I do not know this species except from Beccari's descriptions and the plate; but the species is well characterised by sessile leaves, short oblique ascendent spines, minutely spinulous margins of the leaflets, and scabrid secondary spathes, and spathels.

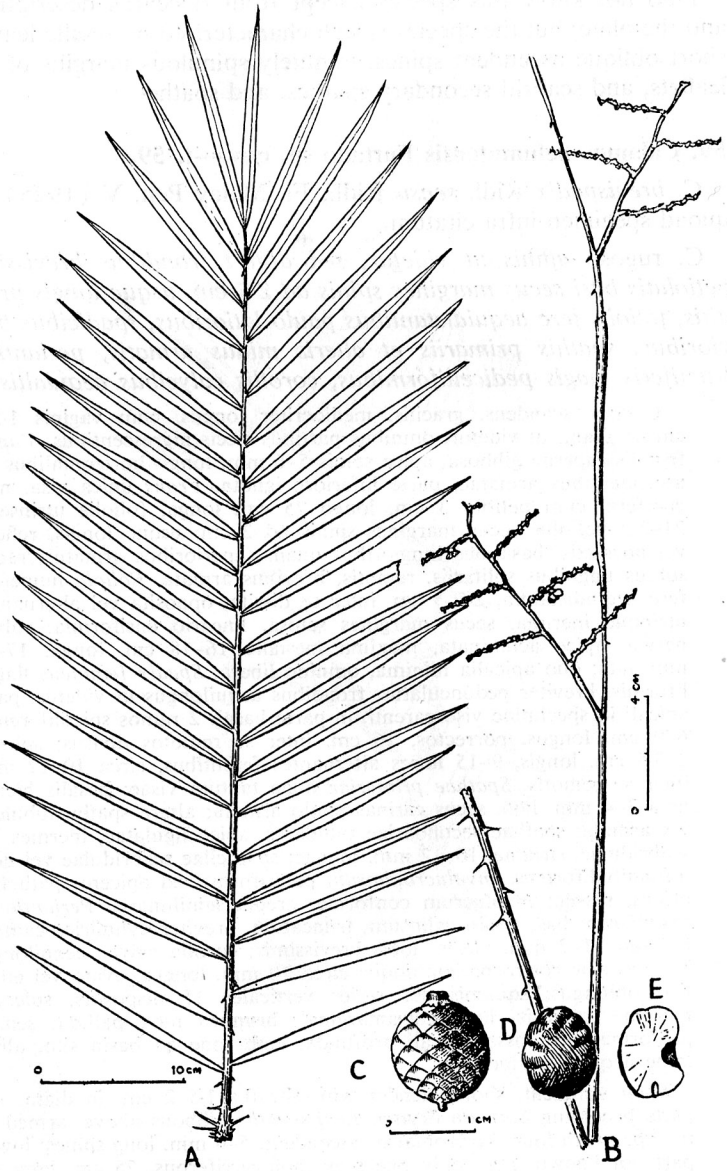
**59. Calamus belumutensis** Furtado **sp. nov.—t. 59.**

*C. brevispadix* Ridl. *sensu* Ridl., Fl. Malay Pen. V (1925) 61 quoad specimen infra citatum.

C. rugoso *affinis ut videtur, sed differt frondibus brevissime petiolatis basi secus margines spinis ad 2·5 cm. usque longis praeditis, foliolis fere aequidistantibus paulo latioribus, spadicibus brevioribus, spathis primariis et alteris minus armatis, perianthiis fructiferis magis pedicelliformibus, corollis calycibus aequialtis.*

*Caudex* scandens, gracilis, mediocriter longus, cum vaginis 1·5–2 cm. in diam. ut videtur, omnibus partibus siccis nigrescentibus. *Vagina* frondis superne gibbosa, apice spinis 5–6 mm. longis horizontalibus vel ascendentibus armatae, parte inferiore ignota. *Frons* unica visa, non-cirrifera, cum petiolo 3 cm. longo 75 cm. longa, foliolis utrinsecus 21–22; petiolus secus margines spinis ad 2 cm. usque longis, reflexis vel porrectis, basalibus longioribus quam superioribus armatus; rachis subtus unguibus solitariis, remotis, brevibus armata. *Foliola* numerosa fere aequidistantia, 2·5–5 cm. inter se dissita, opposita vel alternantia, utrinque inermia, secus margines setosa, lineario ensiformia, subtrinervia, apice acuminata, maxima mesialia 16–18 cm. longa, 17–20 mm. lata; duo apicalia minima, omnino libera. *Spadix femineus* flagelliformis, breviter pedunculatus, frondibus aequilongus ut videtur, parte apicali in specimine viso carenti, in parte basali 2 ramos spiculiferentes 6–9 cm. longos, porrectos, 16 cm. inter se remotos divisus; spiculis 2–3·5 cm. longis, 9–15 flores alternantes ferentibus, circa 10–12 mm. inter se remotis. *Spathae primariae* duae tantum visae; basalis bicarinata 3–4 mm. lata, secus carinas paulo armata; altera spatha tubulosa vix armata; spathae secundariae tubulares, apice ligulatae, inermes vel scabridulae, striatae, 10–12 mm. longae; spathellae scabridulae vel non, infundibuliformes. *Involucrophorum* pateriforme, ad apicem spathellae oriens, sessile; involucrum conforme; areola semilunaris. *Perianthium fructiferum* basi paulo callosum, truncatum, breviter cylindrico-campanulatum, 1–2 mm. altum, lobis brevissimis; corolla calyce aequilonga. *Fructus* sine rostro perianthioque circa 10 mm. longus, ovato vel elliptico oblongus; squamis per series verticales 15 dispositis, sulcatis, margine scariosis, linea intramarginali brunnea mox pallida; semen pisiforme cum fossa foveali profunda; embryone ad basin sito; albumine aequabili, albo.

