

some things in a condition that are injurious. How, then, should they be cultivated? Notwithstanding, it is so fashionable to advocate deep ploughing; notwithstanding, it is always insisted on by agricultural writers, speakers, and essayists, yet I must advise all to beware of it, on these lands, unless they have a red clay sub-soil. The only rational rules for ploughing, are short and plain. They are, to turn up a sufficient depth of soil to give a firm support to the plant, enough to retain moisture for its use, and never to go deeper, when those ends are obtained, unless the sub-soil be better than the surface soil. If it be worse, you injure, and cannot improve by deep ploughing.

If the sub-soil be better, then, and then only can you gain by deep ploughing. Reason and common sense alike tell us, that if you join a worse with a better soil, the compound will be inferior to that better soil. If, on the other hand, the sub-soil is better than that which overlays it, then should it be turned up with the plough, because the sum of the two will be better than the surface soil.

Such being the case, you should plough shallow in these white oak soils, and never turn up the *white* clay upon which they rest. The particular depth of ploughing, will vary slightly in different soils of this class, and I have never seen any that required more than five inches; most frequently three or four inches are sufficient. This depth is sufficient to support the roots of the plants, sufficient, to retain enough of moisture, and there is inferior soil underneath, which would deteriorate the quality of the surface soils.

Where there exists a sub-soil of mottled or marble clay, the same rules are to be observed as regards the depth of tillage. Upon the red or yellow clay sub-soils the practice should be different, as these may with advantage be turned up, never more, however, than one inch for each rotation, which may be repeated until the depth of tillage reaches to six or eight inches. These rules are founded on the nature of the sub-soil, and its influence on vegetation.

The iron in the red and yellow clays, is in the state of peroxide, that is, it is in its highest degree of rust, and can receive no more oxygen. Iron, in this condition, absorbs ammonia, (a very fertilizing constituent of the atmosphere,) and retains it until required by the growing plant. But the advantage does not stop here. The color of soils has an important influence on their productiveness. Those which are dark colored, absorb, and retain heat better than those of a lighter hue. Seed, in the former, sprout quicker, and grow more rapidly than in the latter. So by mixing a red or yellow clay with these white soils, you will cause the crop to take an earlier start, to grow more rapidly, and arrive at maturity sooner, than if a contrary practice was adopted. These clays, too uniformly contain some lime, in which the surface soils are deficient.

We come now to speak of the best means of improving the soils under consideration, by manures, that is by the addition of those