

great failings of our farmers that they neglect this matter to such an extent, that when seed time comes much of their land is not in a state fit to be worked to any advantage. Land that has been properly prepared in the fall, for spring seeding, is certain to yield much better crops than that which is left to lie over winter unworked. There are now so many implements of tillage and so many improvements constantly made towards economizing the labour of tilling the soil, that a farm can be well worked at a less expense than formerly, and it is a very poor economy indeed to devote land to crops unless the farmer is satisfied that he can get it into such a state of tillage, that a profitable crop can be depended upon.

It is better to have no more acreage in crops than can be so tilled as to insure a full return, than try to obtain the same amount, or but little more, from double the number of acres under indifferent cultivation.

Land that has been properly prepared in autumn, and left in such a state of forwardness as regards drainage, that no stagnant water can remain on it from the late fall or early winter rains to be frozen up in a solid mass with the soil, is likely to be much more benefited by the ameliorating effects of the frosts of winter, and be ready early in spring to be prepared for the reception of seed, than that which has been left neglected. Thorough working of the soil, also means having the land clean, and free from any rank growth of weeds to contend for mastery with the crop the farmer desires to successfully raise.

Good ploughing is an all important matter, that has generally been greatly neglected. Great improvements have been made in the construction of the plough, and that implement has been brought to a high state of perfection, so much so as to now be nearly independent of manual skill in the hands of the ploughman.

But this fact is greatly overlooked by most farmers, and we too generally find that they are content to work with old-fashioned models and forms of the plough, such as they have been accustomed to, and from a mistaken economy, seek rather for cheapness than good quality in selecting this most important implement. Ploughs either entirely of steel, or with the share and mould-board of hardened steel, and with guide wheels in front that keep them ploughing at a uniform depth, and lessen the draught on the team as well as the labour of the ploughman, are now made, and although they may cost double or treble the price of an old-fashioned plough, they

not only last much longer, but do enough more work, and of a better quality, to make them save more than the extra cost twice over in a single year. Inventive talent has been set to work, and the result is the "Volkman Plough Guide," which according to the *Maine Farmer* has on a recent trial worked satisfactorily. It is thus described:

"A plough fitted with the guide looks like a cross between a low-wheeled truck and a half-finished plough. The plough has no handles or stilts, but terminates abruptly with the rear end of the ordinary beam. The forward end of the beam (which is somewhat shorter than usual), is attached by an ingenious combination of links and thumb screws to an upright rod of iron about two feet long. This iron lies close to the mould-board side of the beam, and is so firmly attached to it that it cannot be turned over to the right or left without taking the iron rod with it, although the attachment may be easily loosened to allow the beam to be raised or lowered. The lower end of the rod is securely bolted to a horizontal axle of about three feet long. The furrow end of this axle carries a wheel about twenty inches in diameter, and the other end one of about half its size. A chain passing from about the centre of the beam to the rear of the axle is attached to a hook on the end of the draft-rod, to which the whiff-trees are made fast. This describes the essential construction of the plough. In going to the field, the beam is raised and screwed fast to the upper part of the vertical iron rod. The team is attached, and the plough is drawn along with its point raised about three inches above the ground. Arrived on the ground, the end of the beam is lowered according to the depth of cutting desired. The large wheel is set in the furrow and the team is started. The plough takes care of itself, and any boy able to keep the off-horse in the furrow is competent to do a man's work."

The field where the trial was made was a heavy clay soil, full of stones, some of them pretty large ones, and one that would test severely the best ploughman's skill to get over with any degree of credit; yet the work done in the trial of the above attachment is said to have been better than could have been done by a ploughman in an ordinary way. The implement was thrown out several times by stones, yet as soon as the obstruction was passed over, it again entered the soil, and kept steadily at the same uniform depth, as set by the guide wheels, until it met the next obstruction, when the same process was repeated.

We believe the use of guide wheels in ploughs, as generally adopted in Britain, would ensure better and faster work being done than we are yet accustomed to.

## Practical Drainage.

BY ALAN MAUDOU'GALL, C. E.

Some unfortunate impressions seem to have got into the heads of some readers, that these articles are penned for the purpose of advocating tile drainage altogether, to the exclusion of other kinds of drains or material. They were intended to give some practical idea of the method of laying in drains, cutting the grips the proper depth, distance apart etc. If from the habit of using tiles constantly, that material has been brought too prominently forward, it is to be regretted. Each farmer should select for himself that material which is best adapted to his circumstances and purse, be it stones, wood or tiles. In so large a country as this, where a great deal of work has to be done in improving lands, the circumstances under which he happens to be placed must, to a large extent, influence the farmer. In a newly settled country he can't expect to build his house and barns of stone or brick, when neither is in the locality, although in the better settled parts, or in Toronto, houses are built with both.

Because he can't get stone or brick will a man sit down saying he can't have barns and houses and stables? Will he not at once build them of wood? So, if he happens to be in a country where wood is plentiful, and other material cannot be got, what is to hinder him from making wooden drains, when he knows by so doing he is likely to improve the value of his lands and increase and improve the quality of his crops?

On no account should the want of tiles be allowed to deter a man from draining. Wooden drains will dry the land, and if they do so, all he wants is accomplished; therefore, use wood, or stones, whichever is most convenient. These kinds of drains unfortunately have some drawbacks, but for one drain that will not work hundreds will, and are daily so doing.

The material for the drain, though of great consequence, is not the only and important point to be considered, depth must not be lost sight of, and in this, so far as six months' experience among farmers has enabled me to judge, there is a great deficiency. Drains are put in too shallow, or in other words, too near the surface.

In general classes of clay soil, a drain at two feet or two feet six inches, is of little or no use, to properly repay the cost of laying it in; as has already been explained, at such a shallow depth, the water runs discolored from the pipes, showing