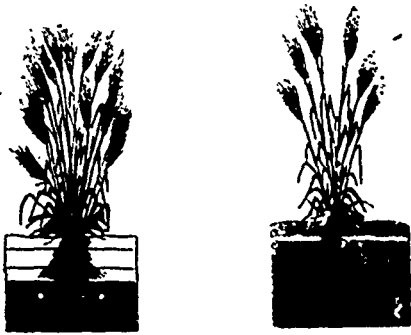


# WATER DRAINAGE

## The Field.



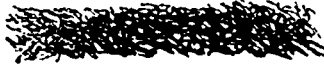
### A Chapter on Draining.

The present season has read the farmers of Canada a lesson about the importance of attention to drainage which they will not soon forget. Excessive rains in the early spring rendered all undrained lands difficult, if not impossible, of access until a very late date; and scarcely was the seed put into the soil before all the evils of long-continued drought began to show themselves. Now, drainage to a very great extent guards against the ill effects of both these extremes. By rendering the land porous, and providing the means of carrying off the surplus water, it keeps the soil in workable order when the weather is unusually wet; and on the other hand, the loose, open state of the ground, induced by draining, allows the moisture to find its way to the surface by capillary attraction when drought prevails. Beside these advantages, drained land is in a better condition for tillage, being more friable and more easily worked. It can not only be operated on immediately after heavy rain, but is fit for tillage earlier in the spring. The improved texture of the soil, and the loose, unbound state induced by drainage is eminently favourable to the growth of plants in another way. The roots of the growing crop have free scope to go in search of food, while they are able to penetrate deeper into the earth in search of moisture. Hence a more vigorous growth and greater ability to withstand drought. The above illustration will show very clearly the truth of these remarks. In the right hand figure is exhibited the condition of a plant on undrained and unsuitable soil, and in the left hand figure a plant of the same species is shown with its roots running down into the moisture below the drained level, and a strong growth above ground testifying to the favourable state of things beneath the surface.

Drainage may be secured either by opening ditches on the top of the land, or by constructing covered channels. Open drains are better than none, and are very useful in certain circumstances. But they are sadly in the way,—they are at best only a sort of make-shift device,—many fertilizing substances are washed into them and carried away from the soil,—

weeds are apt to flourish along their banks,—and they consume a great deal of ground which might be used to advantage in the growth of crops. Under-draining is not liable to any of these objections, while it has other manifest advantages.

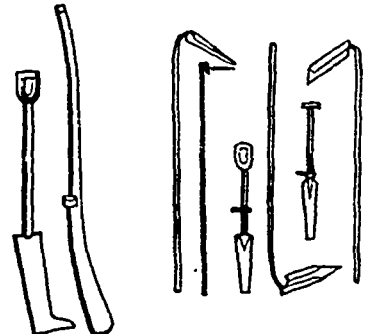
Drains are variously constructed, those made of stones or of tiles being of course very much the best. But the farmer who cannot afford to adopt the more expensive plans, need not on that account consent to leave his land undrained. With many labour is more plentiful than money, and not a few farmers who have effective helpers in the shape of stout healthy sons, might add immeasurably to the productiveness of their farms by constructing drains that will cost only time and toil, which may be given at seasons of the year when other pressing work is not on hand. Very useful drains may be made of brush or logs in the manner shown in the next cut. The brush drain must be carefully formed, the sticks being



laid as regularly as possible, with the larger ends down. Sods with the turf or grass-side down should be placed on the brush, and fitted together closely before the loose dirt is thrown in. Log drains are made by laying down two logs in the trench with a third upon them as represented in the annexed figure. The earth should be solidly pressed down over these drains. A cheap style of board drain has been described and recommended by one of our correspondents, Mr. Blesard, of Otonabee, on pages 82 and 163 of this journal, and need not be referred to more particularly here. In localities where stone and tiles cannot well be had, and lumber is cheap, these may no doubt be used to advantage.

Stone drains such as are represented in our next illustration are only to be recommended where there are a great many small stones on the surface of the land which it is desirable to get rid of, and which may thus be turned to good account. To lay a stone drain properly, a large trench must be dug, which involves great labour. The above cut exhibits the various modes of laying stone drains, so that no further explanation is needed.

Tile drains, where practicable, are greatly preferable to all others. They require less labour in forming the ditch or trench, which need only be about a foot wide at the top, and four inches wide at the bottom; while they carry off the water better, and last longer, than any other kind of drain. The ditch or trench is dug with a spade and hoes made for the purpose, and the entire *modus operandi* will be understood at a glance with the help of the accompanying illustrations.



The tile drain is not only better than any other, but under ordinary circumstances need not be very costly. The chief expense is the cost of the tiles, and some idea of this may be formed by referring to an item in the correspondence column of our present issue.

Drain tiles are made of various patterns. The pipe tile, (a) a simple round tube, is generally considered to be the best in shape. For the interior drains which feed the main drains, a bore two inches in diameter is a good size. The sole tiles (b) are not quite so good as the pipe tile, as it is sometimes difficult to

lay a straight course with them from their becoming more or less warped in burning.

The distance apart at which drains should be laid must depend on the nature of the soil. In stiff land they ought not to be more than about twenty-five feet apart; while in more porous soil, they may be thirty, forty, or even fifty feet, as under. Their depth must depend somewhat on their distance from each other. The farther apart they are, the deeper they must be.

