

## NOTE ON THE FLORAL MORPHOLOGY OF MABEA (EUPH.).

by

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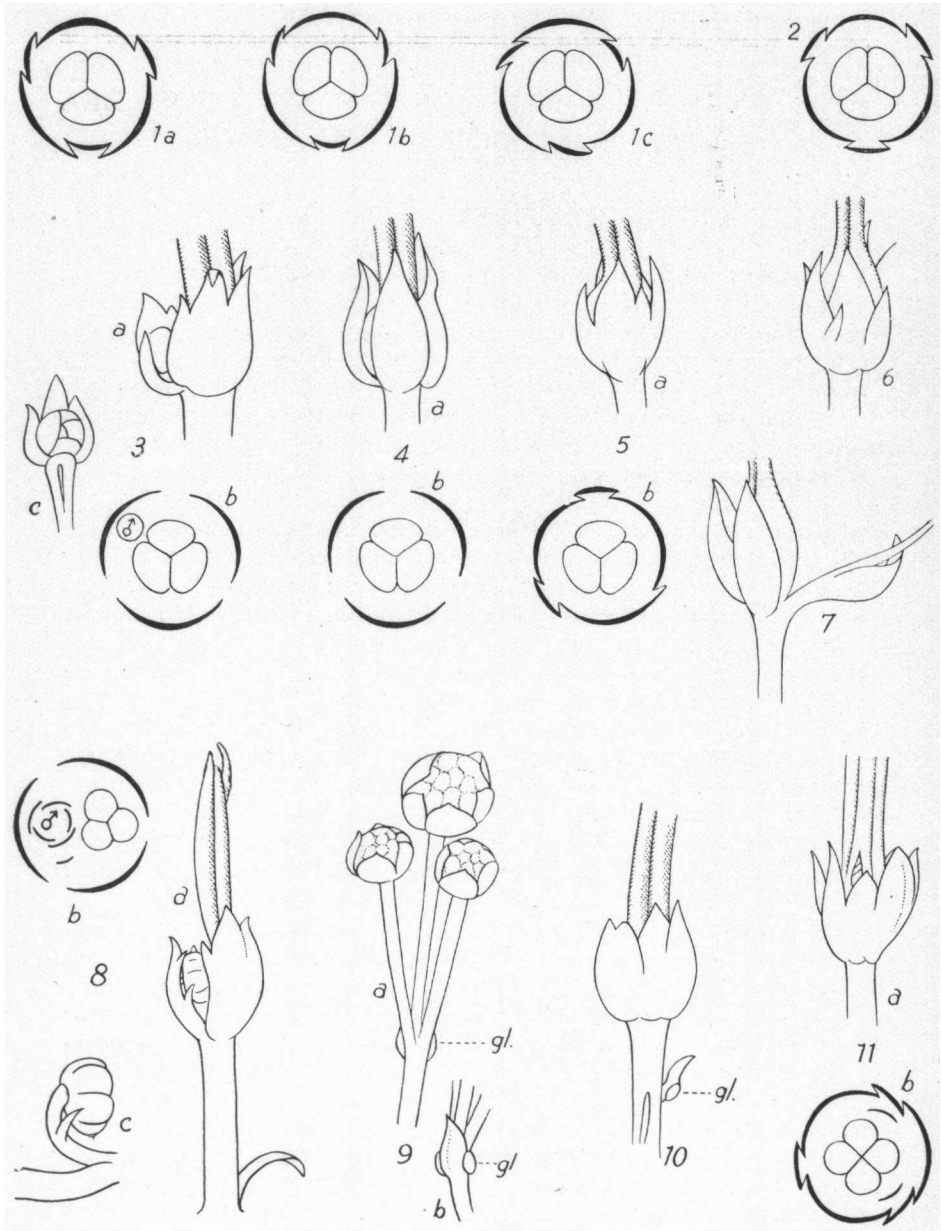
Among the material collected by LANJOUW and LINDEMAN during the Suriname Expedition 1948—'49 a specimen of *Mabea taquari* Aubl. was found whose flowers showed some interesting deviations from the normal structure.

In the "Flora of Suriname" vol. II, part I (1932), p. 78 LANJOUW states that the female flower of the genus *Mabea* Aubl. is apetalous and provided with a 5- or 6- partite calyx. In a re-investigation of the specimens preserved in the Utrecht Herbarium this could as a rule be confirmed.

In most of the older Utrecht specimens of *Mabea taquari* Aubl. the flower proved to be provided with a 6-partite calyx consisting of 3 larger sepals alternating with 3 smaller ones (fig. 1 and 2). In the recently collected specimens the calyx differs from the description given by LANJOUW in having only three either dentate or entire, sepals, and in the circumstance that the latter are completely free (fig. 3, 4 and 8).

MICHAELIS (3) states that the female flowers of the genus *Mabea* Aubl. show in their perianth a rather wide range of variability. In most cases the perianth proves to be 5-merous, sometimes, however, it may be trimerous and *M. occidentalis* Müll. Arg. and *M. fistuligera* Mart. possess a perianth that is apparently 9-merous, i.e. it consists of 3 larger and 6 smaller sepals; the latter are arranged in pairs and all connate at the base; according to MICHAELIS they would represent stipules. The fusion between these smaller "sepals" is sometimes complete e.g. in *M. piriri* Aubl. and the calyx becomes hexamerous.

