MISCELLANEOUS NOTES ON LORANTHACEAE 9—15.

(Nrs. 1—8 in Recueil Trav. Bot. Néerl. 31, p. 223—236 and 751—760, 1934)

by

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With 2 figures.

9. Amylotheca micranthes Dans., n. sp.

Ramulus c. 2 mm crassus, apice paulum incrassatus, ad 5 mm dilatatus, 2 folia et 2 inflorescentias ferens, superficie tenuiter ferrugineo furfuraceus. Folia opposita; petiolus ut costae pars basalis ferrugineo furfuraceus, c. 8 mm longus, basi tereti c. 1.5 mm crassus, laminam versus supra applanatus; lamina oblonga, 6.5—7 cm longa, 3 cm lata, sub basi rotundata abrupte in petiolum contracta, apice rotundata, faciebus vix diversis, costa basin versus facie inferiore paulo distinctiore quam facie superiore, ceterum utrinque opaca, costa nervisque crassioribus paulum prominentibus distinctis, venis indistinctis sed visibilibus. Inflorescentia racemus triadum decussatarum floribus omnibus sessilibus; axis 3—3.5 cm longus, teres, nodis paulum applanatis, a basi c. 1 mm crassa apicem versus ad c. 0.5 mm attenuatus, in c. 6 mm inferioribus nudus, ceterum 6—7 paria triadum decussata ferens; pedicelli triadum inferiorum c. 1 mm longi, superiorum gradatim ad 0.5 mm decrescentes, 0.75—0.5 mm crassi, teretes; bracteae bracteolaeque suborbiculares, 1—1.25 mm longae, rotundatae vel breviter acuminatae. Calycis tubus subcylindricus, 2—2.5 mm longus, 1 mm latus, limbus erectus 0.5—0.75 mm longus, margine plerumque irregulariter laceratus et patens. Corolla statu alabastri adulti 6—7 mm longa, subcylindrica, in 2 mm superioribus paulum incrassata, apice obtusa, postea usque ad basin divisa in petala 6 sublinearia, 7—8 mm longa, c. 0.4 mm lata, parte superiore c. 2 mm longa reflexa paulo latiore apice obtusiuscula crassiuscula. Filamenti pars libera 0.25—0.5 mm longa; anthera c. 1.25 mm longa, acutiuscula. Stylus 6—7 mm longus, 6-angulus, a basi ad apicem paulum attenuatus; stigma styli apice paulo crassius, rotundatum. Cetera ignota.

Island Biak (north of New Guinea), near Bosnèk, on the coast, on coral limestone covered with terra rossa, Sept. 2, 1915,

FEUILLETAU DE BRUYN 369 (B), with the remark „shrub 3 m high, with a stem 10 cm in diameter, flower light-green", bearing, at least partly, on the host tree.

Description after a single twig extremity bearing 2 leaves and 2 complete flowering inflorescens, found by VALETON among *Rubiaceae*. It is strikingly different from all *Amylotheca* species known, by extremely small flowers, and approaching in this respect only the Philippine *A. tenuis* and *A. apodotrias* DANSER [Philipp. Journ. Sc., 58, 1 (1935) p. 9 et 8] with corollas respectively 13 and 11 mm long.

10. New delimitation proposed for some genera of Elytranthinae.

The examination of some *Elytranthe* species of the Asiatic continent convinced me of the necessity to alter the limits of *Elytranthe* as accepted by me up to the present (Verh. Kon. Akad. Wetensch., Amsterd., afd. Natuurk., sect. 2, 29, 6, p. 4, 50). In this genus I distinguished (l. c. p. 15—16) 3 subgenera that perhaps deserved generic distinction, viz. *Coeloma, Pseudocephala,* and *Blumella,* and in *Lepidaria* (ibidem) 2 subgenera, viz. *Strobilaria* and *Lepidella.* Now *Blumella* proved to be only superficially differing, and therefore not to be separable, from *Macrosolen,* and *Pseudocephala* not from *Lepidaria* subg. *Strobilaria,* so that for *Elytranthe* there only remain the species formerly put into the subg. *Coeloma.* Moreover these so-called species of *Elytranthe* all proved to be synonymous, in spite of slight differences, and the genus *Elytranthe* thus becomes a monotypic genus. In transferring *Elytranthe arnottiana* to *Lepidaria* I prefer to divide, at the same occasion, the latter genus into *Lepidaria, sensu strictiore,* and *Lepidella.*

The following scheme may elucidate this alteration.

Old names.	Subgenera.	New names.
Macrosolen		*Macrosolen*
Elytranthe	*Blumella*	
	Coeloma	*Elytranthe*
	Pseudocephala	
Lepidaria	*Strobilaria*	*Lepidaria*
	Lepidella	*Lepidella*

The system of the *Elytranthinae,* now necessary, is given in the following scheme, including also the alterations made necessary by

the distinction of the genus *Thaumasianthes*, and the correction of *Cyne* and *Lepeostegeres* (Rec. trav. bot. néerl., 30, p. 464—474).

3a Flowers in triads, these triads united into larger inflorescences.
4a Inflorescence a raceme, a spike, or an umbel of triads.
5a Anthers basifixed . . . . . **Amylotheca**
5b Anthers dorsifixed (immobile) . . . . . **Loxanthera**
4b Inflorescence a head-like umbel of triads with an involucre . . **Lampas**
4c Inflorescence a simple head.
5a Head with an involucre of decussate bracts . . . . **Lepeostegeres**
5b Head with cucullate involucre of one piece . . . . . **Cyne**
4d Inflorescence a composite head, all bracts of which bear 3 flowers or the interior ones less, all flowers with one bract and 2 bracteoles **Thaumasianthes**
3b Flowers not in triads, single in the inflorescences.
4a Corolla choripetalous . . . . . **Peraxilla**
4b Corolla sympetalous.
5a Each flower with 3 bracts (1 bract and 2 bracteoles).
6a Inflorescence a raceme, a spike, or an umbel.
7a Corolla without thin-walled, enlarged part at the base.
8a Flower 6-merous . . . . . **Macrosolen**
8b Flower 4-merous . . . . . **Trilepidea**
7b Corolla at the base with a thin-walled, enlarged part . **Elytranthe**
6b Inflorescence a head-like, condensed, sessile spike, with imbricate bracts, but with prolongated axis, usually more than 4-flowered . . . **Lepidaria**
6c Inflorescence a real head, with flat receptacle, 4- or less-flowered . **Lepidella**
5b Each flower with a single bract.
6a Flowers in racemes. Bracts deciduous . . . . . **Alepis**
6b Flowers in umbels. Bracts persistent . . . . . **Lysiana**

The nomenclatorial consequences of these alterations of the genus-limits are the following.

The species placed hitherto in *Macrosolen* remain in this genus. To these are added 3 species, formerly placed into *Elytranthe* and there making out the section *Blumella*. They are:

Macrosolen capitellatus (Wight & Arn.) Dans., nov. comb.; *Loranthus capitellatus* Wight & Arn., Prodr. Fl. Pen. Ind. Or., p. 382 (1834) &c.

This can hardly be taken apart from the following as a species.

Macrosolen parasiticus (Linn.) Dans., nov. comb.; *Lonicera parasitica* Linn., Sp. pl., ed. 1, 1, p. 175 (1753) &c. (cfr. l. c. p. 52), also: *Tolypanthus loniceroides* Ettingsh., Denkschr. Akad. Wissensch. Wien, Math.-Naturwiss. Cl., 32, p. 53 (1872).

Macrosolen psilanthus (Hook.f.) Dans., nov. comb.; *Loranthus psilanthus* Hook.f., Fl. Br. Ind., 5, p. 222 (1886) &c.

In the genus *Elytranthe* there remains only one species, viz.:

Elytranthe albida (Bl.) Blume, for the synonyms of which cfr.

l. c. p. 52, to which also the synonyms of *E. Colletii* (l. c. p. 51), *E. dranensis* (l. c. p. 51), *E. Henryi* (l. c. p. 51), and *E. Petelotii* (l. c. p. 52) must be added.

In the genus *Lepidaria* we keep *L. bicarinata* VAN TIEGHEM, *L. oviceps* DANS., and *L. pulchella* DANS., whereas the following species must be transferred to it:

Lepidaria arnottiana (KORTH.) DANS., nov. comb.; *Loranthus arnottianus* KORTH., Verh. Batav. Genootsch., 17, p. 284 (1839) &c. (cfr. l. c. p. 50).

Into the genus *Lepidella* must enter the following species, kept by me in *Lepidaria* up to the present.

Lepidella biflora (VAN TIEGH.) DANS., nov. comb.; *Lepidaria biflora* VAN TIEGH., Bull. Soc. Bot. Fr., 42, p. 441 (1895) &c. (cfr. l. c. p. 63).

Lepidella Forbesii (KING) DANS., nov. comb.; *Loranthus Forbesii* KING, Journ. As. Soc. Beng., 65, 2, p. 100 (1887) &c. (cfr. l. c. p. 63).

Lepidella Kingii (KING) DANS., nov. comb.; *Loranthus Kingii* KING, Journ. As. Soc. Beng., 65, 2, p. 99 (1887) &c. (cfr. l. c. p. 64).

