

STAMINODY IN DIGITALIS PURPUREA L.

by

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(With plate n. III.)

Although staminody i. e. the appearance of stamens in places normally occupied by other parts of the flower, and even in extrafloral organs, is of not so very rare occurrence and has in itself no special significance, the present case of the said phenomenon in the Foxglove is of such a striking interest as to justify a detailed description:

1st because the deviation has been observed, although in unequal degrees, almost simultaneously, in three different places of our country, in the summer of this year, and as far I know, for the first time.

2^{ly} because the abnormal structure is likely to throw some light on the ancestors of the Scrophulariaceae and consequently upon the relation between Eichler's Haplostemones and Diplostemones, the former possessing only one row of stamens, whereas the latter group shows both an inner and an outer series of the said organs.

It should be remembered for a right understanding of the following facts 1^o that the zygomorphous corolla of *Digitalis purpurea* consists — apart from the tube — of a rather short upperlip and a protruding underlip with a narrowed top, 2^o that the four stamens, although inserted on the corolla, are antisealous, 3^o that according to the majority the of Scrophulariaceae, the upper stamen, has disap-

peared, 4^o that the inner stamens are altogether absent.

Let us now examine fig. 1, which has been drawn in the natural position of the flower. *S* denotes the unpaired stamen, which has reappeared. On either side of *S* there springs a stamen in the axil of a thin, pointed petal ($p + s$); next a stamen is visible on either side (without petal), further on: a pair of stamens cohering with the edges of the underlip, which itself completes the flower.

Consequently this flower consists of:

One outer stamen, two small petals (in normal circumstances = upperlip), each with an antipetalous stamen, two antisepalous stamens, two antipetalous stamens grown together with the underlip *p*. Together 7 stamens.

In fig. 2 we find the same construction as in fig. 1, only with this difference that the second pair $p + s$ has given up its connection with the underlip, viz. completely on the left and partly on the right side. But two other stamens appear on the margins of the underlip and these are undubitably the stamens which in normal flowers enclose the base of the underlip and therefore are antisepalous. Together 9 stamens, only the stamen opposite the underlip misses.

In our third figure, representing a corolla split up and spread out, the same succession of petals and stamens is to be seen, only the last pair of antisepalous stamens shows perfect petalody. *S* indicates the place of the not drawn antisepalous stamen.

Compared with fig. 1, the 2^d and 3^d figures show a more complete development of the underlip on account of the presence of a second pair of antisepalous stamens $s' \dots s'$, either in the shape of an incomplete anther or in that of a petal-like lobe.

The three flowers, 1, 2 and 3, belong to a well developed raceme on which the lower flowers had already dropped their corollas but of which the buds unfolding subsequently

showed without exception the same structure i. e. reappearance of the antipetalous stamens and splitting up of the corolla-limb.

If this remarkable deviation might prove to be constant, which seems very probable, this *Digitalis* should be classed with the Diplostemones, and the mother-species left with the Haplostemones. In fact, however, I prefer to look upon this erratic Foxglove as a fore-runner, at all events, as one of the ancestors of the recent *Digitalis* and the whole group of Haplostemones as descendant from Diplostemones, in the same way as the Primulaceae and Myrsinaceae which in a former stage of development must have possessed two rows of stamens of which the outer whorl disappeared in the course of time.

Finally I have to thank the three gentlemen who were kind enough to send me the above instructive specimens: in the first place Mr. R. G. Koopmans of Bussum, student at the University of Utrecht. In his specimen the outer stamen *S* had not come back, but the upper two i. e. antipetalous stamens showed themselves bending outward to the right and left sides of the flower.

The second sender has been Mr. E. Hesselink, Director of the Government Forestry Experiment Station at Wageningen. Also in his specimen only the two upper antipetalous stamen had reappeared and bent outward.

A few days later it was Mr. J. K. Budde, head-gardener of the University Garden at Utrecht, who sent me a whole inflorescence of which all the numerous flowers had been affected in the way as has been described and represented by our figures. It is of course this material which enabled me to give full details about the atavistic transformation.

It is to be hoped that next year the same deviation may show itself on a larger scale, which is hardly to be doubted.

Description of the figures on plate I.

Fig. 1—3. From the corolla-tube spring:

S = the normally suppressed outer stamen,

$s \dots s$ = outer stamens, only one pair having developed.

$p + s$ = petal with antipetalous stamen.

Fig. 2—3. $s' \dots s'$ = anthers coalescing with the underlip,
petaloid in fig. 3.

Fig. 4. One of the antipetalous stamens + petal, magnified.

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Tab. III.

