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1. Studies on the longevity of corn pollen.

This program was initiated as a portion of a study of the male gametophyte. Experiments were conducted in 1955 and 1956 to ascertain the effect of the environment upon the viability of the pollen grain, and, in addition, to determine the optimal conditions under which to store the pollen. The criterion of viability used was the ability to set seed.

Five ranges (15% - 60%) of relative humidity at each of 5 temperatures (-79°C to +16°C) represent the bulk of our treatments. A preliminary interpretation of data indicates that we were able to obtain seed from pollen approximately 150 hours old, at temperatures from -10°C to +5°C, with a reduction in the percentage of viability, however. Pollen that was 95-100% fertile at collection time showed a decrease in viability to approximately 15% after 150 hours. As mentioned, the test criterion was the ability to set seed.

If pollen could be stored for a week or longer and retain a small percentage of viability, it is probable that this would be advantageous to the corn breeder and geneticist, especially in the early stages of a program when the number of seed is not too important. It might also prove to be a profitable method by which to exchange pollen with co-operators separated by relatively great distances.

We plan to increase the precision of our experiment in 1957 and test some of these additional hypotheses.

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2. Mutagenic effect of diepoxybutane.

Experiments have been conducted for several seasons to determine the possible mutagenic effects of diepoxybutane, $\text{CH}_2\text{---}\overset{\text{O}}{\text{C}}\text{---}\text{CH}_2\text{---}\overset{\text{O}}{\text{C}}\text{---}\text{CH}_2$, on Zea mays. Treatments were made by placing the cut ends of newly shedding tassels taken from homozygous multiple dominant stocks in 0.2 per cent solutions of the chemical for 18 hours. Pollinations were made immediately and after a 24 hour period on homozygous multiple recessive stocks. Losses of dominant marker genes in the endosperm of the resulting kernels were used to evaluate the mutagenicity of the diepoxybutane.