Composite hybrid mixtures are not new. The senior author has grown one such for many years and numerous breeders have grown bulk lots of one or more crosses to allow segregation and stabilization to take place. This method of handling hybrids probably secures as valuable segregates as any other and is economical of space and effort. At present we are trying to make a wider adaptation of the scheme in barley than has been attempted before. We have good varieties and varieties that are almost good. The full utilization of the latter constitutes a real problem. At all experiment stations there are varieties which have been tested for many years. They are too good to throw away and not good enough to distribute. Such barleys must have some inherent quality that causes them to be of perennial promise. Whatever this intangible quality may be, it quite probably is not identical in the different sorts. If it is not identical, hybridization should allow a recombination of characters in such a way as to produce superior types. From the mass of material available it is impossible to select the most probable parents for producing the desired superior sorts. The originator of Marquis wheat could hardly have known that the two parents chosen held the possibility of producing that variety. If one were to take all the possible parents, the volume of work would become prohibitive.

The same argument is true of our leading sorts. They are good. They are the best we have. Their hybrids might contain progenies of even greater value than the best of the parents. Not all varieties can be used in this way, as the labor involved in utilizing a limited number is very great. In the 20 years that the senior author has been connected with the barley investigations of the United States Department of Agriculture some 5,000 barleys have been grown. Most of these have come from foreign sources. They have included sorts from every barley-growing region of the world. Most of the 5,000 were discarded after a preliminary test had shown them to be obviously without value.

From this large volume of material it was finally decided to select a number of varieties, including both superior and promising sorts which were outstanding for some quality or other, and to intercross

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487 Published April, 1929