

C and D in figure II., then the pole C must project 2 feet further above the surface than D to be with its upper end on a level with the upper end of D. If D is one foot above the ground, then C must be three feet above the surface, to give the level dotted line A H. To obtain the desired fall in the drain, drive down the stake at the outlet of the drain the same number of inches (or feet) as the drain is to fall towards that point. Say the fall is to be 6 inches from D to C, then drive down C 6 inches, and this will give the line B H to correspond with the bottom of the drain. If the drain is to be 4 feet deep at the outlet, get a pole, E, 4 feet + 2½ feet = 6½ feet long, so that if it is placed at the bottom of the drain it will reach to the top of the poles on which the imaginary line B H rests. If at any time you desire to find out if the drain is deep enough at any point, place the pole E in that place, and let an assistant look over the top of the poles C and D, and if the tops of the poles C, D and E form a straight line, the drain is just the right depth in that place.

The cost of draining varies in different localities, depending upon the cost of tile, the wages paid to the laborers, and to some extent upon the character of the soil. The depth of drain has very little to do with the cost per acre, for the deeper the drains the farther apart they can be placed. The cost of the main drain in our experimental field, being on an average 4 feet 6 in. deep, and passing through a strata largely composed of sandy loam, was as follows:

COST OF MAIN DRAIN PER ROD.	
Digging drain.....	27.7
15 3-inch tile at \$10 per M.....	15.0
Hauling tile 2 miles at \$1.40 per M.....	2.1
Laying tile.....	1.6
Filling in the drain.....	12.6
Allowance for incidentals.....	1.0

Total cost per rod 60c.

The average depth of a drain is obtained by taking the average of a large number of measurements made at equal distances from each other. The cost of the above drain would be 52 cents per rod if \$1 per day, the average wages which farmers pay their hands, had been paid, instead of \$1.25, the amount which we had to pay for experienced drainers in this city. The superintendent of our experiments, who is also a practical man, made accurate calculations as to the cost of the drain, specially for publication, and his figures can be thoroughly relied on.

By incidentals we mean such unforeseen hindrances as are often met with in cutting a drain, as caving in of the sides, meeting with large stones, etc.

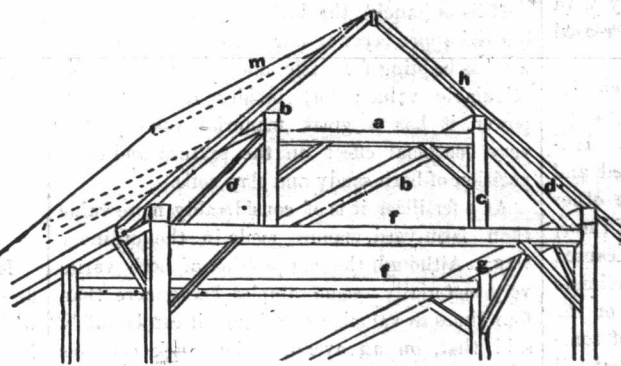
Farmers are all too apt to follow along in beaten tracks, for no other reason than that others travel the same way. The most successful farmers are often those who think to do something that all their neighbors overlook or neglect to do.

The problem of farming consists in making the soil increasingly fertile. Manure is the farmers' savings bank, and if more of them would have large heaps of it every spring to spread upon their lands, instead of money at interest, they would prosper better in the end.

A Barn Without Interior Posts.

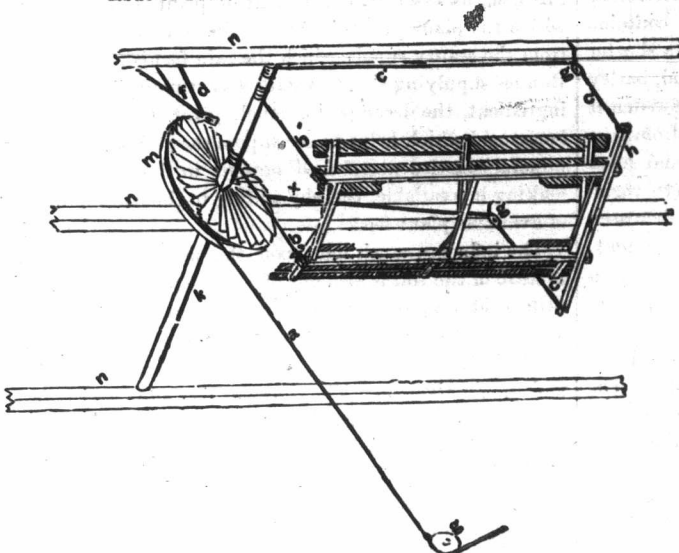
In the accompanying illustration we present to our reader the gable end of a barn framed in such a manner as to dispense with all interior posts, and not divided into mows, thereby enabling a team or wagon to turn in all directions with ease and safety. We took the sketch from the barn of Mr. John Fothergill, Burlington, Ontario.

