Contributions to the Flora of Siam. Additamentum XIII

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No. 8]

[1922

XXXV.—CONTRIBUTIONS TO THE FLORA
OF SIAM.

ADDITAMENTUM XIII.

W. G. CRAIB.

Michelia Rajaniana, Craib [Magnoliaceae-Magnoliceae]; a *M. lanuginosa*, Wall., cui maxime affinis, petiolo longiore, foliis latioribus supra haud glabris, carpellis maturis approximatis differt.

Arbor circa 20 m. alta (ex *Kerr*); ramuli iuventute crassiusculi, dense fulvo- vel subferrugineo-pubescentes, plus minusve glabrescentes, cortice fusco obtecti, conspicue lenticellati. *Folia* late lanceolata, oblongo-elliptica vel elliptico-ovata, apice obtusa, basi rotundata, 22–29 cm. longa, 10–13.2 cm. lata, coriacea, supra ad costam densius pubescentia, aliter puberula, subtus molliter albo-pubescentia, costa subtus valde prominente, nervis lateralibus utrinque circa 20 supra conspicuis subtus prominentibus intra marginem conspicue anastomosantibus, nervulis arcte reticulatis pagina utraque prominulis, petiolo 2.5–3.5 cm. longo supra canaliculato indumento ei ramulorum simili obtecto suffulta. *Flores* albi (ex *Kerr*), solitarii, axillares, pedicello 5–12 mm. longo indumento ei ramulorum nisi sparsiore et pallidiore simili tecto suffulti; bracteae sericeae; alabastra circa 2.5 cm. longa. *Petala* 12, oblanceolata, obtusa, 3.5 cm. longa, 1 cm. lata. *Filamenta* circa 2 mm. longa, antheris (apiculo 1 mm. longo incluso) circa 4 mm. longis. *Gynophorum* et carpella adpresse ferrugineo-pubescentia, stylo glabro sicco atro ovario brevior. *Carpella* matura approximata, ambitu oblonga, obtusa, 1.5 cm. longa, fusca, pallide lenticellata, sparse adpresse pubescentia, breviter stipitata.

Doi Intanon, c. 1300 m., evergreen forest, *Kerr* 5342.

Vern. Cham Pi Luang (ex *Kerr*). (see p. 225.)

Talauma Kerrii, *Craib* [Magnoliaceae-Magnoliceae]; a *T. Hodgsonii*, Hook. f. et Th., ramulis haud glabris, areola stipulari petiolo aequilonga, filamentis brevioribus, connectivo haud longe producto recedit.

Arbor circa 8 m. alta (ex *Kerr*); ramuli primo adpresse hirsuti, mox glabri, cortice luteo-stramineo vel subbrunneo-stramineo obtecti. *Folia* oblongo-oblancoolata vel oblonga, apice obtusa, costa excurrente breviter apiculata, basi late cuneata vel rotundato-cuneata, ad 37 cm. longa et 13 cm. lata, coriacea, glabra, subtus pallidiora, costa straminea supra parum elevata subtus valde prominente, nervis lateralibus utrinque 15 rectis bene intra marginem anastomosantibus supra conspicuis subtus prominentibus, nervulis rete pagina utraque prominens efficientibus, margine integra, parum recurva, petiolo ad 5 cm. longo robusto basi conspicue incrassato suffulta, areola stipulari petiolo aequilonga. *Flores* solitarii, terminales, pedicello robusto glauco glabro 4-6-annulato suffulti, ad 5.5 cm. longi. *Stamina* circa 1.4 cm. longa, filamentis brevibus, connectivo breviter producto apice obtuse triangulari vel subtruncato. *Carpella* glabra, tuberculata, stamina bene superantia.

Nan, Doi Tiu, circa 700 m., evergreen forest, *Kerr* 5060.

Artabotrys Vanprukii, *Craib* [Anonaceae-Unoneae]; *A. siamensi*, Miq., similis, sed ramulorum et foliorum costae pilis adpressis haud divergentibus distinguendus.

Ramuli primo dense adpresse ferrugineo-pubescentes, demum glabri, cortice brunneo vel cinereo obtecti, lenticellis inconspicuis. *Folia* oblongo-elliptica vel obovato-elliptica, apice rotundata obtusave, basi rotundata, cuneato-rotundata, vel rarius cuneata, interdum parum inaequilateralia, ad 12 cm. longa et 5.5 cm. lata, chartaceo-coriacea vel coriacea, supra iuventute ad costam adpresse ferrugineo-pubescentia, matura nitida, glabra vel ad costam inferne puberula, subtus primo dense adpresse ferrugineo-pubescentia, mox ad costam subdense aliter sparse adpresse pubescentia, pallidiora, costa subtus prominente, nervis lateralibus utrinque 9-12 supra conspicuis subtus prominulis intra marginem praesertim superioribus anastomosantibus, nervulis rete pagina utraque conspicuum efficientibus, petiolo 5-10 mm. longo indumento ramulorum suffulta. *Pedunculus* communis mox uncinatus, lignosus, flores saepissime 2 gerens. *Calyx* 6 mm. longus, lobis 7 mm. latis utrinque densius puberulis. *Petala* 2.7 cm. longa, limbo ad 1.5 cm. lato, utrinque breviter adpresse pubescentia. *Antherarum* connectivum supra loculos deltoideum. *Carpella* glabra, stigmatibus carpellis subaequilongo.

Pang Pue, c. 400 m., mixed jungle, *Kerr* 4833. Prê, 180 m. *Vanpruk* 501.

Vern. Săban Nga Kûa (ex *Kerr*).

Polyalthia viridis, *Craib* in *Kew Bull.*, 1914, p. 4, descr. ampl.

Folia ad 33 cm. longa et 14.5 cm. lata. *Pedicelli* fructiferi lignosi, fere 3 cm. longi, receptaculo convexo 2 cm. diametro.

Carpella glabra, ambitu oblongo-elliptica, 2.5–2.8 cm. longa, 1.8 cm. diametro, stipite 2 cm. longo suffulta. *Semina* solitaria. Hue Pāng Hūng, Mê Hawng Sawng, c. 500 m., *Kerr* 5474.

Goniothalamus calvicarpa, *Craib* [Anonaceae-Mitrephoreae]; a *G. Griffithii*, Hook. f. et Th., carpellis glabris recedit.

Arbor 3–4 m. alta (ex *Kerr*); ramuli primo adpresse ferrugineo-pubescentes, demum glabri, cortice fusco-brunneo vel cinereo-brunneo striato obtecti, lenticellis demum conspicuis. *Folia* elongato-oblancoolato-oblonga, apice acuminata, basi cuneata, 19–29 cm. longa, 4–6 cm. lata, subcoriacea, matura glabra vel subtus pilis adpressis sparsis hic et illic instructa, pagina inferiore pallidiora, costa supra impressa subtus prominente, nervis lateralibus utrinque circa 15–17 rectis vel subrectis bene intra marginem anastomosantibus supra subprominulis subtus prominulis, nervulis paucis subtus conspicuis reticulationem laxam efficientibus, margine integra recurva, petiolo valido circa 5 mm. longo supra canaliculato glabro vel subglabro suffulta. *Flores* virides (ex *Kerr*), axillares, solitarii, pedicello 8–10 mm. longo basi parvi-bracteolato pilis adpressis ferrugineis praesertim superne sparse instructo suffulti. *Calyx* 10 mm. longus, lobis ovatis obtusis 7 mm. latis utrinque sparse adpresse pubescentibus ciliolatis. *Petala* exteriora 1.7 cm. longa, 5 mm. lata, utrinque sparse adpresse pubescentia, interiora cohaerentia, 1 cm. alta. *Stamina* vix 2 mm. longa, apiculata. *Carpella* 1 mm. alta, glabra, stigmatate fere 2 mm. longo.

