

A NEW PHILIPPINE SPECIES OF CYCAS

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FOUR PLATES

February 11, 1902, I made a single day's trip inland from Halsey Harbor, Culion, the objective being a large open grassy area locally known as the *cogonal grande* or the *patag grande* originally selected as a possible site for the Culion leper colony. Towards the northern part of this area my attention was called to a number of characteristic *Cycas* plants, these mostly 1 to 2 m high, growing on open gentle slopes in the cogon (*Imperata*) area. A number of these were examined, but none of the plants bore traces of either male cones or female sporophylls. I accordingly had to content myself with collecting a few leaves. Until 1923 this single collection represented all that was known regarding this cycad.

In the early part of 1908 I compared the Kew specimen of my No. 657 with the *Cycas* material in that herbarium, concluding that the only close match was the Australian *Cycas cairnsiana* F. Muell. In my Enumeration¹ I placed this number under F. Mueller's species with the comment: "A curious species, of which only the leaves are known, perhaps representing the above Australian species."

Although several attempts were made by correspondents and friends to locate this *Cycas* in Culion it was not until April, 1923, that additional material came in when Dr. G. A. Perkins and Dr. H. W. Wade found the species near where I had originally collected it, and sent portions of a single leaf and a few male sporophylls to Manila. Previous trips made by Doctors Perkins and Wade had failed in their objectives, probably for the reason that my trip was made eastward from Halsey Harbor on the west coast of the island, and their trips were made westward from the Culion Leper Colony on the east coast. On the trip in April, 1923, which resulted in the relocation of the species, the plants were found late in the afternoon after Doctors Wade and Perkins had been on the trail for about seven hours. Later

¹ Enum. Philip. Fl. Pl. 1 (1922) 1.

abundant material with staminate cones, female sporophylls, and mature fruits was collected by Dr. W. H. Brown. At the same time Doctor Wade transplanted some of the mature cycads to the Culion Leper Colony, two of which were taken to Manila and established on the Bureau of Science grounds. In April, 1931, leaves with female sporophylls and fruits were collected by Dr. A. W. Herre in Culion. It was the receipt of this last collection for identification that reminded me of the unsolved problems associated with this interesting cycad, which lead me to communicate with Dr. W. H. Brown, asking for the loan of the available material that would enable me to prepare a reasonably complete description. In the meantime, however, J. Schuster² had attached a cumbersome quadrinomial to this Culion species on the basis of the original sterile collection, calling it *Cycas circinnalis* Linn. subsp. *riuminiana* (Porte) var. *curranii* Schuster, forma *graminea* Schuster. Complete material clearly shows that Doctor Schuster was as far from the true alliances of this Culion cycad in sinking it in *Cycas circinnalis* Linn., which he treats as a collective species, as I was in referring it to *C. cairnsiana* F. Muell.; both of these belong in the section *Lemuricæ*, while the Culion plant actually belongs in the section *Indosinenses*, in the alliance with *Cycas inermis* Lour. With his apparently broad concept of specific limits Doctor Schuster doubtless would have made this a form, variety, or subspecies of *Cycas siamensis* Miq. under which he placed *C. inermis* Lour. as a subspecies. After a careful consideration of all factors I prefer to consider the Culion plant as worthy of specific rank and accordingly supply the following technical description. In describing this as *Cycas Wadei* I would explain that the specific name is selected to commemorate the services of Dr. H. Windsor Wade, for many years in charge of research at the Culion Leper Colony, to whom we are indebted for much of our information regarding the plant, as well as for photographs, mature fruits and other botanical material, and maximum and minimum measurements of various plants as they occur in nature.

CYCAS WADEI sp. nov. § Indo-sinenses.

Cycas circinnalis Linn. subsp. *riuminiana* Schuster var. *curranii* Schuster forma *graminea* SCHUSTER in Pflanzenreich 99 (IV-1) (1932) 69.

Cycas sp. FOXW. in Philip. Journ. Sci. 6 (1911) Bot. 151.

Cycas cairnsiana MERR., Enum. Philip. Fl. Pl. 1 (1922) 1, non F. Muell.

² Cycadeae, Pflanzenreich 99 (IV-1) (1932) 69.

