early quartet stage were squashed in .2M sucrose and also air dried on microscope slides. Mouse and maize slides were fixed and stained in the same lot by the following procedure: fix 20 minutes neutral 50% formalin, 4 washes (5 minutes each) distilled water, 1N HCl room temperature (1 minute), 1N HCl 60°C (14 minutes), 1N HCl room temperature (1 minute), 4 washes (1 minute each) distilled water, stain basic Fuchsin Schiff's reagent (7 minutes), 3 rinses (5 minutes each) mixture 90 ml. distilled water; 5 ml. 1N HCl; 5 ml 10% aqueous potassium metabisulfite, 4 washes (2 minutes each) distilled water, graded alcohol series to xylene, mounting in index of refraction immersion oil matched (as nearly as possible) to the index of refraction of the cell background. Mean nuclear DNA values in arbitrary units as measured with a Canalco-Zeiss Microspectrophotometer by the two wave length method in 123 cells each, mouse sperm and maize spores, were: mouse 264, maize 524. Estimated ratio of DNA per genome corn/mouse was 1.7681 $\pm$ S.E. 0.0612. Measurements of nuclei from a few cells each of maize telophase I and mouse gonial cells, mouse secondary spermatocytes, and mouse spermatids were reasonably consistent with these estimates.

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2. Experimentally produced meiotic abnormalities.

Meiotic abnormalities of undetermined cause in maize microsporocytes were reported in this Newsletter last year. These have now included synaptic failure, failure of chiasmate association to persist until metaphase, irregular chromosome contraction at diplotene, presence of multiple nucleolar-like bodies at diakinesis, end-to-end association of diakinesis bivalents, cytokinetic failure at first and second meiotic division, and reorientation and abnormal separation of metaphase I bivalents. In this latter case sister centromeres of previously normal appearing metaphase I bivalents seem to separate; then these sister centromeres seem to become cooriented on the metaphase plate and simultaneously associated with homologous sister centromeres, similarly cooriented. Anaphase I then seems to produce equational separation, anaphase II disjunctional separation with occasional resolution of

chiasmata. Bivalents also sometimes separate completely into 40 monads at metaphase I. Following numerous tests it was discovered that these abnormalities were correlated with the use of 3 X 5 filing cards to support tassels of Zea whose stalks had been incised. In response to inquiries to the manufacturers of the cards as to changes in their manufacturing procedure (since the cards had been previously and often used without effect) we received samples of two different kinds of modified starch used by them for sizing in their cards. Starch from one of these samples (which had been treated with ethylene oxide) consistently produced the abnormalities in several different maize stocks. We have now isolated the active substance in crystalline form in small quantity. It is water soluble and unsuitable for gas chromatograph or mass spectrograph analysis without modification. We are now hoping to obtain the biologically active, modified starch in sufficient supply for conventional chemical analysis and are planning studies of the mechanism of its action.

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1. Pigments in hydrolyzed methanol extracts of maize tissues.

Anthocyanidins.

Seah and Styles (M.G.C.N.L. 43:183-184) reported that seven anthocyanidin spots were present on thin-layer chromatograms of the hydrolysates of pigments extracted from various pigmented Pr strains of W22. Although cyanidin was the predominant pigment, lesser amounts of pelargonidin, peonidin, and four other unknown anthocyanidin-like pigments were also found. One of the unknowns was an orange pigment, and this has now been characterized as luteolinidin (3-deoxycyanidin). The colours, Rf values, and spectral data of the other three pigments and of two other pigments since found are shown in Table 1. Their properties do not match those of any of the previously reported