THE FARMER'S ADVOCATE & HOME MAGAZINE

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It is impartial and independent of all cliques or parties, handsomely illustrated with original engravings, and furnishes the most profitable, practical and reliable information for farmers, dairymen, gardeners and stockmen, of any publication in Canada.

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Address—

THE FARMER'S ADVOCATE, or
THE WILLIAM WELD CO.,
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National League for Good Roads.

The National League for Good Roads will join with the New Jersey State Road Improvement Association in calling a general conference of all Road Improvement Associations in the United States, to be held at Asbury Park, N. J., between July 2 and 6, 1894, on the occasion of the National Editorial Convention at that place.

It is not intended at this meeting to form any national organizations, or to take any combined action, but to discuss the general subject with the advantage of all the local information obtainable.

It is expected that some of the road machine companies will give an exhibition of road construction in all its branches, at that time and place.

Many of the leading railroad companies have expressed a desire to aid in the general movement for good roads, by making very important concessions in the transportation of road materials, and it will be suggested to the companies to have representatives at this conference for the purpose of promoting some concerted action in this direction.

The office of Road Inquiry of the U. S. Department of Agriculttre is actively co-operating in the movement.

How to Build a Silo.

"Will you describe to a new subscriber the way to build a silo? There are none near here. Would a brick building be suitable and cheap? May I sink the floor of the silo lower than the byre floor? What size would be suitable to supply sixteen head of cattle with food during the winter?

"The ADVOCATE is a welcome addition to our list of papers. We have, through it, obtained the addresses of many of Canada's best Ayrshire breeders.

RICHARD ANDERSON."

The first silos were pits dug in the earth. In these the ensilage was fairly well preserved, but the most serious inconvenience from the underground pits was the great difficulty experienced in getting the silage out when needed. With the introduction of improved carriers on the cutting boxes, the pit silos dropped into disuse. They are now principally built above ground, or if constructed in the barn, are on a level with the stable floor. Wood is generally recognized as the best material for the construction of silos, being much cheaper than brick or stone, and equally as serviceable in the preservation of the fodder.

LOCATION.

Silage is a heavy food, and should be located as near the stock as possible. In order to have the silo near the cattle, and also to make the construction as cheap as possible, it is a wise plan to build in the barn. A root cellar, or a portion of it, can frequently be converted into a silo by taking out the floor above, and building a wooden wall to the height of the barn plates Where the cattle stand in two rows, with a feeding alley between, it will often be convenient to build at the end of the barn, with the door opposite the passageway. It should be so located as to be filled from the outside. Ample space for cutting-box, power and wagons is necessary.

MATERIAL.

Stone or brick is now seldom used, unless it is desirable to make use of standing walls of masonry, and even in such cases it is better to have the walls lined with wood. Mr. E. D. Tilson, of Tilsonburg, Ont., has in use several excellent silos constructed of brick coated with cement plaster. At the Kansas Experimental Station nearly 50 per cent. of ensilage stored in stone silos was spoiled. Though no such results have been noted by others, yet experience goes to prove that a better ensilage can be obtained from wooden silos.

FLOOR.

The cheapest floor consists of solid clay, raised a few inches above the surface of the surrounding ground. A wooden floor is not to be recommended. A coat of cement, though not necessary, is often applied to the floor. John Gould, the well-known ensilage authority, of Ohio, recommends hollowing out the clay floor in the form of a bowl, the earth from the centre to be thrown up and packed firmly around the bottom of the wall, in order to take part of the pressure from the sides of the silo.

FOUNDATION.

The foundation should be of stone or brick, though this is not absolutely necessary; concrete formed of gravel and cement is equally good, especially up to the surface of the ground. The wall, upon which the sills rest, should be at least six inches above the floor, and eight inches above the ground surface. The sills should be anchored to the masonry by means of iron rods. They may be made of two pieces of 2x8 or 2x10 inch stuff, spiked together; these should be painted with coal tar, and bedded in mortar with the ends crossed at the corners and well spiked together.

STUDDING.

Studs smaller than 2x8 inches are seldom used, even for small structures. Experiments carried on at the Wisconsin Experimental Station, with a view to determine the pressure which was safe to allow on the sides of a silo, showed that to insure against bending, the studs should be not less than ten inches wide for a silo sixteen feet deep, and not less than twelve inches for eighteen to twenty feet deep, and wider in proportion as the depth increases. In these tests the uprights were eighteen inches apart. To be secured against latterel pressure, the studs should be mortered into the sills. Strength in the walls is most essential (the pressure being very great), in order to prevent spreading, which admits the air and spoils the ensilage.

LINING.

