BLUMEA 30 (1985) 389–415

A SYNOPSIS OF THE MALESIAN SPECIES OF KIBARA (MONIMIACEAE)

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SUMMARY

Thirty-nine species are recognized of which twenty-four are described as new (*K. bullata, K. carrii, K. chimbuensis, K. ferox, K. flagelliformis, K. fragrans, K. fugax, K. hartleyi, K. karengana, K. katikii, K. kostermansii, K. latifolia, K. leachii, K. macrantha, K. nitens, K. novobritanica, K. oblongata, K. rosselensis, K. royenii, K. shungolensis, K. sleumeri, K. streimannii, K. sudestensis,* and *K. versteeghii*). One new combination is made: *K. oligocarpella* (Kaneh. & Hatus.) Philipson, and several species are reduced to synonymy. Thirty-six species occur in New Guinea, all but three of these being endemic to that island group. A key to the species is provided and their geographical ranges are given.

INTRODUCTION

Kibara includes the greatest number of species of any genus of Monimiaceae in the Malesian region. It is virtually confined to that region, being represented elsewhere by a few species in eastern Australia, and it extends also into Thailand and the Nicobar Islands. The most widespread species, *K. coriacea*, occurs throughout Malesia, from Sumatra and the Malay Peninsula to the Philippines and eastern New Guinea. It will be seen that the synonymy of this species is unusually extensive, and it may eventually be shown that segregates from it deserve specific rank. This applies particularly to the Philippines, where several species have been described, but the material available is not adequate to enable a firm conclusion to be reached. I have not seen *K. xanthophylla* (Thailand) nor *K. polyantha* (Nicobars), but it is possible that they also should be united with *K. coriacea*. Except for *K. coriacea*, the remaining thirty-eight Malesian species have limited ranges, and all but two (*K. kostermansii* and *K. latifolia*) occur in New Guinea, thirty-two species being confined to that group of islands. Most of the species known from New Guinea are very local, but besides the widespread *K. coriacea*, a few extend overseas. *Kibara moluccana* has a considerable range in the Moluccas and reaches northwestern New Guinea, and *K. roemeri* may also reach the Moluccas; *K. obtusa* occurs on Biak I. and also in Celebes, Borneo and the Philippines; and *K. rigidifolia* is known from Queensland.

The above figures do not include the insufficiently known and inadequately represented species listed at the end of this synopsis. Since so many species are evi-

dently very local, being known from only a few or even only one gathering, it is probable that several others remain uncollected. It has not been possible to treat a number of distinctive species because they are known only from sterile or fruiting specimens.

Very little attention has been given to the taxonomy of *Kibara* since the early work of Perkins, A.C. Smith and Kanehira & Hatusima. These authors had seen very little material from the central mountainous region of New Guinea nor from the southeastern part of the island. Consequently an unusually large number of new species require description.

Kibara is readily separated from *Steganthera* and *Matthaea* by the swollen glandular tissue which surrounds the inner rim of the ostiole (Endress, Pl. Syst. Evol. 134, 1980, 79–120). *Wilkiea* has female receptacles very similar to those of *Kibara*, but these two genera can be distinguished by their male flowers. In most species the androecium of the two genera is distinctive: in *Kibara* there is a symmetrical group of four stamens (2 decussate pairs) within which there is unusually a group of up to four smaller stamens or often apparently infertile staminodes. In most *Wilkiea* species the numerous stamens (about 8 or more) are inserted irregularly over the inner surface of the receptacle. Some species of *Kibara* occasionally may have 5 stamens in the outer group, or these may be reduced to three or even two, in which case the inner reduced stamens are often absent. On the other hand, some individual flowers of *Wilkiea* have relatively few stamens (as few as 6 in *W. huegeliana* and as few as 4 in *W. macrophylla* (see Endress, l.c.). In this event the genera are distinguished by the irregular insertion of the stamens in *Wilkiea* and the decussate arrangement in *Kibara*. The only species in which some doubt may occur is *K. rigidifolia* in which individual flowers with 3 or 5 stamens may not have them clearly arranged in a regular manner. When 6 stamens are present, the decussate arrangement is more definite. The nature of the stigma also serves to separate these two genera. In all species of *Kibara* the stigma forms an obtuse cushion or knob, whereas in *Wilkiea* it is more elongated and acute, being often subulate.

KIBARA

Kibara Endl., Gen. Pl. (1837) 314; Perkins, Bot. Jahrb. 25 (1898) 570; Pflanzenr. Heft 4 (1901) 58; ibid. Heft 49 (1911) 28; Bot. Jahrb. 52 (1915) 207. – *Brongniartia* Bl., Bijdr. Fl. Ned. Ind. 9 (1825) 435 (non Kunth). – *Sciadicarpus* Hassk., Flora 25, iii (1842) Beibl. 20. – *Sarcodiscus* Griff., Notul. Pl. As. 4 (1854) 380.

Trees or shrubs, resting buds with cataphylls. *Leaves* simple, opposite, exstipulate, usually pubescent at first, often becoming glabrous, entire or dentate, principal secondary veins arched and meeting within the margin. Monoecious. *Inflorescence* lateral or terminal cymose (racemose in *K. streimannii*), often pleiochasial, paniculate or fasciculate; pedicels usually thickening distally into the receptacle. *Male flowers* usually smaller than the females, with a minute ostiole surrounded by 2–4 decussate pairs of tepals; androecium usually with 4 large outer stamens and up to 4 inner smal-

ler stamens or staminodes which may be rudimentary and ± connate, occasionally 5 stamens in the outer whorl or as few as 2 stamens present; anthers opening by a single slit, with a filament or subsessile. *Female flowers* with the ostiole surrounded by about 5 decussate pairs of tepals; the inner pairs thickened and glandular; the upper half of the receptacle abscissing as a calyptra after anthesis; carpels numerous, stigma obtuse sessile on the apex of the ovary. *Achenes* sessile or stipitate.

Distribution. About 43 species, of which 39 occur in Malesia (36 in New Guinea), extending over the whole region. The remainder occur in the Nicobar Islands, Thailand and Queensland.

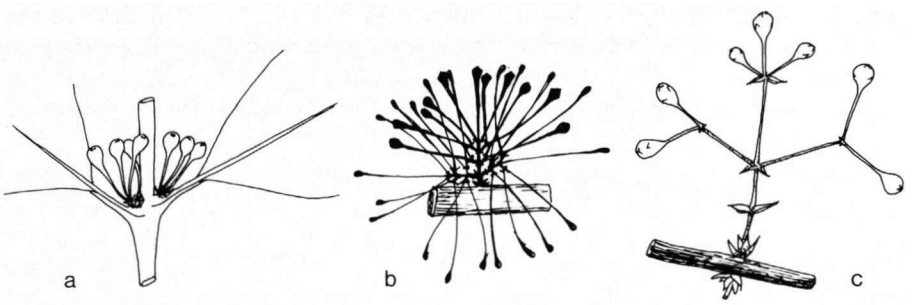

Fig. 1. Inflorescence types in *Kibara*. – a. Fasciculate (*K. oblongata* Philipson, *LAE 68853 Croft et al.*). – b. Condensed cyme (*K. moluccana* Perkins, *Eyma 2900*). – c. Open paniculate cyme (*K. macrantha* Philipson, *Hartley 13691*). All ×½.

KEY TO THE MALESIAN SPECIES

In view of the large number of species, many incompletely known, and the paucity of well defined characters, it is recommended that more reliance than usual is placed on distribution when identifying specimens. Most species are local or regional, and while their distributions may not be fully known, they are unlikely to occur far from their known localities. It must also be borne in mind that several species are not included in this key because they are inadequately known. In addition to those listed at the end of this synopsis, *K. symplocoides* is omitted from the key because the nature of its inflorescences is uncertain.

1a. Leaves linear (ratio l/b 6) ..... **1. K. roemeri**
b. Leaves broader (ratio l/b less than 4) 2
2a. Leaves shorter than 50 mm 3
b. Leaves longer than 50 mm 4
3a. Leaves coriaceous, apex obtuse or retuse (Vogelkop Peninsula) **2. K. oligocarpella**
b. Leaves membranaceous, tapering to a long apiculum (Sepik region) **3. K. myrtoides**

4 a. Inflorescence shorter than, or little exceeding the petiole (c. 20 mm or less). Fig. 1a 5
b. Inflorescence considerably longer than the petiole (30 mm or usually much longer) 18
5 a. Stems greatly expanded at the nodes (usually inhabited by ants) 6
b. Stems not markedly expanded at the nodes 8
6 a. Leaves sessile, amplexicaul, margin strongly and sharply dentate (E. Papua New Guinea) . . . . . **4. K. ferox**
b. Leaves petiolate, base cuneate or truncate, margin entire 7
7 a. Leaves broadly ovate (Moluccas) . . . . . **5. K. latifolia**
b. Leaves elliptic oblong (S. Papua New Guinea) . . . . . **6. K. archboldiana**
8 a. Inflorescence pubescent (young shoots also pubescent and hairs ± persisting on natural foliage) 9
b. Inflorescence and mature foliage glabrous (buds and young foliage sometimes pubescent) 13
9 a. Leaves stiffly chartaceous, teeth sharply spinulose, often ± bullate (Western Highlands Prov.) . . . . . **7. K. karengana**
b. Leaves softly chartaceous, dentations not spinulose 10
10 a. Leaves bullate (Morobe Prov.) . . . . . **8. K. bullata**
b. Leaves flat 11
11 a. Female receptacle and pedicel bearing several pairs of acute imbricating bracts (Moluccas) . . . . . **9. K. kostermansii**
b. Female receptacle and pedicel without bracts (or at most small bracts widely spaced) (New Guinea) 12
12 a. Pubescence of fine pale appressed hairs (SE. Papua New Guinea) . **10. K. leachii**
b. Pubescence of loose curled brownish hairs (Vogelkop Peninsula) **11. K. versteeghii**
13 a. Leaf blade larger than 100 mm 13
b. Leaf blade shorter than 80 mm 16
14 a. Leaf margin dentate 14
b. Leaf margin entire (Normanby I.) . . . . . **12. K. oblongata**
15 a. Leaf margin spinulose-dentate (Vogelkop Peninsula) . . . . . **13. K. warenensis**
b. Leaf margin serrate 15
16 a. Leaf base tapering to the petiole, blade narrowly obovate (Rossel I.) **14. K. rosselensis**
b. Leaf base broadly cuneate, blade oblong-elliptic (Vogelkop Peninsula) **15. K. royenii**
17 a. Leaf apex with a slender apiculum (Eastern Highlands Prov.) . **16. K. hartleyi**
b. Leaf apex acute or obtuse, without an apiculum (Mt Shungol, Morobe Prov.) **17. K. shungolensis**
18 a. Inflorescence with the lateral branches crowded on a short peduncle. Fig. 1b **18. K. moluccana**
b. Inflorescence a simple or branched cyme with evident internodes separating the branches. Fig. 1c 19

