Does Clover Impoverish the Soil?

Mr. John Taylor, Jr., Galt, sends us a clipping from Prof. Robertson's report, and has the following comments to make regarding it:—

"According to the tables here given, Prof. Robertson would leave the impression that a ton of clover is as hard a crop on the land as a ton of barley or oats, and will impoverish the soil as much as a 30 (thirty) bushel crop of wheat.

"Now, I do not doubt but that the figures here given by Prof. Robertson are correct enough in one sense of the word, that is, the grains here mentioned may draw and contain the amount here mentioned of nitrogen, phosphoric acid and potash; but I do not believe that they exhaust the fertility of the soil at the rate given in these tables. I do not for one moment believe that a ton-per-acre crop of clover hay will impoverish the soil more than a 40-bu.-per-acre crop of barley or a 58-bu.-per-acre crop of oats or a 30-bu.-per-acre crop of wheat. You are well aware that certain crops draw their nourishment more largely from the air than others. But if clover impoverishes the air, Prof. Robertson should not say that the nourishment it draws from the air comes from the soil and makes it that much poorer.

"How much nitrogen, phosphoric acid and potash will a ton of turnips draw from the soil, taking a good, all-around crop, and leave the tops on the ground? How much poorer will a ton of turnips leave the soil?"

The clipping in question gives the amounts of nitrogen, phosphoric acid and potash in the different kinds of farm products, and as this table is the basis of all computations for both feeding rations and the manurial value of feeds, we give it in full:—

Nitrogen, phosphoric acid and potash in one ton each of some farm products—

	Nitrogen.	Phosphoric Acid.	Potash.
Wheat	41.6 lb.	15.8 lb.	10.4 lb.
Barley	32. "	15.4 "	9. "
Oats	38.4 "	12.4 "	8.8 "
Pease	70.6 "	17.2 "	19.6 "
Beans	81.6 "	23.8 "	26.2 "
Indian corn	32. "	11.8 "	7.4 "
Hay	31. "	8.2 "	26.4 "
Clover	39.4 "	11.2 "	36.8 "
Turnips	3.6 "	5.8 "	1.6 "
Potatoes	6.8 "	3.2 "	11.4 "
Fat cattle, alive	50. "	31.2 "	2.8 "
Fat sheep, alive	44. "	22.6 "	2.8 "
Fat swine, alive	34.8 "	14.6 "	2. "
Cheese	90. "	23. "	5. "
Milk	10.2 "	3.4 "	3. "
Fine butter	.5 "	0. "	0. "

We have only so much of certain valuable elements in the soil, and when we sell off any farm products we sell off some of this plant food. The constituents in the soil which are essential to plant growth, and which in many places are becoming scarce, are nitrogen, phosphoric acid and potash. If a man sells a large quantity of these things for a small price, he impoverishes his farm.

In every ton of barley the farmer sells 32 pounds of nitrogen, 15½ of phosphoric acid and 9 of potash. If a man will persist in selling a ton of hay and a ton of oats—the two tons for $30—he will sell as much of the elements of fertility off his farm as he will dispose of in two tons of fat swine for $200. If he sells fat beef, he will sell about one-half more for $200 than he sells in the other case of primitive products for $30. If he sells cheese, he will get for the cheese $200 a ton, and sell less in one ton than in 2½ tons of hay for $25. If a man will sell a ton of hay for $10 he will sell about 87 times more out of his farm for that sum than he will for $500 in butter at 25 cents per pound. Cheese is more exhaustive. Fine butter is nearly all carbon, but strong butter has some nitrogen in its ammonia.

If our correspondent will read the article in question carefully, he will notice that the analyses show the amount of valuable constituents sold off a farm in a ton of the above products. He will also notice that hay—which is generally understood to consist principally of timothy—is spoken of separately from clover. In selling clover hay, which is generally understood to obtain much of its nitrogen from the air, it stands to reason a farmer would not exhaust his soil of nitrogen, though he might the other valuable constituents, as soon as he would by selling grain. In reality, instead of being impoverished, the land would be improved in this particular. Still the fact remains that nearly the same value of nitrogen, phosphoric acid and potash is sold in a ton of clover hay as in a ton of grain. The question to be considered is, Would it not be better for the farm in the long run, and also more profitable at the present time, to sell manufactured articles, such as beef, pork, milk, butter, and cheese, which contain only a very small amount of valuable fertilizing material in proportion to that contained in the grain and fodder necessary to produce them? The difference, being returned to the farm, will increase its value and may thus be considered as being added to capital account.

