

with which plants are furnished for the purpose of absorbing the carbonic acid diffused around them and everywhere wafted toward their leaves, we need not wonder that it is found to be sufficient. The air in the soil itself contains vastly more carbonic acid than the atmosphere which rests upon it. M Boussingault found that the air in sandy soil recently manured, contained 217 parts of carbonic in every 10,000 parts. Shortly after rain, the air from the same soil was found, on analysis, to contain 974 parts of carbonic acid. This fact explains the wonderfully rapid growth of some crops after a copious rain. The quick starting of turnips on well-manured land, just after a shower arises from the sudden and ample supply of carbonic acid which is furnished. The atmosphere consists chiefly of two gases, oxygen constituting about 21 parts, and nitrogen 79. Mixed with these are carbonic acid, ammonia, and nitric acid, in certain small proportions. Water is also present in the form of vapour. Minute proportions of phosphoric acid have also recently been detected in the atmosphere by a French chemist. There is abundant proof that it is chiefly the carbonic acid of the atmosphere which nourishes vegetation. It is calculated, indeed, that at least three fourths of the dry substance of plants is derived from this source. The minute vessels and tissues of plants from so many factories and distilleries in which starch, gum sugar, and other substances found in all vegetable productions, are prepared so as to subserve the purpose of plant life.

This curious provision of nature explains many of the phenomena which we behold. It has much to do with the efficacy of fallowing. Rotation of crops is based to a considerable extent upon it. The broad-leaved plants which absorb largely from the air, are most important and useful members of rotation. We see also how the fertility of uncultivated places and old woods is maintained. Soils which nature only fertilizes keep producing, and still retain their strength. The long-continued experiments of Mr. Lawes, at Rothamstead, show that an average of about sixteen bushels of wheat per acre can be raised year after year on the same ground, without manure, the soil being thoroughly cultivated and often stirred, thereby admitting the air. But for this provision of nature, land that is neither manured nor tilled in any proper sense would become incapable of bearing a weed. We thus understand the meaning of the axiom, that "tillage is manure." It lets the fertilizing material of the atmosphere gain access to the soil, and so keeps up its productiveness.

The great practical lesson thus taught may be expressed in three words—STIR THE SOIL. Let plough, harrow, scuffler, cultivator, spade, fork, rake, hand

hoe, be in constant requisition. If the air is to circulate freely in the soil, it must have ready admission to it. A hard, caked surface shuts out the food supply. Hence all through the growing season, there should be repeated loosenings of the ground. Even when clear of weeds, the land should be stirred up and kept in porous condition, that the air may get into it and feed the growing plant.

We also perceive the impolicy of over-thick seeding and planting. A stunted growth must result from this, because the air cannot freely circulate among the growing plants, and supply the needed nutriment.

#### CORN FOR FODDER.

It is very doubtful whether any other green forage plants can be named, which, in this climate, yields so large a product per acre as Indian Corn. For soiling purposes, its value is very great. Sown about the first of June, so as to incur no risk from frost, it grows with wonderful rapidity, its broad long leaves drinking in from the sun and air the nutriment suited to its nature. It is valuable too as a crop for fodder, but the difficulty is so to cure and stack it as to avoid mildew and rot. This, however, can be done by proper care and attention. In the first place, to have good fodder, corn must be cut before the leaves and stalks begin to dry up;—in fact while it is yet green. So soon as the corn is grazed it may be cut without detriment to the grain. The proper time may easily be ascertained by this rule even when corn is sown broad-cast, as there will always be stray stalks around the edges of the patch, which will mature ears. The second step is to put the stalks up in shocks. Where material, such as oat straw, &c., can be had for bands, the best way is to make the bundles of a handy size and then stack them somewhat after the manner in which grainsheaves are made into shocks. After husking, if a crop of grain has been the main object,—or in the case of broad-cast corn when the stalks are pretty thoroughly cured, the third part of the process will need attention, viz: storing up for winter use. A great blunder is often committed, that of stowing away corn stalks after the fashion of hay in a mow, in the barn. This is invariably to spoil the whole. No matter how dry corn fodder may appear, there is always enough moisture in the butt of the stalk after standing for weeks on the ground, to insure heat and mildew, when closely packed in a barn. It is better to make a stack in a convenient place close to the stables and sheds, and to build it in as loose a manner as is consistent with due protection from the weather. A good plan is to fix a stout pole some 15 feet long