Truncis usque ad 5.3 m altis, plerumque multo brevioris, basi incrassatis, 30–40 cm diametro, sursum reductis, infra foliis 10–20 cm diametro; foliis numerosis, circiter 25 cm longis, petiolo breviter spinoso, foliolis utrinque circiter 90, confertis, crassis, rigidis, acute acuminatis, lineari-lanceolatis, rectis vel leviter falcatis, planis, 4–5 mm latis, medianis 15–20 cm longis, inferioribus brevioribus, infimis 8 cm longis; strobilis ♂ cylindraceis, 40–55 cm diametro, sursum angustatis, microsporophyllis numerosissimis, confertis, sphenoideis, medianis circiter 3 cm longis, deorsum valde angustatis, sursum triangularis, basi acutis, apice truncatis, 1.5–2 cm latis, in acuminis tenuibus fragilibus sursum arrectis 5–6 mm longis productis, obscure 5-dentatis vel breviter 5-lobatis; megasporophyllis ferrugineo-tomentosis, usque ad 22 cm longis, pedunculis circiter 15 cm longis et 1 cm latis, megasporangiis 1–3 gerentibus, laminis terminalibus sterilis in ambitu ovatis, circiter 10 cm longis, 7 cm latis, ferrugineo-pubescentibus, longe acuminatis, pectinatopinnatifidis, lobis utrinque circiter 15, linearis, acute acuminatis, sursum glabris, usque ad 3.5 cm longis; fructibus ellipsoideis vel ovoideis, rotundatis, 3.2–4 cm longis, 2.5–3 cm diametro, putamine longitudinaliter distincte 9-15-costatum.

Trunk² up to 5.3 m high, usually much shorter, and in many mature plants less than 1 m high, often branched, base swollen, usually tapering above, varying in diameter from 30 to 48 cm at the base and from 10 to 20 cm below the crown of leaves, the swollen base tapering rather abruptly in the lower 20 to 45 cm, and much more gradually above. Leaves numerous in the terminal crown, crowded, about 75 cm long, 25 to 30 cm wide, the petiolar part about 20 cm long and with two rows of short spines in positions corresponding to the attachment of the leaflets, but with no transition from leaflets to spines, these spines acute, about 1.5 mm long, spaced on the average about 6 mm apart, the petiole 5 to 10 mm in diameter, the rachis rounded and smooth on the lower surface, the upper surface blunt-angled, the sloping sides and basal parts of the leaflets on the upper surface in young leaves cinnamomeous-pilose, in age entirely

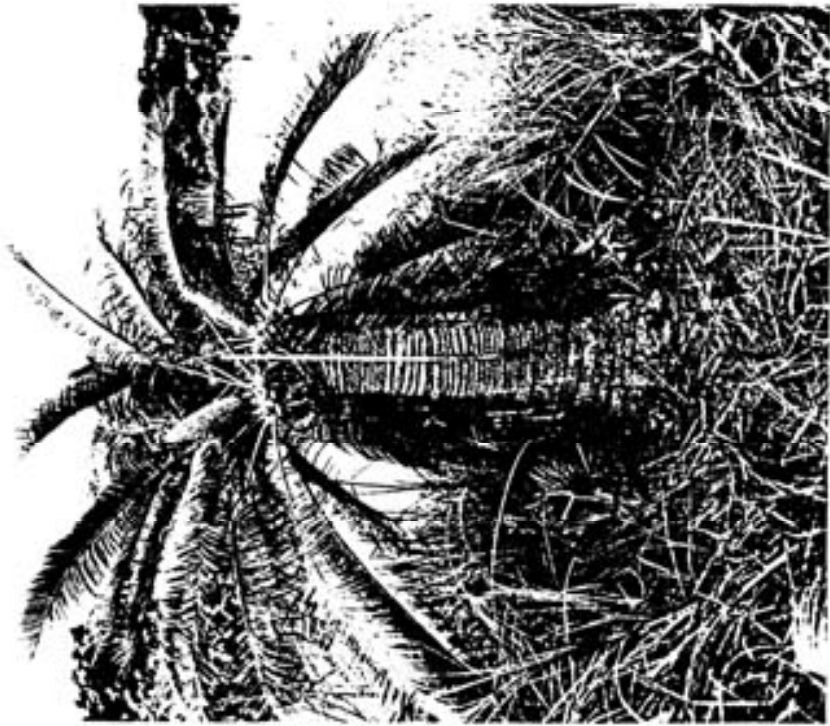
² A striking character of the trunk is the presence of pronounced rings around it, which are plainly shown in a number of the illustrations. A male plant growing in the grounds of the Bureau of Science branched and rebranched until it had a number of heads, and each head produced a cone. Gradually most of the heads died out and eventually there were four left as is shown in the illustration. There was nothing to indicate that this branching was due to injury or any other abnormal circumstance.

