

FARM.

How to Build Cement-Concrete Walls and Floors.

Though some men have been slow to admit it, the stern logic of events has irresistibly driven home the conviction that live stock husbandry is the sheet-anchor of Canadian agriculture. Every farmer is then confronted with the question: How shall I house my stock economically and comfortably? Beef cattle, dairy cattle, swine, etc., must have suitable winter quarters, even though in summer most of the time can be spent out of doors. For cattle the "bank barn," or barn raised and set on substantial walls, with a cement floor, solves the problem. While no one doubts the excellence of stone walls, the labor involved and the cost are excessive, and nowadays to farm without economy is suicidal. Cement walls can be constructed without high-priced skilled labor, and the materials are easily got and cheap. As to their efficiency and durability, the ADVOCATE is able to speak from the actual experience of members of its staff, and from careful examination of many walls built in this way by our readers.

CAREFUL WORK NECESSARY.

In reply to all enquirers, we will frankly say that there must be: 1st, an intelligent idea of the method; and 2nd, the work of selecting and mixing materials, and the actual construction of the wall, must be thoroughly done. If a few simple rules are observed there can be no failure. We are quite satisfied about that, and there is no question but that the use of cement in the construction of walls and floors is destined to work a revolution in farm building by superseding the old, laborious, expensive and unsatisfactory methods of the past.

Once proper materials are secured, the all-important point is knowing how the work should be done. A strict rule governing all cases cannot be laid down, because conditions vary. We were recently fortunate enough to secure an interview with Mr. Isaac Usher, of Thorold, Ont., who has had over thirty years' experience in supervising the construction of walls, piers of bridges, aqueducts, dams, floors and various public works. He has reached the conclusion that all such structures built of concrete-cement are not only stronger and more durable, and where sand and gravel are available,

VERY MUCH CHEAPER THAN STONE.

Mr. Usher has spent a great portion of the past year giving practical directions and overseeing the construction of barn walls, stable floors, hog pen troughs, etc. He consented to furnish a few general directions that might be of service to readers of the FARMER'S ADVOCATE.

A large platform of plank, or boards, convenient to the wall, should be first laid down to mix on, and in order to keep the materials clean. Before using, the cement should be kept free from dirt of any kind and perfectly dry. The sand or gravel used should be clear, sharp and entirely free from clay. It must be mixed thoroughly dry first, using a hoe or shovel. If the mixing is not done thoroughly, there will be soft, crumbling spots, and the job will not be a success. Where clear, sharp sand alone is used, take two parts sand and one cement, spread over the platform two or three inches thick, mix thoroughly as directed; then apply water (not too much) and work to a consistent mortar; next spread about the same amount of clean, coarse gravel over the mortar; if the gravel is dry, sprinkle on a little water to dampen it thoroughly. Turn over the whole quickly three or four times, working it into a good stiff mortar. Where a coarse gravel (the pieces of which are from one to three inches thick) is used, with sand enough to fill the interstices, a first-class concrete can be made of

ONE PART CEMENT TO FIVE OR SIX

of a mixture of the sand and gravel as described. Experience and good judgment are needed in determining the proper portions. If the gravel has a large proportion of fine sand, it should be mixed about one part cement to three. Each particle of sand or gravel must be in contact, or be coated with cement, in order to hold them together, so there is great economy in using the coarse gravel. It makes a stronger wall. For an ordinary barn wall, seven to nine feet high, dig the trenches to below frost, eighteen inches wide. (If the site is low and damp, put down a tile drain, but keep it a foot or so from the outside of the wall.) Fill in bottom of trench with, say three inches concrete; then pack in stones and ram down firmly. This is most important. All interstices must be filled with concrete. Next lay three inches more cement, then another layer of stone, if available, well rammed down, and so on, till the level of the ground is reached. Very large stones may be put in this trench. Smooth, straight planks are then set on edge on each side, supported in position with studs with space enough to allow for an inch wooden wedge between the studding and the outside of the plank, so that when the first course is "set" the plank can be slacked and raised for the next. Build the wall fourteen inches wide at the bottom and twelve inches at the top. Set studding so as to allow for that. Fill the first course to top of plank all round the walls; then raise and begin again at the original starting point. If door frames are put in near the corners, the wall should "return" a little from corner, and the planks at corner should be well braced from outside each way, in order to prevent the corner from settling outward, as it is apt to do, and cracking when in a wet

state. Where field stone is plentiful, they can be used of large size, so long as they are kept in, say three inches from each side of the wall, but surround them well with concrete carefully packed down. The more stone used

THE LESS THE COST WILL BE.

