introgression. Some of these cobs from this level are exact counterparts of modern F_1 hybrids between maize and teosinte and many others resemble teosinte derivatives in being small with highly indurated glumes. A few cobs have soft-glumes and resemble the carbonized ones from the previous level. In level-3 there is some recovery, on the average, from the marked effects of teosinte introgression as well as a tremendous increase in variability. Finally, in levels-2 and -1, the variation initiated by teosinte hybridization, includes a type of maize that has larger cobs and was presumably more productive than the original Chapalote race. Some of the larger cobs resemble those of the present day flour corns of the semi-arid regions in the Southwest. The introgression from teosinte which may initially have been detrimental proved to be beneficial in the long run, after new balanced polygene systems had become established.

17. Homozygous corn-grass.

For the first time we have obtained homozygous corn grass lines which approach the original "grassy" extreme reported by Singleton. Cg Cg plants of the grass extreme suddenly appeared in a line which was thought to be homozygous minus-modified corn grass but which so closely approached normal corn that identification was usually impossible. These new Cg Cg stocks are uniform and breed true. They are much more profusely tillered than teopod and yet are more amenable to hand pollination. The breeding behavior of the new Cg Cg suggests a change at the Cg locus to a new stable allele. These new Cg stocks will be studied further in regard to the development of a forage or ensilage-type of corn as a possible substitute for sudan grass.

18. Papyrescent (Pn) linkage data for long arm of chromosome - 7.

According to the data (see below), the sequence of genes linked to papyrescent glumes is gl_1 - ij - bd - Pn. The Pn gene is to the right of bd and separated from it by about 5 map units. The cross-over value between bd and Pn was measured as a difference in the linkage of each to either Gl or Ij. This value (5 units) was not obtained directly because of difficulty in scoring certain decayed branched-silkless (bd) ears for glume character.

The Pn character should be more useful as a marker gene than the other factors near it in the long arm of chromosome-7. Bn (brown aleurone) is often difficult to classify and bd (branched-silkless) must be maintained as a heterozygote because it usually has no silks. The Pn gene also extends the genetic coverage of the long arm of chromosome-7 by 5 units beyond that previously known.

F_2 Linkage Data from the Cross Pn bd x gl ij

Genes XY	XY	Xy	xY	xy	Total	Recombination %[1]	Map Units[2]
Gl Pn	192	62	60	23	337	47.6	79.0
Gl Bd	178	75	63	21	337	46.9	74.0
Gl Ij	234	19	24	60	337	13.8	14.5
Ij Pn	200	59	52	26	337	42.9	58.6
Ij Bd	177	81	64	15	337	40.7	54.0

[1]Product method from tables of Immer, 1930.
[2]Conversion from tables of Haldane, 1919.

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1. Correlations among 28 characteristics of 145 inbred lines of maize.

A group of 145 standard American inbred lines were compared in many locations in 1948 by members of the North Central Corn Improvement Conference of the United States. These lines were involved in most of the open-pedigree hybrids developed by the Corn Belt agricultural experiment stations and in use prior to 1948. Data were summarized in 1948 in a mimeographed report by Brunson, Ullstrup and Dicke. The 378 possible correlations involving 28 plant and ear characters of the 145 widely used inbred lines are shown in Table 1. Many of the correlations were statistically significant and should have some predictive value in maize breeding research. These 378 correlations were obtained quickly and easily on the University of Illinois Illiac electronic digital computer.

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