

the foot sinking deeper than the other : (1) the stock never seem satisfied : the trees have hard bark, and are covered with parasitic plants : the roads are soft, and full of ruts : the ditches plashy, and always falling in : mosquitoes, midges, all sorts of horrible insects fill the air : the plough, scuffler, and harrow have double work to do, and, even with double work, never succeed in pulverising the soil into a fine mould.

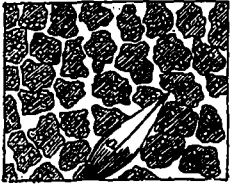


Fig. 5.

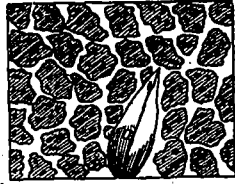


Fig. 6.

In the climate of our Province, it is something, to add ten days to each end of the season. Draining will effect this, at least, and will help in enabling us to sow autumn wheat, if we wish it. Why we do not wish it, I cannot conceive ; for every show at Montreal proves that it can be grown to advantage, and Cap. Campbell's farm at St. Hilaire, would convince an infidel. Of course, autumn wheat won't grow in a swamp ; but drain the swamp, and then try !

I do not think our draining here will ever be systematic work ; that is to say, that whole farms, or even whole fields, will be drained on a regular plan at 25 to 33 feet apart. In the first place we cannot afford it, and, again, the summer's heat acts too rapidly to make such intensive work absolutely necessary. It would pay, I doubt not, in the long run, but I look upon it as hopeless, and therefore pass it by.

No, what we must look for is local drainage, wet spots, here and there, in corners, under the line of a wood, in sheltered places which the wind cannot reach : this is about all we can, at present, manage. And it must not be supposed that I by any means underrate the value of even this slight improvement. The effects of this practical work will, when its benefits are seen, give each one who tries it an appetite for the task. It is so interesting in itself, to say nothing of its profits, that when once a man begins draining I have no fear of his halting on the road : if he begins with bushes, he will end with pipes.

(1) The best test of perfect harrowing is that the toe and heel of the boot sink equally deep in the surface soil.—Ed.

Whatever material we may use for our conduit, we should form, first of all, a clear idea of the way in which the water is to get into it. Many people have a notion, that each drop of water that falls from the clouds, when it reaches the ground, has to hunt its way through cracks and crevices, following the easiest route, in fact, until it falls into the drain at the top. Nothing can be farther from the truth. *Percolation* is not the way. It is all done by the force of *gravity*. My readers all know that a sponge will hold a certain quantity of water, and no more. Let us conceive for a moment a sponge fully saturated : an additional drop is added from above : what happens ? A drop oozes out from the bottom. So it is with drained land ; but with this difference : the lowest drop, not being able to escape in any other way, is pressed upon by its superincumbent neighbours, and finds the easiest mode of disembarassing itself from the annoyance is to divide itself in two, and go, one half into the drain on the right hand, and the other into the drain on the left. We know very well that, after a dry time, drains do not run until the body of earth between them is fully charged with water, and we now see the reason why they do not : gravity acts more easily in proportion to the depth it has to work upon ; and this consideration alone should put an end to all idea of *shallow* draining ; it having been satisfactorily proved by experiment, that, in a heavy clay soil, with alternate drains of 30 inches and 48 inches deep, respectively, the 48 inches drains always begin to run, after rain, at least 24 hours before the others.

This, incredible as it may seem to some, I know to be a fact ; and it can only be accounted for on the principle we have just enunciated. In Essex, Eng., again, where very shallow draining, at frequent intervals, had long been practised, upon the introduction of deep drains (in the same fields) the shallow drains ceased to run at all, not even acting as subsidiary feeders to the deep ones, when the latter crossed them at a lower level : gravity acted on a column of water 48 inches high, more easily than on one of 18 inches.

It has often been wondered at by non-critical observers, that an *open ditch* will allow a pool of water to stand within a foot or two of its *lip* ; and that no deepening of the ditch seems to have any effect on the retentive spots. (1)

(1) Hence the difficulty of draining orchards and plantations : pipes, etc., would be filled up by the roots of the trees, and open ditches do not *draw*. Ed.