its affinity with the present species cannot be fully assessed until fertile material becomes available. A recent collection of *C. pseudoulur* from the Fourth Division of Sarawak (*Chin* 3014) (K), shows that the fruit of this species also is inordinately large. *C. mesilauensis* differs in the more slender stems and the sheaths more densely armed with small spines, often in groups.

9. **Calamus convallium** *J. Dransf.* sp. nov. Species singularis inflorescentia et floribus *C. conirostri & C. lobbiano* affinis sed aspectu omnino divergenti, flagello parvo, folio subcirrato, foliolis binatis divergentibus his apice folii minutis, rachillis staminatis circinatis distinctissima. Typus: Borneo, Sabah, *Dransfield* JD5816 (holotypus K; isotypi KEP, L, SAN, SAR).

Clustering, low to high climbing rattan tending to form rather open thickets in wet valley bottoms. Stem without sheaths 1–1·5 cm diam., with sheaths to 2·5 cm, rarely more; internodes to 25 cm. Sheaths dull green, armed with rather sparse brittle laminar black spines to 25 × 5 mm, usually less, the spine margins conspicuously fringed with brownish-black hairs; pale brown scaly indumentum present as a thin caducous covering between the spines; knee conspicuous, usually unarmed; ocrea scarcely developed. Flagellum usually absent in juveniles, reaching 1·3 m only in mature stems, sometimes present as only a short vestige, weakly armed with rather distant grapnel groups. Leaf arcuate, conspicuously subcirrate, to 1·5 m; petiole to 30 cm long, semi-circular in cross-section, 12 × 6 mm, unarmed on the flattened adaxial surface, armed with distant reflexed black spines along the edges and on the abaxial surface; rachis gradually decreasing in diam. from the petiole, distally becoming more angular in cross-section and more densely armed with grapnel groups of spines; leaflets lanceolate, acute or somewhat acuminate, 12–20 on each side of the rachis, in the proximal portion arranged in very distant pairs (to 25 cm distant), the leaflets in each pair strongly divergent; in the most distal portion (the subcirrus) the leaflets sometimes subregular; mid-leaf leaflets to 40 × 5 cm, decreasing distally, the leaflets of the subcirrus ranging from 16 × 2·5–4·5 × 0·4 cm, a malformed leaflet pair frequently present fused to the tip of the rachis; ab- and ad-axial leaflet surfaces unarmed; leaflet margins armed with black bristles to 4 mm, usually only conspicuous at the leaflet tip; three main veins conspicuous on adaxial surface, transverse veinlets very conspicuous, somewhat sinuous. Staminate inflorescence to 1·5 m, the peduncle c. 6 mm diam. at the insertion on the leaf sheath, and bearing five evenly spaced partial inflorescences c. 25 cm distant; primary axis bracts closely tubular armed with scattered reflexed triangular spines along the surface abaxial to the stem; margins of bracts bearing a fringe of grey hairs to 3 mm; partial inflorescence to 16 cm, arcuate bearing c. 8 conspicuously recurved rachillae on each side of the axis, the proximal few rachillae sometimes bearing a few branches; bracts on the partial inflorescence axis to 15 × 3 mm, with scattered brown scales, fringed as the primary bracts; rachilla bracts with triangular limbs to 4 mm, ciliate-margined and brown scaly; involucre c. 3·5 mm diam., ciliate-margined. Staminate flower rounded in bud; immature calyx c. 3 mm with three short triangular lobes, the whole densely covered in yellowish silicified scale-like papillae; corolla tubular at the base with three broad petals; stamens 6. Pistillate inflorescence known only from mummified material, to 35 cm with one partial inflorescence; peduncular bract armed with scattered spines as the leaf sheath, but

