

ON THE GROUPING OF SPECIES IN GENERA IN THE LORANTHACEAE
WITH GAMOSEPALOUS CALICES* AND BASIFIXED ANTERS OR
DENDROPHTHOEEES;
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* What Tieghem calls the calyx we call the corolla

In three previous Notes, I tried to group into genera the many species of the Loranthaceae tribe which make up, on the one hand, the sub-tribe of the Phenicanthémées, where the calyx is dialysepal and the anthers basifixed, on the other sub-tribe of Struthanthaceae, where the calyx is dialysepalous and the anthers versatile (1). In order to complete the summary study of this vast tribe, I propose today to attempt the same test for the species which, having the gamosepalous calyx and the basifixed anthers, form the sub-tribe of the Dendrophthoeae there. Like the Phenicanthémées, the Dendrophthoeae all inhabit the Old World, while the Struthanthaceae almost all grow, as we know, in America.

In a recent work, Mr. Engler has greatly extended our knowledge about this sub-tribe, of which he described in one stroke seventy-four new species, all growing on the African continent and all belonging to the two old sections *Dendrophthoe* and *Tapinanthus*, as well as the new section *Ischnanthus*, of its genus *Loranthus* (2). At the same time, he endeavored to group these species, joining to them the types of the African continent already known, twenty-three in number, in a certain number of subsections, according to the floral characters. This preparatory grouping was very useful to me, as we will see below.

By studying the set, thus notably increased, of the species which make up the sub-tribe of the Dendrophthoeae, we see that they are grouped into a certain number of genera, which must first of all be defined in a few words, from after the characters of the inflorescence and floral organization.

In almost all species the inflorescence is simple, with a single sub-floral bract. As in the Phenicanthémées, we do not know where the inflorescence is simple with three bracts under each flower, a fairly frequent arrangement, as we have seen, in the Struthanthaceae. There are also only a very small number in which the inflorescence is composed of triads, an arrangement which is observed quite often, as we know, in the Phenicanthémées and in the Struthanthaceae.

The simple inflorescence is sometimes reduced to a solitary, sessile flower, which offers at its base several bracts forming an involucre: this is the new genus *Bakerella*.

It is sometimes a capitulum. When the involucre is formed of scaly bracts, if the capitulum is sessile, it is the new genus *Agelanthus*; if it is pedunculate, with non-hairy flowers, it is the new genus *Benthamina*; with flowers all covered with long

silky hairs, this is the new genus *Erianthemum*. When it is formed from leafy bracts, it is the genus *Tolypanthus* of Blume.

It is sometimes a spike. If the axis of the spike does not go beyond the flowers, it is the new genus *Oedina*; if the axis of the spike extends beyond the last dagger-shaped flowers, it is the new genus *Beccarina*.

Elsewhere the flowers are arranged in racemes. If the fruit is, as usual, ovoid, sometimes the leaves are whorled and the flowers hexameric, it is the new genus *Kingella*; sometimes the leaves are opposite or isolated and, the pentameric flowers, with calyx swollen at the base in the new genus *Oncella*, with calyx not swollen at the base in the genus *Dendrophthoe* of Martius. If the fruit is, owing to a peculiar structure of the flower, pear-shaped, with usually tetrameric flowers, it is the new genus *Cichlanthus*.

Most often the inflorescence is an umbel, pedunculate or sessile, with more or less long pedicels, sometimes almost absent to the point of simulating a flower head.

The umbel is sometimes terminal. If the leafy twig which bears it is devoid of perula [leaf bud scale] at its base, it is the genus *Lichtensteinia* of Wendland. If it is provided with a perule, with pentamerous flowers, it is the new genus *Acranthentum*; with tetrameric flowers, this is the new genus *Phyllodesmis*.

More frequently, the umbel is axillary. Whenever the flower does not then exhibit in any of its parts a very prominent external character, if it is covered with hairs, it is the new genus *Taxillus*; if it is hairless, on type five, it is the new genus *Schimperia*; on type four, it is the new genus *Englerina*.

When the calyx tube is provided on its internal face, at the base, with as many lobes as sepals and higher, on each side of the concretescent staminal filaments, of oblique projections, it is the new genus *Tapinostemma*. When the calyx tube bulges out at its base, it is the new genus *Oncocalyx*. When the calyx, deeply split on one side, spreads out into a blade that winds inward in a volute shape, this is the new genus *Oliverella*.

When each stamen produces on its internal face, at the level of insertion of the anther, an ascending tooth, with pentameric flowers, it is the new genus *Odontella*; with tetrameric flowers, if the calyx is rounded at the top in the bud, it is the new genus *Ischnanthus*; if the calyx is truncated and crowned at the top in the bud, it is the new genus *Stephaniscus*.

When each anther has its pollen sacs transversely partitioned and subdivided into cubicles, if the flowers are pentameric, with glabrous flowers, it is the new genus *Locella*; with hairy flowers, when the fruit has the ordinary form, it is the new genus *Phragmanthera*; when the fruit is pear-shaped and surmounted by a nipple, it is the new genus *Thelecarpus*; if the flowers are tetramers, it is the new genus *Septulina*.

When the style, gradually swelling from bottom to top in its lower region, is suddenly narrowed under the stigma throughout the length of the anthers pressed against it in the bud, so as to take the form of skittle, it is the new genus *Metula*.

The flower can also have more than one of the preceding characters at the same time. If it has the calyx bulging at the base with a skittle-shaped style, it is the new genus *Globimetula*. If it has a staminal tooth with a skittle style, it is the new genus *Dentimetula*. If it has the septate pollen sacs with a skittle-shaped style, this is the new genus *Septimetula*. If it offers both a calyx swollen at the base, toothed stamens and a skittle-shaped style, it is the genus *Tapinanthus* of Blume. To these three characteristics combined, if it adds that of forming around the top of the calyx either a thickened ring, or as many bumps or horns as there are sepals, the crown thus formed immediately distinguishes from *Tapinanthus* the new genus *Acrostephanus*.

Finally, the species in which the inflorescence is composite form only one genus, this inflorescence being everywhere an umbel of triads with a sessile median flower and pedicellate lateral flowers, that is to say of cymules; this is the new genus *Candollina*.

Let us now take again one by one, in the order indicated, the thirty-four genera thus summarily defined, in order to examine more closely their characters and their composition, by sticking to the main features of their external morphology and to a few structural characters, reserving all circumstantial details for the Memoire which will be published later.

I. GENERA WITH SIMPLE INFLORESCENCE.

1. On the new genus BAKERELLA. - Defined by its solitary sessile flower, surrounded at the base by an involucre of small bracts, this genus has for types the two plants collected in Madagascar by Rev. Baron that Mr. Baker, one described in 1882 under the name of *Loranthus (Dendrophthoe) microcuspis* (3), the other in 1884 under that of *L. (D.) Diplocrater* (4).

In *L. microcuspis*, the solitary flower is terminal, which causes, since the leaves are opposite, the dichotomy of the twigs. Immediately, above the last pair of leaves, the twig bears a pair of narrow, pointed bracts cross with it, then a second pair of bracts cross with the first, then the flower, which is sessile in the center of the involucre formed by these four bracts. The bracts of the second pair are very unequal; one of them is small, sometimes of the same shape as those of the first pair, usually wider and shorter; the other, much larger, is applied against the ovary which it completely surrounds by its sheathing base, thus behaving as if it were the mother bract of the flower. This arrangement suggests that the typical inflorescence is actually a quadri-flower head, in which three flowers regularly abort, giving the fourth a middle and terminal situation.

The calyculus is very developed and later tears lengthwise due to the bulging of the base of the calyx. This one is pentamerous, split on one side. The stamens are threaded together with the sepals to the base of the anthers, which is toothless. The style is uniformly thin, with a stigma on its head.

The mesophyll of the leaf and the wall of the inferior ovary have numerous stellate sclereids. The lignified cup is wide and deep, in the shape of a drinking glass, and the pistil is formed of five alternisepalous carpels, without abortion.

