of continuous selection in corn for certain special characteristics, including both chemical and physical properties, have been carried on for many years at the Illinois Agricultural Experiment Station. Twenty-four generations of selection to influence the composition of the grain show very marked responses, and from a single original variety four diverse strains have been established, namely, high protein, low protein, high oil, and low oil. Similarly, high- and low-ear strains as well as erect- and declining-ear strains have been produced. Another example of this response to selection has been the development of a two-eared strain from an ordinary single-eared variety. In like manner differences in yield have been induced by similar methods of selection. These results all go to show something of the possibilities of profoundly modifying various characteristics by continuous selection in a cross-fertilized plant such as corn.

First generation corn varietal crosses: Fred Griffee. A brief review is made of the development of the theory which accounts for the increased vigor of F_1 crosses. Experiments are reviewed in which F_1 corn crosses are compared with their parents for yield of grain. Of 146 crosses, 113 exceeded the parental average in yield of grain and 84 exceeded the better parent. At the Minnesota station 5 flint-dent crosses tested for a period of two to six years yielded an average of 7.7 per cent. more shelled corn per acre than either parent. Particular attention is called to the cross between Minnesota No. 13 and Squaw Flint which yielded 8.4 per cent. more shelled corn per acre than Minnesota No. 13, which is the higher yielding parent, and was a week to ten days earlier in maturity than Minnesota No. 13. Such a cross appears of considerable promise for sections where early maturity is an important factor. During the first three years of the study a strain of Minnesota No. 13 was used which had been selected for type for several years. In the latter years this strain was selected primarily for yield. The increase in yield of shelled corn per acre of the F_1 cross over the better parent has averaged less for the last two years than for the first four years of the tests in the case of crosses with Minnesota No. 13. On the basis of these results it appears that, if corn were selected primarily on the basis of yield, the value of F_1 varietal crosses would be somewhat questionable.

Rust and the weather: H. L. Walster. At Fargo, N. D., blue stem spring wheat averaged 7.1 bushels per acre in 5 seasons when rust epidemics occurred, and 26.7 bushels per acre in 5 non-rust seasons. The average minimal and maximal temperatures by 10-day periods from the date of seeding show the following differences as between the respective 5-year periods:

Average Differences in Degrees F. for Each 10-day Period after Seeding. Five-year Averages

			1st	2d	3d	4th	5th	6th	7th	8th	9th
Minimals of 5 Good Years	Minus	Minimals of 5 Rust Years	−1.76	+8.50	+6.72	+7.70	+2.84	+7.24	+8.32	+1.42	+2.94
Maximals of 5 Rust Years	Minus	Maximals of 5 Good Years	−1.54	+9.16	+4.96	+4.48	+0.28	+5.74	+5.72	+4.10	+0.72

During rust years maximal temperatures rose more rapidly and reached their highest point sooner than in non-rust years. The average rainfall during April, May, June and July averaged higher in rust years than in good years. When high rainfall occurred in good years danger of rust has been offset by low temperatures. When excessively high temperatures have occurred in good years, danger of rust has been offset by droughty conditions.

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Secretary-Treasurer