It is difficult to account for the discrepancy. The assay used here was colorimetric while that used by Sprague et al was potentiometric. Yet approximately the same values were obtained for Wx/Wx/Wx isolates. The differences between percentages observed for the lower dosages are large to be attributed to background effect and are most readily ascribable to techniques of measurement.

Table 2. Amylose percentages in starch isolated from the listed stocks.

Source	Genotype	% Amylose
Check	Wx/Wx/Wx	27.5, 26.0
"	Wx/Wx/wx	20.5, 21.5
"	Wx/wx/wx	12.5, 12.5
15424G x 15492	Wx/Wx/wx	18.5, 25.5
15492 x 15424G	Wx/wx/wx	13.0, 11.5
15425E x 15492	Wx/Wx/wx	17.5, 18.5
15492 x 15425E	Wx/wx/wx	14.0, 14.5
15427G x 15492	Wx/Wx/wx	18.5, 20.0
15492 x 15427G	Wx/wx/wx	13.5, 13.5
15422G x 15492	Wx/Wx/wx	22.0, 18.5
15422B x "	"	19.5, 20.0
15422D x "	"	21.0, 19.0
15422E x "	"	20.0, 20.0
15422H x "	"	18.0, 17.0
15423A x "	"	18.0, 24.0
15422F x "	"	19.5, 20.0
15423G x "	"	18.5, 19.0
15422C x "	"	19.5, 20.5
15424A x "	"	20.0, 20.5
15423B x "	"	23.0, 20.0
15424B x "	"	24.0, 20.5
15424C x "	"	19.0, 18.5
15424D x "	"	19.5, 20.0
15424H x "	"	19.5, 19.0
15424F x "	"	17.5, 20.0
15425A x "	"	17.5, 20.0

Oliver Nelson

3. The allele wx^{m-1} recombines with wx^{C}.

The recombinational pattern of wx mutants which apparently contain the requisite information for Wx activity but are inhibited in action by a controlling element such as Ds would be most interesting to geneticists. We have been endeavoring to make such tests for several years.

In 1960 Dr. Barbara McClintock was good enough to send seed of the heterozygote $\frac{c^{m2}\ Sh\ wx^{m-1}}{C\quad sh\ wx^{S}\ Ds}$; Ac. The allele designated by McClintock as wx^{S} is almost certainly the same allele which we call wx^{C}. Plants of this stock were outcrossed to M14; the F_1's were selfed in Florida in the winter of 1960-61; from ears on which some of the wx/wx kernels had Wx sectors, non-sectored wx/wx kernels were selected. The plants from these kernels were pollinated by W23 (P^{VV}/P^{VV}; wx/wx); pollen from these plants was put onto wx^{C} and wx^{90}; tassel branches were collected for pollen analysis. Those plants where the Wx frequency in the pollen was less than 2×10^{-5}, which gave kernels with Wx sectors when pollinated by W23 (P^{VV}/P^{VV} ; wx/wx), but which did not induce the formation of kernels with Wx sectors when used as males on wx^{C} and wx^{90}, were considered to be wx^{m-1}/wx^{m-1} without Ac in the genotype. The crosses of these plants onto wx^{C} were grown in the first '61-'62 greenhouse crop, and results are given in Table 3. The plants 62G5, 62G8, and 62G12 all come from different isolations of the wx^{m-1} allele. The 62G8A and G8B data came from different plants of the same isolate.

It is apparent that the different wx^{m-1} isolates used in crosses on wx^{C} show reasonably good agreement as to frequency of Wx pollen grains in the F_1. The crosses of these plants onto wx^{90} are being grown in the 2nd GH crop, and results will soon be available. Crosses to the other wx alleles will be made in 1962.

It might be of interest to note the frequency of the Wx pollen grains in the heterozygote $\frac{c^{m-2}\ Sh\ wx^{m-1}}{C\quad sh\ wx^{S}\ Ds}$ where 1 Ac was present. These data are given in Table 4. The populations per slide are low since the plants were extremely weak and this apparently reduces pollen production. Where the numbers of Wx pollen grains are as high as these samples, the number of Wx per slide is estimated by the same technique used to estimate the total number of pollen grains per slide.

Table 3. The frequency of Wx pollen grains in the cross $wx^{C} \times wx^{m-1}$, no Ac.

Plant	Source	Estimated Total Pop.	No. Wx	Wx x 10^{-5}
62G5A	$\frac{15110}{15046\text{-}2}$	44,000	7	16
62G8A	$\frac{15102}{15049\text{-}2}$	43,500	11	25
62G8B	$\frac{15102}{15049\text{-}2}$	55,000	14	25
62G12A	$\frac{15102}{15053\text{-}2}$	42,000	8	19

Table 4. The frequency of Wx pollen grains in c^{m-2} Sh wx^{m-1} / C sh wx^{C} Ds, Ac plants.

Plant	Estimated Total Pop.	No. Wx	Wx x 10^{-5}
12501-1	22,000	536	2436
-2	21,000	320	1524
-3	19,000	609	3205
-4	14,000	402	2871
-5	20,000	93	465
-6	25,000	135	540
-7	9,000	151	1678
-9	18,000	191	1061

Oliver Nelson

4. A test for an unlinked inhibitor of a 5th chromosome gametophyte factor.

Longley (Genetics, 1961) has reported that a 5th chromosome gametophyte factor is one component of a two-component system. The other component is an unlinked inhibitor (In). The Ga gametes have a selective advantage over ga gametes only on the silks of In / - plants (the alleles at the Gametophyte locus in the female plant are immaterial).

Having worked for several years with a 5th chromosome gametophyte factor which is apparently Ga_2, stocks were on hand for a test of whether or not such an inhibitor could be implicated in this particular instance. The stock carrying the Ga factor is an inbred line, 4541, derived from Black Beauty popcorn. This line is A_1, C, R, A_2 Bt Ga Pr. In the F_2 population derived from a cross of 4541 onto Burnham's A_1, C, R, a_2 bt ga pr tester, we have observed a mean bt percentage of 5.1, and an a_2 percentage of 10.4 in a population of 3107 kernels from 7 ears.

The backcross, a_2 bt ga pr / A_2 Bt Ga Pr x a_2 bt ga pr / a_2 bt ga pr and its reciprocal were made in 1960 in order to estimate the recombination between a_2 and bt. Both backcrosses, F_1 x a_2 bt ga pr and a_2 bt ga pr x the F_1, gave proportions of a_2 and bt seeds which were in agreement with the expectation of a 1:1 ratio. The combined estimate (total population = 2457) of a_2 bt recombination was 7.7 percent.

Consider the possible genotypes of the parental strains if a two-component system is applicable. There is a striking deficiency of a_2 and bt kernels in the F_2 progeny. Therefore, 4541 is A_2 Bt Ga Pr and Burnham's tester is a_2 bt ga pr. There is also an In allele contributed by one or both of the parents, but the data from the F_2 progeny are not informative as to this point. However, the backcross a_2 bt ga pr / a_2 bt ga pr x a_2 bt ga pr / A_2 Bt Ga Pr gave .5 bt seeds. Therefore the a_2 bt ga pr / a_2 bt ga pr stock must be in / in since if it were In / In there should be a marked deficiency of a_2 and bt seeds in this backcross progeny. So 4541 must then be A_2 Bt Ga ; In. The backcross onto the tester was a_2 bt ga pr ; in x a_2 bt ga pr / A_2 Bt Ga Pr ; In / in. Since the postulated inhibitor is not linked to the Ga / ga locus,