

that these green crops should have the greatest possible benefit to be imparted to them by the use of straw as a fertiliser. An observation, made I believe by Mr. Hudson, to the effect that he "found his farm-yard manure greatly improved by exposing it the sun and air of summer for a fortnight," is suggestive on this point although his theory, that "something was absorbed by it from the air during the exposure," is certainly erroneous. It would lose a certain proportion of its carbonaceous compounds by being charged with water by dews and rain, if any fell, and evaporation by the sun's heat. This loss would vary according as the elements of the straw had been liberated by fermentation in the heap. Therefore, although the above observation would undoubtedly be correct as regards the fact, the theory of it would be untenable. Its "improvement" would simply arise from a much greater proportion of the straw being reduced to a state of solubility, or to a condition for the first crop of plants to take it up; and as green crops are the agents used to restore soils, partially decomposed straw manure would be "improved," or made more profitable, if so treated. Exposure to dews, or "dew-rotting," is a rapid natural process of decomposing vegetable textures, particularly when they have been subjected to slight fermentation. These considerations prove two things: the necessity of gummy insoluble textures, as straw, being decomposed by a slow process of fermentation; and the great importance it is to have this perfectly done for rapid-growing restorative crops.

The only considerations that require observance in regard to pits and covered sheds is to have enough dry straw at hand to prevent any of the droppings from running away through the walls and floors of them, and from dripping on the roads to the field when they are being emptied. If this be done in the winter, the generally economical method of a light and frequent dressing should be especially practised in this case, for a large proportion of the fertilizing elements are in a soluble form, and as few soils are of a condition to suddenly unite with and fix a large amount of these elements, subsequent heavy rains may wash them into drains or deep into the subsoil beyond the reach of domestic plants. I have seen water highly coloured running off clay lands after a heavy winter dressing, and this too when it has been ploughed in.

Much inconvenience and loss often arise from too little care being taken to keep straw dry. If it be necessary to thresh out as much as can be trodden down in two or

three months, it should be stacked evenly—it is no more trouble—and roughly thatched. I often see as much as one-half, at the least, of the value of the ejecta from a row of bullocks running to waste out of the sink-hole from the place they are tied up in. There are brick reservoirs, it is true, and liquid carts with troughs and all complete, but a man or boy cannot always be there to sweep the places down and then empty them into the water-tight cart, that they may not soak into the sandy soil beneath. It may be said, "asphalte the floor and cistern that they may be impervious." But something better than that can be said on behalf of plain farming; there ought to be no call for a liquid manure-cart at all. Liquid manure (if there be any) from a farm-yard ought not to be worth carriage. If straw be kept dry, and the liquid of the yard cannot be soaked up, then the yards are at fault. If, too, the straw to each yarded animal be so small in quantity that an ordinary rain washes much of value from the yards, then the system is bad. Either too many bullocks are kept in proportion to sheep, or winter feeding is practised where it would be better to expend money in cake and corn, in the spring and summer on Tares, Rye, Clover, Rape, and early Turnip lands.

Where it is possible to arrange the straw of a farm so that that which grew on one determined soil shall be applied to another determined soil—for example, from heavy to light, and *vice versa*, or from chalk to soil deficient in that earth—by all means let this be done. This is not always practicable where a farm is situate on a table land of uniform soil; but the crust of this country is so variable that a vast amount of good may be produced by forecasting and incurring the trifling expense that this change would require. When a purchase of straw is about to be made this view should not be forgotten. If it be good to apply clay, chalk, sand, moor, and so on, according to circumstances, it must be good to vary the great fertiliser straw in a similar way. The atmospheric constituents of straw are much alike; but the inorganic or earthy are quite different where grown on different determined soils. Analytical chemists have favoured us with numerous results of what 100 or 1000 parts of Wheat and Barley straw have yielded, and they have told us that as this is so, Wheat or Barley straw requires so and so. But this is more suggestive than conclusive. It would be folly to accept the theory that because one sample of vegetation or animal substance possessed certain constituents in