

## 2. Chemical mutagens.

As part of a study on chemical mutagens, pollen samples of a multiple dominant stock were treated last summer with certain gaseous compounds and used to pollinate a multiple recessive stock. Three of the chemicals were effective in causing altered endosperm characters in the  $F_1$  kernels. These compounds are ketene ( $\text{CH}_2 = \text{C} = \text{O}$ ), ethylene oxide ( $\text{CH}_2 - \text{O} - \text{CH}_2$ ), and dimethylamine  $(\text{CH}_3)_2\text{NH}$ . The ketene treatments were carried out by running the gas from a generator into a beaker (under hood) and, after allowing 15 seconds for saturation, pollen samples were exposed to the ketene vapor for periods of from 15 to 240 seconds. No seeds were produced from pollinations with samples that had been subjected to the longer treatments (30 to 240 seconds). One ear containing 124 kernels was produced by using the pollen treated for 15 seconds. None of the  $F_1$  kernels was normal. Most ( $\pm 99\%$ ) were apparently mosaics for the  $a$  locus in that they showed purple and colorless sectors of various sizes. At least one, and probably more, kernels were mosaics for the  $su$  locus. Whether or not heritable changes were induced in male nuclei contributing to the hybrid embryos remains to be tested.

Treatments with ethylene oxide and dimethylamine were carried out by using the apparatus described by Gibson, Brink and Stahman (J. Hered. 41:232-238. 1950). Effective dosages were 7 to 10 ml. of ethylene oxide for 10 minutes and 3 ml. of dimethylamine for 10 minutes. Each of the chemicals produced both entire and sectorial  $F_1$  endosperm deficiencies.

Evidence suggesting that the activity at least of ethylene oxide may be mutagenic has been obtained from experiments in which the authors have utilized the back mutation technique in *Neurospora*.

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