

especially, the proportion of nitrogen is immensely larger than is found either in stable manure or in ordinary commercial fertilizers; much larger, too, in clover than in timothy; much larger in both *than it pays to buy*; and if we take into account the labor of handling the manure, and the partial insolubility of stable manure, and the loss of probably 15 per cent. of the totals, above, in feeding, even if the liquid and solia are saved and used as wisely as possible, and if we purchase bone meal wisely on its analysis, I am persuaded that half the above sums expended in bone meal will replace, on clayey soils at least, the available fertility removed by selling the crop. I think, too, that selling an acre of clover hay from the farm really exhausts the soil less than selling an acre of timothy, and but little more than selling an acre of potatoes at the above estimates, since the benefit of the clover roots remains.

For several years Mr. Terry has sold the potatoes from 24, and then from 18 acres of his total 36 acres of plow land, and yet is horrified to think of selling hay which exhausts the soil but little more. He says "the good farmer would never take clover to market," no matter what the price. Last fall Mr. T. plowed under "three large loads per acre" of clover on six acres. Timothy hay now (Nov. 22) quotes \$20 per ton in Cleveland, and clover is really worth more to feed than timothy, Mr. Terry says. So let us say he plowed under \$50 worth of clover (2½ tons) as manure. He raised potatoes on the field, about 100 bushels, at 35 cts. per bushel = \$35 per acre for the crop, after tilling, dunging and digging; \$50 per acre plowed under, and \$35 per acre for the crop.

Of course these last figures are not a fair average at all. Hay is exceptionally high, and potatoes were an exceptionally light crop for Mr. Terry, owing to rather dry weather, and not very high, since they were plenty elsewhere. But I think it perfectly fair to place these figures in sharp juxtaposition to show that it is *not always* a sin to sell clover hay, or always wise to plow it under. It is simply a question of relative prices. When hay was \$4 or \$5 per ton, good acres \$2.50 per cwt., and wheat \$1 per bushel, as I can distinctly remember the prices to have been thirty or more years ago, I think it was wise to plow under clover for wheat. When hay is \$20 in our nearest good city market (Cleveland, 25 miles), and wheat quotes only 77 cts. per bushel in the same market, I should deem it unwise for me to plow under clover as manure for wheat, or for potatoes at present prices. To do so would remind me of an incident I may have told in these columns. I had a cow once that was a milk-drinker; Old Lise was her name. I had milked a full pail from her, and set it down where I could watch it while I milked the other cow in the same yard. A little boy standing by said: "Mr. Chamberlain, if Old Lise should drink that pail of milk, *would she give twice as much next time?*" While my attention was attracted by my amusement at the question, Old Lise *tried the experiment!* But I didn't notice that she gave "twice as much the next time!" Moral: "This fable teaches" that clover seed at \$6.50 per bushel, and hay at \$20 per ton, are expensive manures to plow under to grow wheat at 77 cts., or potatoes at 35 cts. per bushel. Rotation of crops is all right, but we want to be sharp enough to "rotate" some cash into our own pockets; in other words, we want to save both "money value" and "manure value," if we can, but if for any reason one of the two is very low, and the other very high, it will, perhaps, be wise to sacrifice the one that is very low, and to save the one that is very high; but hardly the reverse.

In the same article Mr. Terry says: "Brother Chamberlain sold his cows last spring, and now has his large barn, with deep bays, well filled with hay. \* \* \* I am more than anxious to see how he will get the 'money value' and the

'manurial value' out of the hay;" and intimates that I shall have to take a large part of the pay in "experience." Well, I am not worrying much about the "money value," with hay at \$20 cash in November, and likely to go higher, and as for the manure value, if I should sell every ton of hay from 50 acres, I should not be exhausting any larger proportion of my arable land, nor exhausting it much more rapidly, than Mr. Terry did his in selling the potatoes off from 24 out of 36 acres of plow land; for of my land this dry year none averaged over two tons of seasoned hay per acre. For 20 years my little farm has had, on the average, the manure of over 30 head of cattle and horses, with more or less hay and grain bought, or cut on shares, and fed on the place. I shall this winter probably keep cows for my neighbours, or buy young stock to feed out some 20 tons of Hungarian hay, and 10 tons of fine meadow hay, and the straw from about 20 acres of wheat. This stuff I have, besides the timothy hay from 35 acres, every ton of which will probably be in demand in Cleveland at \$20 or \$22 per ton, or at home at \$15 to \$18 per ton. If I were on the farm myself, I should try to feed out more of it, probably shipping milk to Cleveland at 3½¢ per quart, the present price, thus getting "money value," and "manure value," too.

One thing is certain - I shall try not to let my farm run down in fertility while I own it. It is more than twice as productive now as when I bought it 22 years ago; and I do not want people to say: "Yes, he's president of an agricultural college, and 'farms with his mouth,' but you ought to see his farm!" The farm is in good shape, and I mean to keep it so as long as I own it. This last August I put a heavy dressing of fine stable manure on 10 acres for wheat, and of pure bone meal on five acres more, and of best superphosphate on five more. (1) The ground and the weather were very dry when the wheat was drilled, about Sept. 5th to 10th, and it was some two weeks coming up. But it all looks exceedingly well now—the manured best, the phosphated next best, and what had bone meal next, while a narrow strip that had neither bone meal nor phosphate nor manure looks not half so well as any of the rest. Good commercial fertilizers always show marked results on wheat on my rather clayey soil, and this helps solve the question of "manure value."

The ground for all the wheat was thoroughly and seasonably worked, and it looks now as if there would be a large yield. I was here on the farm a few days, just as the ground was ready for the seed. The finely rotted manured was spread on the surface with a Kemp manure spreader, which worked to perfection, two men and a boy handling 50 loads a day. The manure was drawn to the field in spring, and placed in four large heaps at convenient distances on the field. I had not seen the farm or the wheat again after Sept. 1st until to-day (Nov. 22d), when I came up for a few days to help to build a new sugar house, and see to various matters from personal observation.

This working a farm by proxy, when one is 700 miles away, is rather up-hill work. It requires a careful letter each week from my farmer, stating progress made, work done, for wardness of crops, &c., and a careful reply each week from the owner, giving directions. Still I find it, thus far, much better, and more profitable and satisfactory, than renting on shares. I have an excellent farmer or manager, and as my friend J. G. says, if things go right I can take the credit myself, and if they go wrong I can "lay the blame on the hired manager."

Let me re-state my conclusions in regard to selling hay, and plowing crops under:

1. Selling clover exhausts the land not quite so fast per acre

(1) The bone-meal should average 3.5 % of nitrogen, and the superphosphate about the same.

A. R. J. F.