In *L. diplocrater*, which was found in Madagascar by Cattat in 1889 (n° 129), the flower, always solitary and sessile, is usually axillary, sometimes however terminal, and then conformed as in the preceding species. When it is axillary, the flower offers at its base two small lateral bracts, then two other bracts in cross with the first and very unequal; one of them, much larger and marked with a hump in the middle, is sheathing and envelops the ovary to a greater length than in *L. microcuspis*.

In short, terminal or axillary, the inflorescence is essentially the same in these two species. The structure of the leaf and the flower also offers the same characters, with slight differences. They therefore belong to the same genus, specific to Madagascar, which I will name *Bakerella*, in honor of the learned botanist who first described them and who contributed so much to making the flora known of this large island. the *Bakerella microcuspis* (Baker) and *B. diplocrater* (Baker).

2. On the new genus AGELANTHUS. - In this genus, the flowers are arranged in axillary, multifloral and sessile capitules, a character from which we took its name (5). Surrounded by a cup-shaped bract and provided with a long calyculus, the flower has its calyx more or less strongly swollen in a ball at the base. The growth of the calyx being basilar, this bulge does not appear until quite late and, to observe it, it is always necessary to apply to fully developed flowers. As this same disposition is also showing in other genera, as we will see later, it was necessary to make this remark once and for all at the beginning.

The genus *Agelanthus* includes first the *Loranthus* of Angola, recently described by M. Engler, who made it the type of the *Inflati* subdivision in his section *Dendrophthoe*, and probably also the three other species of this subdivision (6). To this must be added *L. glomeratus* and *brunneus*, also from Angola, which M. Engler has classified, with *L. Henriquesii*, in its subdivision *Glomerati* (7). The author says, it is true, that in this last group the calicinal tube is not swollen at the base, but I have made sure that if it is indeed missing in the buds more or less old than the samples of Welwitsch are overwhelmingly bearded, the bulge clearly exists in the few fully developed flowers that can be seen there.

The leaf, which is trinerved, has its mesophyll devoid of sclerenchymatous cells. The inferior ovary, very short, has sclerenchymatous nodules in its outer wall; the lignified cup, located towards the base, is thick and watch glass shaped. The style has a highly developed free rim around its base, and of the five alternisepalous carpels it usually aborts two.

3. On the new genus BENTHAMINA. - Characterized by its two-flowered axillary capitulum inflorescence, this genus is type *Loranthus alyxifolius* of MF de Müller, which inhabits Australia (Queensland and New South Wales) (8).

The flower heads are shortly stalked, often fasciculate at the nodes and, to exit, each of them pierces a cortical pocket. Peduncle, bract and young calyx are covered with reddish brown pubescence. The calyx, slightly swollen at the end in the bud, is truncated there with the top raised in a small point; later it splits more on one side.

The leaf has its mesophyll all crammed with star sclereids with long thread-like branches, with very little or no lignified membrane. The ovary contains, throughout the thickness of its outer wall, a large number of stellate sclereids with a lignified membrane. The cup, located halfway up, is wide and deep, shaped like a drinking glass. The pistil consists of five alternisepalous carpels, sometimes reduced to four by abortion.

To the inflorescence mode are therefore added the structure of the leaf and that of the ovary, in particular the shape of its stellate sclereids and its lignified cup, are added to characterize this genus. In memory of the learned author of Flore d'Australie, I will name it *Benthamina*. It is currently reduced to a single species, *Benthamina alyxifolia* (Müller).

4. On the new genus ERIANTHEMUM. - Defined by its flowers arranged in an axillary pedunculate capitulum, normally carrying four flowers, but being able to be reduced to three or to two by abortion, this genus has for type the *Loranthus Dregei* of Ecklon and Zeyher (*L. oblongifolius* Meyer), which in various forms is found widespread throughout the eastern coast of Africa, from Abyssinia to Cape Town. Each flower, provided with a large sheathing bract and a long tubular calyculus, is covered from base to top by long, simple silky hairs, very different from the hairs branched into superimposed stars that we observe here and there in the most diverse Loranthaceae, both Viscoideae and Loranthoideae. This coating makes it possible to immediately recognize this genus among all other Dendrophthoeae, so it is from this character that we got its name (9).

The leaf, as well as the lining of the inferior ovary, is devoid of sclereids. The lignified cup, located at mid-height, is thick, with a flat upper face, in the shape of a log. The pistil has, around its central slit, only three or four ligneous vascular bundles, so there is an abortion of one or two of the five alternisepalous carpels.

To this species, M. Engler has just added two others by describing *L. Schelei*, from Ousambara, and *L. taborensis*, from Tabora, in the lakes region. He brought these three species together in a *Hirsuti* subsection, of his *Dendrophthoe* section. It is this subsection which is here elevated to the rank of genus and the species become respectively *Erianthemum Dregei* (Ecklon and Zeyher), *E. Schelei* (Engler), *E. taborensis* (Engler).

Thus constituted, the genus *Erianthemum* is widespread, as we see, over the entire eastern coast of Africa. In its long geographical extension, the *E. Dregei* offers, especially in the form of its leaves, variations sufficiently marked for M. Engler to be able to distinguish three varieties: *subcuneifolia*, *obtusifolia* and *Sodenii*, the second of which has been described as a separate species by Klotzsch under the name of *Loranthus roseus*. The question of knowing if, under this name of *L. Dregei*, it is not really hiding several distinct species, could not be treated here; the examination is submitted to the Detailed Memorandum.

5. On the genus TOLYPANTHUS Blume. - Characterized by its flowers arranged, four or five in number, in an axillary capitulum, briefly pedunculate or sessile, and provided with an involucre formed by as many leafy bracts, free or concrescent, this genus was created by Blume in 1830 (10). Since then, although it has never been recognized as such, it has always been admitted as a separate section of the genus *Loranthus*. It is to be restored.

The type species is *T. involucratus* (*Loranthus involucratus* Roxburgh) from India, where the flower head has flowers with as many free bracts. The leaf is thin and devoid of sclereids. The inferior ovary has nodules of isodiametric sclerenchymatous cells in its outer wall; the lignified cup has the shape of a watch glass, located one third from the base. The pistil is reduced, by abortion, to three or four of the five normal alternisepalous carpels.

To this must be added *T. Gardneri* (*L. Gardneri* Thwaites), Ceylon, where the flower head has five flowers with as many free bracts, and *T. lageniferus* (*L. lageniferus* Wight) from India, where the flower head has five flowers with as many bell-shaped bracts. In *T. involucratus*, Blume united in this genus *L. loniceroides* Linnaeus, which is an *Elytranthe*, and *L. coriaceus* Desrousseaux, which does not belong to it either.

Made up of these three species, the genus *Tolypanthus* inhabits the mountains of India and Ceylon.

6. On the new genus OEDINA. - Easy to distinguish by its axillary spike inflorescence and by its calyx widened at the base, character from which we got its name (11), this genus has for type the *Loranthus erectus*, from Ousanibara, side East Africa, recently described by M. Engler, who established for him a subsection *Laxiflori* in his section *Dendrophthoe* (12).

The whole plant is covered with brown hairs, with tiered stars. The mesophyll of the leaf encloses it with numerous branched sclereids. The outer area of the inferior ovary and the calyculus, which is very short, are devoid of sclerenchymatous cells. The lignified cup, located halfway through, is flattened into a disc. The pistil forms only three of its five alternisepalous carpels.

This genus includes so far only this one species, which will be *Oedina erecta* (Engler).

On the new genus BECCARINA.— Remarkable among all for its axillary spike, whose thick and woody axis extends above the last flowers in a long quadrangular dagger, this genus has been described in an earlier Note (13) and there would be no need to return if it had not become necessary to make an important correction to its description, which brought with it a change of name.

On studying it for the first time, I had noticed that the anthers of the flower examined all had six pollen sacs arranged in three pairs, one on each side and one in the middle of the ventral surface, in short, were trilocular. This singular character had led me to adopt the generic name of *Trithecanthera*.

Since then I have observed the same conformation in the anthers of a plant belonging to an entirely different genus, and at the same time I have recognized that it is a pure accident striking here and there certain flowers, while others retain the normal bilocular conformation in their anthers. Having then resumed the examination of the anthers in other flowers of the first genus, I was convinced that, as a rule, they have, according to the rule, only two pairs of pollen sacs, which they are normally, bilocular. There is therefore no need to take into account, since it is exceptional, the conformation observed in the first place, and, therefore, it is necessary to remove from the genus its name of *Trithecanthera*. I propose to name it *Beccarina*, in honor of Mr. Beccari, who discovered the plant in question in Borneo; this species will henceforth be *Beccarina xiphostachya*.

