

should have shown a value considerably higher than \$4.74 per ton. If, therefore, it becomes a question of buying farmyard manure, there is no doubt that well-rotted manure is usually worth considerably more than fresh manure per ton, but when it is a question of how to handle homemade manure to get the greatest value out of it, the problem becomes a very different one indeed. Carelessness in the handling of farmyard manure may result in a loss of at least fifty per cent. of its fertilizing constituents, which, in the light of the figures which have been presented, is a loss of no mean importance.

Though not strictly belonging to the question under consideration, a few estimates of the amount of manure produced in a year by different animals may be of interest. The Cornell Experiment Station gives the following figures for animals which are liberally fed and given sufficient bedding:

Horse weighing 1,000 lbs., nearly.....	9 tons.
Cow weighing 1,000 lbs.....	13½ "
Sheep, per 1,000 lbs., live weight.....	6 "
Pigs, per 1,000 lbs., live weight.....	15 "

Professor Shutt, in Bulletin 31, C.E.F., gives a summary of experiments made by Heiden, Bousignault, and others, which shows the amount of manure produced annually by different farm animals to be as follows:

Horse, well fed, from 5 to 6 tons during time he is in the stable.	
Steer, weighing 1,000 pounds, about 20 tons.	
Sheep, weighing 60 pounds, about ¾ of a ton.	
Pig, from 2 to 3 tons.	

The figures just quoted do not agree exactly with the Cornell figures, but even if we take the lowest estimate in each case, we will find considerable food for thought.

There is another item connected with the valuation of farmyard manure, namely, the cost of handling. Manure made on the farm has to be removed from the stable day by day, and finally drawn to the field and spread. In some cases, a little extra labor may be required to incorporate it with the soil. As compared with commercial fertilizers, farmyard manure calls for more labor, though commercial fertilizers are not by any means exempt from labor charges. To estimate the cost of labor is even more difficult than to estimate the value of the manure. Manure that is drawn to the fields during the winter is usually subject to a minimum charge for labor, because, in many cases, the labor employed in drawing out manure in the winter would not otherwise have been profitably employed. The same conditions sometimes prevail in connection with the care of stock, so that in some cases it would not be fair to charge full rates for the labor bestowed upon farmyard manure, and in other cases it would be only reasonable to do so. The distance the manure has to be hauled is another factor which helps to complicate the calculation. The question of labor, therefore, is one which every man must work out for himself, and it would hardly be profitable to pursue it further at this time.

Anyone who has taken time to read this article will see that the question: "What is a ton of farmyard manure worth?" has not been answered definitely, for the reason that the question does not admit of a definite answer. He will see, however, that a ton of good farmyard manure has a considerable value when regarded as a substitute for commercial fertilizers. He will also see that every animal about the farm is a revenue producer of some importance in a way that we too often disregard. If he takes these two facts to heart, together with the fact that it is easy to lose half this revenue through careless handling of the manure, he will probably realize that there is more wealth in the manure pile than many people imagine, and that it is important to give some attention to securing the largest possible proportion of this wealth. Farmyard manure is a by-product of the farm. Every successful industrial enter-

prise is sparing no pains to secure the largest possible returns from its by-products, striving to prevent waste by every known means; and, in some cases, the returns from the by-products represent the profits of the business. The shrewd farmer will be equally awake to the importance of getting the most out of the by-products of his business.

G. E. DAY.

### Comforts of the Farm Home.

The accompanying photograph, which is a representation of the farm home of John C. Shaw, Oxford County, Ontario, is typical of what may be seen in many places in the rural districts of this country. This farm, for several years in the hands of Mr. Shaw, has been worked with much success and profit. It is not the object here to give details regarding the working of the farm, but rather to dwell upon the peaceful and restful character of such a home, as compared with the never-ending worry that usually dogs the steps of the business man. The escape practically from worry which such a home brings is in itself ample compensation for what some people regard as drawbacks in rural life.

Such a home should bring with it every reasonable comfort, though it may not make the owner a rich man. Farming is not a calling that is primarily intended to make men rich. It is calculated to provide them a comfortable and honorable living. The man who turns this occupation into a scramble for riches misses the mark to the extent to which he does so. It is a business intended to bring competency but not wealth.

Such a home brings with it true independence. The occupant may rise or lie down when he is ready. He can sleep when he needs rest, for he has taken that exercise which induces sleep when he lies down. He can work when he wills to work, and rest when he wills to rest. No sharp competition puts him to his wits' end as to how he may get even with others in business. He cares little what may be going on in the wheat pit or in speculative schemes. He is sure of growing a harvest if he does his duty, and he is sure of some kind of a market for it when it is grown.

Such a home brings with it security against the ups and downs of business life. The man who has his investment in banks or stocks may lose it. A financial panic may sweep it all away, in spite of his best efforts to the contrary. But no financial panic can sweep away a title to lands. It is as sure and safe as the nation when free from incubance.

Such a home may be possessed of all the conveniences of city life and be free from many of the inconveniences and annoyances of the same. Among the former are the daily mail, in many instances the suburban trolley line, a water supply in every room, and the quiet that adds so much to true enjoyment. His taxes are moderate and his expenses are not heavy.

Such a home also brings one into close touch with nature. There is the garden, with the great variety it may possess of vegetables and fruits. There is the orchard, with its production. There are the flowers, with their varied bloom. The dumb dependents on the farm are also objects of increasing interest. No place can compete with the farm as a place for bringing up children, as is abundantly proved by the character of the development that accompanies such upbringing.

That so many try to get away from rural life is one of the unexplainable things, when they are usually lured away by some mirage that deceives. In the days that are not distant this will change. The farm will be looked upon as being what it is, the most enviable spot on earth where man may live and labor. The days are not far away in which men will say as never before, Oh give me a home in the country wide.