19 a. Leaf blade small membranaceous (usually under 100 × 30 mm, inflorescence branches very slender (Torricelli Mts) . . . . . **19. K. microphylla**
b. Leaf blade larger (usually over 100 mm long, if not, then coriaceous) 20
20 a. Male flowers racemosely arranged along the inflorescence branches **20. K. streimannii**
b. Male flowers cymosely arranged or solitary 21
21 a. Flowers 6 mm long at anthesis or longer, densely pubescent (Eastern Highlands and Morobe Prov.) . . . . . **21. K. macrantha**
b. Flowers less than 5 mm long (or if 6 mm then glabrous) 22
22 a. Leaf margin dentate 23
b. Leaf margin entire (occasionally some leaves with few teeth near apex) . . 29
23 a. Stems greatly expanded at the nodes (usually inhabited by ants) (Central Prov.) **22. K. carrii**
b. Stems not markedly expanded at the nodes 24
24 a. Dentations of leaf margin sharply spinulose . . . . . **23. K. elongata**
b. Dentations of leaf margin not spinulose 25
25 a. Pedicels strong 26
b. Pedicels delicate 28
26 a. Underside of mature leaf pubescent, inflorescence a few-flowered cyme (Southern Highlands Prov.–Milne Bay Prov.) . . . . . **24. K. katikii**
b. Underside of mature leaf glabrous or if pubescent inflorescence ± paniculate 27
27 a. Leaf blade usually broadly elliptic-ovate, more than 100 mm long, rounded to broadly cuneate base, pedicels rigid (throughout Malesia) . . . . **25. K. coriacea**
b. Leaf blade usually elliptic, usually less than 100 mm long, base cuneate, pedicels less rigid (SE. Papua New Guinea) . . . . . **26. K. papuana**
28 a. Inflorescence of simple pleiochasia, outer stamens inserted at widest part of the receptacle (Star Mts, Telefomin region) . . . . . **27. K. nitens**
b. Inflorescence of paniculate cymes, stamens inserted near base of the receptacle (NW. Irian Jaya) . . . . . **28. K. fragrans**
29 a. Undersurface of mature leaf pubescent 30
b. Undersurface of mature leaf glabrous 32
30 a. Pubescence on inflorescence soft, not closely appressed (Southern Highlands Prov.–Milne Bay Prov.) . . . . . **24. K. katikii**
b. Pubescence on inflorescence stiffly appressed 31
31 a. Leaves acuminate, usually broadly elliptic (throughout Malesia) **25. K. coriacea**
b. Leaves obtuse, usually narrowly elliptic (Sabah, Celebes, Philippines, Biak I.) **29. K. obtusa**
32 a. Leaves stiffly coriaceous, broadly elliptic to subrotund (New Guinea highlands) **30. K. laurifolia**
b. Leaves not as above 33
33 a. Inflorescence pubescent 34
b. Inflorescence glabrous (young inflorescence ± setulose in *K. sleumeri*) . . . 35

34 a. Leaves acuminate, usually broadly elliptic (throughout Malesia) **25. K. coriacea**
b. Leaves obtuse, usually narrowly elliptic (Sabah, Celebes, Philippines, Biak I.) **29. K. obtusa**
35 a. Pedicels of male flowers elongated (20–45 mm) 36
b. Pedicels of male flowers shorter than 20 mm 38
36 a. Male flowers in separate inflorescences (Irian Jaya) . . . . . **31. K. flagelliformis**
b. Male flowers on lower branches of inflorescences 37
37 a. Leaf narrowly elliptic (Chimbu Prov.) . . . . . **32. K. chimbuensis**
b. Leaf broadly elliptic or elliptic (Morobe and Central Prov.) . . . . . **33. K. fugax**
38 a. Pedicels of female flowers noticeable thickened for c. 10 mm below the receptacle (New Britain, New Ireland) . . . . . **34. K. novobritanica**
b. Pedicels of female flowers not strikingly thickened 39
39 a. Male receptacle 4–6 mm long, anthers kidney-shaped, leaf rigidly coriaceous 40
b. Male receptacle 1.5–2.5 mm long, anthers triangular, leaf not rigidly coriaceous 41
40 a. Leaf oblong, apex rounded or retuse with a minute mucro, often 3-whorled (Western Prov., also in Queensland) . . . . . **35. K. rigidifolia**
b. Leaf narrowly elliptic, apiculate, opposite (Sudest I.) . . . . **36. K. sudestensis**
41 a. Leaves oblong, apex and base rounded (Vogelkop Peninsula) . **37. K. sleumeri**
b. Leaves elliptic 42
42 a. Leaves membranaceous (Sepik region) . . . . . **38. K. monticola**
b. Leaves firmly herbaceous or chartaceous (SE. Papua New Guinea) **26. K. papuana**

1. Kibara roemeri (Perkins) Perkins

K. roemeri (Perkins) Perkins, Bot. Jahrb. 52 (1915) 212. – *Matthaea roemeri* Perkins, Pflanzenr. Heft 49 (1911) 17.

Distribution. Irian Jaya: southwest region.

Ecology. Collected at 750 m altitude.

Note. The stiff, lanceolate leaves, with sharply toothed margin are characteristic. A second collection consisting of a leafy shoot only, may belong to this species. It was made by Teijsmann on Mysool I., Moluccas, so (if correctly identified) increases the range of the species.

2. Kibara oligocarpella (Kaneh. & Hatus.) Philipson, *comb. nov.*

Steganthera oligocarpella Kaneh. & Hatus., Bot. Mag. Tokyo 56 (1942) 257.

Distribution. Irian Jaya: Vogelkop Peninsula, Anggi Lakes, Arfak Mts.

Ecology. Open scrub (*Tristanea, Dacrydium*) at about 2400 m altitude.

Note. The small, close-set, thick leathery leaves (which dry a dark brown) are quite unlike any other species. The flowers are yellowish-brown, and the ripe

achenes black on a reddish-brown receptacle. Kanehira & Hatusima attributed their material to *Kibara* on their herbarium labels, but published the species as a *Steganthera*. The material collected by Sleumer and Vink, with female flowers, removes any doubt about this species being a *Kibara*.

3. Kibara myrtoides Perkins

K. myrtoides Perkins, Bot. Jahrb. 52 (1915) 208.

Distribution. Papua New Guinea: Sepik region.

Ecology. Montane forest, in scrub with few large trees, 1400–1500 m altitude. With flowers and fruits in August.

Note. Known only from the type collection. The specimen available to me lacks flowers so that parts of the above account are derived from the original description. Since the androecium is so reduced and details of the female flower are not given, the assignment to *Kibara* must remain tentative. The foliage is quite unlike any other species.

4. Kibara ferox Philipson, *spec. nov.*

Frutex vel arbor parva, ramulis glabris ad nodos incrassatis. Folia amplexicaulia, late cordata ad oblonga, ad 300 mm longa, margine acute dentata, coriacea. Inflorescentiae axillares, fasciculatae. Flores masculi ovoidei, 2 × 1.5 mm; tepala 6; stamina c. 5, subsessilia. Flores feminei globosi, 4.5 × 4.5 mm. Achenia ovoidea, 15 × 10 mm. – Typus: *Philipson & Kairo 3640* (L), Papua New Guinea, Morobe Prov., Wau Dist., Mt Missim.

A shrub or treelet to 3 m high, glabrous, the nodes dilated with pores inhabited by ants. *Leaves* sessile, broadly cordate to oblong, up to 300 × 230 mm, coriaceous, the base amplexicaul, narrowing to a short or long apiculum, margin with small or coarse sharp dentations (the upper leaves and those of juvenile plants narrower and more dentate), veins and reticulations very prominent on the underside. ? Monoecious. *Inflorescence* of axillary fascicles (or rarely supra-axillary) borne on a very short bracteate peduncle; pedicels up to c. 10 mm long, slender in male gradually widening into the flower, female thicker, becoming woody in fruit. *Male flower* ovoid, 2 × 1.5 mm, 3 pairs of tepals; stamens c. 5, subsessile; anther broadly triangular with a single horseshoe-shaped opening. *Female flower* globose, 4.5 × 4.5 mm, ostiole surrounded by 2 pairs of obscure tepals (additional pairs probably within the ostiole); upper part of the receptacular chamber with very thick irregular glands; carpels numerous, glabrous: stigma short, obtuse. *Achenes* sessile ovoid, c. 15 × 10 mm, verruculose when dry.

Distribution. Papua New Guinea: Madang Prov., Ramu Dist.; Eastern Highlands Prov., Kainantu Dist.; Morobe Prov., Mumeng Dist., Wau Dist.; Central Prov., Port Moresby Dist.

Ecology. Lowland and lower montane rain forest, 500–1550 m altitude.

Vernacular name. Daraboro (Madang Dist., Domainde).

Note. The sessile, cordate coriaceous leaves are unlike those of any other species. The leaves on lower thicker branches are very broad and cordate, while those on the more slender branches are oblong. Juvenile plants have smaller narrower more dentate leaves. Swollen nodes with pore used by small black ants are also found in *K. carrii, K. latifolia* and *K. archboldiana*, and resemble those of some species of *Steganthera*. The flowers are yellowish green or pinkish. The achenes are black on an orange torus. The outer bark is light grey-green to brown, rough with vertical fissures.

5. Kibara latifolia Philipson, *spec. nov.*

Frutex, ramulis glabris ad nodos incrassatis. Folia late ovata, 200–300 × 130–240 mm, margine integra. Inflorescentiae axillares, subsessiles, c. 18 mm longae. Flores ignoti. Achenia ovoidea, 10–12 × 6–8 mm. – Typus: *Anang 556* (L), Moluccas, Halmahera, south peninsula, Tiliope.

