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Nec aranearum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.

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REPORT OF THE COMMITTEE ON MANURES.

Having looked out a convenient place to procure this useful material, the first step is to dry it: fresh peat contains about 75 per cent of water, and even when called dry it still holds about 10 per cent; this drying may be effected in part by draining or trenching the ground where it occurs, but more easily by digging it out at a convenient season, either in summer or winter, piling it into heaps and leaving it for some months or even a whole season to the full influence of light, air and moisture; by these agencies it crumbles to powder and parts with much of the sour or antiseptic principles which it originally had; having got it thoroughly dry and crumbled, the next step is to cause it to rot or decay and become converted into the soluble forms required for the food of plants. There are various ways of doing this, but they all resolve themselves into composting materials rich in alkali. This alkali, whether it be ammonia, potash, soda or lime, soon disposes the peat earth to fermentation and reduces it to a state of great efficiency as a fertiliser.—Ammonia is most accessible in urine or fresh stable manure, potash and soda are the characteristic constituents of ashes, and lime in any quantity may be easily procured.

In warm weather one part of animal substance will cause ten parts of dry peat to ferment, or one hundred pounds of flesh properly cut up and mixed will decompose about one thousand pounds of peat, and a dead horse will decompose five or six cords of it: a barrel of fish or fish refuse, or a hog's head of urine will decompose a cord; from a half to a fourth of fresh stable manure will be sufficient to induce heating and decomposition, and produce a compost which is said to be as efficacious as an equal weight of unmixed farm yard manure, in enriching the land for a root crop, and one fourth or less of sea weed will serve the same purpose, so that when their principles are fairly understood there need be no difficulty in procuring abundant means of fertility for the land.

Peat earth may likewise be decomposed by wood ashes either leached or unleached; it takes about four bushels of the former, and twice as much of the latter to induce fermentation in one cord of peat. When a bushel of lime is added to a load of wet muck, the water of the peat will slack the lime, decomposition will be set up and the whole brought into a useful form for top dressing young clover, &c.; a better way is to dissolve a bushel of salt in water, and to mix it with ten bushels of lime until it is thoroughly slacked and moistened, let the mass remain for a week more, and then be added to three cords of peat, shovelled over for about six weeks, and then applied to the soil. By mixing salt with lime, soda and the chloride of lime are formed, both of which are very excellent fertilisers. On the whole, however, it will be more generally advantageous to combine the above materials in the same compost; thus we may mix one load of stable manure with three of bog earth and three bushels of ashes or quick lime and salt. Pile the whole up into heaps and turn over once or twice during the season—such a mixture is considered to be equal to barn yard manure, load for load upon worn out land.

When compost heaps of peat and green manures, &c., are to be made in the field a layer of the muck and a layer of the manure ought to be laid down parallel to each other, and distant five or six feet; let there then be laid down between the two a layer of muck ten

or twelve inches thick, then a layer of lime or ashes, then a layer of manure in proper proportion, then another layer of muck and so on always covering with the latter: if it has not been too closely packed it will take on a good heat in a week or ten days, and in six or eight weeks, more or less according to the weather, it will be ripe and ready for the land; it may however, be advantageously turned over again before using. Peat earth or fine saw dust, ought always to be kept on hand at the farm, they might be kept for absorbing liquid matters in the stable, the dung cellar, the barn yard, and the hog, sheep, and cattle pens, where they will not only save the liquid manure, but will themselves become soluble and fertilising: after stable manure they are the most available fertilisers which our farmers can command, and by using them skilfully they may soon reclaim their exhausted lands, and begin again, with greater propriety to sell their hay and straw off the farm.

A good compost sufficient for an acre of ground may be made of forty bushels of mould from the woods, five bushels of ashes, five bushels of bone dust, and thirty gallons of urine, when this is mixed in heaps and shovelled over it becomes earnestly fertilising.

