

was the depth wanting, but the grade was quite irregular, hence the necessity for the extra work.

Wherever the fall makes it possible, a main drain, with all the laterals emptying into it, is by far preferable to having each lateral emptying into an open waterway. The outlets being a bit costly, and requiring close attention to keep them clear of all or any material which is apt to gather in any depression, it is safer and much more convenient to watch one outlet for a system of drains than several scattered here and there.

While draining may be done at any time to suit one's convenience, unless there is too much water to contend with, still we find our clay soil digs much easier in May and June. In late fall, if there has fallen rain in abundance, the soil below as well as on top is softened, so as to render digging easier than in midsummer or soon after harvest. It pays well to have a full set of tiling tools in order to do better work and with greatly lessened labor. Three- and five-inch tile spades are necessary. The three-inch should have an iron tramp, made for the purpose, and sold as an extra, fastened on the shank above the blade. The tramp is reversible for right or left foot, and held tight by a pair of bolts. A narrow, long-handled, round-mouthed shovel and a pickaxe are also needed. Next we will mention the three-inch double-pointed scoop for cleaning out the bottom and shaping it to bed the tiles in. A tile pick, sharpened to a point at one end and hatchet-shaped at the other, to make openings in the main drain tiles to enter the laterals into, is a needed tool, and so is a tile hook with a five-foot handle. The latter is used to lay tiles up to four-inch size from the surface of the ground. The operator stands straddle of the drain, reaches to a tile by his side, and puts it down to its place more quickly and better than can be done standing in the bottom of a narrow drain. Five-inch tiles and larger ones are too heavy to handle with the hook; therefore, hand placing is unavoidable. Special care is required in draining near some kinds of trees, as a small root, finding its way in at a joint, attracted by the moisture, soon forms a mass of thread-like roots, completely filling up the tiles and stopping all flow. Elms and willows are probably the readiest of all to cause such trouble. We have had both kinds fill several feet of five-inch tiles, so as to stop all flow of water. Some roots will run from trees to tiles, a distance of fifty to one hundred feet. It has been reported, but cannot vouch for it, that covering the joints with black-felt tarred paper is a preventive. Our cure has been to cut down the trees which caused the trouble.

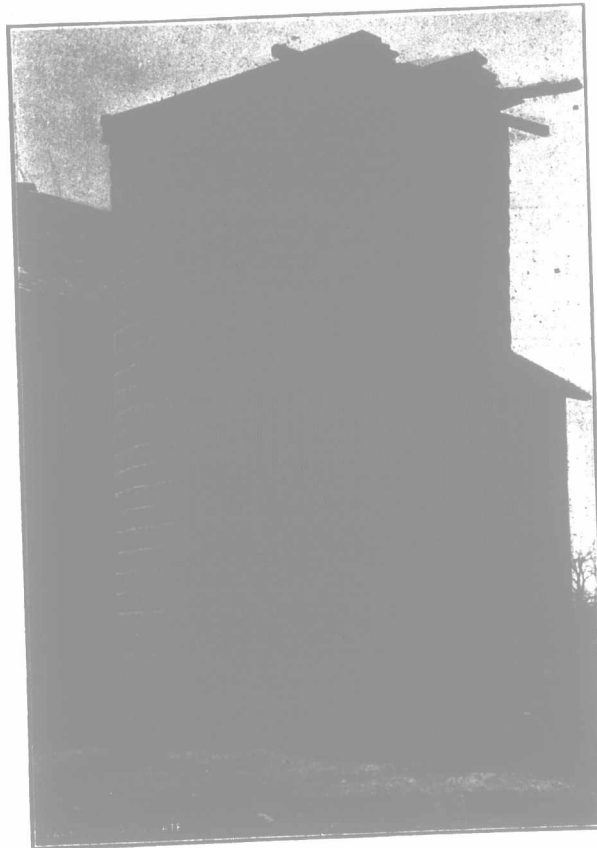
Where drains run a long distance from the outlet in open subsoil, there is danger of their sometimes filling with silt. To overcome that, it is well—at fence, or some other convenient point—to construct a silt basin. It may be built of hard bricks or cement. Whether round or square, the diameter inside should be eighteen to twenty inches, and deep enough to be two feet lower than the tile. The inflow tile being run an inch or two higher than the outflow, the working of the system can be readily seen in the flow of water. There should be a strong cover, with a few inches of soil on top, to prevent frost from injuring the tiles; then whenever accumulation of silt may be expected it is an easy matter to take cover off basin and dip out the silt with post-hole scoop in the two feet below tile bed. Much of the danger of tiles filling up with silt may be avoided by care in laying the tiles. The aim should be to have them jointed closely as possible on the top side, and have the water enter mainly by rising in from the bottom. If the soil is of a loose nature it pays to haul good clay to cover the tiles with an inch or two of the solid soil. At times a good hard tile may have a piece chipped off the end. It is too good to throw away, and yet unsafe to use, unless the precaution is taken to cover the hole with part of a larger size of tile. Never use cull tiles, if got for nothing, is our rule. Another frequent cause of a drainage system filling up in part, or possibly as a whole, is the accumulation of silt, or any other material, obstructing the outlet. That is more apt to occur where the land is flat and grades but slight. Considerable care is required in making satisfactory outlets. Our plan of late years has been to make a cedar two-inch plank box, 8 feet long, with the outside opening cut on a bevel, receding on the top, so as to allow an iron grate being placed, fastened at top, but loose at bottom. That prevents vermin from getting in, and a rush of water will raise the bottom of grate and allow a freer escape of the water. Wherever the grade will allow it there should be a drop of a few inches from outlet to open water course.