8. On the new genus KINGELLA. - Defined by its whorled leaves six or seven in number at the top of the twigs, by its axillary raceme inflorescence and its large hexamerous flowers, this genus is like the plant discovered at Perak, in 1884, by P. Scortechini, and described by M. King in 1887 as *Loranthus (Dendrophthoe) Scortechinii* (14). The leaf and wall of the inferior ovary contain numerous star sclereids with short branches. The lignified cup is broad and shallow, and of the six alternisepalous carpels, it usually aborts two in the pistil.

By these various characters, this plant is clearly distinguished from all *Dendrophthoe*, and must constitute a separate genus. I name it *Kingella* in honor of Mr. King, the learned director of the Calcutta Botanical Garden, to whom we owe the knowledge of several interesting Loranthoids of Perak, and the species in question thus becomes the *Kingella Scortechinii* (King). By its large whorled leaves at the top of the branches, and a few other characters, this plant resembles the *Beccarina xiphostachya* of Borneo, from which it differs too much moreover, both in the mode of inflorescence and in the floral type, for it to be it is possible to relate them to the same genus.

9. On the new genus ONCELLA. - This genus has as a type the plant from the coast of Zanzibar described recently by M. Engler under the name of *Loranthus ambiguus*, and of which he made a special subsection *Ambigui* in his section *Dendrophthoe* (15). By its axillary racemose inflorescence and the pentamery of the flowers, it resembles *Dendrophthoe*, but it is immediately distinguished by several other characters, in particular by the ball-shaped bulge at the base of the calicinal tube, an arrangement from which the generic name of *Oncella* (16). It is further distinguished by the conformation of the stamens, where the anther, carried by a gradually widened net, has its two anterior pollen sacs longer than the posterior ones and is surmounted by a notched extension of the connective.

I was able to study in the herbarium of the Muséum another species of the same genus harvested in the same region, in Bagamoyo, by Fr. Sacleux in 1889 (n° 676). It differs from *O. ambigua* (Engl.) notably by longer internodes, larger and almost sessile leaves, solitary racemes, a smaller swelling at the base of the calyx and shorter anthers; I will name it *Oncella Sacleuxii*. The leaf mesophyll and the outer wall of the inferior ovary are devoid of sclerenchymatous cells. The lignified cup, located halfway up, is small and flat, saucer-shaped. The pistil usually has only two of the five normal alternisepalous carpels, by abortion of the other three.

Thus defined, the genus *Oncella* is certainly the easiest to recognize of all the *Dendrophthoeae* in Africa.

10. On the genus DENDROPTHOE Martius, pro parte. - By establishing in 1830 his genus *Dendrophthoe* (17), immediately admitted by Blume (18), Ph. De Martius admitted there species from Africa and Australia alongside species from India and, among the latter, tetrandrous species next to pentandrous species. So Blume immediately distinguished two sections: the first with pentamerous flowers, which Endlicher later named *Eudendrophthoe*, the second with tetramerous flowers, which Endlicher named *Cichlanthus* (19).

Still admitted as a genus with these two sections by Miguel in 1855 (20), the *Dendrophthoe* group had already previously been brought back by Endlicher to the state, from a simple section of the genus *Loranthus* and, since then, only as such. But the various authors who have succeeded one another: Bentham and Hooker in 1883 (21), M. Engler in 1889 (22), M. Hooker in 1890 (23), have nevertheless agreed to unite under this name, considering them as a primary section of the genus *Loranthus*, the species of the *Eudendrophthoe* section of Miguel, of the *Eudendrophthoe* subsection of Endlicher.

By re-establishing here the genus *Dendrophthoe*, it is limited, as was said above, to the species which have the inflorescence in a simple raceme, sometimes contracted, the pentamerous flowers with calyx not swollen at the base, and the ovoid fruit, that is, only a small part of the species in the *Dendrophthoe* section of Bentham and Hooker. These are, for example, *D. pentandrus* (L.), *longiflorus* (Desr.), *Nilgherrensis*

(Wight), etc., from India; the *L. praelongus* (Bl.) *curvatus* (Bl.), etc., the Java *L. vitellinus* (Muell.) *acacioides* (A. Cunn.), etc., of Australia; etc.

Throughout the leaf has its mesophyll traversed by branching sclereids. The inferior ovary has in its outer wall a large number of isodiametric sclerenchymatous cells, isolated or grouped in nodules, sometimes close together in layers, which extend into the calyculus. The lignified cup, located around the quarter or third from the base, sometimes halfway *D. ligulatus*, etc.), is broad and flat, saucer-shaped. The pistil is normally formed from five alternisepalous carpels (*D. pentandrus*, *curvatus*, *praelongus*, *ligulatus*, etc.); but sometimes it is reduced to four or three similarly arranged carpels, by abortion of one or both others (*D. longiflorus*, *orbicularis*, etc.). The style around its base a pentagonal rim sometimes free (*D. Pentandrus*, *praelongus*, etc.), sometimes conrescent or outside with the calice (*D. curvatus*, *ligulatus*, etc.) or in the style *D. vitellinus*, *acacioides*, etc.). Thus understood, the genus *Dendrophthoe* is widespread in India, the Malay Archipelago, Australia and Madagascar; it has no species on the African continent.

11. On the new genus CICHLANTHUS (Endlicher). - Defined in particular by the racemose inflorescence, the tetrameric flower and the pear-shaped fruit, this genus contains most of the species of the first of the two sections distinguished in 1830 by Blume in the genus *Dendrophthoe*, as it was said above, sections which, according to him, perhaps deserved to be separated as genera. This section was named *Cichlanthus* by Endlicher, and since then it has not ceased to be admitted as such. By erecting it here as a genus, we exclude from it, not only *L. tetrapetalus*, which is a *Peraxilla*, *L. ligustrinus*, which is a *Phœnicanthemum*, *L. luzonensis*, which is a *Stemmatophyllum*, but also the *L. fasciculatus*, which Bentham still stored there in 1883. I was able to be sure, in fact, that by its dialysepalous calyx and its inflorescence composed of triads, this last species is a Phénicanthémée belonging either to the genus *Amyema*, or rather, because of its tetrameria, to a new genus related to *Amyema*.

Thus limited, the genus *Cichlanthus* includes in particular *C. Scurrula* (L.), *ferrugineus* (Roxb.), *Pulverulentus* (Wall.), *Umbellifer* (Schult.), Etc., from India *C. chinensis* (DC.), from China, *C. Jadoriki* (Sieb.), from Japan; *C. atropurpurens* (Bl.), *Schultesii* (Bl.), *repandus* (Bl.), *chrysanthus* (Bl.), *fusvus* (Bl.), *lepidotus* (M.), etc., of Java; the *C. philippensis* (Ch.), etc., from Manila; etc.

The mesophyll of the leaf is devoid of sclerenchymatous cells; the inferior ovary has nodules of isodiametric sclerenchymatous cells in its outer wall. The lignified, saucer-shaped cup, which marks the actual base of the pistil, is located very high, three-quarters or four-fifths of the way between the insertion of the mother bract and that of the calyx. In other words, the pedicel extends here after the departure of the bract, and carries the actual base of the flower much higher. From this extension of the pedicel, joined to the brevity of the pistil, results the characteristic shape of the fruit, which is club or pear.

The *Cichlanthus* are, so far, limited to Asia; they have not been found in Australia or Africa.

12. On the genus LICHTENSTEINIA Wendland. - This genus, created by Wendland in 1808, was admitted by Blume in 1830. It has as type *Loranthus speciosus* Dietrich (*L. Lichtensteinii*, *L. oleoefolius*, from Cape Ham and Schlecht.). The differential character invoked, an alleged monadelphism of the stamens, having since been found to be inaccurate, this genus was said to be abandoned, and the species in question was simply classified among the *Dendrophthoe*. By leaving it in this section, Mr. Engler nevertheless assigned it a place apart, making it the type of his subdivision of *Oleaefolii*.

