have large ones that are quite complex. Figure 2 illustrates a double (overlapping) inversion configuration found in our strain from Jim Thorpe (Carbon County), Pennsylvania; one similar to this (if not identical) has been found in strains from Massachusetts (Amherst) and Ontario (Owens Sound). Large, complex configurations, covering most of the euchromatic arm and involving three, four, or five inversions have been found in strains from Massachusetts (Amherst), Minnesota (Lake Shamineau), North Carolina (Highlands), Ontario (Owens Sound), Pennsylvania (Jim Thorpe), and Vermont (Poultney). Of our eastern strains, only those from Oberlin, Ohio, and Philadelphia, Pennsylvania, have failed so far to reveal such large configurations. This may be significant inasmuch as these two eastern strains behaved differently from other eastern ones in sexual isolation tests, mating relatively easily with western strains but less so with other eastern ones (Miller and Westphal, 1965).

Recent contributions of wild flies and stocks by Dr. Max Levitan (Univ. Virginia, Fairfax) and Dr. D. L. Williamson (Woman's Med. Col. Pennsylvania, Phila.) are much appreciated. This work is supported by National Science Foundation Grant GB 5011.

Jost, P. University of Oregon, Eugene, Oregon. Observation of an unexpectedly high frequency of Bar revertants.

In an experiment involving females carrying a compound X chromosome, heterozygous for In(1)S and Bar, a sc^8•Y, and a compound fourth chromosome AF, (with no free 4) 11 out of 74 pair matings produced a single B^+ F_1 female (total F_1 females = 2403). The parental females were of the constitution RA, y^2 su-w^a w^a --- M-5•/sc^8•Y;AF, ci ey^R/ci ey^R, where M-5 = Muller-5 (Ins(1)s sc^{SIL}, S, sc^{8R}), and were mated to males that also carried a compound-4.

The original stock, carrying free 4's and with no free Y, has not produced Bar revertants in the year and a half it has been maintained in this laboratory. George Brosseau, who supplied us with this particular stock, confirms that stocks of this chromosome, carried both with and without a sc^8•Y for several years in his laboratory, have not produced any B^+ individuals detected in routine stock inspections.

The introduction of sc^8•Y and the compound 4, and removal of the free 4's, in our laboratory gave a stock that accumulated a high frequency of B^+ females, necessitating periodic selection for B to maintain the original phenotype sc. This stock also shows a wide variability in the Bar phenotype, consistent with the presence of B/B.

Individual stocks were established from 7 of the original 11 independently arisen B^+ revertants and an additional stock of B^+ was established by culling B^+ females from the B stock containing the compound 4. Salivary gland chromosome preparations of several larvae from each of these 8 stocks have been examined by George Brosseau in anticipation that some of the recombinational events involved would have resulted in a structurally homozygous compound X, i.e., a compound-X that either contained In(1)S in both X elements or lacked it in both elements. All of the preparations examined showed an inversion loop, indicating retention of the structural heterozygosity of the chromosome. If these revertants are the result of a 3-strand double crossover, then in all cases, both crossovers occurred distal to In(1)S, although it would be reasonable to expect that in some cases one of the crossovers would have occurred proximal to this inversion, yielding a compound homozygous for sequence in this central region of the X elements.

The presence of the compound 4 per se, or as an unpaired element (or the introduction of some unknown factor in stock synthesis) appears to produce an unexpected inter-chromosomal effect in addition to the increased recombination in the reversed acrocentric compound X expected from the presence of the sc^8•Y. Such an effect was not observed for homozygosis for w in experiments involving Muller's y f:= (RA, In(1)dl-49, y w f -- In(1)sc^8? f sc^8•) that gave a total of 5803 F_1 females, although a single y w f female has been recovered from the stock bottles. (This derivative chromosome shows no inversion loop in salivary gland preparations.) Since homozygosis for w would involve a crossover between the centromere of the sc^8 element and the w locus of the distal X, i.e., effectively a crossover between y and w, the rarity of this event is undoubtedly a reflection of the short map distance involved between markers, and may not indicate the absence of an inter-chromosomal effect associated with the presence of the compound-4.