When we compare the female flowers of the older Utrecht specimens of *Mabea taquari* Aubl. with their 6-merous calyx and those of the specimen collected by LANJOUW and LINDEMAN with their 3-merous calyx, we see that the 3 larger calyx lobes of the former alternate with the ovary cells and that the three smaller ones are found in opposition to them, while of the specimen collected by LANJOUW and LINDEMAN the only 3 sepals alternate with the ovary cells (fig. 1, 2, 3, 4 and 8). The absence of the smaller sepals in the



trimerous calyx may be due either to a complete suppression or to a fusion with the larger ones. An indication in favour of the latter possibility is found in the specimen of *Mabea taquari* Aubl. collected by A. PULLE under number 409 for here one of the smaller sepals is almost entirely united with one of the larger ones, in this case therefore the calyx is 5-merous (fig. 5). If all three the smaller lobes are united in this way with the larger ones the perianth would become 3-merous <sup>1)</sup>.

*Mabea taquari* Aubl. fig. 1—8, 10, 11: female flowers; fig. 9: male flowers.

Fig. 1. a, b and c Diagrams of the specimen VERSTEEG 836.

Fig. 2. Diagram of the specimen A. PULLE 59.

Fig. 3. Herbarium specimen: LANJOUW and LINDEMAN 1193. a. Female flower with a male flower in the axil of one of the 3 free "sepals". b. Diagram. c. "Sepal" with male flower.

Fig. 4. Herbarium specimen: LANJOUW and LINDEMAN 1193. a. Female flower with 3 free "sepals". b. Diagram.

Fig. 5. Herbarium specimen: A. PULLE 409. a. Female flower with 5 sepals. One of the smaller sepals is almost entirely united with one of the larger ones b. Diagram.

Fig. 6. Herbarium specimen: VERSTEEG 836. Female flower with an irregular "perianth".

Fig. 7. Herbarium specimen: LANJOUW and LINDEMAN 1193. Female flower provided with a pedicel of a deflorated male flower arising from the axil of one of the "sepals".

Fig. 8. Herbarium specimen: LANJOUW and LINDEMAN 1193. a. Female flower with a male flower in the axil of one of the 3 "sepals". b. Diagram. c. Part of a "sepal" with a male flower. The pedicel of the male flower is provided with a bracteole.

Fig. 9. Herbarium specimen: LANJOUW and LINDEMAN 1193. a. A dichasium consisting of male flowers. b. Bract, provided with 2 glands (seen from behind).

Fig. 10. Herbarium specimen: A. PULLE 409. Female flower with two bracteoles on the pedicel. The upper one provided with a basal gland.

Fig. 11. Herbarium specimen: VERSTEEG 836. a. Female flower showing two scales inside the whorl of "sepals". b. Diagram.

<sup>1)</sup> In a specimen of the same species collected by VERSTEEG under number 839 we observed a flower with a very irregular calyx its structure could not be explained (fig. 6).

Of great importance is the following deviation observed in the specimen of LANJOUW and LINDEMAN of which mention has already been made. In several "female" flowers one of the three sepals was found to bear in the axil a complete male flower (fig. 3 and 8). Once even a bracteole was found on the pedicel of such a male flower (fig. 8c). In some female flowers we found a small stalk of which we suppose that it represents the pedicel of a deflorated male flower (fig. 7). The above mentioned peculiarities can, in our opinion, only be explained if we regard the female flower as an inflorescence and the sepals as the latter's bracts. If this is right, the six smaller calyx lobes found in *Mabea occidentalis* Müll. Arg. and in *Mabea fistuligera* Mart. might quite well be interpreted as stipules belonging to the three bracts of which the involucre originally consists.

As the male inflorescence of *Mabea taquari* Aubl. is a simple dichasium (fig. 9) it is only natural to regard the deviating female "flowers" of the specimen collected by LANJOUW and LINDEMAN, and consequently also the normal female "flowers" of this species generally, as similar dichasia. In these bisexual dichasia the terminal flower would be represented by a naked ovary while only one of the lateral flowers is developed. This is a male one and it is subtended by one of the bracteoles of the terminal flower. It should, however, not be overlooked that there are some points of difference between the two kinds of dichasia.

The whole inflorescence is a compound raceme consisting in the lower part of a few bisexual "dichasia" and for the rest of a number of male ones. The bisexual ones are subtended by an eglandular bract springing from the main rhachis; the male ones are also inserted on this rhachis but they are not subtended by bracts. However, in the male dichasia a bract provided with two basal glands is found near the base of the lateral pedicels (fig. 9b).

In one of the older specimens, i.e. in those provided with "normal" 6-merous flowers, we have found a female flower in which the pedicel was provided with two bracteoles; on one of the latter a basal gland was present (fig. 10).

Further, a female inflorescence has been found (in Versteeg 836) which showed two extra leaf-like scales inserted inside the 6-merous whorl of the "perianth". These scales represent perhaps a rudiment of the real perianth. It must, however, be admitted that this flower is also abnormal in another respect: instead of a trilocular ovary and three stigmata it possesses a quadrilocular ovary provided with four stigmata (fig. 11).

## LITERATURE

1. J. LANJOUW in Flora of Suriname Vol. II part I: Euphorbiaceae; 1932 p.1 seq.
2. —, The Euphorbiaceae of Suriname, diss. Utrecht 1931.
3. P. MICHAELIS, Blütenmorphologische Untersuchungen an den Euphorbiaceae in Bot. Abh. 3, 1924.
4. J. MUELLER, Euphorbiaceae in Flora Bras. XI, 2, 1873, p.1 seq.