small pulley, and a small float inside, and a weight outside of barn siding, and I have never seen the weight stop in one place; it rises and sinks as water is pumped in; the inside float works up and down, touching west side of tank all the time, and we always know how much is on hand; and I think all will agree with me that this winter has been severe enough to test it.

Mode of Construction.—We had in same place in barn a wooden tank which leaked badly after two years' use. Coopers wanted six dollars to repair it, so we did the following as an experiment: Wooden tank is six feet deep and seven feet wide. We got two rings made so as to allow 5 inches space all around, two inches for lumber, and three inches for cement. We had a lot of 6 x 6 x 7-ft. lumber for curbing outside of ring. First, we put eight strands of barb wire from each side and across bottom, just stapled it lightly at bottom, and put 1½-inch blocks at top end, so that side wires would come up in the center of the filling of concrete. Of course, wires were put equal distance apart around old tank. We also laid one around the bottom, 1½ inches from old tank sides. Next, we put in about three or four inches of cement, mixed one of cement to five of screened gravel, and raised bottom wires where they crossed the bottom of tank, so the cement was well under them. Then the bottom ring was put in, and the 2 x 6 set up outside of rings. The top ring came 6 or 8 inches above old tank, and we just tacked the 2 x 6 to the top ring and put 3-inch blocks in around the top at intervals to keep it plumb. We mixed the cement so that it would pour around mold, and had a long inch piece to tamp around, so it would go each side of wires, keeping them from the edges. About a foot from the top we ran another heavy wire around it. Fourth day took out center curbing and painted it inside with thick cement, and it was as smooth as could be. I might say our tank fills up from the bottom. We had a piece of pipe through; also one at the top as an overflow. Two of us built it in one day. If I remember right, I do not think it cost us four dollars for cement.

The tank is not exposed, there being hay around three sides, and open to west side, minus siding of barn. As regards bursting, we built a cement water trough at same time, 10 x 2½ feet. During cold spell this winter we used all water from tap in barn, which allowed trough to freeze solid; even the supply pipe was frozen one inch down. We went to work and chopped it all out, and all the damage I can see is where we chopped trough, instead of ice. Half of the above tank rests on walls of barn, and other on heavy cedar posts; cement would probably be better. We are more than satisfied with it, there being no leakage on cow's heads, etc. SMITH BROS.

Middlesex Co., Ont.

Straw Shed on One-hundred-acre Farm.

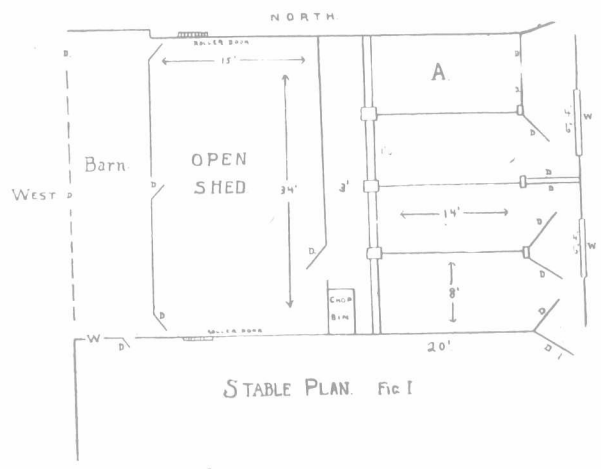
Editor "The Farmer's Advocate":

For the benefit of those who may be contemplating building a straw shed during the coming summer, I will give plans and cost of one 34x35 feet, with 15-foot posts, which I built in 1910-11, and which is entirely satisfactory to my point of view. The reason it was not completed in 1910 was that too much filling in had to be done in the stables, owing to five feet of a drop in the yard level from the barn. The timber was bought at a sale (part of it), and a few required sticks were taken out of the bush and squared by a bee of the neighbors. One carpenter laid out the timber, and my two sons and myself helped frame it. Had plenty of stone on hand for the walls, which were on three sides of the building. After the frame was raised, we helped the carpenter side it and put on the doors, etc. The tinsmith having the contract of the roofing, put on the sheathing and the galvanized corrugated sheets.

