

lizing constituents than animal excrements; hence their use in large quantities tends to decrease the value of the manure. But there is another important consideration. Bedding absorbs the liquid excrements, and if no bedding is used, it is more than probable that much of the liquid excrement will be lost; therefore, the use of sufficient bedding to absorb this important liquid and prevent its waste, adds very materially to the value of the manure. Straw is of course the usual and, excepting peat, the most valuable absorbent. Sawdust and shavings are regarded unfavorably by some farmers. When applied in large quantity on light land, they appear to be injurious, probably by making the land too open and thus lessening its already limited water-holding power. There is need of further investigation in this connection; but where sawdust and shavings are used in moderation in the stables and applied to the land judiciously, there is little danger of injurious results. Peat is used for bedding in some districts, and is an excellent substance for the purpose. It absorbs and holds a large amount of liquid; it has considerable value as a fertilizer in itself; and it improves the mechanical condition of the soil to which it is applied.

Treatment. No one needs to be told that the treatment manure receives affects its value very materially. Excessive fermentation, washing by rain, keeping in badly constructed yards, etc., all have their influence in reducing the value of manure. As this part of the subject is dealt with more fully in another place, no more need be said under this heading.

V. CARE OF FARMYARD MANURE.

Liquid Manure Tank and Absorbents. While it is true that some loss is sure to occur in the management of manure, still, by using a little forethought the most serious losses may be prevented. What has been said regarding liquid manure is sufficient to illustrate its importance, for it has been pointed out that the greater part of the nitrogen and a large proportion of the potash which an animal consumes in its food appear in the liquid excrement. The first step in saving this important liquid is to have perfectly water tight floors. In this respect, a cement floor excels all others. This loss being stopped, it is in order to consider how to prevent loss of liquid outside of the stable. In some cases, liquid manure tanks have been built at considerable cost, but the tank has its objectionable features. To begin with, there is the cost of construction, including a portable tank for carrying the liquid to the field. Then, in warm weather, liquid manure ferments very rapidly, and in fermenting it loses much of its nitrogen which escapes into the air in the form of a gas (ammonia). If the tank is emptied frequently, much of this loss is prevented, but the liquid in the tank is out of sight and too frequently out of mind when other work is pressing. There is also an objection to applying liquid manure to the land separately, for liquid manure is rich in soluble nitrogen and potash but contains very little phosphoric acid, while the solid manure contains most of the phosphoric acid but is comparatively poor in soluble nitrogen. As a result, the manuring is somewhat one-sided and less satisfactory than where the solid and liquid manure are incorporated and applied together. Moreover, in applying liquid manure alone, there is danger of applying more nitrogen than the crop can use, and soluble unused nitrogen is washed out of the soil before another crop can be grown. Sometimes the liquid manure is pumped from the tank and distributed over the manure heap; but where there is sufficient absorbent material in the heap to retain the