A shrub 1.5 m high, glabrous, with the branches prominently dilated at the nodes. *Leaves* opposite; petiole 12–18 mm long, deeply channelled above; blade broadly ovate to subrotund, 200–300 × 130–240 mm, chartaceous to coriaceous, base broadly cuneate to truncate, apex obtuse, entire, principal veins widely spaced, channelled above, prominent below, arched and meeting inside the margin, glabrous. Flowers not seen. *Infructescence* lateral, a subsessile umbel or compact cyme, peduncle stout, c. 2 mm long, branches (pedicels) c. 15 mm long; receptacle leathery, c. 10–13 mm diam., with about 12–16 short thick stipes. *Achenes* ovoid, c. 10–12 × 6–8 mm.

Distribution. Moluccas: Halmahera; Obi I.

Ecology. In dense low forest with little undergrowth at 15 m altitude.

Note. Known from only two gatherings, neither with flowers. However, the broad leaves, swollen nodes, and the small infructescences are distinctive.

6. Kibara archboldiana A.C. Smith

K. archboldiana A.C. Smith, J. Arn. Arbor. 22 (1941) 231.

Distribution. Papua New Guinea: Western, Gulf and Central Provinces.

Ecology. In rain forest from near sea level to 500 m.

Vernacular name. Hooanu (Uraru lang.).

Note. The two original collections (*Brass 3928*, Central Prov. and *Brass 6858*, Western Prov.) agree in all respects. The only other collection (*LAE 66299 Conn et al.*) has very similar foliage, but has broadly ovoid achenes instead of the very characteristic elongate fruit of the type, and apparently lacks the swollen nodes.

7. Kibara karengana Philipson, *spec. nov.*

Frutex vel arbor parva, ramulis juvenalibus glabris vel minute strigosis. Folia ovata vel oblonga, 90–220 × 40–100 mm, rigide chartacea, glabra vel in petiolo et costa sparse tomentosa, mar-

gine acute dentata. Inflorescentiae axillares vel supra-axillares, cymosae, ad 20 mm longae. Flores masculi ovoidei, 3 × 2.5 mm; tepala 8; stamina 4–6, subsessilia. Flores feminei ovoidei, 5 × 4 mm. Achenia ovoidea, 14 × 10 mm. – Typus: *Philipson & Karenga 3719* (L), Papua New Guinea, Western Highlands Prov., Mt Hagen Dist., Whagi-Jimi Div.

A scandent shrub or small tree to 6 m high, glabrous or with small brown strigose hairs on young parts, sometimes persisting on the petiole and underside of the midrib. *Leaves* opposite; petiole channelled above, to c. 8 mm long; blade ovate to oblong, 90–220 × 40–100 mm, stiffly chartaceous, often more or less bullate, base broadly cuneate, rounded or subcordate, apex shortly apiculate, margin with small or coarse indurated, sharp dentations, midrib, lateral veins and reticulation of minor veins prominent below. Monoecious. *Inflorescence* axillary or supra-axillary, male and female flowers in separate inflorescences; simple triads or a small cymose panicle, 10–20 mm long, peduncle c. 2 mm long with minute bracts; female a few-flowered fascicle, pedicels becoming woody in fruit and elongating to 20–30 mm. *Male receptacle* ovoid 3 × 2.5 mm, tepals in 4 pairs; stamens 4–6, subsessile, anthers broadly triangular with a single horseshoe-shaped opening. *Female receptacle* ovoid, 5 × 4 mm, sometimes pubescent, ostiole surrounded by minute tepals and bearing within large pendulous glands; carpels c. 12–18, pubescent with short obtuse stigma. *Fruiting receptacle* leathery, c. 10 mm diam. *Achenes* ± sessile, ovoid, c. 14 × 10 mm, surface (when dry) verruculose.

Distribution. Papua New Guinea: Western Highlands Prov., Mt Hagen Dist.; Eastern Highlands Prov., Goroka Dist.; Southern Highlands Prov., Mendi and Tari Dist.

Ecology. Lower montane and mossy forest (*Nothofagus, Podocarpus, Pandanus*) and at forest/burnt grassland margin, between 2500–3000 m.

Uses. In the Minj Dist. the plant is considered to be a male sex stimulant.

Vernacular names. Kong-ambugont, gegnikl (Minj), ogumbwarombigl (Hagen).

Note. A small tree or scandent shrub reaching 6 m high. The ripe achenes are shining black borne on an orange receptacle.

8. **Kibara bullata** Philipson, *spec. nov.*

Frutex, ramulis juvenalibus pubescentibus. Folia elliptica ad oblonga, ad 170 × 80 mm, bullata, margine dentata, subtus pubescentia. Inflorescentiae axillares vel supra-axillares, fasciculatae, pubescentes. Flores masculi ovoidei, 1.5 mm longi; tepala 8; stamina 6. Flores feminei c. 2 mm longi; carpella pubescentia. Inflorescentiae plus minusve sessiles. Achenia ovoidea, c. 18 × 10 mm; stipites c. 4–8 mm longi. – Typus: *NGF 13689 Henty* (A, K, L), Papua New Guinea, Oomsis.

A shrub to 2.5 m high, the young branches finely and densely pubescent. *Leaves* opposite; petiole c. 10–12 mm, channelled above, pubescent; blade elliptic to elliptic-oblong, up to 170 × 80 mm, chartaceous, base broadly cuneate, apex long acuminate, margin dentate, the midrib, lateral veins and reticulation prominent below, the upper surface raised between the veins (bullate), the pubescence persisting on the lower surface especially on the midrib and veins but disappearing from the upper sur-

face. Monoecious. *Inflorescence* axillary or supra-axillary, of short few flowered fascicles; pedicel 2–4 mm long, densely pubescent. *Male flowers* ovoid, 1.5 mm long, pubescent on the outer surface, 4 pairs of tepals, stamens 4, in the outer whorl 0.75 mm long, with 2 smaller central stamens; filament as broad as the anther, short and pubescent. *Female flowers* similar to male but stouter, c. 2 mm long, tepals surrounding the ostiole minute, with large pendulous glands within, the inner surface of the receptacle with hairs between the carpels; carpels c. 10, ovary pubescent, 0.8 mm long, stigma obtuse. *Fruiting receptacle* ± sessile (peduncle undeveloped) with long radiating stipes (receptacle c. 6 mm diam., stipes c. 4–8 mm long), achenes ovoid, c. 18 × 10 mm.

Distribution. Papua New Guinea: Morobe Prov., Lae and Wau Dist.

Ecology. Rain forest (*Anisoptera, Castanopsis*), between 500–1000 m altitude.

Note. The slightly bullate, pubescent leaves with a serrate margin, combined with a fasciculate inflorescence and sessile fruiting receptacles are distinctive. The black achenes are borne on an orange receptacle. Collected only twice. The specimen from Garaina has less dentate leaf margins and shorter thicker stipes below the achenes but agrees with the type in other respects.

9. Kibara kostermansii Philipson, *spec. nov.*

Frutex, ramulis juvenalibus strigosis. Folia ellipticobovata, 140–220 × (30–)50–80(–100) mm, margine plerumque dentata, subtus tomentosa. Inflorescentiae axillares vel supra-axillares. Flores masculi in cymis paucifloribus c. 10 mm longis, dispositi, obovoidei, 2 mm longi; tepala 6, stamina 4, antheris subsessilibus. Flores feminei solitarii; pedicelli et receptacula decussatis acutis bracteis praediti; tepala 6–8, obtusa. Achenia ovoidea vel ellipsoidea, c. 15 × 10 mm; stipites crassi. – Typus: *Kostermans 754* (L), Moluccas, Morotai.

A shrub to 4 m high, with young branches covered with strigose tomentum. *Leaves* opposite; petiole c. 10–14 mm long, deeply channelled above; blade elliptic to obovate (occasionally lanceolate), 140–220 × (30–)50–80(–100) mm, chartaceous, base cuneate or rounded, apex with an apiculum, margin dentate (at least in most leaves) with short crisp hairs on the midrib, principal veins, and often ± sparsely over the whole lower surface. ? Monoecious. *Inflorescence* axillary, supra-axillary or terminal; male and female flowers in separate inflorescences; male inflorescence a few-flowered cyme, c. 10 mm long, hispid; peduncle 2 mm long bearing minute bracts and lateral branches (pedicels) subtended by bracts; female flowers solitary borne on a short (2 mm long) bracteate peduncle (pedicel). *Male flowers* obovoid, c. 2 mm long, receptacle hispid on the outer surface and bearing a pair of rounded bracts (? tepals), ostiole minute, surrounded by c. 3 pairs of tepals; stamens 4, anthers broadly triangular, subsessile. *Female receptacle* hispid on the outer surface and bearing c. 2 pairs of acute ovate bracts, ostiole surrounded by 3–4 pairs of decussate rounded tepals, with large pendulous glands within the ostiole, inner surface of receptacle hispid, ovules with a blunt peg-like stigma. Pedicels becoming woody and longer in fruit (up to 15 mm); receptacle becoming woody, to 20 mm diam. including the stout stipes. *Achenes* ovoid or ellipsoid, c. 15 × 10 mm.

Distribution. Moluccas: Halmahera, Morotai.

Ecology. Primary forest, often at sea level on limestone but reaching 500 m alt.

Vernacular name. Wajoka gogumini (Tobelo dial., Halmahera).

Note. The pubescent dentate leaves and the small inflorescences are characteristic. Acute bracts like those on the pedicel and receptacle of the female flowers have not been seen on any other species. The ripe fruits are blue-black, borne on an orange or red receptacle.

10. Kibara leachii Philipson, *spec. nov.*

Frutex vel arbor parva, ramulis juvenalibus strigosis. Folia elliptica ad anguste-elliptica, c. 140 × 55 mm, margine dentata, subtus pubescentia minimum in costam. Inflorescentiae terminales axillares vel supra-axillares, fasciculatae; pedunculi breves. Flores masculi ovoidei; tepala 6; stamina 4–7. Flores feminei ignoti. Achenia ovoidea, 18 × 13 mm; stipites c. 2 mm longi. – Typus: *Schodde 5660* (CANB; LAE), Papua New Guinea, Owen Stanley Range.

