

shipments are made almost entirely to Great Britain and the New England States, most of the Ontario ashes will be handled through Montreal.

In view of the above exportation, and of the great waste of ashes in Ontario, it is worth while for the farmer to consider whether it pays to waste, or to sell for five or ten cents in cash or barter, a bushel of ashes for which the enterprising New England farmer offers 25 cents by the carload.

Plants draw upon the air and soil for their nourishment. From the former they can obtain water, carbon, oxygen and nitrogen, either directly through their leaves, or indirectly through their roots from the washing of the rains. These build up starch, sugar, cellulose, woody fibre, fat and much of the nitrogen compounds (*albuminoids, etc.*) The ash, or mineral matter, however, which is just as necessary for vegetable and animal life, is derived from the mineral salts of the soil. Hence it is of importance that the quantity of mineral matter in the soil be not decreased or exhausted. Products in the form of starch, sugar, fat and albuminoids can be sold without exhausting a soil, but the removal of ash or mineral matter without compensation is a sure and certain method of deterioration. A farm will be less exhausted by the sale of its produce in the form of beef than in the form of grain, less exhausted in the sale of cream or butter than of milk, etc. The return of the ashes to the soil, when they have come, is economical, just, necessary.

Unbleached ashes are valued for the potash (K₂O), phosphoric acid (P₂O₅), and lime (CaO) which they contain. In addition, magnesia (3 per cent), iron (1.5 per cent), soda (0.5 per cent) and sulphuric acid (0.15 per cent.) are found.

Leaching removes the salts which are soluble in water; these are the potash salts. The leached ashes contain from one to two per cent. of potash—all the other ingredients of the fresh ashes remain in about the same proportions. A bushel of fresh ashes averages 48 lbs., of leached ashes 55 lbs. The latter contain more moisture. Two samples of ashes have lately been submitted to me for analysis. The first was a little impure, evidently mixed with sifted coal ashes, and perhaps slightly leached. I give the analyses so far as they are of value—

	Potash	Phosphoric acid	Lime	Value per bushel	Value per ton
1. Guelph ashes	4.42	1.20	16.81	20	80.33
2. London ashes, fresh	7.15	1.89	37.33	26	10.83

The above values are from reckoning potash at 5 cents per lb., phosphoric acid at 5 cents per lb., and lime at one fourth of a cent per lb., the same values that are used in all commercial fertilizers.

For further reference I shall give a few late analyses from other sources—

	Potash	Phosphoric acid	Lime	Value per bushel	Value per ton
3. Canada ashes—New Jersey report	5.02	1.26	36.10	21	8.50
4. Canada ashes—Mass. report (average)	3.76	1.51	35.77	19	8.11
5. Dried hardwood, fresh Michigan report	12.22	6.00	40.00	48	120.00
6. Dried hardwood, leached—Michigan report	1.00	0.80	4.00	25	10.40
7. Canada unbleached ashes—New Jersey report	6.25	1.80	37.24	24	9.98
8. Hard coal ashes—Michigan report	0.10	0.05	1.50	00	0.16

The more complete analysis of ashes No. 2 I found to be as follows. It may be taken as a fair average of fresh ashes

	per cent
Water	7.68
Insoluble matters	7.15
Potash	1.89
Phosphoric acid	37.33
Lime	1.92
Magnesia	3.52
Iron and alumina	

PRACTICAL CONCLUSIONS

1. Ashes are very beneficial to all soils more or less impoverished, especially to sandy soils.
2. Ashes are adapted to every crop of a woody nature, especially fruit trees and vines.
3. Hardwood ashes are worth to the farmer unleached

about 20 cents per bushel, leached about 10 cents per bushel. Softwood ashes are a little less valuable.

4. Coal ashes contain little or no plant food. They are a good absorbent, make first-class road beds, and are well adapted for filling in hollow walls.

5. Apply from one-half to one ton of fresh ashes per acre, three to four tons of leached ashes.

6. All wood ashes should be kept under cover, in a dry place.—*Bulletin XVI; Ont. Ag'l. College, Guelph.*

First Prize Essay

ON "THE RELATIONS BETWEEN EMPLOYERS AND EMPLOYED IN CANADA, WITH SPECIAL REFERENCE TO THE FARM, WITH A VIEW TO IMPROVING THESE RELATIONS."

(By the Editor)

(Continued from September)

The most sacred spot on earth to the farmer or his workman is his own hearth-stone, and the most enjoyable hour of the day is that spent in partaking of the refreshing meal, surrounded by the olive plants that are growing up in beauty around his table, till they be transplanted into homes of their own, the queen of his home seated by his side. And why the hearth-stone so sacred? Because it is his own, and there he has reared the pillar of his chief social enjoyments, the privacy of which no man has a right to invade unasked. At the social board he can talk with his family the secrets of the home, which other ears have no right to hear. Queen Victoria, herself, has no right to cross the threshold of his door uninvited, but Her Gracious Majesty, as queenly in her manners as in her government of Britain, would be the last person to make any such invasion without an invitation. Shall the scarcity of laborers give the employed the privilege of access to this privacy unsought? Never! Shall the sanctions of neighborhood custom? Never! These only bind us when they conflict with no expressed law of Providence. Does Holy Writ ask it? nay, but the opposite, as the central pillar upon which the whole social fabric rests is the division of men into families, and the preserving inviolate the sacredness of these home rights from invasion of outsiders. Man ceases to possess a home when he can get no moment with his household to talk of things of common and vital interest to them, but which in no way concern the outsider. Circumstances may compel the farmer to admit to the presence of his household those whose associations may not be for its good. The only alternative may be to do so or allow his crops to go back to earth again ungathered; but this in no way affects the equity of the thing. The employed of the queen has the same right to demand that he be admitted to dine with Her Majesty as the farm laborer to be admitted to the table of the farmer. It is evident there is a line between the employer's rights to privacy and that of the employed to the privileges of his household, but where shall the line be drawn? We see no reason why, if the principle of equity admit the employed to the farmer's table, that it should not admit him to the drawing room, which grates harshly on the good sense of a properly constituted mind.

