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ON THE GROUPING OF SPECIES IN GENERA IN THE TRIBE GAIADENDREAE OF THE FAMILY LORANTHACEAE

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To complete the summary study of the grouping of species into genera in the Loranthoideae subfamily, it remains to deal with the question for the fourth and last tribe of this subfamily, that of the Gaiadendreae: this is what makes the subject of this Note.

The Gaiadendreae tribe contains, as we know, all the Loranthoideae which have the plurilocular ovary and the fruit of which is a ruminant endospermous drupe, that is to say hollowed out in as many longitudinal furrows as there are carpels, furrows that correspond to the backs of the carpels. This conformation of the endosperm arises from the sclerenchymous layer of the pericarp developing so as to include both the sepalic bundles and the alternate carpellar bundles, located on a much more inner circle. The result is, on the internal face of the pericarp, as many protruding ridges as there are carpels, ridges which form an obstacle to the growth of the embryo sac and remain embedded in as many furrows of the endosperm.

Some these plants inhabit Australia, others in greater America. Only a small number are known so far and, as they all have the dialysepalous calyx with versatile anthers, they also all form one and the same sub-tribe, which corresponds to the sub-tribe of Struthantheae in the tribe Lorantheae, the sub-tribe of Chatinieae in the tribe Psittacanthae and to the sub-tribe Treubellée in the tribe Elytrantheae.

According to the nature of the inflorescence, they belong, moreover, to three distinct genera. In one, the inflorescence is simple, consisting of an axillary raceme, each pedicel of which bears under the flower not only its concrescent mother bract, but also two lateral second-order bracts; this is the genus *Atkinsonia* of M. F. de Müller. In the other two, the inflorescence is composed of triads with a sessile median flower, with pedicellate lateral flowers, that is to say of biparous cymules. If it is an axillary raceme, the primary and secondary pedicels of which have a large leafy bract under the flower, it is the genus *Gaiadendron* of Don. If it is an umbel terminating in a short leafy twig, the primary and secondary pedicels of which have a small, scarious bract under the flower, it is the new genus *Desmaria*.

A few words on each of the three genera thus briefly defined.

1. On the genus ATKINSONIA F. Muller. – Founded in 1865 By M. Muller (1), for the *Nuytsia ligustrina* of A. Cunningham, a terrestrial shrub that inhabits the Blue Mountains in Australia, and immediately admitted to the Flora of Australia (2), this genus has not been recognized since. Bentham and Hooker introduced it in the *Gaiadendron* section, of their genus *Loranthus* (3) and more recently Engler incorporated it into his genus *Gaiadendron* (4). However, it is necessary to re-establish this genus, which differs greatly, in particular by its inflorescence, from the American plants which constitute the genus *Gaiadendron*.

This inflorescence is, in fact, a simple axillary raceme, whose peduncle offers at its base a persistent perula and whose pedicels each bear three bracts under the flower, namely the concrescent mother bract and two bracteoles, as in *Dendropemon*, for example, among the Lorantheae, or even as among *Macrosolen* among the Elytrantheae. The flowers are usually heptamerous, without abortion, that is to say, are composed of seven staminiferous sepals and

seven alternate carpels, each hollowed out of a locule soon obliterated by an amyliiferous epidermis; also the pericarp presents, on its internal surface, seven projecting ribs, sunk in as many furrows of the endosperm. The floral type can also lower it six, or rise to eight.

The outside surface of the leaf and the outer area of the inferior ovary are devoid of sclereids. Above its separation, the calyculus contains a few groups of vascular cells, of the same order as those which exist, as we know, in the outside surface of the leaf of all Loranthaceae. The lignified cup is thick, narrow and deep, like a thimble. After the separation of the calyx, the ovary extends into a flattened bulge where the seven locules are continued and which persists after the fall of the style.

Thus constituted, the genus *Atkinsonia* has so far only one species.

2. On the genus GAIADENDRON Don. – Don established this genus in 1834 (5) for a number of American plants with terrestrial vegetation, and defined it, as its name indicates, by the very fact of this terrestrial vegetation. So there is included, quite wrongly, *L. eugenioides* H.B.K., which is a *Tripodanthus*. Reduced by Bentham and Hooker to be only a section of the genus *Loranthus* (6), this genus has more recently been re-admitted by M. Engler (7). It must be maintained.

Its type is *G. Tagua* (HBK) and also includes *G. puracense* (HBK), *laurifolium*, (HBK), *nitidum* (HBK), *punctatum* (RP.), as well as a species recently described by M. Hieronymus under the name of *Gaiadendron breviflorum* (8), all terrestrial shrubs, inhabiting Peru, Bolivia, New Grenada, Ecuador and English Guyana.

