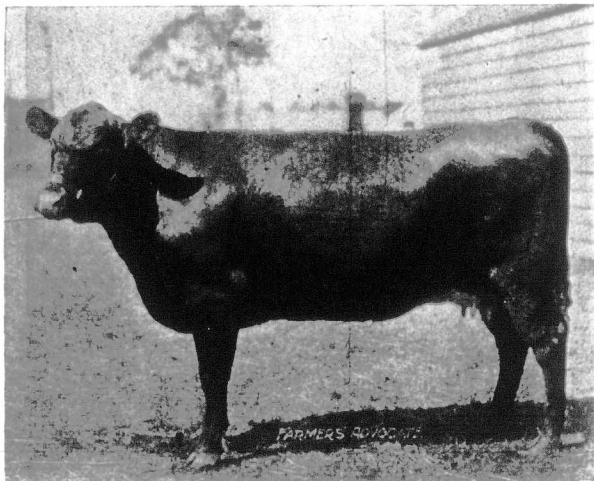


the hard layer of soil beneath the furrow slice and have already reached depths almost equal to those of the primary vertical roots. The branches in turn give off other branches, and these produce fibers and root hairs so that the whole soil at this stage of growth to the depth of two feet was practically filled with roots. In this sample the main roots were three inches from the surface of the ground at six inches from the hill and about four inches below the surface midway between the rows. Numerous feeders or small, fibrous roots were noticed in washing, within two inches of the surface, and some were caught on the wires. After corn is ten inches high, it should not be cultivated deep. A sample of corn roots taken after the corn was killed by frost, ninety days after planting, showed that the whole field to the depth of three

**DORMOUSE.**

First-prize and champion Red Polled cow, Royal Show, Cardiff, 1901.

PROPERTY OF MR. J. E. PLATT, BEDFORD.

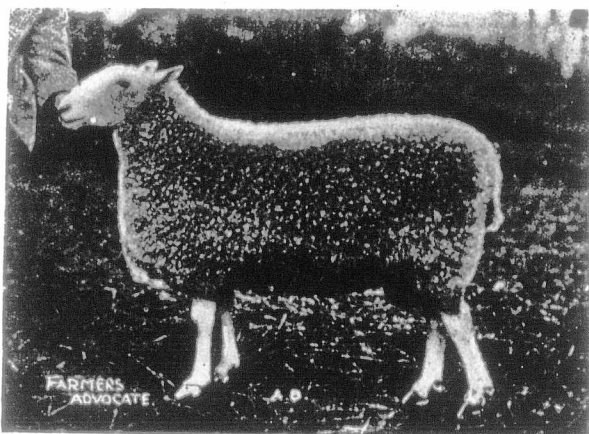
and a half feet was fully occupied by the roots. (See Fig. 1.)

SUGAR-BEET ROOTS.

"The root system of the sugar beet differs from that of any of the other plants studied. The vegetable itself is really the enlarged upper part of the taproot which extends almost perpendicularly downward into the ground, becoming rapidly smaller in diameter in the upper part of its course, the lower part being quite small and threadlike, and reaching, in several samples, a depth of over three and one-half feet. From this central root, branches spread outward and downward into the soil on all sides. The upper main branches are the largest and extend outward almost horizontally for more than two feet. Those deeper down incline more and more until the last branches run nearly parallel to the taproot. The diagram (Fig. II.) merely represents the skeleton of the root system."

Attributes of Alfalfa.

It is stated that millions of dollars are annually added to the wealth of arid portions of the Western States through the growing of alfalfa for feeding animals, and that it has added immensely to the production of honey in those sections—that each blossom has its honey, and that the bee in gathering it, spreads the pollen which fertilizes and gives

**BORDER LEICESTER.**

Shearling ram. First prize and champion of the breed at the H. & A. S. Show, Inverness, and Royal Northern Show, Aberdeen, 1901.

BRED AND OWNED BY DAVID HUME, BARRELEWELL, BRECHIN.

to the plant a superior quality and more vigorous growth, particularly the power to produce seeds.

