

purchases, however, must be submitted to the approbation of this council before the first of March next.

The motion having been put to the vote was carried on the following division :

For : Messrs. Benoit, Blackwood, Browning, Casgrain, Guilbault, Gaudet, Gauthier and Marsan (8).

Against : Messrs. Ouimet and Tassé (2).

The Council then adjourned.

Certified true copy,

(Signed) GEORGES LECLÈRE, Secretary.

Feeding for Manure.

The farmer is compelled to keep stock and feed them to save his farm from impoverishment as well as to diversify his products so as to avoid overcrowding the markets, with too much grain, hay, or other crops. If it were not for the live stock kept on farms, the coarse waste products, such as straw, could not be returned to the soil with any benefit, and what with the rapid exhaustion of grain growing and the absence of any return to the soil, a few years only would be required to render it completely barren. This final result may be postponed for a time by returning the straw to the soil in some manner, but it may be averted altogether by feeding all the coarse crops, as straw, hay, and corn stalks, with some part of the grain product, to cattle. Some farmers even enrich their soil far beyond its virgin condition by the skilful feeding of cattle upon purchased food, in addition to the coarse products of the farm. By doing this, double profits are made; one on the cattle fed, and one on the manure made, or rather on the increased products grown by the use of this manure. This practice is of the greatest value in agriculture and can be made more or less profitable as greater or less skill and experience are brought to bear upon it. It matters not what kinds of animals are fed. Some farmers prefer to feed sheep, and some cattle for the butcher; and some choose to feed cows for dairy purposes. It is not so much the choice of means to the end as the use of whatever means may be chosen, upon which depend the advantage and profit of the operation; and the most important of these means which should be considered first is the kind and nature of the feeding substances that may be used, and their relation to the production of rich manure. The value of the manure made by feeding any kind of food depends upon the character of the food altogether, and not upon the animal. It depends somewhat upon the condition of the animal, and whether it is young or old or making flesh or fat; because a young and growing animal procures its increase of substance from the mineral and nitrogenous elements of the food, while a full grown or a fattening animal requires only to support its existence or accumulate fat, and for these purposes only carbonaceous matter is required which does not enter into the calculation of the values of the manure (1). Manure is valued for its mineral matter, chiefly phosphoric acid and potash, and the nitrogenous matter contained in it. So then foods, regarded as materials for making manure, are considered too for these same mineral and nitrogenous matters. Animals consume a certain quantity of food. A certain portion of this is used up in maintaining the animal heat and in supporting the respiration, these functions consuming for their support only carbonaceous matter. But every animal wastes a certain quantity of muscular fibre by every exertion of the muscles, and this loss is repaired from the blood, so that a portion of the food is used up in the production of blood which is required to repair this continual waste. This waste is however very small compared with that of the carbonaceous elements expended in respiration and vital heat. The following tables show how the food of the animals mentioned is spent in their different functions of growth, of excretion, and of vital

force. For instance an ox consuming 100 pounds of dry mixed fodder of the best kind consisting of linseed oil cake, clover hay and turnips expends as follows :

	In increase.	In manure.	In vital force
Nitrogenous substance....	0 8	} 29 1	57 3
Carbonaceous substance...	5 2		
Mineral matter.....	0 2		
Total 100 lbs.....	6 2	36 5	57 3
A sheep with similar food expends of			
Nitrogenous substance...	0 8	} 25 1	60 1
Carbonaceous substance...	7 0		
Mineral matter.....	0 2		
Total 100 lbs.....	8 0	31 9	60 1
A pig fed on 100 lbs of barley-meal expends of			
Nitrogenous substance....	1 7	} 14 3	65 7
Carbonaceous substance...	15 7		
Mineral matter.....	0 2		
Total 100 lbs.....	17 6	16 7	65 7

It is seen that the expenditure of nitrogenous and mineral matter is very small indeed, and that nearly all of these is recovered in the manure. The richer the food may be in these elements of course the richer will be the manure, and it is therefore of great importance in choosing food to procure that which furnishes the largest quantity of these elements for the least money. As a guide for this purpose the following table is given. It shows the quantity of phosphoric acid, potash and nitrogen contained in 100 lbs of each substance and the money value of that portion of them contained in the manure made by feeding one ton of them, as based on the market prices of standard artificial fertilizers.

	Phosph. acid.	Potash.	Nitrogen.	Money value manure
Linseed cake meal.....	1 92	1 65	4 75	\$19 72
Cotton seed cake meal.	7 00	3 12	6 50	27 86
Beans.....	2 20	1 27	4 00	15 76
Peas.....	1 84	0 96	3 40	13 38
Malt dust.....	5 23	2 12	4 20	18 21
Indian corneal.....	1 13	0 35	1 80	6 65
Fine middlings.....	6 44	1 43	2 60	13 53
Coarse middlings.....	7 52	1 49	2 58	14 36
Wheat bran.....	7 95	1 45	2 55	14 69
Clover hay.....	1 23	1 30	2 50	9 64
Meadow hay.....	0 88	1 50	1 50	6 43
Bean straw.....	0 90	1 11	0 90	3 87
Pea straw.....	0 85	0 89	1 00	3 74
Wheat straw.....	0 55	0 65	0 65	2 08
Oat straw.....	0 40	0 93	0 60	2 90
Mangels.....	0 09	0 25	0 25	1 07
Swede turnips.....	0 13	0 18	0 22	91
White turnips.....	0 11	0 29	0 18	86
Potatoes.....	0 32	0 43	0 35	1 50
Carrots.....	0 13	0 23	0 20	80
Parsnips.....	0 42	0 36	0 22	1 14

It is to be considered, in regard to the valuations given, that the manure made from any feeding substance after it has passed through the intestines of an animal is of more value than the substance itself would be. If one were to give a ton of clover hay and a ton of bran to a cow, the resulting manure would be worth \$ 24.23; according to the above table. That is, that the phosphoric acid, potash and nitrogen contained in the manure could not be purchased in the form of guano, superphosphate of lime or any other standard fertilizer for any less money than that. The manure too would be greatly more valuable than the raw hay and bran; because in passing through the animal these have undergone a process of digestion or decomposition, and are in a far more available condition as plant food than they were before they were eaten. The whole subject is worthy of the most careful and thorough study by the farmer as one of the most interesting in agricultural che-

(1) Because, after the first start, plants take all their carbon from the air.—A. R. J. F.