

*Kiahii*). Otherwise *L. Kiahii* has many characters similar to those of *L. mattanensis*, even in the habit of developing frequently more than one fertile carpel in each ovary.

9. **Licuala Kingiana** Becc. in Malesia III (1889) 193; Hook. f., Fl. Brit. Ind. VI (1892) 434; Ridl., Mat. II (1907) 165; Becc. in Webbia V (1921) 38 et 51; Ridl., Flora V (1925) 30; Becc. in Calc. Annals XIII (1933) 213 t. 11-II.

MALAY PENINSULA: *Perak*, Bukit Kapayang (Ridley in Feb. 1904); *Sungai Siput* (Haniff & Nur, 6962); *Gunong Keledang* (Ridley, 9804); *Kinta Valley* (Ridley s.n.); *Bujong Malacca* (Curtis, 3162); *Keledang Saiong* (Symington, Cf. 25724 & 25612-Herb. Kepong).

The *Bukit Kapayang* specimen collected by RIDLEY has one spadix bifid at the apex.

10. **Licuala Kunstleri** Becc. in Hook. f., Flor. Brit. Ind. VI (1892) 433; Ridl., Mat. II (1907) 162; Becc. in Webbia V (1921) 30 et 44; Ridl., Flora V (1925) 27; Becc. in Calc. Annals XIII (1933) 167 t. 94.

MALAY PENINSULA: *Perak*, Temango (Ridley, 14709). *Pahang*, Tanjong Antan (Ridley in 1891); *Sungai Lepar* (Burkill & Haniff, 17460). *Selangor*, Ulu Gombak, alt. 1,500 ft. (Hume, 9437); *Bukit Kutu* (Casdani in 1899); *Kuala Lumpur* (Ridley in 1889); *Gua Batu* (Ridley in Dec. 1896).

Some specimens of this species have been distributed from Singapore under the name of *L. ferruginea*.

