Fresh corn pollen was successfully "diluted" with previously killed corn pollen. Dilutions of from 1:1 to 100:1 were used effectively in viability studies. The mechanical mixing did not appear to have any deleterious effects on the fresh pollen longevity.

Additional experiments were conducted to determine optimal pollen collection, optimal storage, and the changes that take place in the pollen during storage. These will be reported in detail in a thesis in preparation by the junior author.

H. L. Everett
D. B. Walden

2. Oxygen utilization by fresh pollen.

Some of the pollen treatments observed in the longevity-viability studies have been subjected to elementary physiological analyses. The results can be summarized as follows:

a) The O_2 uptake of fresh pollen can be measured with appropriate manometric techniques. Thus O_2 uptake as a function of time of storage, storage conditions, etc. can be determined. In our work, 0.2 - 0.3 gm. fresh wt. of pollen was inserted into 15 ml. "Warburg" vessels and attached to manometers.

b) The O_2 uptake of fresh pollen suspended in 0.05M phosphate buffer, pH 7.3 can also be measured. In such a system, the pollen homogenate can be shown to oxidize some of the organic acids of the "Krebs" cycle. It can also be shown in the case of succinate oxidation that the respiration pathway is at least partially sensitive to cyanide and azide. A general interpretation of these pollen "respiration" studies indicates that pollen respiration is not unlike the classical respiration of yeast.

c) The preparation of an active "mitochondrial" suspension from corn pollen has not been successful with classical methods.

H. L. Everett
D. B. Walden

3. Respiration studies with preparations from corn seedlings.

A preparation with oxygen uptake activity can be prepared from corn seedlings: Six-day old mesocotyls and cotyledons are ground for 3 minutes in a 0.05M $NaHCO_3$ buffer in 0.25M mannitol solution at 0°C. Differential centrifugation allows sedimentation of a pellet at 15,000 g. This pellet is washed and re-suspended in 0.25M mannitol.

Utilization of some organic acids, inhibitor studies, determination of P:O ratios, have aided in the characterization of the respiration path-

way of corn seedling preparations.

H. L. Everett
D. B. Walden

CROW'S HYBRID CORN COMPANY
Milford, Illinois

1. Dwarf prolific corn.

Our work with the multiple-eared strains of corn is showing enough promise that we are going back to teosinte again to make a wide variety of crosses. In 1958, we had 105 first-generation hybrids. For the most part, these were crossed back to maize.

We are about ready to conclude that a stalk with 6 to 8 ears, five to six feet tall, would be ideal either for silage or for grain. Crosse with dwarf lines have been made to shorten the tall normal plants to a more desirable height.

W. J. Mumm

2. Twin shoot.

This past year we had a number of F2 crosses between twin-shoot and Inbred Hy. The twin-shoot character failed to reappear. We do not unde stand why it failed to appear, but we are going to try another approach. A characteristic of the twin-shoot we are using is a double groove in th internode of the stalk where the twin ear buds appear.

W. J. Mumm

3. Dwarf hybrids.

We are multiplying our inbred seed stocks this year in preparation commercial production of intermediate dwarf hybrids. Up to now we have called them semi-dwarf. The stalks themselves are six to eight feet tal and the ears are from 18 to 30 inches above the ground. These hybrids will fit in situations where high fertility and thick planting rates causes normal hybrids to break over badly.

W. J. Mumm