ing penetrance and expressivity, utmost attention is usually given to temperature, and the nutritional aspect is almost always ignored. The following yeasts were used and are presented in a series decreasing in the ability to aid in the formation of tumors: Hansenula anomala, Pichia membranaefaciens, Candida sorbosa, Nadsonia fulvescens, Debaromyces globosus, Hansenula saturnus, Torulopsis utilis, Rhodotoryla gracilis, R. glutinis, and Geotrichium. Penetrance was less when the above yeasts were compared to Saccharomyces cerevisiae (Baker's yeast) on cornmeal-molasses medium. D. melanogaster can live exclusively on a nonfermenter yeast, Pichia membranefaciens.

Moriwaki, D., Okada, T., Ohba, S., and Kurokawa, H. Drosophila species belonging to the "obscura" group found in Japan.

In the summer of 1951, we were able to collect about 800 flies (females about 160), belonging to the "obscura" group of Drosophila, at several localities in Hokkaido (Akkeshi and five others) and one locality in the northern district of Honshu (Mt. Hakkada). Although it still remains undecided whether these flies form one species or more, they are believed to belong to the "obscura" rather than to the "affinis" subgroup.

Having compared them with ten species of the "obscura " subgroup, namely pseudoobscura, persimilis, miranda, obscura, subobscura, obscuroides, tristis, bifasciata, alpina, and ambigua, mostly according to descriptions seen in the literature, we found that the several characteristics, such as color of mesonotum, male sex-combs, male genitalia, and karyotype, of this species, if it is one, were mostly similar to the descriptions of D. obscura Fallen.

On the other hand, the "obscura" species of Sweeden described by Fallen (1823) may be identified as "subobscura" as proposed by Buzzati-Traverso (1949) on the evidence that D. subobscura is numerically prevalent at Esperöd (Sweeden) and has the wider geographical distribution in continental and insular Europe among species of the "obscura" group. The "obscura" species of Moscow described by Frolova & Astaurov (1930) has a karyotype of either "A" (♀: V-shape 4, Dot 1) or "B" (♀: V-shape 3, Rod 2, Dot 1), either of which differs from the karyotype of D. subobscura showing Rod 5 and Dot 1. Then the Swedish obscura, provided that it should be considered as being subobscura, seems to be different from Moscow obscura. Moreover, the karyotype of the present species in Japan coincides with the "A" type, one of the two types of the Moscow obscura.

At any rate, D. obscura is an uncertain species, as pointed out by Buzzati-Traverso in DIS-23 ("What is Drosophila obscura?"), and the identification is very difficult. But it is desirable to decide early to which species the name "obscura" should be given, in order to establish the synonymization.

Mossige, Jeanne Two new jaunty mutations.

This laboratory has had one stock containing j, namely, b j pr cn. On Oct. 18, 1949, one sv^2 male was found in sv^2 stock with curled wings. This proved to be an allele of j. On May 5, 1950, several sc cv v f flies in sc cv v f stock were also found to have curly wings and these too were j. The occurrence of two new spontaneous j mutations in the same laboratory within such a short space of time seems remarkable, as only two alleles have been reported previously. Contamination would seem to be impossible as the stocks where the mutations were found showed no irregularities and if contamination had come from b j pr cn then the other markers should also have been found. Moreover the first mutation has been kept in combination with sv^2, which again should have been found in sc cv v f if the first had contaminated the second. The two alleles, j^{49j} and j^{50e} (see New Mutants) seem to be identical: both have a slighter manifestation than j, both overlap + at 21° but not at 30°, whereas j does not overlap + at 21°, tested at the same time as the others.

Muller, H. J. Detection of mutations in the second chromosome by use of the "sifter" stock.

Flies one or more of whose second chromosomes are to be tested for the presence of recessive mutant genes are first crossed with a stock (such as Indiana stock g^{98}) containing S^2 and Cy in the same chromosome. If the usual inversions in both right and left arms are present with Cy, and preferably also Bl and L^4 as a check on the rare crossing over which these allow, F_1 females as well as F_1 males are available for the testing; otherwise only F_1 males are used. The F_1 flies are crossed individually to flies of the "sifter" stock (Indiana stock j^{42}). In this stock, one second chromosome, containing S and Sp in the left arm and P^- (Pale deficiency) in the right arm, has its right arm connected by a translocation with a third chromosome having the complex of inversions designated as InsCXF, which effectually prevent crossing over with the other third chromosome. The other second chromosome contains Cy, with its left- and right-arm inversions, as well as cn^2, L^4, and sp^2; and the other third chromosome contains the closely linked dominants Dl and H and, very near to them, P^i (the Pale insertion, complementary to P^-) and e. Thus the cross of the F_1 flies by sifter flies is as follows (representing by mu the chromosome in which the presence of mutant genes is to be determined, and allowing the presence of the Cy inversion to be understood).

$$(F_1)\ \frac{mu}{S^2\ Cy\ Bl\ L^4\ sp^2} \quad x \quad (\text{sifter})\ \frac{S\ Sp\ T23\ P^-}{Cy\ cn^2\ L^4\ sp^2}\ \frac{.\ InsCXF}{;\ Dl\ H\ e\ P^i}$$

If we neglect crossovers, we find that the only F_2 which survive are those having the composition $\frac{mu}{Cy\ cn^2\ L^4\ sp^2}\ \frac{\quad}{Dl\ H\ P^i}$. All zygotes which receive one of the T23 chromosomes from the sifter parent will of course die unless they receive the other one also, thus getting S Sp T23 P^-. InsCXF. But in that case they fail to receive P^i and hense are killed by their P^-. Zygotes which receive the Cy cn^2 L^4 sp^2 and Dl H P^i chromosomes from their sifter parent can live only if they receive mu from the F1 fly, for otherwise they will be homozygous for Cy. (Very seldom Cy homozygotes live; in the cross shown they would be recognizable by having Bl)

If the sifter parent was a female there will be a not negligible amount of crossing over between the chromosome arms containing the Cy inversions, because of the reduction of crossings over in the third chromosomes occasioned by InsCXF. The crossovers containing P^- will still die, as do the non-crossovers with P^-, but the crossover gametes of type S Sp cn^2 L^4 sp^2; Dl H P^i will be able to live provided they become combined with the mu-containing gametes of the F_1 (those combined with the S Cy Bl L^4 sp^2 gametes are killed by their S^2/S compound condition). These surviving crossovers would be detrimental to the mutation study if the females were allowed to breed, but they are recognizable by reason of being non-Curly. Hence the flies of F2 must be etherized and the non-curly discarded. Although some of the Curly females may have been inseminated by crossover non-Curly males, this is not a source of error for the recognition of lethal and other mutations in F_3, since even the crossover males carried a noncrossover mu chromosome, distinguishable from its homologue through the presence of S and Sp in the latter.

The procedure therefore is simply to mate together, en masse, the Curly