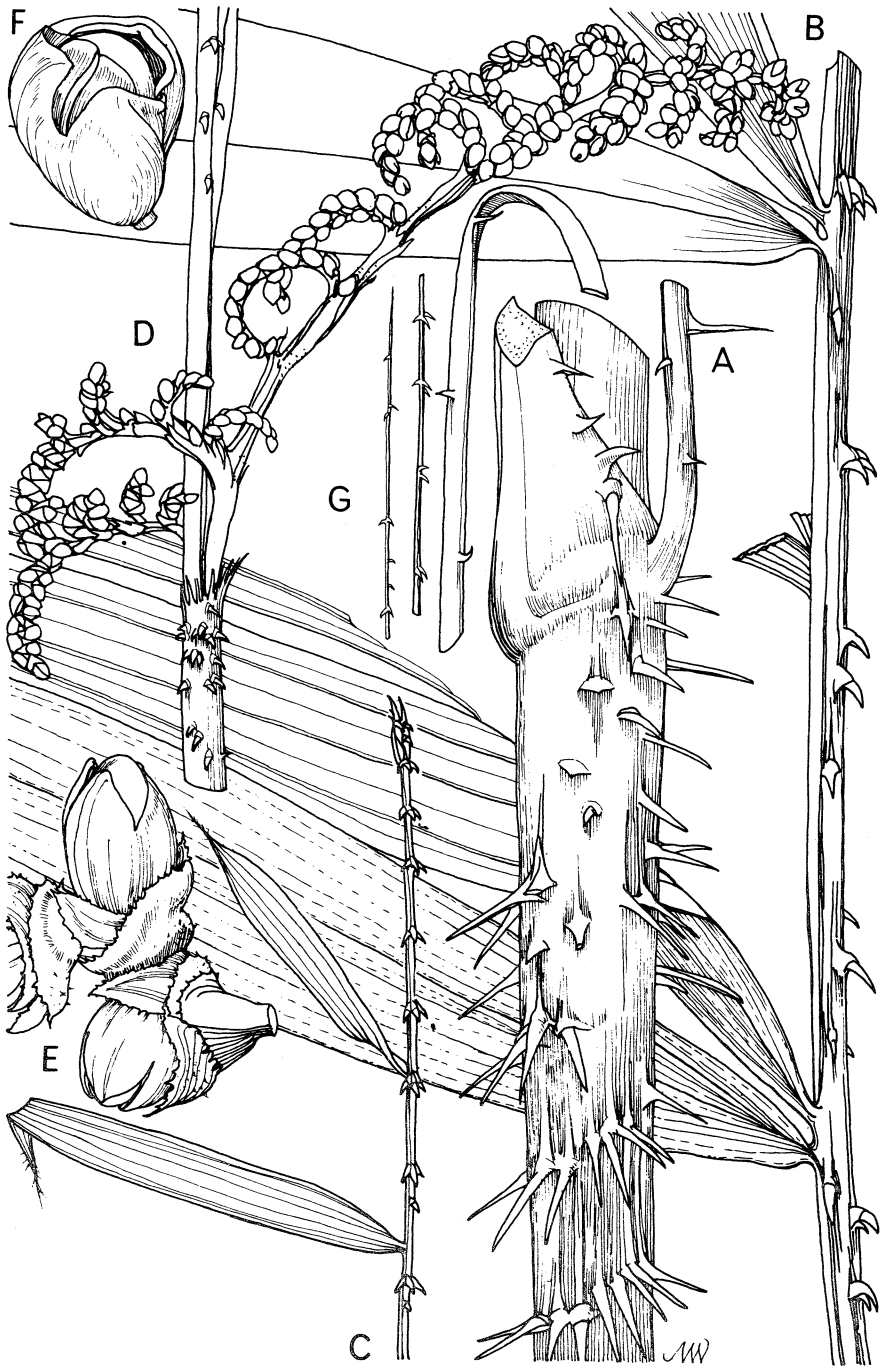

FIG. 6. *Calamus convallium*. **A** leaf sheath with base of flagellum × $\frac{2}{3}$; **B** mid-portion of leaf showing paired leaflets × $\frac{2}{3}$; **C** leaf tip × $\frac{2}{3}$; **D** partial inflorescence (staminate) × $\frac{2}{3}$; **E** portion of staminate rachilla × 4; **F** staminate flower × 6; **G** portions of flagellum × $\frac{2}{3}$. From *Dransfield* JD5816. Drawn by Mary Millar Watt.