Lepidella malaiana (DANS.) DANS., nov. comb.; *Lepidaria malaiana* DANS., Bull. Jard. Bot. Buitenz., ser. 3, 11, p. 314 (1931) (cfr. l. c. p. 64).

Lepidella quadriflora (VAN TIEGH.) DANS., nov. comb.; *Lepidaria quadriflora* VAN TIEGH., Bull. Soc. Bot. Fr., 42, p. 441 (1895) &c. (cfr. l. c. p. 64).

Lepidella sabaënsis (STAPF) VAN TIEGH., &c. (cfr. l. c. p. 64).

Lepidella tetrantha (MERR.) DANS., nov. comb.; *Loranthus tetranthus* MERR., Phil. Journ. Sc., bot., 7, p. 79 (1912) &c. (cfr. l. c. p. 64).

Lepidella vaginata (VAN TIEGH.) VAN TIEGH., &c. (cfr. l. c. p. 64).

Lepidella Williamsii (MERR.) DANS., nov. comb.; *Loranthus Williamsii* MERR., Phil. Journ. Sc., bot., 4, p. 148 (1909) &c. (cfr. l. c. p. 64).

11. The Loranthaceae of Dr. Kaudern's Celebes Expedition.

Through the courtesy of the Direction of the State Herbarium at Leiden, I had the opportunity to revise a collection of Loranthaceae, collected by Dr. KAUDERN in Celebes, very small but so remarkable, that it seems to deserve a short publication. The 5 numbers it contains belong to as many species, of which one seems to be new to science, whereas one is very rare up to the present, and 2 are new for Celebes.

Macrosolen coriaceus DANSER, n. sp. — Omnis glabra. Stolonibus longis haustoriis crassis oblongis plantae nutrici affixa. Rami ramulique

teretes, internodiis foliiferis 2.5—5 mm crassis, nodis incrassatis applanatis ad duplo latioribus. Folia opposita vel subopposita vel etiam sparsa; petiolus basi subteres, laminam versus supra applanatus semiteres, 3—10 mm longus, 1.5—2.5 mm crassus; lamina ovata vel subelliptica, 6—12 cm longa, 2.5—7 cm lata, basi rotundata vel subcuneata, apice obtusa, crasse coriacea, penninervis nervis lateralibus incurvis, facie superiore lucidula nervis paulum prominentibus, facie inferiore opaca costa valde prominente nervis lateralibus subdistinctis. Inflorescentiae gregatim in axillis foliorum et numerosiores in axillis defoliatis, racemi paribus florum 2 vel 3 congestis; pedunculus ad 6 mm longus 1.5 mm crassus, apice dilatatus; axis florifer brevissimus; pedicelli 0.5—1.5 mm longi; bracteae bracteolaeque ovato-triangulares, ad 1 mm longae, obtusae vel subacutae. Calyx cylindraceus, 2.5—3 mm longus, 1.25—1.5 mm latus, limbo brevi integro erecto; corolla statu alabastri adulti ad 12 mm longa, in dimidia parte inferiore inflata, paulum sub medio alis angustis 6, parte dimida superiore in clavam obtusissimam ad 2 mm crassam 6-carinatam incrassata, aperta obscure rubra. Stylus c. 0.75 mm supra basin articulatus, rostrum breve 6-angulum pyramidatum in fructu relinquens. Flos apertus et fructus ignoti.

Island Banggai, Febr. 1920, W. KAUDERN 507 (L), parasite upon a pompelmoose tree, flowers dark red.

Dendrophthoë pauciflora DANS., in Bull. Jard. Bot. Buitenz., ser. 3, 11, p. 417, ic. 21, l-n (1931).

East Celebes, Loewoek, on limestone rocks near the sea-shore, Jan. 1920, W. KAUDERN 433 (L) small tree.

This species was described by me after rather incomplete materials, collected by RIEDEL and FORSTEN near Gorontalo and Kotaboena, and not bearing open flowers. The present materials, from Loewoek, though consisting of only few twigs, bear open flowers and so afford a welcome completion of the description. To the original description may be added the following: Corolla aperta 13—15 mm longa, in 0.4 partibus inferioribus inflata ad 3.5 mm lata, 5-fida, tubo c. 4.5 mm longo, laciniis parte inferiore anguste triangulari, superiore anguste spathulata, apice acutiusculo crassiusculo. Stamina filamento c. 2.5 mm longo, anthera c. 2.5 mm longa obtusa. The specimens collected by KAUDERN moreover are entirely glabrous and bear young inflorescences that usually are 2-flowered, even the very young ones in the axils of the youngest leaves.

These specimens, like those already known before, resemble *Dendrophthoë pentandra* (L.) MIQ. by the appearance of the open flowers, but are strikingly different from all *Dendrophthoë* species known, by

the angular twigs, the peculiar shape and nervation of the leaves, and the conical fruit that is warty when well-developed.

Scurrula ferruginea (JACK) DANS., cfr. Bull. Jard. Bot. Buitenz., ser. 3, 11, p. 432 (1931).

East Celebes, Pinapoean, 600 m alt., on grass land where before stood tall forest, Dec. 1919, T. KAUDERN 439 (L) tree.

This species is new for Celebes; it was not collected, before, more eastward than Borneo.

Scurrula parasitica LINN., cfr. Bull. Jard. Bot. Buitenz., ser. 3, 11, p. 434 (1931) sub *Sc. fusca.*

Island Banggai, Febr. 1920, W. KAUDERN 509 (L) parasite on a pompelmoose tree.

Ginalloa arnottiana KORTH.; cfr. Bull. Jard. Bot. Buitenz., ser. 3, 11, p. 449 (1931).

Island Banggai, Febr. 1920, W. KAUDERN 508 (L) parasite on a pompelmoose tree.

New for Celebes proper, though known from Karakélang and Salajar.

12. New Clemens-numbers from Mt. Kinabalu, Borneo.

Lepeostegeres centiflorus (STAPF) VAN TIEGHEM — *31995*, 10 III 1933, Penibukan, W. Canon, 4000 ft, „flower pink"; *33785*, 29 VI 1933, Colombon River, 7000 ft, „red bracts, flower tube pale yellow-green, anthers blood-red, tips cells yellow, fruit red".

Macrosolen floridus DANSER — *30993*, 16 I 1933, Penibukan, 4—5000 ft, near Table Rock, N. Ridge-top, mossy forest, „inflor. pink, frt. yellow"; *32517*, 5 IV 1933, Marai Parai spur, 5—6000 ft, „fruit light orange".

Macrosolen splendidus DANSER — *30359*, 9 IX 1933, Penibukan, 4000 ft, „flower scarlet with black and white tips"; *31728*, 2 III 1933, Kina Taki River, 8000 ft, „fruit bright red".

Elytranthe albida (BLUME) BLUME — *32209*, 17 III 1933, Canon W. of Penibukan, 4000 ft.

Helixanthera cylindrica (JACK) DANSER — *32622*, 6 IV 1933, Marai Parai, 6—7000 ft.

Helixanthera maxwelliana (GIBBS) DANSER — *30923*, 10 I 1933, Penibukan, 4—5000 ft, top Table Rock, ridge left above camp, „fl. bright red".

Dendrophthoë quadrifida DANSER, n. sp. — Cfr. iconem (Fig. 1, *c—e*) — Ramuli foliaque novissima tantum tomentosa, mox omnino

glabra; inflorescentiae et flores tomento denso sed tenui subferrugineo in corollis tenuescente vestiti. Caules erecti; internodia foliifera teretia plerumque 1—3 cm longa 1.5—2.5 mm crassa, insertionibus foliorum valde incrassatis. Folia sparsa vel passim subopposita; petiolus teres, laminam versus supra subtusque vix applanatus, 3—8 mm longus; lamina obovata ad obovato-lanceolata, basi cuneata apice rotundata, 2—6 cm longa, 0.8—3 cm lata, crassiuscula vel crassa, rigida, faciebus vix diversis opacis, penninervis, costa basin versus utrinque prominente, nervis lateralibus primariis utrinque visibilibus, facie superiore paulo distinctoribus quam facie inferiore. Inflorescentiae racemi breves axillares erecti paribus florum 1—3, plerumque 2, decussatis; pedunculus plerumque 2—7 mm longus; axis florifer 0—14 mm longus, nodis applanatis; pedicelli 1—3 mm longi; bractea late ovata amplexicaulis, acutiuscula, c. 1.5 mm longa. Calycis tubus subcylindraceus, c. 2 mm longus et latus, limbus erectus integer c. 1 mm longus; corolla regularis statu alabastri adulti 26—28 mm longa, a basi rotundata paululum dilatata, 3 mm lata, teres vel plicis 4 longitudinalibus ad circiter duas terias longitudinis, ibi annulo paulo magis dilatato, supra annulum abruptius in collum 1.5 mm crassum contracta, deinde in clavam apicalem 1.75—2 mm crassam 4-angulam obtusam incrassata, postea fissa ultra dimidiam longitudinem in lacinias 4 circiter 100 mm ab apice subabrupte dilatatas, supra dilatationem anguste spathulatas crassiusculas acutiusculas 1—1.25 mm latas; filamenti pars libera 5 mm longa valde applanata; anthera 4 mm longa filamento vix latior obtusissima, 4-locularis (non septata); stilus corolla vix longior, a basi ad apicem subaequicrassus, 4-angularis, in 4 mm superioribus paulo tenuior, sub stigmate 8-costulatus; stigma capitatum stilo duplo crassius, c. 0.6 mm crassum. Fructus ignotus.

