will not thrive till the sixth year; in others; not till the twelfth: flax in the second, or third year. All this depends upon the chemical nature of the soil, and it has been found that the time in such cases, cannot be shortened by the most powerful means. The destruction of the peculiar excrements of one crop must have taken place, before a new crop can be produced.

"A soil lying fallow owes its earlier fertility, in part to the destruction, or conversion into *humus* of the excrements contained in it, which is effected during the fallow season, at the same time that the land is exposed to a farther disintegration;" or separation of its particles. The overflowing of lands by water answers the purposes of fallowing, "because the waters of rivers and streams contain oxygen in solution," which enables them to effect the most complete, and rapid putrefaction in the excrements contained in the soil, which it penetrates, and in which it is continually renewed.

"Silicic acid," which is a compound of Silicum and oxygen "is the first solid substance taken up by plants. It appears to be the material from which the formation of the wood takes its origin."

"When we grow in the same soil for several years in succession different plants, the first of which leaves behind that, which the second, and the second that, which the third may require, the soil will be a fruitful one for all the three kinds of produce. If the first plant for example be wheat, which consumes the greatest part of the silicate of potash in the soil whilst the plants which succeed it are of such a kind as require only small quantities of potash, as turnips, potatoes, &c. the wheat may be again sowed with advantage after the fourth year; for during the interval of three years, the soil will by the action of the atmosphere be rendered capable of again yielding silicate of potash in sufficient quantity for the young plants.

"The same precautions must be observed with regard to the other *inorganic* constituents, when it is desired to grow different plants in succession on the same soil.

"The nutriment of young plants, consists of carbonic acid, contained in the soil in the form of humus, and of nitrogen in the form of ammonia, both of which must be supplied to the plants.

"The sowing of a field with fallow plants, as clover, rye, buckwheat," &c. and ploughing these into the soil, when they are nearly in blossom, contribute to the supply of humus.

The *Sainfoin*, or Lucerne grass, affords the most productive supply of humus—the roots ramify extensively; absorb but little inorganic matter, and excretes organic matters abundantly into the soil—the plants, until they have reached a certain period of their growth, retain all the carbonic acid and ammonia which may have been conveyed to them by rain or the air, through their roots and leaves. They prevent the escape of ammonia from the soil, by completely covering it in." Hence it would appear, that Lucerne must form one of the best fallow plants with which a field can be sowed. The principles which regulate the rotation of crops, "are the artificial production of humus, and the cultivation of different kinds of plants upon the same field, in such an order of succession, that shall extract only certain components of the soil, whilst it leaves behind or restores those which a second or third species of plant may require for its growth and perfect developement."

The seeds, roots, and leaves of plants, must gradually remove some