smaller; partial inflorescence to 7 cm, bearing one branch and the remains of three flowers; other parts not known (the mummified inflorescence may well prove to be depauperate). Fig. 6.

SABAH. Labuk & Sugut District, Mile 60, Sandakan–Telupid Road, *Dransfield et al.* JD5816 (holotype K; isotypes KEP, L, SAN, SAR). Penampang District: Crocker Range, Mile 28, Sinsuron Road, *Dransfield et al.* JD5543 (K, SAN, SAR); Kinabatangan District: Segaliud–Lokan F. R., Virgin Jungle Reserve, Mile 42, *Dransfield et al.* JD5773 (K, SAN, SAR); Labuk & Sugut District: Slopes of Bt. Masasau, *Dransfield et al.* JD5750 (K, KEP. L, SAN, SAR).

Calamus convallium is an infrequent rattan, known only from Sabah where it seems to be confined to soaks in valley bottoms; I did not see it as a streamside plant, but always in squelchy valley bottoms or very wet slopes. It has a wide altitudinal range being found from lowland Dipterocarp forest at about 50 m above sea-level right up to lower montane forest at 1400 m. Once I observed it growing in forest on ultrabasic rock.

The affinities of this new species seem to lie with the species included by Furtado in his genus *Cornera* (now reduced to *Calamus*—Dransfield (1978)—Beccari's Group XVI); there are also similarities with *C. peregrinus* Furtado which Furtado included with *C. exilis* and others in his § *Macropodus*, a perhaps heterogeneous section. Unfortunately, as already observed, no fruiting material or pistillate flowers of *C. convallium* have been collected. *C. convallium* in its vegetative characters is unlike any other species known to me, and presents a very curious combination of characters. The long subcirrate leaf with its distant pairs of divergent leaflets and minute apical leaflets, and the poorly developed flagellum are highly diagnostic. Although *C. convallium* appears so aberrant and conspicuous to the rattanologist, it could easily be overlooked in the field. The specific epithet refers to its habitat. The cane from the tallest specimen observed in the Crocker Range, appeared to be of good quality.

10. **Calamus pratermissus** *J. Dransf.* sp. nov. ad sectionem *Coleospathum* Furtadonis pertinens *C. raduloso* Malayae affinis sed vaginis foliorum spinis amplitudinium duarum dense tectis, foliolis plerumque lanceolatis distantibus fructibus ovoideis distincta. Typus: Borneo, Sabah, *Dransfield* JD5587 (holotypus K; isotypus SAN).

Clustering high-climbing rattan with stems ultimately to 25 m or more in length; stem without sheaths to 18 mm diam., usually less, sometimes very slender in juvenile specimens, with sheaths to 35 mm; internodes to 18 cm. Sheaths dark green armed with abundant and diverse mid-brown, pale green bulbous-based spines, the spines usually of two major kinds, large spines to 30 × 7 mm, and smaller spines to 7 × 3 mm, the smaller spines frequently arranged in partial whorls or oblique groups and the larger scattered over the surface; more rarely the spines not differentiated into small and large; most spines horizontal or slightly reflexed; spines around leaf sheath mouth usually narrow and erect, to 15 mm; pale brown indumentum abundant between the spines; knee conspicuous, usually armed as the sheath but spines usually of the smaller type only. Ocrea low, membranous, unarmed. Flagellum well-developed, heavily armed, to 3 m. Leaf ecirrate, arcuate to 1·2 m; petiole