

pasture, top dressed with lime or compost. Sixth and seventh years, pasture, and ploughed in the Fall for oats the succeeding Spring, to be followed by summer fallow, or green crop.

On gravelly soils: First year, green crops, well manured. Second year, barley, with grass seeds. Third and fourth years, pastured. Fifth year, pastured, and top dressed with compost. Sixth, seventh, and eighth years, pastured.

Ninth year, oats, out of lay, and the rotation begins again.

It is no wonder that land managed in this way should be constantly in the best condition, producing from 34 to 38 imperial bushels of wheat to the acre, on an average of favourable years; and I am well persuaded this kind of rotation is more profitable in every way than the scourging one of constant cropping, however well ploughed or manured the soil may be.

Not to repeat the same kind of crop at too short intervals, is a rule with regard to the succession of crops, that ought to be strictly observed. Whatever may be the cause, whether it is to be sought for in the nature of the soil or of the plants, experience clearly proves the advantage of introducing a diversity of species into every course of cropping. On new land, or land that has been pastured several years, before it is again brought under the plough, there may be less need of adhering steadily to this rule; but the degeneracy of wheat, and other corn crops recurring upon the same land every second year for a long period, has been generally acknowledged.

Wheat it is supposed cannot be grown in perfection, on an average, more frequently than once in every five years on the same land. Beans, peas, potatoes, carrots, and red clover, that may be called green crops, become less productive, and much more liable to disease, when they came into the course, upon the same land, every second, third, or fourth year. What the interval ought to be has not yet been ascertained, and from the great number of years that the experiments must be continued, to give any certain result, probably cannot be determined until the component parts of soils, particularly the sort of nourishment which each species of plant extracts from the soil, have been more fully investigated. All good farmers will, however, avoid overcropping, or treating land in any way so as to exhaust its powers, as the greatest of all evils.

### DEEP CULTIVATION.

Under this head I propose taking a cursory view of the causes that produce the beneficial effects that follow their execution; and afterwards, to confirm those facts by describing the results of my own experience.

There is an evident necessity of seeing the causes of the effects that govern our daily prac-

tice, that we may be enabled to remove them (if possible) when attended with injurious influence, and thus obviate former difficulties—and thus empower us to govern those effects that now govern us, and so enable us to guide our daily practice with that minute precision so needful to profitable culture.

Under the powerful influence of carbonic acid, oxygen, and moisture, the hardest rocks are crumbled; human structures are by them and rain water swept away—soils disintegrated, and constituents liberated in a fit state for the plants' reception: yet are these destructive agencies too slow in their action to merit the attention of many agriculturists.

Notwithstanding that the mechanical operations of ploughing, harrowing, &c., accelerate disintegration and liberation, we have no clear proof that they are strictly concomitant. It is enough for us to know that liberation will be produced in proportion to the exposure of the soil to the destructive agencies of the air—that it is brought to pass through atmospheric influence; and it is natural we should strive to deepen and pulverize our soils, thereby exposing every particle to be acted on by chemical solvents.

Perhaps the greatest of all means connected with fertility is an equal supply of moisture. Without an equal supply of moisture, vegetation languishes; the soil is irregularly assimilated by the plant and, consequently, our crop is deficient in bulk.

When a fertile soil, possessed of a good supply of carbonate of lime and finely divided clay, has a thorough division of its parts, it has the power of absorbing a large amount of moisture from the atmosphere during the night in dry weather; whilst deep cultivation will enable it to retain, in its interior, a supply equal to the demand of the plant, when most required; and by increasing the velocity of the water passing through the soil, a more speedy evacuation will be gained, and less of that chilling process—evaporation—will follow.

By deeply and properly cultivating a fertile soil, we provide for the plant a fitting receptacle—a receptacle sufficiently deep to permit them to penetrate beyond the scorching influence of the sun's rays, and in which every obstacle is removed for its speedy and equal supply of abundance of nourishment.

These were the views held by me in the year 1846, when, to test their accuracy, the following experiment was instituted on a piece of thorough-drained land situated on the Weald clay formation. It was found to contain an abundance of decaying organic matter to the depth of eight inches, the usual depth of cultivation. In the autumn the soil was forked twelve inches deep, turning up and exposing to the pulverizing influence of the winter's frosts two inches of clay and vegetable mould mixed,