

them are rendered arable and highly fertile by a proper use of lime. In this operation the lime is combined with the acid contained in the moss, and also with carbonic acid, and remains as a component of the newly formed soil. Every kind of quicklime, however, does not answer for manure, and particularly that which abounds with magnesia; for although magnesia, when united with carbonic acid, is a useful ingredient in a soil, yet in its uncombined state or as calcined magnesia, which is that in which it must be, when magnesian limestone is burnt into quicklime, it is injurious to plants: as proved by the experiments of Mr. Tennant. When, however, even the best quicklime is too freely used, it becomes hurtful by over stimulating the growing plants; and, therefore, the more frequent and small application of it is preferable.

The object of all manures is either to alter the retentive quality of the soil, or immediately to supply carbonaceous matter to the plants. For these purposes, as occasion has required, clay, brick, rubbish, limestone, marl, chalk sand, gravel, has been employed as mechanical means; salts of various kinds as stimulants; and soot, ashes, and dung, as affording the nutriment of plants. That salts are taken up ready formed from the soil by vegetables is pretty certain; Drs. Hamel and Cadet having established the fact, that if the marine plants which yield soda when they grow near the sea, be removed to inland situations, they gradually cease to yield soda, and at length potash only is obtained from the ashes. We shall merely notice, with regard to dung, that when it is completely rotten it does not afford much soluble carbon, owing to its becoming as it were oxydized, and the carbon being converted into real charcoal; other principles also, such as carbonic acid and ammonia, useful both as stimula and nutriment to plants, are dissipated during the violent fermentation which is requisite to reduce dung into this state. Fresh dung, or that which is not completely rotten, on the contrary, benefits not only the present crop but several subsequent ones, as its good effect continues as long as the process of decomposition goes on.

## SUMMER FALLOWING, WEEDING,

&c.

“Exposition to the atmosphere is one of the principal advantages. The most stubborn, and unfertile soil, if exposed to atmospheric influence will be improved in its texture, and rendered much better calculated for the process of vegetation. This is effected, either by the soil acquiring properties from the atmosphere, or by those substances which render it barren, being neutralized, destroyed, or washed away.

The fact is, that by no other means but by a complete summer fallow, can a wet bottomed clay be freed sufficiently of the moisture it has imbibed, which having been long locked up in the soil, holds saline and mineral matters in solution. These matters being discharged, the soil readily imbibes fresh water, and gets into a mellow and fertile state. The soil becomes more friable, the crops which it produces are vigorous, and abundant, and, comparatively speaking, freed from weeds.”—(Extract from Sinclair.)

An experiment has been made in Scotland by planting potatoes in a part of a fallow field where the soil was favourable, with a greater allowance of manure than the naked fallow; and it was found that the part cultivated with potatoes yielded a less crop of wheat, than the ground that had been fallowed;—the other crops on the fallowed part, were likewise more abundant; and the land much cleaner in the end. The ploughings should be carried on in dry weather, and the cross-ploughing carefully executed otherwise the process will be imperfectly done, and will not produce much benefit to the farmer.

We cannot expect profitable results from naked fallow, if the process is imperfectly done, and certainly that work is seldom properly executed in Canada. Mr. Marshall, in his agricultural work, accounts fallowing to be the best preventive of the wire worm. All herbivorous insects which have not the power of flight, at least in their early stages, are best extirpated by keeping the soil which they inhabit free from every thing herbaceous, especially during the summer months, when they are in a state of activity, and doubtless require daily support. In that case, they must be destroyed in soil that is properly fallowed. In many English countries fallow is thought essential, especially for barley, and it is considered that wherever the soil is strong, clayey, adhesive, and wet-bottomed, it cannot be profitably managed without fallowing.

The expense of six ploughings, six harrowings, and cleaning of an acre in England, is estimated at £3 11 6. It would not cost so much in Canada. In Flanders, much of the land is trenched with the spade, and light soils are preferred for that operation. The expense on light lands, trenched 18 inches deep, is £1 6 0 per acre. On strong lands, 18 inches deep £1 11 per acre. And on strong lands, 2 feet deep, £2 5 0 per acre. In parts of England where men are to be found accustomed to dig, light lands would be trenched at £2 10 0 per acre.

Summer fallowing would be extremely beneficial to the strong clay lands of Canada. But unless the lands to be summer fallowed are ploughed in the previous Fall, the work is not likely to be well executed subsequently.