

LORANTHACEAE FROM INDO-CHINA H. LECOMTE

No physical condition is more favorable than atmospheric humidity for the development of epiphytes on plants. Sometimes, as on certain points of the Congo coast, innumerable Orchids cover the trees, from the base to the top; sometimes, they are Bromeliads, such as *Tillandsia*, so widespread in tropical America, in particular in the forests of Guadeloupe; elsewhere, they are Ferns, whose graceful foliage hang down on all sides or whose powerful tufts encircle the trunks of trees (e.g. *Asplenium Nidus-avis*, various species of *Platyserium*, etc.); in the humid meadows of temperate countries, the mistletoe grows in bushes on the branches of our trees, while in hot and humid tropical regions the *Loranthus*, of the same family as the mistletoe, sometimes thrive abundantly in the same conditions.

It would not be absolutely rigorous, however, to advance that epiphytes are completely lacking in the plants of dry and arid countries; but it must be recognized that in humid and hot countries the number of species and individuals increases with the proportion of water vapor contained in the air.

It is therefore not surprising to note the presence of a very large number of epiphytes of the Loranthaceae family in our colony of Indo-China, just as it is quite natural to see a multitude of them on the forest trees that cover the high rainy mountains of Yunnan.

It has been rightly said that in hot and humid countries the botanist can botanize on trees with as much success as he does under the cover of trees in our temperate countries.

Parasitism can even become so widespread that Loranthaceae of various species live side by side on the same host with Ferns. In the vicinity of Haiphong, we had the opportunity to meet, on an imported *Nerium Oleander* plant, two different species of Loranthaceae (*Loranthus estipitatus* Stapf and *Elytranthe tricolor* H. Lec.). Elsewhere, on a *Loranthus* parasite of a tree, we encountered a Santalaceae (*Phacellaria*), itself a parasite of *Loranthus*, that is to say an epiphytic plant growing on another epiphytic plant.

Unfortunately, plants living as epiphytes on other plants are likely to be influenced by the host. Feeding in part at its expense, they obviously cannot completely escape its action. This is what Moseley [Notes of a Naturalist] observed for an Australian *Loranthus* which presents leaves of different shape depending on whether it lives on a *Banksia*, *Eucalyptus* or a *Casuarina*.

This is again what it is also easy to note for the mistletoe of our countries, which presents leaves of notably different sizes depending on whether it lives on Poplar, Apple, Linden, Elm, *Sorbus Aria*, the Sapin or the Pine, as we have been able to verify ourselves on the collections gathered at the Museum of Paris. The Pine Mistletoe (*Viscum laxum* Boiss. et Reut.) bears notably smaller leaves (4 cm. X 1 cm.) than that of the Fir (6 X 1.6 cm.); that of *Sorbus Aria* has very small leaves (3 X 0.4 cm.), while that of Poplar has much larger leaves (up to 8 X 1.7 cm.).

If we believe it is our duty to relate these facts, it is because it seems to us useful and even necessary to apply them in the determination of the Loranthaceae.

The vegetative organs of some species are shown to be so malleable that the uninformed botanist might be tempted to create different species with different forms of the same plant, as we have seen for one species (*Loranthus heteranthus* Wall.) showing leaves of two very distinct shapes on the same twig, while other samples from the same crop showed only one or the other of these two shapes.

It must be concluded that, for the distinction of the species of Loranthaceae, the characters of the flower and the fruit must not only retain a marked predominance over the those of the vegetative apparatus, as is moreover the usual case, but also that these characters of the leaf and the stem should for the most part be relegated to the last line.

On the subject of the vegetative apparatus, we must remark, in passing, that the distribution of the stomata on the leaves is variable according to the species.

In many *Loranthus* (*L. longispicatus* H. Lec., etc.) and in *Elytranthe ampullacea* Don, the stomata exist only on the underside of the leaves; on the contrary, they are found on both sides in *Elytranthe tricolor* H. Lec., *E. Krempfii* H. Lec., *Loranthus heteranthus*, *Viscum album*, etc.

M. van Tieghem [Genres noueraux des *Dendrophthoées*, in Bull. Soc. bot. Fr.. 1895, p. 262] who subdivided the old genus *Loranthus* into a great number of genera, often according to characters of the inflorescence, says, precisely about a Loranthaceae collected by us in the Congo, that the number of lobes of the flower or of the petals constitutes only a specific character, and as the genera created by the eminent botanist are often distinguished from each other only by the mode of inflorescence, the result is that for him the number of lobes is an inherent character to those which can be derived from the arrangement of the inflorescence.

The very long examination that we have made of the Loranthaceae of the Far East does not allow us to accept this view, at least as regards the *Loranthus* and *Elytranthe* of these regions.

Whenever, moreover, pre-flowering is valvular in flowers, we can say, in general, that the number of lobes of the corolla or that of the petals is more or less constant, especially when these lobes or these petals reach a certain length.

The true *Loranthus* of Indo-China, whose flower is in the axil of a bract without bracteoles, are all 4 or 5-merous and, in each of these two groups, the petals are free from the base or fused into a tube. up to a certain height:

4-merous flowers.

Dialypetalous corolla:

- L. coccineus* Jack.
- L. ligustrinus* Wali.
- L. subligustrinus* H. Lec.

Gamopetalous corolla:

- L. chinensis* DC.
- L. estipitatus* Stapf.
- L. ferrugineus* Roxbg.
- L. Scurrula* Linn.
- L. Balansae* H. Lec.
- L. Robinsonii* H. Lec.
- L. thuducensis* H. Lec.

5-merous flowers.

Dialypetalous corolla:

- L. beteranthus* Wall
- L. longispicatus* H. Lec.
- L. pentapetalus* Roxb.
- L. adpréssus* (VT) H. Lec.

Gamopetalous corolla:

- L. cambodianus* H. Lec.
- L. pentandrus* Roxb.
- L. Thorelii* H. Lec.

These subdivisions at least have the merit of being perfectly clear. As regards the *Loranthus* of Indo-China, they appear to us to be much superior to the sections adopted hitherto by botanists and which lend themselves to the most varied interpretations. Thus the botanist Merrill (Philipp. Journ. of Science, IV) is led to place in the *Dendrophthoe* section of the genus *Loranthus* species which

Lecomte, H. 1914. Loranthacées d'Indo-Chine. *Notulae Systematicae (Paris)* 3: 65-82.

really belong to the genus *Elytranthe*, for example *Loranthus subalternifolius* Merr. which merges with *Amylotheca* Cumingii VT and with *Elytranthe Cumingii* (VT) Engler.