Sukotai, Kao Luang, c. 600 m., evergreen forest, *Kerr* 5946.

Mitrephora Winitii, *Craib* [Anonaceae Mitrephoreae]; ab affini *M. Edwardsii*, Pierre, foliis pro longitudine angustioribus, petiolis longioribus et ut videtur floribus maioribus, a *M. grandiflora*, Bedd., cui florum magnitudine similis, foliis basi saepissime cordatulis recedit.

Arbor parva (ex *Winit*); ramuli iuventute fulvo-tomentosi, mox glabri, cortice cinereo reticulato obtecti, lenticellis parvis conspicuis. *Folia* lanceolata, ovato-lanceolata, rarius subelliptico-ovata, apice obtusa, rotundata, vel subacuminata et acutiuscula, basi rotundata vel cordatula, interdum parum inaequalialia, 5–11 cm. longa, 3.5–4.7 cm. lata, subcoriacea, supra glabra vel ad costam inferne breviter pubescentia, subtus pallidiora, ad costam nervosque laterales densius fulvo-pubescentia, aliter sparsius pubescentia, nervis lateralibus utrinque 9–15 supra tenuibus conspicuis subtus prominentibus intra marginem praesertim superioribus arcuatim coniunctis, nervulis gracilibus supra conspicuis vel subconspicuis subtus rete gracile prominulum efficientibus, margine parum recurva, densius breviter ciliata, petiolo sat crasso 4–5 mm. longo indumento ramulorum supra canaliculato suffulta. *Pedicelli* circa 1 cm. longi, fulvo-tomentosi, apicem versus bracteola vix 1 cm. longa instructi. *Calyx* 1 cm. longus, dorso fulvo-tomentosus, intra sparse pubescens. *Petala* exteriora alba (ex *Winit*), oblongo-obovata, vel elliptico-obovata,

circa 4 cm. longa et 2 cm. lata, extra adpresse fulvo-pubescentia, intra apicem basemque versus sparse pubescentia, interiora purpurea (ex *Winit*), dorso medio fulvo-pubescentia, ungui 1.5 cm. longo dorso fulvo-pubescente suffulta. *Stamina* 2 mm. longa, connectivo truncato papilloso. *Carpella* 1.5 mm. alta, dense adpresse hirsuta.

Prachuab, 80 m., evergreen jungle, *Winit* 577A.

The species described above must be very near *M. Edwardsii* Pierre, of which species apparently no flowering material can be traced. The flower was evidently described by Pierre from material in comparatively young bud.

Orophea siamensis, *Craib* [Anonaceae-Miliuseae]; ab *O. monospermate*, *Craib*, foliis maioribus, petalis exterioribus quam sepalis pro rata multo longioribus recedit.

Arbor circa 8 m. alta (ex *Kerr*); ramuli iuvenes sparse adpresse pubescentes, angulati, mox glabri, fusco-corticati, lenticellis subconspicuis notati. *Folia* oblongo-elliptica vel oblongo-oblancoolata, apice caudato-acuminata, obtusa, basi cuneata, saepe parum inaequilateralia, 10–16.5 cm. longa, 3–5.3 cm. lata, pagina superiore glabra, inferiore pallidiora, praesertim ad costam pilis adpressis sparse instructa, nervis lateralibus utrinque circa 6 supra subconspicuis subtus prominulis, nervulis subtus subprominulis, petiolo 5 mm. longo sat valido supra canaliculato subtus transverse corrugato suffulta. *Flores* axillares, in ramulis vel foliatis vel defoliatis positi, pauci in axillo quoque, pedunculo communi perbrevis, pedunculis partialibus et pedicellis adpresse fulvo-pubescentibus, pedicellis apicem versus unibracteolatis. *Sepala* deltoideo-ovata, sub-obtusa, 1.5 mm. longa, dorso adpresse pubescentia. *Petala* exteriora 4.5 mm. longa, 4 mm. lata, subacuta, extra pilis adpressis sparse instructa, intra glabra, ciliata, interiora 1 cm. longa, medio 2.5 mm. lata. *Stamina* 6. *Carpella* dorso breviter sparse pubescentia, vix 1.5 mm. longa.

Hue Wao, c. 500 m., common in evergreen forest, *Kerr*, 5069.

Stephania brevipes, *Craib* [Menispermaceae-Cocculeae]; a *S. herbacea*, Gagnep., caulibus haud omnino glabris, foliis minoribus ad nervulos subtus papillosis, inflorescentia brevi puberula recedit.

Caules graciles, volubiles, interdum inferne radicales, iuventute sicco fusci, mox straminei vel olivaceo-straminei, sulcati, torquati, fere glabri vel apud nodos tantum puberuli vel nonnunquam omnino densius puberuli. *Folia* triangularia vel oblato-triangularia, apice obtusa vel leviter emarginata, breviter mucronata, basi late leviter emarginata vel subtruncata, lateribus rotundata, usque ad 5.7 cm. longa et 6 cm. lata, papyracea, nervis radiantibus 9–10 supra conspicuis subtus prominulis, nervis secundariis (e costa ortis) utrinque 1–3, nervulis rete gracile sub oculo armato conspicuum efficientibus, pagina superiore viridia, glabra, inferiore pallida, magis minusve glauca, ad nervulos papillosa, petiolo 3.5–6 cm. longo interdum parum

puberulo suffulta. *Inflorescentia* ♂ axillaris, circa 5 mm. longa, pedunculis conspicue puberulis, pedicellis circa 0.75 mm. longis. *Sepala* 6, circa 1–1.25 mm. longa et 0.75 mm. lata, inter se subaequalia. *Petala* 3, flabelliformia, 0.6 mm. longa, paulo latiora quam longiora. *Synandrium* 0.5 mm. altum, apice 0.5 mm. diametro.

Doi Sutep, evergreen jungle, 900 m., *Kerr* 3255.

***Stephania erecta*, Craib** [Menispermaceae-Cocculeae]; ab affini *S. Pierrei*, Diels, caulibus erectis, foliis crassioribus distinguenda.

Caules annui, sub anthesin erecti, saepissime simplices, 7–30 cm. alti, superne glauci, inferne pallidiores, annotini straminei, striati, glabri. *Folia* iuventute sicca glauca, ovata vel rotundata, apice obtusa, mucronulata, 3 cm. longa, 2.5 cm. lata, rigidiuscula, glabra, nervis circa 11 radiantibus, nervulis vix conspicuis, subtus pallidiora, marginata, petiolo ad 4 cm. longo suffulta. *Pseudumbellae* ♂ axillares vel inferiores ex axillis foliorum squamiformium ortae, 5–fere 10 mm. diametro, pedunculo communi 8–20 mm. longo suffultae, glabrae; pedunculi partiales breves; pedicelli 1.5–2 mm. longi, apice articulati. *Flores* expansi 2.5 mm. diametro. *Sepala* saepe varie et irregulariter connata, lanceolata vel ovato-lanceolata, 1.3 mm. longa, 0.8 mm. lata, saepe tridentata. *Petala* haud evoluta. *Synandrium* vix 1.25 mm. diametro, brevissime stipitatum.