On first sight much like a mountain summit form of a long-flowered *D. pentandra* by the erect twigs, leaves and inflorescences and the rigidity of all parts. The 4-merous flowers with deeply split corollas induced me to distinguish it as a new species.

33035, 30 IV 1933, Marai Parai spur, 5000 ft, „flower red with yellow throat"; *32743*, 13 IV 1933, ridge below Marai Parai, 4000 ft, „flower red", type.

Scurrula parasitica LINN. — *28062*, 27 I 1932, Tenompok, 5000 ft, „buds brown, frt. brownish green"; *32996*, 27 IV 1933, Marai Parai,

Fig. 1 — a–b: *Taxillus serious*, after the type FORREST 9470; a: flowerbearing twig, $^2/_3 \times$; b: corolla with stamens and style, $2 \times$; c–e: *Dendrophthoë quadrifida*, after the type CLEMENS 32743; c: flower-bearing twig, $^2/_3 \times$; d: flower without corolla and stamens, $2 \times$; e: corolla with stamens and style, $2 \times$.


a
b
c
d
e
R.H

spur S. Sadikan River, 5000 ft, „flower, inflorescence and under leaf bright rusty brown".

Ginalloa arnottiana KORTHALS — *31779*, 23 II 1933, Upper Kina Taki river, 7000 ft.

Ginalloa nuda DANSER — *32078*, 11 III 1933, Penibukan, below camp, 4000 ft, „fruit bright red".

These materials, being much better than the type, allow to improve the description of the leaves of this curious species. They are not spathulate but *lanceolate, 25—35 mm long, 3—7.5 mm broad, subobtuse.* The well-developed pairs of leaves occur here and there at rather long intervals, and between them and the pairs reduced to a rim I did not find intermediary stages.

13. The Loranthaceae collected by George Forrest in Yunnan and adjacent regions.

Through the kindness of Prof. W. W. SMITH, Regius Keeper of the Herbarium of the Edinburgh Botanic Garden, I had the opportunity to revise the Asiatic *Loranthaceae* of that Herbarium, especially interesting by containing a complete set of the *Loranthaceae* collected by GEORGE FORREST in Yunnan and adjacent regions, for the greater part not yet, or only provisorily, named and affording many new and interesting taxonomic and floristic data. While giving a short account of my determinations of FORREST's *Loranthaceae* I take the opportunity to give also some remarks on few other specimens of the Edinburgh Herbarium collected in the same regions.

Macrosolen cochinchinensis (LOUREIRO) VAN TIEGHEM, Bull. Soc. Bot. Fr., 41 (1894) 122; *Loranthus cochinchinensis* LOUREIRO, Fl. cochinch., 1 (1790) 195. — N. E. Upper Burma, around Bhamo, Lat. 24°20′ N., alt. 400 ft, IV 1917, FORREST 13619 (flowers red an green; cfr. Not. Bot. Gard. Edinb., 17, p. 6); hills around Tzi-tzo-ti, Lat. 25°58′ N., Long. 98°29′ E., alt. 7.000 ft, V 1925, FORREST 26614 (flowers orange, on conifers and *Quercus*). — China, Yunnan, flanks of the Mingkwong valley, Lat. 25°15′ N., alt. 6—7.000 ft, V 1912, FORREST 7940 (flowers ruddy orange-yellow); N.W. of Tengyueh, Lat. 25°10′N., alt. 7—8.000 ft, VI 1912 FORREST 8231 (flowers yellowish-rose); *ibidem*, alt. 6.000 ft, VII 1913, FORREST 11840 (flowers pale-rose); *ibidem*, Lat. 25°30′ N., Long. 98°25′E., alt. 8.000 ft, V 1931, FORREST 29605 (flowers yellow, on conifers); Tengyueh valley, Lat. 25° N., alt. 5300 ft, VI 1931, FORREST 29723 (flowers crimson, fruits yellow); divide between Shweli

and Tengyueh valleys, Lat. 25° N., alt. 7.000 ft, VII 1912, FORREST 8810 (on oaks and pines, fruits bright orange); Shweli valley, Lat. 25°20′ N., alt. 7.000 ft, VIII 1913, FORREST 12052 (flowers dull yellowish-crimson); western flank of Shweli-Salwin divide, Lat. 25°45′ N., alt. 9—10.000 ft, V 1919, FORREST 17921 (flowers deep orange-yellow; cfr. Not. Bot. Gard. Edinb., 17, p. 297); Shweli-Salwin divide, Lat. 25°40′ N., alt. 8.000 ft, VI 1919, FORREST 18109 (fruits orange-yellow; cfr. Not. Bot. Gard. Edinb., 17, p. 312).

With exception of the first number, all the above specimens belong to the same particular form of the widely spread and polymorphic *M. cochinchinensis,* characterised by more robust inflorescences and somewhat thickish corollas. To the same form also belong HENRY 11755A and 11755B from Szemao, Yunnan, in the Edinburgh Herbarium. Everyone who is acquainted with the polymorphy of this species will understand that it is useless to distinguish local forms as varieties, that hardly, or not at all, can be fixed by descriptions. Also LECOMTE's varieties *puberula, Harmandii* and *tonkinensis* of his *Loranthus globosus* (cfr. Not. Syst., 3, p. 98—99), hardly deserve, after my opinion, to be named. FORREST 13619 and ROCK 2683, from S. Yunnan, between Keng Hung and Muang Hing, represent the form common in the Malay Archipelago.

Macrosolen Robinsonii (GAMBLE) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 10, p. 345 (1929); *Elytranthe Robinsonii* GAMBLE, in Kew Bull. (1913) 45. — China, Yunnan, Shweli-Salwin divide, Lat. 25°30′N., alt. 10.000 ft, VIII 1917, FORREST 15709 (shrub of 2—3 ft, parasitic on oaks and pines, flowers deep crimson and green; cfr. Not. Bot. Gard. Edinb., 17, p. 154).

This species was only known from Gunong Tahan in the Malay Peninsula, where it has been collected few times at altitudes of between 3.000 and 5.000 ft. FORREST's specimen differs from those from Gunong Tahan by unimportant characters certainly insufficient for specific distinction, *viz.* somewhat longer corollas (13—15 instead of 11—13 mm long), inflorescences not only on the leafless nodes but even for the greater part in the axils of the leaves and usually 2-flowered instead of usually 4-flowered.

Elytranthe albida (BLUME) BLUME, in SCHULTES, Systema veg., VII, 2, p. 1611 (1830); *Loranthus albidus* BLUME, in Verh. Bat. Genootsch., 9, p. 184 (1823). — China, Yunnan, Shweli-Salwin divide, Lat. 25° N., alt. 7—8.000 ft, V 1919, FORREST 17909 (shrub of 2—3 ft, flowers deep crimson, orange and red tipped; cfr. Not. Bot. Gard. Edinb., 17, p. 206; *ibidem,* 24°50′ N., alt. 7—8.000 ft, VIII 1919,

FORREST 18432 (shrub of 1—3 ft, flowers fleshy deep crimson, green tipped, parasitic on oaks and pines; cfr. Not. Bot. Gard. Edinb., 17, p. 337).

In the Edinburgh Herbarium there is also a specimen of HENRY 11604A, from Yunnan, Szemao, on which LECOMTE based *Elytranthe Henryi*, but neither FORREST's plants, nor HENRY's, nor KING's *Loranthus Collettii* from the Shan Hills, nor MERRILL's *Elytranthe Petelotii* from Indo China, nor MOORE's *Loranthus dranensis* from Siam, can be separated from BLUME's *Elytranthe albida*, originally described from Java, but widely spread and strongly varying in the western part of the Malay Archipelago inclusive the Malay Peninsula, and already recorded by J. D. HOOKER from the Khasia Hills.

Helixanthera parasitica LOUREIRO, Fl. cochinchin., 1 (1790) 142. — China, Yunnan, Shweli valley S. of Tengyueh, Lat. 24°42′ N., alt. 5—6.000 ft, II 1918, FORREST 16148 (flowers bright rose, anthers creamy yellow; cfr. Not. Bot. Gard. Edinb., 17, p. 178); 3 days S. of Tengyueh, Lat. 24°20′N., Long. 98°33′E., alt. 5—6.000 ft, V 1925, FORREST 26391 (flowers purple-rose, anthers yellow).

Helixanthera scoriarum (W. W. SMITH) DANSER, Bull. Jard. Bot. Buitenz., ser. III, 10, p. 318 (1929); *Loranthus scorarium* W. W. SMITH, in Not. Bot. Gard. Edinb., 10, p. 184 (1917). — China, Yunnan, Tengyueh, Lat. 25° N., alt. 5.000 ft, V 1912, FORREST 7689 (type of *Loranthus scorarium* W. W. SMITH, shrub of 2—4 ft, flowers reddish-orange); Shweli-Salwin divide, Lat. 25°45′ N., Long. 98°40′ E., alt. 9—10.000 ft, VI 1924, FORREST 24428 (parasitic shrub of 3—4 ft, on oaks and conifers, flowers dull-crimson-based, slipped dull green).

