to make up the animal we are using. Line breeding, too, has its particular difficulties. A sire bred from animals of his own or closely-allied tribes has comparatively few causes of variation; that is, he is very potent, his capacities are pretty sure to descend; but then, his capacities may be good or bad, and as any good tendency becomes strongly developed, so does any bad one. The number of "blue-blooded weeds" which have been produced of late years, since line breeding became fashionable, is good evidence of the danger which is sure to come unless the system is worked by an unerring genius. Let us take the experience of Thomas Bates; he believed in his own blood beyond any other man. What was his practice? Up to 1823 and 1824 he used hardly any other than Duchess bulls, and it is said that "rickety" calves compelled him to change. Be that as it may, between the years 1823 and 1838 the great bulk of his calves were from Red Rose and Princess sires; between 1836 and 1843 he fell back on the Duke of Northumberland (1940), a Duchess bull, it is true, but with a double cross of a Princess sire and a Red Rose great-grandsire. From 1843 to the time of his death his calves were principally sired by Oxford bulls, some of whose recorded pedigrees would not now entitle them to registration. He was too wise a man to be bound by his own theories.

The best plan seems to be to take the middle course—in a general way, stick as much as possible to animals bred by men who have successfully carried out the ideas at which you aim, and, if possible, keep to animals with some blood connection. Similarity in blood is of advantage, as it reduces the tendency to sport, as botanists would say; but do not let a desire to have similar blood confine your judgment to too narrow a circle. When you have a good sort, do not let any prejudice or whim persuade you to part with it. The breeder is the best off who has a herd of sufficiently good character and enough variety of origin to enable him to keep the best of his own produce for his own use, without danger of lessening constitutional vigor; but before a man tries to breed his own sires, let him be very sure that he has the right sort of stuff to work with.

This opinion is no mere theory; it expresses the practice of most of the successful men of old, and in the few instances in which it has been carried out in modern times its safety has been proved. When the men of old found that they had not what they wanted within their own herds, they never hesitated to make a change.

The details of cattle management must vary with climate and soil, but there is one general principle which ought to be kept in view everywhere: Let your plan be as nearly as possible nature's plan. Do not give unduly stimulating food; do not fatten at one time and starve at another; do not expose unnecessarily to extremes of climate, and do not coddle your cattle.

Breeders of Shorthorns have nothing to fear so long as they keep utility clearly in view. Let the proof of the pudding always be in the eating.

OLD COUNTRYMAN.

Aberdeen, Scotland.

WINTER FEEDING OF LAMBS.

The old system of selling lambs in the fall at a fixed price of $2.50 or $3.00 per head each year, is a thing of the past. We sell to-day at so many cents, even fractions of a cent, per pound.

The Canadian public is developing a taste for choice mutton, and are willing to pay for it. Realizing this, we should study this growing industry as to how and when to place most profitably this product upon the market.

Let us look briefly at the care of the lambs in the autumn, as this determines largely success later on. After weaning, lambs should have a good run on clover, if rape has not been provided, with a light feeding of whole oats. Later on, in November, scarcity of pasture, with cold, sleet and rain, without shelter, will make the best flock poor, pinched, and almost worthless for feeding.

What I have to say regarding winter feeding applies to no particular breed, as our flock was composed of 25 grade Leicesters (our own raising), 10 Oxfords, 10 Shropshires and 20 Cotswolds. The last three bunches were bought, and were fair specimens of grades. Of the lambs bought for feeding, the Shropshires at 5½ cents per pound were cheaper than the Cotswolds at 4½ cents, being better bred, and consequently more uniform and more easily fattened.

Their winter quarters were bright and comfortable, 48 x 26, giving each lamb nearly 20 square feet of floor space. It is a mistake to think that the old moss-covered shed at the north of the barn, whose roof is threatened with collapse with every covering of snow, will do to feed a few lambs in.

As the lambs in the early spring seek the sunny slopes—not the low, damp places—so their winter quarters should be bright and dry. Light, and even sunshine, should be carefully considered. Nothing spoils the appearance of a flock of lambs like darkened and discolored fleeces.

A good and very necessary asset for winter feeding is plenty of well-saved clover hay, not too coarse. For morning, we feed roots pulped, what they will eat up clean; after this a small quantity of clover hay. At noon a grain ration of oats with cracked peas, 1½ to 2 pounds each. This, with roots and hay at night, constituted their regular bill-of-fare. Notwithstanding we fed roots, they always looked for water.