Mûang Petchabun, c. 50 m., deciduous forest, *Kerr* 5689.

Lao name, Bua Kûa (ex *Kerr*).

This is probably the plant mentioued by Diels (in Engler Pflanzenr., Menispermaceae, p. 276) under *S. Pierrei*, Diels, as represented by Siam, *Teysmann*, Mekong, *Harmand*, and Cochinchina, *Pierre*.

A tuber received from Dr. Kerr is at present (July 1922) in flower in the Botanic Garden, Aberdeen.

***Stephania Kerrii*, Craib** [Menispermaceae-Cocculeae]; ab affini *S. Delavayi*, Diels, foliis papyraceis, pedunculis masculis longioribus, drupis orbicularibus haud obovoideis recedit.

Caules volubiles, graciles vel subgraciles, saepe tortuosi, glabri, sulcati, substraminei. *Folia* orbiculari-ovata vel fere orbicularia, apice obtusa, interdum obtuse acuminata, mucronata, basi rotundata vel truncata, usque ad 10 cm. longa et 9 cm. lata, papyracea, pagina utraque glabra, superiore viridia, inferiore glauca, nervis 9 radiantibus supra tenuioribus conspicuis subtus subprominulis, nervulis reticulationem subtus plus minusve conspicuam efficientibus, marginata, integra, petiolo circa 7–14 cm. longo basi incrassato glabro suffulta. *Inflorescentiae* ♂ axillares, solitariae vel 2-fasciculatae, inferiore pseudumbellam compositam pedunculo communi 3–3.5 cm. longo suffulta e radiis 3–4 constituta, superiore elongata inferiore 2–3-plo longiore e pseudumbellis racemosim dispositis constituta pedunculo communi 3–5 cm. longo suffulta, pedunculis partialibus ad 2.5 cm. longis, bracteis

parvis vel interdum infimis foliaceis; pedicelli ad 2 mm. longi, paulo infra apicem articulati. *Sepala* 3 exteriora obovato-oblongata vel obovato-oblonga, apice rotundata, 1.5 mm. longa, 3 interiora obovato-oblonga, 1.75 mm. longa, 1.25 mm. lata. *Petala* 3-4, circa 1.25 mm. longa. *Synandrium* 0.75 mm. altum, apice 0.8 mm. diametro, stipite distincto inferne incrassato suffultum. *Inflorescentia* ♀ e pseudumbella axillari vel ramulum brevem axillarem terminante pedunculo communi ad 1.3 cm. longo suffulta ad 1 cm. diametro constituta; pedicelli 1.5 mm. longi. *Ovarium* semiovoideum, glabrum; stigmata 6-partita. *Drupa* orbicularis, 7 mm. diametro; endocarpium faciebus depressum, dorso utrinque costulis circa 16 ornatum.

Chiangmai, 300 m., scrub jungle, *Kerr* 3309. Doi Sutep, 500 m., mixed jungle, *Kerr* 3275.

***Stephania oblata*, Craib** [Menispermaceae-Cocculeae]; a *S. herbacea*, Gagnep., foliis crassioribus, petalis carnosius latioribus quam longioribus, synandrio altiore, a *S. Delavayi*, Diels, inflorescentia minore magis condensata, floribus maioribus, ab ambabus foliorum nervulis rete laxius efficientibus recedit.

Caulis gracilis, glaber, sicco iuventute fuscescens, mox stramineus, sulcatus, torquatus. *Folia* oblata, apice rotundata, costa excurrente breviter apiculata, basi rotundata, subtruncata, vel emarginata, ad 4 cm. longa et 4.5 cm. lata, papyracea, glabra, subtus pallidiora, nervis radiantibus 9 supra conspicuis subtus prominulis, nervulis supra parum impressis subtus subprominulis rete laxum efficientibus, margine pallida, parum reflexa, petiolo ad 5 cm. longo circa 1 cm. supra laminae basem inserto suffulta. *Pseudumbellae* ♂ axillares, solitariae, vix 1 cm. diametro, glabrae, pedunculo communi circa 2.7 cm. longo apice parvi-bracteato suffultae, pedunculis partialibus circa 5 ad 2.5 mm. longis, pedicellis vix 2 mm. longis. *Sepala* 6 vel 8, exteriora 2 mm. longa, 1 mm. lata, interiora exterioribus paululo breviora iisque aequilata. *Petala* carnosius, flabelliformia, 1 mm. longa, 1.5 mm. lata. *Synandrium* 1 mm. altum, apice 1.5 mm. diametro.

Doi Sutep, 720 m., mixed jungle, *Kerr* 2610.

***Cyclea ciliata*, Craib** [Menispermaceae-Cocculeae]; species nova foliis peltatis pagina neutra glabris, inflorescentia ♂ paniculata axillari, sepalis connatis, calyce haud ad medium fisso, synandrio conspicue exserto distincta.

Caules herbacei, e radice perenni orti, volubiles, pilis longiusculis saepissime deflexis sat copiose tecti, striati, demum subsulcati, pallide corticati. *Folia* ovata lateve ovata, apicem versus angustata, longe mucronata, basi truncata vel leviter emarginata, 8-9 cm. longa, 5.3-7 cm. lata, papyracea, supra viridia, subtus pallidiora, subglauca, pagina superiore pilis longis sat rigidis sparse strigosa, inferiore pilis iisdem nisi minus rigidis et numerosioribus instructa, nervis radiantibus 9-11 supra conspicuis subtus prominulis, nervulis pagina utraque conspicuis, margine longe ciliata, petiolo 2.5-3.3 cm. longo 8-13 mm. supra laminae basem affixo indumento caulium suffulta. *Inflorescentia*

♂ elongato-paniculata, axillaris, ad 7.5 cm. longa et 1 cm. diametro, pedunculo communi 1.5–2.5 cm. longo suffulta, pedunculis partialibus ad 4 mm. longis, pedicellis 1–1.75 mm. longis, partibus omnibus pubescentibus vel substrigillosis. *Calyx* extra strigillosus, 1.8 mm. longus, 4-lobatus, lobis deltoideis circa 0.5 mm. longis. *Corolla* 0.6 mm. longa, apice lobulata, glabra. *Synandrium* 2 mm. altum, apice 0.5 mm. diametro.

Doi Sutep, 900 m., on low herbage in evergreen jungle, *Kerr* 3356.

Cyclea varians, *Craib* [Menispermaceae-Cocculeae]; a *C. gracillima*, Diels, caule haud glabro, petiolo longiore, a *C. Wattii*, Diels, petiolo haud glabro distinguenda.