This species is not yet known from other localities. The type specimen has corollas nearly 10 mm long, the second specimen is somewhat more robust in all parts and has corollas up to 12 and 13 mm long.

The genus **Hyphear** comprises a number of closely allied species that, after the most important specific differences mentioned in literature, may be arranged in the following synoptical key.

Spikes terminal on short leafy twigs. Flowers sessile.
- Plant dioecious.
  - Flowers 6-merous . . . . . **H. europaeum**
  - Flowers 5-merous . . . . . **H. Owatarii, H. Tanakae**
- Flowers hermaphrodite.
  - Flowers 6-merous . . . . . **H. Grewinkii**
  - Flowers 5-merous . . . . . **H. Lambertianum**

Spikes axillary. Flowers inserted in hollows of the axis, 6-merous.
- Flowers hermaphrodite . **H. odoratum, H. pseudo-odoratum, H. Hemsleyanum**
- Plant dioecious . . . . . **H. Delavayi**

The difference between species with flowers sessile, in spikes terminal on short leafy twigs, and such with flowers inserted in hollows of the axis of lateral spikes, is striking. On this difference is based the distinction of the *Viscoidei* and *Odorati* by DE CANDOLLE (Prodr., 4, p. 294) and that of the sections *Euloranthus* and *Cyttarellus* by VAN TIEGHEM (Bull. Soc. Bot. Fr., 41, p. 535—536).

All other characters used for the distinction of the species are of little systematic value. The number of petals and stamens is, among *Loranthoideae*, nowhere sufficient for specific distinction, and especially in *Helixanthera* and allied genera it is of very little systematic value. Moreover the number of petals appears not to be constant in *Hyphear europaeum*, as its flowers are in general 6-merous, but partly 5- and even 4-merous. If *H. Tanakae* really differs from *H. europaeum* mainly by 5-merous flowers, the doubt is justified whether it is specifically different. The same can be said about the difference between *H. Lambertianum* and *H. Grewinkii*. *Hyphear Owatarii* is very inadequately described, and from the description we cannot state any difference with *H. Tanakae*.

Also it is questionable whether hermaphrodite *Hypheata* may be always regarded as specifically different from such with hermaphrodite flowers. The flowers of *H. europaeum* are not always described as dioecious, but often as polygamic-dioecious, and what I have seen of *H. Delavayi* suggests that the same might be the case with this species. Moreover it is always possible, that male specimens may be looked upon as hermaphrodite. Among the species described with axillary inflorescences, *H. Delavayi* is perhaps not specifically different from *H. odoratum*, and still less important are the differences given for the distinction of *H. pseudo-odoratum* and *H. Hemsleyanum*. *Hyphear pseudo-odoratum* is said to differ from *H. odoratum* mainly by pruinose twigs and somewhat smaller leaves and inflorescences, differences that certainly are entirely insufficient for distinction of species. Specimens with pruinose twigs I found also between the Yunnan specimens of *H. Delavayi*, and this peculiarity may be caused by the mode of preparing the specimens for the herbarium. *Hyphear Hemsleyanum*, indeed, is described as possessing hermaphrodite flowers, but these flowers are said to have a „stylus gracilis brevis", and we justly find such styles in the male specimens of *H. Delavayi*. It is therefore that, among the materials enumerated below, I did not distinguish more than 2 species. Cfr. also the remarks to these.

Hyphear Delavayi (VAN TIEGHEM) DANSER, in Bull. Jard. Bot.

Buitenzorg, ser. III, 10, p. 319 (1929); *Loranthus Delavayi* VAN TIEGHEM, in Bull. Soc. Bot. Fr., 41, p. 535 (1894). — China, Yunnan, south side of Chao Cheo valley, alt. 7.000 ft, III 1905, FORREST 540 (on oak); Shweli valley, Lat. 25° N., alt. 6.000 ft, II 1913, FORREST 9564 (flowers brownish-yellow); *ibidem*, FORREST 9642 (flowers dull brownish-orange); *ibidem*, FORREST 9643 (flowers dull-orange, anthers light yellow); Lichiang Range, Lat. 27°35′ N., alt. 10.000 ft, VI 1913, FORREST 10149 (on oak); Salwin valley, Lat. 28°10′N., alt. 7.000 ft, IX 1917, FORREST 16196 (flowers olive-brown, on oaks and pines; cfr. Not. Bot. Gard. Edinb., 17, p. 181).

Moreover I will mention the following specimens seen by me in the Edinburgh Herbarium; China, Yunnan, Mou-gni-chan, près de Tapin-tze, 1800 m alt., 20 I 1887, DELAVAY 2312 (first no. cited by VAN TIEGHEM of his *Loranthus Delavayi*); bois de Mou-gni-chan, au-dessus de Pien-kio, 12 II 1888, DELAVAY 4653 (3rd no. cited by VAN TIEGHEM); Tibet, Tse-kou, 1800 m alt., 1912, MONBEIG s. n. (cfr. LECOMTE, Not. syst., 3, p. 196); China, Hupeh, HENRY 7849 (cfr. FORBES & HEMSLEY in Journ. Linn. Soc., bot., 26, p. 406); western Hupeh, WILSON 3524); Burma, S. Shan States, Loi Mwe, 5.000 ft alt., MACGREGOR 86.

Of these specimens FORREST 16196 and MONBEIG s. n. are distinctly female, as styles and stigmas are strongly developed and anthers are entirely absent. Very probably male are those specimens of which the anthers are well-developed and the styles thin and attenuate towards the tip, that hardly bears a stigma, viz. FORREST 9564, 9642, 9643, DELAVAY 2312, 4635, HENRY 7849, WILSON 3524, MACGREGOR 86. The number FORREST 10149 is fruit-bearing; FORREST 540 is apparently hermaphrodite, as anthers are well-developed and the style is cylindrical and bears a well-developed stigma, though less clavate than in the female specimens cited. According to the key given in the above this specimen ought to be named *H. odoratum*, but as I cannot see any further differences with undoubtedly correctly named *H. Delavayi*, I give this specimen the same name.

Hyphear europaeum (JACQUIN) DANSER, in Bull. Jard. Bot. Buitenzorg, ser. III, 10, p. 319 (1929); *Loranthus europaeus* JACQUIN, Enum. stirp. Vindob., p. 230 (1762). — China, N.W. Yunnan, Mekong, Yangtze divide, around Wei Hsi, Lat. 27°12′ N., Long. 99°18′ E., alt. 9—10.000 ft, X 1921, FORREST 20953 (fruits clear transparent yellow, on *Quercus*, cfr. Not. Bot. Gard. Edinb., 14, p. 216).

The specimen is in fruit and only few leaves are present between the fruit sticking together. Though I cannot see whether the flowers

have been 5- or 6-merous, nor whether the flowers have been female or hermaphrodite, it is so much like a fruit-bearing specimen of *H. europaeum* that I see no reason to give it another name. The specimen ROCK 14750, from S.W. Kansu, lower Tebbu country, in Mayaku, alt. 7500 ft (in the Edinburgh Herbarium) appears to be wholly identical. Cfr. the remarks above.

Scurrula elata (EDGEWORTH) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 10, p. 350 (1929); *Loranthus elatus* EDGEWORTH, Transact. Linn. Soc., 20, p. 58 (1846). — China, Yunnan, western flank of the Shweli-Salwin divide, Lat. 25°20′ N., alt. 8—10.000 ft, VIII 1912, FORREST 8906 (flowers orange-red, shaded to dull sage at apex, stamens crimson, on oaks and pines).

This species is widely spread in the Himalayas. The locality where FORREST collected it probably is the most eastern known hitherto.

Scurrula ferruginea (JACK) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 10, p. 350 (1929); *Loranthus ferrugineus* JACK, in Mal. Misc., 1, p. 279, t. 59 (1820). — China, Yunnan, Shweli valley, Lat. 25° N., alt. 7.000 ft, II 1913, FORREST 9685 (flowers brown).

Scurrula ferruginea is common in the adjacent part of Burma and more southward, but I do not know more northern localities.

Scurrula gracilifolia (SCHULTES) DANSER, nov. comb.; *Loranthus gracilifolius* SCHULTES, Syst. veg., VII, 1, p. 99 (1829); *Loranthus graciliflorus* D. C., Prodr., 4, p. 300 (1830); *Loranthus chinensis* BENTH., Fl. hongkong., p. 141 (1861); an D. C., Mém. Lor., p. 28, t. 7 (1830) et Prodr., 4, p. 301 (1830)?; *Loranthus Scurrula* var. *graciliflorus* KURZ, For. Fl. Burma, 2, p. 319 (1877); HOOK.F., Fl. Br. Ind., 5, p. 209 (1886).

China, Yunnan, Shweli valley, Lat. 25° N., alt. 6.000 ft, VIII 1912, FORREST 8857 (base of tube of perianth ochre yellow shaded to green at apex, filaments deep crimson, anthers orange, on pines); Yung-pe Mts., Lat. 26°45′ N., alt. 10.000 ft, IX 1913, FORREST 11086 (flowers base exterior grey-orange, apex grey-green, interior dull green, on pines); Shweli-Salwin divide, Lat. 25°30′ N., alt. 9—10.000 ft, VIII 1918, FORREST 17534 (flowers greyish-red, on pines; cfr. Bot. Gard. Edinb., 17, p. 270).