The following is said on good authority, to be superior even to guano:—

Peat earth or saw dust,	40 bushels.
Bone dust,	7 do.
Quick Lime,	20 do.
Coal-tar,	20 gallons.
Common Salt,	1½ cwt.
Epsom do.	1½ do.
Glanber's do.	1 do.

The whole to be mixed up in a heap and allowed to heat or ferment.

Another compost may be made of a mixture of lime and ashes with weeds, twigs leaves, potato haulms, brakes, raspberry bushes, nettles, chip rubbish, and other refuse vegetable matters. This compost will necessarily vary very much in composition; if lime be scarce and woody fibre abundant in it, its value will be but small; another common compost may be made of barn manure, lime, soot, scrapings of roads, sods, sweeping of ditches, pools or ponds, hillocks from old pastures, and all kinds of rough and waste mixtures of earthy vegetable matters; the lime should be mixed with the earth in a separate heap, and added in layers to the other from time to time. These heaps may be formed in the yard, the field or by the road sides: the great principle is to let nothing be lost, and the more of these compost heaps "and dirt piles" that are to be seen in any neighborhood the more favorably would we augur of the industry, intelligence, thrift and profits of the farmer.

We need hardly point out the value of *Salt-Marsh Mud* to farmers on the sea-board: we are happy to say that many of the farmers along the shores of the Bay of Fundy are actually engaged in renovating their worn out uplands by the mud of the marshes. On the large scale, the enterprising men of Westmorland are covering waste bog or marsh land by letting in the maddy tide waters of the Bay, and leaving the sediment or warp, not to improve the old, but absolutely to make new land; the Toler Canal and the Botsford Canal are perhaps the most signal and successful monuments of Agricultural industry in New Brunswick; many thousand acres of swamp and water have thus been redeemed and converted into valuable hay land.

Wood Ashes contain a great many of the necessary elements of fertility, (but of course can only supply the ash, or mineral portion of any crop:) even when leached they must be regarded as useful additions to the soil; German and even English farmers often haul them from a distance of twenty miles, and if they are to be had either leached or unleached they ought to be carefully saved for the land. The composition of any given heap of wood ashes is very variable, but always, even when

leached they contain a considerable proportion of the phosphates which are so essential for grain crops and when mixed with bone dust are found nearly to double its effect.—We have already spoken of them as a useful ingredient in composts and we may farther add that to land already in good heart a compound of bone dust and wood ashes will always be extremely beneficial eight bushels of bone dust, and twenty four of ashes mixed and moistened with urine for two or three months form an excellent compost for an acre of turnips.

Charcoal is also an excellent article for the farmer and there is no excuse but ignorance to be offered for his neglect of it. Like peat it consists of vegetable substance partially decomposed but still rich in the elements of productiveness.

It is admirably fitted to absorb and retain the gases of fermenting manures, and when mixed in a state of powder with the soil to decay and yield them up again, as well as its own substance to the crops. After the coal is burned the large lumps can be readily broken with an axe or maul, and then reduced to powder on the barn floor by passing a heavy roller over it: it may be used advantageously for any crop and on any soil at the rate of 60 bushels to an acre; or it may be used with some of the composts.

Soot is also a useful fertiliser; and when mixed with salt it is said to be most especially favorable to carrots, potatoes or wheat.—Farmers who live near the sea should never neglect the valuable resource which they have in *Sea-weeds*. Scotch and Irish farmers spare no pains in collecting this material, and after a storm they sometimes pass the night in hauling it beyond the reach of the waves.—Sea weed contains more nitrogen and saline matter than land plants and ferments more readily; its application to land is therefore greatly calculated to increase its productiveness for a season. It may be ploughed in at once, or it may be used as a top dressing to grass lands, or it may be advantageously composted with stable manure, earth, lime, peat moss or marl, turning over the mixture once or twice before using it. The ash of sea weed makes an excellent top dressing, but it is not so likely to be used as the plant itself in the green or dry state.

Sea grass or Sea wrack when green makes a very good manure for clay soil, or it may be used as litter in the stables and hog pens; after it has become wind dried it may be made to ferment in the compost heap, or it may be burnt and its ashes added to compost heaps.