It has been demonstrated that alfalfa does not seriously exhaust the strength of the soil, though it produces a series of crops each year without the introduction of fertilizers, which shows that its growth in large part is from drafts upon the atmosphere.

It is a truth demonstrated by the whole human experience that the fertility of the soil is much sooner exhausted in wet than in dry countries, which is philosophical. An abundance of water carries the fertilizing elements downward or causes them to evaporate, when in periods of what may be called droughts, or in dry countries, the tendency of moisture is towards the surface, bringing with it the elements that contribute to vegetable growth.

Alfalfa at Annandale—A Great Crop for Pigs and Cows.

To the Editor "Farmer's Advocate":

I would like to tell you some of my experience with growing and feeding lucerne or alfalfa. As there is at best very little of it grown in Canada, farmers know very little of it, and as I have now had ten years' experience with it. I am getting pretty well posted as to the best way of growing, harvesting and curing it; and also its good qualities as feed for both hogs and cattle, particularly milch cows. I think it one of the best, most valuable and most economical forage crops we can grow, either for soiling or for cured hay. It is the greatest milk producer of any fodder grown on our farms, and produces the greatest crops—three to four good crops in one season. I have cut two crops this season, and now have a third crop two and a half feet high, standing as thick on the ground as possible—the most beautiful clover crop you ever saw. The first cutting, May 20; second cutting, July 1; third cutting, Aug. 9; expect a fourth in Sept. First cutting, 7 tons per acre (green weight); second cutting, 4 tons; third will go 7 to 8 tons; fourth, can't say how much, probably 4 to 5 tons. Second cutting was after a long dry spell, and it did not do so well as the first and third crops. I cut a field for cured hay about the middle of June, 2½ tons dry hay to the acre; a second crop now (Aug. 10th) as good or better, and will have a third crop, making 7 to 8 tons per acre.

The above was seeded down last year. I have seeded down six acres this season—the finest and most beautiful growth I ever saw—clean and nice. I cut it once about the middle of July, and will soon cut it the second time. First cutting I left the greater part lying spread over the ground for a mulch, but some of it was too heavy, so I took it off for feed. About the last of August I will have to cut it a second time, and will get a very fair crop. This is great for this summer's seeding—the best I have ever had. I am always learning and improving in my way of managing it. It seems to be a very difficult matter to get it well started. Not one in a hundred can succeed with it at first, and so many give it up as a failure. I have held on and kept at it until I have learned how to manage it. The great secret is in knowing how to prepare the land, when to sow, and how much seed to sow per acre. The land must be thoroughly cultivated and worked the year before, and again early in the spring before sowing, so as to kill all weeds and have a fine seed-bed. I sow 30 lbs. seed to the acre, harrow, and roll well so as to pack the earth well down after sowing, and when six to eight inches high mow it so as to cut all weeds, if any; but cut it anyway, as it makes it root better and grow stronger. It never should be allowed to go to seed, as that would weaken it very much. For hay it is best cut as soon as it begins to show the blossom; cut later, it is not nearly so good for feed. For soiling, cut before it blossoms and cut often.

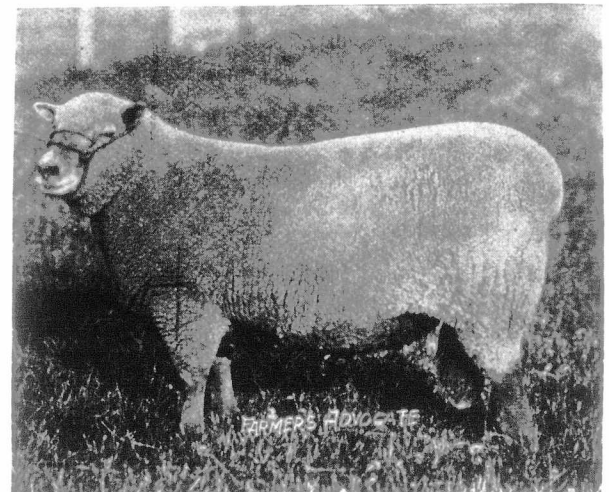
There is no better way for soiling either cows or pigs. I feed my 300 pigs all they will eat of it every day, and they fairly love it—eat it ravenously, both young and old pigs—and it does them good; and the cows like it better than any other green feed, but we have so much old ensilage left over this summer we are feeding that to our cows. I have fed it all summer, and will continue to do so even with good or bad pasture. I have a new book on alfalfa (besides several old ones) which tells wonderful stories about alfalfa. The writer says that one ton of alfalfa hay (properly cured) is worth as much as four tons of timothy hay for milch cows, or two tons of red clover, and that a ton of the leaves is worth as much as a ton of wheat bran. If you feed your cows or pigs alfalfa hay in the winter, you do not require to feed any grain. Just think of it—five to six tons of alfalfa hay to the acre, and that worth as much as 20 tons of timothy hay! A big story, is it not? But this is what this Professor of Agriculture says in this new book. But even if it is one half as good as he says it is, and all the older books and professors say it is, it certainly is a good thing, and why do our farmers not grow more of it? If one had a few acres of it, he could cut it continuously all summer, from the middle of May to October, and feed his cows and pigs every day all summer, fresh and good, the richest and most convenient of any soiling crop, and the greatest growth to the acre.

