so readily to gentle yet skillful manipulation as the sheep.

As soon as each sheep is finished the fleece should be neatly and properly rolled. Paper cord may be used for tying. Any droppings or dirt that may have accumulated while shearing should be swept and cleaned up before commencing the next sheep. A clean, dry room may be used for storing the wool until shipment.

There is no excuse for any farmer shearing in a dirty place, because there is always a place in every barn that can be made perfectly clean with very little preparation. Now that more of our wool is likely to go to the States, where it will be sold according to grade and condition, it will pay handsomely to see that more care is taken with it.

Macdonald College, Que. A. A. MacMILLAN.

The Guardian Angel of the Stock Industry.

The live stock of any country depends more or less upon the activities of the breeders of pure bred stock. The gratifying condition exists where a good average line of stock may be found in the neighborhood but to procure this there must be pure-bred sires standing for service that are first, of the right type and kind and second, though no less important, prepotent and capable of stamping their likeness upon their progeny. This condition of affairs will be brought about most speedily by a recognition of the value of a long-pedigreed animal whose progenitors have been true to the breed and with whom no inferior animals have been mated which may allow of the out-cropping of undesirable characteristics. It is the aim of the breed societies in Canada to maintain their respective breeds in as pure a form as possible and by placing the records in the hands of the central body, in close touch with the Dept. of Customs, and made up of representatives from the different breeds, it is possible to watch the importations and Canadian-bred animals in such a way as to keep abuses from creeping in and to make our system of records universally recognized as without a superior in the world. A few breeders may at times revolt against the rigidity of our system but it is for the good of the live stock industry and most breeders live to rejoice that we have a system based on integrity.

The Census of June, 1911, reveals the number of pure-bred animals in Canada, to be divided among the different classes as follows: Horses, 33,133; fifteen different breeds of cattle included 123,831 head; fourteen breeds of sheep numbered 53,617 head, and the nine breeds of swine existing at that time included 56,447 head.

This is the most accurate estimate that can be gathered of the number of pure-bred stock in Canada, but since that time many have been imported and, of course, many have died. The report of the National Record Board for 1913 shows the importations to cover 111 swine, 270 sheep, 387 cattle and 2087 horses, making a grand total of 2,855 head of pure-bred stock imported into Canada, chiefly from Great Britain and the United States. Ayrshires were most numerous among the breeds of cattle and Clydesdales in horses, numbering 647 head. These animals were dispersed very widely over the Dominion, many of them going to the Western Provinces.

The registrations for 1913 were as follows: swine, 11,499; sheep, 3,934; cattle, 16,177 and horses 6,237, making a total of 37,847. This number would include, of course, those imported from other countries as well as Canadian-bred stock. One society, the Holstein-Friesian Association has not yet affiliated with the National Record Board. It is a large and prosperous association and were its numbers of imported and registered animals included in this number it would add to them very materially.

An association may proclaim animals registered in its books as pure bred but the status of the same association may not be recognized by our National Record Board. Under these circumstances the owner is deprived of many advantages that accrue from having his animal registered in that system of records and may be debarred from exhibiting his stock at many of the leading Canadian shows where only animals recorded in the National Records are allowed to compete. Since the nationalization of the Records in 1905 a great impetus to pure-bred stock raising has been noticeable owing to the stability of the scheme and Canada now has a line of pure-bred stock of which she may well be proud. Purchasers should, however, acquaint themselves with the status of all associations in which stock is registered that they may be interested in and not encumber themselves with individuals whose standing and breeding is not recognized as equal to that of our established breeds. In other countries there are minor societies not recognized by the leading associations of their own land and when stock registered in those unrecognized associations is introduced into Canada it leads to difficulties and often results in the animals being classed as grades which is the inevitable outcome in Ontario as applied to stallions.

Make a Calf Paddock.

With summer again at hand it becomes necessary to find some suitable place for the calves. Too many are kept in close confinement and not allowed enough outdoor exercise and fresh air. True, during the very hot weather of summer when the flies are particularly bad it is better to keep the calves inside in a darkened box stall during the day than to compel them to remain out in an unprotected paddock pestered from morning till night by flies, but they should be out part of the time and the best practice is to allow them the run of a good-sized grass plot during the night if possible. However, we would much rather have the calves outside altogether than to have them kept closely confined day and night and would urge readers who are interested in the improvement of their stock through the keeping of the best female calves raised each year to prepare a paddock close to the barn and grow on it or near to it suitable crops for feeding the calves during the summer months. If there are plenty of trees in the paddock the calves will not suffer much from being out day as well as night. Readers will find that it means a great deal to the first year's growth of the calves to give them fairly free range and plenty of green feed together with the skim milk or new milk, as the case may be, which they get the first few months.

Better Accommodation for Sheep at Guelph Winter Fair.

The sheep breeders who make it a practice to exhibit at the Guelph Winter Fair petitioned the Board recently asking for better accommodation. The petition has been placed before the Secretary, R. W. Wade, who, in a reply to one of the men interested, assured the sheep exhibitors that the Executive will do everything in its power to improve the present inadequate accommodation for the sheep exhibitors. The over-crowding of sheep should be remedied, and it is gratifying to note that the Executive are willing to do everything possible to facilitate matters.

