

ed to cease to look elsewhere for their remedy, than to carry out these absurd abstract principles,—for such this is—and such it can be shown to be. In England, there are Downs that have never had any phosphates returned to them, but have been pastured, probably, for 500, or 1000 years. No timber ever grew on them within any decided record, and hence it may be safely assumed, that they have been devoted to pasture ever since grass first grew on them; and no manure of any kind other than the natural droppings of the animals pastured thereon has ever been applied,—and as a rule, all dead animals, accidentally or otherwise killed, have quickly been removed, and yet these downs and mountainous lands, are the very best and healthiest for sheep pasture in the world, and annually raise an enormous amount of bones, and meat. “Nitrogen and the Phosphates,” the very things that Horace Greely states steer and heifer are, or may be so hungry for, from their absence in the soil, as to be tempted to eat old bones to supply. We know very well cattle bred up round a household, and used to eat house refuse, will eat the slops of the house, and in some cases meat bones and all. We had several that would do so. And hundreds besides, when bred in a similar manner, will eat any thing about a house, even soft soap stock, as many a housewife can testify to her cost.

The American Prairies are another excellent exemplification of the fact; but the illustration is not so decided or capable of being brought home, of cattle raised from grass for generations, as the Buffaloes may have died all over them; one here and one there, until, as “all flesh is grass,” each patch may have had a Buffalo to manure it with, but this source cannot in the mind of any practical man be believed, to be the cause of the power of these immense plains being still able to produce “bone and meat,” especially as it is well known that the great masses of Buffalo do not die here and there, giving each spot a Buffalo to manure it with,—but generally in great droves, from fire, disease, or slaughter,—and we must not believe that because the supply of bone from this cause has ceased, in many localities,—for probably some hundreds of years the supply of grass is any less than it was, or its power to raise stock any less than before the Buffaloes were driven westward. The fact and principle are both wrong in practice in these cases, or if not wrong as applied to our case, are not necessarily the *only* right ones.

A farmer in England, having Downs on his farm on which to recuperate the health of his flock, would laugh at the idea of a lamb not being able to be raised on such grass.—It is here he would use more forcing food than can be had in the winter to get lambs forward so as to be sold at high prices. When from circumstances he has caused intercourse between the sexes to have their lambs born when no other food in such abundance can

be had, but that does not for one moment prove the “position,” principle “or practice” that Horace Greely sets forth to be true. If we want lambs to have food in February, we must grow turnips to feed them and their mothers with, and if we want heavy crops of turnips we must use bones in some form, in many cases, to produce them to the best advantage. But that only proves a means of raising early fine lamb, not by any means that our pastures unmanured by bone, for many generations, would not raise, mutton—in meat, bones and tallow, which every one knows it will do, but not at the season when lambs are high in price. If we were content to wait until September, for our lambs, and have them dropped about the 1st of May, and if the mother never had eaten but down pasture we should have as fine lamb in September (provided there was abundance of down food for the mother)—as if raised in the unnatural manner as to season and food the lambs are at present.

This point and principle are most important, far more so, than any one would at first glance believe. It involves the great fact of nature’s recuperative or non-recuperative forces—and her having the great remedy for our want of crops in Canada, and in fact our very existence as an agricultural community. I say, and always have said, and will maintain, and prove, that, foreign and imported manure, laid down at a cost of, as Greely says, \$90 a ton, may make a return; but I never hear of any farmer here using bone continuously even at half the price, or superphosphate, at about half the price, that is, to any extent,—and if it paid to do so farmers would soon use it. If it pays to a *certainty* to use 500 lbs. on two acres of wheat, say twenty per cent profit, no mercantile speculation will pay better; but we know it does not *pay to a certainty*, or even so much so as to tempt farmers to use one ton of either bones or superphosphate each year, or say even seven acres on their farms,—some few do use it, but more as an experiment than as a *certain* means of making twenty per cent profit, *due alone* and altogether to the use of such manures—and this is not an unreasonable profit to make, considering it only occurs once a year. Farmers ought to make as much, and as much is constantly made, and often much more, in England, by growing turnips where turnips would not grow without, and growing lambs, on the turnips, at a season when lambs could not otherwise be had, and when the price causes such a good return.

But in Canada, we cannot grow, and feed turnips on the land, as in England, nor can we therefore make such a profit,—and it follows that we cannot therefore use such a remedy. All the preaching in the world will not make farming *pay* by the use of artificial manures. When wheat is 90 cents or \$1 a bushel and the crops when grown endangered by the destructive effects of the midge. Here is the beginning and the end of it all—

“dear labor,” “cheap produce,” and danger from destruction from insects, will, I fear, cause scientific farming to be at a discount during our generation, notwithstanding all that can be said by the “savans” of the day. But one great remedy is gradually and surely working in our favor, namely, the gradual learning of the value of gold, as the *current medium of the commerce of the world*—and the consequent increased price in the aggregate of years—of the price of wheat and other produce. Meantime, we must look to our own resources for a remedy, we must each, and individually, try, by enterprise, and industry to amend our farms, by such fertilizers as are within our reach, and we must not sit idly down, and gradually cease to thrive, because expensive remedies are not within our reach. And above all things, must *not* believe that nature is of itself non-recuperative and naturally barren; but that with reasonable fair play, and some assistance, our farms can be kept from serious depreciation—if not enriched by means within our own reach.

C.

#### Food for Plants.

An excellent lecture on this subject has recently been given by Professor Odling, as one of the series of “Science lectures for the People,” which have been delivered in Hulme Town-hall, Manchester. After pointing out that the dry organic matter of a growing plant contains on an average about forty-five parts in one hundred, or rather less than half its weight, of charcoal or carbon, the lecturer drew attention to the fact that “on an acre of meadow land, or arable land, or woodland, there are produced in the course of a single season several thousand pounds weight of vegetable produce, containing not unfrequently as much as two thousand pounds weight of charcoal; while the charcoal of an average crop may be taken at over sixteen hundred pounds, or nearly three-quarters of a ton per acre.” An enormous amount of carbon is thus accumulated somehow in vegetable produce, and we are thus led to conclude that “the growing plant, whether large or small, tree of the forest or grass of the field, may be regarded by us simply as a contrivance for producing carbon.” It is quite clear, then, that the carbon which is stored up in a plant when it has finished growing must have been derived from some source external to the plant, and it need hardly be remarked that this carbon can only be obtained from some substance already containing carbon. Vegetable mould, or, as it is technically called, “humus,” is produced by the decomposition of vegetable matter, and unquestionably contains a very large quantity of carbon. Up to about thirty years ago it was generally believed that plants derived their supply of carbon from the vegetable