glabrous. Leaflets rather close, about 90 on each side of the rachis, linear to linear-lanceolate, coriaceous, rigid, straight or somewhat falcate, spaced at about the rate of 9 on each side within a distance of 5 cm, flat, not at all revolute, smooth, sharply acuminate, base slightly narrowed, 4 to 5 mm wide, the median ones 15 to 20 cm long, the lowest ones but 8 cm long, but with no transition into petiolar spines, the uppermost ones again shorter, about 8 cm long; male cones cylindric, somewhat narrowed below, more strongly tapering upward, 40 to 70 cm long, 9 to 10 cm in diameter, the microsporophylls very numerous, crowded, the median ones about 3 cm long, the claw rather narrow, the somewhat rhomboid limb 1.5 to 2 cm wide, tapering below, the apex truncate, the lower surface of both claw and limb covered with microsporangia, the upper surface of the limb glabrous, the exposed sterile end puberulent, about 2 cm wide and 1 cm high, ascending at about a right angle, the tip thin, ovate from the broad base, 5 to 6 mm long and wide, rounded to acute or to somewhat acuminate, not conspicuous, with usually 3 to 5 slender teeth or short narrow lobes, sometimes nearly entire. Megasporophylls up to 22 cm long, rather densely ferruginous-pilose, the peduncular part about 15 cm long, 1 cm wide, bearing few, usually but two, megasporangia, the sterile limb ovate in outline, up to 10 cm long and 8 cm wide, pectinate-pinnatifid, the lobes about 15 on each side, usually ascending, linear, rather rigid, sharp-pointed, pubescent below, glabrous above, or entirely glabrous, up to 3.5 cm long, the tips of the sterile limbs usually long-acuminate, with few, gradually shorter, ascending lobes or the uppermost ones often reduced to teeth only 1 to 2 mm long. Fruits ovoid to ellipsoid, sessile, not at all compressed, brown, glabrous, shining, somewhat rugose when dry, apex rounded, rarely obscurely and minutely apiculate, 3.2 to 4 cm long, 2.5 to 3 cm in diameter. Seeds conforming to the fruit in shape, the putamen woody, pale, somewhat shining, longitudinally 9- to 15-ribbed.

CULION, Cogonal Grande or Patag Grande, *Merrill 657*, February 11, 1902, a sterile specimen, type of forma *graminea* Schuster of *Cycas circinnalis* Linn. subsp. *riuminiana* Schuster var. *curranii* Schuster; *H. W. Wade and G. A. Perkins*, April 4, 1923, with staminate sporophylls; *A. W. Herre 1061*, April 27, 1931; and abundant material secured by *W. H. Brown*, the type collection.

Mature plants of this interesting *Cycas* are now in cultivation at the Culion Leper Colony and in the grounds of the Bureau of Science, Manila, while seedlings are in cultivation at the New York Botanical Garden and the Coconut Grove Palmetum in Florida; viable seeds were transmitted to the Royal Botanic Gardens at Kew and to the Botanical Garden at Berlin.

Striking characters of the present species are found in its unusually narrow leaflets and in its distinctly ribbed putamen. In *Cycas circinnalis* and its allied species the putamen is very smooth; it is perhaps ribbed in some of the *Indosinenses* species, but I have no data on this point.



1



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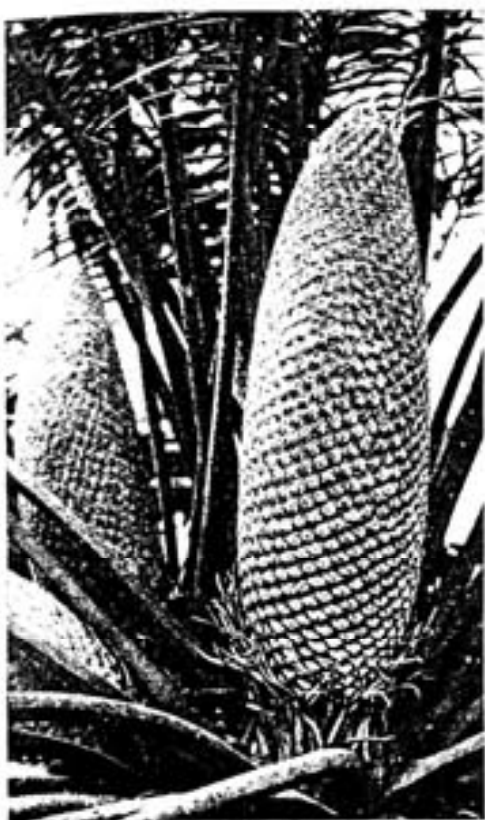
PLATE 1.



