

### How to Keep Up the Fertility of Our Farms by Breeding Cattle and Sheep, and Feeding for Profit.

(Continued from May issue.)

DOES IT PAY TO RAISE CATTLE TO EXPORT OR FOR HOME MARKETS?

I will try and show that the farmers of Ontario can at least do better than many are doing. In the first place they must produce cattle well bred and well fed. The day is past for the long legged steer, with qua legs, big tail, long narrow head, light in the flank, bare over the loins, and shingle hams. This sort consumes more food, gains less, takes from six months to a year longer to mature, and will not realize as much as one of the right sort, although the latter weighs 100 to 150 lbs. less; then they never ship or handle kindly; they are always in trouble; they require more care because their constitutions are weak, and will not stand the voyage to market, thereby causing the shipper anxiety and loss. The right sort of steers are those that are entirely free from the defects and stand on a hard, bony, short leg. This class can be raised and fed to the age of two and a-half to three years old, and leave a profit to the producer. Calves should be kept growing the first year; never allow them to lose their calf flesh. Allowing steers to lose 200 lbs. through winter, for the purpose of having them gain 400 lbs. through the whole summer, is a terrible mistake keep them up to their fall weights and gaining through winter, then put on 200 lbs. more by July, or 400 lbs. by October, and you have a finished bullock. The same with winter feeding, keep them always gaining, it is the finished cattle that pays. Year before last I took my cattle to London, England; I had some of my own breeding (Shorthorn grades) not three years old; they brought £21 per head; I had a number of the same class three and a-half years old, they brought about the same. Mark, they had been fairly raised and I wintered them. I had others that I bought in the spring, got by pure Shorthorn sires, heavy weights, a little on the leggy side, and two or three others that are termed the light fleshed sort; they were the last sold, and sold at a loss. I had among the lot five little steers, about 1,250 lbs., of the right sort; they sold for £18, when some of the others a year older and weighing 1350 lbs., brought only £16. I can tell you that it is quality that tells in any market. In looking over my gains and losses in the cattle trade, which has extended over a period of twenty-five years, it was when my cattle lacked quality and finish that my bank account diminished. It will be hard for any breeder or feeder to succeed if his cattle lack quality.

Another matter in our cattle industry which should be practised is economy. One great mistake in this branch is in sending our good steers to Scotland and our little steers to the American markets to be fed and finished in either country, and at the same time robbing our own lands. What do we realize for our little steers which go over to the Buffalo market every fall by the thousands? We sell them for 2c. to 2½c. per lb. live weight, and they sell them for 3c. to 3½c. I admit that is all they are worth, as they are light—700 to 900 lbs. No wonder they are light; we cannot expect anything else, as long as we continue robbing our lands by this

system; but you will say we were compelled to, our crops were short. I tell you they will continually grow lighter if we do not change. Let us consider this question—2½c. for a 900 lbs. steer would be \$22.50, and in Buffalo at 3½c. would be \$29.25. Feed them at home until spring for beef or for grazing; you can feed for beef at 18c. or 20c. per day, and for grazing 8c. or 10c. per day; then after you have finished them ship them to the Buffalo market, or to Europe; add gains, say 250 lbs. per head would be 1,150 lbs. at 5c. per lb. in Buffalo, \$57.50, for wintering them you would have \$28.25 for each steer that gains 250 lbs. at a cost of 18c. to 20c. per day, and you can do this if you have the right sort; this for five months would show a profit of 45c. on each steer, if you can feed for 18c. per day, and they are worth 4c. per lb. for grazing purposes in the spring, and should weigh 950 lbs. at 4c., \$38.00 at 10c. per day would show a profit of 50c. on each steer. But the manure from steers fed by either method for five months is worth from \$6 to \$8 per head when applied upon your farms, and the weight of your steers instead of being 700 to 900 will be 1,100 to 1,300 lbs.

Preparing cattle for export—If you are feeding for the spring market Ontario farmers should have the 15,000 choice steers that are now being fed in Scotland in their own stables. For example, they would average 1,150 lbs. when they left our farms for Europe, and you received \$35 per head for them on an average; feed them for six months at 20c. per day they would cost \$71; in the spring they should gain 300 lbs. each; would be 1,450 lbs., at 5c., \$72.50, showing a profit of \$1.50 per head.