JOHN CAMPBELL,  
Victoria Co., Ont.

The greatest American cereal, and one of the world's greatest grain crops, cultivated by the Indians before the discovery of America, and now a commercial crop of Europe, Africa, Australia and America, is corn. The world produces annually 3,340,000,000 bushels of corn, of which the United States boasts 2,575,000,000 bushels, or more than three-fourths of the entire crop of the world.

### Another Cement-block Silo.

Cement silos may be built either with solid walls, or with hollow cement blocks. The former has probably an advantage in point of cost, but the cement-block wall is a better nonconductor of heat, and there is less trouble from feed freezing around the edges in such a silo. The accompanying illustration represents a cement-block silo on the farm of R. F. Martin, Lincoln County, Ont. It is 12 feet in diameter, and 26 feet high, built on a foundation trench 2 x 2 feet, filled in with solid concrete. The floor is of concrete, 6 inches thick, which is unnecessary, as a three-inch floor would answer quite as well, and a shallower and narrower foundation would suffice. The blocks were made by Mr. Martin with his own machine, the dimensions of each block being 24 x 12 x 8 inches in size, and weight 125 pounds. The cement from which the blocks were made was composed of gravel 4 parts, sand 2 parts, and cement 1 part, made as wet as for ordinary concrete. At this rate, 4 cubic feet of gravel, 2 cubic feet of sand, and 1½ sacks of cement, make 8 blocks, 22 blocks being required to complete one circle, at which rate 800 blocks would build this silo to the height of 26 feet, 16 loads of gravel, 8 loads of sand and nearly forty barrels of cement being required for the walls. The foundation took 2 loads of gravel, 1 of sand, and from



Cement-block Silo.

On farm of Robt. Martin, Lincoln Co., Ont.

5 to 10 barrels of cement. Each layer of blocks was reinforced by two strands of No. 9 galvanized wire laid in the mortar. Mr. Martin considers this unnecessary, believing that the reinforcement of every other layer would do as well.

The wall was laid by a mason in six days. One helper, and sometimes two helpers, were required in building. As for block-making, two men could make from 75 to 100 of these large blocks per day, amounting in all to about ten days' work for two men.

Mr. Martin submits the following figures as the cost of his silo:

Cement, 50 barrels, at \$2.00.....	\$100.00
Gravel, 18 loads, at \$1.00 .....	18.00
Sand, 9 loads, at \$1.00 .....	9.00
Wire, (estimated) 200 pounds, at 3c.....	6.00
Mason work, 6 days, at \$3.00 .....	18.00
Ordinary labor, 30 days, at \$1.50 .....	45.00
Total cost .....	\$196.00

It is the intention to run the walls up somewhat higher than they are at present. It has given fairly good satisfaction, but would be better for plastering on the inside. The appearance of a block silo is decidedly more pleasing than that of solid cement concrete.

