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The Field.

Familiar Talks on Agricultural Principles.

MORE ABOUT MANURE-MAKING.

THE great importance of this subject justifies a little further talk about it. And in this article we propose to let others besides ourselves have something to say about the matter.

One of the ablest of British American agriculturists has said, "More than one-half of the manure made in the provinces is absolutely wasted from ignorance and inattention; and the other half is much more unproductive than it would have been under more skilful direction. We have almost no pits dug upon a regular plan, for the collection and preservation of the dung, which, from time to time, is wheeled out of the barn. Sometimes it is spread out on the green sward; sometimes cast carelessly in court, or adjoining yard; but seldom is an excavation made, purposely for retaining the juices which run from it. These are suffered either to stream along the surface, or sink into the earth, and in either case, their utility is sacrificed to inattention or ignorance. This is no more, however, than half the evil. The exhalations which arise from the ardent influence of the summer's sun, or from the natural activity of fermentation, are permitted to escape freely, and to carry with them all the strength and substance of the putrescible matter."

Professor Dawson has an excellent chapter on this subject in his "First Lessons in Scientific Agriculture," from which we make a few extracts. He says:

"There is, no doubt, much more attention given to this important subject now; but still, the waste of barn-yard manure, both solid and liquid, is a great evil, and a fruitful cause of agricultural poverty, and failures of crops. About two years ago, I had referred to this subject in a public lecture, and happened, immediately afterward, to drive ten or twelve miles into the country, with an intelligent friend, who doubted the extent of the loss. We were driving through an old agricultural district, and, by way of settling the question, determined to observe the capability of each barn-yard that we passed, for the preservation of manure. It was early in spring, and we found scarcely one barn that had not its large manure heap perfectly exposed to the weather, and with a dark stream oozing from its base into the road side ditch, or down the nearest slope; while there was evidently no contrivance whatever, for saving the liquid manure of cattle. Here was direct evidence, that a large proportion, probably not less than one-third, of the soluble part of the solid manure, and the whole of the liquid manure, which all agricultural chemists think to be at least equal in value to the solid part, was being lost. In other words, each farmer was deliberately losing between one-half and two thirds of the means of raising crops, *contained in his own barn-yard. What would we think* of a tradesman or manufacturer, who should carelessly suffer one half of his stock of raw material to go to waste; and the case of such farmers is precisely similar. The results of chemical analysis will enable us to form more precise ideas of the nature and amount of this waste.

Composition of Solid Stable Manure (Richardson.)

Carbon	37.40
Hydrogen	5.27
Oxygen	25.52
Nitrogen	1.76
Ashes	30.05
	100.00

Composition of the Ashes of Stable Manure (Richardson)

Potash	3.22	Soluble in water.
Soda	2.70	
Lime	0.34	
Magnesia	0.26	
Sulphuric Acid	3.27	
Chlorine	3.15	
Silica	0.04	
Phosphate of Lime	7.11	Soluble in Hydrochloric Acid.
" of Magnesia	2.26	
" of Oxide of Iron	4.68	
Carbonate of Lime	9.34	
" of Magnesia	1.63	
Silica	27.01	
Sand, &c.	34.96	
	100.00	

Composition of Liquid Stable Manure (Boussaingault.)

	Horse.	Cow.
Urea	31.00	18.48
Hippurate of Potash	4.74	16.51
Lactate of Potash	20.09	17.16
Carbonate of Magnesia	4.16	4.74
" of Lime	10.82	0.55
Sulphate of Potash	1.18	3.60
Chloride of Sodium	0.74	1.52
Silica	1.01	
Water, &c.	910.76	921.32
	1000.00	1000.00

Urea, the principal organic ingredient of Urine, consists of—

Carbon	20.0
Hydrogen	6.6
Oxygen	46.7
Nitrogen	26.7
	100.0

"Urea is very rich in nitrogen. In decomposing, it changes into carbonate of ammonia, which rapidly escapes, unless prevented by some absorbent material, as charcoal, or by the chemical action of sulphuric acid or gypsum."

"In the above table, we see that the liquid manure contains large quantities of potash and soda; and that a large portion of it is urea, a substance very rich in nitrogen, and, in fact, quite similar to the richest ingredient of guano. Johnson estimates the value of 1000 gallons of the cow, to be equal to that of a hundred weight of guano. The farmers of Flanders,—who save all this manure in tanks,—consider the annual value of the urine of a cow to be $10."

"In the solid manure, we perceive that there is little nitrogen. This element, so valuable for producing the richer nutritious parts of grain and root crops, is principally found in the liquid manure. The little that is present, however, in the solid manure, is soon lost in the form of ammoniacal vapours, if the dung be allowed to ferment uncovered. The other organic matters are less easily destroyed, unless the dung be allowed to become "fire-fanged, in which case the greater part of it is lost. In the ashes, or inorganic part, we find all the substances already referred to as constituents of fertile soils; and many of the most valuable of them are, as the manure decomposes, washed away, and, along with a variety of organic matters, appear in the dark-coloured water which flows from exposed dung-hills. It is not too much to say, that the loss of the volatile and soluble parts of manures, on ordinary upland soils, cannot be repaid by any amount of outlay in the purchase of other manures, that our farmers can afford; and we can plainly perceive that, that the prevailing neglect in this one particular, is sufficient for the deterioration of once fertile farms. How, then, is this waste to be prevented? In answer to this, I shall merely indicate the principles on which the means adopted for saving manures should be founded, with a few general hints on the best modes of carrying them into effect."

"1. The solid manure should be covered with a shed or roof, sufficient to protect it from rain and snow. Its own natural moisture is sufficient to promote, during winter, a slow and beneficial fermentation. Snow only prevents this from going on; rain washes away the substance of the fermented manure."

"2. The ground on which the manure heap rests, should be hollowed, and made tight below with clay or planks; and in autumn, a thick layer of bog mud, or loam, should be placed on it, to absorb the drainings of the manure."

"3. When the manure is drawn out to the field, it should be covered as soon as possible, either in the soil, or, if it must stand for a time, with a thick coating of peat or loam,—a pile of which should be prepared in autumn for this purpose. All unnecessary exposure should be avoided."

"4. Where gypsum can be procured cheaply, it should be strewed about the stables, and on the manure heap, for the purpose of converting violate ammoniacal vapours into *fixed* sulphate of ammonia. This will also render the air of the stables more pure and wholesome."

"5. It must be borne in mind, that the richest manures are the most easily injured. For example, many farmers think horse manure to be of little value. The reason is, that when exposed it rapidly enters into a violent fermentation and decay, and its more valuable parts are lost. Such manures require more care than others, in protection and covering, so as to moderate the chemical changes to which they are so liable, and to save the volatile and soluble products which result from them."

"6. The liquid manure should be collected, either in the pit or hollow intended for the other manure, or in a separate pit prepared for the purpose. The latter is the better method. If a tight floor can be made in the stable, it should be sloped from the heads of the cattle, and a channel made, along which the urine can flow into the pit. If the floor is open, the pit should be directly beneath it, or the ground below should be sloped to conduct the liquid into the pit. In whatever way arranged, the pit should be tight in the bottom and sides, and should be filled with soil, or peaty swamp mud, to absorb the liquid Gypsum may also be added with great benefit; and the urine pit may very well form a receptacle