A shrub or small tree to 6.5 m high, young branches, buds and young foliage covered in strigose hairs. *Leaves* opposite; petiole c. 5–10 mm long, channelled above, strigose; blade elliptic or narrowly elliptic, 140 × 55 mm, thinly chartaceous, base narrowly or broadly cuneate, apex with a short obtuse apiculum, or tapered to a long acute apiculum, margin finely or more coarsely dentate, midrib prominent below, lateral veins arched and uniting within the margin, traces of the tomentum persisting on the mature leaves, especially on the midrib below, or the blade more or less glabrous. Monoecious. *Inflorescence* terminal, axillary or supra-axillary, of compacted dichasia (fascicles) or with the peduncle evident, c. 10–20 mm long, strigose and bracteate. *Male flowers* ovoid, 3 pairs of rounded tepals; 4 stamens in the outer whorl, 0–3 in the inner whorl. *Female flowers* not seen. Peduncle below fruit remaining short or elongating slightly (to c. 10 mm), pedicel may also elongate under fruiting receptacle; receptacle becoming woody, c. 5 mm diam. (without stipes), stipes short (up to c. 2 mm long), strigose or glabrous; achenes ovoid, 18 × 13 mm.

Distribution. Papua New Guinea: Central Prov., Moresby Dist.; Northern Prov., Popondètta Dist.; Milne Bay Prov., Raba Raba Dist.

Ecology. Lowland rain forest and lower montane forest, 390–1370 m.

Note. The thinly chartaceous dentate leaves with compact inflorescences are distinctive. Most gatherings have narrower leaves than the type (chosen because in flower) with long narrow apicula. The species is named after Dr. G. Leach of University of Papua New Guinea, who accompanied me when I collected this species.

11. Kibara versteeghii Philipson, *spec. nov.*

Frutex, ramulis juvenalibus tomentosis. Folia elliptica, c. 110 × 38 mm, margine dentata, subtus tomentosa. Inflorescentiae axillares vel terminales, ex fasciculis vel pleiochasiis brevibus compositae. Flores masculi ovoidei, 1.5 mm longi, strigosi; tepala 6; stamina 2, staminodium 1, filamentis strigosis. Flores feminei ovoidei, 2.7 mm longi, dense strigosi. – Typus: *BW 10403 Versteegh* (L), Irian Jaya, Nettoti Mts.

A shrub to 5 m high, young branches with dense crisp brown tomentum. *Leaves* opposite; petiole c. 10 mm densely tomentose; blade elliptic, c. 110 × 38 mm, chartaceous, base cuneate, apex narrowed into an obscure apiculum, margin dentate, midrib and veins prominent below, lateral veins few, strongly arched and meeting within the margin, upper surface becoming ± glabrous, lower surface retaining the crisp tomentum. Monoecious. *Inflorescence* axillary or terminal, of solitary flowers, fascicles, or short pleiochasia, pubescent in all parts. *Male flowers* ovoid, 1.5 mm long, strigose on the outer surface; 3 pairs of rounded tepals, stamens 2 with 1 central staminode (only 2 flowers dissected); anther with a single horizontal opening; filament short, strigose. *Female flowers* ovoid, 2.7 mm long, on the outside, densely strigose on the outer surface and with hairs on the inner surface between the carpels, c. 4 pairs of tepals and prominent pendulous glandular swellings within the ostiole; carpels c. 12–15, ovary pubescent, stigma blunt. *Fruits* not seen.

Distribution. Irian Jaya: Vogelkop Peninsula.

Ecology. Rather common shrub in *Nothofagus* forest and in old secondary forest, 1650–1950 m.

Note. The small dentate pubescent leaves are distinctive. The young leaves are described as brownish purple above and light red below. The dried leaves are a dull dark brown. The flowers are yellow.

12. **Kibara oblongata** Philipson, *spec. nov.*

Arbor parva, ramulis glabris. Folia oblonga, ad 310 × 120 mm, margine integra, glabra. Inflorescentiae axillares, fasciculatae. Flores masculi ignoti. Flores feminei globosi, c. 4 mm diam. Achenia ovoidea, 14 × 10 mm; stipites crassi, 2–3 mm long. – Typus: *LAE 52627 Streimann & Lelean* (LAE; BO), Papua New Guinea, Normanby I.

A small tree, about 5 m high, glabrous in all its parts. *Leaves* opposite; petiole 15–20 mm long, 4 mm wide, channelled above; blade oblong, up to 310 × 120 mm, coriaceous or chartaceous, base broadly cuneate, apex obtuse to slightly retuse, margin entire, midrib prominent, lateral veins connected within the margin. ? Monoecious. *Inflorescence* axillary, fasciculate (fig. 1a), pedicels c. 10 mm long, wider towards the top. *Male flowers* not seen. *Female flowers* globose, c. 4 mm diam., ostiole surrounded by c. 3 pairs of rounded tepals and with swollen glands within; carpels c. 20 with a short obtuse stigma. *Fruiting receptacle* enlarged and woody, c. 15–20 mm diam., with short stout stipes 2–3 mm long. *Achenes* ovoid, 14 × 10 mm (? fully developed).

Distribution. Papua New Guinea: Morobe Prov., Lae Dist.; Milne Bay Prov., Esa'ala Dist.

Ecology. Lowland rain forest, from sea level to about 65 m.

Note. The large glabrous oblong leaves resemble those of *K. moluccana*, but the inflorescence is distinct. Two collections have been made on Normandy I., a third collection from north of Lae appears to be identical.

13. Kibara warenensis Kaneh. & Hatus.

K. warenensis Kaneh. & Hatus., Bot. Mag. Tokyo 56 (1942) 249.

Distribution. Irian Jaya: Vogelkop Peninsula.

Ecology. In lowland rain forest at about 100 m altitude.

Note. The glabrous fasciculate inflorescence combined with the spinulose dentate leaves are distinctive.

14. Kibara rosselensis Philipson, *spec. nov.*

Arbor parva, ramulis juvenalibus, subtiliter pubescentibus. Folia anguste-obovata, 100–150 × 30–45 mm, margine dentata. Inflorescentiae fasciculatae. Flores masculi subglobosi, c. 3 mm diam.; tepala 6; stamina c. 7. Flores feminei subglobosi, c. 4 mm diam. – Typus: *Brass 28401* (A; K, US), Papua New Guinea, Milne Bay Prov., Misima Dist., south slope of Mt Rossel, Rossel I.

A small tree, 4 m high, young branches finely pubescent. *Leaves* opposite; petioles to 15 mm long, channelled above; blade narrowly obovate, 100–150 × 30–45 mm, subchartaceous, base narrowly cuneate, apex apiculate, margin dentate, midrib prominent below, lateral veins about 7–9 pairs, arched ascending, glabrous at maturity. Monoecious. *Inflorescence* fasciculate (compacted cymes), c. 10–14 mm long, with small bracts around the peduncle and the bases of the pedicels, the pedicels and usually the receptacle also bearing minute bracts. *Male receptacle* subglobose, narrowed into the pedicel, c. 3 mm diam., tepals in 3 pairs, stamens 4 in outer whorl, c. 3 in inner whorl. *Female receptacle* similar, c. 4 mm diam., ostiole surrounded by c. 3 pairs of tepals and bearing within large pendulous glands; carpels c. 18. *Fruits* not seen, but described by the collector as ovoid, 20 × 16 mm.

Distribution. Known only from the type.

Ecology. Low forest on ridge crest, 700 m altitude.

Note. Male and female flowers in fascicles in the axils of the dentate leaves. The flowers are yellow and the ripe achenes black.

15. Kibara royenii Philipson, *spec. nov.*

Frutex, ramulis juvenalibus glabris. Folia anguste-oblongo-elliptica, 210 × 65 mm, margine serrata. Inflorescentiae axillares, fasciculatae, c. 10 mm longae. Flores masculi ovoidei, c. 2 mm diam.; tepala 8; stamina c. 6, filamentis brevibus glabris. Flores feminei et fructus ignoti. – Typus: *van Royen 3556* (L; LAE), Irian Jaya, Vogelkop Peninsula, Steenkool Dist.

A shrub about 3 m high, glabrous. *Leaves* opposite; petiole 15–20 mm long, channelled above, blade narrowly oblong-elliptic, 210 × 65 mm, chartaceous, base cuneate, apex apiculate, apiculum obtuse, margin sharply serrate, midrib and lateral veins and their junctions prominent, main veins numerous (8–10 pairs) with subsidiary lateral veins between them and a prominent reticulation. ? Monoecious. *Inflorescence* axillary, of short compacted dichasia (fascicles), c. 10 mm long, one or more in an axil. *Male flower* ovoid, c. 2 mm diam., 4 pairs of tepals, the outer triangu-

lar, the inner rounded; outer stamens 4, inner c. 2, filament short, glabrous. *Female flower and fruit* not seen.

Distribution. Known only from the type.

Ecology. In primary forest, at 50 m.

Note. The narrowly oblong elliptic, dentate leaves, combined with the small fasciculate inflorescence is distinctive.

16. Kibara hartleyi Philipson, *spec. nov.*

Frutex, praeter alabastra glaber. Folia elliptica, ad 80 × 38 mm, coriacea, margine dentata, glabra. Flores solitarii axillares; pedicelli 15–20 mm longi. Flores masculi obovoidei, c. 3 mm diam.; tepala 6; stamina 7–8. Flores feminei obovoidei, c. 3.5 mm diam.; carpella dense appresso-pilosa. – Typus: *Hartley 13292* (L; A, CANB, LAE), Papua New Guinea, Eastern Highlands Prov., Goroka Dist., Marafunga.

A tall shrub, glabrous except for unopened buds. *Leaves* opposite, petiole 4–6 mm long, channelled above; blade elliptic, up to 80 × 38 mm, rigidly coriaceous, base cuneate, apex with a prominent apiculum, margin sharply dentate, reticulation of veins very evident on both surfaces, glabrous. Monoecious. *Inflorescence* axillary, flowers solitary, pedicels c. 15–20 mm long at anthesis, elongating slightly in fruit. *Male flower* obovoid, c. 3 mm diam., tepals in c. 3 pairs; stamens in an outer whorl of 5 and an inner whorl of 2–3. *Female flower* similar but slightly larger, carpels c. 12–16, ovary densely covered with appressed hairs. Ripe *achenes* not seen, but developing *fruits* verruculose and pubescent.

Distribution. Known only from the type.

Ecology. In montane forest, about 2700 m altitude.

