

which have been raised in this State for the last two or three years, have been planted by this machine. A man and boy, with a horse, can plant from twelve to fifteen acres in a day. The amount which can be planted in a given time, depends on the width of the rows. The statement in regard to the amount of corn planted in a day, is on the supposition that the rows are three and a half feet apart.

The depth of planting can be regulated at will, by raising or lowering the plough which makes the furrow. For small seeds, a depth of an inch is sufficient. For corn and beans, two inches is the usual depth. Crops planted with this machine, from the regularity of the rows, are cultivated with much ease and at little expense. Price in Rochester, \$14.

VILLAGE LECTURES.—No. 2.

The Soil and the Air continued.—A plant is made up of roots, and a stem which carries leaves. It does not live in the soil only—the greater part of it lives in the air. Almost the whole of the plant above ground is covered with pores, little holes in its skin through which it absorbs, sucks in food. Only the *extremities* of the roots have these pores by which they can absorb nourishment. No doubt the roots do take in water from the soil, and along with it they will take in whatever the water has dissolved in it. But then if you examine this water, you will find very little of the matter of wood, or of cheese, or of corn, or of meat, dissolved in it. The water which comes from our drains, and which is such as the roots of plants suck up, is indeed apparently clear and quite pure, very good water to drink, but none of us would get fat upon it if that were all we had to live upon. Neither, you may depend upon it, will not a tree nor a plant get stouter and greater if that be all that it has to live upon. The soil contains quite as much vegetable matter at the end of a rotation of crops as it does at the beginning; it contains a great deal more vegetable matter after a forest of trees has been grown out of it than it did when the acorns were planted; therefore, all this matter could not have been got out of the land—the water could not have dissolved all this matter out of the earth and furnished it to the roots of the plants, so that they might suck it up and flourish upon it. No. The great bulk of every plant that grows enters it—not by the roots from the earth, but by the leaves from the air. It is the air and the sunshine and the rain water, not the mineral matter of the soil, that make our trees shoot, our turnips swell, and our wheat and grain crops ripen their seed.

But before entering upon the argument by which I have to prove this, I may as well just refer to the idea which some people have that a plant changes the matter of the soil on which it feeds into its own substance. It cannot do this; it cannot make one thing into another. It must have the right things given to it, or it cannot grow; too much of one thing will not make up for the absence of another. Unless a mason be provided with the wood and the bricks, and the mortar, he cannot build the house; and neither can a plant build its own structure up unless it be provided with the right things in the right quantity. The mason might have abundance of bricks; but if he had that alone he could not proceed: he could not make everything he wanted out of an abundance of only one of them. They have no power to make one thing into another; they can only make wood of the matter of wood; leaves out of the matter of leaves; seed out of the matter of seed.

It is quite consistent with what is known to say that when the world was created, only sixty or seventy different kinds of particles or atoms, and certain number of each sort were called into being; and though they were together in so many different forms, and though as time passes some of these substances thus formed are continually being taken to pieces, as it were, and decomposed, and others are being built up of the pieces, yet the world is made of just the same number of each kind of particles or atoms; the same number of pieces of each kind now, as it was 6,000 years ago. It is consistent, I say, with what is known, to suppose that not one particle has been created since—not one since been converted into another. Each is as it was when originally called into being, and though not in the same place now, nor united with the same companions now as it was then, yet it is the same particle possessed of the same shape, size, and weight, and endowed with the same properties.

Now, these particles are perfectly distinguishable and perfectly recognisable, but I cannot go through the process just now by which the individuality and proper distinct character and existence of each is proved, therefore you must be content to believe me when I say that the soil contains comparatively few of those particles which go to make the bulk of a tree, or the substance of butter, of cheese, of wheat, or of meat—that it positively contains more of them every year under good farming, notwithstanding that butter and cheese, and wheat and meat, are every year being sent off it to market, and that, as neither a plant, nor anything else can change one thing into another, the matter of wood, or of