

Farm Drainage.

It is almost essential to the efficiency of drains, that there be fall enough beyond the outlet to allow of the quick flow of the water discharged. At the outlet, must be deposited whatever earth is brought down by the drains; and in many cases the outlet must be at a swamp or pond. If no decided fall can be obtained at the outlet there must be care to provide and keep an open ditch or passage so that the drainage water may not be damned back in the drains. It is advisable even to follow down the bank of the stream or river so as to obtain sufficient fall rather than have the outlet flooded, or back water in the drains. There still may be cases where it will be impossible to have an outlet that shall be always above the level of the water or pond which may receive the drainage water. If the outlet must be so situated as to be at times overflowed, great care should be taken to excavate a place at the outlet into which any deposits brought down by the drain may fall. If the outlet be level with the ground beyond it, the smallest quantity of earth will operate as a dam to keep back the water. Therefore at the outlet in such cases, a small well of brick or stone work should be constructed into which the water should pour. There, even if the water stands above the outlet, will be deposited the earth brought along in the drain. The well must at times, when the water is low, be cleared of its contents and kept ready for its work.

The effect of back water in drains cannot ordinarily be injurious, except as it raises the water higher in the land and occasions deposits of earthy matter and so obstructs the drains. I have in mind now the common case of water temporarily raised by winter flowage or by summer freshets.

It should be remembered that even when the outlet is under water, if there is any current in the stream into which the drain empties, there must be some current in the drain also; and even if the drain discharge into a still pond there must be a current greater or less, as water from a level higher than the surface of the pond presses into the drains. Generally then, under the most unfavorable circumstances we may expect to have some flow of water through the pipes and rarely an utter stagnation. If then, the tiles be carefully laid so as to only admit well filtered water there can be but little deposit in the drain; and a temporary stagnation even will not injure them, and a trifle flow will keep them clean. Much will depend as to the obstruction of drains in this, and indeed in all cases upon the internal smoothness and upon the nice adjustment of the pipes. In case of the drainage of marshes and other lands subject to sudden floods, a flap or gate is used to exclude the water or flowage, until counterbalanced by the drainage water in the pipes.

We are quite sure that it is not in us a

work of supererogation to urge upon our farmers the importance of careful attention to this matter of outlets. This is one of that class of things which will never be attended to if left to be daily watched. We Canadians have so much work to do that we have no time to be careful and watchful. If a child falls into the fire we take time and snatch him out. If a sheep or ox gets mired in the ditch we leave our business and fly to the rescue. Even if the cows break into the corn all hands, men and boys, leave hoeing or haying and drive them out. And by the way the frequency with which most of us have had occasion to leave important labors to drive back unruly cattle rendered lawless by the neglect of our fences, well illustrates a national characteristic. We are earnest, industrious and intent on doing. We can look forward to accomplish any labor however difficult, but lack the conservatism, which preserves the fruit of our labors—the old fogysm which put on its spectacles with most careful adjustment after wiping the glasses for a clear sight, at stated periods revises its affairs to see if some screw has not worked loose. A steward on a large estate or a corporation agent paid for superintending and inspecting may be relied upon to examine his drainage works and maintain them in repair; but the farmer in this country who labors with his own hands has not time even for this most essential duty. His policy is to do his work now while he is intent upon it, and not trust to future watchfulness.

We speak from personal experience in this matter of outfalls. We have seen drains ran down into a swamp, and the fall was so slight that the mains were laid as low as possible so that at every freshet they are overflowed. The owner many times each season has been compelled to go down with spade and hoe and clear away the mud which has been trodden up by cattle around the outlet. Although a small stream flows through the pasture, the cows find amusement, or better water about these drains and keep you in constant apprehension of a total obstruction of the works. Prevent this by connecting the drains together and building one or more reliable outlets.

There are many species of vermin both creeping things and slimy things that crawl which seem to imagine that drains are constructed for their special accommodation. In dry times it is a favorite amusement of moles, mice, and snakes to explore the devious passages, thus fitted up for them, and entering at the capacious front door, they never suspect that the spacious corridors lead to no apartments, that their accommodations as they progress grow fine by degrees and beautifully less, and that there are houses with no back doors or even convenient places for turning about for retreat. They persevere upwards and onward till they come in more senses than one to an untimely end. Perhaps stuck fast in a small pipe tile they

die a nightmare death or perhaps overtaken by a shower of the effect of which in their ignorance of the scientific principles of drainage they had no conception, they are drowned before they have time for deliverance from the strait in which they find themselves, and so are left as the poet strikingly expressed it "to lie in cold obstruction and to rot."

In cold weather, water from the drains is warmer than the open ditch, and the poor frogs reluctant to submit to the laws of nature, which requires them to seek refuge in mud and obvious sleep in winter, gather round the outfalls as they do about springs to bask in the warmth of the running water. If the flow is small they leap up into the pipe and follow its course upward. In summer the drains furnish a cool and shady retreat from the mid-day sun, and they may be seen in single file, by scores, at the approach of an intruding footstep, scrambling up the pipe. Dying in this way affects these creatures as sighing and grief did Falstaff, "b'ows them up like a bladder," and like Sampson, they do more mischief in their death than in all their life together. They swell up and stop the water entirely, or partially dam it so that the effect of the work is impaired.

To prevent injury from this source there should be at every outlet a grating or screen of cast iron or of copper wire to prevent the intrusion of vermin. The screen should be movable so that the accumulation in the pipe may be removed. A coarse wire netting, a screen which is attached to the pipe by a hinge of wire is sometimes used. Holes may be bored with a bit through even a hard tile or a number 9 wire may be twisted firmly round the end of it and the screen thus secured. This is only better than none but it is not permanent, and we hope to see some successful invention that may supply this want. So far as we have observed no such precaution is used in this country; and in England farmers and others who take charge of their own drainage works often run their pipes into the mud in an open ditch and trust the water to force its own passage.

He Was Very Sensitive.

A man, born and brought up in Illinois, and who had never travelled on any but dirt roads, spent a month in the east not long since, and while there did some driving on a macadam road of the first class. He did not like that kind of a road, he said. It was too solid and too noisy.
—Exchange.

When the sheriffs of London are formally presented to the Queen's remembrancer, they annually hand over to him (as the representative of the sovereign) a bill-hook and a hatchet, by way of "service" for a piece of waste land in Shropshire, of which they are the de-jure tenants and occupiers.