

cases. The H 28 line has fewer bristles at 22°C than at 28°C, suggesting that some of the genes effective at the latter temperature have a diminished effect at 22°C. The magnitude of this diminution in effect is probably of the order of three bristles. Provisionally we may conclude that the genes selected for in H 28 differ appreciably from those selected for in H 22.

The experiment is being continued.

Mettler, L. E. and J. J. Nagle. North Carolina State University, Raleigh, N.C. Corroboratory evidence for the concept of the sympatric origin of isolating mechanisms.

*Drosophila arizonensis* and *D. mojavensis* are two species found in the southwestern part of the United States and in northwestern Mexico. The central range of *arizonensis* includes the Central Gulf Coast, Foothills of Sonora, Plains of Sonora, and southern parts of the Arizona

Upland and Lower Colorado Valley regions of the Sonoran Desert. *Drosophila mojavensis* consists of two morphologically and cytologically distinct races. Race A is limited to the Mojave Desert and Race B is found in the Central Gulf Coast, Arizona Upland, and Lower Colorado Valley regions of the Sonoran Desert. Race A of *mojavensis* is allopatric to *arizonensis*, while Race B is sympatric with *arizonensis* over a large portion of its range. Both species are members of the Mulleri subgroup of the Repleta group and they are known to hybridize and produce some fertile offspring (Patterson and Stone, 1952). *Drosophila arizonensis* is morphologically and cytologically distinguishable from either race of *mojavensis* (species-specific paracentric inversion differences occur in three of the haploid set of six chromosomes).

Four cage populations were initiated for the purpose of studying inter-specific competition and possible secondary intergradation. Cages I and II were initiated with equal proportions of males and females of *arizonensis* and Race A of *mojavensis*, and Cages III and IV were initiated in the same manner using *arizonensis* and Race B of *mojavensis*. The composition of each population was determined by a cytological examination (salivary-gland chromosomes) of larvae developing from egg samples taken every thirty days (approximating generations). Parental, F<sub>1</sub> hybrid, and post-F<sub>1</sub> recombinant karyotypic combinations could be ascertained for the three chromosomes having species-specific arrangements.

The data obtained from these populations conform to the hypothesis that reproductive isolation is stronger in areas where two species are sympatric, as compared to the degree of isolation between allopatric forms of the same species, which is expected under the concept that isolating mechanisms are intensified through natural selection, as originally proposed by A. R. Wallace (Dobzhansky, 1940).

It is evident from Table 1 that the degree of reproductive isolation is much stronger between the naturally sympatric forms than between the allopatric forms (the relative degree of reproductive isolation being inversely proportional to the incidence of interspecific recombinant types). Reproductive isolation between *arizonensis* and Race B of *mojavensis* is apparently complete in nature; no hybrids have been found among individuals sampled from several areas of Sonora, Mexico where the two species are known to be sympatric (samples collected by Dr. W. B. Heed). Although the above data suggest that introgression or intergradation might occur between *arizonensis* and Race A of *mojavensis*, there is ample reason to suspect that these forms are truly allopatric.

Table 1. Percentages of interspecific recombinant types from hybridization between allopatric and sympatric populations of the same two species.

Sample Number	Percentage of Recombinant Types			
	Cage No. I	II	III	IV
1	30.0	85.0	0.0	0.0
2	51.0	91.0	0.0	0.0
3	72.0	89.0	1.7	1.7
4	85.0	92.0	0.0	0.8
5	88.0	88.0	0.8	0.0
6	86.0	82.0	5.0	2.5
7	-	-	2.5	3.3