A peculiar *Scurrula,* closely allied to the polymorphic and widely spread *Sc. parasitica,* but probably specifically as distinct as the other *Scurrulae* and strikingly different by entirely glabrous foliage only tomentose in the very young state, and very slender flower-buds and flowers.

Entirely the same form is represented by the numbers LACE 5373

and 5417, both from Burma, Maymyo, 3400—3500 ft alt., in the Edinburgh Herbarium; apparently the same species, though with smaller leaves, is the number EM. BODINIER 792, from Hongkong, in the same herbarium. Probably also the following specimens without flowers: FORREST 526, without exact locality, and FORREST 9299, from Yunnan, N. of Tengyueh, Lat. 25°15′ N., alt. 8.000 ft, XI 1912.

Scurrula philippensis (CHAM. & SCHLECHT.) G. DON, Gen. Hist. Dichl. Pl., 3, p. 422 (1834); *Loranthus philippensis* CHAM. & SCHL., in Linnaea, 3, p. 204 (1828). — China, Yunnan, Shweli valley, Lat. 25° N., alt. 6.000 ft, VII 1912, FORREST 8665 (exterior of perianth bright brown at base shading green towards apex, limb green, filaments red or red-orange, anthers yellow, on oak and pine); mountains N.E. of the Yangtze bend, Lat. 27°45′ N., alt. 10—11.000 ft, VIII 1913, FORREST 10928 (flowers dull soft orange at base, shaded to dull olive green at apex, interior deep maroon, on pines and *Salix*); Tale Range, Lat. 25°40′N., alt. 10.000 ft, IX 1913, FORREST 11633 (flowers interior maroon, exterior dull grey, on pines) and VII, 1913, FORREST 11650 (flowers interior deep crimson-maroon, exterior grey towards apex, with dull orange base, on *Salix* and pines); N'Maikha-Salwin divide, Lat. 26°20′ N., alt. 9.000 ft, VI 1919, FORREST 18062 (flower tube dull brownish-grey, petals green, on pines and oaks; cfr. Not. Bot. Gard. Edinb., 17, p. 308).

I cannot distinguish this from the Philippine *Sc. philippensis*, but probably it is conspecific with *Sc. cordifolia* (WALL.) G. DON, a species I do not know sufficiently.

Taxillus Delavayi (VAN TIEGHEM) DANSER, in Verh. Akad. Wetensch. Amsterd., afd. Natuurk., sect. 2, 29, 6, p. 123 (1933); *Phyllodesmis Delavayi* VAN TIEGHEM, in Bull. Soc. Bot. Fr., 42, p. 265 (1895); *Loranthus Delavayi* ENGLER, in ENGL. & PR., Nat. Pflanzenfam., Nachtr., p. 131 (1897) non VAN TIEGHEM (1894); *Loranthus Balfourianus* DIELS, in Not. Bot. Gard. Edinb., 5, p. 250 (1912). — E. Upper Burma, western flank of the Chimi-li, N'Maikha-Salwin divide, Lat. 26°21′ N., Long. 98°48′ E., alt. 9.000 ft, VI 1924, FORREST 24595 (flowers flame-crimson, tipped green, on conifers and poplars); N.E. Burma, side valleys on the N'Maikha-Salwin divide, Lat. 26°20′ N., alt. 8—9.000 ft, VI 1931, FORREST 29752 (flowers orange-crimson, tipped green). — China, Tibet banks of the Mekong between Bati and Tsekou, alt. 6.000 ft, 1904, FORREST 543 (first type of *Loranthus Balfourianus* DIELS); Yunnan, eastern flank of the Lichiang Range, Lat. 27°10′ N., alt. 10.000 ft, V 1906, FORREST 2215 (flowers orange-crimson, fruit yellow, mostly on *Prunus* and *Salix*, second type of *Loranthus Balfourianus* DIELS); *ibidem*,

alt. 9—10.500 ft, V 1910, FORREST 5622 (tube of corolla crimson, limb green, on pines, *Rosaceae* and *Tiliaceae*); N. of Tengyueh, Lat. 25°15′ N., alt. 7.000 ft, V 1912, FORREST 7718 (flowers deep flame red, with limb of corolla green, on pines and other trees); mountains in the N.E. of the Yangtze bend, Lat. 27°45′ N., alt. 10.000 ft, VII 1913, FORREST 10579 (on pines, fruits scarlet).

This species is widely spread and common in eastern China, and apparently also occurs in the adjacent art of Upper Burma. The number DELAVAY 2620, on which VAN TIEGHEM based his *Phyllodesmis Delavayi* and of which I saw a specimen in the Edinburgh Herbarium, is identical with the numbers FORREST 543 & 2215, on which DIELS based his *Loranthus Balfourianus*; in the genus *Taxillus* the species name *Delavayi* has priority over that of *Balfourianus*.

Taxillus Kaempferi (DE CANDOLLE) DANSER, in Verh. Kon. Akad. Wetensch. Amsterd., afd. Natuurk., sect. 2, 29, 6, p. 124 (1933); *Viscum Kaempferi* D. C., Prodr., 4, p. 285 (1830); *Loranthus caloreas* DIELS, in Not. Bot. Gard. Edinb., 5, p. 251 (1912). — China, Yunnan, eastern flank of the Lichiang Range, Lat. 27°15′ N., alt. 9—11.000 ft, VII 1906, FORREST 2600 (flowers bright scarlet, limb of perianth bright green, on conifers only, type of *Loranthus caloreas* DIELS); *ibidem*, Lat. 27°30′ N., alt. 10—11.000 ft, VII 1910, FORREST 6147 (flowers crimson and green, fruit yellow, on conifers); mountains in the N.E. of the Yangtze bend, Lat. 27°45′ N., alt. 10—11.000 ft, VIII 1913, FORREST 10760 (flowers orange-red tipped deep olive green, on conifers especially *Tsuga*); Tali Range, Lat. 25°40′ N., alt. 10.000 ft, VI 1913, FORREST 11663 (flowers red-orange and maroon, on pines); Lichiang Range, Lat. 27° N., alt. 11.000 ft, VII 1918, FORREST 16310 (fruits red-orange, parasitic on conifers; cfr. Not. Bot. Gard. Edinb., 17, p. 189); Shweli-Salwin divide, Lat. 25°40′ N., alt. 7—8.000 ft, VI 1919, FORREST 18072 (flowers green, on pines and other trees; cfr. Not. Bot. Gard. Edinb., 17, p. 309).

Somewhat doubtful by broader leaves, and with unripe fruit only: Yangtze valley between Chu Tim and Shih Ku, alt. 6—7.000 ft, 1904, FORREST 614 (on oak).

I cannot distinguish *Loranthus caloreas* DIELS from the Japanese *Taxillus Kaempferi* otherwise than by larger flowers, more robust vegetative parts and very young parts covered with ferrugineous indumentum but soon becoming glabrous. The corollas of the Japanese plant are, as far as known to me, 14—15 mm long; the type of *Loranthus caloreas* has corollas extremely long, viz. 28—32 mm, but in the Edinburgh Herbarium the other specimens of the latter species show a rather strong

variability of the corolla length, down to 25 mm, whereas there is one specimen from southern Chekiang (CHING 2402) agreeing with *Loranthus caloreas* by rusty-hairy young parts, but with corollas only 11—12 mm long.

The species also occurs west of the Chinese border, as show the following specimens in the Edinburgh Herbarium: Bhutan, Chalimarphé, Timpu, alt. 7.000 ft, 8 VII 1914, R. E. COOPER no. 1398 (on *Pinus*), and Bhutan, Paro, alt. 9.000 ft, 7 XI 1914, R. E. COOPER no. 3567 (on *Pinus*).

Taxillus sericus DANSER, n. sp. — Cfr. iconem (Fig. 1, *a—b*) — Partes iuveniles pilis stellatis tenuiter sed dense vestitae, ramuli foliaque mox glabra, pedicelli prope apicem, bracteae et calyces omnino indumento usque ad tempus florendi persistente, corolla dum aperta iam glabrescens. Ramuli teretes, novissimi sub nodis paulum angulati, rugulosi, nec opaci, nec lucidi, vetustiores opaci, nodis incrassatis. Folia sparsa vel subopposita; petiolus basi teres, laminam versus subtus rotundatus supra applanatus vel leviter canaliculatus, 10—17 mm longus; lamina oblonga vel ovato-oblonga, 6—10 cm longa, 2.5—4 cm lata, sub basi cuneata in petiolum contracta, margine saepe irrugulari, apice obtusiusculo, tenuiter coriacea, facie superiore sublucida inferiore opaca, penninervis nervis usque ad venas utrinque visibilibus facie inferiore prominulis. Inflorescentiae paulatim in axillis vel gregatim in nodis vetustioribus; umbellae pedunculatae floribus plerumque 4; pedunculus teres 3—5 mm longus, basi apiceque incrassatus 0.75 mm crassus, medio 0.3—0.6 mm crassus, paribus florum 2 decussatis; pedicelli pedunculo aequilongi vel paulo longiores, ad 0.2 mm crassi; bractea ovata basi annulo angusto calycis basin amplectens, obtusa, 0.75—1 mm longa. Calyx campanulato-infundibuliformis, 2—2.5 mm longus, apice circiter 1.5 mm latus, limbo subnullo; corolla statu alabastri adulti ad 30 mm longa, supra basin mox inflata ad 3 mm lata, supra medium gradatim angustata, ad 6—7 mm ab apice in collum 1—2 mm crassum angustata, supra collum in clavam apicalem oblongam obtusissimam 1.5—2.5 mm crassam incrassata, postea divisa in lacinias 4 secundas 8—9 mm longas parte superiore 5 mm longa reflexa 1 mm lata lanceolato-spathulata, fissura singula ultra medium corollae longitudinis producta; anthera 5 mm longa, sessilis, obtusissima, loculis 4 distinctis non septatis; stilus 30 vel 31 mm longus, filiformis, c. 0.2 mm crassus, parte inferiore 4-angularis; stigma globosum, c. 0.4 mm crassum. Fructus ignotus.

