

ART. LIII. — *Experiments in Cross-breeding Indian Corn with flowers of the same variety, the seed of which was raised one hundred miles away*; by PROFESSOR W. J. BEAL.

IN 1878 I reported some experiments in cross-breeding, made with Indian corn and with beans. The advantage shown by the crossing of corn with corn, the seed of which was grown some miles away, over that not so crossed was as 151 exceeds 100, and in the case of black wax beans it was as 236 exceeds 100.

In 1879 and 1880, a similar experiment was made with Indian corn showing that seed from crossed stock produced corn excelling that raised from uncrossed seed as $109\frac{67}{100}$ exceeds 100, or nearly ten per cent in favor of crossed stock.

In the spring of 1881, I obtained two lots of white flint corn; one from Oakland County, the other from Allegan County, about 100 miles apart. These places are in the same latitude in Michigan. The corn from Oakland had been raised for ten years on one farm; that from Allegan six years in the same neighborhood. In one patch of alternate rows of Oakland and Allegan corn, all of the Allegan corn was castrated by pulling out the tassels before flowering. On former experiments, castration has been found to cause the ears to grow larger than they otherwise would grow. Still, with castration in favor of the Allegan corn, it did not produce ears which were so large or evenly developed as did the corn from Oakland County. The Oakland County seed corn was the better of the two.

Owing to an accident, we failed to raise any pure Allegan seed in 1881. The "crossed corn" in 1882 was only compared with pure Oakland seed raised last year at this place.

In the spring of 1882, on good even soil, three rows of "crossed seed" were planted in rows alternating with three rows of pure Oakland County seed of 1881. By an oversight, each row of each lot was not kept separate. The pure seed in the cob nearly dried, yielded $57\frac{1}{2}$ pounds. The "crossed seed" yielded $69\frac{1}{2}$ pounds. In other words, the crossed stock exceeded the pure stock of the best parent nearly as 121 exceeds 100.