In regard to this question, Professor Robertson has the following, which will explain itself:—

"The whole drift of my argument before and after the table is to show the advantages that result from the sale of *concentrated and refined farm products*, which carry the highest value with the least exhaustion of fertility. Elsewhere, I have taken occasion to recommend the growth of clover hay, peas and beans, which are known to have the power and habit of appropriating nitrogen from the atmosphere through warty-like growths on their roots. I have generally added the further advice: to feed these crops to live stock, in order that as much as possible of the nitrogen which has been fixed by these plants may be left on the farm in a form ready for assimilation by other plants which have not the valuable faculty possessed by these three, which have been mentioned, viz.:—clover, peas and beans.

"My argument is against selling clover hay, not in any way against growing it. It is difficult in the course of an address or paper, which must necessarily be brief, to state all the limitations and qualifying conditions under which any practice which may be recommended can be followed with most advantage."

The criticism of your correspondent, Mr. John Taylor, jr., is well taken, but I hope that the lack of clearness and completeness in the sentences before and after the table in my report has not misled any farmer."

In regard to the question regarding the turnips we have added their analysis to the above table. The amount of fertilizer material lost to the acre can be easily found by multiplying the above numbers by the number of tons grown to the acre.

Keeping Accounts by Farmers.

(A paper read by H. McKellar, Chief Clerk of Agricultural Department, at the Central Institute Convention.)

During my immigration work in Ontario and the Maritime Provinces, in 1891 and 1892, the statement was often made:—"You only grow wheat in Manitoba, and when your wheat crop fails, or if the price is low, farmers are completely destitute." In most cases I satisfied enquirers that we could and did succeed in raising horses, cattle, hogs, poultry, vegetables, etc., and that the time was fast approaching when every farmer would depend, not on wheat alone, but on the returns from mixed husbandry. As no statistics exist to show what any practical farmer's revenue has been in Manitoba from a system of mixed farming, I desire to collect such information in tabulated form, and arranged to do so by sending out blank forms to the various farmers' institutes, asking them to co-operate by the individual members keeping exact accounts of all cash receipts for the year, under the various headings as shown on these printed slips. Glancing at those slips you will find page one gives a stock-taking on January 1st, 1893, also a stock-taking on January 1st, 1894. The difference in these shows whether the farmer is poorer or richer in assets.

Now turn to page two, here you find a monthly summary of all receipts for the year, in separate columns for the various kinds of grain, animals, dairy, and all products likely to be disposed of by a practical farmer. These reports would be the truest, the most practical and the most convincing proofs that could be given to the world regarding the possibilities of our province, and would completely eradicate from the minds of eastern men the idea that Manitoba is only a wheat country. I may say that my suggestion was met with indifference; I was assured by those to whom I submitted the scheme that farmers would not take the trouble to keep such a record—that farmers never keep accounts.

The matter was dropped for the time being; I have studied the case more thoroughly, and to-day return to it more resolved than ever that good would result, not only as a means of giving information regarding our province, which alone was my first intention, but that the farmers themselves would derive a thousandfold benefit. It is principally with the latter object in view that I am addressing you here to-day. It is hardly necessary for me to say that every business man, banker, merchant, miller, butcher and even the corner grocer keeps accounts of every transaction, every day, and all the year. The folly of doing business in any of these branches without keeping accounts is so great that we would all laugh at the idea, and predict ruin to all who would be so foolish; is it possible that the farmer alone is the man who needs not keep accounts? One of the greatest hindrances to successful farming to-day is through not keeping accounts. There are 22,000 farmers in Manitoba, of whom I venture to say that not 1,000 of them can give a statement at the end of the year of the proceeds of their work from the different sources of revenue—grain, stock, butter, eggs, etc. Now, I do not for a moment say that any knowledge of book-keeping, so called, is necessary to keep farmers' accounts. You are all aware that every business man provides books ruled to make the entries required for his own special purpose. Bank books, freight books, insurance books are all ruled to suit their various uses. Why have we not a book especially prepared for farmers' accounts? It can be done and done cheaply; if a practical book were prepared and offered for sale in our village bookstores, thousands of farmers would purchase the same and keep accounts.

