

are used, and the dung hills *containing them are protected neither from evaporation nor from rain.* The solid excrements contain the insoluble, the liquid all the soluble phosphates, and the latter contain likewise all the potash which existed as organic salts in the plants consumed by the animals."

With the preceding valuable extracts respecting the beneficial influence of the interchange or rotation of crops, and respecting the composition and value of manures, we are prepared to commence the practical details of ROTATION in our next number.

(To be Continued.)

MANURE FOR GRAPE VINES; AND A SUGGESTION FOR A SIMILAR PRACTICE WITH APPLE AND OTHER FRUIT TREES.

As the grape is cultivated with comparative success in several parts of Nova Scotia and New Brunswick, we would direct the attention of horticulturists to the following interesting statements, which prove that a vineyard may be retained in fertility without the application of animal matters, when *the leaves and branches pruned from the vines are cut into small pieces and used as manure.* This simple process has maintained the fertility of the soil for ten years. Leibig relates several cases confirmatory of the fact; one "vineyard was manured in this manner for eight years, without receiving any other kind of manure, and yet, more richly laden vines could scarcely be pointed out." The writer of this statement says: "I feel inclined to say to all, come to my vineyard, and see how a bountiful Creator has provided that vines shall manure themselves, like trees in the forest, and even better than they. The foliage falls from the tree in a forest, only when they are withered, and they lie for years before they decay. But the branches are pruned from the vine in the end

of July and beginning of August, whilst still fresh and moist. If they are then cut into small pieces, and mixed with the earth, they undergo putrefaction so completely, that, as I have learned by experience, at the end of four weeks not the smallest trace of them could be found."

M. Fraunfelder says, "I remember that twenty years ago, a man, called Peter Muller, had a vineyard here, which he manured with the branches pruned from the vines, and continued the practice for thirty years. His way of applying them was to hoe them into the soil, after having cut them into small pieces. His vineyard was always in a thriving condition; so much so, that the peasants here speak of it to this day, wondering that old Muller had so good a vineyard, and yet used no manure.

Other cases are given, proving that a barren vineyard was restored to fruitfulness by such cuttings. In addition to these cuttings we would suggest the use of the liquid manure as worthy of trial.

Query—Since experience has proved that the cuttings of the vine is such a valuable manure for the vine from which it is taken, is it not probable that the limbs pruned from apple and other fruit trees would answer also as manures to their respective trees. One thing is certain, that as wood is formed primarily from the silicate of potash, this important salt, with others, would be restored to the soil. Large quantities of limbs are annually cut from fruit trees, and removed from the field.

We would recommend the experiment with one or two trees, by cutting the limbs in small pieces and covering them with earth around the roots of the tree, and if this should prove too troublesome upon the large scale in orchards, in such places, the limbs might be cut up in larger pieces and burnt, and the ashes incorporated with the soil immediately around the tree. The condition of the orchards generally throughout