ant-infested ocreas, and is unlikely to be confused with any other species in its range except in northern Borneo. In the vicinity of Sandakan, and a few other localities in Sabah, grows *K. furtadoana*, which is closely related to *K. rostrata* and almost indistinguishable in the vegetative state, but differing markedly in inflorescence structure (see below). In scattered localities in Sarawak and Sabah occurs a taxon with slender stems and short swollen ocreas, indistinguishable from both *K. rostrata* and *K. furtadoana* apart from the leaflets which are narrowly lanceolate. Only one collection (*Dransfield* JD 5322) is fertile, but even this is represented by old disintegrating inflorescence axes. Although the leaflet shape gives this rattan a very distinctive appearance in the field, its status will remain uncertain until good fertile material is collected.

Ridley's new species *K. machadonis* was based on a sterile juvenile plant; no specimen has been found, and it is assumed that it was based on living material sent to Singapore Botanic Gardens for cultivation. Like Furtado (1951) I believe much of the type description suggests a juvenile state of *K. scaphigera*—i.e. *K. rostrata*, and thus *K. machadonis* is tentatively included in synonymy here.

I have already discussed this taxon at some length in justifying its exclusion from the genus *Ceratolobus* (Dransfield 1979b). In that discussion I indicated that several features of the type, a single juvenile leaf, suggested affinity of *K. scaphigera* and that Beccari had also annotated the borrowed specimen as '*K. scaphigera* Mart.?'. I have recently re-examined the type and am now sure that *K. rostrata* and *K. scaphigera* are synonymous; unfortunately, as *K. rostrata* is the earlier name, the name of this well-known rattan will have to be changed.

18. Korthalsia scaphigeroides *Becc.* in Philip. J. Sci. Bot. 4: 619 (1909), in Ann. Roy. Bot. Gard. Calcutta 12(2): 114 (1918) & in Philip. J. Sci. 14: 342 (1919); Merr. in Brown, Minor Products Philip. forests 1: 212 (1920) & Enum. Philip. Fl. Pl. 1: 146 (1922). Type: Philippines, Mindanao, Zamboanga, *Hutchinson* 4816 (holotype FI).

This species is still known only from sterile material. Although it is so similar to *K. rostrata*, two characters are consistently different; in all specimens examined (*Merrill* 7313, *Hutchinson* 6106, 4816 (all FI) and *Ponce* 23913(K)) the ocrea is consistently larger than that in *K. rostrata* (c. 5 cm long or more) and the leaflets are densely chalky white indumentose on the abaxial surface. Because of these differences, I prefer to retain *K. scaphigeroides* as a distinct species until fertile material is available for comparison with *K. rostrata*. *K. scaphigeroides* is known only from Mindanao (Agusan, Surigao and Zamboanga) and from Basilan Island nearby. Nothing is known of the habitat of this species.

19. Korthalsia furtadoana *Dransfield* sp. nov. *K. rostratae* affinis, juventute vix distincta, sed structura inflorescentiae facile distinguenda; rachillae robustae, paucae, raro plus quam 4, bracteis rachillae quam pili fovearum floralium insigniter longioribus etiam post anthesin conspicuis; flores fructusque distincte majores, squamis fructus in ordines verticales 21–22

