

great effects are obtained simply by accumulating the differences which in themselves are very insignificant, and become surprisingly increased by a continually repeated selection.

Before we pass on to a comparison of this artificial with natural breeding, let us see what natural qualities of the organisms are made use of by the artificial breeder or cultivator. We can trace all the different qualities which here come into play to physiological fundamental qualities of the organism, which are common to all animals and plants, and are most closely connected with the functions of *propagation* and *nutrition*. These two fundamental qualities are *transmissibility*, or the capability of *transmitting by inheritance*, and *mutability*, or the capability of *adaptation*. The breeder starts from the fact that all the individuals of one and the same species are different, even though in a very slight degree, a fact which is as true of organisms in a wild as in a cultivated state. If we look about us in a forest consisting of only a single species of tree, for example of beech, we shall certainly not find in the whole forest two trees of this kind which are absolutely identical or perfectly equal in the form of their branches, the number of their branches and leaves, blossoms and fruits. Special differences occur everywhere, just as in the case of men. There are no two men who are absolutely identical, perfectly equal in size, in the formation of their faces, the number of their hairs, their temperament, character, etc. The very same is true of individuals of all the different species of animals and plants. It is true that in most organisms the differences are very trifling to the eye of the uninitiated. Everything here essentially depends on the