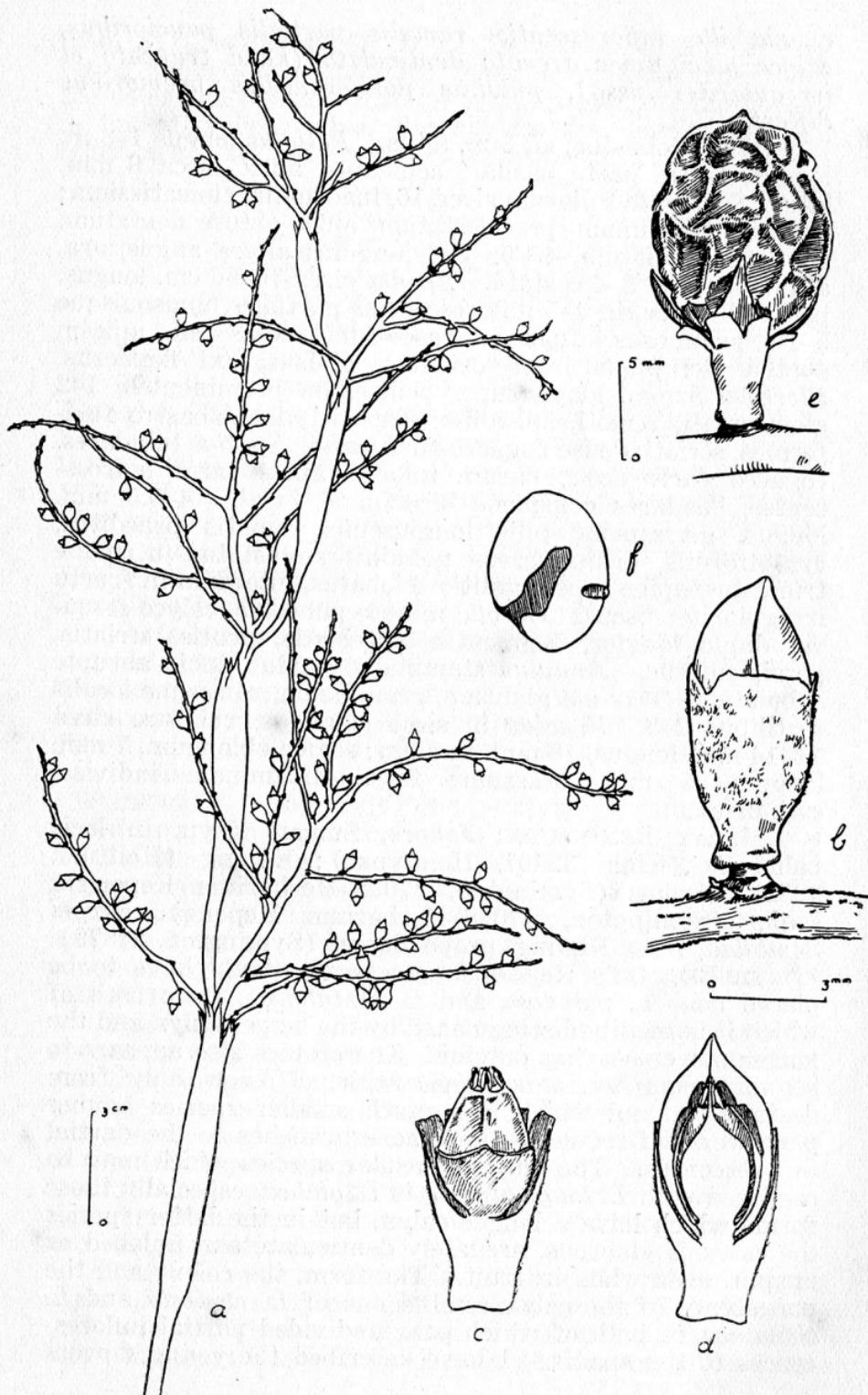
11. **Licuala lanuginosa** Ridl. in Journ. Roy. Asiat. Soc. Straits Br. 44 (1905) 203, Mat. II (1907) 165; Becc. in Webbia V (1921) 33 et 46; Ridl., Flora V (1925) 30; Becc. in Calc. Annals XIII (1933) 181 tt. 9-IV et 50.

*L. longipes* sensu Ridl. op. cit. (1907 and 1925) pro parte.

MALAY PENINSULA: *Johore*, Gunong Panti (Ridley in Dec. 1892; Corner 30739 & 30739A); *Gunong Belumut*, alt. 2,200 ft. (Holttum, 10792); *Gunong Pulai* (Mat in 1892; Ridley 12198 partim; Best 7711; Corner in 1937); *Bukit Tinjau Laut* alt. 1240 ft. (Corner 37068).

12. **Licuala longicalycata** Furtado sp. nov. Fig. 5.

*L. baculariae affinis ut videtur, sed planta robustiore, foliorum segmentis latioribus, inflorescentiae ramulis partialis pluribus, floribus majoribus, calyce floris longe piloso, sed fructus interdum laevi, corolla minute pubescente haec species sat distincta. Inter species malayanas L. glabra producit formas aspectu calycale similes L. longicalycatæ,*



**Fig. 5. *Licuala longicalycata* (Holotypus: KIAH 32401).**

a. Pars spadicis floridi. b. Alabastrum. c. Alabastrum verticaliter discessum ut aestivatio staminum appareat. d. Alabastrum verticaliter discessum ut ovarium exhibeat. e. Fructus (e specimine SYMINGTON 47092). f. Semen ejusdem fructus verticaliter discessum.

