

Band, H.T. Michigan State University, East Lansing, Michigan. Lethals and environmental tracking.

In his stimulating book, Levins (1968) postulates that only a genetic system of short memory can track the recent environment. Band (1969) suggested that the lethal and semilethal genetic variants maintained in the South Amherst (Mass.) *D. melanogaster* population might

constitute a system for environmental tracking; the frequencies of these variants recovered from population samples from 1945 through 1959 and later have shown a significant negative correlation with temperature range of the week prior to collection (Band and Ives, 1961). Evidence bearing on the environmental tracking hypothesis is available from the extensive sampling by Ives from the breeding site population in the summer and fall of 1967. The data

Collection	# Chromosomes	% le + sle	Direction of change	t ^o range	Direction of change
June 7-18	566	22.8		35.4	
June 29	322	25.2	+	25.6	-
July 18	290	27.6	+	22.3	-
August 8	266	21.4	-	26.4	+
October 19	204	26.8	+	16.8	-
October 24	170	20.0	-	22.8	+
October 31	107	22.4	+	24.1	+
November 7	208	27.4	+	20.4	-

have also been included in Ives (1970). Only one sample fails to be in agreement with the expected negative relationship between le + sle frequency and temperature range for successive samples. The sign test for trend changes yields a k value of 3.5, P (one-tailed) = .001, hence highly significant.

The ability of these recessive genetic variants, otherwise severely deleterious to lethal in homozygous condition, to fluctuate in population samples in relation to the environment indicates they play a positive adaptive role in population structure. Further, the likelihood that many such lethals in heterozygous condition can enter the dynamic relationship with the immediate environment removes the restriction that any one lethal need be present in the population in high frequency to be considered heterotic. This gains added support from the finding by Ives (1970) that allelism rate among lethals in the June 7-18 collection was 20.4% and in the November 7 collection only 0.9%. Hence, the level of lethals and semilethals maintained in the population in relation to the immediate environment seems of greater importance in population structure than the frequency of any one individual genetic variant.

References: Band, H.T., 1969 unpublished manuscript; Ives, P.T., 1970 Evolution (in press); Levins, R., 1968 Evolution in changing environments, some theoretical considerations Princeton University Press.

Vogel, E. Zentrallaboratorium für Mutagenitätsprüfung, Freiburg, Germany. Lack of mutagenic effectiveness of 8-Hydroxyquinoline sulfate in *D. melanogaster*.

8-Hydroxyquinoline sulfate has been utilized as a fungicide and disinfectant. Furthermore, it has medical importance as an ingredient of drugs. In human lymphocytes and in plants 8-Hydroxyquinoline produces gaps and fragmentations of chromatids and chromosomes, respectively (Ref. see Gebhart, E., 1968 Mutat. Res.

6: 308-318).

In order to study the mutagenic action on *Drosophila*, a 0.1% solution of 8-Hydroxyquinoline sulfate, buffered with phosphate-buffer to keep the pH at 6.8, was administered by feeding on glass filter dishes to wild (Berlin K) males for three days. By means of the Muller-5-technique the rate of sex-linked recessive lethals in three successive broods, each of three day's duration, has been determined. Only two lethals (0.03%) were detected out of 6528 chromosomes total tested.

Hence, under these conditions, 8-Hydroxyquinoline sulfate is not a mutagen for *D. melanogaster*.