

### in the Selection of Seeds of the Cereals.

In every field of grain there are to be seen ears differing in size, in form, and in general appearance from those growing beside them. Some of these can be recognised as the ears of established varieties, but a few will be distinct from all the kinds in cultivation. Farmers usually pay little attention on the different kinds of grain which may be sometimes seen growing in the field, and which can be best observed during the cutting and harvesting of the crop; but the farmer in a thousand would undertake the selection of such ears with the intention of sowing the seed, and thus propagating the kinds. A number of varieties would be considerably increased, and the kinds in cultivation would be improved by this selection of the best ears. One who intends to collect ears of one or more of the cereals should proceed methodically, not when selecting, but in keeping the ears of apparently different kinds distinct at the time of gathering them, so that each kind can be known by itself, and the produce from the seed of the selected ears collected and stored for future sowing. During the time of selecting, small bags formed of cloth should be used, and as the ears are separated from the straw they should be placed in one or other of these bags. Care should be exercised to prevent confusion and intermixing of the seeds.

Every circumstance should be noted at the time, such as the field of grain in which the ears are gathered; the characteristic features which the ears presented in growing, such as size, form, whether the ears are close or open, and the color of the chaff and straw, chaff smooth or downy. Other points deemed worthy of being recorded. A written description should be placed on the ears put into each bag for after reference, as it is seldom advisable to trust to the memory as to the facts. The bags containing ears should be hung in an open place away from mice or other depredators until the period of sowing the seeds.

When it has been determined that the sowing of the seeds of the selected ears shall be proceeded with, a plot of ground near to the entrance of the field can be chosen, the remainder of the field to be seeded with grain of the same kind, whether wheat, barley, or oats. Small plots can be formed by a hand hoe, the seed being sown, and the earth returned by a hand hoe, the seed being lightly covered. Each plot should be marked by a piece of wood placed at the end of the rows and the number marked on the wood for after reference. A note book should be used for inserting facts connected with the selecting of ears, the sowing of the seed, the appearance of the different plots presented at the time of braiding, tillering, earing, blooming, ripening, with dates and other particulars.

The amount of trouble which the propagating of varieties entails renders it advisable for experimenters not to attempt too much at one time. Only those who are resolved to bestow minute attention during the whole period from the time of selecting the ears until the quantity of grain produced admits of its being distributed, should undertake the selection of ears for propagating the variety. In propagating new varieties, constant attention is essential to keep the variety true to the kind selected, more particularly if it has originated in what is termed a sport, either the result of cultivation or hybridization—the pollen of the ear or one variety fertilizing the seeds contained in the ear of a different kind. This hybridization is sometimes effected by experimenters, but accidental contact is the more frequent cause of the sports which appear in cultivated plants. Every variety of grain in cultivation will occasionally show ears differing from those which possess the characteristic appearance of the variety, while some varieties show red or brown ears, and ears with and without awns. The higher the manurial condition of the soil, the tendency to sporting appears to increase in force. As the soil should be made rich in which the seeds of the selected ears are grown year after year, this tendency to sport is certain to appear, and as the propagating of the selected variety is proceeded with, constant care is essential to cull out the ears which differ from the original standard of the selected ears. If the variety is the result of hybridization, this culling is all important.

The ears will differ considerably in appearance, some resembling the kind from which the fertilizing pollen was derived, and others more closely resembling the variety which the pollen fertilized. Uniformity is essential to entitle any grain to the term variety, and this uniformity can only be secured by constant care in selection. After the type becomes fixed, sporting and degenerating will almost wholly cease, provided ordinary care is taken by the propagator. But every established variety should be kept up by occasional selection of the best ears.

In an industrial point of view the propagating of a new prolific variety of any of the grains is of immense national importance. Any new variety which would yield from one to four bushels of additional grain per acre over the ordinary varieties in cultivation would tend thus far to raise the resources of our own soils. In this direction an extensive and most inviting field is open to all cultivators. Were agriculturists to study more closely the operations of horticulturists, much benefit would result to all. Farmers generally not only undervalue, but wholly disregard what horticulturists have done for agriculture. As well said by the highly distinguished botanist Dr. Lindley, in a recent address to Prince Albert, as President of the London Horticultural Society, "Horticulture, sir