### Alfalfa on the Increase.

That alfalfa is securing the foothold it deserves among farm crops in the central part of Western Ontario, is evident in the fields, large or small, that stand fresh and green this season. A representative of "The Farmer's Advocate" recently visited parts of Dufferin and Wellington Counties, and, although a comparatively small acreage is devoted to this legume, the number of farms on which at least a plot has been tried shows that farmers are willing to give it a test. A pleasing feature is that the trial results in such returns as to induce further sowing the following season, and also to cause neighbors to do likewise. As a rule, a trial plot of half an acre or so is followed by five or ten acres seeded the next year on that farm, to say nothing of what owners of surrounding farms sow.

Those who have tried alfalfa, either as pasture or hay, for all classes of stock, do not hesitate to pronounce it unexcelled. Experience is teaching them that it must not be pastured too close, and also that, in cutting for hay, it must be mown before it comes to full bloom. The prevailing advice as to time of cutting is when about one-tenth of the crop shows bloom. In many instances, the first cut of the first season has been light, but the stand has become thicker and stronger. One important characteristic mentioned by all is that, after alfalfa has become established, it remains fresh and green in the late summer, where other pasture crops are dry and undesirable for grazing purposes.

Although results indicate that this valuable nitrogen-gatherer can be grown to advantage on any well-worked soil that is thoroughly drained, it is evident that, on clay loam lying over limestone rock, suitable conditions are provided, if the land has been thoroughly prepared and made free from weeds. Spring seeding, with a nurse crop of one bushel of barley to the acre, is generally advised. In almost every case it was found that it was best to treat the seed with nitro-culture provided by the Ontario Agricultural College, as the plants were, as a rule, thicker and stronger. One man was disappointed in his seeding, but it was learned that it was put in in August, and, dry weather prevailing, the seeds did not germinate. Loss due to lack of drainage or to standing water was also in evidence. Fields were seen on which a thick stand developed last summer. This spring, low patches on which water lay in the spring are bare, save for the dead alfalfa and an occasional weed.

The net result is a triumph for alfalfa. None have failed on reasonably suitable soil, if due precautions regarding preparation of seed-bed and putting in the seed have been taken.

### Recommends Cement Silo.

Editor "The Farmer's Advocate":

I have noticed several times in your paper inquiries about silo-building, and especially one in your issue of May 27th. The inquirer is asking the cost of stave silo, and size, for twenty cows.

Now, as I have had nine years' experience with a stave silo, and also helped to fill cement silos, I will endeavor to give to your readers my experience, for the special benefit of those who are thinking of building. First, I would not build a stave silo, by any means, if I could possibly get gravel and Portland cement, for about ten years is the length of time the staves will last. Then, it is very difficult to keep them plumb, and, if they are not plumb, when the corn settles it will leave an air-space down one side, and a large amount of the corn will spoil. I find it almost impossible to keep stave silos in shape, for they are exposed to the weather all through the dry season, and become so dried up that the least wind will sway them; and you can't keep them tight, or they are liable to burst when refilled again with green corn. The cement silo, if properly built, is always ready for use, and will last long enough, or, as some may say, forever. The only parts that will rot out are the doors, and they can be easily replaced. Just a word here about the finish of the cement silo. After it has been properly plastered on the inside, give it a good coating of coal tar. This is to prevent the concrete from taking the moisture out of the corn, and it becoming moulded around the edges.

As to size, I think a great many build too small, for two reasons: First, after you have used silage a while, you will like it so well that you will grow more corn; secondly, if you have to hire your outfit to fill, it is much better to have it big enough so as to have your corn put in at one time. It adds a good deal to the expense of filling to have the silo refilled in ten days, besides, generally, the corn left out that long suffers a good deal if it has not been properly set up. An ordinary filling outfit can fill a silo 11 ft. by 30 ft. in one day, if properly managed. I would advise to build large enough so as to get all the corn in at once. Put it up high if you have a bank, or, if not, 30 or 35 feet can be filled to the level, but leave a small hole in