

show, etc., is a good one, and will, I believe, accomplish much.

Further inducement for the milking competition held at our winter fairs should also be held out. But in this connection I do not think that the inducement should be for Shorthorns capable of excelling in milk production the pure dairy breeds. This is more than can reasonably be expected of a breed that is primarily intended for beef production. A Shorthorn that can produce 30 to 35 pounds of milk per day, as compared with a pure dairy cow that, under the same conditions, will produce 40 to 50 pounds per day, is a good paying sort, for her calf, when he is fed, will pay the difference. The beef breeds should stand in a class by themselves in this competition.

Then, there is the practical management. Allowing calves to suck their dams after the first week, is not so conducive to as good a flow of milk as if the cow were milked by some person, and the calf pail-fed. Moreover, attention must be given to the feeding of rations conducive to good milk flow, rather than to fat production.

The establishment of an appendix in which to register cows of the milking sort would, also, I believe, be invaluable. However, it occurs to me, for the same reason as mentioned above, that the amount of milk a cow must give, in order to be entered, might be considerably below the amount required by the American Shorthorn Breeders' Association. A beef cow that can produce 6,000 pounds of milk per year and raise a good feeding calf, is a paying proposition for anyone. Perhaps the standard could be subsequently raised to 8,000 pounds, as required by the American book. How to make the tests is the difficult point. Weekly tests would not be satisfactory, for many Shorthorns will give a good flow for a few weeks, and then drop off in their milk flow. It's the yearly test that counts. Arrangements are now being made by some of the Dairy Associations for the carrying on of authentic yearly tests. When these are perfected, the Shorthorn men can surely fall in line. Testing cows for milk production is in the air, and we feel sure that the Shorthorn men will not be the last to acknowledge the merits of the system and adapt themselves to it. Success to the milking Shorthorn! The farmers want her.

M. CUMMING.
Principal N. S. Agr. College.

Good Sires with Good Pedigrees Needed.

To the Editor "The Farmer's Advocate":

As this is the time of year when farmers are selecting Shorthorn bulls to use on their grade cows, it would, perhaps, be of some benefit to have a discussion on this subject through your valuable columns.

What seems to be neglected most by the average man who keeps a bull is the pedigree. Of course, the individual merit of an animal is of most importance, but his breeding plays such a prominent part in the reproduction of his characteristics in his progeny, that it is scarcely less important than his individuality. And why is his breeding important. Simply because of the transmission of ancestral characteristics. This is called atavism or reversion.

The first great law of heredity is "Like begets like." However prominent this law may be, a breeder can never tell exactly what kind of produce he will get from certain animals, because of the influence of preceding ancestors. But, knowing the breeding of the animals mated, he can then know, with a considerable degree of accuracy, what kind of progeny to expect.

As a rule, farmers think that if an animal has a pedigree at all it is just as good as if he had one of the best. This is surely a mistake. A pedigree is of no great value unless it is a good pedigree. The fact of the matter is that every animal has a pedigree, but luckily they are not all recorded. Quite frequently I have been at auction sales where rather inferior bulls were put up for sale. One is started at a low figure, and before long somebody asks if he is "thoro'-bred," and the owner replies that he can get the papers for him. That seems satisfactory, and immediately the bidding is sharp, and the bull is sold for more than he is really worth. Such bulls as these would be of more value at the slaughterhouse than in use as sires.

What every farmer should be striving for is improvement, and no man can ever expect to improve his herd by using inferior sires. But someone may say, how can I tell whether an animal has a good pedigree or a poor one? This is an enlightened age, and any farmer who keeps a Shorthorn bull, and does not know a pedigree when he looks at it, can offer no excuse for his ignorance. We have the advertisements in your paper of the best herds in the Province, and also have accounts of the prizewinners at leading fairs. At the Short Course in stock-judging at the Ontario Agricultural College, a great deal of information in stock-breeding can be obtained. Then,

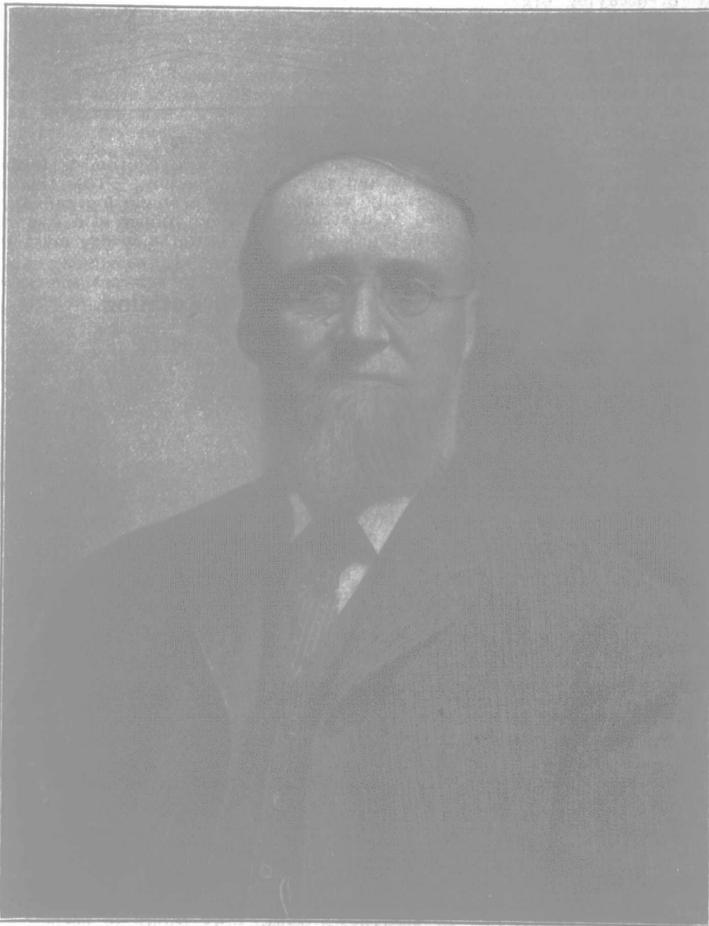
there are pure-bred Shorthorn sales, and the breeding of each animal is recorded in a catalogue. Then, if the prices of animals, as is generally printed in "The Farmer's Advocate," are compared with their pedigrees in catalogue, some idea of the value of pedigree may be had. Therefore, I say ignorance is not bliss, and it is not folly to be wise. The up-to-date man will find a way or make it.