Note. This species shows a close but superficial resemblance to *Steganthera ilicifolia*. It approaches *Kibara shungolensis* which differs in having leaves without a prominent apiculum, and with a broader base, the female inflorescence usually bearing a lateral flower, and the ovary being glabrous.

17. Kibara shungolensis Philipson, *spec. nov.*

Arbor parva, ramulis juvenalibus glabris. Folia elliptica, ad 70 × 35 mm, coriacea, margine dentata. Inflorescentiae axillares, fasciculatae, c. 10 mm longae. Flores masculi obovoidei, c. 2 mm diam.; tepala 6; stamina 5–7. Flores feminei globosi, c. 3 mm diam., ovariis glabris. – Typus: *Sayers 12555* (A; CANB, L, LAE), Papua New Guinea, Morobe Prov., Mumeng Dist., Mt Shungol.

A small tree about 4 m high, glabrous in all its parts. *Leaves* opposite; petiole c. 5–8 mm long, channelled above; blade elliptic, up to 70 × 35 mm, rigidly coriaceous, base broadly cuneate, apex acute or obtuse, margin shallowly dentate, reticulation of veins very evident on both surfaces. ? Monoecious. *Inflorescence* of compacted dichasia (fascicles); peduncles bracteate at the base, short at anthesis but later elongating (10–12 mm), pedicels c. 8–10 mm long, those of the male flowers more delicate than those of the female. *Male flowers* obovoid, c. 2 mm diam., ostiole

surrounded by 3 pairs of rounded tepals; androecium with 4 outer stamens and fewer smaller inner stamens; filaments glabrous. *Female flowers* globose, c. 3 mm diam., ostiole surrounded by c. 3 pairs of minute tepals and with swollen glands within; carpels c. 20, ovary and stigma glabrous. *Fruits* not seen.

Distribution. Known only from the type.

Ecology. Lower mossy forest, at about 2300 m altitude.

Note. For features distinguishing *K. shungolensis* from *K. hartleyi* see that species.

18. Kibara moluccana Perkins

K. moluccana Perkins, Bot. Jahrb. 45 (1911) 425. – *K. vriesiana* Perkins, l.c. 424. – *K. teijsmanniana* Perkins, l.c. 425. – *K. ledermannii* Perkins, Bot. Jahrb. 52 (1915) 213.

Distribution. Moluccas: Buru, Ceram, Ambon, Halmahera, Morotai, Obi; Papua New Guinea: East Sepik Prov.

Ecology. Rain forest, to 1000 m.

Uses. The skin of the fruit is rubbed on the hair to dye it black (Halmahera).

Vernacular name. Ogoroutu masauru mnauru (Halmahera, Tobaro lang.).

Note. The large glabrous oblong leaves with the almost fasciculate inflorescences are characteristic (fig. 1b). The flowers are yellow. The material I have seen of *K. ledermannii* is fragmentary but the leaves and inflorescence match those of *K. moluccana.*

19. Kibara microphylla Perkins

K. microphylla Perkins in K. Schum. & Laut., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905) 268.

Distribution. Papua New Guinea: West Sepik Prov., Torricelli Mts.

Ecology. In forest at 600 m altitude.

Note. I have not seen the type collection (*Schlechter 14373*), but a specimen collected at the same locality (*Schlechter 14503*) agrees with the original description in all respects, except that the leaf margins are not entire but irregularly dentate. The small leaves and very delicate inflorescences of this specimen leave no doubt that it represents *K. microphylla.*

20. Kibara streimannii Philipson, *spec. nov.*

Arbor parva, ramulis juvenalibus molliter pubescentibus. Folia oblonga, 100–160 × 25–45 mm, base truncata ad cordata, subtus molliter pubescentia. Inflorescentiae masculae axillaris, ramulis elongatis racemosis (c. 80 mm longis), bracteis subulatis numerosis decussatis praeditis. Inflorescentiae femineae breviores (c. 45 mm longae). Flores masculi obovoidei, c. 3.5 mm longi, setulosi; tepala 6; stamina c. 6, filamentis brevibus angustatis. Flores feminei globosi, c. 4 mm diam., dense tomentosi. – Typus: *NGF 47554 Streimann & Kairo* (L), Papua New Guinea, Morobe Prov., Wau Dist., head of Baime creek.

Small tree to 7 m high, young shoots softly and densely pubescent. *Leaves* opposite; petiole 4–7 mm long, densely short pubescent; blade narrowly oblong or oblong, stiffly chartaceous, 80–160 × 25–47 mm, base truncate to shallowly cordate, apex narrowed into an indistinct acute apiculum, margin entire, becoming glabrous above, soft pubescence persisting below, midrib channelled above, prominent below, lateral veins arched and meeting within the margin, prominent, reticulation well defined. Monoecious. *Inflorescence* axillary. Male and female flowers in separate inflorescences. *Male inflorescence* consisting of elongated rachises, c. 80 mm long, setulose, bearing many pairs of subulate bracts. *Female inflorescences* shorter (c. 45 mm long), peduncle c. 35 mm long, ending in a dichasium. *Male flowers* in axils of bracts, apparently arising in acropetal sequence and soon caducous, pedicel c. 4 mm long, setulose; receptacle obovoid, c. 3.5 mm long, hairy outside, tepals 6, rounded or mucronate, stamens 4 outer and c. 2 inner, c. 0.75 mm long, anthers triangular with very short narrow filaments. *Female flowers* globose, c. 4 mm diam., densely tomentose. *Fruiting receptacle* c. 8 mm diam., setulose, without stipes. *Achenes* not seen.

Distribution. Known only from the type.

Ecology. Forest on a *Nothofagus* dominated ridge at 1700 m altitude.

Note. The narrow softly pubescent foliage is distinctive and the form of the inflorescence is unique in the genus. The flowers are yellowish white and the ripe fruit deep blue-black.

21. Kibara macrantha Philipson, *spec. nov.*

Arbor ad 20 m, ramulis juvenalibus pubescentibus. Folia ovata vel elliptica, 120–240 ×40–80 mm, margine integra (interdum paucidentata), subtus pubescentia minimum in costam. Inflorescentiae axillares vel supra-axillares, ex dichasiis vel cymis paniculatis compositae, ad 100 mm longae, pubescentes. Flores masculi obovoidei, pubescentes, c. 5 mm longi sub anthesi; tepala 6; stamina 6–8, subsessilia. Flores feminei obovoidei, 6–8 mm longi, pubescentes; carpella pubescentia. Achenia ovoidea 12 × 9 mm, pubescentia, plus minusve sessilia. – Typus: *Clemens 7693* (B; A, L).

A tree up to 20 m high with pubescent branches. *Leaves* opposite; petiole 10–15 mm long, channelled above, pubescent; blade ovate or elliptic, 120–240 × 40–80 mm, chartaceous, base rounded to broadly cuneate, apex obtuse or subacute, margin entire or occasionally with few coarse dentations, midrib prominent and reticulation of veins evident, pubescence persisting on the midrib below and to a less extent on the subsidiary veins. Monoecious. *Inflorescence* axillary or supra-axillary, on leafy twigs or clustered on older branches, simple dichasia or open cymose panicles (fig. 1c), rhachis up to 100 mm with several pairs of lateral branches, or much shorter, pubescent, bracts ovate, c. 4 mm long, at the base of the peduncle and the lateral branches and usually at the base of each receptacle. *Male receptacle* obovoid pubescent on the outer surface, c. 5 mm long at anthesis, tepals 6, rounded, stamens 6–8, subsessile, anther broadly triangular with a single horseshoe-shaped opening. *Female receptacle* similar, 6–8 mm long, tepals in several pairs with swollen glands within, inner surface pubescent; carpels numerous, pubescent, stigma short, obtuse. *Achenes* ± sessile, ovoid, c. 12 × 9 mm, pubescent, fruiting receptacle c. 10 mm diam., woody.

Distribution. Papua New Guinea: Morobe Prov., Finschhafen and Wau Dist.; Eastern Highlands Prov., Kainantu Dist.

Ecology. Lower montane forest (*Nothofagus, Castanopsis, Lithocarpus*), between 1400–2000 m.

Note. The open inflorescences of large flowers distinguish this species.

22. Kibara carrii Philipson, *spec. nov.*

Frutex, ramulis glabris, ad nodos incrassatis. Folia late-elliptica, ad 270 × 163 mm, margine grosse dentata, glabra. Inflorescentiae axillares vel supra-axillares, ex cymis paniculatis compositae, c. 50 mm longae. Flores masculi ovoidei c. 2 mm diam.; tepala 6; stamina c. 6. Flores feminei ovoidei, c. 3 mm diam. Achenia ovoidea, subsessilia. – Typus: *Carr 16030* (K; BM, CANB, L), Papua New Guinea, Central Prov., Goilala Dist., Insuarava.

A shrub, 1.75 m high, glabrous,, in all its parts, the nodes dilated. *Leaves* opposite; petiole c. 10 mm long, 4 mm wide; blade broadly elliptic, up to 270 × 163 mm, coriaceous, base broadly cuneate, apex abruptly apiculate, margin coarsely dentate, midrib and lateral veins prominent below, channelled above. ? Monoecious. *Inflorescence* axillary or supra-axillary, cymose panicles, rhachis c. 50 mm long, lateral branches c. 20 mm long, sometimes again branched, pedicels 10–12 mm long, slender and slightly thickened below the receptacle. *Male flower* ovoid, c. 2 mm diam., ostiole with 3 pairs of tepals, outer whorl of stamens 3–4, inner whorl ± 3, anther with 1 horseshoe-shaped opening, filament pubescent. *Female flower* ovoid, c. 3 mm diam., ostiole surrounded by small obtuse tepals in pairs, the innermost forming thickened pendulous glands; carpels c. 15–20, with a short blunt stigma. *Fruiting receptacle* c. 12 mm diam.; *achenes* subsessile, ovoid (not fully mature).

Distribution. Known only from the type.

Ecology. Secondary forest at 1000 m.

Note. The large broadly elliptical and coarsely serrate leaves are distinctive. Similar dilated nodes are found in a few other species and also in some species of *Steganthera*. The flowers are described as yellow.

23. Kibara elongata A.C. Smith

K. elongata A.C. Smith, J. Arn. Arbor. 22 (1941) 244.

Distribution. Irian Jaya: Vogelkop Peninsula to Idenburg River; Papua New Guinea: Jimi Valley.

Ecology. In primary rain forest from near sea level to 2000 m.

