ever, is very coarse; and as it is only used for one department of baking, the demand is very limited, and the market price generally very unsatisfactory.

The following are the varieties usually met with in cultivation:—

Rivet, Common.—Ears smaller and less compact than the next variety; awns stay on longer; grain long and flinty; heavy cropper, but being somewhat later at harvest than the Cone rivet, is only suited for early districts.

Rivet, Cone.—Ears white and velvety, square and compact: grain whitish yellow, and larger than the common rivet; straw, bold, long and stout; generally hardier, and less liable to diseases; sample poor in quality; yield very productive.

Egyptian.—Ear woolly; straw long, stiff, and filled with pith: differs from the other varieties of Turgid wheats by the form of its ear, the lower florets being elongated, and forming in appearance, distinct ears. This is the variety so frequently met with under the name of "mummy wheat." It is like the others, a very productive sort, but of a like inferior quality.

At the Exhibition of 1851 specimens were exhibited of *hybrid wheats*, obtained by the systematic crossings of different known varieties, and prize medals were awarded to the successful experimenters. 'The specimens excited great interest from the importance of the process in other departments of the vegetable kingdom, and the known difficulty of hybridizing the *cerealia* in particular. This arises from the great care required to extract unexpanded anthers from one parent, and to replace them with the pollen of another—preventing at the same time, the stigmas to be fertilized from receiving any other pollen than that artificially applied, and guarding them afterwards, from the attacks of birds, and a variety of disturbing operations. The result appears in most cases to be an offspring stronger than either parent." (Jury Report on Class III).

In discussing the agricultural relations of wheat, the *soil*, of course, claims our first consideration. Wheat we know, has a very wide range of soils. In this country we see it grown on well-nigh every variety, from the light siliceous soils met with in the eastern counties, and on the green sandstone and the new red sandstone formations to the difficult and disheartening soils of the London, the Wealden, the Oxford and the Lias clays. Some soils however, are clearly more suitable for it than others. Those best adapted for it are, of course, such as contain the ingredients necessary for its growth and perfection in the best proportions, and in a condition most available for the plant. We know that wheat will not flourish in any soil unless there is a certain amount of silica and potash for its stem, of silica and lime for the chaff or outer covering of the seed, and of potash, phosphoric acid, magnesia, and ammonia for the seed. These substances are generally found to exist in clays to a greater extent than in other descriptions of earth; consequently, we are accustomed to look upon our different soils as strong, medium, and light wheat soils, according to the proportions of clay they severally contain in their composition. *Pure clay*, which is a chemical compound of silica and alumina, would be unsuited to any description of vegetable growth; but clays are always more or less mixed up with other substances which give them their fertilizing value, while their own substance acts mechanically in a very beneficial manner, by giving tenacity—staple—to the soil, and by increasing its powers of absorption and retention of moisture, and also of condensing and retaining the ammonia so necessary for plant life. In soils containing large proportions of sand, or of organic matter, but deficiency in clay, we often see the young plant very luxuriant at first, but without the power to build up its stem, and consequently unable to assimilate those substances necessary to perfect its growth and to produce its seed.

In all descriptions of soils it is essential that they should not retain more moisture than is natural to their composition—that all the surplus should be got rid of by drainage, as, owing to the habit of the growth of wheat under suitable conditions, it requires less moisture after it has once sent out its roots than most of our other crops.

The preparation of the land for wheat depends very much upon the character of the soil and the general practice of the district. In some of the unmodified clay districts, especially if undrained, of the London clay formation, as in Essex; of the Wealden in Kent and Sussex; of the oolite clays in Oxford; and of the lias in Gloucester and Worcester, it is still the practice to give it a summer fallow, keeping it well stirred and cleaned, and sowing it down early in the autumn. This expensive and unphilosophical practice is, however, gradually disappearing as thorough-draining makes its way into the districts, and as the farmers recognize the immense advantages which the rapid development and adaptation of mechanical power, in the shape of farm machines and implements, now place at their disposal. Except under very rare circumstances, we should not admit the practice of an open fallow as a necessary preparation for wheat; but we should endeavour to occupy the ground profitably, by a crop which would take from the soil such ingredients as the wheat will not require, and which would leave in the soil behind it sufficient organic matter to satisfy the demands of the succeeding crop. This may be readily secured to the soil by growing a green crop, either a regular fallow crop of roots, as turnips, potatoes, &c., or a forage crop, as clover, such crop being determined either by the particular character of the soil or by the practice of the district. If the