Would like to have space to quote you some instances of atavism by such authorities as Darwin, Spencer and Sedgwick. I leave the subject, however, hoping that some person more capable will take it up. S. M. P.
Elgin Co., Ont.

The Shorthorn Cow and Her Mission.

I have read with interest your editorial in reference to the milking propensities of the Shorthorn cow, and I note the questions asked, viz., is the mission of the Shorthorn cow in Canada to make beef only? To this question I answer, emphatically, no. I believe the mission of the Shorthorn cow in Canada is a dual one, and it is that dual purpose that has made her supreme, and kept her in her present place of supremacy with the general farmer of Canada.

For one, I believe the Shorthorn cow is ful-



W. G. Pettit, Freeman, Ont.

President Dominion Shorthorn Breeders' Association.

filling her mission now quite as fully as she has ever done in Canada, though I do not contend that she is fulfilling that mission as completely as she might be trained to do. For my own part, I think it will be very many years before the Shorthorn cow will be called on to be generally milked, because she is required to produce bulls to improve the general farmer's stock for generations to come. This, I believe, is her main mission in Canada in the near future, as it has been in the past. While this is my opinion, I am quite in sympathy with any and every effort put forth to develop milking qualities and keep before the country the excellent milking propensities which every breeder of Shorthorns knows she possesses. I believe that the Shorthorn cow would have been the close competitor with the foremost special purpose (dairy) cow, if she had not been in such demand for the production of high-class beef animals. Again I say I am in hearty sympathy with any and every effort put forth to develop and record the excellent milking possibilities of "The Farmer's Cow."

Greenwood, Ont. ARTHUR JOHNSTON.

THE FARM.

The Soil.

By Prof. R. Harcourt, Professor of Chemistry, O. A. C., Guelph, Ont.

The whole business of agriculture is founded upon the soil. For the soil the farmer pays rent; it is his capital, and upon his skill in making use of its inherent capacities depends the returns for his labor. It is, consequently, important that he should endeavor to obtain such a knowledge of the constituents of the soil, and the part they play in the nutrition of plants, as will aid him in determining the cause of the inferiority of any given piece of land, and ultimately enable him to correct it. At first sight this may seem a simple problem, and in some cases it may be; but in many instances the cause, or causes, are not easily located. In one sense it is correct to speak of a soil as a reservoir of plant food, to be drawn on for the growth of successive crops, but it is equally correct to regard the soil as a busy, complex manufacturing establishment, in which all the various parts must work together under proper conditions to bring this store of plant food into a form available for growth. On rich virgin soil it is possible to grow, even with indifferent cultivation, a number of good crops, but the supply of soluble food must soon become

exhausted if the proper combination of air, moisture, germ life, decaying vegetable matter, etc., are not all working together to break down the insoluble part of the soil to supply the extra demands made upon the land to make good the unavoidable losses caused by cultivation. Furthermore, the crude materials of the soil vary, and the same methods of breaking them down cannot be used in all cases. In order that we may better understand the nature of the soil and the various agencies at work in them, let us look first, very briefly, at the method of their formation.

Soils are formed from rocks by the prolonged action of the water, frost and air, and by the action upon them of vegetable and animal life and their products. It is not necessary to go into details regarding the action of these various agencies. It is sufficient to point out that swiftly running water rolls and tumbles the broken rocks lying in its bed, and that the pieces worn off these rocks, and the otherwise formed particles which have been washed into the stream, are carried on in suspension until the decrease in the rate of flow

of water allows the particles to be deposited according to their size and weight. These and other influences, extending over thousands of years, have caused the formation of our gravelly, sandy, and clayey soils, and all the admixtures of these so commonly found throughout the Province.

Among the more important soil-forming materials, there may be mentioned quartz, feldspar, hornblende, mica, apalite, limestone, etc. From the decomposition of the feldspars, hornblendes, etc., all our clays arise, and as these minerals generally contain potash, and are the source of the potash required by crops, it must follow that potash is always more abundant as clay predominates in the soil. Many of these rocks, but more particularly the apalite, contain phosphoric acid, and are the natural source of this valuable constituent of plant food. When the soil has become the seat of vegetation, the chemical agents of decomposition gain in power. The carbon dioxide, which, in the first case, was derived from the atmosphere, is now formed in large quantities by the decomposition of organic matter, and is assisted in its solvent action by the humic acids and by nitric acid, which are derived from the