Vernacular names. Kinjoem (Hattam lang.), talwalye (Eipomek Valley).

Note. The coriaceous leaves with spiny teeth on the margin are distinctive. The dentations on the leaves from Jimi Valley are less spinose than the collections from Irian Jaya. The inflorescence may be a large diffuse panicle, or may be reduced in size but still with open branching. The flowers are yellow or orange and the ripe achenes are black, borne on an orange receptacle.

24. Kibara katikii Philipson, *spec. nov.*

Arbor parva, ramulis juvenalibus dense tomentosis. Folia ovata, oblongo-elliptica vel obovata, 75–210 × 32–83 mm, margine integra vel irregulariter dentata, subtus molliter pubescentia. Inflorescentiae axillares vel supra-axillares, ex cymis paucifloribus compositae, c. 30 mm longae. Floris masculi 1 mm diam.; tepala 4; stamina 2, antheris nephroideis filamentis angustis, brevissimis. Flores feminei ad 3 mm diam.; carpella pubescentia. Achenia ovoidea ad subglobosa, 13–18 × 9–11 mm, sparsim pubescentia. – Typus: *NGF 29952 Coode & Katik* (K; A, BO, LAE), Papua New Guinea, Northern Prov., Popondetta Dist., south of Ioma.

A small tree to 16 m high, young growth densely covered with buff or fulvous tomentum. *Leaves* opposite; petiole c. 10–15 mm long, densely pubescent; blade variable in size and shape, ovate oblong-elliptic or obovate, 75–210 × 32–83 mm, becoming coriaceous, base broadly cuneate or rounded, apex shortly apiculate, margin entire or (more usually) irregularly dentate in the upper part, dentations either small and obscure or prominent, midrib prominent below, lateral veins evident and meeting within the margin, upper surface becoming ± glabrous above, lower surface softly pubescent. Monoecious. *Inflorescence* axillary or supra-axillary, usually of simple, 3-flowered cymes, c. 30 mm long, densely pubescent, pedicels c. 8 mm long, male and female flowers in separate inflorescences. *Male flowers* scarcely wider than the pedicel (c. 1 mm), pubescent on the outer surface and on the lower part inside the receptacle, tepals 4, rounded, stamens 2, attached to the base of the receptacle, c. 0.75 mm long, anther kidney-shaped, filament narrow, very short. *Female flowers* wider than the stout pedicel (to 3 mm), pubescent on both surfaces, tepals 4 (2 tepals or bracts often present on the outer surface), inner rim of ostiole thickened and glandular, carpels c. 10–15, c. 1.25 mm long, pubescent, stigma obtuse glabrous. *Fruiting receptacle* usually solitary (developing from the terminal flower, side branches occasionally also with fruits), peduncle and pedicel becoming thickened and woody, receptacle enlarging slightly (c. 8 mm diam.), pubescent, with thick stipes or achenes ± sessile. *Achenes* ovoid to subspherical, 13–18 × 9–11 mm, sparsely pubescent.

Distribution. Papua New Guinea: Southern Highlands Prov., Talibu Dist.; Morobe Prov., Wau Dist.; Northern Prov., Popondetta Dist.; Central Prov., Moresby Dist.; Milne Bay Prov., Raba Raba Dist.

Ecology. Lowland and montane rain forest from 30–2200 m altitude.

Note. The foliage may have very different aspects, sometimes being broadly obovate with an entire margin, at others being ovate and tapering towards the apex. The copious and persistent tomentum on the underside of the leaf is characteristic. This species has a wider distribution than most in the genus and a very considerable altitudinal range. The bark is thickly corky, pale brown and deeply and closely fissured.

25. Kibara coriacea (Bl.) Tulasne

K. coriacea (Bl.) Tulasne, Arch. Mus. Hist. Nat. 7 (1855) 404. – *Brongniartia coriacea* Bl., Bijdr. Fl. Ned. Ind. 9 (1825) 436. – *K. blumei* Steudel, Nomencl. Bot. (1840) 846. – *Sciadicarpus brongniartii* Hassk., Flora 25, iii (1842) Beibl., 20. – *Sarcodiscus chloranthiformis* Griff., Notul. Pl. As. 4 (1854) 380. – *K. chartacea* Bl., Mus. Bot. Lugd. Bat. 2 (1852) 89. – *K. cuspi-*

data Bl., l.c. 89. – *K. tomentosa* Perkins, Bot. Jahrb. 25 (1898) 571. – *K. trichantha* Perkins, l.c. 572. – *K. macrophylla* Perkins, l.c. 571. – *K. serrulata* Perkins, l.c. 575. – *K. angustifolia* Perkins, l.c. 577. – *K. grandifolia* Merr., Govt. Sci. Lab. Publ. Philip. 29 (1905) 15. – *K. ellipsoidea* Merr., Philip. J. Sc. 1 (1906) Suppl. 56. – *K. mollis* Merr., op. cit. 3 (1908) Bot. 225. – *K. clemensiae* Perkins, Bot. Jahrb. 45 (1911) 423. – *K. vidalii* Perkins, l.c. 423. – *K. motleyi* Perkins, l.c. 424. – *K. merrilliana* Perkins, l.c. 424. – *K. stapfiana* Perkins, l.c. 424. *K. warburgii* Perkins, l.c. 424. – *K. macrocarpa* Perkins, l.c. 425. – *K. schlechteri* Perkins, Pflanzenr. Heft 49 (1911) 31. – *K. longipes* Perkins, l.c. 31. – *K. inamoena* Perkins, l.c. 34. *K. dichasialis* Suesseng. & Heine, Mitt. Bot. Staatssamml. München 2 (1960) 60.

Distribution. Throughout Malesia.

Ecology. Lowland rain forest, including swamp forest and coral limestone, to lower montane forest, from sea level to 1600 m.

Uses. The fruit is said to be edible, and the leaves are used to flavour meat dishes.

Vernacular names. Alimau dotan (Sumatra), ambibliw (Dusun Banggi, Sabah), boe loe san (Java), kajoe mata ole, kajoe roeang-roeang, kajoe sitomirah (Sumatra), kayu singumbang paya (Sungei Ujong), keawon (Sepik Dist.), kibara, ki endog, ki kuja, ki-sau heum (Sundanese), labak (Dusun, Sabah), mardiber (Biak), pako kubang tando, pako pakan jantan (Malacca), pako srean puteh (Negri Sembilan), pata toelang (Sundanese), pototan (Manila Prov.), pu-ula (Managalese), ramat daging, rimik dazing (Sundanese), sakonoeo (Moeswaar I.), sangka-sangka batoe, sangka-sangka sito (Sumatra), susuh ayam (Pahang), tampui (Banka), tor (Biaru dial., Bulolo).

Note. Although this species varies in respect to the size and shape of its foliage and inflorescences, the number of its parts and the degree of its pubescence, it retains a character over its extensive range which ensures its recognition. This is best expressed by the broad, pliant, fresh green leaves and the openly branched inflorescence with strong pedicels to the female flowers which terminate the more distal branches. Specimens with the largest inflorescences occur in Sumatra. The range of variation appears greatest in the Philippines, and, when more complete material becomes available, several species which have been described from there may yet prove to be valid taxa, though here reduced to synonymy. The flowers are yellow, the male being somewhat greener; the achenes are black, borne on a yellow to orange receptacle.

26. Kibara papuana A. C. Smith

K. papuana A. C. Smith, J. Arn. Arbor. 22 (1941) 242.

Distribution. Papua New Guinea: Central Prov., Goilala, Kairuku and Port Moresby Dist.; Northern Prov., Kokoda and Popondetta Dist.; Milne Bay Prov., Raba Raba, Esa'ala, Losuia and Misima Dist.; Morobe Prov., Lae, Mumeng, Wau and Finschhafen Dist.

Ecology. Primary lowland rain forest, montane forest, mossy forest. Understorey with *Castanopsis* and *Araucaria*. Also in secondary growth. Between 100–2100 m altitude.

Vernacular names. Boakeava (Waigau), popoia (Koiari lang., Northern Prov.), siganapa (Orokawa lang., Northern Prov.), saha (Managalese).

Note. Similar to *K. coriacea* but with smaller foliage, and with smaller, less indurated flowers. The ripe achenes are black on an orange receptacle. In some specimens the achenes are muricate, but this may be due to insect infection. The species, as here treated, includes a considerable range of leaf size, and most specimens do not show the compact inflorescences which Smith noted on the type. The extreme forms come from the islands to the east of New Guinea (especially Goodenough and Normanby I.), but a continuous series of intermediate states unite all the forms.

27. Kibara nitens Philipson, *spec. nov.*

Frutex, ramulis glabris. Folia elliptica, oblongo-elliptica vel anguste-obovata, ad 170 × 65 mm, coriacea, margine irregulariter obscure dentata, nervis lateralibus numerosis. Inflorescentiae axillares vel terminales, ex pleiochasiis compositae. Flores masculi ovoidei, c. 1 mm diam.; tepala 6; stamina 4, staminodia 2. Flores feminei ignoti. Achenia 16 × 10 mm, breve stipitata. – Typus: *NGF 20912 Henty* (LAE), Papua New Guinea, Dokbil near Telefomin.

A small sparsely branched shrub usually under 3 m high, glabrous. *Leaves* opposite; petiole 15 × 2.5 mm, channelled above; blade elliptic, elliptic-oblong or narrowly obovate, 170 × 65 mm, coriaceous, base cuneate, apex apiculate, apiculum obtuse or acute, margin obscurely and irregularly dentate, midrib prominent, lateral veins numerous and close-set, at first straight but curved and uniting near the margin, glabrous. Monoecious. *Inflorescence* an axillary or terminal pleiochasium, rhachis c. 40 mm long, peduncle c. 18 mm long, bracteate at the base, the opposite pairs of pedicels also subtended by bracts, pedicels c. 5 mm long, becoming thickened and elongating in female flowers after anthesis. *Male flowers* ovoid, c. 1 mm diam., ostiole surrounded by 3 pairs of obtuse tepals, stamens 4 inserted halfway up the receptacle, with 2 small central staminodes. *Female flowers* not seen. *Fruiting receptacle* woody, c. 8 mm diam. *Achenes* c. 12–15, shortly stipitate, ellipsoid, c. 16 × 11 mm (when dry).

Distribution. Irian Jaya: Star Mts; Papua New Guinea: West Sepik Prov., Telefomin Dist.; Southern Highlands Prov., Tari Dist.