The leaf mesophyll and outer wall of the inferior ovary are entirely devoid of sclerenchymatous cells. The lignified cup, located halfway up, is shallow, shaped like a watch glass. Of the five alternisepalous carpels, three regularly abort, and only two ligneous vascular bundles remain around the central slit, which pass in style.

Together with the umbel-like inflorescence usually terminating in a short leafy branch without perula, and with the spiraling inward curvature of the sepals, these characters are sufficient to distinguish this species, and, with it, *L. elegans* Cham. and Schlecht. (*L. croceus* E. Mey.), which differs very little from it. We are therefore justified in adopting the generic name of *Lichtensteinia* for these two plants. The first will now be *Lichtensteinia speciosa* (Dietr.) and the other will be *L. elegans* (Cham. & Schlecht.).

13. On the new genus ACRANTHEMUM. - With its inflorescence ending in a leafy branch with a deciduous perula and its pentamerous flowers, this genus is typical of *Loranthus Zeyheri* Harvey, from Cape Town, and *L. natalitius* Meisner, from Natal, two species which M. Engler has omitted in his recent work.

The perule is composed of three or four pairs of brown scales; the branch then bears four to six pairs of leaves and ends, immediately above the last, in a sessile umbel of three to five flowers. In the axils of the last two leaves, the buds lengthen into branches, resulting in dichotomous branching. This mode of vegetation recalls that of the *Loranthus* of the *Euloranthus* section.

The leaf has its mesophyll devoid of sclereids. The inferior ovary has numerous sclerenchymatous nodules in its outer wall, with a broad, flat, saucer-shaped, lignified cup located midway up. Of the five alternisepalous carpels, it usually aborts one or two. The style is gradually swollen from the base to the top, then retracted under the stigma all along the anthers, thus offering this skittle shape that we will find later in other groups.

This set of characters clearly separates from all the others these two species of southern Africa, which we unite here in a distinct genus under the name of

Acranthemum (24) and which become respectively the *A. Zeyheri* (Harvey) and the *A. natalitium* (Meisner).

14. On the new genus of PHYLLODISMIS.— The type of this genus is the plant collected by Father Delavay in China, Yun-nan province, in February 1887 and sent to the Museum under number 26e. It has two kinds of branches. On the long branches, provided with prominent ribs and black mesophyll, the leaves are isolated according to 3/8. In the axils of these, often after their fall, very short branches form, beginning with a perula of small brown and deciduous bracts, then producing, in very close places, a bunch of leaves, and finally ending in the center of the rosette By an umbel of two four tetrameric flowers. Once the stem has fallen, the rosette of leaves and the central umbel appear to come out of a hole in the stem. It is from this arrangement of the leaves and flowers in tufts on the long branches that the name of *Phyllodesmis* has been derived for this genus (25).

The mesophyll of the leaf and the outer wall of the inferior ovary are devoid of sclerenchymatous cells. The lignified cup, located about a quarter from the base, is very small, shaped like a watch glass. The style has a highly developed tetragon rim around its base. Of the four alternisepalous carpels, only two usually develop around the central cleft. The fruit is ovoid and not pear-shaped as in *Cichlanthus*. The species thus characterized will be the *Phyllodesmis Delavayi*.

In the same region, Father Delavay collected, in 1887, another species of the same genus (n° 2372). It differs from the first by longer and thicker leaves, and also because the short flowering branches, after having produced the scales of their perule, and before terminating in their umbel, form only a few green leaves smaller than ordinary leaves; sometimes they even do not form any at all, and the umbel appears axillary. It will be the *Phyllodesmis paucifolia*.

Finally, we must very probably relate to the same genus, of which they constitute a third species, the two plants collected in 1888, in the same province, by M. l'Abbé Delavay, one (n° 3538) on the oaks, the other (n° 3710) on the fir trees. The leaves are more leathery and also more persistent than in the preceding species. It will be the *Phyllodesmis coriacea*.

Thus constituted, with these three species, the genus *Phyllodesmis* is certainly, by its mode of vegetation and inflorescence, joined to the tetramery of the flowers, one of the best characterized among the Dendrophthoeae.

15. On the new genus TAXILLUS. - This genus has as types the *Loranthus tomentosus* Heyne, *L. bracteatus* Heyne, *L. recurvus* Wallich, and related species, all originating in India (Deccan).

Hitherto included among the *Dendrophthoe*, they are clearly separated from them by their pubescence, their axillary umbel inflorescence, the absence of sclereids in the mesophyll of their leaves, which is provided, on the other hand, with nodules of

sclerenchymatous cells. crystals, and above all by the shape of their lignified cup, which is flat or even a little convex on its upper face and strongly thickened towards the bottom, in the form of a truncated cone or block. It is from this last character that the generic name has been derived (26). The above-named species will henceforth be *Taxillus tomentosus* (Heyne), *T. bracteatus* (Heyne), *T. recurvus* (Wallich), etc.

16. On the new genus SCHIMPERINA. - Dedicated to G. Schimper who has contributed so much to making us know the flora of Abyssinia, this genus is type *Loranthus platyphyllus* Hochstetter, from Abyssinia. The inflorescence is a pedunculated axillary umbel. The leaf is thin and has its mesophyll devoid of sclereids.

The inferior ovary has sclerenchymatous nodules in its outer wall, and a lignified saucer-shaped cup located halfway up. Of the five alternisepalous carpels, there are usually two which abort, and the style receives only three bundles.

To *Schimperina platyphylla* we must add a species collected in Fazogl (Upper Nubia) by Figari, in 1841, and named by Delile *Loranthus amœnus*, which I was able to study in the Delessert herbarium: it will be *Schimperina amoena*. The *L. panganensis* from Zanzibar which M. Engler described recently and which he compared to *L. platyphyllus* in his subsection of *Longiflori* (27) should perhaps also be linked to the same genus; I have not yet been able to examine this species.

17. On the new genus ENGLERINA. - This genus has as a type the *Loranthus Holstii* of Ousambara, eastern coast of Africa, which M. Engler has recently described and which, despite the absence of a tooth in the stamen, incorporated into its section *Ischnanthus*, of which all other limbs have dentate stamens and inhabit West Africa (28).

Although I still only know this species from the description and the figures given by M. Engler in his *Pflanzenwelt Ostafrikas* (pl. XV, AD), the proofs of which he was kind enough to communicate to me, I believe it necessary, because of the defect of the tooth in the stamen, joined to the development in tube of the rim of the base of the style, to separate it now from the *Ischnanthus* and to constitute for it a distinct genus, close to the *Schimperina*, which I dedicate to Mr. Engler, under the name of *Englerina*. It will henceforth be *Englerina Holstii* (Engl.).

18. On the new genus TAPINOSTEMMA (Bentham and Hooker). For the *Loranthus Acaciae* Zuccarini, of Palestine, Bentham and Hooker established in 1883, under the name of *Tapinostemma*, a special section in the genus *Loranthus* (29). It is this section that is erected here as a distinct genus.

Contrary to the opinion of M. Engler (30), who admits, quite recently, only the single *Tapinostemma Acaciae* (Zucc.), It should also include *T. gibbosulum* (A. Richard) d 'Abyssinia, *T. venustum* (*L. venustus* Fenzl) from Ethiopia, *T.*

nummulariifolium Milon (*L. nummulariifolius* Franchet) from the land of Somalis and the *T. arabicum* (*L. arabicas* Defflers) of Yemen.

We know the very particular conformation of the calyx of these plants, with its five oppositisepalous basilar lobes and its tube provided with ten rows of oblique projections; in this last character, it resembles that of *Plicosepalus* in the sub-tribe of the Phenicanthémées. The leaf has its mesophyll crossed by numerous sclereids, directed perpendicular to the surface. The outer wall of the inferior ovary is there abundantly provided with sclerenchymatous cells. The lignified cup forms, at mid-height, a large and thick mass, in the shape of a log, with a rounded upper face. The rim which surrounds the base of the style is concrescent with the calyx. The pistil is formed by five alternisepalous carpels, without abortion.