*a qua illa inflorescentiae ramulis partialis paucioribus, calyce laevi apice arcuato denticulato (haud truncato et irregulariter fisso), pulvinis floriferentibus brevioribus differt.*

*Caulis* robustus, ad 3 m. altus. *Petiolus* longus 1–3 m. longus, tertia parte basili aculeatus, apice circa 8 mm. latus. *Segmenta* foliorum circa 16, inaequalia, cuneatissima; centrale latissimum, pluricostatum, apice obtuse dentatum, ad 9–16 cm. latum, 40–55 cm. longum; altera angustiora, altius dentata, 3–4 costata. *Spadix* circa 70–80 cm. longus, petiolo brevior, in 4–5 inflorescentias partiales, unasquisque 5–10 ramulosas, fugaceo fusco-furfuraceas ad apicem spathæ vel paulo infra orientes, divisus, axi flexuosus. *Flores* 6–8 mm. longi, super pedicellum prominentem 1–2 glomerulati, remoti, spiraliter dispositi; in alabastro fusi-formes, striati, dense fugaceo-furfuracei. *Spathæ* tubulares, fugaceo furfuraceæ, parum inflatæ, apice parce marcescentes, basilares conspicue bicarinatæ. *Calyx* 4–5.5 mm. longus, gramineus, pilis longiusculis remotis praeditus, cyathiformis, basin versus nonnihil angustatus, utrinque truncatus, apice superficialiter 3 lobatus, interdum in fructu irregulariter fissus. *Corolla* minute puberula, calyce sesqui vel duplo longior, segmentis lanceolatis, acutis, striatis, persistentibus. *Annulus* staminalis 6-fidus, lobis abrupte subulatis. *Ovarium* glabrum, gramineum, rarissime loculis fertilibus 2–3. *Fructus* in sicco oblongus, rugosus, circa 12–14 mm. longus, 10 mm. in diam; semen oblongum, 7 mm. longum, 5 mm. crassum; fossa albuminale indivisa, cylindrica.

MALAY PENINSULA: *Johore*, Sungai Kayu, in locis paludosis (Kiah, 32401, Holotypus); *Kluang* (Holttum, 9252); *Arong* (Symington, 47092—Herbarium Kepong); *Labis* (Symington, 47068—Herbarium Kepong). *Negri Sembilan*, Ayer Kuning, prope Bahau (Symington, 24379).

In BECCARI'S Key *L. longicalycata* would have to be placed near *L. paludosa* and *L. bintulensis*, from both of which it is readily distinguished by the longer calyx and the longer flower-bearing pulvini. The species also appears to be very near to *L. bacularia* which I know only from description, and which is a much smaller species having narrower leaf-segments, and more branches to the partial inflorescences. The only peninsular species which may be confused with *L. longicalycata* is *L. glabra*, especially those forms which have a longer calyx, but in the latter species the calyx is glabrous, arcuately denticulate and unlobed or unsplitt, even when in fruit. The form, the colour and the pubescence of the calyx remind one of *L. modesta* and *L. tiomanensis*, both of which bear undivided partial inflorescences to the spadix. I have described the young flowers

from SYMINGTON 47068 where there is a portion of very young inflorescence mounted together with an older one; the veins and the thick furfur that is present on the flowers in bud disappear when the flowers are developed. The fruits are described from SYMINGTON 47092.

**13. *Licuala longipes*** Griff. in Calc. Journ. Nat. Hist. V (1845) 330 et Palms Brit. Ind. (1850) 125 tt. 234 A & B; Hook. f., Fl. Brit. Ind. VI (1892) 431; Ridl., Mat. II (1907) 162; Becc. in Webbia V (1921) 28 et 42; Ridl., Flora V (1925) 27; Becc. in Calc. Annals XIII (1933) 155 t. 8-V.

MALAY PENINSULA: *Kemaman*, Ulu Bendong, Kajang, alt. 700 ft. (Corner, 30111). *Pahang*, Titi Bungor in Temerloh (Henderson, 10559); Mentakab (Holttum, 24560). *Negri Sembilan*, Gunong Angsi (Nur, 11571; Ridley, 10121); Tampin (Burkill, 1417); Gunong Tampin (Burkill, 1171; Holttum 9557); Beremban along Sungai Bendol (Furtado, 33125). *Malacca*, Ayer Panas (Goodenough, 1406; Ridley & Goodenough, 1577); Bukit Besar Ophir (Ridley, 10120 & 3474); Selandan (Ridley, 10793); Bukit Tampin (Goodenough, 1962).