TETRAMERIC COROLA SPECIES

Dialypetalous corolla.

L. COCCINEUS Jack. in Mal. Misc., 1, 8 and Hook. Bot. Misc., 1, p. 278, pl. 58; Roxbg. Fl. Ind. Ed. Carrey and Wall., II, p. 215 DC. Prodr. IV, p. 226; JD Hook. Fl. Brit. Ind. V, p. 206; *Phenicanthemum coccineum* and *Ph. Bennettianum* Miq. Fl. Ind. Bat. I, pt. 1, pp. 825-826; *Dendrophthoe coccinea* G. Don Gen. Syst. III, p.419; *Dithecina cocinea* VT, in Bull. Soc. Bot. France, (1895), P. 488.

COCHINCHINE Cai-cong [Thorel without number]; Thudaumot [Pierre, n° 63491].

L. LIGUSTRINUS Wall. in Roxb. Fl. Ind. Ed. Carey and Wall. II, p. 219 and Catal. 513; DC. Prodr. IV, p. 294; Don Prodr. p. 143 Brand. For. Fl. P. 395; *Phaenicanthemum Balansae* VT Bull. Soc. bot. France, 1894, p. 502, *Dithecina Balansae* VT Bul. Soc. bot. France, 1895, p. 488.

INDO-CHINA: Tonkin: Bat-Bac [Balansa, n° 2331]; Laos: [Dussaua, n 123]; Lakhón [Thorel, n° 3063].

L. subligustrinus sp. nov.

Ramuli teretes, lenticellis parvis numerosisque tecti; cortex griseus; ramulis unioribus, folis novellis, pedunculis, bracteis floribusque pubescentibus. Folia subcoriacea, subopposita vel alterna, in sicco subfusca, demum glabra; **limbus** lanceolatus, utrinque attenuatus, 6-7 cm. longus, 2.5 cm. latus; nervi 3-4 p., irregulares; petiolus 5-7 mm. longus. Pedunculi axillares 1-2 cm. longi; flores sessiles saepe oppositi; pedicelli nulli; bractea triangularis, concava, 1 mm. longa. Calyx cylindricus 1.5 mm. longus ore integerrimo. Corolla basi quadrangularis, apice clavata; petala 4, linearia, demum patula, 6 mm. longa, adulta **certe** libera. Stamina 4, antheris linearibus 1.5-2 mm. longis. Ovarium inferum, stigma globulosum. Fructus urceolatus, 2 mm. longus, calycis limbo coronatus.

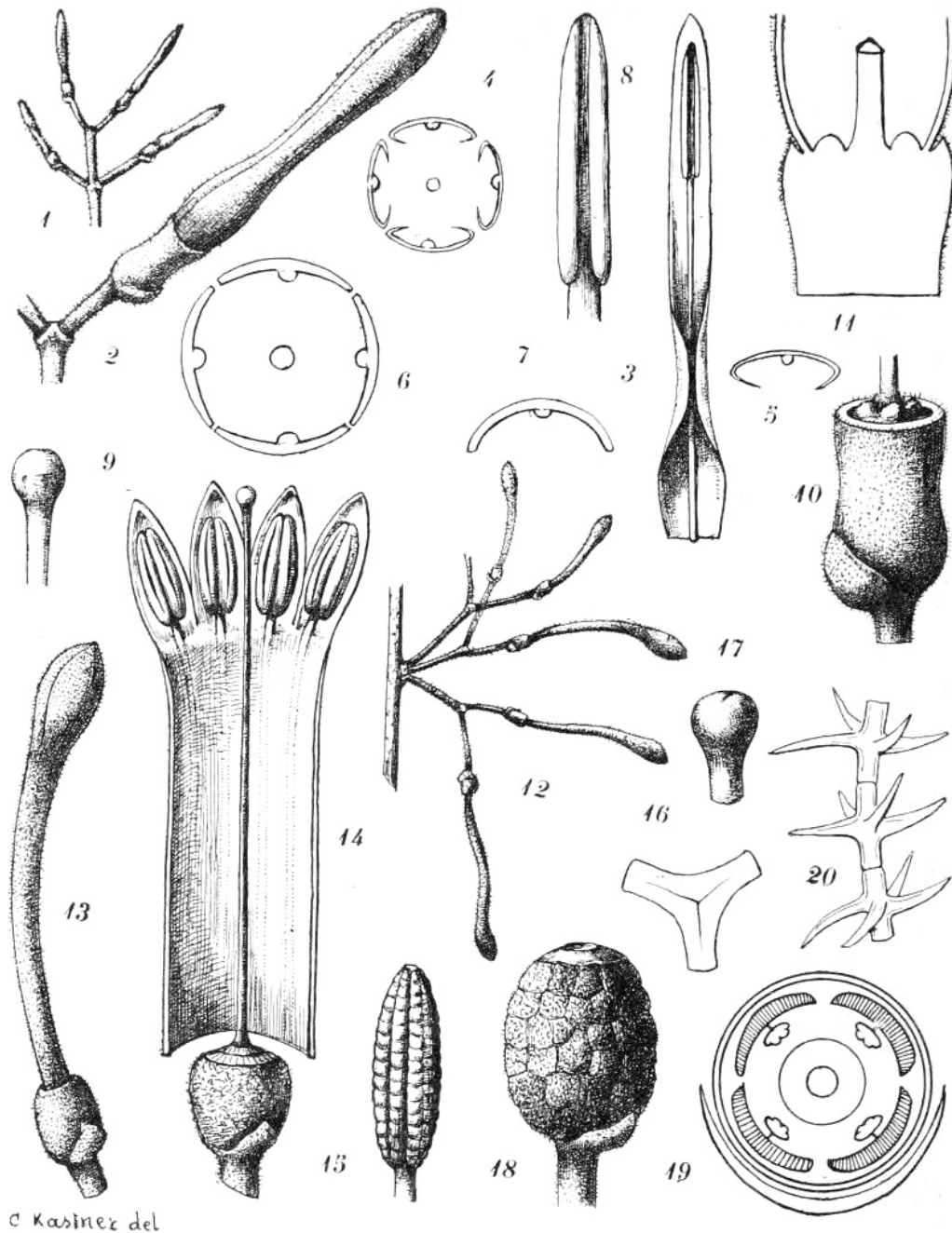
Branches terete, lenticels few, concealed; bark grey; branches one-edged, new leaves, pedunculate, bracts and flowers pubescent. Leaves subcoriaceous, subopposite or alternate, when dry almost dark brown (fusco), then glabrous; limb [lamina, blade?] lanceolate, attenuate [on both sides?], 6-7 cm long, 3-4 pairs of nerves, irregular; petiole 5-7 mm long. Peduncle axillary 1-2 cm long; flowers sessile often opposite; pedicels absent; bracts triangular, concave, 1 mm long. Calyx cylindrical 1.5 mm long margin. Corolla quadrangular at base, apex clavate; petals 4, linear, when open 6 mm long, adult [lobe?] free. Stamens 4, anthers linear 1.5-2 mm long. Ovary inferior, stigma globose. Fruit urceolate, 2 mm long, crowned by calyx limb.