After this was completed, the filling in of the stables under the shed was done at convenient times, after showers in harvest or any slack day, so that it was all finished by the fall. This shed was left open during the winter, and cattle were allowed to run through it, excepting one corner used for a turkey pen.

In the spring of 1911 the ground in the stables had settled so that it required six loads more clay and gravel to level it up to the required height. First, cement walls, 10 inches thick, 4 feet high, were built around the three sides of the pen. The walls were four feet from the lumber (siding). On top of these walls was bolted a plank sill, 2 x 4 studs were put between this and the barn (ceiling sill), and over them two-ply of lumber, with building paper between. The floors were laid of cement, cement posts being used in the partitions, and cement troughs for feeding. The cement wall was 2 feet high, by 6 inches, capped and two-ply lumber, with paper above that. The dotted line in barn shows where the barn wall was before shed was built. The wall having been moved out to where it now is. D's represent doors and windows. Notice the double doors at the back of each pen; two doors are hung on the cement post at the back of each pen. These doors are 14 feet wide, and are fitted with latches, so that, by bringing a door from each pen together, they lock and form a smaller pen (A). This is a great convenience in cleaning out the pens by door 1, or for loading from any pen by door 2. When this is not going on, the doors are locked, bolted by draw-bolts to blocks placed in the cement wall at the back of the pen. This arrangement of pens is specially fitted for litter carrier, which is not put in yet, but is very handy for any method of cleaning.

Figure II. shows the side elevation of the pens, with passages at both ends of the pen, cement posts, trough, and gutter. The hinge-hangers were placed in the posts while they were green in the moulds, having been moulded and then placed in the stable, going 1 foot under floor. The partitions (2-in. plank) are fitted into the grooves in the cement posts, and, if one happens to get chewed through, it can easily be replaced by a new one.



STABLE PLAN. Fig I

COST OF SHED—1910.

Timber	$ 20.00
Lime, 31 bushels, at 26 cents	8.06
Sand, 8 loads, at 25 cents	2.00
Masons (building walls)	42.50
Lumber and window sashes	60.30
Sawing (rafters, sheeting and flooring)	16.50
Roofing, nails, door hangers, track, etc.	107.57
Carpenters, 23 days, at $1.50	34.50
Eavestroughing	5.00
Gravel, 4 loads, at 20 cents	.80
Cement, 3 barrels, at $1.85	5.55
Total, 1910	$302.88

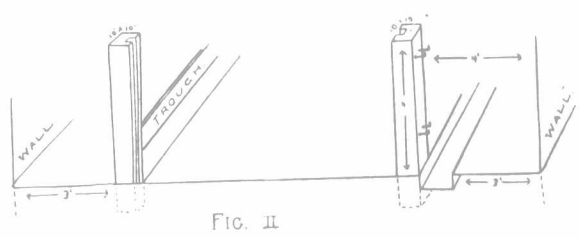


FIG. II

COST OF STABLES—1911.

Gravel, 10 loads, at 20c.	$ 2.00
Bolts, hinges, etc.	5.75
Glass, paper, nails, etc.	2.40
Lumber, cement and window sashes	42.00
Total of stable	$ 52.15
Total of shed	302.78
Total	$354.93

Without counting our own work, we having done all the stable work ourselves.

JAS. B. HAMMOND.

Standard in Measuring Lumber.

In the Feb. 15th issue of "The Farmer's Advocate" I noticed an inquiry from E. G. T. in regard to what constituted a standard, or, more correctly, how many standards it required to make a thousand feet of lumber, and, being familiar with measuring lumber and logs, I believe I can give the necessary information.

The term Standard, as applied to logs, may mean a log 22 in. in diameter, or one 24 in. in diameter, but the latter is the most common, and applies to a log that is the above measurement across the small end, and is 12 feet long and contains 300 square feet of square-edged 1-inch boards.

The smaller standard is for a log the same length as the larger, and contains 243 square feet of edged boards.

Very likely the question applies to the larger, and in this case would take 3⅓ standard to cut one-thousand square feet of good edged lumber one inch thick. A. A. GILMORE.

Huntingdon, Que.

