Ménsua, J. L. University of Barcelona, Spain. Some factors affecting pupation height of Drosophila.

Sokal et al. (1) have studied some factors affecting pupation site of Drosophila, observing only central or peripheral sites, with independence of the distance to the medium. We considered it important to see if the pupation height (p.h.) on the wall of vials was affected by different environmental factors and by disruptive selection for p.h.

Prat de Llobregat (near Barcelona) and Caracolisito (2) strains were used, both kept at 17°C. in population boxes. Eggs from these boxes were collected and 70 eggs were put in the middle of the food in vials of 80 mm. H., 24 mm. Ø and containing 8 mm. H. of medium, and 90 eggs in bottles of 100 mm. H., 45 mm. Ø and containing 10 mm. H. of medium. Inside the vials millimetric paper was put around from the top to the medium, in order to facilitate the measurements. The results, expressed in millimeters, were as follows:

a) Selection experiment: A Prat strain was used, with three vials each generation, selecting 8 males and 8 females from each vial for higher and lower p.h. at 17°C. The parent generation p.h. measured $\bar{x} = 14.63 \pm 0.93$, and the F_2, in which were counted six vials in both directions, $\bar{x} = 24.38 \pm 0.75$ and $\bar{x} = 14.56 \pm 0.60$ respectively ($P<0.001$).

b) Temperature effect: Four temperatures, with five vials each one, were proved in Caracolisito strain. The results gave at 13°C. $\bar{x} = 11.77 \pm 0.43$, at 17°C. $\bar{x} = 13.29 \pm 0.43$, at 25°C. $\bar{x} = 15.47 \pm 0.54$ and at 29°C. $\bar{x} = 4.26 \pm 0.27$. The differences among the various temperatures are significant at the level of at least $P<0.01$.

c) Recipient size effect: By using three bottles instead of vials, the p.h. in Caracolisito strain gave $\bar{x} = 25.03 \pm 1.19$ at 17°C. (instead of $\bar{x} = 13.29 \pm 0.43$ in vials; $P<0.001$).

d) Crowding effect: By putting 35 eggs per vial and 45 eggs per bottle, the results at 17°C. were as follows: three vials of Prat strain gave $\bar{x} = 9.07 \pm 0.76$ (instead of $\bar{x} = 15.75 \pm 0.81$ with 70 eggs; $P<0.001$); three bottles of Caracolisito strain gave $\bar{x} = 17.21 \pm 1.34$ (instead of $\bar{x} = 25.03 \pm 1.19$ with 90 eggs; $P \leq 0.001$).

e) Aeration deficiency: By using cork instead of cotton stoppers, the results with Prat strain at 17°C. in three vials were $\bar{x} = 28.17 \pm 1.93$ (instead of $\bar{x} = 14.63 \pm 0.93$ with cotton stoppers; $P<0.001$).

As we can see, the preliminary findings reported here suggest that the disruptive selection was only effective in one direction, moving the pupae away from the medium, but not toward it. The high temperature (29°C.) clearly diminishes the p.h., the highest value being at 25°C. The p.h. is higher when the number of individuals per recipient increases. When the recipient size (or the diameter) is increased, the p.h. also increases. When there is a good aeration inside vials the p.h. diminishes.

For these reasons we can consider the p.h. as an ethological and adaptative character with genetic variability (due to polygenes) because it responds to selection pressure and to different environmental factors, being exposed to natural selection in natural populations.

This work is presently continued in order to verify the results reported here, to make a selection experiment in detail, and to see if pupae size, sex and moisture have some influence in pupation height.

(1) Sokal, R. R., et al., 1960. Some factors affecting pupation site of Drosophila. Annals Entoml. Soc. of America, Vol. 53, 2:174-182. (2) I am grateful to Dr. Hoenisgsberg for providing the Caracolisito strain. (Supported by a Predoctoral Fellowship (P.I.O.). I am in debt for advice and suggestions to Dr. A. Prevosti.)

Ives, P. T. Amherst College, Amherst, Massachusetts. Relocation of the or locus closer to pd.

Crossing over tests in March and April 1966 using b vg bw, or^{45a} sp^2, and a px or, in that sequence, with a new mutant, $If^{65\ 1\ 16}$, have established an order of bw or sp If, which reverses the previously reported order for the or and sp loci. Based on 11 crossovers between or^{45a} and sp^2 in 3367 flies a locus of 106.7 is suggested for or, placing it close to pd, another brownish eye color mutant. Earlier crosses (Ives and Evans, DIS 25:107) of pd and bw to each other and to or and or^{45a} gave + offspring in all cases, indicating that these now fairly closely bunched loci probably function independently of each other in spite of the phenotypic similarity of many of their mutants.