after the initial accumulation. After fifteen days, the number of mature oocytes in the ovaries becomes more variable. The fact that the females were kept in separate vials makes it possible to assert with certainty that females that were laying fertile eggs were also retaining eggs. There appeared to be an inverse correlation between the number of eggs laid in a day and the number of mature oocytes present in the ovaries at the end of the day, but the data were not sufficient to establish this point. It may also be pointed out that the type of egg retention exhibited by hydei is not necessarily characteristic of large flies with long life cycles. In D. virilis which is very similar to hydei in these two respects, the number of mature oocytes in the ovaries of a seven day old virgin is very small, averaging less than one per ovariole.

Average egg retention for several kinds of hydei females are shown in the accompanying table.

Egg Retention in hydei females

	7 day old virgins	18 day old virgins	18 day old mated
w lt	103/female(34♀♀)	87/female(62♀♀)	127/female(62♀♀)
wild Type	124/female(47♀♀)		

Edwards, J. W. and J. R. Simmons. Utah State University. Optic asymmetry and the absence of somatic crossing-over in D. melanogaster.

A developmental problem in such D. melanogaster mutants as eyeless and eyes-reduced is the occurrence of structural optic asymmetry in otherwise bilaterally symmetrical organisms. Intra-organismal nuclear differentiation by means of somatic crossing-over was discovered by Stern in 1936. He found that the frequencies of mosaicism in heterozygotes varied from 0.0 to 6.0 percent in the head-thorax and from 4.6 to 20.0 percent in the abdomen. The presence of minute factors increased the frequencies by 0.0 to 22.3 percent in the head-thorax and by 8.0 to 36.6 percent in the abdomen.

DeMarinis (Genetics 44:1101-1111) reported that, barring the less common events such as somatic mutations and somatic crossing-over, the same genetic constitutions occurred on corresponding sides of bilaterally symmetrical organisms. He concluded that, consequently, asymmetry must have resulted from differences in external and internal environmental factors. Somatic crossing-over is an established phenomenon, however, and genetic factors have been shown to increase its frequency. Also Baron (J. Exp. Zool. 70:461-490) had stated that sets of modifiers were present on all chromosomes, particularly the second and third in flies homozygous for ey^2. Thus, it seemed desirable to test critically for the possible occurrence of the "less common" phenomenon of somatic crossing-over. If this were occurring, structural optic asymmetry would result from nuclear differentiation by means of somatic crossing-over. Further, although all nuclei were homozygous for the eyeless genes, the recombination of genetic modifiers in the second and third chromosomes (and in the X-chromosomes of females) would yield asymmetrical phenotypes.

To test this possibility, the second and third chromosomes were marked with bw and st genes. Six kinds of experimental crosses (all progeny were homozygous for ey^4) and two kinds of control crosses (progeny were $ey^4/+$ or $+/+$) were made. The following genotypes resulted: (1) bw/+;st/st;ey^4/ey^4 (2) bw/bw;st/+;ey^4/ey^4 (3) bw/+;st/+;ey^4/ey^4 (4) bw/+;st/+;$ey^4/+$ (5) bw/+;st/+;+/+. Only white ommatidia were scored.

The experimental crosses produced 2593 flies. Six had mottled pigmentation (white ommatidia) in one eye. Of a total of 1396 flies produced from the control crosses, one female was observed to have white ommatidia in one eye. Thus, the observed frequencies of mosaicism in the experimental and control groups were 0.23 percent and 0.07 percent, respectively. No simple objective method for accurately measuring asymmetry has been devised; however, by using the frequency of flies with ommatidia only on one side of the head, a minimum estimate was possible. Of the 155 progeny so scored, 35 or 22.6 percent had asymmetrical eye structure. Consequently, the conclusion seems justified that somatic crossing-over probably does not play

a role in the production of structural optic asymmetry in eyeless[4] Drosophila. Furthermore, if somatic crossing were an active factor, asymmetry should not occur in an isogenic strain of eyeless flies. Spofford, however, (Genetics 41:938-959) found that the right-left correlation in an isogenic ey^4/ey^4 strain was negligible (coefficients of +0.08 for males and -0.22 for females). Thus, nuclear differentiation by means of somatic crossing-over is not responsible for optic asymmetry in eyeless[4] Drosophila melanogaster.

Smoler, M. University of Wisconsin. The ineffectiveness of anoxia in promoting non-disjunction.

Mottram (1930) found that there was an increase in the rate of non-disjunction when D. melanogaster females were treated with CO_2. The present experiments were an attempt to learn if anoxia was causing the increase in the rate of non-disjunction.

In these experiments yellow apricot virgin females, 12-36 hours old, were exposed to Linde highest purity nitrogen for 1 hour. The treated and control groups of females were mated to yellow; sc^8.Y males. Experiment I was limited to a control group to serve as a pilot experiment. In experiments I and II the females were mated singly in shell glass culture vials and in experiments III and IV fifteen pairs were mated in 1/4 pint milk bottles. In all experiments the flies were mated on cornmeal, molasses and agar food medium. The flies were transferred to fresh culture bottles every 2 days for a ten day period. Only transfers 1, 4 and 5 (days 0-2, 6-8 and 8-10) were examined. The expected classes of offspring from this mating are yellow females and apricot males, whereas the exceptional flies produced by maternal non-disjunction are apricot females and yellow males, and a double non-disjunctional event would be detected by the presence of yellow apricot females or wild-type males.

A total of 32,701 offspring from treated females were compared to 29,488 offspring from control flies, and the results indicate that there is no significant difference in the rate of non-disjunction in the 2 groups, and there was no difference between the tested 2 day broods. The ratio of nullo-X non-disjuncts to double-X is in agreement with that found by other workers.

EXPERIMENT	GROUP	NORMAL ♂		EXCEPTIONS y♂	apr	+♂	y/apr	TOTAL	PERCENTAGE
I	Control	5,234	5,297	2	1		1	4/10,531	.038
II	Control	1,467	1,445					0/2,912	--
	Treated	1,703	1,722	1		2	1	4/3,424	.117
III	Control	4,541	4,473	6			1	7/9,014	.078
	Treated	7,075	7,166	6			3	9/14,241	.063
IV	Control	3,429	3,602	2				2/7,031	.028
	Treated	7,627	7,408	4				4/15,035	.027
Total	Control	14,671	14,817	10	1		2	13/29,488	.044
	Treated	16,405	16,296	11		2	4	17/32,701	.052