

cellar which holds four thousand bushels of roots. The hogpen, which is empty, I purpose filling with sheep. I keep a dairy of sixty cows. I could mention many more. If this state of things exists all over our Province, it is a very serious affair. Our Canadian bacon industry, which we, as farmers, were so proud of, is surely in danger. The very plain, simple fact of the matter is, we were losing money. Farmers have made some money in the past, but it is run on a very close margin now. One of the reasons is, feed has been higher of late years. Shorts, that could be bought for \$14 and \$16 per ton in car lots, are \$20 and \$22 now; other coarse grain the same in proportion, and labor has gone up.

Now, sir, I will touch on a most tender point—raising Yorkshire hogs, which Mr. D. takes so much credit to himself for introducing to this country. I feel safe in saying it will cost every farmer 50 cents more for every Yorkshire hog he grows on his farm than it will with a cross between the Chester White and Tamworth or Berkshire. I don't care what breeders may say to the contrary. I have raised and fed for the market three thousand dollars' worth of hogs a year, have tried all breeds, and know whereof I speak, and I can give proof. I wish to say they are going out as fast as they came in. I doubt very much the statement that three-fifths of the hogs grown are of Yorkshire strain. I don't know of a pure-bred Yorkshire hog in our neighborhood. If the Yorkshire is a better bacon hog than others, has Mr. D. really encouraged his growth? Has the farmer received any more for what he calls a first-class bacon hog? I say no, but he has lost money. The discussion on the type of bacon hog has become a byword.

He speaks of grading in the past, and grading severely. I call his attention to some of his grading (he does not do any more of it). Hogs were cheaper then. Go back to 1899: Out of a carload of 103 hogs, 62 selects, 24 small, 18 fats; price, selects 4½c., small 4c., fats 3½c., or 62½c. less per hundred. The average weight of these fat hogs was 155 pounds; the farmer's price was 50c. less per hundred all around. I have quoted Toronto prices. Forty-four graded out of this car of 103 at 50c. less per hundred. Another case of his: 107 hogs in car; 80 selects, 17 small, 10 fats; average weight of fats 172½ pounds. Price, selects 4½c., small 4½c., fats 3½c.—Toronto prices. One more car: 97 hogs; 56 selects, 31 small, 10 fats; average weights of fats 177½ pounds; average weight of small hogs 136 pounds. The wonder to me is why the balance of little pigs at home were not killed. I will say this for Mr. Davies, he was no worse than the rest of the packers. This was carried on for nearly two years. We have heard nothing of it since. The only grading that is done now is a very slight dockage on small hogs. Farmers know that the price is sure to come down in November, and they can better afford to take 25c. less per hundred for them than keep them until they are heavy enough and take one to two dollars less per hundred, which is the case. I will take the months of August and November for the last six or seven years. The year 1905, August price \$7, November price \$5.35; 1904, August price \$5.65, November \$4.75; 1903, August price \$6, November \$4.65; 1902, August \$6.65, November \$5.87½. Mr. D. will note the price is a dollar higher this year. The Farmers' Packing Co. were in business, also in 1901. For 1901 prices were, August \$6.50, November \$5.05; 1900, August \$5.87½, November \$4; heavy dockage, with low prices, this year. In 1899—our banner year—August \$5, November \$3.62½; very heavy grading this year. These prices are at country shipping points. Can go back further with same results. Since Mr. Davies' house has been in the business I killed and dressed 40 hogs in one day, sold them to R. C. Scott for \$4.80 per hundred, cleared \$20 on one day's work. Mr. D. was only paying \$3.70. I don't think the farmers owe him anything. I know he pays all he can afford to pay for hogs. He has colossal losses, and he does not whine. He is not to blame. He sends his pork to the Old Country, and takes what they give him. I haven't followed the Old Country markets. It is strange the price is always lower in November. Beef, cheese, butter, and all other products, never run along in the same line year after year for 8 or 10 years.