Everywhere, the inflorescence is an axillary raceme, composed of triads with a sessile median flower, with pedicellate lateral flowers, that is to say of biparous cymules. The peduncle of the raceme has its base surrounded by a persistent perule and the bracts, borne by the primary and secondary pedicels, are broad and leafy. Everywhere also, the flowers are heptamerous, with a complete pistil, that is to say formed of seven alternisepalous carpels and hollowed out of seven amyliiferous locules; also the fruit has its endocarp provided with seven sides, embedded in as many furrows of the endosperm.

The outside surface of the leaf and the outer layer of the inferior ovary are devoid of sclereids. The lignified cup is thick and deep, shaped like a drinking glass; above the departure of the calyx, the ovary bears a bead conerescent with the base of the style and which persists after its fall.

G. breviflorum Hier. appears to be dioecious; the samples that I was able to study were, in fact, all male, by abortion of the pistil, the style of which was nevertheless well developed.

3. On the new genus DESMARIA. – The type of this genus is *Loranthus mutabilis* Pœppig and Endlicher, which lives in Chile, where it is parasitic on various trees. This species was incorporated by M. Eichler in the *Taguana* section of its genus *Phrygilanthus* (9), and more recently M. Engler included it in the *Euphrygilanthus* section of this same genus (10).

In a previous communication, I showed that, by its plurilocular ovary, it moves away not only from *Phrygilanthus*, but from all Loranthaceae, and is related to Gaiadendreae (11).

The stem has long shoots and short shoots, all bearing petiolate leaves with a thin blade, tapering at the base, rounded at the top. On long shoots the leaves are in spaced pairs; the short branches produce a persistent perule and a rosette of leaves each year. After a few years, they end in an umbel of 4 to 6 rays, usually sessile above the last leaves, sometimes stalked. Each pedicel bears a triad with a sessile median flower, with pedicellate lateral flowers, provided with

three short and scarious bracts, in a word a biparous cymule. It is from this arrangement of the leaves and flowers in a bouquet at the end of the short branches, along the long branches, that the name of the genus was derived (12).

The flower is usually hexameric, with a highly developed membranous calyculus. The outside surface of the leaf and the outer area of the inferior ovary are devoid of sclereids. The lignified cup is thick and shallow, cup-shaped. Of the six carpels which normally compose the pistil, it usually aborts one or two, and only five or four amyliiferous locules are seen. The base of the style is surrounded by a free rim, and the calyculus offers, above its separation, groups of vascular cells, as we have seen in *Atkinsonia* and *Gaiadendron*.

By the conformation of its leaves, which recall those of *Loranthus europaeus*, by their arrangement, which recalls that of *Phyllodesmis*, especially by its inflorescence in a terminal umbel of cymules, finally by its parasitism, this genus, reduced until now to a single species, is clearly distinct from the previous two.

The fruit being there so far unknown, it is only with doubt that it is placed in the tribe of Gaiadendreae. If the fruit were, in fact, to be a berry with smooth endosperm, and not a drupe with ruminated endosperm, it would have to be transferred to the tribe Elytrantheae, and at the same time to establish for it in this tribe a new sub-tribe, since the anthers are dorsifixed and versatile. It would also be the only representative in America of the Elytrantheae tribe. It therefore seems preferable, in the meantime, to leave this genus among the Gaiadendreae.

4. Summary. In short, the Gaiadendreae tribe, by far the smallest of the four tribes of the Loranthoideae subfamily, includes only one sub-tribe with three genera, the differential characters of which can be summarized as follows:

Gaiadendreae	{	axillary	{	simple	Atkinsonia F. Mul.
Inflorescence in	{	racemes	{	composed of cymules	Gaiadendron Don.
		umbel of terminal cymules		Desmaria

Of these three genera, two have been established already (*Aikinsonia*, *Gaiadendron*), but not recognized, the third is new (*Desmaria*). The first inhabits Australia, the other two in western tropical America.

FOOTNOTES

- (1) Fragmenta, V, p. 34, 1865.
- (2) Flora australiensis, III, p. 188,)1866.
- (3) Genera, 111, p. 212, 1883.
- (4) Nat. Pflanzenfam., III, 1, p. 178, 1889.
- (5) General System, III, p. 431 1834.
- (6) Genera, III, p. 212, 1883.
- (7) Nat. Pflanzenfam., III, 1, p. 178, 1889.
- (8) Bot. Jahrbücher für Systematik, XX, Beiblatt, 4, 1895.
- (9) Flora Bras., V, 2, p. 47, 1866.
- (10) Nat. Pftanzenfam., III, 1, p. 179, 1889.
- (11) Bull, de la Soc. bot., séance du 8 décembre 18937 p. 359.
- (12) From δεσμός, bouquet.