CAMBODIA: Knang Krepeu mountains [Pierre, n° 972].

This plant, which is very similar to *Loranthus ligustrinus* Wall., is easily distinguished by the following characters:

- 1 ° Leaves larger and lower veins very inclined going up above the middle of the blade;
- 2 ° Mainly by the floral pedicels which are null, whereas in *L. ligustrinus* they always reach 1.5-2 mm.

This last difference, which is very apparent, does not allow the two species to be confused.



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Loranthus ligustrinus Wall.: - 1, inflorescence gr. nat.; - 2, a separate flower, before the anthesis X 6; - 3, a petal with the inner folds of the lower third X 7; - 4, transverse section of the corolla at the level of these folds; - 5, one of these petals; - 6, section at the lower part of the flower; - 7, one petal in cross section at base; - 8, an anther with 2 bags X 14; - 9, the stigma X 3; - 10, the calyx, the bract and the disc X 12; - 11, vertical section of the middle part of the flower; - *L. estipitatus* Stapf: - 12, inflorescence gr. nat.; - 13, flower in bud - 14, flower with open corolla in the length 3; 15, an anther with transversely septate sacs X 6; - 16, a grain of pollen; - 17, the stigma; - 18, the fruit X 3; - 19, flower diagram; - *Loranthus ferrugineus* L.: - 20, portion of a tiered and stellate hair.

Lecomte, H. 1914. Loranthacées d'Indo-Chine. *Notulae Systematicae (Paris)* 3: 65-82.

Gamopetalous corolla.

L. CHINENSIS DC. Men., VI, t. 7, p. 28; DC. Prodr. IV, p. 301; Benth. Fl. Hongk. p. 147.

INDO-CHINA Tonkin: Tu-Phap [Balansa, n° 2328]; near the Green Island [id., n° 1025]; Sa Vê [Good, n° 5241 Hanoi, Jardin bot. [Wood, No. 351; Lemarié, n° 57]; Yen-thé Bois, No. 303].

Annam: Hué [Lecomte and Finet, n° 1151]. Laos Luang-Prabang [D Spire, n° 826]; Khong [D Harmand, n° 175]

CHINA: Hong-Kong [Bodinier, No. 792]; Macao, [Calléry, n° 63 and Gaudichaud, n° 319].

Var. **granaria** H. Lec., with **chagrined** leaves and open flowers of a greenish yellow corolla.

TONKIN Hanoi and Tu-Phap [Balansa, nos. 4747 and 2325]; Nhat-Pham [Bon, n° 1387]; Khang-Thuong [id., Nos. 270 and 317].

COCHINCHINE: Ong-iem [Bois, n° 2251]; without locality [Counillon].

L. ESTIPITATUS Stapf, Trans. Linn. Soc., N. ser. IV, p. 221.

CHINA: Hainan [Henry, No. 8267]; Macao [Calléry, n° 252]

INDO-CHINA: Annam: Nha-trang [Robinson, # 1024; on an introduced *Casuarina*.

Tonkin Nhat-Pham [Bon, n° 1387]; Khang-thuong [id., Nos. 270 and 317]; Sa vê [id., N° 5241]; Groves near the Green Island to the east of the bay of Fi tsi long [Balansa, n° 1025]; Ouonbi [id., No. 1030]; Tu Phap [id., N° 2329 and 2325]; Hanoi [id., No. 4747]; without locality [d'Aleizette, n° 185].

According to the above indications, this species, very widespread in Yun-nan, seems mainly confined to the north of Indo-China and we do not have it from Cochinchina or Cambodia.

L. FERRUGINEUS Roxbg. Fl. Ind. I, p. 551; II, p. 188, DC. Prodr. IV, p. 299; *Dendrophthoe ferruginea* G. Don Gen. Syst., III, p. 240.

INDO-CHINA: Cochinchina: Dinh near Baria [Pierre, n° 6369]; Bay Mountains, Prov. Chaudoc [id., N° 274) without locality [Thorel, n° 951 and 961; Talmy, Baudoin]; Saigon edge of the Avalanche arroyo, on a *Sonneratia* [Lecomte et Finet]. Laos: Sé moun [Harmand. No. 163] form with very lengthened hairs.

Cambodia: Kampot [Geoffray, n° 303].

This species does not appear to date back to northern Cochinchina and Cambodia; it was collected neither in Tonkin nor in China

L. SCURRULA Linn.; Kurz. For. Fl. I, p. 319; JD Hook. Fl. Br. Ind., V, p. 208.

INDO-CHINA: Cochinchina [Pierre, n° 6350]; Thudaumot [Thorel, No. 961]; Ong-iem [Bois, n° 2231].

Cambodia: Grand Lac, on a *Barringtonia* [Lecomte, n° 1836].

Laos [Harmand, No. 28; Pierre herbarium, n° 6355].

Siam [Kerr, No. 1377].

Loranthus Balansae sp. Nov.

Ramuli debiles, teretes, noveli pilis steilatis rufisque tecti, deinde glabri, lenticellati. Folia opposita vel subopposita, coriacea; limbus ovatus 3-5 cm. longus, 2-3 cm. latus, basi apiceque rotundatus, supra glaber, subnitidus, subtus pilis stellatis rufisque tectus; costa conspicua; nervi 4-5 p. vix conspicui; petiolus 6-8 mm. longus. Flores axillares geminati; pedunculus 3-4 mm. longus; pedicelli oppositi 2, 5-6 mm. longi; bractea parva triangularis; calyx ovoideus ore integerrimo 2 mm. longus;

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corolla gamopetala, longa, pilis stellatis rufisque tecta; lobi 4, crassi, 4 mm. longi; stamina 4, antheris-oblongis 2 mm. longis; ovarium adhaerens; stigma globosum. Fructus ovoideus 4 mm. longus, pilosus.