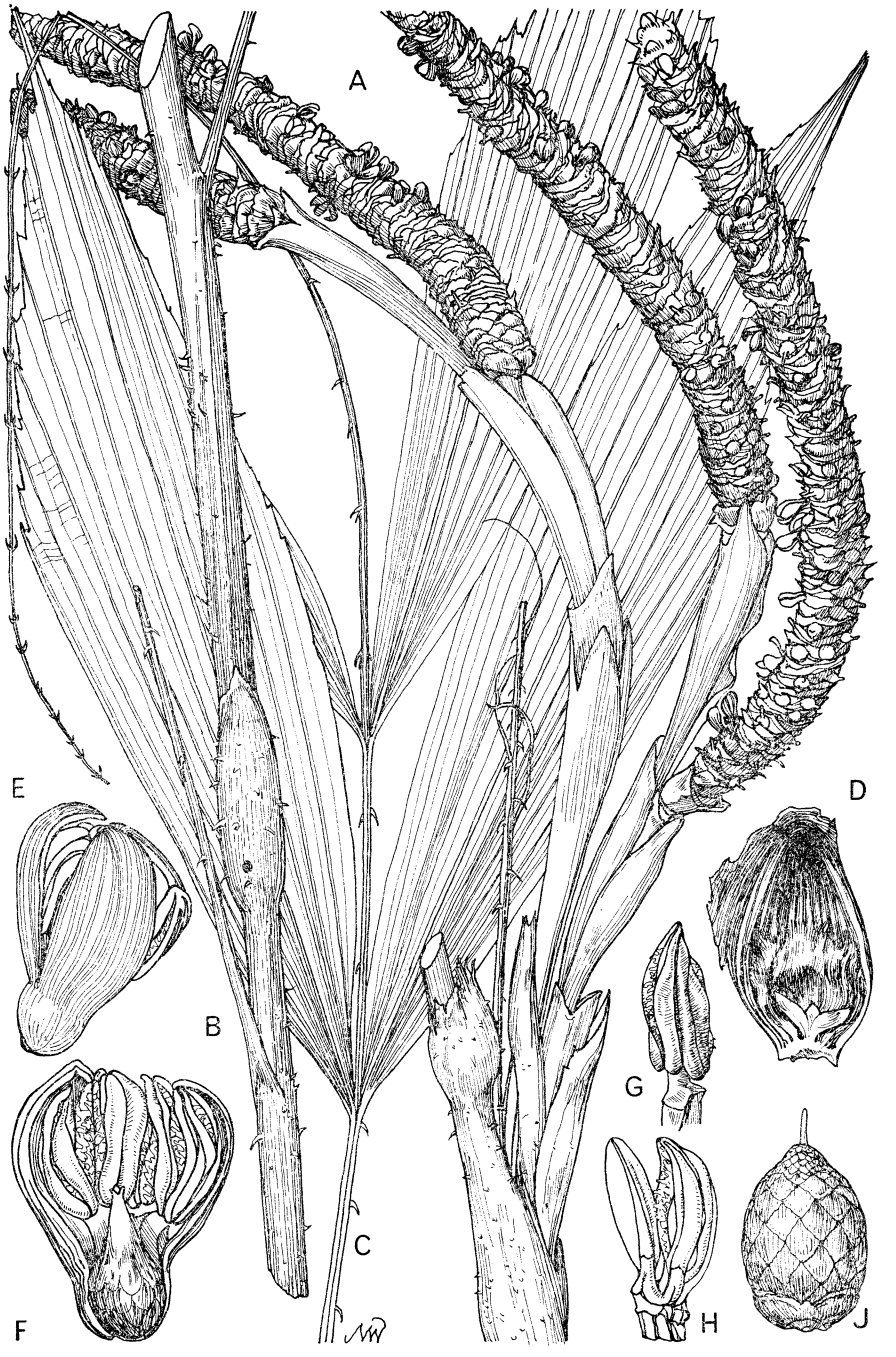

FIG. 2. *Korthalsia furtadoana*. **A** part of the apex of a flowering shoot showing reduced leaf and ocrea and inflorescence emerging from a split in the leaf sheath × $\frac{2}{3}$; **B** stem with sheaths, and ocrea complete with ant hole × $\frac{2}{3}$; **C** leaf tip with cirrus × $\frac{2}{3}$; **D** adaxial view of rachilla bract and calyx × $4\frac{1}{2}$; **E** flower with calyx removed × $4\frac{1}{2}$; **F** flower with one petal and two stamens removed × $4\frac{1}{2}$; **G** adaxial view of one stamen × $4\frac{1}{2}$; **H** abaxial view of two stamens × $4\frac{1}{2}$; **J** almost mature fruit × 2. **A–C** from *Dransfield* JD 5590, **D–H** from *Matusop* 7427, **J** from *Castro* A 3201. Drawn by Mary Millar Watt.