Ecology. Undergrowth in primary forest, 750–2150 m altitude.

Vernacular name. Soinok (Telefomin).

Note. Rigid leaves with a glossy upper surface, the margin usually sharply dentate, and the lateral nerves often rather close together. The flowers are described as yellow and the black achenes are borne on an orange receptacle.

28. Kibara fragrans Philipson, *spec. nov.*

Arbor parva, ramulis glabris. Folia oblongo-elliptica, ad 220 × 85 mm, margine irregulariter obscure dentata. Inflorescentiae axillares, ex cymis parvis ad 50 mm longis compositae. Flores masculi c. 2 mm longi, cupulati; tepala 6; stamina 6. Flores feminei ovoidei c. 2.75 mm longi. – Typus: *Docters van Leeuwen 9472* (L; A, BO, K), Irian Jaya: northwestern region, Albatros bivouac.

Small tree, c. 3 m high, young shoots glabrous. *Leaves* opposite; petiole to 30 mm long; blade elliptic oblong, to 220 × 85 mm, chartaceous, base broadly cuneate, apex

shortly apiculate, apiculum obtuse, margin irregularly and indistinctly dentate, midrib prominent, principal lateral veins evident, arched, ascending, glabrous. *Inflorescence* axillary, c. 50 mm long, glabrous, small few-flowered cymes or rather more complex small paniculate cymes, solitary or clustered at nodes, upper flowers female on stouter pedicels, pedicels c. 20 mm long, wider distally. *Male receptacle* c. 2 mm long, cup-shaped widely open, tepals 6, rounded, stamens 4 in outer whorl, c. 0.75 mm long, c. 2 in centre, shorter, filament strap-shaped, as wide as the anther. *Female receptacle* ovoid, c. 2.75 mm long, tepals 6, rounded, ostiole small, with thickened glands within. *Fruit* not seen.

Distribution. Known only from the type.

Ecology. Lowland forest, on hilltop at 150 m altitude.

Note. The foliage resembles that of *Steganthera hirsuta*, while the inflorescences are similar to those of *Kibara fugax*. The green flowers are fragrant.

29. Kibara obtusa Bl.

K. obtusa Bl., Mus. Bot. Lugd. Bat. 2 (1856) 89. – *K. depauperata* Merr., Govt. Sci. Lab. Publ. Philip. 35 (1906) 13.

Distribution. Sabah: Lahad Datu Dist.; Philippines: Luzon, Benguet Prov.; Celebes: Minahassa; Irian Jaya: Biak.

Ecology. Primary rain forest, sea level to 700 m.

Vernacular name. Mardieber (Biak lang.).

Note. A tree attaining a height of 20 m, with the bole 36 cm in diameter. The flowers are yellow or orange; the ripe achenes are black on an orange receptacle.

30. Kibara laurifolia A.C. Smith

K. laurifolia A.C. Smith, J. Arn. Arbor. 22 (1941) 240.

Distribution. Irian Jaya and Papua New Guinea. Throughout the highlands between 139–148° E.

Ecology. In primary and disturbed lower montane rain forest, between 1800–2800 m altitude.

Vernacular name. Kamokam (Enga lang.).

Note. The broad, often suborbicular, leathery leaves are distinctive. The ripe achenes are purplish black on an orange to yellow receptacle. A specimen from near Wabag (*NGF 11075 Womersley*) approaches *K. macrantha* in the large pubescent receptacle, but has foliage similar to that of *K. laurifolia*. It may be a hybrid, though it lies west of the known range of *K. macrantha*.

31. Kibara flagelliformis Philipson, *spec. nov.*

Frutex vel arbor parva, ramulis juvenalibus minute puberulatis, glabrescentibus. Folia elliptica, margine integra. Inflorescentiae axillares ex cymis paniculatis compositae, c. 80 mm longae; pedi-

cellis tenuibus elongatis (ad 45 mm longis). Flores masculi obovoidei, 3 mm longi; tepala 4; stamina c. 7, filamentis latis, antheris parvis. Flores feminei ignoti. – Typus: *Ijiri & Niimura 33* (L), Irian Jaya, Napan Dist., Anggadi I. in Jamoer Lake.

A shrub or small tree, with the young parts minutely puberulous and soon becoming glabrous. *Leaves* opposite or subopposite; petiole stout, c. 10–12 mm long, channelled above; blade elliptical, chartaceous, c. 190 × 90 mm (all damaged), base broadly cuneate, apex not present, margin entire, midrib prominent below, lateral veins strongly arched-ascending. *Inflorescences* axillary, central rhachis c. 80 mm long, lateral branches in opposite pairs or 3–4 at the same level, usually again branched about the middle; pedicels slender elongated (up to 45 mm long). *Male flowers* obovoid, 3 mm long, with 4 rounded tepals surrounding a widely open ostiole (sometimes another pair of tepals (bracts) about the middle of the receptacle), 4 large stamens and c. 3 smaller stamens in the centre, filaments wide, strap-shaped, c. 2 mm long, wider than the small triangular anthers. *Female flowers and fruit* not seen.

Distribution. Known only from the type.

Ecology. No information.

Note. The specimen bears only male flowers in strangely branched inflorescences. The stamens are unusual, with long filaments much wider than the small anthers. The specific epithet refers to the supposed resemblance of the inflorescence to a many-thonged whip.

32. Kibara chimbuensis Philipson, *spec. nov.*

Arbor parva, ramulis glabris. Folia anguste-elliptica ad lanceolata, 90–130 × 28–48 mm, membranacea, margine integra vel parum undulata. Inflorescentiae axillares, supra-axillares vel terminales, ex cymis paniculatis compositae, ad 80 mm longae; pedicellis tenuibus. Flores masculi inferioribus ramulis dispositi, cupulati, c. 1.5 mm longi; tepala obtusa; stamina 8. Flores feminei subglobosi, c. 3 mm longi; carpella c. 10, glabra. Achenia ovoidea c. 15 × 10 mm, breve stipitata. – Typus: *Robbins 625* (CANB; A, LAE), Papua New Guinea, Chimbu Prov., Kerowagi Dist., Wahgi River near Kup.

A small tree to 7 m high, young branches glabrous. *Leaves* opposite, glabrous; petiole to 10 mm long; blade narrowly elliptic to lanceolate, membranaceous, 90–130 × 28–48 mm, base narrowed into the petiole, apex narrowed into an indistinct and obtuse apiculum, margin entire or slightly undulate, lateral veins rather indistinct, steeply ascending. Monoecious. *Inflorescence* axillary, supra-axillary or terminal, glabrous, singly or in groups, either few-flowered cymes or more branched, open, cymose, panicles up to 80 mm long, pedicels slender, 20–45 mm long, male flowers on lower branches. *Male flowers* cup-shaped, c. 1.5 mm long, 2 mm diam., rounded tepals widely open, stamens 4 in outer whorl and 4 smaller stamens at centre, filaments strap-shaped, glabrous. *Female flowers* subglobose, c. 3 mm long, 2.5 mm diam., tepals 6, rounded, inner rim of ostiole with pendulous glands, carpels c. 10, glabrous, stigmas obtuse. *Infructescence* with somewhat thickened pedicels and a woody receptacle c. 15 mm diam. (including short thick stipes). *Achenes* ovoid, c. 15 × 10 mm when dry, shortly stipitate.

Distribution. Known only from the type.

Ecology. A small tree in forest remnant at 1350 m.

Note. The narrowly elliptic to lanceolate leaves have a thin texture and dry to a dull dark green. The inflorescences are similar to those of *K. fugax*.

33. Kibara fugax Philipson, *spec. nov.*

Arbor parva, ramulis glabris. Folia elliptica ad late elliptica vel obovata, 100–160(–180) × 38–70(–80) mm, membranacea vel tenuiter chartacea, margine plerumque integra. Inflorescentiae axillares vel terminales, paniculatae. Flores masculi, subglobosi c. 1.5 mm diam.; pedicellis tenuibus c. 35–60 mm longis; tepala 6, obtusa; stamina 6–8(–10). Flores feminei globosi c. 2–2.5 mm diam.; carpella glabra. Achenia ovoidea, breve stipitata. – Typus: *NGF 14581 Millar* (K; A, L, US), Papua New Guinea, Morobe Prov., Kauli Creek.

Small tree, up to 10 m high, all parts glabrous. *Leaves* opposite; petiole 5–8(–10) mm long, channelled above; blade elliptic to broadly elliptic or obovate, 100–160(–180) × 38–70(–80) mm, membranaceous to thinly chartaceous, base cuneate, apex slightly apiculate, apiculum obtuse, entire or occasionally with a few obscure dentations, midrib evident, lateral veins few, strongly arched. Monoecious. *Inflorescence* terminal or axillary, simple or paniculate cymes, either all flowers of one sex or with male flowers on the lower branches, to c. 50 mm long; pedicel of male flowers c. 35–60 mm long, very slender, or female flowers stronger and shorter (c. 15–20 mm). *Male receptacle* subglobose, c. 1.5 mm diam., 6 rounded tepals around the ostiole; stamens c. 4 (5) outer, 2–5 inner, filament short, broad, anther broad with a single horizontal opening. *Female receptacle* globose, c. 2–2.5 mm diam., tepals minute, 4 around the ostiole, another pair inside and with thickened glands within, carpels c. 16–20, glabrous, stigma short, blunt. *Achenes* ovoid, c. 13 × 9 mm, shortly stipitate.

Distribution. Papua New Guinea: Morobe Prov., Mumeng and Wau Dist.; Central Prov., Goilala Dist.

Ecology. Lower montane forest or secondary forest, between 750–1400 m altitude.

Note. A common tree in the Wau district distinguished by its membranaceous leaves (which usually dry to a blackish colour) and the long delicate pedicels of male flowers. The male receptacles and pedicels wither immediately after anthesis, a feature reflected in the specific epithet. The flowers are yellowish and the ripe achenes purple-black.

34. Kibara novobritanica Philipson, *spec. nov.*

Arbor parva, ramulis glabris. Folia oblonga ad late elliptica, 160–200 × 75–100 mm, margine integra. Inflorescentiae axillares, supra-axillares vel terminales, ex pleiochasiis c. 30 mm longis, ad nodos aggregatis compositae; pedicelli infra flores crassi. Flores masculi subglobosi c. 2 mm diam.; tepala 6, stamina 6, anthesis parvis subsessilibus. Flores feminei majores. Achenia ovoidea, c. 18 × 13 mm, plus minusve sessilia. – Typus: *NGF 26675 Frodin* (LAE; A, BO, NY), Papua New Guinea, New Britain, Talasea.