Branches weak, terete, young parts covered with reddish stellate hairs, thereafter glabrous, lenticellate. Leaves opposite or subopposite, coriaceous; limb [blade] ovate 3-5 cm. long, 2.3 cm. wide, base and apex rounded, glabrous above, somewhat shiny, covered below with reddish stellate hairs; midrib conspicuous; nerves 4-5 pairs, scarcely conspicuous; petiole 6-8 mm. long. Flowers in axillary pairs; peduncles 3-4 mm. long; 2 opposite pedicels, 5-6 mm. long; bracts small, triangular; calyx ovoid, margin entire, 2 mm long; corolla gamopetalous [petals connate from base], long, covered in reddish stellate hairs; lobes 4, thick, 4 mm long; stamens 4, anthers oblong, 2 mm long; ovary adhering; stigma globose. Fruit ovoid 4 mm long, hairy.

TONKIN: forests of Mount Bavi [Balansa n^{os} 2326 and 2327]. This species could, on first examination, be confused with certain forms of *L. Yadoriki* Sieb. and Zuc.; but it differs from it: (1) by the leaves noticeably smaller and not shiny on the upper surface; (2) by the much more elongated peduncles and flower pedicels. In *L. Yadoriki* the pedicels are approximately the same length as the calyx, while they sometimes reach 6-7 mm. in the Balansa plant. The hairs on the underside of the leaves are easily deciduous, and on older leaves only the ribs are covered with these hairs. The two sides of the leaves bear stomata moreover not very numerous.

The brownish-red hairs which cover the flower are articulated and sometimes appear formed of more than 20 stellate cells and superimposed; so they grow to over half a millimeter in length.

It is still useful to make an observation with regard to the anthers. Indeed, it often happens that the two internal sacs do not extend over the entire length of the anther and are shown to be more or less reduced, which constitutes a very clear passage towards the 2-sac anthers that we sometimes meet in certain Loranthaceae. This last observation shows that the character derived from the number of pollen sacs is not very important.

Loranthous Robinsonii sp. Nov.

Ramuli grisei lenticellis sparsis instructi; ramuli novelli pilis brunneis stellatisque tecti. Folia alterna vel subopposita pilis stellatis, araneis, brunneis utrinque tecta; limbus obovalis 2.5-3 cm. longus, 1.5-2 cm. latus, apice rotundatus, basim versus paulatim attenuatus; costa utrinque prominens; nervi vix conspicui; petiolus 3-4 mm. longus, apice alatus. Flores geminati ad foliorum axillam dispositi, pilis stellatis brunneis instructi; pedunculus tenuis 5-6 mm. longus, flores 2 gerens; pediculus 1-5 mm. longus; bractea linearis curvata, apice pulvinata, 1.75-2 mm. longa; calyx oblongus, ore integerrimo, 3 mm. longus; corolla tenuis, gamopetala medio apiceque pulvinata, curvata, 2.5-2.8 cm. longa, apice 4-lobata, antice fissura, lobis ovatis, acutis; stamina 4 opposita, filamentis glabris, antheris ovatis 1-3 mm. longis. Ovarum inferum; stylus prismaticus; stigma globosum. Fructus incognitus.

Branches grey, provided with sparse lenticels; young branches covered in brown stellate hairs. Leaves alternate or subopposite stellately hairy, weblike, covering brown on both sides; limb [blade] obovate 2.5-3 cm. long, 1.5-2 cm. wide, apex rounded, base somewhat attenuate; midrib prominent on both sides; nerves scarcely visible; petiole 3-4 mm. long, apex winged. Pairs of flowers arranged in the leaf axils, provided with brown stellate hairs; peduncle thin 5-6 mm. long, carrying 2 flowers; pedicels 1.5 mm. long; bracts linear curved, apex pulvinate [convex], 1.75-2 mm. long; calyx oblong, margin entire, 3 mm. long; corolla thin, gamopetalous pulvinate at the bottom, curved, 2.5-2.8 cm. long, apex 4-lobed, split in front, lobes ovate, acute; stamens 4 opposite, filaments glabrous, anthers ovate, 1-3 mm. long. Ovary inferior; style prismatic [having several longitudinal angles]; stigma globose. Fruit unknown.

Lecomte, H. 1914. Loranthacées d'Indo-Chine. *Notulae Systematicae (Paris)* 3: 65-82.

This plant is very similar to *L. thuducensis* H. Lec. by the general arrangement of flowers and leaves; but, in addition to the hairiness is notably lighter, the leaves are twice as long and bear two well-developed secondary veins, the flowers are also borne by much larger peduncles, and the corolla here clearly curved, reaches nearly 3 cm. long instead of 1 cm. at most. The two plants cannot therefore be confused; but they have very marked affinities.

The species is also well recognized by the unusual length of the bract and the small size of the leaves.

ANNAM, Nha-trang and surroundings [CB Robinson n° 1555]

Var. **parvifolia** H. Lec. Folia minima vix 2 cm. longa; pilis numeroissimis. [Leaves small, barely 2 cm long; hairs numerous]

Phanrang: Tourcham Lecomte and Finet, n° 1395].

Loranthus thuducensis spec. Nov.

Ramuli debiles; cortex subfuscus lenticellis parvis sparsisque instructus; ramuli novelli pilis ferrugineis stellatisque tecti. Folia alterna vel subopposita, parva, pilis stellatis, araneis, ferrugineis utrinque tecta; limbus obovalis 12-15 mm, longus, 8-10 mm. latus, apice rotundatus, basim versus attenuatus; petiolus 2 mm. longus. Flores geminati ad foliorum axilam dispositi, pilis stellatis rufisque instructi; pedunculus 3-4 mm. longus flores 2 gerens; pedicellus 1 mm. longus; bractea linearis, curvata, 2 mm. longa; calyx cylindricus, integerrimus, 2 mm, longus; corolla gamopetala, cylindrica, tenuis, 1 cm. longa, apice 4-lobata, lobis spathulatis; stamina 4. antheris brevibus, ovatis, 1 mm, longis; ovarium inferum; stylus primaticus; stigma globosum. Fructus cylindricus 3-4 mm. longus.

Branches weak; cortex brown provided with small sparse lenticels; young branches covered in brown stellate hairs. Leaves alternate or subopposite, small, stellately hairy, weblike, covering brown on both sides; limb [blade] obovate 12-15 mm. long, 8-10 mm. wide, apex rounded, base somewhat attenuate; petiole 2 mm long. Pairs of flowers arranged in the leaf axils, provided with reddish stellate hairs; peduncle 3-4 mm. long, carrying 2 flowers; pedicels 1 mm. long; bracts linear curved, 2 mm long; calyx cylindrical, margin entire, 2 mm. long; corolla gamopetalous, cylindrical, thin, 1 cm. long, apex 4-lobed, lobes spathulate; stamens 4, anthers short, ovate, 1 mm. long; ovary inferior; style prismatic [having several longitudinal angles]; stigma globose. Fruit cylindrical 3-4 mm long.

