

at the base forking near the insertion, to  $24 \times 0.7$  cm, deep scarlet when fresh, proximally bearing 2–3 triads c. 3 cm distant distally bearing staminate flowers solitary or in pairs c. 1.5 cm distant, all  $\pm$  uniseriate on one side of the rachilla. Staminate flowers green in bud, becoming white after anthesis, relatively very large (perhaps the largest in the genus), c. 18 mm long; calyx c. 3.5 mm long, tubular above a short solid base, with 3 low triangular lobes with minutely ciliate margins; petals 3,  $\pm$  oblong, c.  $15 \times 4$  mm, connate in the basal 5 mm, the tips blunt triangular; stamens 6, the filaments inserted on the corolla c. 2 mm above the base; anthers  $\pm$  medifixed, c.  $9 \times 1$  mm, pistillode absent. Pistillate flower bud c.  $15 \times 7$  mm,  $\pm$  ovoid, subtrigonus; sepals 3, imbricate, cucullate, connate only at the very base, the outermost to  $15 \times 7$  mm, the innermost to  $11 \times 6$  mm; petals 3, free, valvate above, imbricate below, c.  $9 \times 3$  mm; staminodes apparently absent; ovary very immature in available specimen. Immature fruit fusiform,  $5.5 \times 1$  cm, tipped by massive stigmatic remains (Fig. 5).

**DISTRIBUTION.** Borneo, Sarawak, 7th Division, known only from the type collection (see above).

**HABITAT.** Cited as growing near river banks.

This species (*jugahpunya*—belonging to *Jugah*, in Malay) is named for *Jugah anak Kudi*, well known plant collector of the Forest Department, Sarawak, who assisted in collecting the type, and who has accompanied me on many field trips, enlivening them with wit and great botanical knowledge. *A. jugahpunya* is an extraordinary species. The inflorescence is remarkably robust and the staminate flowers perhaps larger than in any other species of *Areca*; furthermore the petals of the staminate flower are conspicuously connate at the base. The fruit, even in an immature state is massive. These features, together with the acaulescent habit, must lend a very strange aspect to the palm in the field. Despite its anomalous features, the uniseriate arrangement of the staminate flowers indicates a position within section *Arecella*, where it is probably closest to a new taxon from northern Sumatra and Trengganu.

**11. *Areca kinabaluensis*** *Furtado* in Feddes Rep. 33: 228, 233 (1933). Type: Borneo, Sabah, Kinabalu, Lumu-Lumu, *Furtado* sub *J. & M. S. Clemens* 28761 (holotype SING; isotypes B, K).

*Areca hallieriana* Becc. ex Martelli in Atti Soc. Tosc. Sci. Nat. Residente Pisa. Mem. 44: 114 ('1934'). Type: Borneo, Kalimantan, at the foot of G. Demus, *Hallier* 454 (holotype BO; isotype FI); **synon. nov.**

Far from being a Kinabalu endemic, this species turns out to be widespread in Borneo; however, it seems never to be abundant, often occurring as a few solitary individuals. The type of *A. hallieriana* fits within the range of variation of *A. kinabaluensis*.

**12. *Areca klingkangensis*** *J. Dransf.* sp. nov. inter species maiores sectionis *Microarecae* propter florem staminatum stipitatum *A. abdulrahmanii* et *A. andersonii* affinis sed staminibus 9 vice c. 16 vel 6 distincta. Typus: Borneo, Sarawak, 1st Division, Sabal Tapang Forest Reserve, G. Gaharu, *J. Dransfield et al.* JD 6103 (holotype K; isotypi BH, SAR).

Erect, solitary, undergrowth palmlet. Stem to 2 m tall, c. 7–10 mm diam.; internodes green, 2.5–6 cm long, bearing scattered dull brown scales; nodal scars c. 3 mm wide. Crownshaft well-defined, pale green drying dull brownish, c. 25 × 1.5 cm, only slightly swollen; leafsheaths neatly abscising, c. 10 cm long, longitudinally striate, bearing scattered dark brown scales; ligule c. 3 mm long, soon tattering and becoming lost. Leaf pinnate, excluding sheath to c. 55 cm, including petiole to 12 × 0.3 cm; leaflets 3–6 on each side of the rachis, distant, stiff, very coriaceous, narrow, 1–3-ribbed, concolorous, drying mid-brown, 22–40 × 0.7–1.7 cm, the longest near the base, the shortest at the apex, acuminate except for the apical pair where tip minutely lobed; minute brown scales present on both surfaces, more abundant abaxially. Inflorescence infrafoliar, branching to 1 order, short, not exceeding c. 8 cm long, usually shorter; prophyll winged, c. 8 × 2 cm or less, bearing scattered scales; peduncle very short, c. 15 mm long, 5 mm wide just above the winged base; rachillae divergent, usually 3 only, to c. 6 cm long, c. 4 mm diam. at the base, tapering to the tip, bright reddish tinged, bearing abundant persistent low blackish scales, and sparse, caducous, chaffy hairs; triads rarely more than 2–3 at the base of each rachilla, the rachillae otherwise bearing spirally arranged paired or solitary staminate flowers. Staminate flower irregularly angled, markedly stipitate, especially those of the triads; stipitate base of calyx 0.5–2.5 × 1 mm, angled, glabrous, calyx lobes low c. 0.7 × 1 mm triangular, the margins smooth; petals valvate, glabrous broadly triangular, c. 2.5–3.5 × 1–1.5 mm; stamens 9, slightly irregular, borne on very short or obsolete filaments, anthers 1.8–2 × 0.5–0.6 mm, latrorse; pistillode lacking. Pistillate flower sessile; sepals 3, free c. 5.5 × 3.5 mm, imbricate, cucullate, sparsely hairy along the strong keel, minutely ciliate along margins; petals 3, imbricate, ovate, c. 4.5 × 5 mm, ciliate; staminodes 6, minute; ovary ± conical in bud, c. 2.5 mm diam. at base, tipped with 3 fleshy, angled stigmas. Young fruit greenish tinged; mature fruit known only in mummified condition, fusiform, 26 × 5 mm (Fig. 6).

**DISTRIBUTION.** Borneo, Sarawak, 1st Division, known only from the type collection.

**HABITAT.** I discovered this species growing in very wet mossy forest developed on an eroded sandstone block summit at c. 700 m altitude; for an account of its discovery see Dransfield (1982).

*A. klingkangensis* is named after the Klingkang Range, of which G. Gaharu is one of the higher summits, the range which separates Sarawak from Kalimantan Barat. This species has smaller inflorescences and fruit than *A. abdulrahmanii* and *A. andersonii*, and may easily be distinguished by the presence of 9 rather than 6 or c. 16 stamens. With these two species it forms a rather distinctive group within section *Microareca*.

**13. *Areca minuta* Scheff.** in Ann. Jard. Bot. Buitenzorg 1: 145 (1876). Type: Borneo, W Kalimantan, Landak, *Teijsmann* s.n. (holotype BO).

*Areca tenella* Becc. in Malesia 1: 22 (1877). Type: Borneo, Sarawak, *Beccari* PB 1524 (lectotype FI, chosen here; isolectotype K).

*Areca amdjahi* Furtado in Feddes Rep. 33: 235 (1933). Type: Borneo, E Kalimantan, Samenggaris, *Amdjah* 1019 (holotype† B; isotype BO);

**synon. nov.**