The heterosis exhibited here is not the result of crossing after inbreeding. Strains of flies are maintained by mass matings, so that genetic heterogeneity is encouraged. The limits of heterosis due to crossing strains should already be accounted for by using the population cage, so that heterosis exhibited is clearly due to heterozygosity of the third chromosome. These tests can be used to analyze the variation involved in a gradient in relative frequencies of gene arrangements up an altitudinal transect in the Sierra Nevada.

Spurway, H. D. subobscura is very well adapted for prolonged experiments. A single pair transferred to a fresh bottle daily will often give 600 to 800 imagines, and will continue breeding for over a month. Research on the possible effect of parental age is under way, and it is hoped to construct a fertility table.

Tattersfield, F., Kerr, R. W., Taylor, J. and Kerridge, J. R. Resistance to the toxic effects of DDT. Work has been actively prosecuted to ascertain whether resistant strains of D. melanogaster (Rothamsted var.) could be obtained by repeated sprayings with DDT suspensions. A resistance of 1.5 to 3 times that of the original parent strain has emerged. The physiological and morphological characters are being studied. The effects, on resistance to DDT and CO_2, of age of individual and of parents, and of certain environmental factors, are being examined. The maximum resistance to DDT has been found, by R. W. Kerr, to occur at an age of the adult fly of about five days, and this is correlated with a higher respiration rate (Rothamsted wild-type). A "hybrid" stock supplied by B. J. Harrison, Bayfordbury, Hertford, England, is now under experiment.

Ulrich, Hans Killing of Drosophila eggs by partial X-raying. Single sectors 0.1 mm in length, representing one-fifth of the Drosophila egg (average total length, 0.52 mm), were separately X-rayed at different ages of the eggs with a dose of 1000 r (217 r/min, 50 kv, 2 ma). The resulting percentages of non-hatching (i.e., killed) eggs were used as index of radiosensitivity of the several sectors. Eggs irradiated when 15 to 30 minutes old show a definite, high maximum (66.5% corrected) in the second fifth counting from the anterior pole, the middle fifth giving lower (24.2%) and the three other fifths very low percentages (3.5% to 5.4%). This characteristic distribution of radiosensitivity agrees well with the developmental state according to Rabinowitz et al.). The egg when 15-30 minutes old contains either the two pronuclei or 2 to 4 cleavage nuclei , lying mainly in the second fifth. The high susceptibility of this sector may be due to the presence of these nuclei; the mean susceptibility of the middle fifth may be due to extending of nuclei to this section, but also to the method used in localizing the irradiation in this fifth. The fifths 1, 4, and 5, containing no nuclei, are not sensitive. This result contributes to the problem of whether nucleus or cytoplasm is responsible for the death of cells after irradiation. In older eggs (1-2, 2-3, up to 5-6 hours) radiosensitivity is distributed throughout the egg, but not equally, the maxumum remaining in the second fifth. But in general the maximum is not so pronounced as in youngest eggs. The middle fifth gives only a little lower, the other fifths definitely lower percentages than the second fifth. The killing rates after partial X-raying of eggs older than 2-3 hours are low throughout. This agrees with the result of total X-raying, demonstrating a rapid decrease of radiosensitivity in older stages of embryological development.