

Draining of Swamp Lands.

We extract the following correspondence from the "Journal of the N. Y. State Agricultural Society" as the experience of a Long Island farmer in draining swamp lands—

As but few experiments have been made in this favoured section in draining swamp lands—deemed by many almost worthless, and as what may have been accomplished has seldom met the eye of the farming interest, it will be my endeavour, in a brief way, to show that few investments will realize better, and that no lands can be rendered more highly productive. The careful farmer, though of a reflective turn of mind, is not usually inclined to experimenting, except on a limited scale; yet in the general, if I mistake not, it is only necessary to exhibit a fair probability of profit to enlist his prompt acquiescence in new enterprises; and it will be a source of great satisfaction if the following statements shall serve in any measure to awaken new interest in this important branch of agricultural operations.

The land of which I now propose to speak is situated in a valley declining to the west, consisting of about twenty acres, one third of which was black muck or peat, of various depths, the greatest being about seven feet; the remainder, a heavy slate-colored loam, bordering on clay. The substratum was hard-pan, occasionally met with in this region, of sufficient closeness to hold water. The tract sloped gently upward right and left from the centre, facilitating drainage. I commenced by opening a main canal from west to east from the lowest point of depression. As the adjacent land afforded but a slight fall, this opening was at first only about one foot deep by three feet wide at the top, increasing gradually to the highest point, where it reached the depth of four feet, this became necessary, as it took the water from the more elevated fields. This principal channel remains open from necessity, a portion of it which had been closed being forced open by pressure. It was ascertained that the water, which at times entirely submerged the swamp, was derived in part from springs, which were discovered while running the cross-drains. These drains were generally at distances of about two rods apart, being from two and a half to four feet deep by six inches wide at the bottom and eighteen inches at the surface. For one-third of the space I brought into use draining tile of the "horseshoe" pattern; for a part of the remainder I used small stones, and for the balance brush, to which I was obliged to resort in the absence of a firm bottom; and much to my surprise, after a test of five years, this latter work remains sound, and even more reliable than either of the others, discharging copiously, and as yet required no repairs. The result so far is highly encouraging, and with a few additional drains the whole plot will be reclaimed.

Those who were familiar with this swamp in by-gone years would now scarcely recognize the spot. A more forbidding spectacle could scarcely be imagined, the whole being densely covered with sumach, alders, and the usual vegetation incident to such localities, while the higher surfaces contiguous were thickly overrun with briars of like noxious growths. In fact, such was its condition, that portions of it were untroubled by the foot of man; in confirmation of which, it may be here stated, that while excavating the main channel, the remains of two farm cattle were discovered in such positions as to indicate that they had been entangled and mired, without any effort having been made for their recovery. The enterprise was attended at times with discouragements, and it was only by virtue of perseverance, as in all difficult undertakings, that success was eventually attained.

Now, the question may be asked, "why expend so much to recover waste lands, where for an equal outlay, improved lands could be obtained? I have a ready answer, and first the land itself is of the highest value. This is no longer a problem,—I have produced corn of the best quality and largest quantity. One half the area was sown wheat last year, which was of rank growth and good yield, producing, so far as threshed, twenty bushels to the acre; and had it not been for the weevil, the result must have been nearly double. It grows celery four to five feet high; cabbages have been taken from it weighing twenty pounds to the head; mangel wurtzel and turnips from limited experience have resulted well. Of potatoes I cannot speak so favourably the exuberant growth of the vine reducing the size of the bulb. But as grass growing land I cannot say too much of it. It is true that hardly sufficient time had transpired to give full results; I can only conjecture what might be attained, when I state that, after removing the wheat crop, I drew late in the fall from four acres, ten large loads of grass and weeds, which were removed to guard the growing plant from injury. It will thus be seen from the figures that the

investment has proved beyond all peradventure a profitable one, placing the real value of this land far above the estimate fixed to the accompanying statements; and secondly, apart from the question of dollars and cents, other essential objects have been attained. The whole landscape, heretofore marred and unsightly, has been rendered pleasing to the eye, and an object of pleasurable contemplation to the admirers of the beautiful. The surrounding neighbourhood has been benefited by additional guarantee to health in the renovation of a fountain of miasma and disease; and lastly, it has furnished employment and support to men and families during the usually inactive season of winter—all the labour having been accomplished during that period and early spring.

I submit the following statistics. The cost may appear large, but it must be borne in mind that the entire tract had to be grubbed. The ashes were the product of roots, bushes, etc., gathered and burned upon the ground. I might add much more in detail, but fear I have already transcended my proper limit. I may hereafter take occasion to give further practical results.

The valuation of the land in its primitive state is placed at \$25 per acre.....	\$500 00
Total expense (without fence) during five seasons.....	1,633 16
	\$2 033 16
To the credit of which place 2,000 bushels of ashes, at 10c.....	\$200 00
926 cart loads of muck, at 25c.....	\$231 50
Less expense of hauling.....	115 50
	120 00
25 loads of wood, at \$4.....	100 00
20 acres of land, estimated value.....	4,000 00
	4,336 00
Showing a net gain of.....	\$2,302 84

Great Neck, L. I. THOMAS MESSENGER.

Here is another good article on the same subject: Thorough drainage with "deep ploughing and good tillage is manure." How does drainage deepen the soil? Every one who has grown deep rooted vegetables upon half-drained or wet land has observed that they would not extend downward their usual length. Parsnips and carrots on such land often grow large at the top, but divide into numerous small roots below the surface, and spread in different directions. No roots, except water plants, will grow in stagnant water. If it is of any advantage to have a deep rather than a shallow soil, it is necessary to lower the line of standing water at least to the extent to which the roots of our cultivated crops descend. A deep soil is better than a shallow one, because it furnishes more food and nourishment to plants which they search out and find in the subsoil (where it has been washed by the rains) as well as at the surface, if no obstacle opposes. By striking deep roots, the plants stand more firmly and are not so easily drawn out or shaken by the winds. Again, a wet soil cannot be pulverized. Ploughing clayey or loamy soils tends to press it together and renders it less pervious to rain and water.

