Tieghem Pv. 1894. Quelques genres nouveaux pour la Tribu des Loranthées dans la famille des Loranthacées. Bulletin de la Société botanique de France 41:481-490.

SOME NEW GENERA FOR THE TRIBE LORANTHEAE IN THE FAMILY LORANTHACEAE, by **Mr. Ph. VAN TIEGHEM**

The tribe Lorantheae includes, as we know (1), all the Loranthoideae which have the unilocular ovary and the albuminous seed. The numerous species that make it up are firstly divided into three clearly defined groups, depending on whether the calyx is dialysepalous [=polysepalous] with stamens with basifixed anthers, dialysepalous with stamens with versatile anthers or gamosepalous with stamens with basifixed anthers. The fourth combination, where the calyx would be gamosepalous with stamens with versatile anthers, has not been encountered until now. In this Note we will only discuss the first of these three groups, the one where the calyx is dialysepalous and where the stamens have basifixed anthers. There are around fifty species, including *Loranthus europaeus*, and it includes, for MM. Bentham and Hooker (2), as well as for Mr. Engler (3), five of the sections of their genus *Loranthus*, namely: *Euloranthus*, *Phoenicanthemum* [*Helixanthera*], *Acrostachys* [*Helixanthera*], *Plicopetalus* and *Heteranthus*. [names not found]

First of all, it seems obvious to me that, contrary to the opinion of the aforementioned authors, this group of species must constitute at least a distinct genus within the tribe. The question is only whether we should recognize a single genus or several. Without treating it today as a whole, I will limit myself to resolving it in principle in the second sense, by showing that there are in this group up to six lots of species differing from the rest and from each other, by characters drawn from both external morphology and structure, strongly enough that it is necessary to consider them as so many distinct genera.

Let us begin by briefly defining each of these six genera by the most striking of its external characteristics.

In the first, the flowers being arranged in a long axillary cluster, simple and spicate, the axis of the cluster is enveloped at its base by a large number of sterile bracts, forming a persistent, sleeve-shaped involucre. This is the main external character of the genus, after which I propose to name it *Chiridium* (4). [*Helixanthera*]

In the second, the inflorescence also being a simple axillary raceme, the axis of the raceme is surrounded at its base by a short leathery sheath, with an irregularly torn edge, usually more developed behind than on the sides and in front, and which seems to assign an endogenous origin to the flowering branch. It is from this sheath that I derive, for this genus, the name *Coleobotrys* (5). [*Helixanthera*]

Furthermore, while in *Chiridium* the calyx is short, swollen at the top in the bud and contains stamens with oval anthers of ordinary conformation, here the calyx is long, cylindrical, attenuated at the top in the bud, and contains stamens with narrow and long, subulate anthers, where the pollen sacs are each divided into a series of superimposed compartments, by transverse partitions formed of sterile cells.

In the third group of species, the inflorescence being still a simple raceme, the axis of the raceme does not offer at its base either an involucre, as in the *Chiridium*, nor a sheath, as in the *Coleobotrys*. In addition, the calyx is pointed in the bud and the anthers have their pollen sacs subdivided into compartments, as in *Coleobotrys*. The name of this genus is no longer to be sought. Welwitsch, in fact, distinguished it in 1857 and designated it, in a handwritten label in his Herbarium of Angola, under the name of *Sycophila* (6). [*Helixanthera*]

In the fourth batch of species, where the inflorescence is always a simple raceme, the style is divided, by an articulation towards the middle of its length, into two very distinct regions: the lower, thicker, has the shape of a pentagonal prism and extends into a small tooth each of its upper angles; the other, thinner, is cylindrical, ending in a small stigmatic bulge and placed on the first like a column on a pedestal. This differentiation of style provides the main external character of this genus, which already exists in science, without having been hitherto recognized as such. One of its species was described, in fact, by Presl, in 1849, as a new generic type, under the name of *Lanthorus*, [*Helixanthera*] an anagram of that of *Loranthus* (7).

In the fifth lot of species, the inflorescence being an axillary umbel, simple and pauciflorous, the style, uniformly prismatic, ends in a large hemispherical stigma in the shape of a hat, so that the whole resembles a small Agaric. Hence the name *Pilostigma*, [*Amyema*] which I propose to give to this genus (8).

Finally, in the sixth batch of species, the inflorescence being an axillary cluster composed of triflorous umbels, the style, straight and thin in its lower part, turns around on itself and curls its upper region, which is thicker. According to this conformation of the style, I will name this genus *Ileostylus* (9).

Let us now return one by one to the six genera thus briefly defined, to study their characters and composition a little more closely, limiting ourselves, however, to the essentials and reserving all the details for the Memoir to be published later.

