

tion. In many parts of Sweden, as in Westrogothia, in Scotland, &c., there occur many elevated regions, in which gneiss and granite predominating, exclude to a great extent all kinds of vegetation excepting lichens. In the same districts we sometimes meet with pastures and corn-fields interrupted here and there by bare rocks rising but little above the surface, by which the value of the ground is much diminished, and great impediments opposed to its cultivation.

As bare rocks are incapable of all cultivation, their distance from the under surface of vegetable mould must also be of great importance. In the plains of the north of Germany, for example, this distance is often so great that a rocky surface is never found, while, on the contrary, in other countries, especially such as are mountainous, the roots of plants not unfrequently touch the subjacent rock; the variation between these extremes being of all degrees. The effect of the distance of the surface of the solid rock from the under surface of productive soil may be both *direct* and *indirect*, and may vary much, not only with reference to the species of rock, but also to the vegetables.

The surface of the solid strata of the earth has a *direct* influence upon the cultivation of plants, because it terminates the extension of their roots, and limits the volume of the soil necessary for their sustenance. As the length and direction of the roots vary exceedingly in different species, the difference of effect with regard to their growth, and the approximation of the rock to the under surface of the soil, must in general be so much the less prejudicial in proportion as the roots decline from the perpendicular; whence it follows, that certain grasses, and