TABLE 27

theor. genotypical constitution of the F_2 generation (in percentages)		theor. phenotypical consitution of the F_2 generation (in percentages)	
		two normal wings	one or two abnorm. wings
	25 Va'/Va'	0.57	24.43
	50 +/Va'	31.95	18.05
	25 +/+	25.00	—
total	100	57.52	42.48

SUMMARY

The cases of eversporting varieties mentioned in literature are distinguished into phenotypical and genotypical eversporting varieties.

The phenotypical eversporting varieties are characterized by the occurrence of 2 most divergent phenotypes, which are to be considered as modifications.

The phenotypical eversporting varieties may be distinguished according to the occurrence or non-occurrence of transitions between the two phenotypes, according to the occurrence or non-occurrence of the two phenotypes in one and the same individual and according to differences in the ratio between the number of individuals of the normal phenotype and the number of individuals of the abnormal phenotype.

The genotypical eversporting varieties likewise show 2 different phenotypes, the cause of which is, however, to be found in labile genes, constant heterozygosis and the like.

On the phenotypical eversporting varieties environmental conditions usually have a very great influence, on the genotypical eversporting varieties none.

With the phenotypical eversporting varieties the offspring of the two phenotypes show no differences, with the genotypical eversporting varieties usually great ones.

The theory of PLATE is discussed.

Experiments with *Papaver somniferum polycephalum* showed that both the interindividual and the intraindividual differences in polycephaly are chiefly based on different conditions of nourishment.

The offspring of parent-plants which are grown under exceedingly bad conditions compared to those of parent-plants which are grown under exceedingly favourable conditions show no difference in polycephaly.

Plants from seed of the secondary capsules show in no respect whatever any difference with plants from seed of the central capsule.

By replanting each time part of the plants in various stages of development a sensitive period for the development of polycephaly has been ascertained. In the first phase of this sensitive period the number of secondary pistils is somewhat increased with respect to the controls, in the second phase frequently much decreased.

The end of the sensitive period fairly coincides with the beginning of the morphological development of the secondary pistils.

The sensitive periods for the polycephaly of the terminal flower and of the flowers of the primary branches do not coincide, which is explained by the development of the flower-buds not occurring at the same time.

The influence replanting has on the polycephaly may be accounted for best by assuming that a close relation exists between the number of secondary pistils which is to be formed and the area or the diameter of the vegetative cone at the moment that the secondary pistils start developing.

The influence replanting has on the number of stigmata, the thickness of the peduncle and the thickness of the base of the main stem, does not always correspond with the influence on the polycephaly.

The polycephaly is based on 2 polymeric recessive genes with cumulative effect, indicated p_1 and p_2. The genotype of the polycephalic strains is represented by $p_1p_1p_2p_2$, of the non-polycephalic strains by $P_1P_1P_2P_2$.

A strain with a relatively very low expressivity and penetrance

of polycephaly, the genotype of which is presumably $P_1P_1p_2p_2$ or $p_1p_1P_2P_2$, has been isolated.

The gene for wax, w, is an inhibitor of polycephaly; in the presence of ww the expressivity and the penetrance of polycephaly are lower than in the presence of WW.

Penetrance and expressivity of the phenotypical manifestation of the gene Va' of *Drosophila melanogaster* are slightly higher in the male than in the female sex.

In this strain left and right, at least as far as penetrance is concerned, vary perfectly independently from each other.

The specificity of the phenotypical manifestation of the gene Va' has been studied.

Up to a density of population of 80–100 flies per culture bottle, the penetrance remains on fairly the same level; at a greater density of population it decreases.

There exists a distinct relation between the size of the flies (characterized by the length of thorax + scutellum) and the penetrance.

The offspring of small flies with 2 phenotypically normal wings and those of large flies with 2 Va' wings show no difference.

The conclusion of TIMOFÉEFF-RESSOVSKY that the Va' strain and wild type differ in only one gene has been corroborated.

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