Caules e radice perenni volubiles, pilis saepissime deflexis et crispatis hirsuti, primo pallidi, striati, mox fuscescentes, sulcati. *Folia* late ovata, ovata, vel lanceolato-ovata, apice subacuta, mucronata, basi truncata, rarius rotundata, haud rarius cordata, 5–12 cm. longa, 3.5–7.4 cm. lata, chartacea, supra mox ad costam, nervos, nervulosque parce hirsuta, subtus pallidiora, interdum subglauca, molliter pilosa, nervis radiantibus circa 11 supra conspicuis vel subprominulis subtus prominentibus, nervis secundariis (e costa ortis) utrinque 5–6, nervulis reticulationem laxam supra conspicuam subtus prominulam efficientibus, ciliata, marginata, petiolo ad 6 cm. longo 8–10 mm. supra laminae basem affixo crispatis piloso suffulta. *Inflorescentia* ♂ axillaris, anguste paniculata, e pseudumbellis sat densis constituta, interdum ad pseudumbellam unicam redacta, pedunculo communi ad 3 cm. longo cum pedunculis partialibus adpresse setuloso suffulta. *Flores* virides (ex *Kerr*), expansi 3 mm. diametro, pedicellis circa 1 mm. longis apicem versus articulatis glabris suffulti. *Sepala* 4, oblongo-ovata vel oblongo-elliptica, 1 mm. lata, glabra. *Corolla* carnosula, 0.75 mm. alta, apice lobulata, haud rarius e petalis 4 solutis margine involutis constituta. *Synandrium* corolla paululo altius. *Inflorescentia* ♀ masculae similis sed saepissime ramulis brevibus lateralibus gesta. *Carpellum* gibboso-semiovoideum, glabrum, stigmate 3-partito. *Drupa* (vix matura) suborbicularis, 4 mm. diametro.—*Cyclea* sp.n., *Craib*, Contrib. Fl. Siam, p. 10.

Mê Ta, 480 m., *Kerr* 2573 (♂). Ban Pong, 330 m., mixed jungle, *Kerr* 1940 (♀).

Capparis adunca, *Craib* [Capparidaceae-Cappareae]; species floribus axillaribus solitariis, ovario tomentoso in stylum conspicuum angustato, pedicellis post anthesin incrassatis uncinatis vel saltem curvatis distincta.

Ramuli virides, primo pilis albis brevibus tecti, cito glabri, cortice viridi mox parum brunnescente striato obtecti, lenticellis haud conspicuis. *Folia* ovata, vel late lanceolata, rarius ovato-elliptica, apice obtusa, breviter mucronulata, basi rotundata vel cuneato-rotundata, 5–7 cm. longa, 2.7–4 cm. lata, membranacea, pagina utraque cito glabra vel hic et illic pilis brevibus albis

stellatis sparse instructa, nervis lateralibus utrinque 6–8 intra marginem anastomosantibus supra subconspicuis subtus prominulis, petiolo 5–7 mm. longo indumento ramulorum supra canaliculato suffulta. *Flores* saepissime ramulis brevibus lateralibus gesti, axillares, solitarii, pedicello circa 1·3 cm. longo indumento ei ramulorum simili tecto sub anthesin recto cito post anthesin praesertim superne incrassato uncinato suffulti; alabastra pilis parvis stellatis albis plus minusve caducis instructa. *Sepala* oblonga vel obovata, intra glabra, 13 mm. longa, 8 mm. lata, interiora basi angustata, dorso medio carinata, exteriora dorso 3-carinata. *Petala* oblanceolato-obovata, 2·5 cm. longa, 11·5 mm. lata, duo approximata, basi callosa, intra pubescentia. *Stamina* numerosa, glabra, petalis subaequalia vel ea paulo superantia. *Pistillum* staminibus paulo brevius, tomentosum, gynophoro sat robusto; ovarium fusiforme, circa 3 mm. longum, stylo subaequilongum, placentis 3 multiovulatis.

Mûang Pichit, c. 50 m., straggling or climbing shrub in scrub jungle, *Kerr* 5672.

Capparis Kerrii, *Craib* [Capparidaceae-Cappareae]; species nova habitu *C. foetidae*, Blume, similis sed indumento ferrugineo, spinis brevioribus sparsioribus, petiolo paulo longiore ala angusta undulata instructo recedit.

Frutex circa 2-metralis (ex *Kerr*), partibus fere omnibus iuventute indumento brevi ferrugineo e pilis stellatis constituto dense tectis, ramulis gracilibus indumento delapso viridibus striatis. *Folia* obovato-oblancheolata, apice acuminata, acuta, basi cuneata, ad 7 cm. longa et 3·8 cm. lata, membranacea vel chartaceo-membranacea, supra indumento ferrugineo brevi iuventute oblecta, mox sparsius inaequaliter instructa, subtus indumento simili ad costam nervosque laterales dense tecta, aliter sparse instructa, nervis lateralibus utrinque 6–8 intra marginem arcuatim iunctis supra conspicuis vel leviter impressis subtus prominentibus, margine integra, parum recurva, petiolo 7–9 mm. longo indumento ferrugineo stellato oblecto supra canaliculato lamina decurrente anguste undulatim alato suffulta. *Flores* axillares, solitarii vel ad 5 superpositi, pedicellis circa 1 cm. longis suffulti; alabastra sicco viridia, mox plus minusve glabrescentia. *Sepala* oblonga vel elliptico-oblonga, apice rotundata, 5 mm. longa. *Petala* oblonga, 6 mm. longa, 2·5 mm. lata. *Gynophorum* 1·3 cm. longum, glabrum; ovarium glabrum, stylo brevi incluso vix 1·5 mm. longum, placentis 3.

Ban Pong Yêng, 750 m., *Kerr* 3568.

Capparis latifolia, *Craib* [Capparidaceae-Cappareae]; *C. crassifoliae*, Kurz, similis sed foliis maioribus subtus haud glabris, gynophoro haud glabro distinguenda.

Frutex scandens; ramuli tomentosi, grisei vel interdum ferruginei, pilis intermixtis griseis et ferrugineis diu persistentibus, striati vel mox sulcati, aculeis brevibus basi validis tomentosis rectis vel subrectis deflexis. *Folia* elliptica, obovato-elliptica

vel oblata, basi cuneata vel subacuminata, apice emarginata, mucrone indurato reflexo instructa, 5·5–10·5 cm. longa, 6–9 cm. lata, chartacea vel rigide chartacea, pagina superiore glabra vel ad costam nervosque laterales pilis paucis stellatis hic et illic instructa, inferiore pilis brevibus stellatis albis et ferrugineis instructa, nervis lateralibus utrinque 5 supra conspicuis subprominulis subtus prominentibus rectis intra marginem anastomosantibus, nervulis pagina utraque conspicuis, petiolo ad 2 cm. longo pilis iisdem stellatis tecto supra canaliculato suffulta. *Flores* axillares, seriatim dispositi. *Fructus* immaturus 1·8 cm. longus, pedicello ad 3 cm. longo indumento ei ramulorum simili tecto et gynophoro ad 4·5 cm. longo praesertim inferne pilosulo suffultus.

Mûang Lom Sak, c. 200 m., deciduous forest at edge of swampy ground, *Kerr* 5738.

Vern. Kawn Kawng Krûa.

The young fruits have stellate hairs in patches here and there. These hairs appear in many cases to be actually in situ but in others as if derived from the branches or leaves in the process of drying.

