

## VARIATIONS AND DEVIATIONS

by

Dr. J. C. COSTERUS

### I

#### Primulaceae.

In the following pages I propose to give a review of the teratological cases which botanists, cultivators and amateurs have sent to me for examination or have been collected by myself. As the title indicates both deviations and variations will come into discussion because slight deviations occur so frequently as to be considered as inherent to the species and only modify the character of the plant by way of a stronger development. This is e.g. the case with the genus *Cyclamen*, where peduncle and the leaf at its base often just cohere but also may coalesce along their whole length, even to such a degree that the petiole reaches beyond the peduncle, which means a striking deviation. The same thing applies to other oscillations moving between extremes and thus rendering the limitation between variations and deviations difficult e.g. the shape of the corolla-lobes, that of the calyx, the hairiness etc. A very striking deviation is shown by the tree-cyclamen, which develops, instead of isolated flowers, one stem with leaves and flowers and somewhat imitates a rhizome. In this case the question arises whether we have to do with a monstrosity or with a variation which for aught I know has as yet been met with only in *C. persicum*<sup>1)</sup>.

<sup>1)</sup> Penzig III, p. 27.

The cases which I want to deal with in the following pages about various families are meant as a modest supplement of the admirable work of O. Penzig at Genoa.

## 1. PRIMULACEAE.

### **Primula.**

#### *Primula Auricula* L.

Umbella 4-flowered, 2 bracts transformed into foliar leaves. One of the pedicels grown out to an 8-flowered raceme.



Fig. 1. Inflorescence of *Primula elatior* Jacq. Peduncle flattened and slightly contorted.

Legit J. K. Budde, Utrecht.

#### *Primula elatior* Jacq

One of three specimens has corolline calyces just as the variety cultivated as *Pr. calycanthema*.

Legit Miss M. Baart at Rijswijk.

The same phenomenon has been observed by myself in the garden of Prof. D. J. Korteweg at Amsterdam: in the year 1887 a specimen bore normal flowers but in 1888

one of its flowers showed nearly perfect calycanthemy: in one of the flowers only the calyx showed white-greenish, somewhat hairy teeth.

id. id. Two rich flowered umbellas grown together (Fig. 1). Between these a third but poorer umbella is firmly enclosed cohering with both.

Legit Miss N. van der Waarden, Hilversum.

*Primula sinensis* Lindl.

Three pedicels of the umbella grown together, one gets free at a distance of 3.5 c.m.

Legit Mrs. den Tex—van der Waarden, Amsterdam.

*Primula Kewensis* (sic).

From a long stem springs a whorl of 5 leaves each of which bears a flower in the axil. One c.m. higher up as

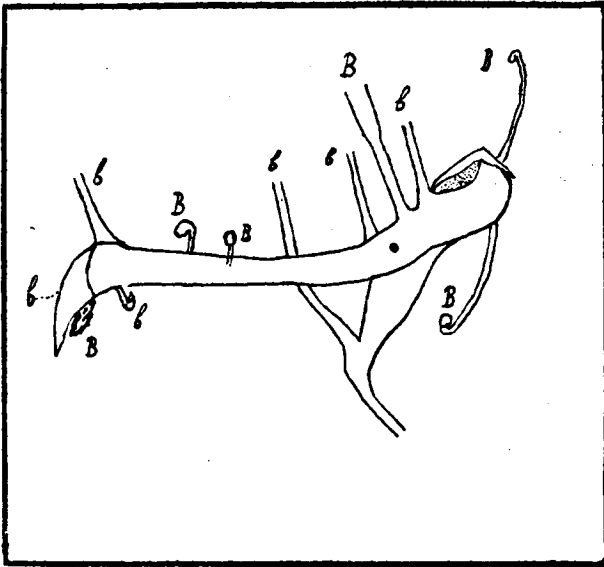


Fig. 2. *Cyclamen europaeum* W. „Tree-cyclamen”.

many as 12 leaves are spirally produced, which each of them also produce an axillary flower. The top itself bears a condensed cluster of both leaves and flowers. For completeness' sake should be mentioned that from the first whorl there springs also a flat and grooved branch with two flowers at the top (symphysis). This fact is mentioned in connection with Prof. J. C. Schoute's interesting

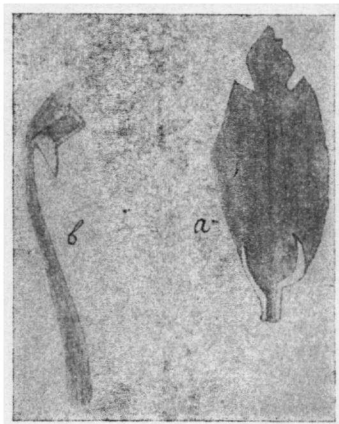
article: „on whorled Phyllotaxis 1921” in Recueil des trav. bot. neerl. Vol. XIX.

Legit J. K. Budde, Utrecht.

### Cyclamen.

*Cyclamen europaeum* L.

Leaves and flowers spring from a rhizomelike creeping stem, 5 c.m. long, terminating into a stout terminal bud. (Fig. 2). This „variety” goes by the name: Treecyclamen<sup>1)</sup>.



Legit J. Maarse, Schelinkhout.

*Cyclamen persicum* Mill.

