

From the Cultivator.

ON THE USE OF LIME.

There are few things connected with agriculture about which so great diversity of opinion exists among theorists and practical farmers, as the value and effects of lime when applied to the soil. By some it is regarded as a manure which may be profitably used upon every soil; others think it a stimulant that can only be used with profit where the soil possesses dormant vegetable matter that requires the action of artificial heat to cause fermentation, and prepare it to become food for plants. "The use of lime as a manure is supposed to have been introduced into Great Britain by the Romans, and has been extensively used there for the last two centuries; in fact it may almost be termed the basis of good English husbandry, as a large proportion of the soil in the British islands is of a cold, heavy and moorish nature, and could never have been brought to its present high state of cultivation without the application of an alternative, or some powerful stimulant that would warm up the soil, bring its dormant powers into action, and cause fermentation; thereby changing its very nature, so far at least as its productive qualities are concerned." Thus heavy clay soils, by a sufficient application of lime to cause thorough fermentation, lose their tenacity, and (while the vegetable matter is prepared to become food for plants,) the soil itself appears by a chemical process to have undergone a change.

It has been asserted that the expense of an application of lime to heavy clays is amply repaid to the husbandman by the increased facility with which such soils can be worked—perfect tillage not being half as expensive as before the application. We think lime will be found invaluable upon all clay soils, especially in the improvement of those that have been worn down by improper tillage. Such soils receive but little benefit from yard manure, except given in large quantities; at least they are slow in their action upon vegetation; from the reason of the coldness of the soil, its heavy texture, fermentation is slow and imperfect. By a sufficient application of lime with the manure, fermentation will be more rapid and complete, the close texture will in a great measure be destroyed, and that an improvement has taken place, after tillage and crops will fully attest. I have frequently noticed an experiment made by a farmer in an adjoining town, the results of which are so satisfactory that I am induced to give them in detail. In the spring of 1836, six bushels of lime was applied to four rods of clay in its hot state; the land was thoroughly worked with a plough, and sown to oats; fermentation soon commenced, and was so great as to injure the oats. The process resembled that of yeast in bread, and the effect was the same; the soil was lighter, and resembled a soft loam. In July, the oats were turned under and turnips sown; the crop was large and of good quality. The spring following it received a dressing of manure, with the rest of the field, and was planted to corn. The decided superiority of this piece could be noticed through the whole summer; it grew rapid, rank, and produced double the corn harvested on the adjoining four rods. Spring of '38 sown to oats and clover, both of which were vastly better than on the adjoining land treated in the same manner, with the exception of the lime.

The quantity of lime used in this experiment was large, at the rate of two hundred and forty bushels per acre. But the experiment has shown that all of the effects that have been attributed to lime may be realized where a sufficient quantity is used. The lime in this case evidently acted as a manure, which is proven by the superiority of all four of the crops, as a stimulus both to the soil and the crops, and as an alternative (how permanent I cannot say,) from the appearance of the soil, resembling more a loam than clay, and the ease with which it can be per-

fectly tilled, compared to the same soil before the application. The results of this experiment are desirable, and the question naturally arises, if heavy or clay soils are to be limed, should not the quantity given be sufficient to produce all the above results? Half the quantity would probably have assisted the partial decomposition of the inert vegetable matter, operated as a stimulant and as a manure, but would not have produced the same effect upon the soil, which was certainly improved, and in addition to being more easily worked, will probably continue to carry heavier crops. Perhaps as a general rule the quantity of lime to be used will depend and should be governed by the quality and nature of the soil, and the results wished to be produced; the lighter the soil the less the quantity required to produce all the good that can be expected on such soils, and *vice versa*. I have seen crops evidently improved by a very slight dressing of lime. There are few farmers that have not noticed its good effects when used as a pickle on wheat, and yet the quantity used was so small that it could only have benefited the crop as a stimulus. I noticed a few years since in one of my neighbor's fields a very great difference in the appearance of the wheat. In one part of the field it was bright and rank—in the other it looked rusty and bad. On inquiry I found that he had been building a house, and had drawn the old mortar and rubbish on his fallow. This was five years ago, and the effects may still be seen.