(vice 15–19) dispositis; venulae transversales foliolorum tenuiores creberioresque quam in *K. rostrata*. Typus: Borneo, Sabah, *Dransfield et al.* JD 5763 (holotypus K; isotypi SAN, SAR).

Slender clustering rattan with stems reaching 30 m or more, suckering basally and branching aerially. Stem without sheaths 5–8 mm diam., with sheaths 8–10 mm diam; internodes 8–15 cm, sometimes shorter on exposed aerial stems. Sheath mid to pale green, armed with scattered triangular black spines 1–4 mm long, and caducous dark scales. Ocrea with proximal half (up to 3 cm) tightly sheathing, similar in armature and texture to the rest of the sheath, and distal half dry, brown, inflated, forming an ant chamber 3–7 × 1·2–1·5 cm, armed with sparse triangular black spines. Leaf, excluding sheath, to 105 cm including petiole to 7 cm, and cirrus to 60 cm, all dimensions smaller in exposed aerial stems and very much reduced in leaves subtending inflorescences; petiole semi-circular in cross section, 2·5 × 1·5 mm, armed with scattered reflexed black hook-like spines to 2 mm on the abaxial surface only; rachis armed as the petiole but spines becoming grouped into grapnels of 3–5 in the distal portion and intergrading with the cirrus spines; leaflets 4–6 on each side of the rachis, usually rather narrow rhomboid, occasionally broad rhomboid; proximal leaflets narrower than the rest, 11–17 × 0·8–2 cm; mid-leaf leaflets 18–20 × 3·5–7 cm; distal pair slightly smaller; distal leaflet margin coarsely praemorse, rarely also with short black spinules; main ribs 6–8; adaxial surface bright green when fresh, usually drying pale green, abaxial surface with thin grey to pale buff indumentum; transverse veinlets conspicuous, fine and close. Inflorescences to c 30 cm produced simultaneously in the axils of the most distal leaves, usually two only, each usually bearing four rachillae only; main axis of inflorescence branching near the base to give two axes, each bearing up to two rachillae, the usually four rachillae all borne ± at the same level; rachillae robust 14–17 × 1·5–2 cm, rarely smaller; rachilla bracts very conspicuous, exceeding the pale brown pit hairs by at least 3 mm and persisting conspicuous up to the fruiting stage; enclosed pit c. 3 × 6 mm. Flower to 6·5 × 4 mm; calyx with 3 broad triangular lobes to 1 × 1·5 mm; corolla tubular in the proximal 1·5 mm with 3 petals to 5 × 3 mm; stamens 6, rarely more (to 9) relatively robust, with short fat filaments to 1 × 0·5 mm, and anthers latrorse to 4 × 1·75 mm; pollen yellow; ovary c. 2 mm diam., style narrow pyramidal to 2·5 × 1 mm at base, tipped with 3 stigmas. Fruit ovoid, at maturity reaching 20 × 12 mm, conspicuously tipped by the stigmatic remains to 2·5 × 1 mm; scales reddish brown to 3 × 2·5 mm arranged in 21–22 vertical rows; mesocarp to 2 mm thick, seed ovoid to 12 × 9 mm; endosperm deeply ruminate; embryo lateral. Seedling leaf bifid. (Fig. 2)

DISTRIBUTION. Borneo; Sabah, particularly in the East Coast residencies.

HABITAT. lowland Dipterocarp forest on a variety of soils.

