

and its value very rapidly evaporates. One method of retaining a large proportion of the ammoniacal substances of urine, is to dilute it with water. The quantity of ammonia retained by the urine, after dilution with an equal bulk of water, is in the same circumstances nearly *three times* as great as when it is allowed to ferment in its original state. Nevertheless, even when thus diluted the urine loses by fermentation during four weeks alone one-fourth of the ammonia produced in it during that period. The urine should therefore be allowed to ferment in covered cisterns to prevent this very serious loss of its most valuable constituents. The same effect may be produced by fixing the ammonia. This escapes because it is so volatile; it may however be combined with some substance which prevents its evaporation. For example, gypsum (sulphate of lime,) may be added to the urine, or sulphuric acid, either of which substances will act as a manure itself. Or again, peat soil, or, perhaps better still, peat charcoal might be added; this would absorb the ammonia and prevent its loss.

The recent urine of one cow is valued in Flanders at £2 stg. or \$10 per annum. It contains about 900 lbs. of solid matter, which, estimated at the price of guano, is worth \$20. It must be borne in mind that guano and urine have a somewhat similar composition, and that the farmer who suffers the urine of his stables and cowhouse to run to waste or to ferment, without using proper means to retain the ammonia, is actually throwing away a very valuable amount of manure, which he is compelled to replace by buying foreign guano. There is one whole class of excrements which are scarcely used at all as manures, but whose value is immense, and to neglect which might almost be termed criminal waste. We refer to the excrements of cities and towns. In London, England, for example, the water of the Thames is contaminated, and the health of the city seriously injured, by allowing these sewerage matters to run into that noble river; matters which possess a real, an immense money value. Not only would these, if properly collected, be a very large annual saving to the country, but the prevention of their escape into rivers would very materially improve the healthfulness of all large towns. The main difficulty with such substances is their disagreeable odour, which would need to be neutralised. This, however, in the present state of chemical science, should be quite practicable, and it is hard to conceive why some plan of utilising these substances has not been generally adopted. The urine of cities indeed would be quite free from even this objection, at any rate, to as great an extent as the urine of farm-yards is, but it would probably be almost impossible to collect the urine separately.

The unpleasant smell of the solid excrements of cities might be in a great measure removed, by mixing it with peat charcoal; gypsum would probably assist in this action. A new disinfectant has been mentioned lately in the newspapers as having been discovered in France, and its virtues have been considerably extolled. It consists of tar mixed with gypsum. Possibly this substance might prove effectual in deodorizing night soil, though it does not seem to have been introduced into this country at all. An immense amount is annually wasted in European countries, and also on this side the water, by allowing such valuable materials to be carried into the sea, while to supply their place, large sums have to be spent in buying guano, bone dust, and other substances, as manure, the money for which might much better be retained in the country. Somewhat similar remarks to those we made with reference to the loss in fermenting urine, might be applied to farm-yard manures in general. These by being permitted to lie about and to be trodden under foot, gradually ferment and lose the ammonia, one of their most valuable constituents. The ammonia might be retained by means similar to those already mentioned.