Table 3. a-x-b arrangement

| Phenotypes | Expected Numbers | Observed Numbers |
|---|---|---|
| + x + | 1/2 pq(1-y)N | $n_1$ |
| a + b | 1/2 pq N + 1/2(1-p)(1-q)yN | $n_2$ |
| + x b | 1/2 p(1-q)(1-y)N | $n_3$ |
| a + + | 1/2 p(1-q)N + 1/2 q(1-p)yN | $n_4$ |
| a x + | 1/2 q(1-p)(1-y)N | $n_5$ |
| + + b | 1/2 q(1-p)N + 1/2 p(1-q)yN | $n_6$ |
| a x b | 1/2 (1-p)(1-q)(1-y)N | $n_7$ |
| + + + | 1/2 (1-p)(1-q)N + 1/2 pq yN | $n_8$ |
| Total | N | N |

Spiess, E. B. University of Pittsburgh. D. persimilis from Humboldt County, Calif.

During July, 1964, persimilis was collected from the Redwoods Forest of Humboldt County, California (town of Weott). With 188 chromosomes identified the frequencies of arrangements from chromosome III are as follows: Klamath 78.2%, Mendocino 13.8%, Humboldt* 3.8%, Standard 1.1%, Cowichan 1.5%, Whitney 1.1%, and Unknown* 0.5%. We are tentatively designating the more common arrangement of two heretofore rare or unknown arrangements as "Humboldt" since we discovered it first in our cultures, took photographs with its heterozygote KL/HU*, and corresponded with Professor Dobzhansky (Rockefeller Institute) as to the arrangement's identity with that described by him (with C. Epling, 1944, Carnegie Institute Washington Publ. #554). Professor Dobzhansky agreed that this arrangement was likely to be his Humboldt arrangement. The exact banding pattern will be reported soon, but briefly it is an independent inversion of the Standard sequence of approximately the same length as the well known KL but displaced more proximally by about 15 bands than KL. The "Unknown*" arrangement however is a single step inversion from KL (overlapping) and had not been observed at the time of our correspondence with Dobzhansky, so that the correct naming may be decided later. In fact this latter "Unknown" may well be identical with Dobzhansky's Humboldt and the arrangement we designated above as "Humboldt*" may be a new arrangement. In either case, the frequency of the latter is much higher than observed before (3.8%); if it is truly a newly formed arrangement, it can hardly be ephemeral to the population.

Whitten, M. J. University of Tasmania. Factors affecting penetrance of an eye mutant in D. melanogaster.

Penetrance of witty (DIS 38:31) in the homozygous state depends both on background modifiers and the environment. A novel method, involving the truncated normal distribution, and utilizing the fact that asymmetric flies are produced, has been applied to measure the genetic and environmental contributions to penetrance.

Initially it was thought that wi arose spontaneously in a Cy j stock. However the evidence suggests that all individuals in the stock were homozygous for wi and that penetrance was reduced to near zero by the large complement of modifiers reducing the activity of wi.

Removal of certain modifiers on the same linkage group as wi results in the dominant form. Penetrance of this form is then dependent on modifiers on Chromosome 3 and 1 and (or) 4.

It is believed that wi first occurred as a dominant in a natural population and a system of modifiers (dominance modifiers) was selected to reduce it to recessivity. Subsequently the penetrance of wi was reduced to near zero by the accumulation of further modifiers (penetrance modifiers). It has not yet been determined whether the two classes of modifiers are mutally exclusive.