Alfalfa — Soil Builder and Forage Crop.

[From notes of address by Prof. A. E. Chamberlain, St. Paul, Minn., at the Ontario Corn Show, in Tilbury.]

Man is naturally a soil robber. It is very easy to overdraw our account in the best of all banks—the soil. Some will say, adopt a good system of crop rotation, and you will maintain soil fertility. Now, a proper rotation of crops is most essential. It is not something altogether new and of man's invention. Rotation of crops is a principle of nature. Cut down a pine forest, and a thicket of poplars springs up. Break up a prairie or other sod, and new, or at least hitherto unnoticed forms of vegetation reveal themselves. When man, acting contrary to this law of nature, attempts to grow the same crops for years in succession, he gets into trouble. The corn-root louse and the corn-root worm are pests which have become serious where there has been overgrowing of corn. And so it is with other crops. When grown too long in succession, the yield so diminishes that they become unprofitable—nature sees to that—and man is forced to conform to the law of rotation, and plant something else. But rotation, except in the cases where clover or alfalfa are introduced at intervals, adds nothing to soil fertility; it but enables greater drafts to be made upon it. Unless the reserves in the soil are kept up by other means, rotation of crops, other than legumes, hastens the process of impoverishment.

It has been demonstrated, however, that the legumes, of which clover and peas and alfalfa are the most common, are soil-enrichers. They add to the nitrogen content of the land by their power of extracting this substance from the air. Red clover is much more suitable than alfalfa as a rotation crop. No man who has a good thick stand of alfalfa cares to break it up, and such a stand on proper soil is good for a lifetime. But as soil improvers, they stand side by side. In the American West, prize corn is nearly always grown on clover or alfalfa sod.

Three things are essential in securing a good stand of alfalfa: First, a soil that is naturally dry or else well drained. I suppose, if you were to examine a level field just now you would probably find the ground surface coated with ice. That condition is destructive to alfalfa. Therefore, in addition to being dry, it is better that the ground should be rolling, so that water may not collect and freeze on it in winter. Second, humus in plenty. The roots of alfalfa go deep, and can extract nutriment from stubborn subsoils, but the main source of supply is in the rich surface soil. Therefore, have soil rich in humus. Third, a good seed-bed. Some men will plow a field, and then harrow the surface well, and think they have a good seed-bed. That is no seed-bed. It is only for the neighbors to look at and say, "What a good farmer that is! Look at that field, ain't that fixed up right?" Roots do not work at the surface. Unless the earth below is thoroughly made fine, and then firmed, there has been no real preparation for alfalfa seed.

Before sowing alfalfa, have the seed examined for dodder. Dodder is the one pest that is ruinous to the alfalfa crop, and it is introduced in the seed. (The Seed Branch at Ottawa examines samples sent it, as to vitality and percentage of weed seeds, free.) In buying seed, it is important also to know where it was grown. Southern-grown seed should not be sown in the North. Get it from a latitude at least as high as your own.

I never recommend sowing alfalfa with another crop. It sometimes does well enough sown in that way, but considering the expensiveness of the seed, the risk is too great. Sow it alone and about the middle of May. It would grow if sown earlier, but the reason I name that date is that it gives time to make the thorough preparation of the soil that is so needful. With a loose surface, and an under soil that has been made first fine and then firm, alfalfa seed may be sown at any time in spring, and it will grow. Sow seed deeply enough so as to rest on the firm, damp soil. The farmer who waits for rain to start his crop is not the best kind of a farmer. He can have moisture wherever he wants it.

As to the amount of seed required, eight or ten pounds per acre will do, if everything is right. We usually have to sow double the amount of small seed really needed because we do not have conditions just right.

Clip with the mower several times the first year, with the bar set at a height of about two inches. A fair crop could be taken off the first season, but the top is produced at the expense of the root. It is wiser to clip and leave on the ground. Clipping develops the root system.

Alfalfa pasture is as good for hogs as milk. Hogs only should be allowed to pasture it. Sheep and horses nip out the crowns, and even cattle eat it down too closely. The crop should be grown chiefly for hog pasture or for hay.

The first cutting should be made when the bloom begins to show well. There is a good rea-