Capparis nana, *Craib* [Capparidaceae-Cappareae]; species nova parvifolia, floribus seriatim dispositis, a *C. disticha*, Kurz, eiusque affiniorebus ovario dense tomentoso, gynophoro plus minusve glabrescente distinguenda.

Suffrutex 2–3-pedalis (ex *Kerr*); ramuli divaricati, graciles, fere glabri, pallide virides, striati, aculeis recurvis basi decurrentibus apice nitido-brunneis mox glabris circa 2 mm. longis instructi. *Folia* subrhombico-ovata, apice acuminata, mucronata, basi cuneato-rotundata vel fere rotundata, 3–fere 4 cm. longa, 1·5–2·2 cm. lata, membranacea, pagina utraque sicco viridia, inferiore parum pallidiora, superiore primo sparse pilosa, cito glabrescentia, inferiore sparse pilosula, nervis lateralibus utrinque circa 6 pagina utraque subconspicuis intra marginem anastomosantibus, costa subtus prominente, petiolo gracili circa 3 mm. longo sparse pilosulo supra canaliculato suffulta. *Flores* axillares, solitarii vel ad 3, seriatim dispositi, pedicello gracili ad 1·8 cm. longo primo sparse pilosulo mox plus minusve glabrescente suffulti; alabastra ambitu oblongo-elliptica vel elliptica, viridia, albo-pilosula. *Sepala* oblongo-elliptica, apice rotundata, 4·5 mm. longa, 2·25 mm. lata, intra glabra. *Petala* oblongo-oblancheolata, apice rotundata, 6 mm. longa, 2 mm. lata, duo approximata, basi callosa, intra pubescentia, dorso densius pilosa. *Stamina* 8, glabra, filamentis circa 1·5 cm. longis, antheris 1·75 mm. longis. *Pistillum* staminibus subaequialtum, gynophoro primo plus minusve piloso cito glabrescente; ovarium circa 1 mm. altum, in stylum eo paulo brevior angustatum, cum stylo tomentosopilosum, placentis tribus pauci-ovulatis.

Mûang Petchabun, c. 100 m., often forming wide patches in bamboo jungle, *Kerr* 5723.

Capparis siamensis, Kurz, For. Fl. Br. Burma, I. p. 63.

Rathbouri, *Teysmann*, 5927. Pran, jungle, 5 m., *Marcan* 631, 637.

Specimens collected by Marcan in a locality not far from Teysmann's collecting ground show that *C. siamensis* is evidently deciduous. The plant is not glabrous, as described by Kurz, the young branchlets being densely covered with a low felt and the leaves being thinly pubescent on both sides, especially on the nerves. The fruit, on a woody gynophore 2.5 cm. long, is about 3.5 cm. long and 2 cm. diameter, apiculate, tomentose, and with 8 longitudinal rows of prominent tubercles, 4 rows being on distinct continuous ridges, the other 4 being without continuous ridges.

Capparis subhorrida, Craib [Capparidaceae-Cappareae]; a *C. horrida*, Linn. f., foliis tenuibus deciduis recedit.

Frutex scandens; ramuli saepissime ferruginei, pilis brevibus stellatis ferrugineis et griseis dense tecti, pilis diu persistentibus, laeves, mox striati, aculeis deflexis basi parum decurrentibus circa 3 mm. longis instructi. *Folia* lanceolata, ovato-lanceolata, vel oblongo-lanceolata, apice acuminata, acuta, basi late cuneata vel rotundata, 5.5–10 cm. longa, 3.2–4.2 cm. lata, membranacea, sicco utrinque viridia, supra glabra, nitentia, subtus pallidiora, pilis brevibus albis et hic et illic ferrugineis densius tecta, nervis lateralibus utrinque 5 supra conspicuis subtus prominulis intra marginem anastomosantibus, nervulis supra subconspicuis, petiolo ad 1 cm. longo supra canaliculato indumento ei ramulorum simili tecto suffulta. *Flores* axillares, seriatim dispositi. *Fructus* vix maturus, ambitu elliptico-ovatus, 2.3 cm. longus, pedicello 8–15 mm. longo indumento ramulorum et gynophoro 2.2 cm. longo hic et illic sparse pubescente suffultus, glaber.

Nakawn Tai, c. 200 m., mixed deciduous forest, *Kerr* 5826.

Vern. Sai Sū Yai (ex *Kerr*).

Capparis Winitii, Craib [Capparidaceae-Cappareae]; ab affini *C. siamense*, Kurz, spinis deficientibus, floribus minoribus, inter alia distinguenda.

Frutex vel *arbor* parva, sempervirens, ramulis primo pilis brevibus stellatis plus minusve dense tectis cito glabrescentibus cortice fuscescente striato obtectis demum omnino glabris. *Folia* lanceolata vel ovata, rarius ovato-elliptica, apice obtuse mucronulata, basi cuneata vel rotundata, saepissime cordatula, 6.5–11.5 cm. longa, 3–5.8 cm. lata, chartacea vel chartaceo-coriacea, matura glabra, subtus pallidiora, nervis lateralibus utrinque 4–7 intra marginem anastomosantibus supra conspicuis subtus prominentibus, nervulis rete pagina utraque conspicuum vel subconspicuum efficientibus, integra, petiolo circa 1 cm. longo supra canaliculato cito glabro suffulta. *Flores* in axillis foliorum novellorum solitarii, pedicellis sat robustis petiolo subaequilongis ut ramulis pubescentibus suffulti; alabastra ovoidea ellipsoidea, iuventute indumento ei ramulorum simili tecta, mox nisi ad

sepalorum margines plus minusve glabrescentia; corolla pallide viridis vel viridi-lutea, ad bases petalorum superiorum aurantiaca, demum fusco-brunnea vel purpurea (ex *Kerr* et *Winit*). *Sepala* exteriora vix 9 mm. longa, interiora 1.25 cm. longa, dorso pilis brevibus stellatis sparse instructa, plus minusve glabrescentia, intra superne marginem versus dense pilosa. *Petala* ad 2 cm. longa. *Stamina* pistillo subaequalia. *Gynophorum* praecipue superne tomentosum; ovarium dense tomentosum, circa 2 mm. altum, stylo subaequilongum, placentis 3 multiovulatis.

Muang Hawt, 225 m., *Kerr* 2938. Reheng, Mê Kor, 360 m., *Winit* 100.

Lao name, Nam Khi Let or Khi Ka Ton (ex *Winit*).

Scolopia rhinantha, *Clos*, var. ***siamensis***, *Craib* [Bixaceae-Flacourtiaceae]; var. nov. foliis basi latis, perianthio 5-mero, placentis duabus distinguenda.

Bangkok, below 5 m., marshy ground; small tree c. 4 m. high, branches with stout simple spines, *Kerr* 4292.

Polygala Kerrii, *Craib* [Polygalaceae-Polygaleae]; a *P. karensum*, *Kurz*, foliis minoribus rigidioribus, bracteis brevioribus inter alia recedit.