China, Yunnan, western flank of the Shweli-Salwin divide, Lat. 25°20′ N., alt. 9.000 ft, XII 1912, FORREST 9470 (parasitic shrub of 2 ft, on pines, base of corolla deep orange, exterior of upper portion deep

green, interior dark maroon; type); S. of Tengyueh, Lat. 25°, alt. 6.000 ft, II 1913, FORREST 9622 (parasitic shrub of 2—3 ft, flowers red and green); Sikkim, Burmiak, alt. 4.000 ft, 1 XII 1908, W. G. CRAIB 458.

Taxillus sericus is a peculiar intermediate between the aberrant *T. Delavayi* and some more normal, *Scurrula*-like species, like *T. yadoriki*. Whereas *T. Delavayi* is peculiar by angular, shining, somewhat umbellately branched twigs, strongly attenuate indistinctly petioled leaves hardly different above and beneath, sessile nearly glabrous inflorescences often surrounded by a few-leaved rosette, and a distinct calyx limb, these peculiarities are only partly found in *T. sericus*. Here the angles of the twigs are hardly developed and the twigs are not or little shining; the subumbellate branching is never distinct; the leaves are rather strongly attenuate at the base, but more distinctly petioled and somewhat shining above; the inflorescences are peduncled and never bear leaf-rosettes at their base; the apical part of the pedicels, the bracts and the calyces are sparingly but distinctly hairy; the calyx limb is almost none, the corolla is nearly as in *T. Delavayi*. It would not at all look impossible that *T. sericus* were a species hybrid, if the anthers were not nearly sessile. Though the length of the filaments is variable in *T. Delavayi* as well as in *T. yadoriki* and its allies, I never met with a specimen with sessile anthers.

These remarks mainly bear on the type specimen FORREST 9470; the other specimens are little different but the anthers are broken off in the well-developed flowers. The specimen FORREST 9622 is somewhat smaller in all parts and the corollas are only 20 mm long; its bears fruit somewhat better developed, slightly scrobiculate or very superficially warty. The third specimen, CRAIB 458, bears longer flowers with corollas nearly 35 mm long and their tube less inflated; the inflorescences are slightly coarser, their peduncles only 2 mm long, their indumentum less sparse. In spite of its being found so far from the other specimens the resemblance is striking.

Taxillus thibetensis (LECOMTE) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 10, p. 355 (1929); *Loranthus Duclouxii* & *L. thibetensis* LECOMTE, Not. syst., 3, p. 166, 168 (1915). — China, Yunnan, N.E. of the Yangtze bend, Lat. 27°45′ N., alt. 11.000 ft, VII 1913, FORREST 10342 (flowers dull green, anthers orange, on pines and ever-green oaks); on the Li-ti-ping, Lat. 27°12′ N., alt. 9.000 ft, VI 1917, FORREST 13882 (flowers red-orange and green, on oaks; cfr. Not. Bot. Gard. Edinb., 17, p. 25); Mekong divide, Lat. 26°40′ N., Long. 99°40′ E., alt. 9—11.000 ft, VII 1922, FORREST 23085 (flowers exterior greyish interior deep maroon, on

various conifers and *Pyrus*; cfr. Not. Bot. Gard. Edinb., 14, p. 377).

The same species is represented by several other specimens in the Edinburgh Herbarium, all of them from China: Thibet Oriental, Tsekou, VI 1895, SOULIÉ s. n. (double of the Muséum d'Histoire Naturelle, Paris, labelled there as *Loranthus thibetensis* LEC. and identical with the type SOULIÉ 1340 and with SOULIÉ s. n. in the Herbarium of the Muséum d'Histoire Naturelle at Paris); Yunnan, vicinity of Yun-nan-sen, MAIRE 1917; Yunnan, plaine de Kiao-kia, alt. 400 m, MAIRE s. n.; Kiao-kia, 14 II 1909, DUCLOUX 1277 coll. S. TEN; prope urbem Yünnanfu, 1800—2200 m alt., 27 IV 1915, HANDEL-MAZZETTI 1601; inter Yung peh ad flumen Yangtze, 2300 m alt., 3 VII 1914, SCHNEIDER 1725; Szechuan australis, inter Woholo & Choso, 2800 m alt., 15 VI 1914, SCHNEIDER 1576.

The type of *Loranthus Duclouxii* LECOMTE (DUCLOUX 6272) I saw in the Paris Herbarium; it shows hardly any difference with the specimens labelled as *Loranthus thibetensis* by LECOMTE himself.

Taxillus vestitus (WALLICH) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 10, p. 355 (1929); *Loranthus vestitus* WALLICH, in ROXB., Fl. ind., ed. 1, II, p. 218 (1824). — China, banks of the Yangtze between Chu Tim and Shi Ku, 6—7.000 ft alt., 1904, FORREST 524 (on evergreen oak); Mekong valley, Lat. 27°40′ N., alt. 9.000 ft, VII 1914, FORREST 12935 (on oaks); Chungtien plateau, Lat. 27°40′ N., alt. 11.000 ft, VI 1917, FORREST 13879 (on pines and *Salix*; cfr. Not. Bot. Gard. Edinb., 17, p. 25).

This species is spread westward all over the Himalayas to Punjab, and appears to reach its eastern frontier in Yunnan. Cfr. the remark on its relationships below.

As among FORREST's specimens the closely allied species *T. thibetensis* and *T. vestitus* appear to occur, I should like to make some remarks about the difference between these two species and their nearest allies *T. yadoriki, T. sutchuenensis* and *T. Cavaleriei.*

Taxillus yadoriki (MAXIM.) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 11, p. 445 (1931); *Loranthus Yadoriki* MAXIMOWICZ, Bull. Ac. Sc. St. Petersb., 22, sep. p. 609 (1876), is so closely allied to *T. thibetensis* and to *T. vestitus* that it looks not at all impossible that these 3 species might be geographic variations of one widely spread polymorphic species. It is not at all easy to indicate exact differences.

Taxillus vestitus is peculiar by thickly coriaceous, obovate-oblong leaves, that are soon glabrous and shining above, densely tomentose beneath like the petioles and twigs, by short flowers (the corolla 12—14 mm long), and abundantly developed oblong fruit that have a

granulate surface and are nearly sessile by 2 or 3 on the tip of a short and thick peduncle (usually 1—2 mm long).

Taxillus yadoriki on the contrary has roundish leaves with a less thick, darker-coloured and finally less copious tomentum, pedicels longer than the peduncle (viz. 3—4 mm long) and longer flowers (corolla 20—25 mm long).

Taxillus thibetensis shows more resemblance with *T. yadoriki* than with *T. vestitus,* but in general it is somewhat more robust than the former and its tomentum is denser and more light-coloured, the peduncles are shorter (1—2 mm long or even shorter), the pedicels variable in length (1—5 mm), the flowers larger (corolla 22—32 mm long), the calyx limb more distinct though very short, the flowers often 5-merous (SCHNEIDER 1725 appears entirely 5-merous, MAIRE s. n. and FORREST 23085 partly, the other specimens mentioned are 4-merous), the loculi of the anthers are often transversely septate (in *T. vestitus* and *T. yadoriki* the calyx limb is wellnigh none, the flower 4-merous, the loculi are not chambered).

Taxillus sutchuenensis (LECOMTE) DANSER, in Bull. Jard. Bot. Buitenz., ser. III, 10, p. 355 (1929); *Loranthus sutchuenensis* LECOMTE, in Not. syst., 3, p. 167 (1915), is also slightly different from the above mentioned species, and I would hardly believe it to be a distinct species if there were not, in the Edinburgh Herbarium, so many specimens that entirely agree with LECOMTE's plant. I have seen the type (FARGES 444) in the Paris Herbarium, of which FARGES s. n. in the Edinburgh Herbarium apparently is a double. The differences are the much scarcer indumentum, dense and light-ferrugineous on the young parts, soon disappearing on the twigs, the petioles and the upper surface of the leaves, but persistent, dense and thin on the undersides of the leaves and on the inflorescences, growing sparse on the corolla; moreover the more ellipsoidal calyx, the more slender corolla nearly 25 mm long and 4-merous, the flower-bud more acute, the loculi of the anthers distinctly septate. The following specimens evidently belong to it.

