

The best remedy seems to be pouring the liquid upon compost heaps, and so, by repeated saturation of the soils of which they are composed, keep up the full supply of manurial matter till the whole of the parts valuable for plants is absorbed and detained by the soil and the decayed matter of which heaps are composed. But even this involves trouble. Besides, the inevitable carting of the waste material, the scraping up, the mixing, the pouring out of the liquid, the watching of the tank, are all operations likely, in a season of active farming life, to be more or less neglected. While, in a wet season, the compost matter will be so liable to be overcharged with wet of one kind or another, that it may not be a willing absorbent at all, and the liquid will run off in all directions.

Now we must first consider a little, what we have to do. We have the most valuable parts of the manure—the soluble—washed out from the rest, but in proportions so small, to the water which conveys them, that the liquid as such, is hardly worth the cost of carting, or of removal of any kind.

We have matters, too, both in suspension and solution—some which the water carries mechanically, and some chemically away—and yet there are those who have so often seen applications of the liquid residuum of the farmyard do so little good that they express doubts if it is really valuable.

The researches of Professor Johnston on this head are very instructive. As chemist to the Highland Society, he gave the following as the result of his investigations "On the Composition of Liquid Manure:—

"The liquid manure of our farmyards is now attracting more general attention than at any former period, and tanks for collecting it are in course of erection in various parts of the country. Both theory and experiment show this liquid to be very valuable as a manure, and it has been long known to contain substances fitted in a marked degree to promote the growth of plants. Still, no analyses, so far as I am aware, have hitherto been made of the liquid in the state in which it actually exists in our farmyards, in too many cases running to waste.

"It was with much satisfaction, therefore, that I received a few months ago, two bottles of liquid manure for analysis, from Mr. Houldsworth, of Coltness, near Hamilton, a member of our association. This gentleman had drawn up, for distribution among his tenantry, a very satisfactory and useful statement in regard to the value of this liquid, and the gain which would accrue from saving it. But before circulating this paper, he was desirous of having the actual liquor of which he spoke carefully analyzed, and he therefore forwarded it to the laboratory of the association. The examination has led to some interesting results, which I think deserving of general publication.

"1st. The liquid contained in the first bottle consisted of the drainings from heaps of cow-dung exposed to rain. It was dark coloured, and of course, contained only what rain-water is

capable of washing out of such dung-heaps. It was neutral, but ammonia was given off when it was boiled, or when quicklime was added.

"An imperial gallon of these drainings, when evaporated to dryness, left about 480 grains, or an once weight of dry solid matter.

This solid matter consisted of—

	Grains.
Ammonia - - - -	9.6
Organic matter - - -	200.8
Inorganic matter (ash) - -	268.8
	<hr/> 479.2

The inorganic portion consisted of—

	Grains.
Alkaline salts - - - -	207.8
Phosphate of lime and magnesia, with a little phosphate of iron	25.1
Carbonate of lime - - -	18.2
Carbonate of magnesia and loss	4.3
Silica, and a little alumina - -	13.4
	<hr/> 268.8

"From this analysis, it appears that the rain is capable of washing out much valuable matter from common cow-dung. The ammonia is not so large in quantity as in many other forms of liquid manure, because most of those substances voided by the cow which are capable of producing ammonia pass off in its urine. But, on the other hand, the urine of the cow contains no phosphates, while these washings contain a considerable proportion. It thus appears that the washings of the dungheaps contain other valuable substances besides those which are present in the urine.

"Those therefore, who, besides allowing the urine from the byres to run to waste, permit the rain to wash their dung heaps, suffer a double loss; they lose the ammonia-producing substances and much alkaline matter in the urine, and the phosphates with a large additional portion of alkaline matter in the washings.

"2nd. The second liquid consisted of the drainings of farmyard dung when watered with cows' urine. It was also neutral, but gave off ammonia copiously when boiled, or when mixed with quick lime.

"An imperial gallon, when evaporated, left 617½ grains of dry matter, considerably more than the former liquid, and this matter consisted of—

	Grains.
Ammonia - - - -	21.5
Organic matter - - -	77.6
Inorganic matter, or ash - -	515.4
	<hr/> 617.5

"We see here that the relative proportions of organic matter in the two liquids were very different. From ordinary farmyard manure there is as we should expect, less of the organic part dissolved by water than from the finely masticated and digested excretions of the cow.

The inorganic matter contained in this liquid consisted of—