total nitrogen in eggs after first cleavage with that at the early blastula stage. Considerable material has been collected for further work along this line.

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Beaufort, N. C.,
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Observations on the Inheritance of Characters in Zea Mays Linn.[1]

In "Red Cuzco" and some other breeds of red maize, the red coloring matter is confined to the pericarp; being therefore a fruit character and not a seed character, it does not appear in the ear immediately resulting from a direct cross between a white female and a red male.

In a red dent breed under investigation, the red pigment occurs in the aleurone layer, and not in the pericarp. Being a seed-character, it is transmitted directly by the pollen grain to the ovule of a white breed. It behaves as a dominant to whiteness; where it meets yellowness in the same grain, it is more conspicuous than yellow. The writer has not met with a previous record of the occurrence of a red pigment of this character in the aleurone layer of the maize grain.

When this red dent is crossed with a white sugar breed the segregation, in the second generation, of the two pairs of characters redness *vs.* whiteness and starchiness *vs.* sugariness, is in approximately the following proportions:

Red	starchy	56.25	= 75%
	sugary	18.75	
White	starchy	18.75	= 25%
	sugary	6.25	

In other words:

Red Grains

Starchy grains	75%	of 75%	= 56.25%
Sugary grains	25%	of 75%	= 18.75%
			75.00%

White Grains

Starchy grains	75%	of 25%	= 18.75%
Sugary grains	25%	of 25%	= 6.25%
			25.00%

[1] Fuller details will shortly appear in the *Transactions of the Royal Society of South Africa.*

A single grain has been found on the ear studied, which distinctly shows the starchy character in one half and the sugar character in the other, a very unusual feature.

A study of row-numbers in maize-ears indicates that within certain limits the number of rows of grain on an ear is subject to fluctuating variation, which may perhaps be affected by season or food supply, or both. In more than thirty plants of Arcadia sugar-maize studied this year, each of which produced two ears on one stalk, the uppermost ear has had a different number of rows from that of the lower ear. On thirteen plants the largest number of rows occurred on the lower ear, while on eight plants the largest number was on the upper ear. In twelve plants of two ears the row-numbers were the same on both; in one case there were four more rows on one ear than on the other. Several plants of Hickory King, bearing two ears, have also produced different numbers of rows on the two ears.

The range of variation appears to be limited, however. A normally 8-rowed type ranges between 4 and 14 rows, while a normally 18-rowed type ranges between 12 and 24 rows.

The result of crossing an 8-row with an 18-row type of maize is to produce an intermediate type in the first generation, both 8-row and 18-row types practically disappear in the heterozygous form. The intermediate type bears mostly 10, 12 or 14 rows, the 12-row type greatly predominating. The experiment will be continued next year, to determine the proportion of the 8-row and 18-row types which reappear. The ears produced by the cross and the reciprocal cross are indistinguishable.

A white-cobbed breed crossed with a red-cobbed produces a red cob in the first filial generation, and so does the reciprocal cross.

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