19. On the new genus ONCOCALYX. - Defined by the bulge of the calyx at its base, an arrangement already encountered with a capitulum in *Agelanthus*, with a raceme in *Oncella*, but which is observed here with an umbel-*shaped* inflorescence, the genus *Oncocalyx* (31) has for type the *Loranthus Welwitschii*, from Angola, recently described by M. Engler, who classified it in the *Rigidiflori* subdivision of his section *Dendrophthoe* (32). We must probably add *L. rhamnifolius* from Zanzibar, placed in the same subdivision, a species which I have not yet been able to study.

The leaf is devoid of sclerenchymatous cells. The external wall of the inferior ovary contains, on the contrary, sclerous nodules; the lignified cup is in the shape of a saucer, halfway up. Two of the five alternisepalous carpels usually abort in the pistil.

20. On the new genus OLIVERELLA. - Characterized by its calyx split and spread out in a blade which curves inwards in a spiral, this genus is like the *Loranthus rubroviridis* Oliver, of the Zambezi (33). It is necessary to relate to it the *L. campestris* Engler, of Ousambara, and, the *L. Hildebrandtii* Engler, of Kilimandscharo. M. Engler has already united these three species in a special subdivision *Involutiflori* of the section *Dendrophthoe*(34). It is this sub-section which is here erected to the distinct gender state. I dedicate it to Mr. Oliver who, not only discovered the type, but also largely contributed to extend our knowledge on the various groups of Loranthaceae. The three preceding species thus become respectively *Oliverella rubro-viridis* (Olive), *O. campestris* (Engl.), *O. Hildebrandtii* (Engl.). I can add a fourth, collected by Father Sacleux at Zanguebar, in 1889 (no 878); it resembles *O. Hildebrandtii* in its narrow and long bracts, but differs in particular by its smaller flowers: it will be *O. Sacleuxii*.

The inflorescence is an axillary multiflora umbel, with short pedicels bearing long, accrescent bracts, sometimes leafy. The flower is pentamerous. The stamens have a thread first dilated, then narrowed under the anther, which is surmounted by a brown, indented extension. The mesophyll of the leaf is devoid of sclereids. The outer zone of the inferior ovary, surmounted by a very short calyculus lined inside with a bulge,

contains groups of sclerenchymatous cells. The lignified cup, in the shape of a saucer, is located halfway up. The style has a free rim around its base. The pistil only develops three of its five alternisepalous carpels.

21. On the new genus ODONTELLA. - Characterized in particular by the small ascending tooth that each staminal filament bears on its internal face at the insertion of the anther, joined to the pentamery of the flowers, the genus *Odontella* (35) has for type the *Loranthus Schimperi* Hochstetter, from Abyssinia. The inflorescence is a sessile axillary umbel, which can be reduced to a single flower. Before producing the flowers, the twig first forms a few scales forming a perule, then often also one or more green leaves, smaller than the ordinary leaves. We could therefore perhaps just as well consider the umbel as the terminal of a short branch, as was done above for *Lichtensteinia*, for example, and *Phyllodesmis*. The mesophyll of the leaf is devoid of sclerenchymatous cells. The inferior ovary contains in its outer wall isodiametric sclerous cells which extend into the calyculus, here very developed. The lignified cup, located halfway up, has the shape of a thick saucer. Of the five alternisepalous carpels, it usually aborts three and the style is surrounded at its base by a large pentagonal rim.

To *Odontella Schimperi* (Hochst.), we must add a new species, collected in Yemen by M. Deflers, and which I will name *O. Deflersii*. We must also very probably join the *O. Volkensis* (Engler) and *kilimandscharica* (Engl.), recently described as *Loranthus* by M. Engler (36). Thus constituted, this genus is limited to East Africa.

22. On the new genus ISCHINANTHUS (Engler).- For a group of species having filaments of toothed stamens, such as *Odontella*, but with tetrameric flowers, M. Engler recently established, under the name of *Ischnanthus*, a new primary section in the genus *Loranthus* (37). It is this section that is elevated here to the rank of genus, after having excluded, however, first the *L. Holstii* Engler, which has become the type of the genus *Englerina*, as was said above, then the *L. gabonensis* Engl., which must also form the nucleus of a distinct genus, as we shall see shortly.

In *Ischnanthus Lecardii* (Engl.), for example, the leaf has its mesophyll devoid of sclerenchymatous cells. The inferior ovary, very short and forming around the base of the style a large tetragonal rim, has in its outer wall sclerous nodules the lignified cup, located at mid-height, is wide and shallow, watch glass-shaped domed in the middle.

To this species we must certainly add the *I. parvillorus* (Engl.), And probably also the *I. luluensis* (Engl.), *Kagehensis* (Engl.), *Ehlersii* (Schweinf.) And *woodfordioides* (Schweinf.), species that I have not yet been able to review.

23. On the new genus STEPHANISCUS. - This genus is like *Loranthus gabonensis*, recently described by M. Engler (38), who incorporated it in his section

Ischnanthus. To this must be added a new species, collected at Cape Lopez, by M. Lecomte, in March 1894, and which I will name *Stephaniscus Lecomtei*.

The flowers are tetrameric with toothed stamens, as in the *Ischnanthus*, from which this genus differs in several characters. First, the peduncle of the umbel has its base surrounded by a perule, which is lacking in the *Ischnanthus*; quite often it even carries one and even two spaced bracts on its sides. Then and above all, each sepal offers on its external face, near its end, a projection coming from the local thickening of the mesophyll of its internal face. It follows that, in the bud, the calyx is truncated at the top, with a rim provided with four bosses forming a small crown, character from which the generic name has been taken. (39).

In these two species, the leaf and the inferior ovary are moreover conformed as in the *Ischnanthus*.

24. On the new genus LOCELLA. - *Loranthus cuneatus* Heyne, and related species: *L. lobeliifolius* DC., *L. goodeniifolius* DC., *L. montanus* Wight, etc., from India and Ceylon, are distinguished from *Dendrophthoe*, to which we always have them united until now, not only by their umbel-shaped inflorescence, by their leaves devoid of sclereids and their lignified, log-shaped cup, characters which bring them closer to the *Taxillus* studied above, but also by a particular structure of the anthers, whose pollen sacs are subdivided, by transverse partitions, into superimposed cubicles.

Based on this trait, these species are grouped here into a separate genus, under the name *Locella* (40). They therefore become respectively *Locella cuneata* (Heyne), *L. lobeliifolia* (DC.), etc.

25. On the new genus PHRAGMANTHERA. - There is in West Africa, particularly in Angola, a whole series of species having, like *Locella*, pentamerous flowers and transversely septate anthers, but differing in several characters, notably by a thick covering of tiered stellate hairs. They are united here in a separate genus, under the name *Phragmanthera* (41). These are *Loranthus cistoides* (Welwitsch) Engler, *L. fulvus* Engler, *L. cinereus* Engler, etc., all species which M. Engler has grouped in his subsection of *Cinerascentes* (42).

Everywhere the leaf has its mesophyll devoid of sclerenchymatous cells. The inferior ovary has sclerenchymatous nodules in its outer wall, with a lignified cup located halfway up, wide and shallow, saucer-shaped. The pistil is formed there by five alternisepalous carpels, without abortion.

26. On the new genus THELECARPUS. - With transversely septate pollen-sac anthers, as in the previous genera, *Thelecarpus* have a fruit of different and characteristic shape. It is pear-shaped and develops entirely at the expense of the lower quarter of the inferior ovary, the other three quarters of which form at its

enlarged summit a large nipple covered with red hairs with superimposed stars; it is from this conformation, unique until now in the family, that the generic name was derived (43).

The type of this genus is *Loranthus Soyauxii* Engler (44), from Gabon and Kameroun, to which must be added *L. Batangae* Engler, from the same region, two species for which M. Engler established a special *Lepidoti* subdivision in his *Dendrophthoe* section. I can add two new ones here.

The first was collected in the Congo, on the banks of the Ogooué, by M. Thollon in 1877 (n° 754); it is distinguished from others in particular by its thin and transparent calyx.