*Distribution:* recorded from Mergui in Lower Burma.

GRIFFITH cites the syntypes of this species thus: "Malacca, solitary in dense forests, Ayer Punnus (Rhim), Goonoong Miring, and Mount Ophir, but not above an elevation of a thousand feet. Tenasserim coast in forests near Lainear to the south of Mergui."

BECCARI found only one syntype in the Calcutta herbarium with no indication as to its locality, and since he had not seen any specimen definitely coming from the Malay Peninsula, he gave Tenasserim as the probable origin of this GRIFFITH'S specimen. However from the description and the drawings given by BECCARI I think the species is common in the Peninsula, especially in the regions where GRIFFITH saw it.

From the notes given by collectors it appears that this species is very common in Malacca and Negri Sembilan; also that though it is easy to find plants in flower, it is rare to find them in fruit. There are a few specimens which have been collected above a height of 1,000 ft., and in some of these the flower-bearing pulvini are quite prominent (e.g. BURKILL 1171 and HOLTTUM 9957); but there are transitions between these and the usual forms where the pulvini are nested in depressions.

There is some variation in the dentation of the calyx; some split very early during the development of the flowers and here the lobes are rounded at the apex and are often bifid; in others this lobation is retarded and the calyx looks

almost truncate and later split irregularly as in *L. malajana*, a species which appears to have very close affinities with *L. longipes*.

GRIFFITH records that this species is known to Malays as *Palas Batu*, a name recently recorded also by a Malay collector who notes that the leaves are used for thatching house roofs.

14. *Licuala malajana* Becc., Malesia III (1889) 197; Hook. f., Fl. Brit. Ind. VI (1892) 431; Ridl., Mat. II (1907) 161 pro parte; Becc. in Webbia V (1921) 35 et 55; Ridl., Flora V (1925) 26 pp.; Becc. in Calc. Annals XIII (1933) 196 tt. 14-IV et 87.

MALAY PENINSULA: *Trengganu*, Brang in Tersat, alt. 2,500 ft. (Kiah & Moysey, 33398). *Kemaman*, Kajang at Ulu Bendang, alt. 500 ft. (Corner, 30072 A); *Sungai Nipa* (Corner, 30547).

The following specimens have more hairy calyces, but seem to belong here:

*Kelantan*, Kuala Krai (Haniff & Nur, 10104). *Pahang*, Bukit Senai (Henderson, 19434). *Selangor*, Pahang Track (Ridley in 1897). *Johore*, Gunong Muntahak, alt. 600 ft. (Nur, 19968).

I have not seen any authentic specimens named by BECCARI and so my identification of the species is based entirely on the description and plates given by BECCARI. The specimens doubtfully cited here come very near to some forms of *L. modesta* which however produces very much shorter spadices bearing flowers in groups of two or three on very prominent, almost pedicelliform tubercles. The typical calyx of *L. malajana* has some resemblance to that of *L. Ridleyana*, but the latter species produces unbranched partial inflorescences.

15. *Licuala mirabilis* Furtado sp. nov. Fig. 6.

A L. Kunstleri, cui peraffinis, spathæ limbo pedicellum axillaris spicæ plerumque valde superante, spathis superne inflatis, spicis (=inflorescentiis partialibus) 2-5 ramulosis haec species sat distincta. Secundum clavem Beccarii analyticam prope L. baculariam ponenda, a qua spadicibus quam petioli valde brevioribus facile distinguitur.

*Palma solitaria* vel sobolifera, cum caule 1-1.5 m. longo 3-4 m. alta. *Petiolum* circa 1.5 m. longus, vagina fibrosa mox marcescente decidua præditus, in 2/3 partibus basalibus aculeis redundis, inferioribus robustis 4 mm. altis, 1-2 mm. crassis, superioribus obscuris armatus. *Segmenta frondium* 20-27, basin versus valde angustata, fere petiolata, apice 3.5-7 cm. lata, 5-15 mm. profunde dentata, 2-3, raro 4-6, costata; medianum alteris parum majus 3-6