

rels, and carefully got on the fence. On the top he stopped and looked round, but could see nothing, save a large butt log of hemlock a few yards within the corn. He jumped fearlessly down, and the next moment up rose from behind the log, a monstrous bear, within ten feet of him. The bear rose on his hind legs with both fore paws hanging down, and for one moment looked stupidly at the man. He, poor fellow, who had only been a month in Canada, was terribly frightened, and yet the old poaching instinct prevailed. He was a capital shot, and instinctively raising the gun, he poured the contents of both barrels into the breast of the bear. In the smoke, not being able to see the effect of the shot, he threw down the gun and ran at a fearful pace towards the house. We met, and I was almost upset in endeavouring to stop him, and in fact did tear his jacket half off in holding on to him. His story was soon told, and when I had reassured him somewhat, we carefully and noiselessly returned to the seat of war, to find the largest bear I ever saw stone dead, with the contents of both barrels in his heart. This bear weighed nearly 600 lbs., and his hide was as large as a small cow's—a monstrous brute. But my man could never again be persuaded to go bear hunting.

Our potash paid well that season. The price was high and quality good, and before fall we boiled 22 barrels of No. 1, and two barrels of No. 2. Our gross return from this source alone was nearly \$700. C.

Manure.—Lime.

All matters which, when applied to our soils, increase their fertility either by mechanical action, or by the supplying of certain elements of plant food, may fairly be considered under the head of "manures." Lime may, then, be termed a "calcareous manure," and is often of great benefit to our soils. By the discoveries of science, and the experience of practical men in the application of those discoveries, we have learned the great usefulness of lime as a manure.

Lime may be used in one of two states—*quick* or *slaked*. After limestones have been subjected for some time to the action of intense heat, they burn into a substance very caustic, and having an immense effect in causing the rapid decomposition of vegetable and animal bodies. This substance is *quick lime*. If water be applied to this quick lime, or if it be simply exposed to the air, it loses with more or less rapidity, according to which process be adopted, much of its caustic or burning power, and becomes "*slaked*" or "*effete*."

Now, the difference between quick and slaked lime is simply in rapidity of action upon substances with which they may be brought in contact—the former hastening decomposition much more rapidly than the latter. When the object of an application of this manure is to destroy and hasten the

rotting of vegetable or animal matters, the quick lime has the best effect.

The action of lime is almost entirely mechanical. I say, almost entirely mechanical, for the fact that it does directly impart a certain element of food to plants is proved by chemical analyses, in that calcareous earth is found in the ashes of all vegetables, and in large quantities in those of wheat or clover. In 100 parts of wheat straw there are found 5 parts, and in wheat 3.35 parts of phosphate of lime. On the other hand, seeds planted in a pot of carbonate of lime will grow very feebly—in clear lime will die. Partly fill with garden mould and cover over with lime, and the plant will put down its roots through the lime to the mould, without throwing out branch rootlets until it arrive at the mould.

Great care must be used in the application of this manure, for it has different effects upon different soils and under different conditions. These conditions are so contrary, that while in many cases lime has been shown to have a most beneficial effect, in others its application has been fatal to all vegetable growth.

Lime has a strong affinity for acids. Its application to land, therefore, is beneficial in the following ways: It either renders harmless or converts into usefulness substances lodged in the soil, which, by their acidity, or, as named by farmers generally, "coldness," may be injurious to the growing crops, and thus prepares the land for the reception of seeds; it also greatly increases the rapidity of decomposition of putrescent manures, thus making them more easily available for the nourishment of vegetable life.

Lime has a great effect upon decayed and decaying vegetable matter, or, as we know it, "mould." There is no doubt that its application is of great benefit on "sour clays," for it corrects their acidity, and warms that sour mould which has been useless hitherto to plants, because it has required a quickening power to stimulate its further decomposition; also to land which has been at some time previous well dressed with "dung," without any addition of calcareous matter, by hastening decomposition: and rendering every particle of the rotting or putrescent manure available to the growing plant.

Now, in all arable lands, however much such may have been "run out," there still remains a large proportion of mould. Lime applied upon such land will quicken all that plant food which is lying dormant, and will greatly benefit the ensuing crop.

Let it be borne carefully in mind that lime has the effect of drawing out and placing within reach of the crop all the strength of the land, and it becomes evident that if its application be not followed by more manure, it will have the effect of rapidly exhausting the land.

It is useless and indeed injurious to lime too often, for if our land become surcharged with lime, having no putrescent matter to act upon, it will act too directly upon the crop itself, and greatly injure it.

Many farmers have, by advice, used lime on certain lands, and found that they have thus increased the yield of the ensuing crop. From this result they have deduced the truth that it is a grand manure, and have again and again applied it without further barnyard or green manure, to the utter exhaustion of the soil and the certain failure of future crops. Lime is a stimulant, correcting acidity and quickening the action of vegetable and animal manures, and like all stimulants, is good when used in moderation, but fatally exhaustive when taken in excess.

Low lands are immensely benefited by a free use of lime. Our low lands are generally rich with a deep black mould, but owing to their coldness, crops are not as heavy as the richness of the soil would lead us to hope. These soils contain in themselves all the component parts of the best soils, and are rich in decayed and decaying vegetable substances, but the manurial qualities in these lands are sluggish and inert, and will not freely give of their richness to the growing plant until stimulated by a free use of lime.

Heavy clays are often deficient in calcareous earths. In such lime is needed, and has often, too, the purely mechanical effect of making the soil more friable, and less subject to run together after rain.

Upon sandy land, which seldom contains much vegetable matter, lime has a contrary but good effect, attracting moisture from the atmosphere and giving more consistency to the sand, even as sand and lime become mortar.

"But if the soil consist of clay and sand," says Finlayson in his practical essays on agriculture, "containing animal or vegetable matter in a torpid state of decay, then lime would be preferable to dung. The state of the soil should therefore be minutely enquired into before lime is employed, and it should only be used to give effect to the inert substances with which it may be conjoined."

I cannot but think that a very free and liberal application of lime, ploughed in with our new lands when broken up, would increase their fertility wonderfully, for such lands are rich in vegetable matter, but are cold, inert in action, and acid. On such land I should use quick lime, as its effects are the more rapid, and it will destroy weeds and injurious plants.

The authority quoted above also says:—"There is this difference between the actions of lime and barnyard manure upon land: The former, being more stimulant and corrective, helps the farmer to an abundant crop at the expense of the land alone while the latter furnishes the land at once with fertilizing fluids, and will insure a good