The second was found in the Congo, near the Mayomba lagoon, by M. Lecomte, in 1894 (n° 39). It differs from the previous ones, and in particular from *Th. Soyauxii* (Engler) by smaller leaves, by bracts shorter than the ovaries and especially by the usual hexamery of the flower, which is pentameric in the other three species. This difference in the floral type is here only a specific character, as in the *Loranthus*, for example, where the flower, usually hexameric, becomes pentameric in *L. Lambertianus*. It will therefore be the *Thelecarpus hexasepalus*.

Everywhere, the mesophyll of the leaf contains some subepidermal transverse sclereids. The outer area of the inferior ovary has many sclerenchymatous cells forming a continuous layer. The lignified cup is wide and deep, as in a drinking glass. The style has around its base a conerescent rim with the calyx. The pistil develops all its alternisepalous carpels, without abortion.

27. On the new genus SEPTULINA. - Like the three preceding ones, the genus *Septulina* (45) has the pollen sacs of its anthers transversely partitioned, but the flowers are tetrameric. Its type is *Loranthus glaucus* Thunberg and *L. ovalis* E. Meyer, native to Cape Town, which M. Engler has placed after *Phragmanthera* in his subsection of *Cinerascentes*, and which respectively become *Septulina glauca* (Thunb.) and *S. ovalis* (E. Mey.).

The leaf and outer wall of the inferior ovary there are devoid of sclerenchymatous cells. The lignified cup, located halfway up, has the shape of a saucer, thickened towards the bottom. The pistil usually shrinks to three or two of the four normal alternisepalous carpels.

28. On the new genus METULA. - Characterized in particular by its style gradually swelling from the base to the top, then sharply narrowed under the stigma along the line of contact of the anthers, which gives it fairly good skittle shape, the genus *Metula* (46) is of type *Loranthus angolensis* recently described by M. Engler, who classified it in his subsection of *Rufescentes* (47). The flowers are, in fact, all covered with red hairs, with tiered stars, as in the other species of this subdivision, but the anthers, very short, have their pollen sacs continuous and not partitioned.

The leaf contains, in its mesophyll, branched sclereids with short branches which start from the upper epidermis and run perpendicular to the surface. The inferior ovary has a large number of sclerenchymatous cells in its outer wall; the lignified cup, in the shape of a watch glass, is located there towards the quarter from the base. The pistil is formed by five alternisepalous carpels without abortion.

To the type thus defined are attached, to constitute this genus, several new species which I will describe in my Memoir.

29. On the new genus GLOBIMETULA. - Defined, as its name indicates (48), by the simultaneous presence of a calyx swollen at the base, as in *Agelanthus*, *Oncella* and *Oncocalyx*, and of a skittle-shaped style, as in *Metula*, this genus has for type the *Loranthus cupulatus* DC., collected by Leprieur in Senegal, on the banks of the Casamance, in April 1826, and for which AP de Candolle established, under the name of *Cupulati*, a special section in the genus *Loranthus* (49).

The flowers are arranged there in an axillary umbel rather long stalked, with often reflexed pedicels; the peduncle has a perule around its base and often bears one or two sterile bracts on its sides, as in the *Stephaniscus*. Under the outermost pedicels, the mesophyll of the peduncle swells into a protruding rim, simulating an involucre. Each flower has its base enveloped by a cup-shaped bract, hunchbacked at the bottom. The calyx, the base of which, thin in the bud, bulges out later, is early inflated at the top in a ball with five meridian ribs; after flowering, the sepals also separate and twist in a spiral, as in *Lichtensteinia*. The anthers are wedge-shaped, notched at the top, the two posterior pollen sacs much shorter than the anterior, and fused together. The style, skittle shaped, has small warts on its swollen region, and above the narrowing which responds to the contact area of the anthers the stigma spreads out in the form of a hat. The fruit is ovoid, truncated at the top and topped by the tubular calyculus.

The leaf has its mesophyll devoid of sclerenchymatous cells. The inferior ovary has sclerenchymatous nodules located towards the base in its outer wall, the lignified cupule is large, saucer-shaped with a convex upper face. The style has a large bulge around its base, and in the pistil there is usually an abortion of two of the five alternisepalous carpels.

All these characters are found in the *Loranthus anguliflorus* of Angola, recently described by M. Engler, who made it the type of the subdivision *Anguliflori* of its section *Dendrophthoe* (50), the bulge of the base of the calyx is also late there, which made believe that it does not exist. To these two species, we must also add those, five in number, which M. Engler has united in the *Ungui* forms subdivision of his section *Dendrophthoe*, namely: *L. Braunii* Engler, *L. oreophilus* Oliver, *L. unguiformis* Engler, *L. Dinklayei* Engler and *L. Zenkeri* Engler; they are certainly of the same genus as *L. cupulatus* DC., of which they share all the characteristics.

Thus constituted, with its seven species which inhabit all of West Africa, from Senegal to Angola, the genus *Globimetula* is, without a doubt, one of the best characterized of the Dendrophthoeae sub-tribe.

30. On the new genus DENTIMETULA. - Offering both, as its name recalls (51), the dentate stamens of *Odontella* and the skittle-shaped style of *Metula*, this genus is type *Loranthus dodoneaefolius* DC., from Senegal. The leaf has its mesophyll devoid of sclereids. The inferior ovary, which is very short and surmounted by a very long tubular calyx, has in its external wall a large number of sclerenchymatous nodules; the lignified cup, located near the base, is thin and flat, disc-shaped, and the style does not have a rim around its insertion. The pistil usually shrinks, by abortion, to three of the five alternisepalous carpels.

To *Dentimetula dodoneaefolia* (DC.), It may be necessary to join the *L. irangensis* which M. Engler related to it to constitute the *Purpureiflori* subdivision of its *Tapinanthus* section (52).

I have not yet been able to study this species. But, as it is from the eastern coast of Africa and as Mr. Engler, without describing in particular his style, suggests that it is skinny, I have my doubts about this connection.

31. On the new genus SEPTIMETULA. - As its name indicates (53), this genus has both stamens with septate anthers, like *Locella*, *Phragmanthera*, *Septulina* and *Thelecarpus*, and a skittle-shaped style, like *Metula* and *Globimetula*. Its types are *Loranthus Macrosolen* Steudel and *L. regularis* Steudel, both from Abyssinia, to which must be added *L. rufescens* De Candolle, from Senegal, a species quite distinct from the previous one, which is often confused with it.

The pollen sacs are there usually divided by four partitions into five superimposed pockets. The leaf has its mesophyll devoid of sclerenchymatous cells. The inferior ovary has numerous sclereids in its outer wall and the lignified cup, located halfway up, has the shape of a saucer. The style has a free rim around its base and the pistil is formed by five alternisepalous carpels, without abortion.

To the *Septimetula Macrosolen* (St.) must we join the *L. Kayseri* Engl., *Djurensis* Engl. et *ussuiensis* Oliv., also from the east coast of Africa, which M. Engler (54) brought together to form the *Infundibuliformes* subdivision of its *Dendrophthoe* section? I have not yet been able to study these plants; but, the author assigning to the first two a filiform style, I have doubts about this classification.

To *Septimetula Macrosolen* (St.) and *rufescens* (DC.), It is probably necessary to add *L. emarginatus* Engl., *Hirsutissimus* Engl., *Sigensis* Engl., *Bukobensis* Engl. and *dschallensis* Engl., that is to say, except *L. angolensis* Engl. which is, as we have seen, a *Metulla*, the whole *Rufescentes* subdivision of M. Engler (55).

Thus defined and constituted with at least eight species, one with glabrous flowers (*S. Macrosolen*), the others with flowers covered with red hairs, with tiered stars, the

genus *Septimetula* is widespread throughout East Africa and extends to Senegal by *S. rufescens* (DC.).

32. On the genus TAPINANTHUS Blume. - Established by Blume in 1830 (56), but very incompletely defined at that time, this genus was not admitted as such, although all the authors who followed, in particular MM. Bentham and Hooker (57) and most recently M. Engler (58), have retained this group as the main section of the genus *Loranthus*. By restoring its generic value here, it is defined both by the calyx swollen at the base and rounded at the top in the bud, by the stamens provided with a tooth and by the skittle-shaped style, three characters which do not met only singly or in pairs in the previous genera.