In conclusion, I wish to say this: I am a Liberal in politics, and all my relatives have been for generations. I believe in free trade, but I tell Mr. D., honestly, it is high time something is done. The easy-fed, fat, broad-shouldered Poland-China hog products are being imported by millions of pounds, and we are obliged to compete with them—a thing which is impossible with the Yorkshire bacon hog. If we can't produce the hogs—which the past has proved to be false—some of the packers can do as the Farmers' Co-operative Cos. did—go out of the business. My father sold hogs for \$9.75 per hundred before Mr. D.'s packing-house came into existence, and we farmers will run the chance of it again. Rather than lose our reputation in the Old Country, we will try a change. Give the farmers a taste of protection. I will vote for it with both hands. Oxford Co., Ont. S. A. FREEMAN.

THE FARM.

Winter Application of Farmyard Manure

At no time can farmyard manure contain the essential elements of plant food in larger proportions than when it is freshly made. Fermentation may change to a large extent its chemical nature; it may render its plant food more readily available, but this change is invariably accompanied by a loss through oxidation of the carbonaceous matter—the bedding or litter—which would otherwise be converted into humus in the soil, and unless the fermentation occurred under ideal conditions, which in ordinary cases is impossible, there must be a very serious loss in nitrogen, the most valuable of the manurial constituents, as well. To understand clearly this loss of nitrogen, we must know something of the form in which it occurs; in brief, we must know something of its chemistry. The element exists in the atmosphere in the form of a colorless, inodorous gas. It occurs in the soil as a plant food, combined with oxygen and lime or potash, in the form of a nitrate. In this form it is soluble in water, and readily absorbed by the roots of the growing plant. In the plant these nitrates are built into highly complex compounds, many so intricate that their composition cannot be established chemically. When the plant is consumed by the animal these complex forms are broken down in the digesting processes; a part of the nitrogen is employed in building up the animal's body, while the remainder and greater portion passes off in the excrement in the urine as urea. It is this part of the nitrogen that is of most importance to the farmer, for it is almost immediately available to the plant. On application it unites with the lime or potash in the soil, forming again the soluble nitrates that are readily utilized by the plant. Hence, we see the importance of this one element in the economy of nature, and when we reflect that it is the most costly of all fertilizing materials, running in commercial manures at from three to four times the price of either phosphoric acid or potash, and when we realize that the great proportion of the nitrogen in farmyard manure may be easily lost by careless or unintelligent management, its economic importance, and the value of understanding clearly the why and wherefore of the underlying principles of manuring, that this loss may be checked or entirely prevented, is very apparent.

When manure is applied to the land during winter, the only possible loss of plant food, and particularly of nitrogen, is by drainage, and on no land, save steep hillsides such as are liable to wash, is there any danger whatever of the fertilizing material leaching away. On the average land there is far less loss of plant food by washing than there is in the average yard where the manure may lie for several months beneath the eaves of the barns, draining its substance into some convenient ditch or pool. It matters not if the manure does appear bleached and dry and worthless after it has lain upon the soil all winter, or through the heavy March and April rains, its soluble manurial constituents have not been carried away—they are safely stored in the first few inches of the surface, ready to feed the plant immediately growth commences in the spring.

On the other hand, let us note the action that occurs if manure is left to rot in the yard, or, as is sometimes done, drawn to heaps in the field. The urea compound in which the nitrogen almost exclusively occurs, breaks up immediately it comes in contact with the moisture and warmth of the manure-heap into the form of two gases, carbon dioxide and ammonia, escaping at once into the atmosphere. It is the occurrence of this chemical process that gives the characteristic and pungent odor of ammonia around stables or manure-heaps, and wherever that odor occurs there also occurs a serious loss of the most valuable and essential fertilizing element, for ammonia, like the original urea, is a nitrogen compound, differing only in that it is a gas, whilst the urea is a solution.

Knowing, then, something of the chemistry of farmyard manure, the proposition seems only natural that, the sooner the manure is applied after it has been made, the less will be the loss in its fertilizing constituents. On that assumption we have, for a number of years, and with unvarying success, followed the practice of hauling the manure directly from the stable to the land. The practice is, however, not by any means general among farmers. Too many cling to the old belief that manure should be well rotted before it is applied to the soil; but in this, like some other long-established customs in agriculture, they are not sustained by modern scientific research, nor by actually conducted experiments. It is true that decomposition must occur before the fertilizing elements in the manure are available for the plant, but let this occur in the soil, where there is little danger of any loss from volatilization. The action occurs there just as readily, though less slowly than in the heap, while the loss of plant food is reduced to a minimum.