This species, which was collected by L. Pierre at Thu-Due (Cochinchina, n° 6368) is remarkable: 1° by the small size of the leaves; 2° by the unusual length of the bract which is linear, curved, generally longer than the calyx, towards which its concavity turns; the peduncle, the pedicel, the bract, the calyx and the corolla, as well as the young twig leaves so covered with brownish red stellate hairs, which are tangled, generally short and araneous on the surface of the leaves, but which are quite long and with multiple stages of stellate ramifications in the flower. From *L. Robinsonii* it differs notably by the corolla which reaches only 1 cm. instead of 2.5-2.8 cm.

PENTAMERIC COROLA SPECIES
Dialypetalous corolla.

Lecomte, H. 1914. Loranthacées d'Indo-Chine. *Notulae Systematicae (Paris)* 3: 65-82.

LORANTHUS HETERANTHUS Wall. Cat. 5375 JD Hook. Fl. Br. Ind. V, p. 208; *Coleobotrys heterantha*, VT Bull. Soc. bot. Fr. XLI, pp. 484-542.

M. van Tieghem created the genus *Coleobotrys* for a number of plants included so far in the genus *Loranthus* and forming the section *Heteranthus* Bl.

This genus would be characterized, according to M. van Tieghem, by a protruding collar which surrounds the base of the main peduncle, by numerous sclerites in the tissues, in particular in the thickness of the petals and finally by long anthers, with its transversely partitioned.

We will add the following characters: 1° the very polymorphic leaves have barely marked and very close secondary veins, or rather the secondary veins are often very inconspicuous and appear to be replaced by veins going very obliquely from the rib to the edge of the leaf; 2° unlike species with dorsi-ventral leaves, the stomata are here distributed on both sides of the leaf instead of being found only on the underside; 3° the floral pedicels have an unusual length and along these pedicels, the bract shows itself clearly connivent. In a Sumatran plant communicated to M. van Tieghem by Beccari (No. II), the connivent bract even forms well-characterized wings (*Coleobotrys alata*, VT); 4° the calyx is also very long and its blade often flared and sometimes sublobed, presents a projection of 5 to 14 mm.; (5) the stamens insert themselves towards the lower part of the lobes of the corolla, instead of inserting towards the upper third or quarter; 6° the anthers reach up to 12-14 mm. long and have four sacs arranged on the edges of the prism; moreover these 4 pollen sacs are partitioned transversely; 7. Finally, the pollen grains are tetrahedral and not stellate as in most *Loranthus*.

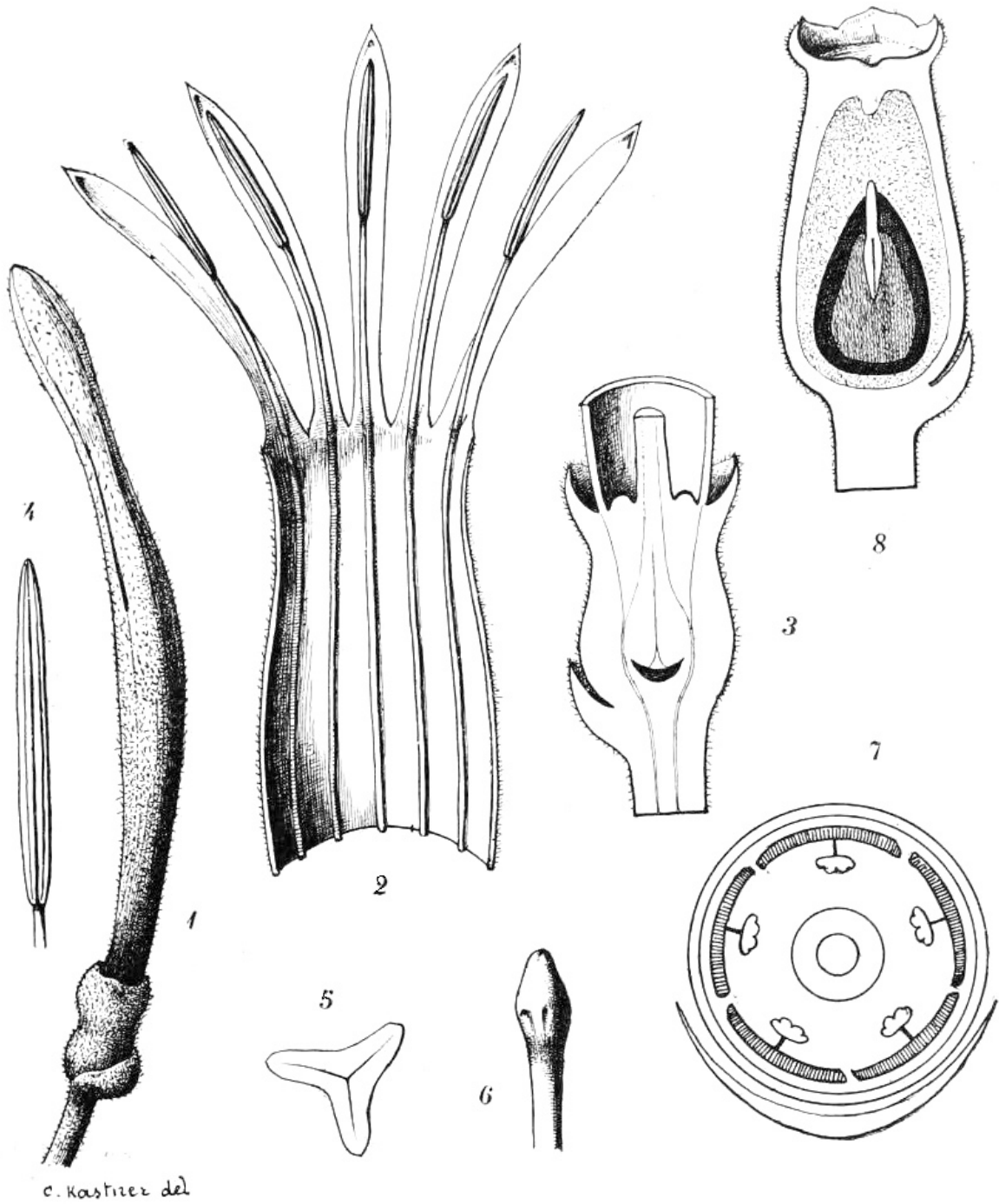
However, the flower is constructed in the same way as in pentamerous *Loranthus*, and the characters mentioned above appear to us to be specific characters rather than generic characters.

