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Certain Features of the Vegetation in Kansas Sand Hills

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occur in Iowa. The former is a cultivated species imported from Europe, that has escaped from cultivation in many places. *Rhamnus lanceolata* is commonly found along the small streams and shaded dry runs throughout the southern half of this state and as far north as Sioux City on the Missouri river and McGregor on the Mississippi. *Rhamnus alnifolia* is confined to a few counties in extreme northeastern Iowa.

Rhamnus frangula and *R. dahurica*, both indigenous to Northern Asia and thus able to endure cold, are very resistant to crown rust. Both flourish under Iowa conditions and could well replace *R. cathartica* as an ornamental shrub. *Rhamnus dahurica* retains the purplish-black fruits until late in the spring, a fact which makes it desirable for landscape gardening.

BREEDING OATS RESISTANT TO PUCCINIA GRAMINIS AVENAE

S. M. DIETZ

A test of some three hundred oat varieties showed some susceptible and some resistant to *Puccinia graminis avenae*. A study of the inheritance of resistance has been made by determining the response of hybrids of resistant x susceptible varieties. In this study, Iowa 105 was found to possess a marked resistance in addition to maturing early and thus escaping stem rust. Green Russian and Raukura were both resistant. The F_1 generation of Iowa 105 x Green Russian was resistant. The F_2 generation gave a wide ratio of several hundred resistant plants to one susceptible. In the F_3 progeny test the susceptible F_2 plants bred true for susceptibility, while numerous progenies from the resistant F_2 plants, segregated into resistant and susceptible plants. Such a wide ratio exists in the F_2 generation it is impossible to determine the true factorial basis of inheritance without further work. It is probable, however, that several factors are responsible for the inheritance of resistance to stem rust of oats. These data were further confirmed by the Raukura x Green Russian crosses.

CERTAIN FEATURES OF THE VEGETATION IN KANSAS SAND HILLS

FRED W. EMERSON

A consideration of some ecological factors influencing the stabilizing of these dune areas located in central Kansas. Heavy

grazing interrupts the usual successions of plants, but wherever permitted the permanent climax of bunch-grass usual in the surrounding prairies takes possession and completes stabilization of the sand.

TROPOGRAPH AND FLECTOGRAPH

W. J. HIMMEL

The former is an instrument devised in the Laboratory of Plant Physiology of the State University of Iowa for recording the pull exerted by a plant giving a tropic response. It has so far been applied only to the case of a plant placed horizontally and attempting to bend upwards in response to gravity. As the stem raises very slightly an electrical contact is made and a shot dropped into a container attached to the end of the stem. Shots will be added singly at one-minute intervals until the plant is drawn back to its horizontal position, thereby breaking the electrical contact. An automatic recording device is attached to the dropping apparatus, giving a graph of the time when each shot is dropped. In this way the pull of the plant at excessive moments and the rate at which this pull accumulates is recorded. The Flectograph is used in recording the bending strength of stems or petioles.

GENETIC LINKAGE BETWEEN CHLOROPHYLL AND CAROTINOID PIGMENTS IN MAIZE

E. W. LINDSTROM

Genetic analysis of the inheritance of the pigments chlorophyll and carotin (and xanthophyll) in maize have demonstrated beyond reasonable doubt that these two groups of pigments are controlled by different genetic factors. Most of the genes for chlorophyll development are independently inherited of the yellow-producing gene, *l*. However, a case of linkage, involving this yellow factor and one of the three complementary genes responsible for chlorophyll development in the seedling stage of maize has now been discovered. These two linked genes w_2 and *l*, belong with the R-L-G linkage group, since they show typical linked inheritance, with approximately 21% crossing-over.