

that fermentation may take place more rapidly and the manure decomposed and ready to apply; that should it be intended to remain for any length of time before using it, it would be better to drive the teams over it, so that the fermentation might not be so rapid. In either case, the dung heap ought to be brought as near to a point at the top as possible, so that should any heavy falls of rain take place, it might be run off, and a practice I have seen generally adopted was to cover the heap with peat or porous earth so as to determine the ammonia arising therefrom; and here where plaster is easily obtained, occasionally scattering a quantity of it over it, would be superior from its retentive properties to the former. Plaster also can be beneficially applied where the stall feeding of cattle is followed. For every one knows that on cleaning out such houses, an effluvia of no very agreeable odour arises, which, by scattering a few handfuls of it over the floor, it is at once checked or retained by the plaster, and such also is its effects if scattered over a dung heap while undergoing the process of fermentation.

Having gotten it collected and properly made, the next step is to apply it.

That is a process all generally are acquainted with.

The general practice was to drill it in for green crops, either potatoes, turnips, or carrots. For the last it required to be as well decomposed as possible to effect it, so that the root might not be divided and run into what was called toes, but which description of manure, pigeon dung, or such like being always preferred, if they could be obtained: yet, when these were not to be had, well fermented farm-yard dung was used. It is, however, a generally admitted fact that the more manure is fermented, the more its organic matter is lessened, yet the more speedily will its influence be felt on the crop to which it is applied; and, although less in quantity, is better in quality. Another method was practised, when dung was collected during the summer; when it was properly made, it was spread on the ground in the fall, where it was needed to plant potatoes in the Spring, and ploughed in so that it might incorporate with the soil, and at the same time save a vast amount of labor in the Spring, a system which I much approve of, as, by treating it in that way, the potatoes, will be clear in the skin and free from scab; which although of good quality, makes them unsightly to the eye, and lowers their value in the market. In applying it when turnips were intended to be grown, it was always put in drills, sometimes having a quantity of bone dust added to it. At other times it was applied to summer fallow, and ploughed in with the last furrow before sowing; and in doing so, care should always be taken to cover it properly, as vegetable manures, more especially, have always a tendency to rise; and, if exposed to the weather, lose much of their virtues.

Having now very imperfectly drawn your attention to Farm yard manure, in its solid form, I would merely glance at it in its liquid form, which is far more valuable than what is generally understood.

I would take for instance, the urine of horses and cattle. I will give you the opinion of Henry Youle Hind, Esq., in preference to mine on this head—as stated in his lectures on Agricultural Chemistry—in which he states that Farmers are very anxious to obtain Guano at a great expense, yet what is Guano? but the excrements of birds. It is composed of various ingredients, together with acid in combination with ammonia, of which latter substance, guano contains from 7 to 17 per cent.. Canadian farmers (he states) would not think of purchasing guano, even if

a supply were at hand. The price of \$10 to \$60 a ton, presents a great objection to its use as a manure, when a substitute of almost equal value is to be found in the urine escaping from our stables. He estimates that the urine and droppings of a full grown cow or horse contain a quantity of saline and mineral ingredients, exactly equal to the quantity of the same substances contained in the food consumed. In the solid excrements are found those large ingredients which, as they passed through the body of the animal, resisted the action of the fluids with which they came in contact. This somewhat singular statement will appear perfectly credible, when we consider that a full grown horse or cow consumes food for years together without increasing in weight: that is to say, the mean or average weight of a milch cow or working horse or ox is the same throughout a period of many years. Certain constituents of the food assume the form of muscle, bone, and blood, supplying the place of an equal amount of worn out and useless materials, which are discharged from the body in the urine.

The same author calculates that a horse voids 3 lbs of urine a day. From November to March he will void 450 lbs., which contains soluble solids as much as is contained in 200 lbs. of Guano. A cow voids 20 lbs. to 40 lbs a day; and for the same length of time gives as much soluble solid as is equal to 500 lbs. of Guano.

Now, Mr. President, in looking at the above statement, from a party competent to make such a calculation, what must be the loss to the Farmers of Canada, whose cattle are allowed to wander up and down, as I before stated, in lanes, where their droppings, either of solids or liquids, are comparatively lost?

I will next merely glance at green manuring such as ploughing down buckwheat, clover, and rape, (on the West coast of Scotland, we considered seaweed, direct from the Sea, also a green manure: its effects being much the same as those first mentioned. The general system adopted for those first named, was to get the land as well pulverized as possible; and then to sow either as thickly as possible—that is buckwheat or rape, clover being sown the previous year, and ploughed down the next; so that they might grow as rapidly as possible, thereby checking the growth of any weed that might show itself; and when full grown and coming into bloom, roll it down with a good heavy roller, so that the plough might the more easily turn it under with the furrow, when its results would be seen in two ways: first, in cleaning the land of weeds, and second, in giving a good crop.

But the disadvantage in adopting such a course is that it has no lasting effect, the first crop being sufficient to exhaust all its strength; and on that account it is seldom resorted to except when a supply of more permanent manure cannot easily be obtained.

Guano, I have no experience in applying; but from the results, which we see in the Agricultural reports from Britain, its powers must be very great; and like Bone-dust, the small quantity applied to an acre, makes the cost of carriage so trifling, that it in a great measure, reduces the first cost of the article, when compared with the expense attendant on carrying a quantity of Farm-yard dung any distance.

Bone-dust, in my time, was very generally used, for the raising of Turnips: the bones having been crushed by a mill for the purpose. It was to be had at most all ports on the coast and was well adapted for light loam or sandy soils; and its effects were astonishing. As to its application, when carried to the field, it was applied sometimes alone, and at other