We will therefore keep these plants in the genus *Loranthus* by creating a section for them that will correspond to the genus of M. van Tieghem.

One of the characteristics of *Loranthus heteranthus* Wall. lies in the quite remarkable polymorphism of the leaves. The Museum has, from Dr. Thorel, a sample bearing, on the same branch, leaves, some of which have a blade of 13 cm. long on others of 5 cm. wide, and for the others, incomparably narrower, 8 cm. by about 1.2 cm. One of the samples of the same number 1172 bears only broad leaves and another only narrow leaves, and if these samples were not found together with the one which bears both kinds of leaves simultaneously, one might think that this is two different species, because the leaves differ not only in size, but also in shape.

INDO-CHINA Cochinchina [Thorel, 1172]; Baochiang (Pierre, 1872); Thuduc [Pierre, 973 pars]; Donnai [Pierre, 923 pars Annam Nha-trang [Krempf, n° 1596].

Cambodia: prov. Samrong-tong on *Eugenia* [Pierre, 973] prov. Kampot [Pierre, without number]; mountains of Pursat [Harmand, n° 501]; "On mango sometimes completely overgrown and appearing reddish [Harm.]".



Loranthus cambodianus H. Lec.: - 1, a whole flower X2; - 2, open corolla, with stamens X3; - 3, longitudinal section of the lower part of the flower X6; - 4, a separate and very long anther X4; - 5, a grain of star pollen; - 6, the stigma X6; - 7, diagram of the feur.

Lecomte, H. 1914. Loranthacées d'Indo-Chine. *Notulae Systematicae (Paris)* 3: 65-82.

L. longispicatus H. Lec. *Chiridium sessile* VT in Bull. Soc. bot. France (1894), p. 483.

Ramuli glabri obscure triangulares deinde cylindrici; cortex longitudinaliter fissus. Folia crassa, coriacea, subverticillata basi articulata; limbus lanceolatus, vel lanceolato-oblongus, basi attenuatus, apicem versus attenuatus vel plus minus apice rotundatus, 11-15 cm. longus, 2-4 cm. latus; costa utrinque conspicua; nervi supra obscure subtus non conspicui; petiolus glaber 1,5 cm. longus paullum alatus, supra canaliculatus. Spicae axillares vel ad apicem confertae, 12-15 cm. longae; pedunculus crassus, subfuscus, glaber, longitudinaliter striatus. Flores subsesiles; bracter cyathiformes dorso gibbosa; calyx ovoideo urceolatus, 2 mm. longus, ore integerrimo; corolla dialypetala 5-mera, basi inflata, apice clavata; corollae segmenta crassa. Stamina 5; anthere oblongae 1-5 mm. longae, apice plus minus apiculatae 4-loculatae, abortu saepe 3-2 -loculatae. Ovarium inferum; stigma capitatum. Fructus ovoideus calycis limbo coronatus.

Branches glabrous, cylindrical and thereafter obscurely triangular; cortex longitudinally fissured. Leaves thick, coriaceous, subverticillate at basal joints; limbus [blade] lanceolate, or lanceolate-oblong, base attenuate, apex becoming attenuate or more or less rounded, 11-15 cm long, 2-4 cm wide; midrib conspicuous on both sides; nerves obscure above, non conspicuous below; petiole glabrous 1.5 cm long somewhat winged, canaliculate above. Spikes axillary crowded at apex, 12-15 cm long; peduncles thick, brownish, glabrous, longitudinally striate. Flowers subsessile; bracts cup-shaped, dorsally gibbous; calyx ovoid urceolate, 2 mm long, margin entire; corolla dialypetalous [with separate petals], 5-merous, base inflated, apex clavate; corolla segments thick. Stamens 5; anthers oblong 1-5 mm long, apex more or less apiculate, 4-loculate, often aborting to 3-2 loculate. Ovary inferior, stigma capitate. Fruit ovoid crowned by the calyx limb.

INDO-CHINE:

Laos, Attopeu [Harmand, nos. 1278 and 1346].

Cambodia [Pierre, n° 673 pars].

Var. **grandifolia** ; *Chiridium Pierrei* (VT).

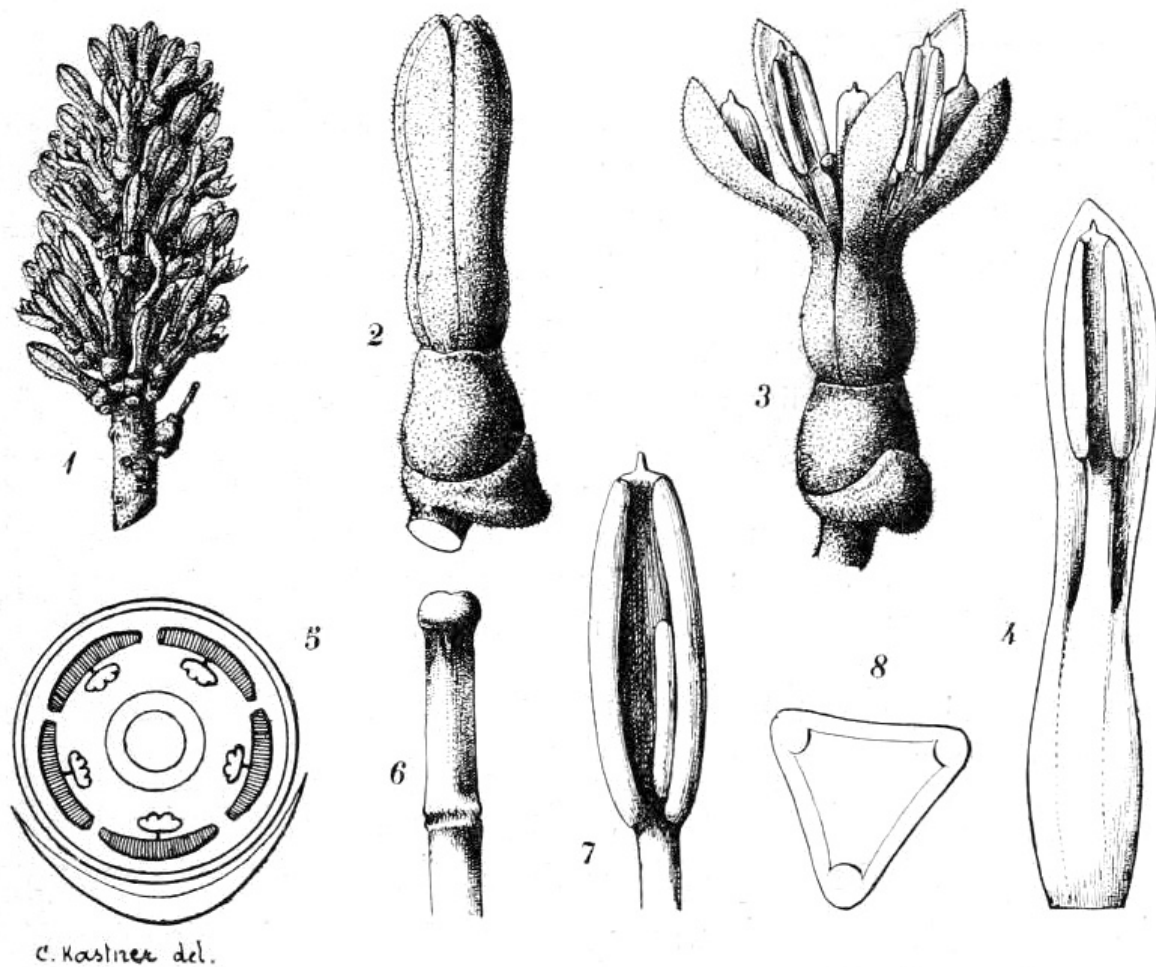
Folia ampla 15-16 cm. longa, 6 cm. lata; spicae 20 cm. longae.