The first effect of under-draining is to dry the surface soil, to draw out all the water that will run out of it, so that in early spring or autumn it may be worked with the plough as advantageously as undrained lands in midsummer.

Most land which is not in grass is liable to surface washing in spring and fall, if not drained; being already filled with water that rain cannot pass directly downward, but runs away on the surface, carrying with it much of the soil, and washing out the valuable elements of fertility. If the land is properly drained the rain water is absorbed and passes downwards, saturating the soil as it goes, and carrying soluble substances with it to the roots, and the surplus, if any, percolates through the drains below. The absorbent power of drained lands is so great at times after a drought, that all the water of a heavy shower will be held or drunk up by the soil, so that none will find its way into the drains for a day or two, nor run upon the surface. Again, it allows the farmer to start his team in the spring so much earlier, to prepare for oats, corn and potatoes, &c., to say nothing of the garden and early vegetable growers, where the season is often lengthened two weeks at each end, as a farmer once said to his neighbour, who planted his corn on a well drained field the day after a rain storm of two days, "to have planted mine at the same time, I should have to do it from a raft."

Many farmers have the same privileges of raising, where it would be profitable to spend some time in ditching before the spring rains set in and fill the springs to overflowing.

G. Yeomans, of New York, says, in a published statement, that on his drained lands "the ground becomes almost as dry in two or three days after the frost comes out in the spring, or after a heavy rain, as it would do in as many weeks without draining." The additional time gained for vegetation is important. One or two weeks often secures the corn crop against frost; a few days is often sufficient for the

grain to pass from the milky to the glazed state, before which a single frosty night may injure, if not ruin it. When the grain reaches this latter stage it is safe from cold, and twice the time alluded to is added by this removal of the surplus water.

Thorough draining of our wheat and grass fields prevents that difficulty of freezing out, which most of us, who have wet or stiff loam or clayey land, know. J. Johnston, of Seneca county, N. Y., who had been experimenting with tiles from 1835 to 1851, and had laid 16 miles of them on a few acres of his clayey land, raised the largest crop of Indian corn produced in that county, being 83 bushels of shelled corn per acre; he says, on this clayey soil, when laid down to grass, "not one square foot of clover froze out. But before, many acres of wheat were lost on the upland by freezing out, and none would grow on the lowlands. Now there is no loss from that cause."

It is on account of this water-killing or freezing out that farmers have such great difficulty in getting and keeping their fields in grass, particularly clover and some other grasses of similar growth, the soil being pulverized only a few inches in depth, unless we have ploughed deep, and then only to the depth of the plough. Below this there is a stratum of clay or tight loam nearly impervious to water. The fall rains saturate the surface soil, which holds it like a sponge if it has been well pulverized before seeding. The ground is suddenly frozen and crystallizes into ice, the soil being thrown up and the clover roots and wheat are drawn up with it, often appearing a little like honey-comb. A few such operations are sufficient to draw them out root and branch, and to our sorrow we see them laying dead on the surface of the field in the spring. Thorough draining, followed by subsoiling, or deep ploughing, lets down the water through the soil, leaving the roots so free from an excess of it that the ground is not "heaved up" at all; the plants retain their position, and when the warmth of the genial sun reaches them, are ready to strike root downward and spring upward with renewed vigour, refreshed by their winter's repose.—Rural Advertiser.

Tobacco as a Substitute for Wheat.

To the Editor of THE CANADA FARMER:

Sir,—The unparalleled failure of the wheat crop of this country this year compels us to cast about in our mind's eye for what will answer the purpose best as a substitute. We are told that we have in the country a sample of wheat which is called midge-proof: of that I have a sample by me, but as yet have little faith in it. It must have a fair and further trial before I will believe that anything protects it from that dreadful scourge other than the accident of blooming either before or after the midge-fly deposits its eggs.

Besides sowing this variety of wheat, we are strongly advised to sow flax, and very great efforts are now being made throughout the length and breadth of the land to induce a more general cultivation of that valuable plant. Mills are being put up in every direction for preparing it for market, others to manufacture it into linens, twine and thread, and last, though not least, an extensive establishment under the management of F. A. Whitney, Esq., of this city, will be ready to manufacture all the seed grown in U. Canada into linseed oil fit for home consumption, and affording to the feeder and breeder oil-cake at a fair price and near his own home.

My object in writing this letter is to bring before the farmers another and quite different kind of husbandry and cultivation, namely the growing of tobacco. I think I see some virtuous people hold up their hands and exclaim with indignation—"What a shame for a man of sense to endeavour to persuade the people of this country to grow such a noxious and pernicious weed." To such I can only say, let them enjoy their ignorance whilst I enjoy my pipe.

No very particular skill or knowledge is required in the management of this plant beyond that possessed by Canadian farmers generally, nor is more capital required than in grain growing. Just the same implements and tools are needed as are already in daily use upon a farm. The seed is cheap, and but little is required; the cultivation is simple; and the demand for the raw material unprecedented. Many factories are now in full operation in Toronto, and other towns and cities in the Province. Therefore this branch of husbandry has not to trust to accident or other contingency for a market; but, on the contrary, is in great demand, in consequence of the American war, which, in a great measure, cuts off