SABAH. Sandakan Residency: Ulu Dusun, *Dransfield et al.* JD 5763 (holotype K; isotypes SAN, SAR); Sandakan, *Ramos* 1666 (K); Sepilok, *Patrick* SAN 20607 (K), *Kadir* A2643 (K, SAN), *Cuadra* A2176 (SING), *Matusop* 7427 (K. SAN, SING); Belotan, *Castro* A3201 (K) *Boden-Kloss* 19031 (SING); Subak Camp, *Madani* SAN 33215 (K, SAN). Tawau Residency: Lahad Datu, *Cuadra* A2498 (K); Bakapit, *Burgess* SAN 30782

(K, SAN); Bagahak, *Howroyd* SAN 29366 (K, SAN); Tawau, *Elmer* 20476 (BM, K SING); St Lucia, *Cuadra* A2377 (K, SAN SING); Luasong, *Fedilis* & *Sumbing* SAN 87333 (K, SAN). Interior Residency: Nabawan, *Ag. Nordin Abas* SAN 85854 (K, SAN); Tenom, Paling-paling Hills, *Dransfield et al.* JD 5590 (K, SAN), JD 5591 (K, L, SAR, SAN).

Furtado had separated a number of collections of *Korthalsia* in the Singapore Herbarium and had labelled them *K. spinulata* Furtado, nov. sp. This name has never been published. All the collections have vegetative features similar to *K. rostrata* but with few robust rachillae bearing conspicuous bracts. I believe Furtado had named the collections *K. spinulata* after the spinulous leaflet margins of the collection he selected as type (*Matusop* 7427). However, most of the collections are without this character, and, indeed, spinules on the praemorse leaflet margin may be found, in varying abundance and, as an inconsistent feature, in several species of the genus. Although I do not believe Furtado's unpublished epithet suitable, I do believe that the taxon is distinct from *K. rostrata* and have named it in honour of Furtado. It is closely related to *K. rostrata* but differs in the few robust rachillae with conspicuous bracts, and the larger flowers and fruit. It is abundant near Sandakan and Tawau; true *K. rostrata* has been collected once near Tawau (*Dransfield et al.* JD 5855 (K, SAN, SAR)). Unfortunately I did not appreciate how distinct a taxon *K. furtadoana* is, when I undertook my recent field work in Sabah, so the slight difference in vegetative features appreciable in the herbarium, has not been tested in the field.

20. Korthalsia echinometra *Becc.* in Malesia 2: 66 (1884), 276 (1886) & in Hook. f., Fl. Br. Ind. 6: 474 (1893); Ridley, Mat. Fl. Malay Pen. 2: 215 (1907); Becc. in Ann. Roy. Bot. Gard. Calcutta 12(2): 115 (1918); Merr., Bibl. Enum. Bornean Pl.: 72 (1921); Ridley, Fl. Malay Pen. 5: 68 (1925); Furtado in Gard. Bull. Singapore 13: 306 (1951) Dransfield, Man. Rattans Malay Pen.: 47 (1979). Type: Borneo, Sarawak, G. Matang, *Beccari* PB 1935 (holotype FI).

Korthalsia horrida Becc. in Malesia 2: 66 (1884) & Ann. Roy. Bot. Gard. Calcutta 12(2): 117 (1918); Merr., Bibl. Enum. Bornean Pl.: 72 (1921). Type: Borneo, Sarawak, G. Matang, *Beccari* PB 1918 (holotype FI).

Korthalsia angustifolia Bl. var. *β gracilis* Miq., De Palm. Arc. Ind.: 16 (1868); Becc. in Malesia 2: 70 (1884), 276 (1886); Merr., Bibl. Enum. Bornean Pl.: 71 (1921). Type: Sumatra, Palembang, *De Vriese* (holotype L).

Daemonorops ochreatus Teysm. et Binn. Cat. Hort. Bog. 74 (1866) (nomen).

Calamus (sect. *Daemonorops*) *ochreatus* Miq., De Palm. Arc. Ind.: 29 (1868) (nomen).

Beccari (1918) already indicated the possibility that *K. horrida* was based on a juvenile specimen of *K. echinometra*; Furtado (1951) formally reduced it to synonmy. Certainly *K. horrida* is indistinguishable from seedlings of *K. echinometra*.

K. echinometra is an easily identified rattan, yet from a distance it can be mistaken for a species of another genus. Time and again I have been fooled by distant views of its narrow lanceolate leaflets into thinking I was dealing with another rattan; yet on closer examination it is quite unmistakable. It is probably the commonest species of the genus in primary forest in Southern