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an extensive use of it with the view to the cultivation of certain hereditary characteristics.

C 110 We show in Table C 110, after de Chapeaurouge, the pedigree of Belvidere, an animal which, in spite of close inbreeding, was distinguished by excellent qualities, and by whom, out of his own daughter, another sire of the highest rank was produced.

C 111 After long-continued and very close inbreeding, even with a faultless condition of the germ plasm, the decrease of vitality and fertility of the progeny asserts itself. Important evidence for this is given by Georg. H. Shull in his exhibition of cross-fertilized, self-fertilized and hybridized maize (Exhibit No. C 111). Shull makes the following comments: "Results of inbreeding with maize—crossing between different races or genotypes, if not too distantly related, results in a progeny which excels its parents in vitality, whereas crosses between individuals belonging to the same genotype engender no increase of vitality as compared with the parents."

In maize, and presumably in most other plants and animals in which cross-fertilization is the rule, all individuals are usually complicated hybrids between different varieties of genotype. They owe their vigorous constitution to this hybrid nature.

"The result of self-fertilization or of close inbreeding is that the hybrid nature diminishes in degree. The stock is reduced to a homozygotic condition, and is thus deprived of the stimulus which lies in the hybrid condition."

"When two given genotypes are crossed, the first hybrid generation is possessed of the greatest vigour. Even the second generation shows much less vitality, and this decrease continues with the third and later generations. But each succeeding generation differs less from its predecessor than the latter differed from its own parents. As soon as the stock has become a pure line, inbreeding produces no further weakening."

"The top row of the exhibited collection of maize cobs (large cobs with many grains) is derived from a family in which for five generations self-fertilization has been prevented by using mixed pollen. These conditions approach those prevailing in an ordinary field."

"The middle row of maize cobs (small cobs with few grains) comes from families of the same derivation as the first row; but for five generations they have been self-fertilized. Each one has characters which the others do not possess. They are almost pure bred, and continued self-fertilization produces no further adverse influence. The cob, quite to the right, without grains, has pistils so short that