This sketch requires little or no explanation. The purline-plate, post c, is, at its lower extremity, bolted to the beam with a bolt passing



BARN WITHOUT CENTRE POSTS.

through the beam f, and the centre of the post nearly reaching up half the length of the latter, here fastened with a nut. The entire weight resting on the purline plates is supported by the timbers d, d, and the purline-plate post-girt a. The former d, d, are not merely common braces, but regular sticks of timber intended to bear weight. No weight at all rests upon the beams, and the purline plate posts might be dispensed with altogether, a bar of iron taking their place, as is the case in the dairy barn of Mr. H. S. Losee, Norwich, Ont., illustrated in our March issue of 1885.



CONTRIVANCE FOR LIFTING LOADS IN THE BARN.

A Home-made Rack Lifter.

Amongst the labor-saving harvest contrivances the rack-lifter is becoming one of the most popular. It can be cheaply constructed, and when well made is very durable. Any farmer with ordinary mechanical skill can easily construct it. One of the simplest and most efficient is represented in the subjoined illustration, taken by our artist from one constructed by Messrs. Fothergill & Son, Burlington, Ont.

It simply consists of a cross-piece of timber, k, extending over the beams of three bents, forming the axle of the wheel, m, about five feet in

diameter. This wheel is about six inches thick in the groove. It is constructed out of two sets of three inch planks fastened together, with flanges on each side, the one flange having projected edges forming teeth something like those of a circular saw, a dog, f, being attached to the purline plate, which prevents the wheel from turning back when the load is elevated. The rope, d, attached to the dog, extends to the floor. The rope, a, running under the pulley, g, is wound around the wheel, and the horses are attached to the other end. The cut sufficiently illustrates how the rack is evenly lifted by means of ropes, and the pulleys g, g—A being a strong piece of timber placed under the hind end of the rack. The four ropes winding around the axle, k, elevate the load. The rack may be elevated to such a height that the bottom of the load is as high as the beams on which the axle rests, by which the bottom of the load can be pitched with ease to the highest point in the mow.

A long barn requires two fixtures, but one rope will do for both. The whole arrangements, including timbers, labor, rope (1½ inch), can be completed for about \$50.

A New Fertilizer.

A new phosphorous fertilizer has lately come into the market. It is manufactured as a by-product in the preparation of iron from phosphate iron ores, and contains, beside phosphorous, other elements of plant food of lesser importance.

Although this fertilizer (phosphate meal) has its phosphorus in an insoluble form, it produced, according to German experimenters, better results than soluble phosphates (superphosphates.)

This should be a hint to our farmers to observe closely all experiments made with soluble versus insoluble phosphate fertilizers; for if the latter, being much cheaper, give better results than the former, it should be decidedly preferred; but this seems almost incredible.

Keep your tools free from rust and dust; clean them every night after work, before putting them away. During the time they are not in use, a good oiling will prevent rust from forming on them. Implements well taken care of last much longer than those that are left wherever last used, and it is much easier and more satisfactory to work with clean, bright, well kept tools and implements.

Ontario's export of ashes amounts to about \$30,000 annually. Politicians may boast of our large export trade, but

would it not be to the interest of our farmers if these ashes remained in the Province, to be used as fertilizers and turned into products worth \$100,000 annually?

The heavy hoe requires strength to lift the extra weight. The dull hoe requires strength in bringing it down again, to make it cut. These are very poor ways to use up strength. Make the hoe light and sharp, that the strength may be used for killing weeds and cultivating vegetables. This is only an illustration; the principle applies as well to the scythe, the cultivator and the reaper.