More than three or four inches of concrete should not be laid at a time without ramming. To make the surface of the wall smooth, let no coarse stones get to the outside, and clamp the fine concrete down with a smooth spade inside the plank. The top pieces of window frames should not project over the upright end piece, as the little corner underneath is hard to fill properly with concrete. Some place the window frames so that the top piece is just on a level with the top of the wall; others set them down, say six inches lower, so that there is that depth of concrete above the frame. It improves the appearance of a nicely-finished concrete wall to block it off with white lead stripes in imitation of stone work.

House walls may be built of concrete, but a high wall should be, say eighteen inches thick at the bottom and twelve inches at top. Mr. Usher is this season superintending the building of a Queenstown cement-concrete silo, 16 x 44 x 23 feet deep, with two partition walls, for Mr. Sharon, of Frome, West Elgin, and another, 15 x 30 x 26 feet deep, with one partition wall, for Mr. T. D. Hodgins, in his big dairy barn at Bothwell. We will report the results to our readers in due time.

CEMENT FOR FLOORS.

For floors for hogs, cattle and horses the cement-concrete should be laid three or four inches thick, well rammed down. A bed of stone, or gravel, may be laid in the bottom. The clay below should be solid and perfectly free from old manure or barnyard soakage. The surface should be finished perfectly smooth. A properly constructed cement floor saves all manure, both liquid and solid. These old high-up wooden floors were cold and helped to impoverish thousands of farms. Cement is also, doubtless, the very best material for the construction of cisterns. The whole cistern, arch and all, may be well and cheaply constructed of cement without the use of either brick or stone, simply a man-hole for pump and cleaning out being left at the top. One great beauty of cement-concrete is that it becomes harder with age. It is important that no lime should be used, because it shrinks and swells, which a pure rock cement will not do, and does not "set" at the same rate as cement, consequently there is disintegration and a crumbling wall. The cement-concrete wall is a non-conductor, and has, therefore, the advantage of being dryer than solid masonry; being also cooler in summer and warmer in winter.

In some places machinery has been devised for mixing the materials by horse-power, and Mr. Usher reports one man who is constructing walls this season under some thirty barns. Our own observation, however, would incline us to prefer hand-mixing.

PERSONAL INSTRUCTION DESIRABLE.

Mr. Usher says he has yet to discover a case of failure that is not due to some negligence, but it seems to be of great advantage in preventing mistakes and saving waste to spend a short time at the outset with persons who are building walls or floors. Once they get properly started there seems to be no further trouble; hence he is, at his own expense, devoting all his time at present to this work.

Speaking of various kinds of cement, Mr. Usher showed us an official report of various tests from the Government Engineer at the Kingston grading docks, showing that though the Portland (an Old Country cement and the highest priced of all) lead the Queenstown cement in a tensile or pulling test at seven days, yet in the twelve months' test the cements were about equal, and by the same ratio of gain the Queenstown cement would surpass the Portland cement in extended time tests, thus showing that though a cement may be a little slower in setting, it really proves one of the strongest and most lasting in the end, and it is, moreover, one-third the cost to begin with, a very essential point in the present financial stringency.

In future issues of the ADVOCATE we purpose giving additional practical articles upon this very important subject, including the actual experience of men who have successfully proved to their own satisfaction the utility and economy of using concrete for walls and floors.

Directions for Salting Hides.

During warm weather it is necessary to have green hides salted promptly or they will spoil, but hides can be shipped green in the winter season in a frozen state without salting. To cure a hide properly, it is first necessary to trim it by cutting off what does not belong to the hide, such as horns, tail-bones and sinews, then spread the hide on the floor and sprinkle salt evenly and freely over the flesh side. In this way, pile one hide on the other, flesh side up, head on head, tail on tail. It will take a week or more to cure hides thoroughly.

When hides have lain over a week in salt, they will then do to tie up and ship, after having shaken off the surplus salt.

For a large, heavy hide, it will take about a pail of salt, and a less quantity for a smaller hide or calf-skin, in proportion to size.