Cambodia: Kwang-krepeu [Pierre, n° 673 pars].

The young twigs of this species are often prismatic with 3 sides. The leaves, remarkably thick, contain sclerites which can be easily seen by tearing the blade; the sclerites protrude from the section, as do the fibers on a torn paper. The leaves and flower peduncles always fit on a protrusion of the bark with a circular rim. The bract bears a more or less developed swelling on the outside, forming an obtuse spur. The corolla may be glabrous or very finely puberulous. The anthers, which have a very fine tip at their top, typically have 4 sacs; but the two internal sacs can abort, either completely or partially. Finally, the style can present towards its lower third a slight constriction corresponding to the level where the petals, very thick and with a triangular section in their lower part, suddenly take the shape of blades. This last characteristic brings this plant closer to the genus *Lanthorus* created by van Tieghem for the articulated style *Loranthus*.

The main species was designated by M. van Tieghem, but not described, as *Chiridium sessile* VT [Bull. Soc. bot. Fr. (1894), p. 483]. As the genus *Chiridium* does not seem to us to be conserved and becomes a simple section, the species cannot retain the specific name of *sessilis*, already used by Jacquin for a plant from New Granada. We have therefore given it the name of *L. longispicatus*. It is a neighbor of *L. Parishii* Hook: f.; but the latter has briefly pedicellate and not sessile leaves; the pedicels measure 1.5-2 mm. Both species have sclerites in the parenchyma of their leaves.

L. PENTAPETALUS. Roxbg. Fl. Ind. I, p. 553; II, p. 211; JD Hook. Fl. Br. Ind. V, p. 206; *Lanthorus pentapetalus*, VT in Bull. Soc. bot. Fr. XLI, p. 488.



Loranthus longispicatus H. Lec.: – 1, upper portion of the spike, gr. nat. – 2, a separate flower showing the spur of the bract X 5; – 3, the same open X 5; – 4, a separate petal, with the stamen superimposed X 10; – 5, flower diagram; – 6, the style crowned by the stigma X 10 to: – 7, an anther with apical connective; – 8, a grain of pollen.

INDO-CHINA: Cochinchina: Ben-cât [Pierre, 6367]; near Bien Hoa [Pierre, 6367]; Phu-Quoc [Pierre, 6348]

Cambodia: Kamchay [D^r Hahu]; (medicine for swelling and stomach ache, D^r Hahn); Schraal Mountains [Pierre, n° 974].

Laos: Mekong [Thorel, without number]; Attopeu region [Harmand, n° 1337].

Annam: Hoi-mit [Eberhardt, n° 1578].

Tonkin Lac Thó [Bon, n° 3406]; Thien-thôn [Bon, n° 5423].

Var. ALBIFLORA H. Lec. *Lencobotrys inflata* VT, Bull. Soc. bot. Fr. (1894), p. 503; with white flowers.

Tonkin: Than-moï, on *Ficus* [Balansa, n° 1028].

Gamopetalous corolla.

Loranthus cambodianus sp. Nov.

Ramuli cylindrici primo pubescentes lenticellis parvis instructi. Ramuli, folia, pedunculi floresque primo pubescentia pilis subfuscis stellatis, deinde subglabra. Folia alterna interdum subopposita; limbus coriaceus, fragilis, ovatus, basi roundatus vel subcordatus, apice triangulariter attenuatus, obtusus, 8-11 cm. longus, 4-5,5 cm. latus; costa nervique utrinque, maxime subtus prominentes; nervi 4-5 p. curvati, saepe ramosi; petiolus teres 1 cm. longus. Rami axillares, pedunculi 2-3,5 cm. longi pilosi; pedicelli 4 mm. longi, villosi; bractea lata, apiculata, concavaque; calyx urceolatus, 4-5 mm. longus, pilosus, ore 5-lobato, limbo 1-5 mm. longo; corolla pilosa subfusca, gamopetala 4 cm. longa, medio tumescens, apice clavata, 5-lobata, lobis 10 mm. longis extus reflexis. Stamina 5, filamentis pilosis; antherae lineares 6 mm. longa; discus circumductus; stigma discoideum. Fructus urceolatus calycis limbo coronatus, 5-6 mm. longus.

Branches cylindrical, initially pubescent, provided with small lenticels. Branches, leaves, floresent peduncles initially pubescent with reddish stellate hairs, thereafter subglabrous. Leaves alternate sometimes subopposite; limb [blade] coriaceous, fragile, ovate, base rounded or subcordate, apex triangularly attenuate, obtuse, 8-11 cm long, 4-5.5 cm wide; midrib along with the nerves on both sides, greatly prominent below; nerves 4-5 pairs curved, often branching; petiole terete 1 cm long. Axillary branches, peduncles 2-3.5 cm long, pilose; pedicels 4 mm long, villous; bracts wide, apiculate, concave; calyx urceolate, 4-5 mm long, pilose, margin 5-lobed, limb 1-5 mm long; corolla brownish pilose, gamopetalous, 4 cm long, tumescent [swollen] in the middle, apex clavate, 5-lobed, lobes 10 mm long, reflexing outwardly. Stamens 5, filaments pilose; anthers linear 6 mm long; disc circumductus; stigma discoid. Fruit urceolate crowned by the 5-6 mm long calyx limb.