The usual lining consists of two thicknesses of boards, joints broken; a thickness of tarred paper should be used between the layers of boards. Other materials have been used, but none have proved so satisfactory as the above. Lath and plaster have been tried, but the silage renders the plaster soft, and liable to be destroyed, as well as the laths and framework. The Wisconsin Experimental Station lined one silo with tin, another with sheet iron, neither of which was satisfactory. The inner lining should be of boards, dressed on the side next to the ensilage. A method which is being adopted to a considerable extent, and one which has the recommendation of John Gould, is to use a single thickness of T. & G. lumber, dressed on the inside. In this case the groove should be filled with coal tar before the next board is put on. This forms an air-tight covering, and at much less expense than two thicknesses of lumber with tar paper between.

There is much difference of opinion in regard to the advisability of painting the inside of silos with coal tar or other material for the purpose of preserving the wood. A lining perfectly impervious to dampness would be effective, but in practice numerous places are left for the silage juices to enter the wood, while the coat of paint may do harm by preventing the quick drying of the boards after the removal of the ensilage. Some prefer an ordinary coat of paint.

The officers of the Wisconsin Station examined a number of silos, both painted and unpainted, and found but little advantage in the paint. If the silo is built inside the barn, no lining on the outside will be required. If it is a separate building, the best plan is to use two thicknesses of sheeting, with tar paper between, though good results are reported where only one thickness of inch lumber has been used. The silo will be more durable if the outside coat of lumber is dressed and treated to a coat of paint.

CORNERS.

As a rule the ensilage settles badly in the corners, especially if tramping has been neglected. This allows decay to commence; almost invariably the worst ensilage is found in the corners. Sharp corners may be avoided by nailing a verticle board with beveled edges in the corners. The aperature behind this board may be filled with sawdust or some other suitable material. Instead of boards, the corner may be filled by using a three-cornered piece of timber made by splitting—say, a 6 x 6 in. scantling, with a saw.

DOORS.

The doors may be continuous from top to bottom, thus forming a chute through which the ensilage may drop to the floor of the cattle stable, or there may be a space of several feet left between them. The former method is more convenient for feeding, but the latter adds strength to the silo, and prevents the walls from spreading. If outside doors are used they should be hung on hinges. The best method for arranging the inside is to place short boards across the doorway, which will be held in place by the weight of the ensilage, and can be built up as the height of the ensilage increases—ice-house fashion. By the use of tar paper the air can be excluded.

VENTILATION.

In all silos which are not built inside a building, and for this reason do not require an outside wall, ventilation between the lining and the outside wall should be provided for. This permits the circulation of dry air between the walls, and thus retards action of decay. In order to allow for this ventilation, the outside lining should not come to the plate nearly by two inches. In the lowest board of the outer lining auger holes may be bored between the studs. These ventilators should be covered with wire netting; it is better to close them altogether in cold weather.

THE ROOF.

This is not a matter of great importance, provided it is light and waterproof. A space should be left in the gable for a door, or if the roof is circular, it will be necessary to build a dormer window for the carrier which conveys the ensilage into the silo. As there is a large amount of heat and moisture given off by the ensilage, sufficient ventilation should be provided for by good-sized ventilators.

SIZE OF THE SILO.

The size of the silo will depend upon the number of animals in the herd, and also upon the length of time which it is necessay to feed them. A rough estimate would be one cubic foot per animal per day. The Wisconsin Station recommends a depth of at least 24 feet. The smallest per cent. of waste occurs in deep silos, but the additional cost in framing the building and elevating the ensilage largely counterbalances any advantage which there may be in having the silo of a greater depth. A round silo has a greater capacity for the amount of lumber used than a rectangular one, and the liability to waste at the corners is done away with. At the usual estimate of 50 pounds to the cubic foot of ensilage, allowing 40 pounds of ensilage per day per animal for 200 days, sixteen cattle would require 64 tons of ensilage, or a total cubic space of 2,560 cubic feet; this would be equal to a silo of 16x16x10 or 20x12x10½, inside measurement. But, as ensilage will settle greatly, often to the extent of one-third the bulk, allowance will have to be made. In this case, a good size for Mr. Anderson would be, for a rectangular silo, 14x14½ and 20 feet deep, or for a round silo, 16 feet inside diameter and 20 feet deep, which would give a total capacity of 100 tons, or allowing for settling, about 70 tons.

COST.

It is almost impossible to give the cost of building a silo, owing to the great variation in the cost of the material and in the price of labor. If built in a barn, a silo, such as the above, would cost about one dollar per ton of capacity, or less, if the material is on the farm, or if the silo is of large size. A silo of the dimensions of the one just described, if a stone foundation was built, would require 118 cubic feet of stonework:

Studding, 40 pieces 2x12, 1,600 feet, at $16	$25 60
Sills and plates, 16 pieces 2x12, 512 feet, at $16	8 20
Siding, 1,200 feet, dressed one side, at $14	16 80
Siding, 1,200 feet, rough lumber, at $12	14 40
Tar paper, 3 rolls, at 80 cents	2 40
Nails, etc	5 00
Carpenter work	10 00