You all know that the common diary is utterly worthless for farmers' use. The common journal is not practical. I have a book here prepared on the lines suggested by page two, by which accounts may be kept for the year, and the summary made as on page two. Pages one and two are the same as the slips now in your hands. Page three is for the month of January, with columns as on page two, all ruled, having printed headings. On this page the entries are made, as sales are made of the various farm products during the month, with a total at the bottom. This total would be put down on page two for January at the end of the month. Page four is for February. Five is for March. Twelve pages in all. Any farmer in the province who can write could make these entries. Where there are children, they would consider it a pleasure to make the entries, "keeping the accounts". Then twelve pages in day book form are added for entries of expenditure, simply for convenience, for as soon as farmers would learn how much money really came into their hands, they would also want to know where it went out. This is the sum total of all book-keeping. A few pages are then added for memoranda.

This book can be supplied retail at $1.00 each. This information compiled annually would direct the attention of farmers to those branches of mixed farming most remunerative; it would give valuable information to the Department of Agriculture; it would supply subjects for many discussions at your institute meetings, as well as themes for practical articles in our agricultural journals. Yet the greatest good would result to the farmers themselves, to their boys and girls, who carefully keep the accounts, for they could take more interest in their work, and would soon learn that farming pays. In this way one grand step would be taken in solving the problem, "What must we do to keep our boys on the farm?"

Gentlemen, I have submitted this subject to you in practical form briefly. I should be pleased to hear your comments, and I hope to have your co-operation in introducing this system of keeping accounts for the coming year.

[After a prolonged discussion, in which all favored the keeping of books, it was resolved to recommend all local institutes to urge the use of this book by all members. It certainly is simple, complete, and is not expensive, and we heartily recommend it to all who desire an easy and efficient way of keeping their accounts. Send your application for a book to the secretary of the Central Institute. The greater the number ordered the cheaper can the book be supplied.—ED.]

Summary of an Address on Barn and Stable Building.

[Delivered by Richard Henderson before the Sanitary Association of England.]

The building should be roomy enough, well-lighted, and properly ventilated, and thoroughly drained; it will then afford a sense of satisfaction to the most enlightened health officer or the most exacting sanitary inspector when he comes to look over the building. To the occupier it will be a source of satisfaction to see his stock so comfortably housed and their welfare promoted. Its handiness for being cleaned and otherwise manipulated will be the source of much relief to the attendants, which will be certain to react on the animals. And in the case of our patient dumb friends it will insure for them greater comfort and better health, which is a matter of vital importance to the community at large. The building will have a smooth, hard floor, impervious to damp, capable of affording a comfortable lair for the animals, but refusing to shelter the concomitants of filth. The stall divisions, walls and roofing will offer the minimum of obstruction to light and air, and of the projections and crevices which serve to attract and shelter dust particles, which advantages may be increased at a little extra outlay by plastering the walls and planing the wood surfaces, and even going so far as to vanish them, and thus rendering all of them smoother. It will be possessed of a simple method of admitting an ample supply of fresh air from the outside, and which allows the attendants full power of controlling the same, and at the same time be provided with self-acting outlets for the escape of foul air. And abundance of light will be shed down from the roof into all parts of the building, no portion of it being in the shade and out of vision of a sharp eye. The troughs will always be clean and wholesome, for, if never looked to by the attendants, the animals themselves will be capable of polishing them up with a lick or two of the tongue. This, we maintain, is as good accommodation as the most fastidious need look for under the circumstances that at present prevail. Sometime in the future, when farming is likely to become more intense than it is now, the practice of turning cows into fields, where they tramp and soil a large portion of the food allotted to them, will be considered wasteful, and the animals will, as we have already said, come to be housed in loose-boxes where their food will be carried to them. Confined in places of the sort, the animals will have sufficient room in which to move about and afford themselves exercise. They will at all times be able to lick themselves to their heart's content, and be able to lie down and stretch their limbs when and how they choose. They are certain to be healthier under conditions of this kind, and they are bound to yield more milk. It is only by reading a reliable milk record that one can realize how much the yield of milk varies from day to day. One day a cow gets gored perhaps by another, or it strains a limb while gambolling in its ungainly fashion, and down goes the record. Again, the heat becomes intense and flies grow troublesome, and the cows get no peace; or a cold day succeeds the hot one, and the figures are lessened in consequence. And so on all the season through. But in a box by herself, free to move about as she chooses, in a building the air of which is kept at a regular temperature, the cow will be more comfortable and happier, and she will prove her contentment by an improved and steadily maintained milk record