

THE CANADIAN AGRICULTURIST,

AND JOURNAL OF TRANSACTIONS

OF THE

BOARD OF AGRICULTURE, AGRICULTURAL ASSOCIATION, &c.

VOL. VI.

TORONTO, JULY, 1854.

No. 7.

Reports, Discussions, &c.

YORK TOWNSHIP FARMERS' CLUB.

At a meeting of this Club on 10th May, Mr. James McIlveen read a paper on the "Rotation of Crops," a portion of which we give, as below:—

Soil affords to plants a fixed abode and medium of nourishment. Earths exclusively of organized matter and water, are allowed by most physiologists to be of no other use to plants than that of supporting them, or furnishing a medium by which they may fix themselves to the globe. But earths and organic matter, that is, soils, afford at once support and food. The true nourishment of plants is water, and decomposing organic matter; both these exist only in soils, not in pure earths, but the earthy parts of the soils are useful in retaining water, so as to supply it in the proper proportions to the roots of the vegetables, and they are likewise efficacious in producing the proper distribution of the animal or vegetable matter. When equally mixed with it they prevent it from decomposing too rapidly; and by this means the soluble parts are supplied in proper proportions. The soil is necessary to the existence of plants, both as affording them nourishment, and enabling them to fix themselves in such a manner as to obey those laws by which their radicles are kept below the surface, and their leaves exposed to the free atmosphere. As the system of roots, branches, and leaves, are very different in different vegetables, so they flourish most in different soils, the plants that have bulbous roots require a looser and lighter soil than such as have fibrous roots; and the plants possessing only short fibrous radicles demand a firmer soil than such as have tap-roots, or extensive lateral roots. The constituent parts of the soil which give tenacity and coherence are the finely divided matters, and they possess the power of giving those qualities in the highest degree when they contain alumina. A small quantity of finely divided matter is sufficient to fit a soil for the production of turnips and barley,

and a tolerable crop of turnips has been produced on a soil containing 11 parts out of 15 sand. A much greater proportion of sand, however, always produces absolute sterility. Pure alumina, or silica, pure carbonate of lime, or carbonate of magnesia, are incapable of supporting vegetation, and no soil is fertile that contains as much as 19 out of 20 parts of any of these constituents.

Now as plants derive their nourishment principally from the soil, it will be quite evident that, in order to raise a large crop from a given quantity of land, the soil must contain in requisite abundance, every element required by the plant. It is also plain, that the same kind of crop will require the same elements or principles from the soil in order to their growth and maturity. Hence a succession of the same kind of crops on the same soil, must of necessity exhaust that soil of those elements required by that kind of crop, and as a matter of course, in a few years the crops will become a complete failure. But that same soil may produce a different kind of crop, which requires different elements in its growth, advantageously. Every practical farmer knows this to be the case by experience; but may not always know the cause. This fact being established, is one grand argument in favour of a rotation of crops. But there is another which I will very briefly notice in this place, because I think it necessary in order to carry conviction on this or any other point, that the *why* and the *wherefore* should be given. The Second argument in favor of a rotation of crops is this: Plants as well as animals, take in more food than they can assimilate; and hence the parts not required are secreted. This theory, which seems plausible enough, has been given by Decandolle, and received and supported by others. The above author gives it as his opinion that plants, like animals, have the power of selecting from their food, as it passes through their vascular system, such portions as are likely to nourish them and of rejecting by their roots, during the descent of the sap, such as are unfit to contribute to their support, or would be hurtful to them if not rejected from their system. He also supposes that after