

Robertson, A. and J. H. Louw. Institute of Animal Genetics, Edinburgh, Scotland. Polymorphism of genes affecting amount and distribution of black pigment in the abdominal cuticle of *D. melanogaster*.

In the course of an investigation of lines selected for sternopleural bristles, it became clear that one line was a multiple recessive stock at several loci controlling the amount of pigment in the abdominal cuticle. Using this stock, two such loci have been clearly identified

and located and the existence of others on the third chromosome is indicated. The effects of the genes are completely limited to females. Because of the existence of several loci with the same effect, the descriptions must be limited to the effects of substitutions in the multiple recessive stock. This has a large almost square black spot at the sides of the dorsal part of the 6th segment (Fig. I). A gene on the 4th chromosome, dominant at 25°, produces a black band, slightly narrower than the spot itself, round the dorsal side of the segment (Fig. II). Another gene, located at 3:-1, entirely removes the spot from the multiple recessive stock at 25°, although the heterozygote is intermediate at 18° (Fig. III). This dominant effect appears to be epistatic over other loci producing black pigment on the segment such as that located on the 4th chromosome. We have evidence of probably two other loci on the 3rd chromosome producing black pigment, one of which may be the *e* locus.

In our standard outbred population, the dominant gene at 3:-1 has a frequency of about 0.40 and the segregation appears to have little effect on fitness. The recessive on the 4th chromosome, on the other hand, much reduces male mating ability and female fertility and is at a very low frequency in the outbreeding population. It also reduces the number of sternopleural, abdominal and ocellar bristles. Temperature modifies both the effects of the segregations (in general lower temperatures making the flies darker) and their dominance relationships. The critical period for temperature changes appears to be shortly before emergence from the pupa. (All stocks reared at 25°.)



Fig. I

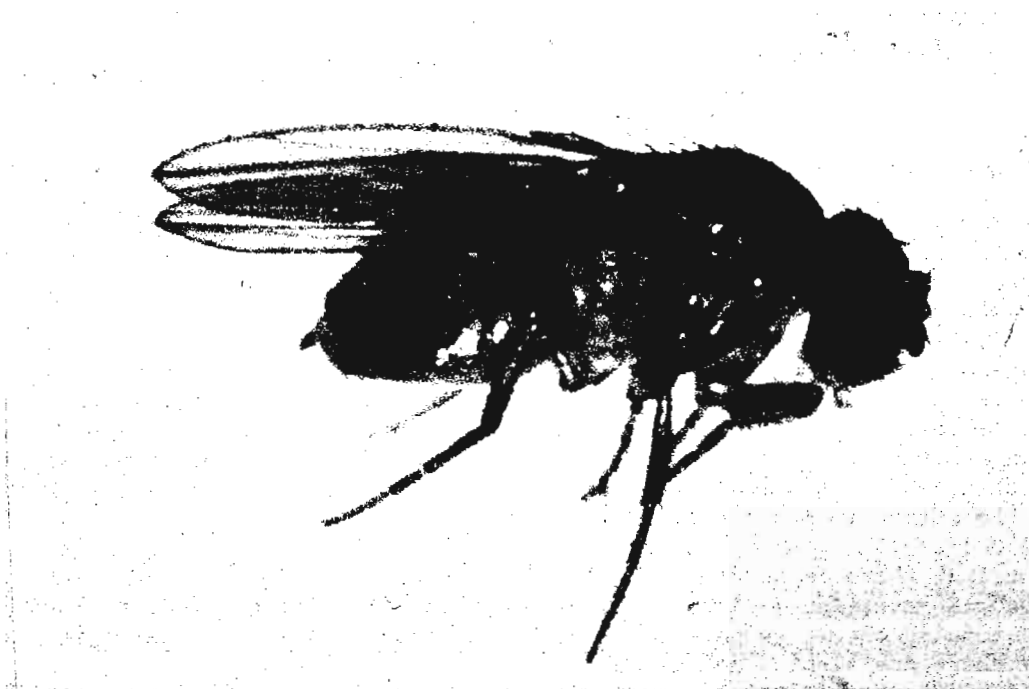


Fig. II

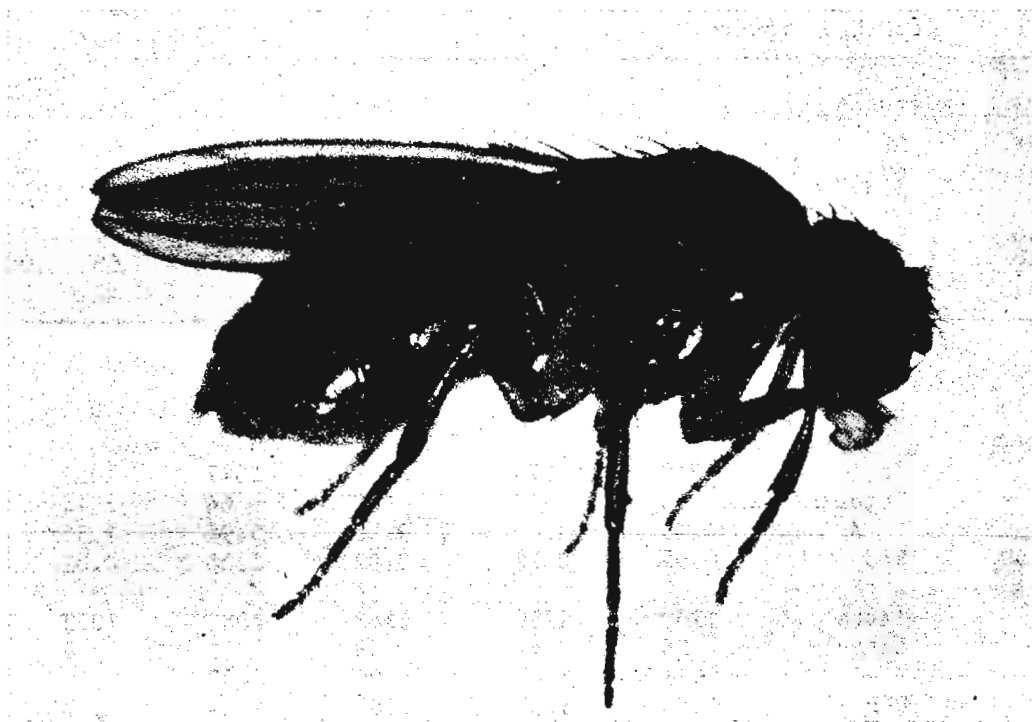


Fig. III