*Stem* scandent, short, slender with sheaths 1·5–2 cm. in diam., all parts becoming dark on drying. *Leaf-sheaths* gibbous above, armed at the apex with long, horizontal or ascendent, 5–6 mm. long spines; lower part not known. *Leaf* only one seen, non-cerriferous, 75 cm. long including 3 cm. long petiole; the latter armed on both margins with spines up to 2 cm. long; rachis armed below with short, solitary, remote reflexed spines. *Leaflets* about 21–22 on each side of the rachis, almost equidistant, setose only along the margins, linear-ensiform; the largest 16–18 cm. long, 17–20 mm. broad, the two apical leaflets smallest, free to the base. *Female spadix* flagelliform, probably as long




Tab. 59. *Calamus belumutensis (Holttum 10,670—holotypus).*

A, Frons. B, Spadix femineus. C, Fructus. D, Semen. C, Idem verticaliter discissum ut albumen aequabile et dispositio embryonis appareant.

as the leaves, in the basal half (which is the only part seen) bearing two 6–9 cm. long branches; spikelets 2–3·5 cm. long, each bearing 9–15 flowers. *Primary spathes*, only two seen; the basal bicarinate, slightly armed, the other tubular, scarcely aculeate; secondary spathes tubular unarmed or scabrid. *Fruiting perianth* shortly pedicelliform. *Fruit* ovate or elliptic oblong, beaked; scales disposed in 15 vertical series, channelled in the middle, with a pale brown intramarginal line; seed with white homogeneous albumen with deep foveal cavity; embryo basal.

**MALAYA: Johore,** Gunong Belumut, alt. 1,000 m. (Holttum 10,670).

The collector notes that the species is common in the locality. Further collections with sheaths and with notes as to its habit, size, etc., are desirable.

Ridley *l.c.* confused this with *C. brevispadix*, and later determined it in the herbarium as *C. bubuensis*.

**60. Calamus Tanakadatei** Furtado **spec. nov.—t. 60.**

*C. luridus* Becc. *sensu* Ridl., Mat. Fl. Malayan Pen. II (1907) 198 et Fl. Malay Pen. V (1925) 56 pro parte.

*C. muricatus* Becc. *sensu* Furtado in Gard. Bull. Straits Settl. VIII (1935) 255 quoad specimena malajana tantum.

C. muricato *affinissima ut videtur, sed petiolis brevioribus et magis aculeatis, foliolis latioribus pluricostulatis inermibus, racheos aculeis frondalis digitatis sat distincta.*

*Caudex* scandens, 1·5–2·5 cm. in diam., in sicco omnino nigrescens. *Vagina* flagellifera, superne gibbosa, apice oblique truncata, transversaliter rugosa; rugae variabiles, inter se mixtae, maximae spinulis 4–6 mm. longis, ascendentibus armatae, minimae rugae scabridae vel minute spinulosae. *Ocrea* usque ad 1 cm. longa, mox decidua, inconspicua. *Frondes* non-cirriferae, 75 cm. vel plus longae; petiolis 15–30 cm. longis, basin versus rugosis et valde aculeolatis scabridisque, in altera parte minus armatis; aculeis rachidis digitatis reflexis. *Foliola* remota, 7–9 cm. inter se dissita, porrecta, alternantia, lineario-lanceolata, utrinque valde cuneata, apice acuminata, 4–7 costulata, plicatula, concoloria, papyracea, utrinque et secus margines inermia, maxima 30–35 cm. longa, 2·8–3·5 cm. lata; duo terminalia paulo minora, basi libera vel paulo connata. *Spadices feminei* flagelliformes, frondibus longiores, in 3–4 inflorescentias, partiales 12–15 cm. longas, porrectas, aliquid infra spatharum apicem orientes subdivisi; pedunculus circa 30 cm. longus, *Spathae primariae* apice marcescentes, multo ultra bases ramorum productae; basalis spatha bicarinata, valde rugosa, aculeolata; alterae tubulares, striatae apice oblique truncatae. *Spiculae* per inflorescentiam partialem 12–16, alternantes, 1·5–3 cm. inter se remotae, 4–8 cm. longae, floribus congestis; spathellae scabridae, fere cylindricae, oblique truncatae. *Involucrophorum* exsertum prateriforme vel disciforme; involucrum conforme; areola discoidea vel triangularis. *Spadices masculi* femineis similes, sed inflorescentiis partialibus plus divisis; spiculis minoribus gracilioribusque spathis secundariis tertiaribusque et etiam involucris inermibus, floribus masculis pectinatis differt.