1



2



1



2



3



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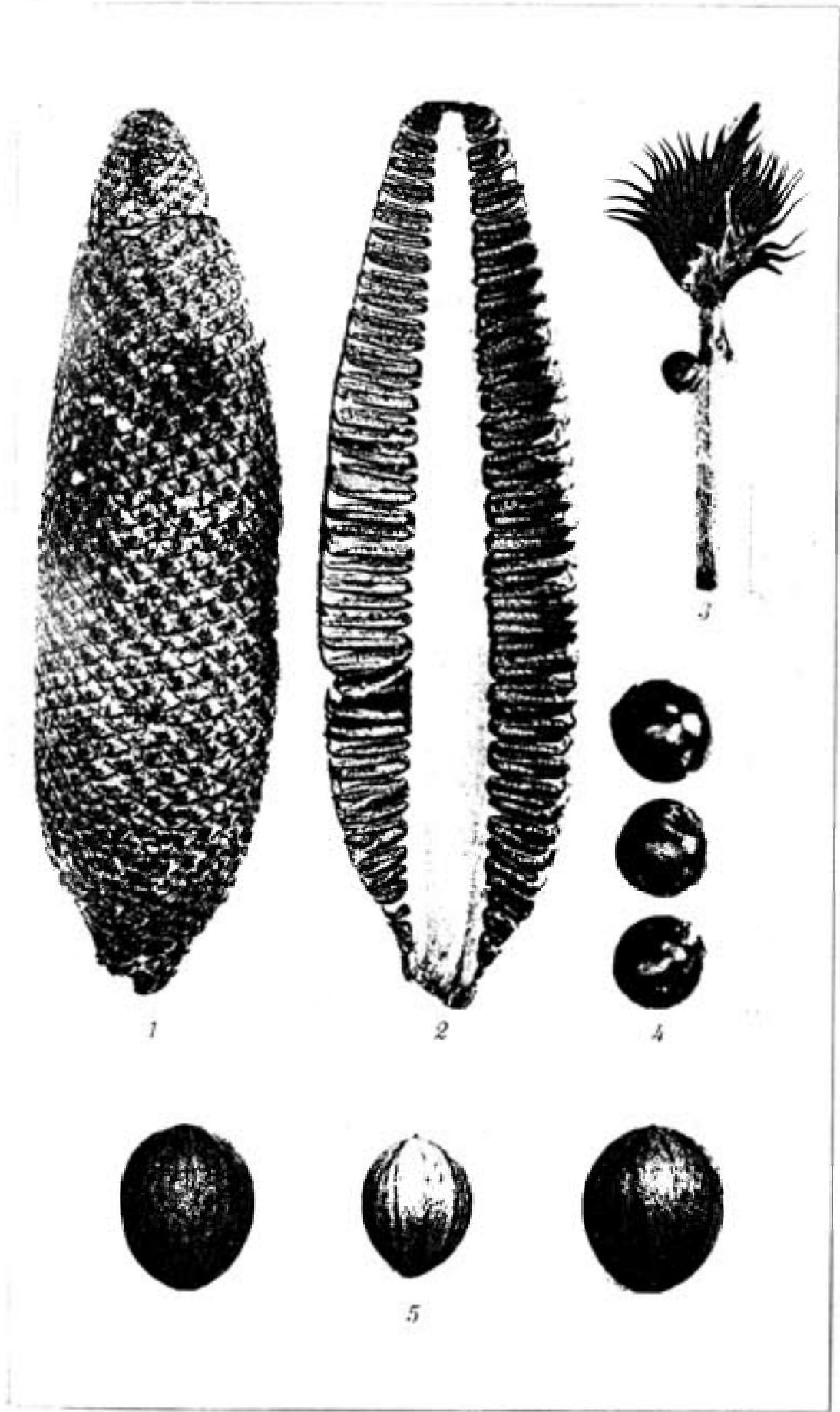


PLATE 4.