1. On the new genus CHIRIDIUM. — *Chiridium* has, as was said above, a persistent involucre at the base of the raceme, a character which is not found elsewhere in the Loranthaceae family and which also appears very rare outside this family. At a young age, these imbricated bracts completely cover and protect the floral group, like the scales of the perulum in the vegetative buds of the trees and shrubs of our countries. At the end, after the fruits have ripened and the cluster has fallen, they are still found, arranged in a circle around the scar, in the axil of each fertile leaf.

To this external character is added another drawn from the structure. The stem, leaf, flower and fruit of these plants have, in fact, their parenchyma crossed, along the length of the organ, by numerous sclereids, shaped like needles, attached by the side, sometimes double in H, with a very thickened and strongly lignified membrane.

Sclereids of this kind are not found elsewhere in the family, except for *Coleobotrys*, which will be discussed; they are also, as we know, quite rare outside the family.

Thus defined, both from the outside and from the inside, the genus *Chiridium* currently has three species, already described as *Loranthus*, namely: *Chiridium speciosum* (*L. speciosus* Wallich, *L. pulcher* DC.), from India, *Ch. Lijndenianum* (*L. Lijndenianus* Zollinger), from Java, and *Ch. setigerum* (*L. setigerus* Korthals), from Borneo. These three species are placed by Miquel in his genus *Phœnicanthemum*, by MM. Bentham and Hooker, as well as by M. Engler, in the *Phœnicanthemum* section of their genus *Loranthus*. The characteristic involucre seems to have escaped as such both from Zollinger, in 1845, and from Korthals, in 1839. Miquel pointed it out first, in 1855, but without appreciating its importance, since it separates the *Ph. setigerum* from *Ph. Lijndenianum* and from several other species, which lack it.

2. On the new genus COLEOBOTRYS. — *Coleobotrys* has, as we saw above, the axis of the cluster surrounded at its base, not by an involucre, but by an irregularly torn cortical sheath,

coming from the fact that the flowering branch is endogenous there. Here too the floral group is therefore protected at the earliest age, but in a completely different way.

The stem, leaf, flower and fruit contain sclereids in the form of long needles, as in *Chiridium*, which proves the close affinity of the two genera.

However, *Coleobotrys* still differ from *Chiridium* by the conformation of the calyx, which is cylindrical and pointed in the bud, and especially by that of the stamens, whose subulate anthers have their pollen sacs transversely partitioned. Despite this partitioning, the anther opens, as usual, through two longitudinal slits, each involving the two series of compartments on the corresponding side.

Thus characterized, both by external morphology and by structure, the genus *Coleobotrys* today includes six species. Three of them have already been described as *Loranthus*, namely: *Coleobotrys heterantha* (*Loranthus heteranthus* Wallich) [= *Coleobotrys cylindrica*], from India, *C. Macklotliana* (*L. Mackloitianus* Korthals) [= *Coleobotrys cylindrica*], from Borneo and Sumatra, finally *C. crassisepala* (*L. crassipetalus* King) [= *Helixanthera crassipetala*], from Perak. MM. Bentham and Hooker separate these species widely; they consider, in fact, the first as the type of a special section of their genus *Loranthus*, the section *Heteranthus*, while they incorporate the second into the section *Phœnicanthemum*, where they place it next to our *Chiridium*. The transverse partitioning of the pollen sacs, which they noted in *L. heteranthus*, escaped them in *L. Macklottianus*.

The other three species have not yet been named or described. Discovered in Java by Zollinger, they were distributed under numbers 1414, 1428 and 2259; the first two were collected in 1843, the third in 1845. I will name No. 1414 *Coleobotrys Zollingeri* [= *Coleobotrys cylindrica*]; No. 1428, *C. acuminata* [= *Coleobotrys cylindrica*], because of its oval, acuminate leaves; No. 2259, *C. raphidophora* [= *Coleobotrys cylindrica*], to recall the needle shape of its sclereids. These three species are also very similar; we will find in my Memoir the details of their differential characteristics.

To these six species of *Coleobotrys*, it may be necessary to add Jack's *L. cylindricus*, which I have not been able to study until now.

3. On the genus SYCOPHILA Welw. mss. — The *Sycophila* resemble the *Coleobotrys*, as was said above, by the conformation of the calyx and the stamens, whose subulate anthers have their pollen sacs transversely partitioned. They differ by the absence of a sheath at the base of the cluster, the surface of which is continuous with that of the leafy branch and which is, according to the rule, exogenous.