A small tree up to 16 m high, glabrous. *Leaves* opposite; petiole c. 10 mm long; blade oblong to broadly elliptic, 160–200 × 75–100 mm, chartaceous, base broadly cuneate to rounded, apex with a short obtuse (or occasionally acute) apiculum, entire, midrib prominent, principal veins arched ascending and meeting near the margin. Monoecious. *Inflorescence* terminal, axillary or supra-axillary, short pleiochasia often densely aggregated together at the nodes, rhachis short (up to 30 mm long) with a few pairs of lateral branches which may branch again, pedicels thickened for about 10 mm below the receptacle. *Male receptacle* subglobose, c. 2 mm diam., tepals 6, rounded; stamens usually 6 (in 3 pairs, the inner small, the outer inserted well above the base of the cavity); anthers small subsessile. *Female receptacle* similar but larger, c. 4 pairs of tepals with swollen glands within the ostiole; carpels numerous, glabrous with an obtuse stigma. *Achenes* ± sessile, ovoid, c. 13 × 8 mm, glabrous, fruiting receptacle c. 8 mm diam., woody.

Distribution. Papua New Guinea: West and East New Britain Prov., New Ireland Prov.

Ecology. Lowland rain forest to 100 m.

Vernacular names. Gangnan (Puhi River, Kandrian Dist.), napeewa (Talasea).

Note. Confined to New Britain Province, and the only species of *Kibara* known from that region. The thickened pedicels are characteristic. The ripe achenes are black on an orange torus.

35. Kibara rigidifolia A.C. Smith

K. rigidifolia A.C. Smith, J. Arn. Arbor. 22 (1941) 243.

Distribution. Papua New Guinea: Western Prov., Morehead and Balimo Dist. Also in Queensland.

Ecology. In coastal scrub or undergrowth of forest near sea level, in sandy soil and on shaded cliff face.

Note. A sparsely branched shrub or small tree with pale shining coriaceous leaves which are frequently arranged in whorls of three on triangular stems. Older branches fawn, with soft fissured corky bark. The achenes black on an orange receptacle. The number of stamens is variable, even on the same plant. They are not arranged irregularly over the receptacle wall (as in *Wilkiea*) but form a central group. When the number of stamens is reduced, the inner tepals may resemble staminodes. The form of the stamens differs from that of most species of *Kibara* as they are held vertically with the two lips of the horseshoe-shaped slit + equal (in most species the anther inclines towards the centre with the lower lip smaller than the upper).

36. Kibara sudestensis Philipson, *spec. nov.*

Frutex vel arbor parva, ramulis juvenalibus pilis appressis sericeis, glabrescentibus. Folia anguste-elliptica, ad 175 × 58 mm, rigide coriacea, margine integra vel apicem versus pauci dentata. Inflorescentiae axillares vel supra-axillares, ex cymis paucifloribus compositae, c. 25 mm longae.

Flores masculi obovoidei, c. 6 mm longi; tepala 6; stamina 6, anthesis nephroideis filamentis brevibus. Flores feminei ignoti. – Typus: *Brass 28050* (A; K), Papua New Guinea, Louisiade Archipelago, Sudest I.

A shrub or small tree, c. 4 m tall, glabrous in all its parts, except that the buds and young foliage are covered in appressed silky hairs. *Leaves* opposite; petiole c. 10 mm, channelled above; blade narrowly elliptic, up to 175 × 58 mm, stiffly coriaceous, narrowed to a truncate base, apex narrowed or slightly apiculate, margin entire or one or a few teeth near the apex, midrib prominent, lateral veins numerous, running straight from the midrib at a slight angle, uniting near the margin. *Inflorescence* axillary or supra-axillary, one or few-flowered cymes, c. 25 mm long, pedicels widening into the base of the flower. *Male receptacle* obovoid, up to c. 6 mm long, glabrous; tepals 6, cavity small, enclosing 4 large and 2 smaller central stamens, anthers kidney-shaped, filament short, narrower than the anthers. *Female flowers and fruits* unknown.

Distribution. Known only from the type.

Ecology. A small undergrowth tree on ridge crest in rain forest, at 150 m.

Note. The narrowly elliptic, rigid leaves, and the large male flowers with small kidney-shaped anthers are distinctive.

37. **Kibara sleumeri** Philipson, *spec. nov.*

Arbor parva, ramulis juvenalibus glabris. Folia oblonga, 140–200 × 60–110 mm, margine integra. Inflorescentiae axillares vel supra-axillares, glabrescentes, ex cymis paucifloribus compositae; pedunculi tenues, 15–20 mm longi. Flores masculi obovoidei, c. 2.5 mm longi; stamina 6. Flores feminei subglobosi, c. 3 mm longi; carpella minute pubescentia. Achenia ovoidea, 16 × 10 mm, valde stipitata. – Typus: *van Royen & Sleumer 7035* (L; CANB), Irian Jaya, Vogelkop Peninsula, Aifat River valley.

A small tree 3 m high, glabrous. *Leaves* opposite; petiole to 22 mm long, channelled above; blade oblong, 140–200 × 60–110 mm, chartaceous, base rounded or broadly cuneate, apex rounded with a short apiculum, entire, principal veins prominent below and meeting inside the margin, glabrous. *Inflorescence* axillary or arising above the foliage leaves, at first setulose becoming glabrous at maturity, one or more few-flowered cymes arising together, peduncles slender, 15–20 mm long, with basal bracts and a pair of bracts towards the middle; pedicels c. 5 mm long, slightly swollen below the female flowers. *Male receptacle* obovoid, c. 2.5 mm long, with 6 stamens, the central pair reduced. *Female receptacle* subglobose, c. 3 mm long; tepals 4, rounded, enclosing swollen glands; c. 10 carpels, very faintly pubescent, stigma short. In *fruit* the peduncles and pedicels become slightly woody, c. 45 mm long; the receptacle in fruit rather small (c. 10 mm diam.) with prominent stipes c. 3 mm long. *Achene* ovoid, 16 × 10 mm.

Distribution. Irian Jaya: Vogelkop Peninsula.

Ecology. Dense shade in *Castanopsis* forest, 450–600 m.

Note. The foliage is similar to that of *K. moluccana*, but the compact subfasciculate inflorescences of that species are distinctive. The flowers are pale yellow and the achenes black on a swollen orange receptacle.

38. Kibara monticola Perkins

K. monticola Perkins, Pflanzenr. Heft 49 (1911) 32.

Distribution. Papua New Guinea: Sepik region, Ibo Mts.
Ecology. In forests at about 110 m.
Note. Known only from the original collection by Schlechter.

39. Kibara symplocoides Perkins

K. symplocoides Perkins, Bot. Jahrb. 52 (1915) 210.

Distribution. Papua New Guinea: Sepik region.
Ecology. In open mountain forest, about 20 m high, at 1000 m altitude.
Note. Known only from the original two collections from the same locality.

INSUFFICIENTLY KNOWN SPECIES

The types of the following species have not been seen, and it is not possible to determine from the descriptions whether they correspond to any known species or are distinct:

Kibara olivaeformis Becc., Malesia 1 (1877) 187.
K. aruensis Becc., l.c. 188.
K. formicarum Becc., l.c. 188.
K. perkinsiae K. Sch. & Laut., Fl. Deutsch. Schutzgeb. Südsee (1901) 330.
K. elmeri Perkins, Bot. Jahrb. 45 (1911) 424.
K. buergersiana Perkins, Bot. Jahrb. 52 (1915) 209.
K. neriifolia Perkins, l.c. 212.

INADEQUATELY REPRESENTED SPECIES

The collections listed below appear to represent undescribed species of *Kibara*, but the material is inadequate because no flowers are present.

Barker LAE 67616 – Telefomin District
Eyma 4555 – Wissel Lakes region
Foreman LAE 52220 – Ramu District
Kostermans & Soegeng 853 – Baliem Valley
van Royen & Sleumer 7773 – Vogelkop Peninsula

EXCLUDED SPECIES

Kibara borneensis Boerl., msc. – Menispermaceae.
K. timorensis Boerl., msc. – Menispermaceae.
K. hirsuta Warb. – **Steganthera hirsuta** (Warb.) Perkins (Monimiaceae).
K. hospitans Becc. – **Steganthera hospitans** (Becc.) Kaneh. & Hatus.

ACKNOWLEDGEMENTS

As this is the final precursor of the treatment of Monimiaceae for Flora Malesiana, I should like to take this opportunity to thank the many people who have helped me in this project. Prof. C. G. G. J. van Steenis, who proposed the topic, has assisted me materially with editorial help, by arranging a period in the field, and by providing xerox copies of literature. Prof. B. C. Arnold and Dr. James McWha, successive Heads of the Botany Department, University of Canterbury, provided accommodation and other facilities, and Mrs. Tine Arkesteyn has typed all my manuscripts and correspondence. Other botanists interested in this family, notably Prof. P. K. Endress of Zürich University, Dr. David H. Lorence, formerly of Missouri Botanic Gardens and now of Instituto de Biologia, Mexico, and Dr. Don B. Foreman of University of New England, New South Wales, have always been ready to discuss aspects of my work, and Dr. Elizabeth Edgar of Botany Division, D. S. I. R. has patiently checked my Latin diagnoses. I am greatly indebted to the following institutions for numerous loans of herbarium material:

Arnold Arboretum and Gray Herbarium, Harvard University
Botanic Gardens, Singapore
Botanisches Museum, Berlin-Dahlem
British Museum, London
Canberra Botanic Garden, Canberra
Division of Botany, Lae
Forest Department, Kuching
Forest Research Centre, Sabah
Herbarium Australiense, Canberra
Herbarium Bogoriense, Bogor
Kyushu University, Japan
Museum of Natural History, Wroclaw
National Herbarium of Victoria, Melbourne
New York Botanic Garden, New York
Philippine National Herbarium, Manila
Rijksherbarium, Leiden
Royal Botanic Gardens, Kew
Smithsonian Institution, Washington
University of California, Berkeley
University of Florence, Florence
University of Papua New Guinea, Port Moresby