easily drawn out by the frost: all wheat, but especially fall-wheat, demands a firm bottom.

Light lands should receive their meals of manure in a well rotted condition; for it is useless to make them more open than they naturally are; and, their memories being very short, the food should be given frequently, and in an advanced state of preparation.

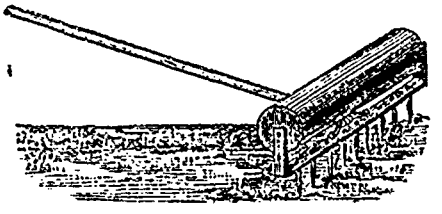
Again, if the crop is wanted in a hurry, as in the case of early potatoes, it is advisable to apply the dung in a thoroughly decomposed state, the rootlets will find it easier to attack, and the juices will be more ready for their greedy little mouths. In England, and in fact wherever advanced agriculture is practised, this is not so necessary a feature; for artificial manures cooked to a nicety are there always presented to the plant on its springing from the seed—in fact, superphosphate, guano, nitrate of soda, &c., &., are the soup, and dung is the roast beef of the plants' dinner table. Before the introduction of bone dust into Scotland, it was the custom of the best farmers to keep the manure intended for swedes, sown. there in the early part of May, from the previous year's supply. So necessary was it thought to be that the young plant should find its food ready on demand.

In very heavy soils, autumn manuring for roots is a wise practice. The dung is ploughed down in early winter, as late as possible, but before frost, and the grubber, harrow, and roller, complete the work of cultivation in the spring. Here, the dung if free from weeds, may go on as it comes from the cattle; and it will be found a means of growing roots with success, in places where it was considered hopeless to attempt it.

In laying down a dung-heap, I strongly recommend first placing a couch of earth, say, six to nine inches in thickness, to absorb the oozings. The heap should be of the same height all over, and, as nearly as possible, of the same texture, that is, the foot, on walking over it, should not sink more deeply in one place than another. The rotting will then proceed equally all through the mass, and, if in turning, the outside and the top be thrown well into the middle, the whole will be of the same strength, quality, and consistence, when it is finally spread on the land. A few shovelfulls of earth should be thrown on the top of the mixen after turning, to keep in check the fermentation. Recollect, that the value of farm yard dung depends, in the first instance, on the food eaten by the animals whose excrements compose it: *the beast that eats straw voids straw;* that the rapidity of rotting depends upon the admission of air to the heap, so that, if you want the dung ready soon you must lay it up lightly; if, on the other hand, it will not be required for some time, draw the loaded carts over it. The quicker the fermentation, the greater the danger of ammonia escaping, and, therefore, the greater the necessity of being able to moisten the heap in moderation; a well managed moist fermentation preserves the ammonia, but a rapid, dry fermentation expels it into the air.

Where you have plenty of black bog-earth, or *muck*, near your stable, I approve of drawing a sufficient quantity, when dry, to act as an absorbent of the urine of the cattle. But I am convinced that you will never find it pay to drag about from swamp to stable, and from stable to field, several hundred loads a year of *muck;* a plan, I see, recommended by some of the agricultural journals of the United States. To show you how absurd the arguments of these journals are I will merely state what I saw in one of them last week. "a ton of *muck* laid up and drained of its water contains four times as much nitrogen as an equal amount of farm yard dung." We will see, now, if this were true, what is the value of a ton (2000 lbs) of muck. Farm yard manure, as we observed at page 151, contains, when properly managed, .606 0/0 of nitrogen, equal to .735 of ammonia. Ammonia, in the form of sulphate, costs, at the Montreal Gas Works, 4 cents a pound, each pound of sulphate contains a quarter of a pound of pure ammonia, which, therefore, costs 16 cents a pound. If, then, muck contains four times as much nitrogen as farm yard dung, it must contain $.735 \times 4 = 2.940$ per cent of ammonia, that is, a ton must contain 58 pounds of ammonia, worth, at our quotations, $9.28—I need hardly say that this is pure nonsense. The sample of muck sent to the chemist for analysis was probably taken from a place where a cow, or some other animal had been buried, and hence this very delusive statement. It is hard upon the chemist, but I cannot help that. Fifty years ago, both in England and Scotland, much labour was expended in the construction of *composts;* at present they are entirely exploded, thanks to a more perfect insight into the functions of the three great manurial agents, nitrogen, phosphoric acid, and potash. (1) Where yard dung has to be applied as a top-dressing to grass or grain crops, it can be used either fresh or rotted.

ARTHUR R. JENNER FUST.



Combined Rake and Roller.

The annexed engraving, taken from the *American Agriculturist*, represents an implement which will be found very useful in the kitchen-garden. To make it, take a rake of wrought iron, and cutting off the last tooth at each end, raise the ends until they are right angles to the back of the rake. Then, make a roller of hard wood, about three inches in diameter, and of the same length as the space between the raised ends of the rake. The arrangement is completed by passing two pins through the holes left by the removal of the teeth of the rake, and fixing them in the roller.

By this cheap and simple operation we obtain two implements of great utility in one. J. C. CHAPAIS.

THE RUST.—UREDO SEGETUM.

Many people, every farmer unfortunately, know too well what the *rust* is; that disease which so often causes the crops of wheat, barley, &c., to fail. But how few know whence it arises, and how to prevent its ravages.

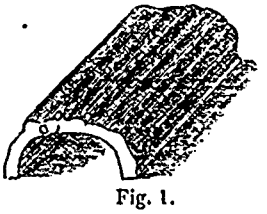


Fig. 1.

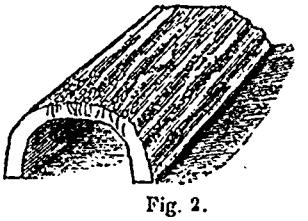


Fig. 2.

Having lately met with some engravings which give an excellent representation of the *rust*, in its different forms, I take the opportunity of giving some information about its origin, the way it sets about its work of destruction, and the means of destroying it.

The *rust* is a microscopic *fungus*, of these fungi there

(1) See article on "Coprogène."