

and by their decay they afford light successive layers of pulverized vegetable matter.

Water, by its own action, will penetrate by degrees into the earthy principles of rocks, and produce, at length, the effect mentioned above; but its power is wonderfully increased, whilst passing from its liquid state, to that of ice.

As soon as the surface of a rock is furrowed, and the mosses and lichens have fastened themselves upon it, all the plants which require but little nourishment, take root and decay there in turn: and the product of each successive decomposition adds something to the slight bed of earth formed by the first, till in time a soil is produced, fit for cultivation.

The great stones which injured the harvests upon alluvial soils, have been removed by blasting. The soils which were too stiff have been improved by a suitable admixture of other earths; all the soils have been in turn manured by the remains of plants, or the collections of the barn-yard; and man has learned by experience what kind of culture, and what species of plants are suited to each soil. Nature has prepared the materials, man disposes of them in such a manner as to cause them to produce according to his necessities, or his tastes.

But in what does the difference of soils consist? and which are those best suited to agriculture?

In examining the nature and variety of the rocks, of which all arable lands were originally but the ruins; and which, notwithstanding all the labor of man, preserve their primitive characters, we shall find the following varieties.

Amongst rocks of the first formation, or, as they are called, primitive rocks, granite holds the first rank; it is generally formed by the aggregation, more or less compact, of several stones, differing among themselves in form, color, hardness, and composition; these stones are, most commonly, feldspar, quartz, and mica. These elements of granite, also, separately form rocks, in which only two of them are combined, as in micaceous schist, which is composed of quartz and mica, disposed in beds, sometimes curvilinear; quartz forms by itself, nearly without mixture, some of the primitive mountains.

The composition of the various stones which constitute granite, is widely different; quartz is almost entirely formed of siliceous earth; feldspar of siliceous earth, lime, potash, and the oxide of iron; mica contains besides these, magnesia. So that when granite is decomposed, it produces those lands which, upon analysis, afford all these principles; whilst the washings from the quartz mountains form only beds of siliceous earth; and the ruins of rocks of micaceous schist contain only the elements of feldspar and mica.

The calcareous mountains, composed of carbonate of lime, without any appearance of the remains of organized bodies, are ranged by naturalists amongst primitive rocks, and give rise to the formation of calcareous soils.

All the lands which are produced by the destruction of primitive rocks are of the first formation, and ought to be so designated to distinguish them from those which owe their existence to other causes, of which I am now about to speak.

Independently of those causes which I have just explained, and which have produced the formation of the greater part of the arable lands, there are others to which some lands owe their origin. The successive destructions which the whole surface of the globe appears to have suffered; the decomposition of pyritous beds, which appear to have covered a part of it; the numerous lakes which have disappeared by the hand of man, or by the accidental rupture of their natural

confines; the eruptions of volcanoes; the overflowings of the sea; the bony remains of animals, and the decay of vegetables buried in the ground, have formed soils of all characters; and these have afterwards been applied by man to his own use.

PARSNIPS FOR STOCK.

MR. EDITOR,—Within a few years, various and contradictory accounts have appeared in your paper, respecting the comparative value of roots as food for stock; and while every other kind has been applauded, very little has been said of the parsnip. For the last twenty years I have been a constant cultivator of this valuable root in a small way, raising from five to one hundred bushels a year. No winter vegetable, except the potato, is more used in my family than the parsnip: we seldom boil a dinner without it, from October to June. And where the soil suits, no root is more easily raised, or gives a better yield: have raised at the rate of a thousand bushels an acre.

As parsnips have generally commanded a pretty good price and a ready sale, I have considered them too valuable to feed to stock; but having raised about a hundred bushels last season, and finding that I should have more than would supply my customers, concluded to feed out the surplus. Having had but little experience in feeding parsnips, and being desirous to ascertain their worth, the inventive faculties of my imagination were put in requisition to hit on a method that would show their relative value with some other kind of roots. This, I thought required the aid of chemistry, but being ignorant of the science, concluded to submit the case to a certain cow that analysed forty bushels of carrots for me last winter. By referring to my note book, I had the time I began to feed the carrots, the quantity given each day, with the probable result. With these notes, and the cow being in the same condition, and would calve about the same time she did last spring, I thought it would be a fair way to make the trial.

Last winter, 20 lbs. of carrots were fed a day; a fair mess of milk was obtained; quite as much as I expected; and the cow held her milk till within 57 days of her calving. This winter, I commenced feeding at the same time, but being convinced that the parsnip is a richer root than the carrot, I gave but 15 lbs. a day; and after continuing this feed about a month, the cow increased her milk so much that I concluded she was farrow, until she showed signs that could not be mistaken. The milk has been nearly double what it was on carrots. The cow has now passed the time that she dried last winter, and continues to give six pounds of milk a day. I want her to dry 30 days before calving, but think she will not do it without stopping her feed. The same person has fed and milked her both winters, and the other keeping has been the same. As to her flesh, there is no perceptible difference; but think her coat looked better on carrots.

This experiment has convinced me that parsnips are worth more for milch cows than carrots, and after two months' feeding, have discovered no unpleasant taste in the milk. Parsnips that are dug in the spring, after the tops start, or if permitted to grow in the cellar and become strong, in either case will affect the milk: this I once ascertained by feeding some that had become unfit for culinary purposes.

In all my experience in the cultivation and management of the parsnip, the most difficult part is to preserve the roots after they are dug. After trying various methods, have decided that the best is to wash the dirt from the roots as soon as they are dug, before