

cut, which readily closes spontaneously, so that in a short time nothing is seen to indicate the course of the tube underground. The line of the drain is, of course, so regulated in regard to fall as to carry off the water. In clay land, or in any land that does not "wash," nothing farther than this is necessary, and when you have gone over the field at the proper distances, the place is well and thoroughly drained, but in land that does "wash," or in sandy or gravelly places, it is customary to string on a number of ordinary round draining tiles to a rope passing through them, and attached to the broad end of the mole, adding more pipes as the mole proceeds, until the drain is properly laid. This saves the excavation and filling in, and the injury done to meadow land by the removal and replacement of the turf, always a troublesome and expensive process. In an article like the present, where the writer is necessarily limited in space, the entire operation cannot be so minutely described as is desirable; but in case any readers or correspondents wish to get this most useful implement, the writer will feel pleasure in affording the most extended information. This instrument has not hitherto been manufactured in Canada, but it is extensively manufactured and used in the United States, and it would be much better, until the demand for such a tool increases sufficiently to tempt our manufacturers to take the matter into their own hands, to pay the duty on the foreign manufacture than to go without it. The immediate attention of the writer was called to the mole drainer by seeing a circular from Messrs. Doty & Co., of Springfield, Ohio, who with the enlarged views of American manufacturers, think no expense wasted which is incurred in advertising, and in making their various manufactures known, and to which enterprising firm the agricultural department of the *Globe* and the *Canada Farmer*, with its 40,000 readers, would afford an excellent medium for making the Canadian public acquainted with their various useful and important wares. In carrying out my enquiries on this subject, I happened to meet with Mr. Romain, the originator of the steam plough, now so extensively used in England and throughout the world (and whom, by the bye, we may be proud of as a Canadian or an adopted son of Canada). We talked the matter over together. He has seen the mole drainer used in almost every kind of soil in England, and says that too much value cannot be set upon it. Now if, in England, where labour is so cheap, this drainer is used with advantage, how much more so could it be used in Canada, where labour is from twice to three times dearer than in England, and where draining is even more important than in England; for in Canada draining means "early maturity" of crops, and early maturity means a good crop of fall wheat, free from the midge; and the latter, as all our farmers know so well, means success and growing rich from farming.

VECTIS.

### Building a Root House.

There are many localities where it is impossible to have a root house entirely built under ground, in the side of a hill, or similarly situated advantageous locality. To those who contemplate building on level land, I will relate the plan I had an opportunity of assisting at and seeing carried out in one of my wanderings. An acquaintance of mine had been much troubled with potato and turnip pits, and determined to effect some radical change, and knowing me well, and also knowing that I had some experience in the building of root houses, he begged me, when calling on him, to prolong my visit for ten days, whilst he and his sons, with my superintendence, constructed a root house.

We first carefully examined the land, and found that we might place the floor of the building at least two feet below the outside level, without any danger of water being troublesome. We therefore commenced to excavate, and dug out an oblong cellar of two feet deep, and thirty by twenty feet long and wide; the earth was readily thrown out, and raised quite a formidable mound all round the pit; we then took three inch hemlock plank, twelve and fourteen inch wide, (pine would have done quite as well, or better, but hemlock was cheaper), and dug out the foundations all round fourteen inches below the bottom of the cellar, and laid the first course of the wall, by carefully dovetailing and fitting the planks into each other at the corners, and placing them on edge as a foundation, and then filling in on the inside and outside with small gravel stones about as large as small eggs and walnuts: this is most important, as otherwise the rats will utterly destroy the root house for all dairy purposes.

As I knew my friend was going to build a root house, and wanted it to last many years, I had previously sent by rail a barrel of coal tar, at a cost of two dollars for the tar and one for the barrel at the works in Toronto. Before finally laying our foundation, we heated some of the tar in a sugar kettle until it was quite liquid and almost boiling, and with an old broom thoroughly saturated the tops and bottoms, sides, ends, and edges of the foundation planks, and rammed the gravel well down on both sides until it was as solid as a rock, and the planks quite straight and level. We proceeded to build up tier after tier of plank, with two or more joists in each plank, about six feet apart, to keep them all straight and true. We had the wall completed before next night, as planks twelve to fourteen inches wide and all gauged to even sizes, went up very fast. We now only tarred the edges and back, and not the inside or front as we went on, on account of the more cleanly working amongst such black stuff.

We built up the walls eight feet high, and in the upper planks we cut "gains" 3 x 10, for our ceiling joists; these were heavy and

strong, as will be seen by and by were required. We "shouldered" our joist about one and a half inches, to afford support to the outside wall from outward pressure, carefully tarring every portion that was exposed, all but the bottom and sides of the ceiling joists, as these were inside. We then thoroughly tarred some two inch plank all over, sides, edges, and ends, and laid a strong floor over the ceiling joist, and when the floor was cut out, and a similar place built up for a passage way, and all thoroughly tarred as we went along, we had as handsome a root house, so far, as you would desire to see. We now continued the wall about three feet high above the floor, and put on the roof in the ordinary way, leaving room in the end to drive a team up an incline into and over the root house. We then carefully banked up the excavated earth, and well sodded the mound so made at the sides, with sods, and built the sods about one foot above the ceiling joists. The roof was allowed to project but a few inches, as the water that fell from it and was allowed to percolate through the turf and through the clay that composed the mound at the sides, would most materially assist in keeping the timber from decay, by always keeping it wet. When the roof was completed, we constructed bins along the sides by boarding up stall-like partitions, of about six feet each, up to the ceiling joist. We then took pine rails and cut them so that they would just fill the length of each bin or division, and form a pervious floor. We laid them on cross pieces of rails, so as to raise the floor some little distance from the earth. Over each bin or stall we cut a small hole in the ceiling, nearly close to the wall, so bevelled in the cut, that each piece cut out formed a perfect clap to fill the hole again. We boarded the passage way between the bins, but allowed the air to have free egress from under the door and under the hollow passage way, in such a manner that each bin was fed with air passing under the roots through the rail flooring, and the entrance to each bin from under the floor was fitted with a piece of board to obstruct the air and force it to pass on to those in which the obstructions had been removed, when heating or growth required checking.

We fitted ordinary double doors with six feet of passage way—so that one door could be closed when the other was opened—and we faced the door to the south to avoid cold north winds blowing directly into it. When we hauled the turnips and potatoes we found some difficulty with the earth adhering to them, and I set my brains to work to cure the evil. I constructed a ladder about six feet long and the width of the waggon box, and put the bars so close that potatoes would not go through the interstices. When the team was driven up the inclined plane and into the root house, I so arranged the ladder at the side or end of the waggon box, that when shovelling out the roots they