CAMBODIA: near Cratieh, Parasite on *Citrus Aurantium* [Harmand, n° 15 and Herb. Pierre, 6361]

This plant, which belongs to the *Dendrophthoe* section, is very similar to *L. longiflorus* Desrous. by the general form; but the anthers are much longer; moreover the filaments are with fasciculate hairs instead of being hairy with simple hairs directed downwards.

L. PENTANDRUS Linn. Mant. p. 63; DG. Prodr. V, p. 305 Kurz For. Fl., 11, p. 320; Wall. Cat., P. 514; Blume Fl. Jav. Loranth., 33, p. 10; *L. farinosus* Desr. in Lamk. Encycl. III, P-597; *Dendrophthoe pentandra* and *D. farinosa* Miq. Fl. Ind. Bat. I, pt. I, pp. 818, 819; *Elytranthe farinosa* G. Don, Gen. Syst. IV, p. 127.

INDO-CHINA: Tonkin: Tu-Phap [Balansa, n° 2333]; corolla of a reddish yellow according to the collector; [Bon n° 5087]. This last plant constitutes a distinct shape with a somewhat conical style; Long-tchéou [Beauvais, n° 281].

Cochinchina: [Borel, n° 48]; Baria [Pierre, n° 160]; Saigon on *Averrhoa* [Pierre, n° 4238].

Laos Bassac [Harmand, No. 1075].

Var. **cochinchinensis** H. Lec., with very small leaves; plant with greenish flowers and red anthers, parasitic on a Euphorbiaceae [Harmand, n° 748].

Var. **Harmandii** H. Lec., With large leaves and red bacciform fruits, cylindrical, 1 cm long.

Cambodia: Grand-Lac [Harmand, n° 690; Godefroy]

Siam: Chieng-ma [Kerr]; Doï-Sootep [Hosséus]; Bangkok [Schomburgk].

Loranthus Thorelii sp. Nov.

Rami teretes, repentes, subfusci, irregulariter ramosi, 1-2 mm. longi, rostris instructi; ramuli pilosi pilis stellatis, gradatisque, rufo-fuscis instructi, deinde glabri. Folia opposita crassa, rigida, coriacea, pilis stellatis rufo-fuscis, brevibus tecta; limbus ovalis basi rotundatus apice paulatim attenuatus obtusus, 6,5-8 cm longus, 2,5-3,5 cm. latus; costa subtus prominens, nervi vix conspicui; petiolus 8-9 mm. longus. Flores spicati; spicae breves 6-10 fl. gerentes; flores rufo-fusci pilis stellatis tecti; pedicellus brevis vel nullus; bractea longa, linearis, triangularis, obtusa, 8-10 mm. longa; calyx cylindricus, 2,5-3 mm. longus, limbo bene evoluto, ore sublobato; corolla cylindrica apice subclavata rufo-fusca 15 mm. longa; lobis extus reflexi, 4,5 mm. longi; stamina 5, antheris oblongis apice apiculatis? ovarium inferum breve; stigma ovoideum. Fructus ignotus.

Branches terete, repent, reddish, irregularly branched, 1-2 mm long, provided with beaks [?]; branches provided with pilose reddish-brown stellate hairs, gradatisque?, thereafter glabrous. Leaves opposite, thick, rigid, coriaceous, covered with short, reddish-brown stellate hairs; limb [blade] oval base rotund apex slightly attenuate obtuse, 6.5-8 cm long, 2.5-3.5 cm wide; midrib prominent below, nerves barely conspicuous; petiole 8-9 mm long. Flowers spicate; spikes carrying 6-1 flowers; flowers covered in reddish-brown stellate hairs; pedicels short or absent; bracts long, linear, triangular, obtuse, 8-10 mm long; calyx cylindrical, 2.5-3 mm long, limb well developed, margin sub-lobed; corolla cylindrical, apex subclavate reddish-brown, 15 mm long; lobes reflexing outwardly, 4.5 mm long; stamens 5, anthers oblong apex apiculate?, ovary short inferior; stigma ovoid. Fruit unknown.

Laos: Me-kong, Lakhôn [Thorel, 3131]; blooms in March according to the collector.

This species differs from *L. bracteatus* DC. by the hairs which are here stellate and tiered, while they are simple in *L. bracteatus* DC. It differs from *L. Yadoriki* Sieb. by the constitution of the flower which is here pentamerous instead of being tetramerous and moreover by the bracts which are well developed; finally, the leaves are not shiny on the upper surface as in *Yadoriki*. But the plant undoubtedly resembles *L. siamensis* Kurz (Kurz For. Fl. II, p. 320). It has thick, rigid leaves covered with a red tomentum; it has very long floral bracts; but however it cannot be confused with *L. siamensis* from which it differs by the following characters:

1 ° By the leaves which measure 6-8 cm. long in Thorel's plant, while the diagnosis is 2-3 lines (= 5-8 mm.) for *L. siamensis*.

2 ° By the spikes of which the peduncle does not reach half a centimeter in our plant, while they reach 4-6 cm. in *L. siamensis*.

Perhaps, however, a typographical error had slipped into Kurz's description and we would hesitate to separate Thorel's plant, if Kurz did not then add about the calyx "limb obsolete"; however, the calyx is, on the contrary, provided with a very deep and slightly lobed blade in Thorel's plant. In addition, the floral bracts of *L. siamensis* Kurz are elliptical oblong, while in *L. Thorelii*, they are elongated oval, approaching a very obtuse triangle at the top. Finally, the anthers of Thorel's plant are long and apiculate at the top, characteristics which are not indicated for *L. siamensis* Kurz. by certain characters, in particular by the unusual length of the floral bracts and the pentamerous of the flowers.

If we take a look at the distribution of *Loranthus* in Indo-China, we first notice that species with pentamerous corolla are poorly represented in Annam and Tonkin, while they are abundantly found in Cochinchina, Laos, Cambodia and Siam. The species *L. heteranthus*, for example, does not appear to exceed the region of Nhatrang, south of Annam.

Among the species with a tetramerous corolla are *L. Robinsonii* H. Lec. and *L. thuducensis* H. Lec. have so far only been found in Cochinchina and south of Annam. On the contrary, *L. esipitatus* Stapf, abundant in China and Tonkin, is still found in Annam, but probably lacking in Cochinchina and Cambodia.