Thus understood, it contains only part of the species of the *Constrictiflori* subdivision of M. Engler, namely all those which have the calyx rounded at the top in the bud. About thirty in number, they are spread throughout Africa, as well in the western region [*T. pentagonia* (DC.), *Sessifolius* (P. Beauv.), *Preussii* (Engl.), *Mechowii* Engl., etc.] in the eastern region [*T. globiferus* (A. Rich.), *verucosus* (Engl.), etc. and in Cape Town [*T. namaquensis* (Ilarv.), *prunifolius* (E. Mey.), *Kraussianus* (Meisn.), etc.].

Everywhere the leaf has its mesophyll devoid of sclerenchymatous cells. The inferior ovary, very short and surmounted by a very developed calyculus, has sclerous nodules in its outer wall; the lignified cup is wide and shallow, cup-shaped. The style has a pentagonal rim around its base and the pistil consists of five alternisepalous carpels, without abortion.

33. On the new genus ACROSTEPHANUS. - To the three characters whose simultaneous presence defines, as we have just seen, our genus *Tapinanthus*, the *Acrostephanus* add a fourth. The calyx is there, in the bud, at least truncated at the top, an arrangement which results from a local thickening of the mesophyll of the internal face of the sepals on a transverse line close to the extremity. Sometimes this thickening is exaggerated in the middle of each sepal, forming five bumps or horns, in each of which the ligneous vascular bundle rises, is reflected and descends, in a word, five full spurs. In all cases, the calyx is more or less strongly crowned at the top and it is from this crown that we derive the generic name (59). The *Acrostephanus* are therefore to the *Tapinanthus* exactly what the *Stephaniscus* are to the *Ischnanthus*, as has been said above.

M. Engler recently made known six species offering the first arrangement, that is to say a calyx terminated simply by an annular rim, which he has arranged in the *Constrictiflori* subdivision of his *Tapinanthus* section (60): these are the *Acrostephanus Buchneri*, *syringifolius*, *truncatus*, *tschintschochensis*, *Poggei*, *dependens*. Together, they will form in the genus the section of *Truncati*. This botanist also described a species offering the second arrangement, that is to say a calyx ending

in a crown with five florets: it is *A. ogowensis*. I can add a new species collected at Niounvou, Kouilou valley (Congo), in January 1894, by M. Lecomte and which I will name *Acrostephanus coronatus*. It differs from *A. ogowensis* Engl. in particular by its sessile and amplexiculate leaves, a little wider than long, measuring 10 to 1 centimeters in width by 9 to 10 centimeters in length, by its red calyx flowers spotted with white which exceed 7 and 8 centimeters in length and by its crown has five large divergent florets. Together, these two species will form the *Coronati* section in the genus.

Everywhere the leaf has its mesophyll devoid of sclerenchymatous cells. The ovary has sclerenchymatous nodules in its outer wall; the lignified cup is flat, saucer-shaped. The pistil usually consists of five alternisepalous carpels, sometimes only four, by partial abortion.

Thus defined and constituted with at least eight species, the genus *Acrostephanus* is widespread in West Africa (Angola, Loango, etc.), but also extends to the lake region (*A. syringifolius* Engl.).

II. GENERA WITH COMPOUND INFLORESCENCES.

So far, in this sub-tribe, only one genus with a compound inflorescence is known.

34. On the new genus CANDOLLINA. - This genus is typified by *Loranthus Haenkeanus* Presl and *L. malifolius* Presl, from Manila. It is dedicated to the memory of AP de Candolle who, among so many other important works, was the first, in 1830, to undertake in the Loranthaceae family this grouping of species that we are trying to pursue and develop here. From all the other genera of Dendrophthoeae the *Candollina* are immediately distinguished by their inflorescence, which is a pedunculated umbel of triads with a sessile median flower and pedicellate lateral flowers, in a word, of biparous cymules. Terminal and erect in *Candollina Hainkeana* (Presl), the umbel is axillary and refracted in *C. matifolia* (Presl), terminal and refracted in a third species, brought back from Manila by Barthe, and which I will name *C. Barthei*.

The leaf has its mesophyll traversed by numerous star sclereids. The inferior ovary has numerous isolated and often branched sclerenchymatous cells throughout the thickness of its wall. The lignified cup, located a quarter of the height from the base, is very deep, shaped like a thimble. The style has a free rim around its base and the pistil is formed of five alternisepalous carpels, without abortion.

By the sclereids of the leaf, this genus is similar to the *Dendrophthoe* of India and the Malay Archipelago; but it differs from it a lot, in particular by the shape of the lignified cup.

III. - ABSTRACT.

From all that precedes it follows that the numerous species presently known of the sub-tribe of *Dendrophthoeae* can, according to the external characters of the inflorescence, of the flower and of the fruit, join the structural characters of the vegetative apparatus and the floral apparatus, be grouped into thirty-four genera, of which the following table summarizes the main external differential characters.

Inflorescence	Simple	Flower solitary, sessile, in scaly involucre.....			<i>Bakerella</i>			
		Involucrate capitulum	{ scaly	sessile	<i>Agelanthus</i>			
				peduncle. Flowers { no hairs	<i>Benthamina</i>			
			hairs	<i>Erianthemum</i>				
				foliaceous	<i>Tolypanthus</i> Bl.			
		Spike	{ not prolonged			<i>Oedina</i>		
			{ prolonged			<i>Beccarina</i>		
		Raceme. Fruit	{ ovoid. Flower	hexamerous	<i>Kingella</i>			
				pentamerous. Calyx { swollen at base	<i>Oncella</i>			
			not swollen at base	<i>Dendrophthoe</i> Mart. p				
				pyriform. Flower tetramerous	<i>Cichlanthus</i> (Endl.)			
						<i>Lichtensteinia</i> Wendl.		
		Umbel	terminal. Branches	{ without perula			<i>Acrantheum</i>	
				{ with perula. Flower	pentamerous	<i>Phyllodesmis</i>		
					tetramerous	<i>Taxillus</i>		
	Flower conformation ordinary			{ hairy			<i>Schimperia</i>	
				{ glabrous { pentamerous			<i>Englerina</i>	
			{ tetramerous			<i>Tapinostemma</i> (B.H.)		
	Calyx		{ with appendages and oblique folds			<i>Oncocalyx</i>		
			{ swollen at the base			<i>Oliverella</i>		
			{ split and coiled			<i>Odontella</i>		
	Axillary		Stamens	{ filament prolonged & toothed. Flower	pentamerous	<i>Ischnanthus</i>		
					tetramerous. Calyx { round	<i>Stephaniscus</i>		
						{ crowned	<i>Locella</i>	
			{ anthers partitioned. Flower	pentamerous glabrous			<i>Phragmanthera</i>	
				hairy Fruit { ordinary			<i>Thelecarpus</i>	
			{ tetramerous			<i>Septulina</i>		
		Style skittle-shaped			<i>Metula</i>			
		Calyx swollen at base, style skittle-shaped			<i>Globimetula</i>			
		Stamens toothed with skittle-shaped style			<i>Dentimetula</i>			
		Anthers partitioned with skittle-shaped style			<i>Septimetula</i>			
		Calyx swollen at base, stamens toothed, style skittle-shaped	round	<i>Tapinanthus</i> Bl.				
		Calyx	crowned	<i>Acrostephanus</i>				
		Composed of triads, that is an umbel of cymules			<i>Candollina</i>			

Of these thirty-four genera, only four have already been established, without having been recognized as such (*Lichtensteinia*, *Dendrophthoe*, *Tolypanthus*, *Tapinanthus*); three were constituted and admitted as sections of the genus *Loranthus* (*Cichlanthus*, *Tapinostemma*, *Ischnanthus*); all the others, twenty-seven in number, are entirely new. And yet the problem does not seem to me to be completely resolved

yet. First, with regard to the African Dendrophthoeae, two of the groups of species distinguished by M. Engler have not yet been able, for lack of materials, to be included in this study, namely: the subdivision *Longecalyculati* of its *Dendrophthoe* section, and the *Obtectiflori* subdivision of its *Tapinanthus* section. Will these two groups be able to take place in the genera that have just been established, or will it be necessary to constitute as many distinct genera for them? This is what remains to be decided (61). Then, many species of Dendrophthoeae exist in the herbaria, collected by various travelers in particular in Tonkin, Borneo, Sumatra, Manila, New Caledonia, Madagascar, etc., which have not yet been described and whose several may require the establishment of new genera. Finally, future explorations will not fail to reveal many more, especially when the attention of travelers has been drawn, as much as it deserves to be, to the plants of this very interesting family.

