cant statistical difference. Unfortunately these last populations had to be terminated at this point; so it can not be known at present whether a low level polymorphism might have been developing.

With respect to adult population size, Types 2-4 form a group clearly in contrast with Type-1 and clearly in agreement with their greater heterozygosity. But, rather surprisingly, they do not differ especially among themselves even though their total heterozygosities do. Heterozygosity, in this respect, does not appear to be acting in any simple, additive way. (Aided by funds from the State of Washington Initiative Measure No. 171 for the Support of Biological and Medical Research.)

Benedík, J.K. J.E. Purkyně University, Brno, Czechoslovakia. Effect of disruptive and directional selection.

A possibility was tested of the increase of genetic variance in long term directionally selected populations of D. melanogaster by means of disruptive selection. This attempt was made to introduce a new genetic material into highly inbred selected lines in order to make possible a new selection progress.

After 54 generations of directional selection on sternopleural bristle number in two natural populations of D. melanogaster (Su - Suchumi and Kr - Krnov) in which selection limit seemed to be achieved, three generations of disruptive selection with 50 per cent gene flow (see Millicent and Thoday, 1961) were used and the comparison of disruptive and directionally selected lines as for the changes in the population mean and variance was made. The results are given in the Table. No significant difference (except one) occurred in variance during

Test of differences in variance between disruptive and directional selection

Tested lines	First generation	Second generation	Third generation
Su A+/Su+	1.648[x]	0.845	1.283
Su B+/Su+	1.222	0.936	1.128
Su C+/Su+	1.248	0.768	1.727
Su D+/Su+	0.960	0.730	1.159
Su A-/Su-	1.177	0.889	0.959
Su B-/Su-	0.921	1.023	0.959
Su C-/Su-	0.883	1.305	0.743
Su D-/Su-	0.023	1.102	0.753
Kr A+/Kr+	0.999	1.031	1.427
Kr B+/Kr+	0.778	0.872	1.041
Kr C+/Kr+	0.699	0.846	1.026
Kr D+/Kr+	0.760	0.861	1.241
Kr A-/Kr-	1.083	1.004	0.821
Kr B-/Kr-	0.938	0.893	0.851
Kr C-/Kr-	0.819	1.091	0.746
Kr D-/Kr-	0.734	0.986	0.873

x - $P < 0.10$

three generations between four lines of disruptive selection (A - B) and the corresponding line selected directionally. This conclusion doesn't correspond with the results of Gibson and Thoday (1962) and others, in the experiments in which disruptive selection leads to the increase of variance.

As for the differences between disruptive and directional selection in the population mean, the number of significant differences gradually increased with the increasing number of generations. These differences were caused by relatively lower selection intensity in the disruptive selection so that the disruptive selection operated in the same way as the relaxation of selection.

According to these results disruptive selection is not suitable either for the increasing of genetic variance nor lengthening of reaction in directionally selected populations.

References: Millicent, E. and J.M. Thoday 1961 Hered. 16:199-217; Gibson, J.B. and J.M. Thoday 1962 Hered. 17:1-26.