When *Fish*, or refuse fish or fish garbage can be had, they can be turned to good account by the farmer, although by reason of their rapid decomposition their effects on the land are rather transient, and they are said to be rather injurious to the land if ploughed in the fresh condition; they should therefore always be composted with peat or muck and soil, or with marl or wood ashes and seaweed. These mixtures are known to be excellent for roots or grains.

Green Manures or the ploughing under of growing crops may be mentioned among the means of renovating our light and worn out land: leafy and juicy plants like clover or buckwheat, are generally preferred for this purpose; the practise of ploughing crops under has in some cases in this province been attended with the very best effects; but it will probably be some time before our settlers can be persuaded to forego a crop for the season on this account; in some cases, however, it may be the most convenient way of renovating land when farm yard manure is scarce and expensive: still it is only a temporary expedient, because no young, leafy plants can supply to the soil, all those elements (nitrogen and phosphoric acid) which are especially required by grain crops. When clover is to be used, it is sown with the green crops of the previous year and ploughed under late in

the succeeding spring before the plant has blossomed; or the second growth of clover may be ploughed in the fall. When buckwheat is to be used in this way, it must be sown separately and ploughed in once or perhaps even twice in the same season before the stalks have begun to grow hard and woody: it is asserted by some that these green, leafy plants derive nearly three-fourths of all their substance from the atmosphere so that, if so, the theory of green manures is simple enough.

When the farmer can afford to buy any Portable manures, Bone-dust and Guano are probably the best which he can select. There will always be a saving with them in the cost of carriage and delivery on the land.—One drawback is however their liability to be adulterated. This is often most unscrupulously done even to the extent of 80 or 90 per cent, and the farmer ought to be fully upon his guard against imposition. Our object in the present report is rather to point out the way to economise the manure which the farmer has at his command than to detail the various ways in which money may be laid out on those of whose value he is ignorant. Bone dust consists partly of animal matter and partly of that kind of mineral matter which is absolutely necessary for cereal crops, and which naturally occurs in very small quantity in the soil; its active principles are most probably nitrogen and phosphoric acid. Its price in Boston last summer was two shillings and six pence per bushel, and probably it could hardly be sold under four or five shillings in the interior of this province; if land is otherwise in good condition eight bushels are said to go as far as thirty tons of manure for a root crop, but unless the bone-dust could be had proportionally lower than the manure it will not probably meet with general sale in the country. We understand that it is intended to erect one or two bone mills in this Province; they are deserving of every encouragement and this Society or the Legislature might very properly offer some pecuniary aid to the establishment of an efficient bone mill in some central place to be hereafter determined. Farmers might also now begin to collect bones which might hereafter be ground at such mills.

Bone dust should be drilled in with the seed for a green crop at the rate of seven or eight bushels per acre; or sowed as a top dressing with any cereal crop at the rate of ten bushels per acre, before the last harrowing; they may also be made to go farther by being composted with wood ashes, sheep's dung, dried night soil, &c. Bones answer best on light dry soils, but do not wholly replace the bulkier stable manure.

The use of the drill in application of bone-dust and all such manures as will admit of it, is always to be recommended on the score of efficiency and economy.

We have now directed the attention of those who are interested in the subject of manures to the most accessible of those substances which, being themselves of vegetable or animal origin, are, on that account pre-eminently qualified to become the nourishment of new generations of plants and animals, and we have endeavored to treat of them with as few scientific phrases and theoretical views as could well be employed in any attempt to inculcate correct principles; it has been deemed that the clear apprehension of a few leading principles might be of more service than the perusal of many pages of what is called *practical details*.

Crops require to be fed as certainly as children do; manures are the food of crops; whatever has been part of a living plant or animal may after decomposition again become food for growing plants or animals: render back to the field an equivalent for what you have taken in the crop; it is much easier to keep land in condition than to bring it up to condition; gather up the fragments, let nothing be lost; save your manure for the crops,