

some small pasture plants, may grow in very thin layers of soil, where the larger grasses and pasture plants with longer roots, could not find subsistence ; and that shrubs and trees, with long perpendicular roots, cannot survive in many places, where others with more horizontal roots may thrive. These inferences are proved to be correct by observations in agriculture and forestry generally known.

Mountainous regions, which are not so elevated but that corn might grow sufficiently well in them, in so far as depends upon the conditions of the air or climate, are yet frequently not adapted for its cultivation, on account of the too near approach of the rock to the surface, or shallowness of the soil, and produce nothing but grasses, and some other pasture plants, among which, however, there is the greatest difference in this respect. *Trifolium montanum*, for example, can support itself on rocky mountains, where *T. pratense* could not grow. *Hedysarum onobrychis* grows luxuriantly on the sunny declivities of calcareous mountains, where *Medicago sativa* (Lucern) does not find a suitable station. The cultivation of this excellent pasture plant in some mountainous regions, especially where the rocks are calcareous, has not proved so advantageous as might have been expected, because the plants have died out in the course of a few years ; whereas, in proper places, where its very long roots find a sufficient depth of soil, they usually last for a great length of time.

The vicinity of the rock to the under surface of the vegetable mould, or the shallowness of the soil, seems to be the principal cause why the *Beech* grows better on many calcareous mountains than the *Oak*, which, on the other