Peduncle 2.7 d.m. long, cylindric, flattening upwards and grooved, splits up into two pedicels of 3 c.m. length.

Two hexamerous flowers: bifurcation.

Legit Mrs. A. Aten—van Iterson, Hilversum.

id. id.

Peduncle bifurcating, one of the two flowers with a trimerous calyx.

Fig. 3. *Cyclamen persicum* Mill. Calyx trilobus, Corolla bilaterally symmetric.

Legit R. de Lange, Hilversum.

id. id.

<sup>1)</sup> Whether the „Tree-cyclamen” is to be looked upon as a monstrosity is, in my opinion, rather dubious 1° because, according to Penzig, *C. persicum* may show the same peculiarity, 2° Daniel Oliver in his lessons in Elementary Botany (1886) p. 182 says about the genus generally: „the tigellum of the embryo enlarges, forming a thick perennial corm, from which leaves and flowers annually rise”.

Peduncle and petiole grown together in various degrees. In a specimen, cultivated by Miss N. van der Waarden at Hilversum, both coalesce completely, the leafblade surpassing the flower for a distance of 1.5 c.m.

id. id.

Polypetaly on account of repeated fission of the segments of the corolla.

Legit Miss N. van der Waarden, Hilversum.

id. id.

5. Bilateral symmetry of the

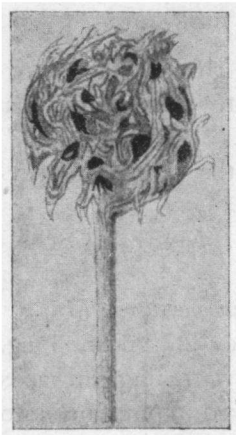


Fig. 4. *Cyclamen persicum* Mill. Four flowered inflorescence.

corolla caused by the unequal development of the lobes of the corolla, of which three are much larger than the other two (Fig. 3a). The calyx is only three-lobed (3b).

Legit Eng. J. L. van Soest, the Hague.

6. Four flowers on one peduncle. This singular and striking case was sent to me from the University Gardens of Utrecht. The general impression of the

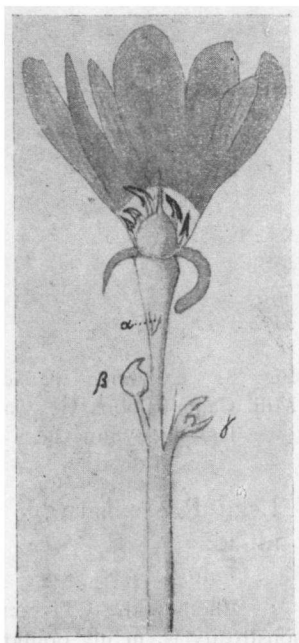


Fig. 5. *Cyclamen*. One of the flowers removed ( $\alpha$ ), two:  $\beta$  and  $\gamma$  after removal of corolla and stamens.

globular complex is represented in Fig. 5 on  $\frac{1}{3}$  of the natural size. On examination no less than four flowers were found, a number in other genera of this family not

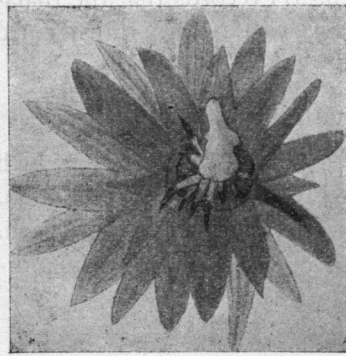


Fig. 6. Cyclamen flower inserted in  $\alpha$ . or rather segments of the corolla, the stamens and

the somewhat transformed pistil occupy a great part of the whole complex. Also the flowers, indicated by  $\beta$  and  $\gamma$ , were polypetalous and showed a greater number of stamens, only the ovary is pretty well normal ( $\beta$ ) but without a style proper. Fig. 7 shows the central placenta and 5 „carpels”; whether we have to do here with ovules or seeds I am not in a position to say, but I think it hardly possible that pollinisation should have taken place on account of the total absence of a style. At any rate the ovules have been produced by the top of the torus and the five little leaves at its base although occupying the place of the carpels are as actually in the whole family, without any function concerning the fructification.

Legit J. K. Budde, Utrecht.

uncommon, but in Cyclamen very rare. Fig. 5 represents the peduncle with the terminal flower and the indications of the flowers  $\alpha$ ,  $\beta$  and  $\gamma$ .

The terminal flower is unilateral and its thalamus hollow from which the stalked ovary rises up. From  $\alpha$  the second flower develops (Fig. 6), its numerous petals

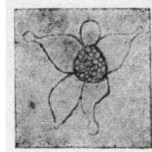


Fig. 7. Cyclamen Pistil of flower  $\gamma$ .

***Trientalis europaea* L.**

In the botanic garden at Hilversum I found a couple of years ago a flower with two pistils, the torus having split up into two. Penzig (III, p. 31) records that the thalamus may lengthen to a branch with ovules transformed to leaves.

***Lysimachia vulgaris* L.**

In the same garden I found a branch of 4.2 d.m. which flattened and split up into two. Bifurcation and fasciation. Each of these branches repeated the same deviation. Also Penzig mentions fasciation of the stem, already indicated by Masters and Geysenheyner.