[TO BE CONTINUED.]

### Application of Chemistry and Geology to Agriculture.

BY JAMES MILLER.

(Continued from May issue.)

Our country has taken a most important step in the right direction in establishing agricultural schools for the education of the rising generation of young farmers, and it is to be hoped that political prejudices will soon disappear, which have a tendency at the present time to retard their success in many different ways. But the fact is still to be deplored that our agricultural literature is very scanty indeed, with the exception of a small number of periodical publications—none of these too well supported—although attempts have been zealously made to scatter important information among the farmers. The press of our country has not been encouraged to educate its readers with agricultural knowledge.

The different branches of science are very numerous, which are connected with the art of the agriculturist. I need not speak of botany, which is, as it were, the foundation on which the first elements of agriculture rests, or of vegetable physiology, or entomology, which alone can throw light on the nature of the numerous insects that prey upon the crops and so often ruin your hopes, and which alone can be reasonably expected to arm you against their ravages, and instruct you to extirpate them. Meteorology, among her other labors, tabulates the highest, the mean and lowest temperatures, as well as the quantity of rain which falls during each day and each month of the year. Do your readers doubt the importance of such knowledge to the proper cultivation of the soil? Think of the destructive effects of a late frost in spring, or of a continued heat in summer, and your doubts will be shaken. It may, indeed, be said with truth, that no part of

natural science is incapable of yielding instruction, that scarcely any knowledge is superfluous to the tiller of the soil.

It is thus that all branches of human knowledge are bound together, and all the arts of life, and all the cultivators of them, mutually dependent. And it is by lending each a helping hand to the others that the success of all is to be secured and accelerated; while with the general progress of the whole, the advance of each individual is made sure.

It is the geologist that can best explain the immediate origin of the several soils; the nature and difference among your subsoils, and the advantages you may expect from breaking them up or bringing them to the surface.

Geology is essentially a popular science, and its relations to agriculture are becoming every day better understood. The Royal Agricultural Society of England has done much to illustrate the connection of agriculture with geology and chemistry.

The times, therefore, is very favorable for the increase and spreading of agricultural knowledge. The exhaustion of our soil and the depreciation of prices demands it. The youth of our country and practical men are anxious to receive greater knowledge.

Having thus given a short synopsis of the state and prospects of scientific agriculture in general and especially of the art of culture in Canada, I shall now speak of a few of those questions of daily occurrence amongst us, to which chemistry alone can give a satisfactory answer. I shall not here refer to the subject of manures, but take it up in its proper place, but I shall select a few isolated topics, the bearing of chemical knowledge upon which is sufficiently striking.

Some soils are naturally barren, but how few of our agriculturists are able, in regard to such soils generally, to say why? How few that possess the knowledge necessary for discovering the cause! Some of these may be improved, some not. How important to be able to distinguish between these two cases? Those which may be improved, practical men have no rule to solve the difficulty, but work in the dark. They may strike the key note, or they may not; and if they do, they only find out something that is already known upon a well known principle of chemistry. For instance, if any of the salts of iron be present they may be decomposed with lime. If there be an excess of siliceous sand, the system of improvement must depend on the application of clay and calcareous matters. If there be an excess of vegetable matter indicated, it may be removed by liming, paring and burning. If there be a lack of vegetable matter, it is to be supplied with manure. Why do the Canadian pines settle themselves on the naked and barren soil and rocks? Why does the birch spring up from the ashes of the pine forest? Why does the strong wheat straw spring from the virgin soil? Why do the natural grasses, the longer they are undisturbed, render the land only the more fertile? Are these, may be asked, chemical questions? I say yes; nothing but a knowledge of chemistry can answer them. Botany has thrown considerable light upon the rotation of crops, but chemistry alone has cleared it up and established the principle. Why is gypsum spoken highly of in one district, doubted in another, and decried in a third? Has not the composition of the different soils something to do with it? and how are you to analyze those different soils without the means of chemistry?

[TO BE CONTINUED.]