I have fourteen acres growing this summer, and intend seeding down a lot more next spring. It should be sown as early in the spring as the ground can be got ready, but better sown later if the land is not in proper shape. It must have a good seed-bed. It requires a good deal of skill and patience to cure it properly for hay. It should not be dried too much in the sun, nor handled about too much, as the leaves, which is the best part of it, are so very easily shaken off one could easily lose one fourth to one half its value. In a dry day it should be tedded or shaken up an hour after cutting, and two or three hours after raked and cocked and the cocks

covered over with cotton hay-caps, and then left standing two or three days or more so as to cure in the cock. This makes the sweetest hay I ever saw. It has a sweet, fragrant aroma, very pleasant to smell.

Now, this is my experience with alfalfa. I guess I must be a crank on this subject, but just let others come and see it for themselves and they will be convinced.

I am also on another experiment with soja beans. I think I have the finest field of them that was ever grown in Canada. They are now over three feet high and will soon be four feet high, and as thick as they can stand—the most beautiful sight in that line you ever saw. Last year they were just loaded with bean-pods filled

**SOUTHDOWN RAM.**

Two years old. First prize and champion, Royal Show, Cardiff, 1901.

PROPERTY OF THE DUKE OF RICHMOND AND GORDON.

with ripe beans right from the ground up to nearly the tops. We planted our own growing of seed this summer, and had a lot of nice beans left over. Our own seed grew better than the imported. We cut the greater part of it green and put it in silo. We are also experimenting with grass peas and Egyptian peas, and never had better corn.

E. D. THILSON.

Annandale Farm, Oxford Co., Ont.

Ontario Wheat Growing.

"Shall Ontario farmers continue to grow wheat?" I believe they will for many years hence. My reasons for this belief are as follows: Scarcely a year passes that crops yielding 25 to 35 bushels are not harvested in some sections of the Province.

Ontario wheat possesses certain qualities which no other wheat possesses. It is true it does not produce as good bread-flour, used alone, as does Manitoba or Kansas wheat. But it is far superior as a pastry flour. Manitoba wheat flour is quite unsuitable for the making of biscuits and buns, which is no unimportant factor in the products of flour.

The soil of Ontario is, I believe, as well fitted for wheat as the soil of Manitoba or Kansas; but it is older, and in many cases more worn-out

**CLOVER BAR KING.**

First-prize Berkshire boar at Edmonton, 1901.

THE PROPERTY OF T. SWIFT, STRATHCONA, ALBERTA.

than most of the prairie fields of the West, and must be built up by the growing of clover, the application of farmyard manure or special fertilizers, and a rotation of crops. I believe that the prairie soils will wear out as quickly as the soil of Ontario has worn out.

The Hessian fly is now perhaps the worst menace to our wheat-growing industry. The fly has made its worst ravages in this section of the Province, as the crops are not one-third what they should be. Late sowing in fall has been tried, with little or no success.

I believe the fly will flourish for some little time, but will disappear as quickly as it came. This has been its history of the past.

Oxford Co., Ont.

JOHN H. ROCK.