To this external difference are added several others drawn from the structure. Let us leave aside the stem and the leaf, and consider only the inferior ovary. We will see two striking characters there. First, its wall is entirely devoid of these needle-like sclereids with which it is stuffed in *Chiridium* and *Coleobotrys*; on the other hand, we find small nodules of isodiametric sclerotic cells, the outermost of which each contain a prism of calcium oxalate. But above all we do not observe here this lignified cupule, of variable shape, located more or less high depending on the genera and each time marking the real base of the pistil, the presence of which is general, as we know, among the Loranthaceae. It is replaced by a massive column of similar cells with thin, lignified membranes, extending along the axis along the entire length of the ovary to the base of the style and attenuated at its two spindle-shaped ends. Only the embryo sacs, which develop, three to five in number, in the thickness of this massif, escape lignification. On the longitudinal axile section of the ovary, after double staining with carmine and iodine green, this

massive green spindle, replacing the ordinary cup, stands out strongly against the pink background and allows us to recognize with the naked eye a species of this genus.

Thus defined, on the one hand by external morphology, on the other by structure, the genus *Sycophila* today includes three species, all three originating from the Portuguese colonies on the west coast of Africa.

Welwitsch discovered in 1857, living on the *Ficus pendulums* in the island of Calemba, on the Cuanza river, south of Loanda, between Quisondo and Condo, a species which he designated, in his Herbarium of the plants of Angola, belonging to the Polytechnic School of Lisbon, under the name *Sycophila combretoides*. The original label also bears this note: "Nov. gen. floribus 4-meris, racemosis and antheris bilocularibus loculis pluriloculatis (fere favosis) distinctum." Duplicates of this species were distributed under number 4852. The characterization of the genus, thus based by Welwitsch on the racemosse inflorescence, the tetramerism of the flower and the transverse partitioning of the pollen sacs, was certainly sufficient. Indeed, in *Coleobotrys*, which also have the cluster inflorescence and the septate anthers, the flower is pentamerous, and in *Elytranthe*, which also have the septate anthers, the inflorescence is a spike and the flower hexameric. However, we will agree that it is the substitution in the ovary of the axile lignified spindle for the normal cupule, a unique character in the family, which gives this still unpublished genus all its value, at the same time as it highlights the insight de Welwitsch, who first saw it.

The second species was collected by Mann, on Saint-Thomas Island, that is to say much further north, under the equator; it was described as *Loranthus*, under the name of *L. Mannii*, by M. Oliver, in 1864. No doubt because of the partitioning of the pollen sacs, MM. Bentham and Hooker classified this species in their section *Heteranthus*, alongside *L. heteranthus* Wall., which is, as stated above, a *Coleobotrys*. It is actually a *Sycophila*, *S. Mannii* (Oliv.).

Finally, thanks to the kindness of Mr. Henriquès, professor at the University of Coimbra, I was able to study a species collected by Mr. Quintas, in 1885, on the island of Tourterelles, near Saint-Thomas, and which bears the name of *Loranthus Mannii* Oliver in the University herbarium. It is, in fact, a *Sycophila*, but differing specifically from *S. Mannii*. The leaves, in particular, are smaller and above all, instead of being opposite, as in the two previous species, they are whorled in threes at each node, an arrangement which results in that of the axillary clusters. This is why I will name it *Sycophila ternata*.

4. On the genus LANTHORUS Presl. — Characterized by the articulation of the style, as said above, *Lanthorus* has the wall of the ovary devoid of needle-shaped sclereids; but on the other hand, we observe, as in *Sycophila*, nodules of isodiametric sclerotic cells containing prisms at the periphery. They also differ from *Chiridium* by the absence of involucre and needle-shaped sclereids, from *Coleobotrys* by the absence of sheath and needle-shaped sclereids, as well as by the normal conformation of the anthers, from *Sycophila*, and finally, by the normal conformation of the anthers and especially by the presence in the ovary of an ordinary lignified cup and not a spindle.

Thus defined both by external morphology and by structure, the genus *Lanthorus* currently includes six species.

One of them, collected in the Philippines by Cuming and distributed under No. 1949, was described by Presl in 1849 as a type of a distinct genus, under the name of *Lanthorus spicifer* [*Helixanthera parasitica*]. While rightly attributing a generic value to the articulation of the style, Presl was unaware that this same character is found in two species previously described as

Loranthus, namely *L. pentapetalus* Roxburgh [*Dendrophthoe pentapetala*], from India, where Blume reported it on first in 1830, and *L. macrostachys* Korthals [*Helixanthera parasitica*], from Borneo, where Korthals found it in 1839.

The *Loranthus pentapetalus* of Roxburgh, later found by Wallich, who named it *L. erythrostachyus*, should therefore be placed in the genus *Lanthorus*, alongside the previous species, under the name *L. pentapetalus* (Roxb.), or better, from *L. pentasepalus* (Roxb.), since the perianth here is a calyx, not a corolla. Miguel classified this species in his genus *Phœnicanthemum*, MM. Bentham and Hooker in the *Phœnicanthemum* section of their genus *Loranthus*.