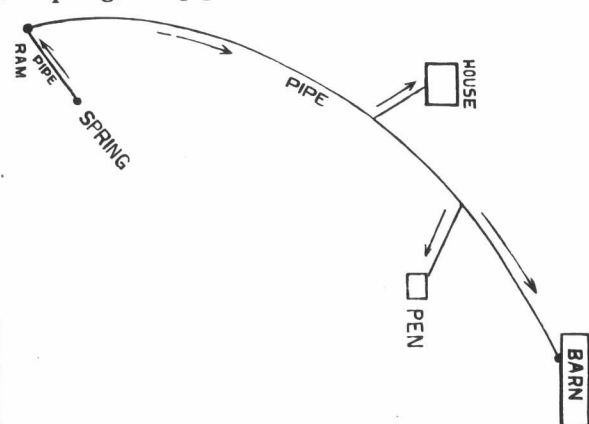
Green butcher hides shrink in salting from 10 to 15 percent; consequently, salted or cured are worth from 1 to 2 cents more than green.

JAS. McMILLAN & Co., Minneapolis Minn.

Farm Water Supply.

BY JESSE CLARK.

Being a subscriber and reader of your valuable paper, and seeing some questions and suggestions in the last number concerning water supply for farm purposes, and as I do not observe any correspondence from New Brunswick, I thought I would tell the readers of the ADVOCATE how I have my buildings supplied with water. My spring is situated 300 feet from the house, and 26 feet below the level of the same. Two years ago I put in a hydraulic ram, made by McDougall, of Galt; I got a fall of 9 feet, and laid a three-quarter-inch pipe from it to my barn, a distance of 450 feet and 40 feet above the spring, the pipe extending past the house, into



which I ran a branch pipe through the kitchen (where I placed a faucet and a globe valve) to the summer kitchen, into a galvanized tank holding about 80 gallons. In summer time, when I do not require the water at the barn, I open the valve and let the water run into tank, but in the winter I close the valve and let the water run to the barn into a trough for the stock, and draw the water by means of faucet for the house. My hog pen is between the house and the barn, and I ran another branch into it, which I used mostly in the fall. I disconnect this branch when it begins to freeze.

Can any subscriber give hints as to raising water from a well to house—200 feet from house, and the well 30 feet below level of house; also the cost, if practicable? I do not think my waterworks cost over \$70. I enclose a diagram showing location of spring and building.

What Can be Kept on 100 Acres.

BY D. B., MANOTICK.

In reply to the letter of T. M., in the FARMER'S ADVOCATE, I might say that I have had considerable experience in mixed farming. I think his stock is entirely too small for 100 acres of land. He keeps from six to ten milch cows, and as many young cattle. I keep from 25 to 30 milch cows, and as many young cattle, on 100 acres, which I feed principally with soiling crops and roots. I have my cows coming in about 1st March, and raise twenty calves, giving them new milk for one month, then skim milk and middlings to the 1st of May. Next, feed them middlings to 1st September, and then let them run on grass until it becomes cold enough to house them. They are then worth \$8.00 each, being \$160 for all. During the month that I feed the calves skim milk, I make butter, the herd yielding about 21 pounds per day, which I sell at 20 cents per pound, being \$126 for the month. I then send milk to the cheese factory for six months, which brings me in \$34.47 per cow, being for all \$1,034.10. I then make butter to the middle of January, making on an average of fourteen pounds per day, being 1,064 pounds, which I sell at 23 cents per pound, amounting to \$244.72, giving me a grand total for calves, butter and cheese, of \$1,504.82. Any person on as small a farm as 100 acres should not keep sheep. I did for a while, but found that they were too hard on the pasture, and did not do well on silage. If one or two pigs will eat all T. M.'s coarse grain, he does not raise much. I keep twelve brood sows which farrow in April; they generally average seven, which I sell at six months old: they then dress 155 pounds, which I sold for \$6.50 per 100 pounds, being \$846.30. I have the old ones fit for the market in August; they average 325 pounds each, which is generally worth \$6.00 per hundred, live weight, which is \$234 for old pigs.

As for poultry, I never reckoned what they made, but I keep 40 hens and it takes them all for home use. I farmed some time ago like T. M., with small stock, and sold grain, but by reading the FARMER'S ADVOCATE I found it was better to feed stock and enrich the farm instead of selling grain and impoverishing the land. I think if T. M. would read the F. A. thoroughly, he would be able to live, improve the farm, and have a handsome profit to lay by every year.

[NOTE.—We would be pleased to hear from the actual experience of others what they have been able to accomplish on their farms, no matter in what particular line of farming. Our correspondent, D. B., appears to have been getting a very good price for his hogs. —ED.]