"The Farmer's Advocate and Home Journal," of Winnipeg, suggests that Canada should have a national or international wheat show, organized on broad lines, with the National Corn Show, of Omaha, Nebraska, as its prototype.

### Experiments in Manuring Grain.

Editor "The Farmer's Advocate":

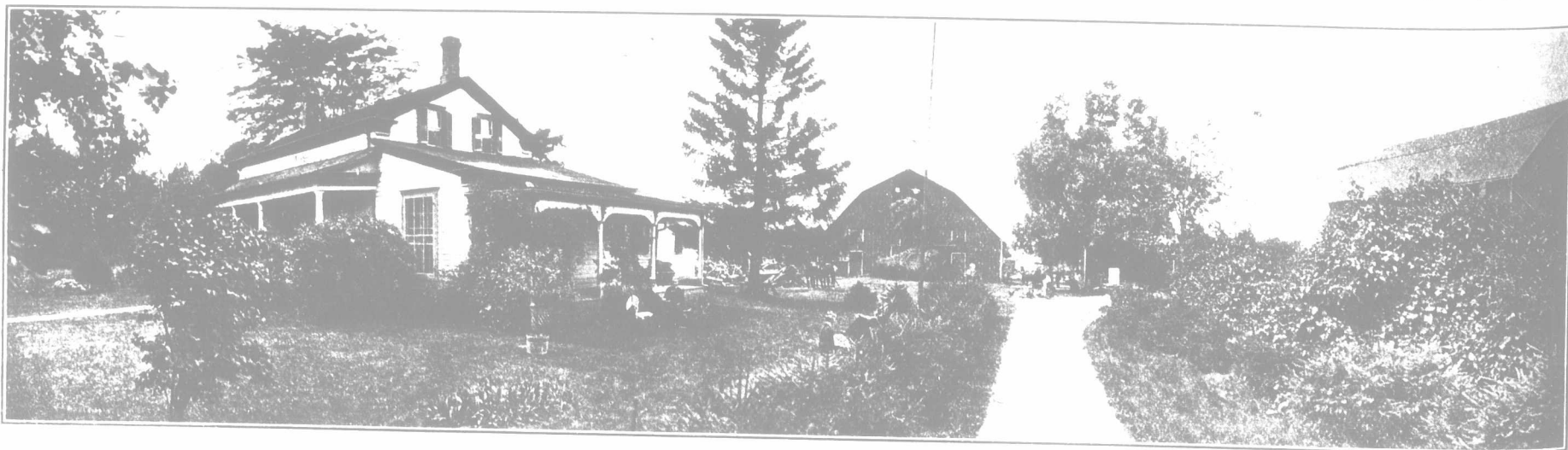
In your issue of December 30th, I noticed that you brought up the question of the value of a ton of manure. This I consider a very important question, and one which we would do well to investigate. If farmers generally could realize the great value of farmyard manure, they would handle it with much more care than is now commonly exercised.

Not only the method of handling, the manner in which it is applied, the litter used, and the class of animals fed, but the food fed to the animal and whether it is fed to a growing, milking or fattening animal must be considered in valuing the manure.

Manure from a fattening animal is much more valuable than that from a growing animal. Why? The reason is that a fattening animal takes from the food the carbohydrates, which are converted into fat on the animal's body, while the proteids of the food are only used to supply waste tissue, and the remainder, expelled in the solid excrement and urine, which contain large quantities of nitrogen, potash and phosphoric acid, almost equal to the amount present in the feed. These constituents are the very ones which soils require in order to produce a crop. It is claimed that in the case of fattening animals 96% of the ash and 95% of the nitrogen present in the food find their way into the manure. In the case of growing and milking animals the manure is of less value; the growing animals using the proteids and ash to develop muscle and bone. In the case of the milking cow, the solids of the milk are composed largely of proteids, which must of necessity come from the feed; thus an animal fed on feeds containing a large percentage of proteids, as oats, oil cake and clover hay, will produce manure of more value than an animal fed on straw and roots alone.

Manure has its greatest value at the time it leaves the animal, but from then on it is subject to great loss, through heating, the action of denitrifying bacteria, and leaching away. This leads the writer to believe that manure taken from the stables and spread on the fields in the winter, provided there is not too much snow, will give the greatest returns the following season. The objection may be raised that manure will lose all its value, through drying out, but it must be remembered that only the water evaporates, and the solids of the feces and urine, which contain the fertilizing constituents, chiefly remain behind, to be slowly dissolved by the acid of the plant roots and the weathering agencies. Manure hauled out and put in loose piles in the field so that it ferments, loses much of its value through the nitrogen being decomposed by heating and the action of bacteria, and passes off in the form of ammonia.

What, then, is the value? To reckon it on the dollars-and-cents basis is very difficult. But, a few years ago the writer conducted several experiments as to the best method of applying farmyard manure and its value. In one field sown with oats mixed manure from the yard was applied, just as the oats were sprouting. On half the field nine loads per acre were applied, with a sixty-bushel manure-spreader. The remainder of the field received no manure. From the part manured we had forty bushels of grain per acre, with good, strong straw, while the part unmanured yielded only twenty bushels of grain per acre, with weak, broken-down straw. This was a difference of 15 bushels per acre, and oats at 40 cents per bushel would mean a difference of \$6.00 per acre, or 66.6 cents per load for the manure. Besides this, the straw was of more value and the ground in better shape for yielding a crop the succeeding years. We also conducted experiments with barley, by spreading on top, in the winter, manure direct from the stable, and working it in in the spring; top-dressing another third of the field with mixed manure after the barley was sown, and leaving the remainder unmanured. The part where the manure was applied in the winter gave the best results, and ripened several days earlier than



Farm Home of John C. Shaw, Oxford County, Ontario.