or less uniformly thickened (*L. chinensis*, *L. decipiens*); hypodermis 1-layered below each surface (*L. rotundifolia*, *L. Woodfordii*), not with a 2-layered adaxial hypodermis as in other species.

Wissmannia possesses no single anatomical feature by which it can be distinguished from *Livistona*, but it is recognized by a unique combination of anatomical characters. It can be distinguished from all species of *Livistona* because it possesses:—An isolateral leaf structure; non-sinuuous epidermal walls which are uniformly thickened; a uniseriate, colourless hypodermis below each surface. It has neither fibre-sclereids nor does the epidermis include short, wedge-shaped, uniformly thickened cells.

The anatomical evidence therefore suggests that *Wissmannia* is a distinct genus which shows some affinity with certain species of *Livistona*. Certain observations about the evolution and geographical distribution of these two genera can be made on the basis of these conclusions. *Livistona* has a wide distribution in the Indo-Malayan region and it is therefore reasonable to suppose that *Wissmannia* represents one line of divergence from the ancestral *Livistona*-stock and has spread westwards to East Africa where it represents the most south-westerly limit of distribution of the Coryphoideae in the Old World. Apart from *Wissmannia* the only other Coryphoid palm which occurs in continental Africa is *Chamaerops* which is found in North Africa and Southern Europe. Another line of descent from the *Livistona*-stock has resulted in the development of *Licuala* in the Eastern Tropics.

Literature Cited

- Burret, M. 1943. Die Palmen Arabiens. *Botanische Jahrbücher*. 73: 145-190.
 Monod, T. 1955. Remarques sur un Palmier peu connu: *Wissmannia carinensis* (Chiov.) Burret. *Bulletin de l'Institut Français d'Afrique Noire*, ser A, 17: 338-358.
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NOTES FROM YASHIRODA JUNKAEN

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In response to a request from our Executive Secretary on how our palms at the Yashiroda Junkaen have progressed since I last wrote on them [*Principes* 1:60-64. 1957], I am writing some notes about them. One of my grieis is that I lost a fine mature tree of *Erythea edulis* which I did not mention earlier. Our climate is less congenial for it than for *Livistona chinensis* but still it is a fine palm to us. Incidentally, while I was wandering about the deserts of Arizona in 1955—for I have been interested in trying some of the woody desert subjects including cacti—I came across some *Erythea armata* heavily loaded with beautiful long clusters of flowers in some and fruits in others at a mission garden. These were so impressive that my superficial view of the palm formed while I was in charge of the Palm House at the Royal Botanic Gardens at Kew, England, when I was a student there, was resolved quickly and spontaneously and I begged permission from the man in charge to gather some seeds. Contrary to my earlier efforts, the seeds germinated very well and the slow grower in the genus is now growing nicely. The young leaves, particularly the tips, resist the severe frost, cold,