Loranthus macrostachys of Korthals, which differs from the previous species notably by the larger size of all its parts, and which Miguel placed in his genus *Phœnicanthemum* under the name of *Ph. xestophyllum*, is also a *Lanthorus*, namely *L. macrostachys* (Korth.).

To these three species already named, we must undoubtedly add the one which was described by Wallich under the name of *Loranthus polycarpus*, and which I have not been able to study until now: this will be the *Lanthorus polycarpus* (Wall.) [*Dendrophthoe pentapetala*].

The last two species have not yet been distinguished. One of them, discovered by Blume in Java and later found by Korthals in Borneo, was described and figured by him under the name of *Loranthus pentapetalus* Roxburgh. However, it seems to me very distinct from the Indian plant. I will name it *Lanthorus Blumeanus*. The other, collected in Manila by Cuming and distributed under number 1975, is close to *L. spicifer*, from which it differs in particular by the shape of the leaves, the cluster and the fruits: I will name it *Lanthorus Cumingii*.

Thus constituted, the genus *Lanthorus* is therefore found in India, Manila, Java and Borneo.

5. On the new genus PILOSTIGMA. – Defined, as we saw above, by the size and shape of the stigma, the genus *Pilostigma* is further distinguished from all the preceding ones by several other external characteristics, notably by its pauciflorous umbellate inflorescence and by the hexamerous flowers, as well as by various structural characteristics, notably because the ovary contains in its wall, not needles as in *Chiridium* and *Coleobotrys*, not sclerotic nodules with prismatic crystals, as in *Sycophila* and *Lanthorus*, but stellate sclereids with long branches.

It has so far been reduced to a single species, discovered by M. F. de Mueller in Australia on *Eucalyptus* trees, on the banks of the Victoria River, and described by him in 1859 as *Loranthus*, under the name *L. sanguineus*. This species was classified by MM. Bentham and Hooker in the *Heteranthus* section of their genus *Loranthus*. It becomes the *Pilostigma sanguineum* (Muell.) [*Amyema sanguinea*].

It is possible that the study of the various forms in which it has been reported in various other regions of Australia will allow several distinct species to be recognized later.

6. On the new genus ILEOSTYLUS. – The platooning [winding into a ball] of the style, a unique character in the family, immediately distinguishes, as we know, the genus *Ileostylus*. The flower is small and the calyx is short in the bud, while inside the style becomes much longer: hence this singular twisting, which persists after blossoming and even after the fall of the calyx and the androceum. In addition, this genus differs from all the previous ones by other external characters, such as having for its inflorescence a raceme composed of triflorous umbels, and also by internal characters, such as not having in the wall of the ovary any kind of sclerotic cells.

It currently includes only one species, native to New Zealand, described by M. J. Hooker in 1864 as *Loranthus*, under the name *L. micranthus*. MM. Bentham and Hooker classified it in the

section *Euloranthus* of their genus *Loranthus*, but separated it sharply from all the others and established for it a distinct subsection, under the name *Heterostylis*. This name, having already been used, could not be transferred to the new genus. The species in question therefore becomes *Ileostylus micranthus* (Hook. fil.).

Deducting the six genera that we have just established, should the other Lorantheae which have the dialysepalous calyx and the stamens with basifixed anthers be all united in one and the same genus, which should then bear the name of *Loranthus*, or on the contrary, should they be distributed among several distinct genera, only one of which will bear the name *Loranthus*? This is the question that I intend to examine in a future Communication.

Mr. Guignard asks what happens, after fertilization, to the spindle-shaped lignified tissue that Mr. Van Tieghem described in *Sycophila*.

Mr. Van Tieghem replies that the samples he had were too young to allow him to follow the study of this tissue.

The Secretary General read the following communication:

Footnotes

(1) Ph. Van Tieghem, On the classification of Loranthaceae (Bull. de la Soc. Bot., February 23, 1894).
(2) Bentham and Hooker, Genera plantarum, III, p. 207, 1883.
(3) Engler, Nat. Pflanzenfamilien, III, 1, p. 185, 1889.
(4) From χειρίδιον, sleeve.
(5) Of κολεός, sheath, and βότρυς raceme.
(6) From συχός, fig tree, and φῖλος friend, because the plant grows on fig trees
(7) Presl, *Epimeliae botanicae*, p. 257, 1849.
(8) From πιλός, hat, and στῖγμα stigma.
(9) From εἰλέω, curled up, and στὺλος style.