Some writers assert that the only benefit vegetation receives from lime is in the heat it imparts to the soil. Lime can only be reduced to a calx by intense heat. And they contend that a great proportion of this heat is partially fixed in the operation. In support of this theory it is said lime promotes the growth of some plants, and is destructive to others, or that all native grasses of northern climates are killed by it, while the cultivated or natives of more southern latitudes are benefited. This theory, like the fixed heat in lime, will hardly stand the process of slaking. It is more probable that the native grasses are destroyed by cultivation, as an application of lime and good culture generally succeed each other. The heat lime produces when slaked, or rather the heat thrown off from the large quantity of water which by its union with the lime is formed into a solid, is without doubt beneficial; but to assert that this is the only benefit lime produces to vegetation is mere theory, which has been falsified by every experiment that has been made in its use.

Lime is found in the formation of a great many of the plants, grains, &c. and wheat cannot be successfully cultivated without the existence of it in the soil. Our geological survey shows that there are large quantities of lime in a majority of the counties in this State, which, with the numerous beds of shell and earth marls, are destined to be valuable resources to the farmer.

JOHN C. MATHER.

TO DESTROY COUCH GRASS.

Answer to "A Subscriber."—Near the close of May plough the land that is subject to couch grass deep, and plant immediately to potatoes. When the potatoes are four or five inches above ground, plough between the rows with a small one horse plough, taking care not to plough so deep as to disturb the sod. Also when the potatoe vines are about a foot long, plough again lightly. By this time the potatoes will spread, so as to prevent the grass from appearing above ground. When the crop is off, plough again light for winter. In spring the root will begin to rot, and by ploughing again deep, the destruction of the couch grass will be completed.

PLAN TO REMOVE STUMPS.

Mr. Editor:—Although I am not myself a practical farmer, yet I love to see all the operations on a farm carried on with neatness and economy. I own a small farm of two hundred acres in Champaign county; and when I purchased it, the fields were greatly disfigured and encumbered with dead trees standing, and with stumps. I wish that I might have the pleasure of your company over the farm, or indeed at the house (for every field can be seen from the door) to show you the excellent condition which it is now in. There is scarcely a stump or bush to be seen, except some very handsome shade trees purposely left for sheltering the cattle in the heat of summer.

The removal of these stumps has been accomplished by a very simple and economical process, which I will attempt to describe, in the hope that it may be beneficial to those who have their lands encumbered with trees and stumps. Procure a dry red-elm lever, about twenty feet long, and about six to eight inches in diameter—a good stout log chain, with two yokes of oxen; this is all the machinery that is necessary. The mode of operation is thus: wrap the log chain around the stump a little above the ground, the large end next to the chain and against the stump; make the other end of the chain fast to this end of the lever, drawing the lever tight against the stump; the cattle are hitched to the small end of the lever and driven around the stump in a circle, of which the lever is the radius. One revolution of the oxen around the stump will generally twist out the largest of them; but should not the power thus applied be sufficient to move the stump, the side roots may be uncovered and cut partly off; after this is done, the stump will be easily removed. You will find this plan much preferable to any "patent stump extractor" that you may have seen puffed in the papers.—*Western Farmer.*

BUILDING STONE WALL.

Messrs. Editors—Living as I do in a country abounding with stone, and having had some experience both in drawing and laying, and having been an attentive observer of the improvements that have been made around in the business, I will venture to make a few suggestions; especially as so little is written on the subject. It demands more attention than I have seen given to it. A fence so costly as stone wall should be well made. A great deal of poor wall has been laid in the country; full enough I think for our credit, as it respects our economy or good sense. Considerable half wall has been laid, 3 feet or so at the bottom, and 3 or 3½ high, which would soon bulge and tumble down; and the stakes and rails which would be needed to complete the sham fence would tumble about as soon as the stone, on account of the stakes rotting off; and they of course would have to stick out in the way when stuck 2½ or 3 ft. each side of the wall.

In some parts of the country you may see considerable fence made of posts, boards, and stone, or perhaps rails instead of boards; but the wind operating on the upper part, would soon jam the stone a little too much to make them lay well, and the posts would rot off before a great while; so that the two kinds of fence above mentioned have found but few advocates among us. Give us none of your half fence; we want a whole fence; so good that it will not be learning the cattle to jump, and will last a spell.

Finish your wall when you begin it, and make it 5 ft. high; and in ground that is wet and liable to heave, do not begrudge a ditch, and make a free use of sticks.

Whole wall seems to take but little more stone than half, where it is as narrow at the bottom as it ought to be; our best wall layers say from 2 ft. to 2½. Wall almost always