From the point of view of the geographical distribution of Dendrophthoeae, it will be noted that only ten of these genera inhabit Asia, Malaysia, Australia and Madagascar (*Dendrophthoe*, *Cichlanthus*, *Tolypanthus*, *Phyllodesmis*, *Locella*, *Taxillus*, *Kingella*, *Beccarina*, *Bakerella*, *Candollina*), some very widespread (*Dendrophthoe*, *Cichlanthus*), most of them very localized, such as *Phyllodesmis* in China, *Kingella* in Perak, *Beccarina* in Borneo, *Benthamina* in Australia, *Bakerella* in Madagascar, *Candollina* in Manila, etc. The twenty-four others inhabit Africa, some widespread, like *Tapinanthus*, *Erianthemum*, etc., others more or less closely localized, like *Metula*, *Globimetula*, *Thelecarpus*, etc., on the west coast; the *Oedina*, *Oncella*, *Tapinostemma*, *Oliverella*, etc., on the eastern coast; the *Acranthemums*, *Lichtensteinia*, *Septulina*, etc., in Cape Town.

It is still interesting to note that, in order to have all the Loranthoids of Africa, it suffices, for these twenty-four genera of Dendrophthoeae, to add the three genera of Phénianthemée which we mentioned in a previous Note, namely: *Sycophila*, *Plicosepalus* and *Acrostachys*. The sub-tribe of the Struthantheae, nor the three other tribes: Psittacanthées, Elytranthées and Gaïadendres, has no representatives in Africa.

IV. CONCLUSIONS RELATING TO THE LORANTHEAE TRIBE.

In short, in order to group together the currently known species which make up the three sub-tribes: Phenicanthémées, Struthantheés and Dendrophthoeae, of the vast tribe of Loranthae, taking into account both structural characters and external organization, it was necessary to trace no less than seventy-one generic groups, namely: eighteen for the Phenicanthémées, nineteen for the Struthantheae, thirty-four for the Dendrophthoeae. And yet, for the reasons which have just been given in connection with Dendrophthoeae, it is now certain that, thereby, this difficult subject is not exhausted and that it will subsequently be necessary to increase somewhat the number of these genera. We must therefore consider the current classification only as a test, necessary at the beginning to draw the plan of the overall work,

Among the structural characters, besides those provided by the stem and especially the leaf, one of the most frequently invoked and most valuable is, as we have seen, the conformation of this lignified cup, always present and which marks in all cases the actual base of the pistil. Flattened into a disc, or hollowed out more or less deeply into a saucer, watch glass, cup, drinking glass, glove finger, etc., or on the contrary thickened more or less downwards into a block, column, etc., its form is constant in the species of the same group, which it often suffices to define with great precision. Another characteristic, also very useful, is the presence or absence, in the external wall of the inferior ovary and in the more or less developed calyculus which prolongs it, of sclerenchymatous cells.

An axile longitudinal section of the ovary, washed with bleach and colored successively with borated carmine and iodine green, immediately shows, even to the naked eye, this cup with its characteristic shape and position, sharp, in blue on the pink background. It also shows with the naked eye the presence or absence, and in the first case, the arrangement of sclerenchymatous cells in the wall. By these two characters, it allows, in many cases, to recognize at first glance the genus we are dealing with.

It is now necessary to continue this work of grouping species into genera and first of all to extend it to the three other tribes of the Lorantheae subfamily. This will be the subject of subsequent Communications.

FOOTNOTES

- (1) Ph. Van Tieghem, Bull. of Soc. bot., sessions of July 27, 1894, November 23, 1894 and February 22, 1895.
- (2) Engler, Lorantheae africanae (Bot. Jahrbücher für Syst., XX, 1894).
- (3) Baker, Journal of Botany, XX, p. 245, 1882.
- (4) Baker, Journal of the Linn. Society, XX, p. 245, 1884.
- (5) From ἀγέλη band, and ἄνθος, flower.
- (6) Loc. cit., p. 91, 1891.
- (7) Loc. cit., p. 88.
- (8) Bentham, Flora australiensis, III, p. 391 1866.
- (9) From ἔριον, wool, and ἀνθήμων flowery.
- (10) Blume, Flora Javae, Lorantheae, P. 18, 1830.
- (11) From οἶδος, bulge.
- (12) Engler, loc. cit., p. 99, 1894.
- (13) Ph. Van Tieghem, Bull. de la Soc. bot., séance du 14 décembre 1894.
- (14) King, Journal of the As. Soc. of Bengal, LVI: 2, p. 94, 1887.
- (15) Engler, loc. cit., p. 98, 1894.
- (16) From ὄγκος, swelling.
- (17) Martius, Flora, XXX, p. 109, 1830.

- (18) Blume, Flora Javae, Loranthaeae, p. 13, 1830.
- (19) Endlicher, Genera, p. 802, 1840.
- (20) Miguel, Flora of ned. Indie, p. 810, 1855.
- (21) Bentham and Hooker, Genera, III, p. 209, 1883.
- (22) Engler, Pflanzenfamilien, III, 1, p. 186, 1889.
- (23) Hooker, Flora of brit. India, p. 212, 1890.
- (24) From ἄχρος, vertex, and ἀνθήμων, flowery.
- (25) From φύλλον, leaf, and δεσμις bouquet.
- (26) *Taxillus*, block (log, stock).
- (27) Engler, loc. cit., p. 92, 1894.
- (28) Engler, loc. cit., p. 126, 1894.
- (29) Bentham and Hooker, Genera, III, p. 209, 1883.
- (30) Loc. cit., p. 130, 1894.
- (31) From ὄγχος, swelling, and χάλυξ, calyx.
- (32) Engler, loc. cit., p. 95, 1894.
- (33) Hooker, Icones plantarum, XV, p. 51, pl. 1461, 1883.
- (34) Loc. cit., p. 87, 1894.
- (35) From ὀδούς, tooth.
- (36) Loc. cit., p. 110, 1894.
- (37) Loc. cit., p. 125, 1894.
- (38) Loc. cit., p. 127, 1894.
- (39) From στανισχος, small crown.
- (40) De *locula*, locule.
- (41) De φράγμα, septum, partition, and ἀνθηρά anther.
- (42) Loc. cit., p. 102, 1894.
- (43) De θηλή, mamelon, and ἀρπός, fruit.
- (44) Engler, loc. cit., p. 97, 1894.
- (45) De *septum*, cloison.
- (46) De *metula*, skittle.
- (47) Loc. cit., p. 101, 1894.
- (48) De *globes*, globe, and *metula*, skittle.
- (49) A. P. de Candolle, Prodrumus, IV, p. 298, 1830. As a result of a mixture of samples, some errors slipped into the description of the Prodrumus. Thus, all the young parts of the plant are hairless and not covered with ferruginous pubescence; the umbel peduncles are not very short, measuring 15 to 20 millimeters; the flowers are not very small, since they are up to 3 centimeters in length and the calyx is thin on the base only in the bud; when blooming, it is strongly swollen.
- (50) Loc. cit., p. 107, 1894.
- (51) De *dens*, tooth, and *metula*, skittle.
- (52) Loc. cit., p. 111, 1894.
- (53) De *septum*, septum, and *metula*, skittle.

- (54) Loc. cit., p. 89, 1894.
- (55) Loc. cit., p. 100, 1894.
- (56) Blume, *Flora Java?*, Lorantheae, p. 15, 1830.
- (57) Bentham et Hooker, *Genera*, III, p. 210, 1883.
- (58) Loc. cit., p. 107, 1894.
- (59) De ἄγρος, summit, peak, apex, and στέφανος, crown, corona.
- (60) Engler, loc. cit., p. 114, 1894.
- (61) Since the meeting of March 22, I have been able, with the aid of the materials which M. Engler kindly placed at my disposal, to study several species in each of these two subdivisions, and thus fill this gap. [Note added during printing.]