

necessary distance apart; but it must be evident to every practical man that local circumstances, and the nature of the subsoil, must produce varied action for attaining the desired end. We believe the question is, how to efficiently perform the operation at the least expense,—for it is certain that any soil that it is necessary to drain at all, can scarcely be made too dry. A writer in the *Albany Cultivator* lays it down as a rule that where water remains on the surface for three hours after the cessation of rain, such land requires draining. Some 7 years since we cut some drains on land which had been erroneously supposed not to require such an operation, and certainly we found no water at the time, nor for many weeks; but they have run freely ever since on any occasion of undue moisture.

We then made use of cedar poles of about four inches diameter to form the sides of the channel, or water way, and covered with a slab or boards; but, although we have not had any failure at present from the decay of the materials, we shall certainly adopt a different method in future, and for this reason: the bottom of this drain can scarcely be too narrow, as the soil with which the drain is filled by the downward pressure will, by being forced into a contracted space over the water-way, become so consolidated as to form and retain a channel, even should the materials used in its original construction decay.

In England, much of the draining is formed by tiles with only a channel of an inch diameter; but it must be obvious that the work thus executed must be performed in the very best manner, and will require great nicety in its execution to prevent so small an orifice from getting choked by the finer particles of earth which may find their way, after the utmost care, under the tile. It is certain we shall find some difficulty in getting labourers who will pay the requisite attention to their construction; the narrower they can be made in all parts the better,—and supposing a drain of two feet six inches deep (and none should be less,) only sufficient surface soil should be removed to enable the labourer efficiently to execute his work to the required depth. A breadth of sixteen inches at the top, tapering gradually and regularly on both sides to six inches at the bottom, (which bottom should have a plane even surface, without any hollows or swells throughout its entire length,) would, at a

distance of one rod apart, effectually accomplish all that is required; while in some instances the distance might be increased to twenty-four feet, according to the nature of the soil and the amount of surplus moisture. We intend making use of one inch and a quarter cedar boards in twelve feet lengths, the one 6 inches, the other five inches wide,—these nailed or pegged, the flat of the six inch one on the edge of the other, forming an inverted V, thus Δ , on the sides of which and overlapping the top, the soil taken from the surface to be laid, filling in with the most tenacious of the soil first, and the remainder with the original surface soil. We would avoid the use of all straw material as much as possible, and peat-straw especially, as, however it may furnish a great bulk to fill the excavation, when it rots, as it will do in a short time, the whole upper surface sinks rapidly and forms a complete channel to convey the surface water, and with it some of the finer soil to choke the drain below.

Doubtless where stones are abundant, and where little labour is requisite in breaking them, a more durable drain may be formed of them; but we much question whether, (unless extreme caution is used in their construction,) they would, under ordinary circumstances, be so long beneficial as the other method; for, let the surface water once begin to percolate, and the whole of the labour is thrown away; and the lifting and relaying would entail an enormous amount of labour and expense. But we would say, whatever the method adopted, drain your land where necessary, and you will never regret the trouble.

The young Spring crops which had begun to suffer materially in many places from the late drought, are plainly indicating the benefit derived from the genial and gentle showers with which they have been visited; and the Fall wheat, where not too far gone, has derived considerable benefit, especially when the roller has been applied. There are some persons who are fearful of using the latter implement, from having an erroneous impression that great injury must be done to the crops, from the feet of the horses and the weight of the roller crushing the tender stem of the plant. They need be under no apprehension on that score,—for lands and crops which need rolling, will suffer far more by the neglect than by the application of that very useful operation.

To the Editor of the Newcastle Farmer.

DEAR SIR,—With reference to the observations of "An Ex-Farmer" on my communication, published in the *Cobourg Star* in April last, relative to the plan suggested for summer fallowing,—he is pleased to observe that he must differ from the method I proposed, except under favourable circumstances. In reply I must say that the farmers in this township never presume to summer-fallow for winter wheat under any other circumstances. My plan would, if adopted, afford an opportunity to prepare the inverted sward for the reception of the seed, instead of using two ploughs, as recommended by the "Ex-Farmer" on the 1st of September, thus turning up the subsoil to the depth of 10 inches the moment the seed was about being sown, if he intended it to be done in the usual season. The above plan would never answer, in my opinion, for stiff clay soil; the grain would scarcely germinate, much less vegetate in a healthy manner to stand a severe Canadian winter. I cannot agree to the plan proposed of sowing 4 bushels of oats to the acre as a preparation for winter wheat, being contrary to the usual routine of farming in my native country Ireland, and by no means following a judicious rotation of crops. Oats are very exhausting, containing the organic matter, which is an essential constituent drawn from the land it occupies, the place intended for the subsequent crop of wheat. I consider that one white crop should never precede another, (barley excepted.) Martin Doyle, in his address to the Young Farmers of Ireland, says that "it is an established principle among all good farmers, looking to the good condition of the soil, not to take two crops of corn (grain) in succession, but to cultivate some leguminous or green crop between the grain crops."

Pease are known from the broadness of their leaves to draw most of their support from the air, and consequently do not much exhaust the soil,—the cultivation of which would secure the object of clean tilth and friableness equally as well as is done by the naked fallow, and give the crop as much clear gain over that made. In many parts of the country the soil may be much improved in its wheat raising qualities by throwing up and mixing with the surface a small portion of the subsoil. In some instances this has been attended with strikingly successful effects,—in others where the subsoil has been thrown on the surface, the increase in the growth of wheat has been almost incredible, as witnessed by myself in the field of alluvial land referred to in my last communication in the *Newcastle Farmer*, where the subsoil taken from an open drain running through the lot had been scattered on the surface of the black mould on each side of the drain. Few persons in this country are willing to undertake the purchase and use of the subsoil plough; but all may adopt the practice of deep ploughing by the ordinary method, late in the