All fifteen of the crosses with row 162 showed blotching. All fifteen of the crosses with row 163 lacked blotching. Other tests showed that row 162 involves the same Bh gene as rows 188 and 189 above, in which linkage of Bh with Su is shown.

Our conclusion from the data now available is that the two systems have a Bh gene on chromosome 4 in common. Further tests could show, however, that there are two distinct Bh genes on this chromosome - one involved in the c system, one involved in the r system - and that these two genes are so closely linked that crossing over between them is rare.

4. The blotching inhibitor appears to affect both systems.

In last year's News Letter it was reported that the inbred Conn. P39 carries an inhibitor of blotching in the r system which is closely linked or allelic to one of the Bh genes. The question is whether this gene also inhibits blotching in the c system. To determine this a stock carrying all four of the Bh genes in the c system was crossed with Conn. P39. The F_1 seeds were Cc Rr and completely colored. The F_2 seeds segregated in a 9:7 ratio for self-colored and colorless or blotched. If the F_1 was heterozygous for all four Bh factors, then 31.6 percent (81:175 ratio) of all cc RR/Rr seeds should be blotched (31.6% x 75% x 25% = 5.925%). If the inhibitor from Conn. P39 suppressed blotching in the c system, then only one fourth of this percentage (1.48 percent) blotched seeds should occur. The data from six ears follow:

Number of Kernels				Percent Blotched
Total	Colored	Blotched	Colorless	
2219	1221	49	949	2.2

The percentage of blotched seeds, 2.2 percent, is nearer the percentage expected, 1.48 percent, from the action of an inhibitor than the 5.9 percent expected if the inhibitor does not act on this system.

The inhibitor of blotching has no discernible effect upon the development of self-color, but the chromosome 9 inhibitor of aleurone color, the I gene, completely inhibits blotching.

5. The possible utilization of Bh genes in the classification of maize.

The four Bh genes in the c system and the five or more Bh genes in the r system may prove to be quite useful in the classification of races, varieties and inbred strains of maize. If the maize in question is

recessive for both c and r, it is very easy to determine its genotype with respect to the Bh genes by simply crossing with a series of stocks, each one of which lacks one of the Bh genes. If the stock being tested is not recessive, then an F_1 plant to furnish the F_2 endosperm generation would have to be grown. In either case, the tests for blotching will also tell the genotype of the stock with respect to c and r so that the genotype for ten different loci can be determined from nine different pollinations. This assumes that the two systems have only one Bh gene in common.

Stocks which prove to be identical or nearly so in these ten loci are very likely to be closely related.

6. Half-tunicate from Peru, Ecuador and Paraguay.

The half-tunicate character, which originally occurred as a mutation in one of our tunicate stocks, has been picked up in collections from Peru, Ecuador and Paraguay. When repeatedly backcrossed to the inbred Al58, the half-tunicate from these exotic races is indistinguishable from the mutant half-tunicate. Half-tunicate is especially common in the Peruvian coastal race, Perla. Mr. Alexander Grobman of the National School of Agriculture near Lima tells me that 1-2 percent of the inbred strains isolated from this race are segregating for this character.

Half-tunicate should not be confused with papyrescent, another character involving prominent glumes described in this Letter, which also occurs in South American maize.

7. An inhibitor of half-tunicate.

We have for some years past assumed that pod corn, if it is the ancestral type, is not inherently monstrous and that its frequent monstrousness can be explained in terms of a relict "wild" gene superimposed upon the genetic background of modern, highly domesticated maize. On this assumption, we have selected for modifier complexes which would reduce the expression of the tunicate character, and we have found such complexes to be especially common in the pop corns. This in itself is significant since the pop corns as a class are the most primitive types of maize extant.

We have now found that, in addition to the complex of minus modifiers for tunicate which many pop corn varieties carry, there are in some varieties of pop corn a gene which strongly inhibits the expression of half-tunicate. This gene, which in preliminary tests appears to be linked with Y on chromosome 6, has so far been studied only in half-tunicate stocks; it is recessive and acts only in the homozygous condition. It causes $tu^h tu^h$ to act like $tu^h tu$ and it renders $tu^h tu$ almost indistinguishable from tu tu.