Frutex circa 3 m. altus (ex *Kerr*); ramuli iuventute breviter crispatis fulvo-pubescentes, mox glabri, angulati, demum teretes, cortice cinereo-brunneo obtekti, lenticellis subconspicuis. *Folia* lanceolata vel oblanceolata, apice longius acuminata, acuta, basi cuneata, 4-8.5 cm. longa, 1.1-2.2 cm. lata, chartacea, supra ad costam nervosque laterales puberula, aliter hic et illic puberula, subtus pallidiora, pilis longioribus saepissime crispatis eodem modo distributis instructa, nervis lateralibus utrinque 7-9 intra marginem anastomosantibus supra subconspicuis subtus prominentibus, nervulis paucis subtus conspicuis vel pagina utraque subconspicuis tantum, margine integra, ciliolata, petiolo ad 1 cm. longo pilis iis ramulorum similibus instructo suffulta. *Racemi* et oppositifolii et ramulos laterales terminantes, ad 7 cm. longi, pedunculo communi brevi vel ad 8 mm. longo cum rhachi ut ramulis pubescente suffulti; pedicelli circa 4 mm. longi, puberuli; bracteae deciduae, 1.75 mm. longae, cuspidato-acuminatae, ciliatae. *Sepalum* superius cucullatum, 6 mm. longum, aliis fere duplo longius, omnibus ciliatis; alae 1.3 cm. longae, densius ciliolatae. *Corolla* 1.5 cm. longa, carinae crista lobulata. *Ovarium* 1.75 mm. altum, compressum, ciliatum, stylo circa 1.4 cm. longo.

Doi Intanon, c. 2100 m., open ridge, flowers bright yellow, *Kerr* 5326.

Xanthophyllum obliquum, *Craib* [Polygalaceae-Xanthophylleae]; ab affini *X. excelso*, *Blume*, foliorum nervis lateralibus obliquis haud patulis, floribus minoribus recedit.

Arbor circa 20 m. alta (ex *Kerr*); ramuli primo minute sparse puberuli, cito glabri, iuventute angulati, lutescentes. *Folia* oblonga vel oblongo-oblanceolata, apice acuminata

vel caudato-acuminata, obtusa, basi cuneata, interdum sub-acuminata, 5–10 cm. longa, 2–3.5 cm. lata, coriacea, sicco lutescentia, subtus pallidiora, pagina utraque glabra, nervis lateralibus utrinque 6–8 supra conspicuis vix prominulis subtus prominentibus sat obliquis saepissime parum arcuatis rarius subrectis, nervulis subtus prominulis, margine integra, sicco undulata, petiolo circa 6 mm. longo supra canaliculato suffulta. *Paniculae* et axillares et terminales, foliis paulo breviores vel iis parum longiores, rhachi et ramulis complanatis cum pedicellis circa 3.5–5 mm. longis aureo-puberulis. *Sepala* ciliolata, utrinque breviter adpresse pubescentia, exteriora ovato-deltaeidea, 2 mm. longa, 1.75 mm. lata, crassa. *Corolla* 4.5 mm. longa, carina petalis aliis paulo brevior. *Filamenta* petalis adnata, haud inter alia connata, inferne ampliata. *Discus* crenulatus. *Ovarium* et gynophorum glabra, ovulis circa 8, stylo pubescente 2 mm. longo.

Dan Sai, Kao Keo Kang, c. 1100 m., evergreen forest, *Kerr* 5766.

var. viride, *Craib*, foliis minus coriaceis sicco viridibus a typo recedit.

Dan Sai, Kao Keo Kang, c. 1300 m., evergreen forest, *Kerr* 5766A.

Xanthophyllum siamense*, *Craib [Polygalaceae-Xanthophylleae]; ab *X. affine*, Korth., foliis maioribus tenuioribus, floribus minoribus distinguendum.

Arbor circa 12-metralis (ex *Kerr*), ramulis sparse puberulis substramineis mox brunnescentibus angulatis. *Folia* lanceolata vel oblongo-lanceolata, apice acuminata, obtusa, basi cuneata vel subacuminata, 15–19.5 cm. longa, 3.6–5.8 cm. lata, coriacea, viridia vel lutescente-viridia, subtus pallidiora, supra glabra, subtus ad costam sparse puberula, nervis lateralibus utrinque 6–8 intra marginem anastomosantibus supra subconspicuis vel fere conspicuis subtus prominentibus nervulis subtus prominulis margine integra, sicco undulata, parum recurva, pallida, petiolo 1 cm. longo sparse puberulo mox glabro supra canaliculato suffulta. *Inflorescentia* et axillaris et terminalis, semper ramosa, ad 15 cm. longa, ramulis lateralibus terminales saepe aequantibus, densius aureo-puberula, pedunculis compressis, pedunculo communi ad 2.5 cm. longo, floribus albis (ex *Kerr*) fasciculis saepe suboppositis pseudoveriticillatis pedicellis 3–5 mm. longis suffultis. *Sepala* exteriora ovata vel elliptico-ovata, apice obtusa rotundatave, 2.75–3.5 mm. longa, 1.8–2.25 mm. lata, utrinque adpresse pubescentia, interiora obovato-elliptica vel elliptica, 3.5 mm. longa, 2.75 mm. lata, extra adpresse pubescentia, intra sparse adpresse pubescentia, omnia ciliolata. *Petala* 6–7 mm. longa, carina aliis paulo brevior dorso pilosa. *Filamenta* petalis adnata, haud connata, inferne ampliata, intra ad latitudinem maximam pubescentia, antheris pilis albis divergentibus instructis.

Ovarium 1 mm. altum, glabrum, ovulis circa 8, stylo pubescente circa 4·5 mm. longo, gynophoro distincto crassiusculo glabro.

Ban Kawng Hě, 960 m., evergreen jungle, *Kerr* 3583.

Indigofera oblonga, *Craib* in *Kew Bull.*, 1914, p. 6, descr. ampl.

Racemi axillares, pedunculo communi petiolo brevioribus indumento ei ramulorum simili tecto suffulti; bracteae filiformes, alabastra conspicue superantes; alabastra adpresse brunneo-hirsuta, paulo ante anthesin apice acuminata; pedicelli paulo ultra 1 mm. longi. *Calyx* antice 3·5 mm. longus, extra griseo-hirsutus. *Vexillum* oblongum, 8 mm. (stipite brevi lato incluso) longum, 5·5 mm. latum; carina et alae vexillo paulo breviores.

Doi Pāhom Pok, Mg. Fāng, c. 1100 m., open evergreen forest, fls. pinkish, *Kerr* 5171.

Mastixia euonymoides, *Prairie* in *Journ. As. Soc. Beng.*, LXVII. p. 295, descr. ampl.

Pedicelli 2 mm. longi; receptaculum pedicello paulo longius. *Calyx* 1 mm. longus, truncatus. *Petala* 4, sat crassa, 4·5 mm. longa et 3 mm. lata. *Stamina* 8, filamentis 3 mm. longis, antheris vix 1·5 mm. longis. *Discus* conspicuus, lobatus. *Stylus* crassus, superne gradatim angustatus, 2 mm. supra discum productus, stigmate bilobo.

Doi Sutep, 1670 mm., evergreen jungle, *Kerr* 3237—tree c. 30 m. high.