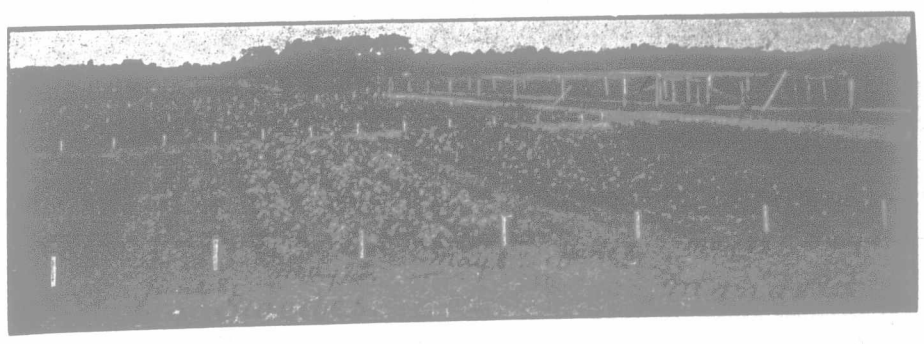
THE FARM.

Farm Engineering.

SOME ESSENTIALS IN SMALL IRRIGATION PRACTICE.

It is now recognized that practically all crops may be benefited by proper irrigation where water is cheap and plentiful. It is not as universally known that proper drainage is essential to make the benefits from irrigation as large as possible. The danger without drainage is that the raising of the ground water with consequent capillary rise and evaporation will cause too great an accumulation of undesirable soil salts in the surface layers of earth. This is a subject that has attracted the attention of many experts, and is what is referred to when the statement is made that continued irrigation is the cause of soil deterioration. Proper cultivation of irrigated lands and care in the use of water will do much to offset the disadvantage of poor drainage. Cultivation of the soil after applying the water will prevent rapid evaporation, and will allow the crops the full use of the water applied, thus making for economy in water.

The desirability of cultivation leads to the belief that the method known as subirrigation is the best one to follow. It has received much thought and study, but the results from it are entirely unsatisfactory, because of the initial outlay involved and the fact that for many crops the inequalities of distribution are fatal. The furrow system is, on the other hand, the cheapest, simplest and probably the most widely used method. Lately, too, a method of sprinkling has been used with success on small fields, known in some sections as the "Skinner Irrigation System."



Dates of Seeding in Roots, Macdonald College, 1912.
Photo taken July 12.

Particularly on sloping fields is the furrow system easily laid out. The furrows are run down the slope either directly or diagonally on an angle, depending upon the amount of the grade. The steeper the grade, of course, the nearer to the horizontal the furrows should be cut. The main feeding furrow runs along the ends of the lateral furrows at the top of the grade. More than one main or flume will be needed in most cases, these being spaced apart down the grade a distance depending upon the distance a stream will run in the branch furrows. No rule can be given for this, as it depends entirely upon how much water is flowing, that is, upon the size of the stream, and also upon the character of the soil.

The Skinner System requires an elevated tank or a pump connected to a water source, and able to keep up a continuous supply for the desired period of time. The main sprinkler pipes are usually not over two hundred and fifty feet long, but there may be a number of them. Every three or four feet there are outlets or faucets. The pipes for lengths such as this are two inch, and the outlets are three-quarter inch pipes. A supply which will provide about fifty pounds pressure is satisfactory for a system of this kind, and there are several working well under somewhat less pressure. A water supply of 1,000 barrels will supply an acre and one-half with sufficient moisture for about four days during the dry season. Obviously this system is of greatest value in small plots, and the operation of the various sections of pipe may be regulated to suit the particular needs.

In every case it must be remembered that irrigation, which provides continuous moisture, is better than one soaking and then a dry spell followed by another soaking. Little and often is best.

Nova Scotia. R. P. CLARKSON.

Some Pointers for Seeding Roots.

Editor "The Farmer's Advocate":

There has been a general tendency within recent years throughout the country to grow mangels instead of swedes. This is in a way a good sign because it indicates progression. The man who makes a success of mangel growing knows something about farming. You can grow some other crops in a haphazard way; you may even get a reasonable crop of swedes or turnips by slipshod methods, but you can not get mangels that way.

At the same time it may be questionable whether it is advisable to make the change so complete as some men seem inclined to do. While it must be admitted that mangels, on good land and in favorable seasons, outyield swedes in Southern Ontario and Western Quebec generally, it should be clearly understood that these two ideal conditions, good soil and favorable seasons, do not occur always and everywhere. And just here I should like to emphasize, that mangels require a deep, rich soil in good heart. They can not as a rule, compete with swedes or turnips on weak land, even if this has had a heavy dressing of farmyard manure with a liberal supplement of commercial fertilizers. Mangels give too small a yield after cold and rainy summers, while swedes are not unfavorably influenced by a cool or wet season. Again, a warm and dry period very often sets back the swedes through subsequent attacks from aphids and mildew. On the other hand, if the heat and drought are not too excessive mangels suffer comparatively little, at least on deep soils. We see thus, that these two kinds of roots complement each other in more than one way.

Under ordinary circumstances it might therefore be advisable to grow both kinds, mangels and swedes, even if preference should be given to the one or the other. On a good mangel farm I would thus plant one third to one fourth of the root area with swedes, and if my land were not in such a high state of culture as to produce mangels to perfection I would make swedes my main crop, but still reserve a piece of my root land for mangels. This arrangement would tend to equalize to some extent the influence of seasonal differences on the total root crop. And in view of the fact that mangels, on the whole, are better keepers than swedes, it would also provide roots for a longer feeding period.

While it may be at least relatively easy to decide in regard to kind, i. e., whether preference should be given to mangels or swedes in each particular case, it is decidedly difficult to choose in regard to variety. Among the mangels at pre-