examined; the strain exhibited some heterozygous inversions.

Karyotypic analyses of larval neuroblast and gonad discs showed the following configuration: one pair of long rod-shaped autosomes, one pair of V-shaped autosomes, and one pair of sex-chromosomes smaller than any of the autosomes. The X chromosomes are rod-shaped while the Y chromosome is V-shaped. Dot chromosomes were found in all strains except that from Okinawa.

On the basis of sexual isolation and chromosomal analysis, it seems possible that the Okinawan and Formosan strains belong to unidentified species, and are different from the South Pacific strains; the latter may belong to D. spinofemora.

Holm, D. G., M. Baldwin[1], P. Duck and A. Chovnick. University of Connecticut, Storrs, Connecticut. The use of compound autosomes to determine the relative centromeric position of chromosome three.

The construction of compound-Three chromosomes from stocks carrying the mutations eagle (eg) and Deformed (Dfd) has enabled us to determine the position of the centromere with respect to these markers. eg^2/eg^2 females were treated with 4000 r of X-rays and mated with C(3L)P2,ri; C(3R)SB1, $p^P gl^3$ males. From this cross fifteen new, independently induced C(3L) chromosomes were recovered in progeny expressing the eagle phenotype. Progeny testing conclusively demonstrated eagle to be associated with C(3L). Eagle was never recovered with newly generated C(3R)'s. In a second experiment, using the mating procedures described above, eg/+ females were used and twenty-seven independently induced C(3L) chromosomes and twenty-one C(3R) chromosomes were recovered. Five of the C(3L) chromosomes were recovered in phenotypically eagle progeny. These progeny are believed to be the result of an exchange event proximal to eagle and simultaneous with the formation of the C(3L) chromosome. This type of event is not rare. We have made the observation that in every experiment when compound autosomes are constructed from stocks heterozygous for proximal markers a high percentage of the newly induced compounds are rendered homozygous for the mutant alleles. We do not discount the possibility of induced sister-strand attachment, however, double exchanges in very short regions have also been recovered in multiple-marked stocks.

Deformed (Dfd) has been recovered in association with newly generated C(3R) chromosomes but never with C(3L). Fourteen different stocks, heterozygous for various markers including Dfd on one homologue and 126 on the other, were used to construct a series of C(3R) chromosomes. Twenty-four of the twenty-five independently generated C(3R) chromosomes were recovered in progeny expressing the Dfd phenotype. The linkage of Dfd with the C(3R) chromosome was confirmed in subsequent crosses. The one exception is believed to have resulted from a double exchange, encompassing the Dfd region, at the time of C(3R) formation.

Cytological studies have been carried out on salivary gland polytene chromosomes from a number of compound-3 stocks. Neither rearrangements nor obvious deletions have been detected in the proximal regions of the C(3L)'s or C(3R)'s observed. Figure 1 shows the proximal region of a C(3R) polytene chromosome. This particular preparation was made from one of the C(3R), Dfd stocks and the banding pattern is consistent with the notion that the euchromatic region of the right arm of chromosome three starts at band 81F1.

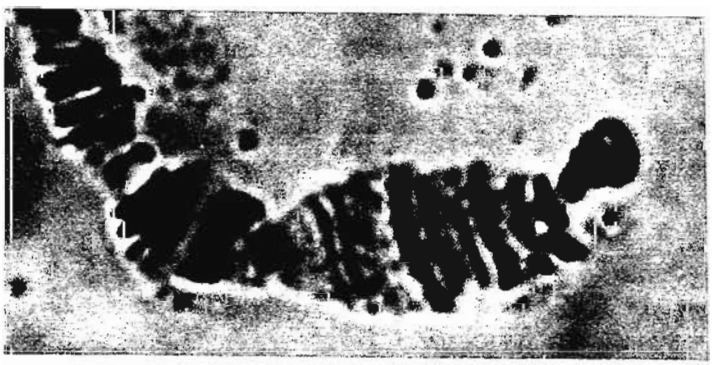

Fig. 1. The proximal region of chromosome C(3R)

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