Described originally from fruiting material (Kachin, *King's Collector*!) this species was treated as incompletely known in Wangerin's monograph (in Engler Pflanzenr.). Kerr's material shows that *M. euonymoides* belongs to the subgenus *Tetramastixia*. In this group *M. rostrata* Blume alone has strictly opposite leaves and a truncate calyx. *M. rostrata* (Java, *Koorders* 2309 α ! 25634 β !) can be readily distinguished by the markedly caudate-acuminate leaves.

Brandis in *Indian Forester*, 1907, p. 57, t. 7, refers a plant collected in British Bhutan by Haines (No. 916!) to *M. euonymoides*. This plant has a lobed calyx, 5-merous flowers (ex Haines' description), and moreover has alternate leaves whereas *M. euonymoides* has a truncate calyx, 4-merous flowers, and strictly opposite leaves.

Paederia linearis, *Hook. f.*, *Fl. Brit. Ind.*, III., p. 197.

Petchaburi, 50 m., *Marcan* 521, 640.

The type material of this species (Tenasserim, *Griffith*, K.D., 2911!) was not sufficiently complete to determine the relationship of the plant. Sir Joseph Hooker placed *P. linearis* provisionally near *P. tomentosa*. Marcan's specimens have mature fruit and show that the affinities of the species are with the first group not with the second as arranged in the *Flora of British India*. The fruit is compressed, broadly elliptic about 7 mm. long and 5 mm. broad; the pyrenes are black, with a distinct straw-coloured wing.

***Primula siamensis*, Craib** [Primulaceae]; *P. nutanti*, Delavay ex Franchet, affinis, sed calycis lobis longioribus angustioribus apice haud acuminato-rotundatis differt.

Folia oblanceolata vel oblongo-oblanceolata, apice rotundata vel obtusa, basi in petiolum angustata, ad 7.5 cm. longa et 2.4 cm. lata, membranacea, efarinosa, supra tenuiter pilosa, subtus ad costam, nervos, nervulosque longius et densius pilosa, nervis lateralibus utrinque circa 9 bene intra marginem ramosis cum ramulis in hydathodos sat longos excurrentibus subtus conspicuis margine breviter densius ciliata, petiolo ad 3.5 cm. longo alato suffulta. *Scapus* solitarius, inflorescentiam paucifloram primo capituliformem mox breviter spicatum gerens, pilis brevibus farini-potentibus tectus, apice albo-farinosus; bracteae deciduae, oblongo-lanceolatae vel lanceolatae, calycem vix aequantes, sparse farinosae vel marginem versus tantum albo-farinosae. *Calyx* extra densius albo-farinosus, 6.5 mm. longus, lobis ovatis vel oblongo-ovatis acutiusculis 2.5 mm. longis. *Corollae* violaceae (ex Kerr) tubus (in flore brevistylis) 1.2 cm. longus, limbus 1.3 cm. longus, lobi circa 9.5 mm. longi, apice irregulariter dentati. *Antherae* bene inclusae, circa 2.75 mm. longae.

Doi Chieng Dao, in crevices of limestone rocks, c. 1700–2000 m., Kerr 5582.

***Androsace similis*, Craib** [Primulaceae]; species nova ad sectionem *Pseudoprimulam*, Pax, pertinens, ab *A. axillari*, Franchet, cui maxime affinis, indumento densiore distinguenda.

Herba estolonifera. *Folia* orbiculari-reniformia, ad 1.7 cm. diametro, chartacea vel subrigide chartacea, pagina utraque sparse hirsuto-pilosa, subtus parum pallidiora, nervis vix conspicuis, margine lobulata, lobulis pauci-dentatis vel subintegris, petiolo 1.7–3 cm. longo pilis divergentibus sat copiose tecto suffulta. *Scapi* 6–21 cm. longi, inflorescentias saepius 3 rarius 2 vel 4 superpositas bracteatas et praeterea foliiferas, foliis 2 vel 3 basalibus nisi paulo minoribus et brevius petiolatis similibus, gerentes, anguste sulcati, hirsuto-pilosi, pilis plus minusve deflexis in sulcis densissimis mox cinereis; pedicelli ad 2 cm. longi, superne densius hirsuto-pilosi, pilis deflexis. *Calyx* 3.5 mm. longus, pilis albis divergentibus sat rigidis extra instructus, lobis 1.75 mm. longis obtusis. *Corollae* albae (ex Kerr) tubus calyce paulo longior, lobis obovato-cuneatis emarginatis circa 2.75 mm. longis et latis. *Antherae* 0.75 mm. longae, filamentis brevibus.

Doi Chieng Dao, c. 2100 m., open grassy ground, Kerr 5588.

***Lysimachia Smithiana*, Craib** [Primulaceae]; a *L. cephalantha*, Knuth, cui affinis, foliis minoribus, floribus paucioribus recedit.

Herba basi lignosa, caule pauci-ramoso, ramis erectis vel decumbentibus, pilis crispatis brevibus primo dense mox sparsius induto. *Folia* opposita, late ovata, ovato-lanceolata, vel rarius oblongo-elliptica, apice mucronata, basi cuneata vel subtruncata, 1–2 cm. longa, 0.7–1.6 cm. lata, chartacea, supra pilis sat rigidis

primo parce instructa, mox glabra, subtus pallidiora, iuventute praecipue ad costam breviter hirsuta, demum fere glabra, nervis lateralibus utrinque 3 pagina inferiore subconspicuis, integra, petiolo brevi vel ad 6 mm. longo supra canaliculato suffulta. *Inflorescentia* terminalis, e floribus paucis (saepissime 2–3) constituta. *Calyx* fere ad basem partitus, 6 mm. longus, segmentis lanceolatis acutiusculis 1.5 mm. latis dorso sparse hirsutis. *Corolla* 6.5 mm. longa, fere ad basem partita, segmentis ovatis vel elliptico-ovatis 4 mm. latis dorso rubro-glandulosis. *Filamenta* circa 2 mm. longa, antheris fere 1.5 mm. longis apiculatis. *Ovarium* 1 mm. altum, superne pilis erectis rigidiusculis instructum; stylus 4 mm. longus.

Doi Pāhom Pok, Mg. Fāng, open grassy jungle, c. 1600 m., *Kerr* 5186.

Symplocos Rajaniana, *Craib* [Symplocaceae]; speciebus zeylanicis maxime affinis, ramulis iuventute dense villosis, foliis primo supra nisi ad costam glabris subtus dense molliter adpresse pubescentibus distincta.

Arbor circa 8 m. alta (ex *Kerr*); ramuli hornotini dense villosi, annotini tomentosi, demum glabrescentes, cortice brunneo vel cinereo-brunneo irregulariter striato obtecti, lenticellis haud conspicuis. *Folia* lanceolata, apice acuminata, acuta, basi cuneata vel late cuneata, ad 6 cm. longa et 2.5 cm. lata, supra iuvenilia ad costam longius dense albo-pubescentia, aliter glabra, matura ad costam puberula, subtus primo dense molliter adpresse subfulvo-pubescentia, mox sparse sed praesertim ad costam nervosque pubescentia, costa supra impressa subtus prominente, nervis lateralibus utrinque 8 intra marginem amastomosantibus supra conspicuis subtus prominentibus, nervulis subtus prominulis, margine argute denticulata, mox conspicue recurva, petiolo circa 5 mm. longo indumento ramulorum suffulta. *Spicae* e ramulis annotinis cum foliis novellis ortae pedunculo communi brevi incluso circa 1.5 cm. longae, fulvo-pubescentes. *Receptaculum* 1.5 mm. altum, adpresse pubescens. *Sepala* oblonga vel oblongo-obovata, apice obtusa, incurva, vix 2 mm. longa et 1.5 mm. lata, extra adpresse pubescentia, intra glabra. *Corolla* 9 mm. diametro, segmentis ellipticis vel oblongo-ellipticis ad 2 mm. latis. *Filamenta* ad 5 mm. longa, gracilia, glabra, antheris parvis. *Discus* conspicuus, 5-angularis, hirsutus. (see p. 255.)