There is something sadly out of joint in that sanction of custom which requires the farmer's wife to wash and mend as well as cook for her husband's employed. If she choose to do so, that is her own affair, but it is an outrage on our sense of propriety to compel her to do so, and this is just the attitude assumed by, we think, a large number of the employed. That attitude expressed in words is something like this—If you give me so much wage and do my mending and washing, I will work for you, which is about equivalent to saying, if your wife become my servant I will become yours. It is perfectly equitable to make it an article of agreement that so much shall be allowed for washing and mending, but no farmer has a right even to bind his wife to do a menial class of work that is derogatory to her dignity, and that at once shocks our sense of the fitness of things. If, however, she choose to do it as a matter of saving, which is not infrequent, it is her own affair, with which no one has a right to interfere.

In treating of the social relations between employers and employed on the farm, it is impossible to lay down cast-iron rules, owing to the extreme differences both in manner and disposition, on the part of the individuals of both classes. Those relations should be frank and pleasant, and where they cease to be of this character, the sooner they are severed the better for all concerned. This feature of our subject finds fitting illustration in the book of Ruth, that charming episode

of rustic Jewish life. When the Bethlehem farmer reached the fields where his husbandmen labored with uplifted sickle, his salam to the reapers was "The Lord be with thee"—sweeter music than the song of birds that sang the songs of harvest, and more refreshing to the weary men than the sound of running waters. Their reply could scarce be other than "The Lord bless thee." Happy reapers in the employ of such a man, and happy farmer to possess such reapers! Those employed in the Bethlehem harvest would not require to call a caucus in the evening as to how they should manage to prolong the harvest, nor would the farmer require a spy-glass to sit and watch them from an upper chamber window. Alas! how many centuries it has taken employers and employed to learn that their interests are mutual, and that they cannot in a sense better further their own interests than when they are seeking to advance the true interests each of the other.

Some servants, tried and faithful, may, with much advantage, be taken into the bosom of the family, incorporated, as it were, a part of the household. In other instances this would be like taking coals into the bosom, and would certainly sap the very foundation of its peace.

The degree of freedom or reserve that should obtain between the employer and his employed cannot be regulated by any written code, for what would be proper and fitting in one case might be far from this in another. In Britain there is perhaps too much of austerity, and in America too much of familiarity, which, if it does not produce contempt, detracts from the respect which should be the due of the employers. It is certainly true that no country in the world has produced soldiers so obedient as those of Britain, where the officers adhere rigidly to the proprieties of their position. There are occasions, however, when the employed may, with great advantage, be taken into the confidence of the employer, as in the case of old, tried servants, and it may be new ones, whose fidelity and promise of usefulness are more than usually apparent.

While we admit that even socially the employed may sometimes be more deserving of the position than the employer, and adjustments would be more seemly if they were to exchange places, there are duties, nevertheless, which they owe to each other regardless of inherent desert, incumbent on them in virtue of the positions which they hold respectively, and it should be the constant aim of each to render these in full tale.

MATERIAL RELATIONS.

The material relations between employers and employed on the farm do not work smoothly. With the former the primary object is too often to grind out all the labor that he possibly can from the workman, at the lowest possible wage, and with the latter to give the least possible return for the largest wage attainable. In this game of fence we can see that he with whom the advantage will lie depends upon the fact of labor being in excess of or not equal to the demand. The farmer too often, in order to get a fair day's work done, must put himself at the head of his work and grapple with what is most difficult and irksome with his own hands. This state of affairs is certainly humiliating, but, nevertheless, true, and so long as the present migratory system amongst laborers obtains we see no sure remedy. While we believe that the employer pays all he can afford now by way of cash outlay, a better plan of doing this might be devised. He too often satisfies his conscience by paying the amount of wage in full, without troubling himself as to the incidental material comforts of the employed, as to the nature of his dwelling and surroundings, when a man with a family, and to his mental entertainment, if single. To put these relations upon a proper basis the employer must put up cottages for his workmen, neat, comfortable, tasteful—not necessarily expensive—each having a piece of land attached and a stable large enough to shelter a cow and her keep for the winter. It is better usually to allow the cottager to furnish his own cow rather than purchase from his employer, that no feeling may arise regarding the price, and he should be allowed sufficient hay to cut in corners or elsewhere to keep his cow, cutting it on his own time. He should manure his garden from the products of his stable and work the same on his own time. A cow is one of the greatest blessings Heaven ever gave to the laborer's family, and it would be cruelty to deny it or its equivalent, but it should be fed in the way indicated lest bickerings arise. He should then receive a wage with these perquisites in