

and that the failure was probably due to conditions that would not apply to other localities. My own impression was at the time, and still is, that to derive any material benefit from subsoiling, manure must be plentifully ploughed under as deeply as possible, thus rendering the lower stratum equally as fertile as the upper. A former experiment, when I ploughed under green crop, succeeded well. I should have said that the land was almost new land, having been cropped only about four times. It is now seeded to clover, as before stated, and when the plough again breaks it up, we shall have an excellent comparison between the experimented portion and that surrounding it, thereby to test Professor Volcher's opinion relative to the fertilizing effects of clover. There will be an excellent chance for such investigation, as from the deep subsoiling and failure of benefit directly derived therefrom, and subsequent sowing with clover, the fertilizing effect of clover roots will certainly have an opportunity of comparative test under such different circumstances.

C.

The Uses of Lime as a Manure

The following is extracted from an address delivered to the students of the Illinois Agricultural college:—

Lime, as found in nature, is usually in the form of a carbonate. The carbonic acid, however, is comparatively loosely held, since it can readily be driven off by heat, as is done in the process of lime burning. It is now caustic or quicklime, and in this state it is sometimes used for agricultural purposes, as in the killing of grubs, destroying thistles, and other noxious vegetables, but its action is too energetic for ordinary use, as it is liable to prevent seeds from germinating, and to destroy tender vegetation. This caustic property may be modified by slaking the lime, as is done in preparing it for mortar, and then letting it remain some days to absorb carbonic acid from the air; but a preferable way is to use only as much water as will be absorbed by the lime, leaving it as dry as before. In this state it is known as hydrated or mild lime, and is, or can be easily reduced to a fine powder. It differs in no essential respect from air slaked lime, which is a mixture of the hydrate and carbonate of lime. When caustic or hydrated lime is exposed to the action of the air, it absorbs carbonic acid and has the same chemical composition it had previous to being burned. The principal uses of lime in agriculture, apart from directly furnishing an essential ingredient of vegetable tissue, are these: 1st. It corrects the acidity of land, particularly when the soil is cold or productive of sorrel. 2nd. It hastens the decomposition of vegetable matter in the soil—especially when it is damp and inert, as is the case with muck—partially decayed straw, and the roots of plants that have been ploughed under. 3rd.

It forms, with other mineral substances in the soil, compounds which are soluble, and are therefore in a state to be taken up by the plant. A notable example of this is found in the case of silica, which is so essential for giving strength to the stalks of all the cereals. 4th. It is lasting in its results, increasing the fertility of the soil in various ways, for an indefinite period after it is applied. 5th. It increases the effect of the vegetable manures previously or subsequently applied to the soil, by putting them in a form to be more easily assimilated to the plant. 6th. It enables the farmer to raise larger crops from the same number of acres, as has been abundantly shown by numerous carefully conducted experiments, both in this country and in Europe. 7th. It improves the quality of nearly every cultivated crop. This is shown in wheat, which will produce more flour to the bushel, and of a more nutritious nature, from soils manured with lime. Potatoes are more mealy and of finer flavour, this may be accounted for from the fact that lime hastens the maturity of this crop, as it does most others, and a rapid growth is very essential to the excellence of the potato. No doubt the superiority of the potatoes raised in Aroostook Co., Maine, and in the adjacent British Provinces, is largely due to the lime soil in which they flourish. In stating all these advantages that ordinarily occur from the judicious application of lime, we should do injustice to the subject if we failed to notice some of the bad effects that may follow its use. Foremost among these results is one that comes from the practice of some farmers of placing caustic lime in the soil in connexion with fresh animal manures; by so doing, most of the ammonia is immediately set free, and passes off into the air. Lime and stable manure are each of great service to the plant, but a period of at least six months should intervene between the times of applying them. Again, too plentiful a use of lime is liable to render the soil more porous than it should be to retain sufficient moisture. Unfavourable results have also been found to attend the use of lime in the raising of flax, as it diminishes the tenacity of the fibre; the same is also probably true in relation to hemp. In the neighbourhood of lime kilns, the farmer may economise much by buying that which is unsuitable for building purposes, from its being over burned or under burned, or which has become partially slaked by falls of rain before it was barreled and housed. Lime also that has been stored for sale, and has undergone spontaneous slaking—absorbed water and carbonic acid—is in a state for farmer's use, and can often be bought at a merely nominal cost.

Culture of Early Horn Carrot.

It is not generally known that Early Horn carrots will produce an enormous yield per acre, and at some times be as thick in the row as if potatoes were strewed along in a

line. I have at this moment a crop of Early Horns so thick and abundant that I am confident there will be at least at the rate of twelve to fifteen hundred bushels per acre. A horticultural friend of mine, who often visits my garden, was there at the time of the first hoeing, and when I showed him how thick I was leaving the young plants, he was loud and demonstrative on the absurdity of so doing. The other day, whilst he was looking on, I laid hold of a double handful of the short, thick greens, and drew up a perfect mass of carrots, most of them about five to six inches long, and about one half to two inches in diameter. The rows as they appear now are about six inches wide, and as the seed drills were originally twelve inches apart when sown, it follows that the carrots have now only about six inches of unoccupied soil between the rows. When fall digging time comes, if a hoe is taken, and the surface cut away, leaving the carrots exposed, they will appear so thick as to be almost solid, one touching the other so nearly as hardly to allow of the point of the finger being inserted between them. For many years I have followed this course with similar results. We sow the seed thinly but widely distributed in the drills, and never thin out any except for the table, as wanted all through the summer. We thus have an abundance for use, and a heavy crop to dig in the autumn.

For their field culture, nothing more is required than to manure heavily in the fall, with well rotted cow manure if possible, and sow as for the garden crop in spring, without ploughing, taking care to harrow several times at intervals before sowing; this harrowing kills all weeds near the surface, and makes further cultivation almost unnecessary, as the rank growth of carrots will smother all weeds but such large ones as lambs-quarter or wild spinach.

To harvest the crop in autumn, take an old scythe and mow the green quite close, then plough and harrow the land, when all the carrots will come to the surface, and great quantities can be gathered into rows with an ordinary hay rake, which greatly facilitates their collection. Early Horns must be carefully preserved in an airy, dry root-house, just cold enough not to freeze, and not warm enough to promote vegetation. Either extreme will cause decay.

C.

Hemp.

We have received from Messrs. Fawcett & Bengough, to whom we sent some of the hemp seed which the liberality of Mr. Joly placed at our disposal, some excellent samples of the crop that they have raised at Embro. The specimens consisted of both male and female plants of the Piedmontese and Kentucky varieties. The largest stem was of the former kind, its length being close upon ten feet. The others, which we are informed are fair samples of the average