

the lead plates must be handled with great care. Both batteries have about the same bulk or size.

Nor is it possible, as so many think, to simply purchase a storage battery and operate it as you would a dry battery, renewing the parts when the storage cells cease to operate. A storage cell requires an electric generator, and an engine of some kind to run the generator. That is, the battery must be charged by the electric current not by new parts. It must be direct current not alternating, the alternating current being used largely for lighting and power. If there is an alternating current which you can use it is cheaper to buy a "rectifier" to change the alternating current into direct current, than to buy an engine and generator. The rectifier, however, like the storage battery, costs money to operate it like any other machine or apparatus. The mercury-vapor converter, which is most commonly used, has an efficiency of about eighty per cent. This means that if you wish to charge a storage battery and for some reason use the alternating current the quantity charged into the battery is only eighty per cent. of what you pay for and the quantity discharged is only eighty per cent. of that charged, if a lead cell is used. That is, if you pay a bill for alternating current of ten dollars a year, you get the benefit of about \$6.50 worth of electricity. If it is an Edison battery you get the benefit of about \$5.20 worth of electricity.

If you light your house with electricity from a storage battery charged by means of a gasoline engine running a generator, and it costs you ten dollars a year for the oil used, the cost would be only about eight dollars if the lights were directly connected to the generator instead of to the battery. The cost of the lighting plant in place of being \$350.00 without engine would be only \$125.00 to \$150.00 with engine included. The repairs and renewals with the storage battery amount to surely ten per cent. a year. Without the storage battery the renewals are negligible, and the repairs not over two per cent. per year.

There is the inconvenience of having to start the gasoline engine whenever lights are needed, and the inconvenience of having to stop it afterwards. This is not by any means as bad as it would seem, however, for the stopping may be accomplished from a distance by any controlling device which will turn off the fuel.

Nova Scotia.

R. P. CLARKSON.

On the Fertilizer Question.

Editor "The Farmer's Advocate":

With the information furnished in the fertilizer advertisement, mentioned in the article "Believes in Home-mixed Fertilizers" in your issue of April 9th, it is not surprising that Jas. Hunter felt prompted to write a protest against such, or to express surprise that anyone who had studied fertilizers at the O. A. C. should let his name go as sponsor for such sweeping statements. I wish to make it clear to your readers, however, that my name was used in connection with this advertisement entirely without my consent.

I altogether agree with Mr. Hunter that the advertisement is quite misleading, since the conditions under which these results were obtained are not taken into account. Those seeking information on fertilizers are asked to believe that the larger yield obtained by the man using the factory-mixed fertilizers is due to the brand of goods. Such important considerations as soil conditions, previous cropping, spraying, etc., are not even hinted at as being factors largely responsible for differences in yields.

The following conditions under which the results were obtained by these two young men will be of interest to your readers, and must necessarily be taken into consideration in accounting for the results secured:

The experiment was with potatoes, each growing Delawares. Roy McKenzie Barron, of Font-hill, Ont., used as fertilizer 100 lbs. nitrate soda, 300 lbs. basic slag and 200 lbs. of potash. In addition to this eight loads of manure were applied. The soil was sandy loam, the surface soil being fully 10 inches deep. The previous year a crop of timothy hay had been grown on the field. The seed was not treated for scab, nor sprayed during the growing season to prevent blight. Between June 6th, planting time, and October 1st, when the potatoes were dug he cultivated five times, and on the latter date harvested 135 bushels. Valuing the marketable potatoes at 60 cents per bushel these would bring in \$77.40. Labor, fertilizers, seed, etc., cost him \$44.25, so that he had a margin of profit of \$33.15.

Will Chrysler, of Allanburg, the other competitor, used 500 lbs. of a factory-mixed fertilizer, and six loads of barnyard manure. This field was clay loam with five inches of surface soil in good condition. This field had been down in alfalfa for several years previous to being broken for this crop. The seed was treated with formalin to prevent scab and planted on June 3rd. Two sprayings of Bordeaux Mixture were given to prevent blight, and three cultivations. When they were harvested on October 20th there was a yield of 296 bushels, worth \$177.50. The cost of producing this crop including tillage, fertilizers, etc., was \$42.25, leaving a margin of \$135.25.

A consideration of the above conditions will enable your readers to see that there were many factors responsible for the results in these experiments, and that the larger profit in the one could not honestly be credited to the special brand of mixed fertilizer used.

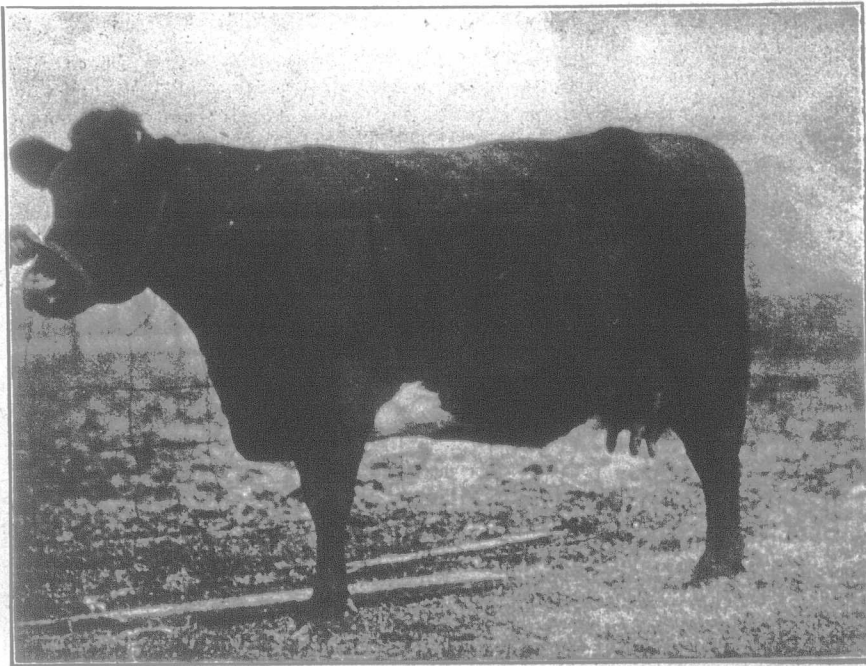
Welland Co., Ont.