China, Su-tchuen Oriental, distr. de Tchen-kéou-tin, FARGES s. n., identical with FARGES 444 and FARGES s. n. in the Paris Herbarium; prov. du Kouy-Tchéou, environs de Gan-pin, He-chê-teou, 8 VIII 1897, MARTIN et BODINIER No. 1796; W. Hupeh, VI 1900 (?), WILSON 809; prov. Hupeh, 1885—1888, HENRY 2496 & 5902; Chirushih, 1888, HENRY 5902A; Changyang, 1888, HENRY 5902B; Si-teou-qoi, 28 VII 1902, LÉVEILLÉ 137 and without locality VIII 1904, ESQUIROL 175.

Taxillus Cavalerieі (LÉVEILLÉ) DANSER, n. comb. *Loranthus Cava-*

leriei Léveillé, Cat. pl. Yunnan, p. 172, 1916), was quite obscure to me till I saw a specimen of the type number Cavalerie 2660 in the Edinburgh Herbarium, from which was evident, that this species was a *Taxillus* most closely allied to those discussed above. Prof. W. W. Smith kindly copied for me the original description that was inaccessible to me, and that runs as follows:

„(1) Loranthus Cavaleriei Lévl. nov. sp. Folia lanceolata valde coriacea obtusa nitida glaberrima petiolata, 3—4 mm; flores tetrameri; corolla gamopetala. Kouy-Tcheou: nord de Lo-Fou, Touan-Cha, nov. 1903 (J. Cavalerie 2660)."

This diagnose evidently being insufficient to recognise the species, I will give here a more complete description after the specimen in the Edinburgh Herbarium.

Taxillus Cavaleriei, descriptio emendata. — Ramuli teretes, nodis paulum tumidis, cano-fusci, iam inter folia lenticellis minutis numerosis, inter folia adulta 2.5—4 mm crassi, internodiis plerumque brevibus, rarius longioribus, 1—5 cm longis. Folia opposita; petiolus difficile a lamina distinguendus, 2—5 mm longus, subtus valde supra leviter convexus; lamina (probabiliter) oblonga ad ovato-lanceolata, ad 10 cm longa, 2—3.5 cm lata, sub basi rotundata vel cuneata in petiolum contracta, apice obtusa vel rotundata, crasse coriacea et fragilis, facie superiore lucidula, facie inferiore opaca, costa et nervis primariis supra magis (!) prominentibus quam subtus, nervis crassioribus supra indistinctis subtus invisibilibus, venis omnino invisibilibus. Pedunculus c. 2 mm longus, 0.75 mm crassus, apice paulum incrassatus vel dilatatus, cicatricibus florum 2 vel 3; pedicelli teretes, 2—3 mm longi, c. 0.3—0.4 mm crassi; bractea minima, c. 0.5 mm longa, forma indistincta. Calyx campanulatus, basi subtruncatus, 1.5 mm latus, apicem versus paulum attenuatus, limbo paulum dilatato, subintegro, brevissimo; corolla ad 30 mm longa, supra basin rotundatam c. 3 mm lata, deinde attenuata, in tertia parte longitudinis 1—1.5 mm lata, denique in clavam apicalem obtusissimam 2 mm crassam incrassata, postea divisa (altero latere vix profundius) in lacinias 4 anguste spathulatas crassiusculas acutiusculas, parte reflexa 5—6 mm longa 0.8—1 mm lata; filamenti pars libera 0.5—0.75 mm longa; anthera c. 4 mm longa, obtusissima, loculis 4 probabiliter septatis; stilus filiformis 4-angularis apicem versus vix attenuatus; stigma obovatum, obtusissimum. Fructus ignotus. Indumentum in partibus iuvenilibus tenue sed densum, cano-fuscum, stellatum, in partibus vegetativis mox evanescens, in inflorescentiis et calycibus persistens tenue, in corolla adulta parcum stellatum.

Taxillus Cavaleriei is most closely allied to *T. sutchuenensis,* but differs by more oblong, thicker and less distinctly nerved laminae, that are soon glabrous also below, shorter and less distinct petioles, slightly longer peduncles and pedicels, shorter filaments and longer anthers, and somewhat longer corollas.

A plant that very well agrees with the type is HENRY 10057, also from China, Yunnan, Szemao, 6500 ft alt., slightly different, however, by somewhat longer petioles, less narrow leaves with more distinct nervation and less shining upper surface, and more ellipsoidal calyx tube, and by these differences coming nearer to *T. sutchuenensis,* but more different from this species by longer corollas (35 mm) and longer pedicels (4—5 mm). It is very well possible that *T. Cavaleriei* is not specifically distinct from *T. sutchuenensis,* and perhaps as little from other allied species.

Arceuthobium chinense LECOMTE, Not. syst., 3, p. 170 (1915) — China, Yunnan, ♀, eastern flank of the Lichiang Range, Lat. 27°30′ N., alt. 12.000 ft, IX 1900, FORREST 6672 (plant of 1—4 inches, parasitic on *Pinus*); ♂, Lichiang Range, Lat. 27°35′ N., alt. 12.000 ft, VI 1913, FORREST 10169 (tufted plant of 4—9 inches, flowers olive green, parasitic on *Pinus*); ♂, Mekong-Salwin divide, Lat. 28°12′ N., alt. 10.000 ft, VII 1917, FORREST 14194 (shrub of 4—6 inches, flowers green, parasitic on *Pinus*; cfr. Not. Bot. Gard. Edinb., 17, p. 49); ♂, western flank of the Tali Range, Lat. 25°40′ N., alt. 12.000 ft, VII 1917, FORREST 15557 (plant of 1—2 inches, parasitic on conifers; cfr. Not. Bot. Gard. Edinb., 17, p. 144).

The type (DELAVAY s. n.) is also from Yunnan.

Korthalsella Opuntia (THUNB.) MERRILL, in Bot. Mag. Tokyo, 30, p. 68 (1916); *Viscum Opuntia* THUNB., Fl. jap., p. 64 (1784). — China, Yunnan, on the Karni Pass, Lat. 28° N., alt. 9.000 ft, VI 1917, FORREST 13918 (parasitic plant of 4—6 inches on oak; cfr. Not. Bot. Gard. Edinb., 17, p. 28).

Viscum album LINN., Sp. pl., ed. 1, 2, p. 1023 (1753). — China, Shweli-Salwin divide, Lat. 25°45′ N., Long. 98°58′ E., alt. 9.000 ft, XI 1924, FORREST 25388 (fruits pale green).

Viscum articulatum BURMAN FIL., Fl. ind., p. 211 (1768) — China, Yunnan, Sung Kwei valley, alt. 7.000 ft, 1904, FORREST 542; Lichiang Range, Lat. 27°40′ N., alt. 11.000 ft, VI 1913, FORREST 10174 (on pines); on the Tong Shan in the Yangtze bend, Lat. 27°20′N., alt. 9—10.000 ft, IX 1913, FORREST 11112 (on pines and oaks); *ibidem,* alt. 9.000 ft, VII 1914, FORREST 12719 (on pines and poplars); between Tan-tui and

Pungtzula, Lat. 28° N., alt. 10.000 ft, VI 1917, FORREST 13811 (stems orange-yellow, on oaks, cfr. Not. Bot. Gard. Edinb., 17, p. 20); on the descent from Lu-tien to the Yangtze, Lat. 27°12′ N., alt. 8.000 ft, XI 1917, FORREST 16142 (on *Alnus*, fruits greeny-white; cfr. Not. Bot. Gard. Edinb., 17, p. 177); Shweli-Salwin divide, Lat. 25°40′ N., alt. 10.000 ft, VII 1919, FORREST 18155 (fruit immature greenish-white, on pines and various other trees; cfr. Not. Bot. Gard. Edinb., 17, p. 316).

It is remarkable that FORREST never mentions the parasitism of this species on other *Loranthaceae*, which is the rule in the Malay Archipelago.