This theory of winter manuring has been preached by our experiment stations and practiced by our most progressive farmers for years. It has been

treated of in the agricultural press and lectured on in the Farmers' Institutes, until practically nothing new can be written on it. Yet we venture to say that not 25 per cent. of the farmers of this Province make a practice of winter-manuring. At least half of our farmers are handling their manure at a serious loss, but because that loss is not directly apparent, it is not realized. A ton of ordinary stable manure contains about ten pounds of nitrogen, five pounds of potash, and five pounds of phosphoric acid. Assuming, as some authorities do, that at least half the nitrogen in farmyard manure is lost through careless handling, taking no account whatever of the losses of the other two ingredients, considering only the loss of the one element, nitrogen, and estimating its value from the rates charged for it in the ordinary commercial manures, the annual loss from this one source alone, on an average 100-acre farm, cannot be less than \$75. Seventy-five dollars per year, it is true, is not a very large amount, but it is larger than most of our farmers can afford to squander by careless management. It is an unnecessary leak, and a very few just such leaks as this distinguishes the successful from the unsuccessful man. If the business is to prosper, it must cease to exist. If your present system of farming will permit of no method of handling the manure, save at a sacrifice of nearly half its fertilizing substance, then it is high time to change your system radically, for it is altogether too costly for present-day agriculture.

We would have liked to discuss other phases of this subject, and to have dwelt more fully on some questions necessarily only briefly touched on here, but we have already exceeded the limit set for this article, and must leave their consideration for a future time. Winter-manuring has been wonderfully successful with us in a long experience under varying conditions, and we believe it can be satisfactorily practiced in any part of the Province. H. B. S.

Lambton Co., Ont.

Cement vs. Wood Silo.

To the Editor "The Farmer's Advocate":

I have had some experience with both wood and cement silos. The first one I had was built of 2 x 6-in. plank, 36 feet high, 12 feet diameter. I filled this one three times, when one day in July there came a heavy wind which totally demolished my silo, but not before I had sold it to a party who had not got his buildings in shape to put up a cement structure, so my loss was not so very great, as I was going to take it down, anyway, and there were only a few of the staves broken.

Some of my reasons for doing away with wood structure are: I found it considerable trouble to keep the hoops in place in dry weather when empty, and if tightened too much when dry they were liable to burst the hoops when filled. I also found, in spite of all I could do, there would be some places where the air would get in, and some of the ensilage would spoil. Also, the danger of blowing down was quite a consideration, since more than half of the wood silos in this vicinity have blown down. The last objection I will mention is the liability of wood to decay. No matter how good the lumber, the age of a wood silo must be comparatively short.

Now, I might mention some of the advantages of a cement silo. It will neither blow down nor rot down. If properly built, it is practically indestructible. Another great advantage over the wood silo is the better preservation of the ensilage. If a cement silo is properly plastered on the inside, there will be no waste whatever. My silo has been emptied four times, and there has not been a handful of ensilage wasted other than that we had to throw off the top when starting.

As to the cost of wood, compared with cement, I would say, at the present price of lumber and cement, the latter will only cost about one-quarter more, provided you have not to pay too steep a price for the use of curbs for building.

A neighbor of mine built a cement silo last summer 12 feet in diameter and 33 feet high, at a cost of less than \$100, counting nothing for his own work. He hired one man. This silo wall was started 9 in. at bottom, and gradually reduced to about 5 in. at the top, which I believe is plenty heavy enough, since that is about the thickness of most of the round silos in this neighborhood, and I have never heard of one bursting. The price I mentioned for building included everything but the roof, which a great many people think unnecessary. In fact, most of the silos in this section have no cover whatever, but I believe one will be well repaid in comfort and saving of ensilage by having it roofed, which can be easily done by putting six bolts into top of silo when building, with threaded end projecting about two and a half inches above wall. To this wall securely fasten 2 in. by 5 in. circular wall plate, and on this wall plate build circular roof, with gothic on one side and door for blower pipe. Perth Co., Ont. PAUL MADGE.