Since the T-Sh region is only about 7.25 recombination units in length, the proportion of colorless crossovers is too large to interpret the a* in these cases as the usual noncrossover a* which has experienced a coincident crossover for the region. If this were the case, reciprocal strands carrying a* would also have occurred. This was not the case in any of the six cases of crossover a* were recombinants in the same direction. Thus, in the case of crossover stable pale, it is felt that crossing over results in the separation of a pre-existing null level element located to the right of alpha. Since the postulated null element is situated between a and b, it cannot be separated from the A^B:Eo complex in a single cycle. This null element seems to be associated also with noncrossover alpha and it is probable that the crossover stable a* derivatives from these constitute the separation of this element. More conclusive proof that we are not separating a mutated b element, b^*, in this case, has awaited further tests.

The colorless cases of noncrossover origin from noncrossover a* crossovers stable pales so far tested are not mutable; those from multiple pales, as in the case of mutable alphas of A^B:P, belong to both stable and mutable types.

M. S. Sarma

UNIVERSITY OF ILLINOIS
Department of Agronomy
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Urbana, Illinois

1. Interaction of fertility-restoring genes.

Full restoration of male-fertility in the presence of Texas strain cytoplasm has been shown by various workers to depend on two dominant complementary genes. In midwestern dent material, a few inbreds carry both; most other inbreds carry only one; WF9 carries neither. This situation can be illustrated as follows:

Ky21, K55, IL53 = AABB
KL4, N6, L317 = aABB
WF9 = aabb

(The gene here shown as A is Rf, located near Rf on Chr.

From self-pollinating plants of the pedigree (WF9 x Ky21) WF9, a line has been isolated which gave on preliminary test a completely fertile progeny with L317T and a wholly sterile progeny with WF9T; the
fore, it is presumably of the constitution AAbb. This line will be used to study gene "B" and its possible interactions with the various partial fertility-restoring genes.

It is interesting to note that the use of inbreds of the constitution AAbb would permit, without detasseling at any stage, the production of double crosses giving only fertile plants in the farmer's field:

\[
\begin{align*}
(1) & \quad \text{cms}_1 \text{ aabb (sterile)} \times \text{ aabb} \\
& \downarrow \\
(2) & \quad \text{cms}_1 \text{ AAbb (sterile)} \times \text{ AAbb} \\
& \downarrow \\
(3) & \quad \text{cms}_1 \text{ aabb (sterile)} \times \text{ cms}_1 \text{ AAbb (fertile)} \\
& \downarrow \\
(4) & \quad \text{cms}_1 \text{ AAbb (fertile)} \times \text{ cms}_1 \text{ AAbb (fertile)}
\end{align*}
\]

Even if inbred (1) above were replaced by the commonly used seed parent WF9, the proportion of fertiles to steriles in the double cross would be 3:1.

2. Employment of Vestigial-glume in screening for sources of smut resistance.

In the process of backcrossing material carrying the gene Vg to a series of inbred lines, vestigial-glume plants were noted to be strikingly more susceptible to corn smut, and often to ear rots, than normal sibs. If this observation holds generally true, Vg should prove a useful tool to screen for better sources of resistance to smut and perhaps ear rots, as was done by LaRue, using Gm to screen for rust resistance.

Jack B. Beckett

INDIANA UNIVERSITY
Bloomington, Indiana

1. Preliminary biochemical studies on the action of a gene controlling meiosis in maize.

In maize a recessive gene called "ameiotic" has been found (Rhoades, MNL 30) which prevents meiosis and leads to almost complete sterility. Occasionally a few kernels may be produced, but these result from unreduced diploid eggs. Plants of the constitution Am Am and Am am (both called normal plants throughout this discussion) are phenotypically completely indistinguishable from those of the constitution am am (called "ameiotic" throughout) except at the late reproductive stage. In the ameiotic plants tassels and ears appear normal, but the anthers fail to