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NEW BIOLOGICAL NOTES ON THE MADAGASCAN FLORA

BY

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Notes that we gather here are are related to undescribed species of the Malagasy flora, either past species on which we can provide some new data.

A New *Cytinus*.

We have already, in 1912, told the story of some phanerogamic parasites of Madagascar (1), and the four species we studied were then:

Thonningia malagasica Fawcett Balanophoracée-Langsdorfiée which is Analamazaotra parasite on the roots of some Eleocarpus such as *Eleocarpus quadrilobus*, Jum. Perr., on *voanany* or *voanakana*, and also on roots of *Grewia*;

Balaniella hildebrandtii Rchb. f., Balanophoracée Balanophorée, which lives in Manongarivo, 400 meters above sea level on the roots of *Ficus Baroni*;

Rhopolocnemis malagasica Jum. and Perr., Balanophoracée-Hélosidée, yet collected by one of us in the massive Manongarivo, but around 1600 meters, on the roots of an undetermined plant;

Hydnora esculenta Jum. and Perr., Rafflésiacée-Hydnorée, with an underground edible fruit, whose thick fleshy roots grow on the roots of *Acacia* and other legumes.

The new species of this curious biological group that we can report today is as *Hydnora* a Rafflèsiacée but the tribe Cytinées.

Until now all known Cytinées are at number six, three of which are Mexican. The three Mexican *Cytinus*, which are *Cytinus Andrieuxii* Hemsl., *Cytinus americanus* R. Br and *Cytinus oxylepis* Robins. belong to the subgenus *Bdallophyton*. The three other members of the genus are *Cytinus Hypocistis* Lin., from our Mediterranean region, which are *Eucytinus*, *Cytinus dioicus* Juss., of Southern Africa, which is a *Hypolepis*, and *Cytinus Baroni* Bak. f., of Madagascar, for which Baker f. created the subgenus *Botryocytinus*.

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(1) H. Jumelle et H. Perrier de la Bâthie: Quelques Phanérogames parasites de Madagascar. (Bevue Générale de Botanique; 1912.)

Baker, in fact, reported in 1888 that *Cytinus Baroni*, which, in the region of Mandritsara, was parasitic on the branches of *Dicorphye*, admitted to the genus *Cytinus* the following four subgenera, for which we must recall the features:

1˚ *Eucytinus*. Parasitic on the roots of *Cistus*. Provided with a stem [peduncle]. Monoecious. Flowers in a dense spike, perianth of four segments; two-bracted. Connective not prolonged (1) above pollen locules. Stigma capitate, eight to ten grooves. Eight to ten simple placentas. Single species: *Cytinus Hypocistis* of the Mediterranean region.

2˚ *Hypolepis*. Parasitic on the roots of *Eriocephalus* and *Agathosma*. Provided with a stem. Dioecious. Spike of one to three flowers. Perianth of six segments, two bracts. Connective prolonged beyond the locules. Stigma globose, twelve to fourteen blades, cuneo-subulate. Twelve to fourteen branched placentas. One species: *Cytinus dioicus* of Southern Africa.

3˚ *Bdallophyton*. Parasites on roots. Stemmed. Dioecious. Many flowers in a dense spike, perianth of four to nine segments, no bracts. Connective long, extended beyond the locules in *C. americanus*, not extended in *C. Andrieuxii*. Stigma radiate, obscurely lobed. Ten to fourteen placentas. Two species: *C. americanus* and *C. Andrieuxii*, Mexico (2).

4˚ *Botryocytinus*. Parasite on tree branches. Stemless. Dioecious. Three to four flowers in a glomerule surrounded by an involucre. Six perianth segments and bracts. Connective prolonged beyond the locules. Stigma radiate. Nine to twelve simple placentas.

The new *Cytinus* we report here is parasitic in the Analamazaotra forest on the roots of a tree that seemed to be *Dombeya* to one of us.

In our samples, which are composed exclusively of male flowers (Pl. IV), a short stem bears two rows of three bracts. The bracts of the outer row are 2.5 cm long by 1 cm wide; they are oblong, rounded at the top. The three internal bracts rank much larger, and alternate with the previous ones, are still very rounded at the top, but 4.5 X 2 cm and are, therefore, of a magnitude almost double that of the previous.

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(1) We literally reproduce the characters shown by Baker, but noting that in *Cytinus Hypocistis*, the connective far exceeds the pollen chambers.
(2) This is probably the same as the genus that gives *Cytinus oxylepis*.

These six bracts are completely hairless. They form a loose involucre at the base of the group of three male flowers. These are each accompanied by two bracts, still hairless and rounded at the top, 4 X 1.5 cm.

Each flower, which in the bud is approximately 3 cm in diameter, has six perianth parts with aestivation arranged in a spiral, with two overlapping sepals, two sepals overlapping mid-section and mid-section covered two sepals.

All these sepals are smooth, oval and round, 4.5-5 cm long and 3 cm wide. They are connected to the staminal column by six strips. Four such strips are connected respectively to the two edges of the two covered sepals and the other two are connected to the two covered sepals overlapping mid-portion and mid-portion covered edges.

The staminal column consists of twenty stamens; the connectives extend above the pollen locules.

The pollen is in tetrads, such as in *Cytinus Baroni* (while the pollen in *Cytinus Hypocistis* is isolated grains).

Regarding this last character, we see, that our species has already been described by Baker from Madagascar, but also differences between the two *Cytinus* are quite large since, in particular, in *Cytinus Baroni*

1˚ The stem is not developed;
2˚ The involucral bracts are numerous and would not, according to Baker, especially in the male flower, be a clear delineation between the bracts and perianth parts;
3˚ There is no connective extension;
4˚ The parasite has established on the branches of the host, not the roots.

It would rather be in section *Hypolepis* than *Cytinus*, since, as *Cytinus dioicus* is a parasite of roots, provided with a small stem, and stamens provided with connective extensions.

We can not, indeed, complete the comparison, since we do not know of the female flowers.

Moreover, even with only male flowers, it appears to some that our species is distinct from *Cytinus dioicus*, as it is described and illustrated in the *Prodromus* (Pl. XXXIV, 1841) in “Hooker's Icon.”

This *Cytinus dioicus* has, indeed, a perianth of six parts, inflorescences of one to three flowers and pollen in tetrads, but the staminal column is composed of only seven to eight anthers, involucral leaflets are serrated and the perianths parts are hispid.

And this is the seventh known species of the genus, if it agrees with G. Baker's Mexican *Bdallophyton* constituting a unique section of *Cytinus*. If, on the other hand, where, with Eichler and Graf zu Solms, it would be considered as forming a separate genus from the three *Bdallophyton*, one may be allowed to ask whether the three *Cytinus* of Southern Africa and Madagascar are not generically separate from Mediterranean *Cytinus*. Some characters might justify this separation, since *Cytinus Hypocistis* is monoecious with tetramerous male flowers and pollen grains isolated, while the other three are dioecious, with hexamerous male flowers and pollen tetrads. These three species thus seem much more similar to each other than all three are to *Cytinus Hypocistis*.