No matter how careful one may be, he need not be surprised to find an occasional dead lamb.

"There is no flock, however watched or tended,
But one dead lamb is there."

(Fig. 49.) Corn Roots Distribution.

(Fig. 51.) Corn Roots Mass.

As the stomach is the most vital part of a lamb, any disarrangement of that organ will soon make short work of the lamb. Plenty of salt is a good preventive for bloating. Great care should be taken to prevent draughts; while one door may be left open, if required, it is unwise to leave open doors or windows at opposite sides. The reason for this will soon show itself in sneezing, drooping head and running at the nose, developing often into disease.

A most important part is to know when to sell. In feeding lambs, the two essentials to aim at are, lightness in conjunction with quality. When these two ends have been accomplished, with the lambs well rounded and solid, weighing around 106 pounds, it is only a waste and loss to feed on.

My Leicesters in October averaged 80 pounds; at time of selling, which was fore part of February, they averaged 110 pounds, for which I received $6.40 per cwt. The Shropshires proved profitable feeders, many of them outweighing the Leicesters, and of excellent quality. The Cotswolds were a poor lot when they went in, and a poor lot when they came out. A man can't bank much on feeding a scrubby, run-out bunch of lambs in the winter.

For the average 100-acre farmer, twenty-five good lambs, well cared for in the fall, will, if carefully looked after, yield a sure and substantial profit.

W. D. W.

York Co., Ont.

THE FARM.

ROOT DEVELOPMENT OF CORN.

It is only by careful study that the extent of root development in soil can be learned. The accompanying illustrations are copied from Physics of Agriculture, by Prof. F. H. King, of the University of Wisconsin. When the corn was 30 inches high, the whole of the soil to a depth of two feet was full of roots, as the engraving (Fig. 49) shows, between the two hills. When the corn was in tassel (Fig. 51), the roots had penetrated to a depth of 3 feet and had come closer to the surface; and at maturity the roots had reached 4 feet in depth, making their way through a fairly heavy clay loam and clay subsoil, the fourth foot only being sandy. It should be understood that the roots here shown grew in undisturbed field soil, and were obtained by going into the field at the stage of growth shown and digging a trench around a block of soil a foot through and the length of the width of the row. The cage was then set down over the block of soil to hold the roots in place, and then the soil washed away by pumping water in a fine spray upon the block. Three days' work for two men were required to secure the sample in Fig. 49.

CLOVER ENSILAGE.

Editor "The Farmer's Advocate":

In the summer of 1904, on the last day of June, I decided on filling my silo with clover, instead of corn. That was something new in our part of the country, at least. I commenced to cut the clover when in full bloom, or a little early for haying, about 9 o'clock in the forenoon, when I considered it was free from any artificial moisture. I cut about two acres, and at 12 o'clock we had a heavy shower of rain; of course, this made the clover very wet. I had arranged to have the filling commenced that afternoon, and everything was ready. The opinion was that it might be no detriment to the ensilage, so the work went on. About one-quarter of silo was filled with the wet clover, and that came out in bad state. Then, there was about one-third of silo filled with clover in a half-cured state that turned out in very good shape, considered by all equal to any corn silage they had seen. The balance of silo was filled with freshly-cut clover, free from extraneous moisture, that turned out to be extra good, and seemed to be relished by all kinds of stock—cows, horses and hogs. It was cut and put in in the ordinary way, the same as corn, and was well tramped down, but not covered or weighted down, but I consider all ensilage should be; it certainly would be to our advantage to do so. My silo is one of the ordinary wooden kind, with stone basement, 10 feet in diameter and 30 feet in height; but, if building again, I certainly would build cement by all means, particularly where good gravel is to be had at a reasonable cost, as it has nearly taken the place of lumber, stone or brick.

I do not hesitate for a moment to recommend clover for ensilage to any persons having silos to fill. They will find it ever so much nicer to handle than corn, and ever so much cheaper to produce, and it will afford lots of pasture afterwards—that is worth a great deal to any farmer—or the growth could be plowed down in good time for fall wheat; and it requires only about one acre more to fill an ordinary silo. Now, I cannot recommend clover in too strong a term to any agriculturist, as there is nothing better for improving our farms than the liberal sowing of clover with all kinds of grain, even at $10 per bushel. Clover should never be sold off the farm. There are three ways only that I know of that clover should be used: First, converted into hay and fed on the farm; second, pastured off; third, plowed down.

RICHARD ATTRIDGE.

Wentworth Co., Ont.