Index of herbarium numbers mentioned in this note. BODINIER 792 (*Sc. g.*), CAVALERIE 2660 (*T. C.*), CHING 2402 (*T. K.*), COOPER 1398 (*T. K.*), 3567 (*T. K.*), CRAIB 458 (*T. s.*), DELAVAY s. n. (*A. ch.*), 2312 (*H. D.*), 2620 (*T. D.*), 4653 (*H. D.*), DUCLOUX 1277 (*T. th.*), 6272 (*T. th.*), ESQUIROL 175 (*T. s.*), FARGES s. n. (*T. s.*), 444 (*T. s.*), FORREST 524 (*T. v.*), 526 (*Sc. g.*), 540 (*H. D.*), 542 (*V. ar.*), 543 (*T. D.*), 614 (*T. K.*), 2215 (*T. D.*), 2600 (*T. K.*), 5622 (*T. D.*), 6147 (*T. K.*), 6672 (*A. ch.*), 7689 (*H. sc.*), 7718 (*T. D.*), 7940 (*M. c.*), 8231 (*M. c.*), 8665 (*Sc. ph.*), 8810 (*M. c.*), 8857 (*Sc. g.*), 8906 (*Sc. c.*), 9299 (*Sc. g.*), 9470 (*T. s.*), 9564 (*H. D.*), 9622 (*T. s.*), 9642 (*H. D.*), 9643 (*H. D.*), 9685 (*Sc. f.*), 10149 (*H. D.*), 10169 (*A. ch.*), 10174 (*V. ar.*), 10342 (*T. th.*), 10579 (*T. D.*), 10760 (*T. K.*), 10928 (*Sc. ph.*), 11086 (*Sc. g.*), 11112 (*V. ar.*), 11633 (*Sc. ph.*), 11650 (*Sc. ph.*), 11663 (*T. K.*), 11840 (*M. c.*), 12052 (*M. c.*), 12719 (*V. ar.*), 12935 (*T. v.*), 13619 (*M. c.*), 13811 (*V. ar.*), 13879 (*T. v.*), 13882 (*T. th.*), 13918 (*K. O.*), 14194 (*A. ch.*), 15557 (*A. ch.*), 15709 (*M. R.*), 16142 (*V. ar.*), 16148 (*H. p.*), 16196 (*H. D.*), 16310 (*T. K.*), 17534 (*Sc. g.*), 17909 (*E. a.*), 17921 (*M. c.*), 18062 (*Sc. ph.*), 18072 (*T. K.*), 18109 (*M. c.*), 18155 (*V. ar.*), 18432 (*E. a.*), 20953 (*H. e.*), 23085 (*T. th.*), 24428 (*H. sc.*), 24595 (*T. D.*), 25388 (*V. al.*), 26391 (*H. p.*), 26614 (*M. c.*), 29605 (*M. c.*), 29723 (*M. c.*), 29752 (*T. D.*), HANDEL-MAZZETTI 1601 (*T. th.*), HENRY 2496 (*T. s.*), 5902 (*T. s.*), 5902A (*T. s.*), 5902B (T. s.), 7849 (*H. D.*), 10057 (*T. C.*), 11604A (*E. a.*), 11755A (*M. c.*), 11755B (*M. c.*), LACE 5373 (*Sc. g.*), 5417 (*Sc. g.*), LÉVEILLÉ 137 (*T. s.*), MAIRE s. n. (*T. th.*), 1917 (*T. th*), MARTIN & BODINIER 1796 (*T. s.*), MACGREGOR 86 (*H. D.*), MONBEIG s. n. (*H. D.*), ROCK 2683 (*M. c.*), 14750 (*H. e.*), SCHNEIDER 1576 (*T. th.*), 1725 (*T. th.*), SOULIÉ s. n. (*T. th.*), 1340 (*T. th.*), WILSON 809 (*T. s.*), 3524 (*H. D.*).

14. Lepeostegeres acutibracteus Danser, n. sp. (Cfr. fig. 2).

Omnis glabra. Ramulus (unicus notus) robustus, internodiis levibus atrisque, 4.5—6.5 cm longis, terminali basi paulum applanato c. 4 mm crasso apicem versus magis applanato ancipite, abrupte in nodum sesquiplo latiorem dilatato, internodiis inferioribus magis teretibus crassioribus ad 5 mm crassis, nodis applanatis incrassatis ad 10 mm latis, vetustioribus ignotis. Folia opposita; petiolus 3—12 mm longus, 1.5—

3.5 mm crassus, basi paulum tantum incrassatus, facie inferiore rotundatus, facie superiore prope basin planiusculus, laminam versus magis applanatus; lamina ovata vel oblonga, 5—9 cm longa, 2—6 cm lata, basi rotundata vel breve cuneata, apice plerumque acuta, rarius obtusiuscula vel nonnihil acuminata, crasse coriacea et rigida, facie superiore lucida inferiore opaca, costa facie inferiore omnis prominente apicem versus valde attenuata, facie superiore plana parte basali tantum visibili, nervis ceteris fere omnino invisibilibus. Inflorescentiae capitatae singulae vel paucae in axillis foliorum, omnino sessiles; receptaculum breve et planum; involucri bracteae crasse coriaceae, parte apicali et media carinatae, facie exteriore tamquam ferrugine tectae, in paribus 5 decussatis imbricatis dispositae; bracteae paris primi parvae, pauca mm tantum longae, rotundato-ovatae vel subreniformes, parium secundi et tertii et quarti gradatim longiores, suborbiculares apice in acumen longiusculum obtusiusculum prolongatae, paris quinti sicut quarti, sed lateribus arcuatim excisis, eo subsagittatae (paris quarti nonnunquam excisione simili sed multo minore). Flores circiter 13 (in capitulo examinato scilicet 10 peripherici et 3 centrales), pedicellis vix diversis omnibus 1.5—2 mm longis apice c. 1 mm latis basin versus paulo angustioribus, pressione angulatis, exteriorum nonnullis apice bracteola forma variabili praeditis, ceteris bracteola nulla. Calyx pressione omnino prismaticus, tubo c. 2—2.5 mm longo 1.5 mm lato, limbo erecto c. 1 mm longo margine membranaceo irregulariter lacerato; corolla statu alabastri adulti 21—22 mm longa, parte inferiore cylindrica calycis limbo aequilata, parte media fusiformiter inflata, parte superiore 5 mm longa cylindrica c. 1.5 mm lata apice obtusissima, postea ultra medium divisa in lacinias 6 parte inferiore anguste triangula superiore anguste spathulata, parte apicali 2.5—3 mm longa acute reflexa c. 0.6 mm lata apice crassiuscula et

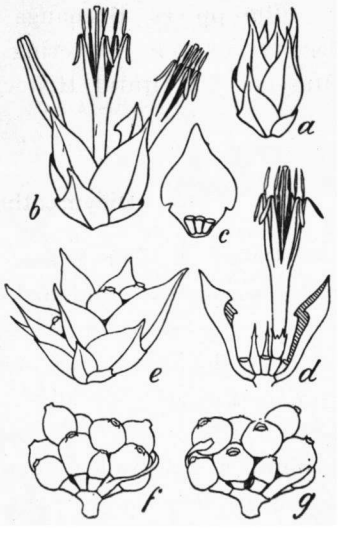

Fig. 2 — *Lepeostegeres acutibracteus* DANSER, n. sp.. *a*: in florescence in bud; *b*: inflorescence in flower, with the flowers only part drawn, and with the outermost involucral bracts fallen off; *c*: involucral bract of the fourth pair, with three pedicels; *d*: receptacle with innermost involucral bracts, pedicels, bracteoles, and one flower; *e*: fruiting inflorescence: *f*—*g*: the same without involucre, seen from two opposite sides. All natural size.

obtusiuscula; filamenti pars libera c. 0.75 mm longa; anthera 2 mm longa, a basi ad apicem gradatim angustata, acuta; stylus corollae aequilongus, strictus, vix attenuatus, stigmate subgloboso c. sesquiplo crassiore. Fructus subglobosi, ad 6 mm diametro, calycis limbo et disco persistentibus coronatus sed styli rudimento nullo, pedicellis paulum auctis, 2—5 mm longis.

Differt ab omnibus congeneribus bracteis involucrantibus carinatis acuminatis, receptaculo et corolla brevibus, et filamenti parte libera brevissima.

Philippines, Busuanga Island, IX 1922, BUREAU OF SCIENCE 41187 leg. RAMOS (one flowering and fruiting twig in the herbarium of the Museum of Natural History at Paris).

15. Dicymanthes lombocana Danser, n. sp.

Robustior, glaberrima. Internodia foliifera teretia, 6—17 cm longa, 2—5 mm crassa, primum levia postea lenticellosa, nodis valde incrassatis ad duplo crassioribus. Folia opposita, sessilia, ovata, 7—15 cm longa, 3—8 cm lata, basi rotundata vel cordata, apicem obtusiusculum versus acuminata, crassa, fragilia, utrinque opacissima, costa basin versus visibili, sed facie inferiore rufa crassiore quam facie superiore, nervis ceteris vix visibilibus. Capitula gregata in axillis foliorum et circum nodos defoliatos; pedunculus 0.5—2 mm longus, c. 1.5 mm crassus, maxima parte in scrobiculo corticis immersus; bracteae brevissimae breve obtuseque triangulares, c. 0.5 mm longae; bracteolae paulo distinctiores vix maiores. Calycis tubus campanulatus, c. 2.5 mm longus, 1.25 mm latus, limbus erectus vel nonnihil cupuliformis, integer vel brevissime dentatus, c. 0.5 mm longus. Corolla statu alabastri adulti 1.25 mm longa, supra basin rotundatam c. 2.25 mm lata, in tertia parte inferiore gradatim attenuata, in tertia parte media c. 1 mm lata 5-angula, in tertia parte superiore in clavam 5-angulam obtusiusculam 1.25—1.5 mm crassam incrassata, latere interiore ad c. 2 mm supra basin squamulis 5 brevibus rotundatis deflexis, statu aperto ignota. Antherae c. 3 mm longae. Stylus quam corolla paulo longior, a basi ad apicem attenuatus; stigma styli apice vix crassius, subglobosum. Fructus ignotus.

Lombok, G. Rindjani, Mt. Poesoek, Sembaloen valley, 1300—1500 m alt., ELBERT 1700.

I had to describe this species after not very good materials. All the leaves are more or less broken, the flowers unopened but probably

adult for the greater part. Most closely allied are *Dicymanthes elliptica* DANSER, from Java and Selebes, with small scales at the inside of the petals and different leaf-shape, and *Dicymanthes longipes* DANSER, from Bali, with much longer peduncles and likewise different leaf-shape. The Philippine *Dicymanthes* species show more important differences. The little developed bracts and bracteoles of *D. lombocana* are very peculiar.