Doi Sutep, evergreen jungle, c. 1600 m., *Kerr* 4684.

Rivea Clarkeana, *Craib* [Convolvulaceae-Convolvuleae]; ab affini *R. hypocrateriformi*, Choisy, sepalis longioribus fructescentibus angustioribus recedit.

Planta perennis; caules volubiles, fistulosi, iuventute sericei. demum sparse breviter adpresse pubescentes, brunneo-corticati. *Folia* oblata, apice retusa, saepissime apiculata, basi late cordata, ad 16 cm. longa et 21 cm. lata, chartacea vel rigide chartacea, supra glabra, subtus pallidiora, iuventute sericea, demum ad costam nervosque dense adpresse albo-pubescentia, aliter sparse adpresse

pubescentia, nervis supra conspicuis subtus prominentibus, fere e basi 7-nervia, nervis secundariis (e costa ortis) utrinque 3 omnibus intra marginem anastomosantibus, nervis transversis pagina utraque conspicuis, integra, petiolo ad 13 cm. longo apice biglanduloso indumento ei caulium simili tecto suffulta. *Cymae* axillares et terminales, 3–5-florae, pedunculo communi ad 7 cm. longo suffultae, pedunculis partialibus circa 5–7 mm. longis, pedicellis terminalibus fere 1 cm. longis, omnibus sericeis; bracteae et bracteolae deciduae. *Calyx* 1.4 cm. longus, partibus exterioribus sericeus. *Corolla* in alabastro adpresse albo-pubescent, expansa 8 cm. longa, apice 6.5 cm. diametro tubo circa 4.5 cm. longo. *Fructus* operculatus, brunneus, nitidus, magis minusve globosus, paulo ultra 1 cm. diametro, sepalis duriusculis patulis vel reflexis persistentibus.—*R. ornata*, Choisy, var. *Griffithii*, C. B. Clarke, pro parte?

Chiangmai, 300 m., cultivated from seeds collected in deciduous jungle near Lampang, *Kerr* 3383.

***Glossocarya siamensis*, Craib** [Verbenaceae-Caryopterideae]; a *G. molli*, Benth., partibus omnibus minus pubescentibus recedit.

Ramuli iuventute breviter subdense crispatis pubescentes, demum glabri, pallide brunneo-corticati, conspicue striati. *Folia* ovata vel oblonga, apice breviter acuminata, basi cordata lateve cordata, ad 9 cm. longa et 5.5 cm. lata, chartacea, pagina utraque sed inferiore sparsius ad costam nervosque puberula, subtus pallidiora, nervis lateralibus utrinque 4–5 intra marginem arcuatim iunctis supra conspicuis subtus prominulis, integra, petiolo 6–10 mm. longo supra canaliculato suffulta. *Corymbi* 3–7 cm. diametro, et terminales et in axillis superioribus positi et ibi vel pedunculo nudo suffulti vel ramulos breves terminantes, foliis subaequilongi vel iis paulo longiores; pedunculi partiales ad 2.5 cm. longi, folia parva basem versus interdum gerentes; pedicelli breves; pedunculi et pedicelli densius breviter pubescentes. *Calyx* obpyramidali-cupularis, 3 mm. longus, apice denticulatus, extra puberulus, distincte nervosus. *Corolla* non visa. *Fructus* circa 8 mm. longus et 2.5 mm. diametro, et puberulus et pilis longioribus sparsius instructus.

Bankgok, under 5 m., on bushes along canal, *Kerr* 4502.

***Hymenopyramis cana*, Craib** [Verbenaceae-Caryopterideae]; ab *H. brachiata*, Wall., foliis subtus canis recedit.

Frutex; ramuli primo adpresse plus minusve crispatis pubescentes, quadrangulares, 4-sulcati, mox puberuli, cinereo-brunneo-corticati, lenticellis longitudinaliter elongatis plus minusve lineatim dispositis. *Folia* elliptico-ovata, ovata, rarius lanceolata vel obovata, apice acuminata, acuta, basi cuneata vel rotundato-cuneata, ad 9 cm. longa et 5.2 cm. lata, rigide chartacea vel subcoriacea, supra sicco fusciscentia, ad costam puberula, subtus cana, nervis lateralibus utrinque 5–6 cum costa supra impressis subtus prominentibus, nervis transversis supra leviter impressis subtus prominulis, integra, petiolo 6–10 mm.

longo pubescente suffulta. *Inflorescentia* generis. *Flores* adhuc ignoti. *Calyx* frutescens inflatus, ei *H. brachiatae*, Wall., similis, circa 1 cm. longus; fructus 4 mm. longus, hirsutus et glandulosus.

Mê Ping Rapids, Kêng Soi, on rocks, c. 400 m., *Kerr* 4637.

XXXVI.—FRUIT CULTURE IN FLORIDA.

Fruit-growing is a subject of importance in tropical countries, not only from the point of supplying markets for local consumption, but also in the hope of establishing an export trade to markets in temperate and more densely populated countries. The accompanying résumé of a paper by DR. J. C. TH. UPHOF, in which he gives his experiences of fruit-growing in tropical and sub-tropical Florida, should be of interest to those similarly engaged in other tropical countries.

Fruit-growing in Florida has become an important industry during recent years, and has been developed through the introduction of modern systems of orchard management, the use of machinery, the latest methods in combating insect pests and plant diseases, and in organising a sound system of marketing. These results have been largely possible through the enterprise of American and European financiers, the work of the United States Agricultural Experiment Stations and the Department of Agriculture, and the lessons learnt from the study of similar industries in the neighbouring State of California.

Oranges, grape fruit, tangerines and pecans are already on the markets as crops of first importance, whilst the cultivation of avocados, mangos, and other tropical fruits is being prosecuted with energy. It is hoped that the pineapple industry, which during the last eight years has steadily declined, will also be revived.

Citrus Fruits.

Nurseries.—Oranges are budded on to sour orange or grape fruit stock when it is three to four years old. Satsuma oranges are generally budded on to *Citrus trifoliata*, as this stock can stand the cold better in the northern part of Florida.

Seeds of the stock are sown in nurseries in December and January, that of *Citrus trifoliata* in September and October. Sowings are made in rows 2 ft. apart, and the seedlings transplanted when one year old to rows 4 ft. apart, where for one or two years they remain to get established. They are then budded, wax cloth being used to fasten the bud, and, provided the bark easily separates from the stem, the operation may be carried out at any time of the year. In the spring seedlings are topped, but the shoot from the introduced bud is staked if necessary and only pinched back when it is some 30 in. long.

Planting.—The land is first cleared, broken, and prepared, and the young trees planted out in December and February