R. AUSTIN.

Cementing a Silo Roof.

Editor "The Farmer's Advocate":

In reply to the enquiry concerning method of building cement roof on silo, I will try and give a concise explanation. In finishing top of cement silo wall I embedded a hoop of one-half inch round iron (old guy rod) firmly looped together, placing about ten or twelve inches from top. I



Gipsy Lady 2nd.

This dual-purpose Shorthorn was second at Guelph in December, with 168.9 points. She freshened October 4, 1913, and in March gave 1,082½ lbs. of milk testing 4.3. Miss Smith, Maple Lodge, is the owner.

also set in on end eight blocks 2 inches by 2 inches by 5 inches, an equal distance apart on inside top and flush with finish of wall. I also ran a groove 1 inch by 1 inch around the top of inside. After removing my inside forms I pulled out blocks, which should be tapered somewhat, to draw easily; I left the outside ring on, as I used it for tacking on my segments of board to support the ten-inch projection. But the principal reason was for resistance against the pressure of the green unbonded roof. For a face strip on the outer edge I used thin basswood five inches wide by less than one-quarter inch thick, butting ends together with block cleats on outside. I made a circle for center about thirty inches in diameter and eight inches deep for the ventilator. We then set up our rafters, dropping

Growing Crops in Rotation.

Editor "The Farmer's Advocate":

Cereal crop production is of major importance at all times, even though forage crop production is attracting increased attention as the necessity for the economical feeding of live stock becomes apparent to more and more of our farmers throughout Canada. But profitable cereal crop production practically always follows satisfactory forage crop production, the two usually, in fact, almost invariably go well together, and entirely satisfactory results from the one are almost impossible unless the land has just previously been properly handled under the other. To secure the most highly profitable returns from a cereal crop necessitates its being grown after certain other crops or, at least, after certain preparatory cultural operations have been properly performed.

The places in the cropping system where cereals may be expected to give profitable returns are:

- 1.—Immediately after a hoed crop, as potatoes, corn or roots.
- 2.—After a leguminous crop, as peas, beans, clover, etc. Or,
- 3.—After a partial summer-fallow, as where a meadow or old pasture has been broken up in August, cultivated and so handled as to cause the sod to rot and later cross-ploughed or ridged up for the winter.

That is to say, the best cereal crop may be expected where a rotation similar to one of the following is put into practice:

- (A)—Three year rotation:
1st year.—Hay or pasture.
2nd year.—Hoed crop.
3rd year.—Cereal, seeded down with clover and timothy.
- (B)—Four year rotation:
1st year.—Hay, (new seeding).
2nd year.—Hay or pasture.
3rd year.—Hoed crop.
4th year.—Cereal, seeded down to clover and timothy.

- (C)—Five year rotation:
1st year.—Hay, (new seeding).
2nd year.—Hay or pasture, (plough in August, cultivate and cross-plough, or preferably ridge up in late autumn).
3rd year.—Cereal.
4th year.—Hoed crop (particularly suitable for potatoes or roots).
5th year.—Cereal, seeded down to clover and timothy.

Any one of the above rotations may be expected to give satisfactory results in the increasing of cereal crop returns, and in the improving of the soil.

After determining the rotation that is to be followed the next most important consideration making for a good grain crop is the preparation of the soil immediately before seeding. Cereal crops require a loose surface with a moderately deeply-worked soil, but with a solidly-packed lower seed bed. Conditions for grain production are almost ideal after a satisfactory crop of roots, say sugar beets or mangels, has been harvested. Corn land, if properly treated after

harvested in the fall, is also likely to give good returns. Where the soil is rather light or of a quality that might be called sandy loam, the best treatment after growing corn, to insure a good stand of grass and a good crop of grain, is to run over the field, lengthwise and crosswise, with a double disc harrow which tears up the corn stubble and leaves the surface in good condition for the next spring seeding, which should be done after the land has been again double-discd but not ploughed.

Potato land or root land had better be lightly ploughed after their respective harvests to insure evenness of surface, and the burying of any refuse matter that may have been left lying about. Where sod has been ploughed in August, rotted and ridged up in the fall, the ridges should be broken down with a disc harrow or



Some Nice Leicester Lambs.

heel in gain in wall, spiking top to circle four inches below top edge. I collared the rafters midway up for a center support for sheeting. Cutting my sheetingboards on suitable taper I dropped the bottom in the groove on wall and tacked lightly the center and top. Everything was now ready for the concrete, which we pulled up with horse, using a swinging 9-inch pole attached to windmill mast. (See cut, page 591, issue of March 26th.) We put on two coats similar to what we might use on a stable floor. We put in another half inch cable near outer edge, also scrap iron set like spokes around the outer edge with hoops of wire every foot up the roof. Provision was also made for entrance of blower pipe.

The cupola form I made in my workshop, confining outside with a sheet of galvanized iron.

Perth Co., Ont.

J. H. ARMSTRONG.