

MANURES.

As manure-heaps are the riches of the fields, good farmers will neglect no means of forming them: indeed, it ought to be their daily care—for without manure it is impossible we can have abundant produce in harvest. It is an extraordinary fact, however, that in Eastern Canada, hitherto, a large proportion of the dung made in farmers' yards has been wasted, either by being left for years in the yard, until all its best qualities have evaporated, or by being misapplied when taken from the yard. The poor crops that may be seen with those farmers who act thus, sufficiently proves the prejudice by which they are governed, and the blindness with which they proceed in their labours. It must be from prejudice and blindness that they neglect to make use of their farm-yard manure, because we seldom see crops upon their farms of that luxuriant appearance that would indicate extreme richness and fertility of soil, that would require no manure. We have seen land in possession of those farmers who neglect to make use of their manure, or who sell it, that would require it very much. Strong clay lands in particular that are exhausted and dirty, if summer-fallowed, and lightly dressed with manure, would produce a crop of as much value in one year as it does now in three. These remarks may not be necessary for our Subscribers, as it is not probable that many of them will neglect to make use of all the manure they can procure. We shall, therefore, say no more on the neglect of making use of manure, but rather how we are to procure it in sufficient abundance to keep our lands in fertility.

According to Davy's experiments, the straw of barley contains only two per cent. of substance soluble in water, and having a slight resemblance to mucilage; the remainder consists entirely of fibre, which can be decomposed only after a long time, and under circumstances calculated to facilitate the operation.

Chaptal in his "Agricultural Chemistry," says, "I do not believe that there is in the whole vegetable kingdom, an element affording so little nutriment, either for plants or animals, as the dry straw of grain; serving only to fill the stomach of the latter, and furnishing to the former but about one hundredth part of its weight of soluble manure."

"Many of those who cultivate the land, know only the kinds of straw which are suitable for furnishing manure, and in a dung-hill of litter, consider them as acting the principal part, whereas they are only feeble accessories. Weeds, leaves of trees, and all the succulent plants which grow so abundantly, in ditches, and waste lands, under hedges, and by the road side, if cut or pulled when in flower, and slightly fermented, furnish from twenty to twenty-five times more manure than straw does. These plants, carefully collected, would furnish to the agriculturist an immense resource for enriching his lands. Besides the advantages arising from the manure furnished by these plants, an agriculturist will find it account the dissemination of their seeds, which, by propagating in the fields, deprive the crops of the nourishment of the soil. The turf,

that borders fields and highways, may be made to answer the same purpose, by cutting it up with all the roots and the earth adhering to them, rotting the whole in a heap, and afterwards carrying the mass upon the field; or what is still better, by burning it, and dressing the land with the products of the combustion."

The same author goes on to say: "That if straw did not serve as beds for animals, and did not contribute, at the same time to their health and cleanliness, it would be better to cut the ears of corn and leave the stalks in the field; since they serve only as absorbents of the true manures."

In this opinion we differ from Count Chaptal: because barn-yard manure, besides its nutritive virtues, possesses the advantage of softening hard lands, and rendering them permeable by air and water; and it owes this property almost entirely to the straw which it contains.

We have stated in our Treatise on Agriculture, that straw ploughed into the land, would have a more beneficial effect upon the soil, than the same quantity of straw applied to the same quantity of land, after it had been wet and rolled into manure, provided no other ingredient had been added to the straw, except its having been wet with pure water to cause it to ferment and rot. We think, nevertheless, that the best management is to collect all the straw that is produced, into the barns and farm-yards, and if the straw absorbs the true manures, it will yield this manure again to the crop, after it is ploughed into the soil.

Count Chaptal again observes:—"Besides the characteristic of providing plants with food, the various kinds of dung possess other qualities, which add to their fertilizing powers. Dung, as it is applied to the ground, is never so much decomposed as to have ceased fermenting; and from the moment it is mixed with the soil it produces in it a degree of warmth favourable to vegetation, and serving to guard the young plants against the effects of those sudden returns of cold in the atmospheric temperature, which are so often experienced. On account of the vicious fluids which it contains, dung is not easily dried, unless it be in contact with the air. It therefore preserves the roots of the plants in a state of moisture; and supports vegetation at those periods, when, without it, plants would perish from drought. It likewise contains many salts which are transmitted by water to plants, serving to animate and excite their functions. The various kinds of dung, mixed with earth, may be considered in the light of amendments to the soil; and in this view they ought to vary according to the nature of the earth to be improved."

"Compact soils require to be separated and warmed; they require, then, those manures which have been but slightly fermented, and that are the richest in salts. Calcareous and light earths require only manures, which decompose slowly, and can retain water for a long time, to furnish it to the wants of the plants in seasons of drought."

"It is by separating these principles, that we may be able to appropriate the various kinds of manure to each species of soil and plant; the attention of agriculturists is already directed, upon this point, to the composition of mixtures of manures, called composts. These are formed by arranging, one above another beds of different kinds of manure, taking care to correct the faults of one

by the properties of another, in such a manner as to produce a mixture suited to the soil to be enriched by it. For example, if it be required to form a compost for a clayey or compact soil; the first bed should be made of plaster, gravel, or mortar rubbish; the second of the litter and excrements of horses or sheep; the third of the sweepings of yards, and barns, of lean marl, dry and calcareous; of mud deposited by rivers, of the fecal matter collected upon the farm, the remains of hay, straw, &c., and this in its turn must be covered with a layer of the same materials as the first. Fermentation will take place first in the beds of dung, and the liquor flowing from them will mingle with the materials of the other layers: when the mass exhibits the signs which I have pointed out, as indicating decomposition to be sufficiently advanced, it must be carried into the fields, care being first taken to mix well the substances composing the different layers."

"If the compost be designed to manure a light, porous, and calcareous soil, it must be formed of materials of a very different character. In this case it is necessary that argillaceous principles should prevail; the substances should be compact, the dung of the least heating kind, and the fermentation continued, till the materials form a yielding and glutinous paste; the earths must be clayey, half baked, and pounded, or consisting of fat and argillaceous marl or mud. Of these all the layers should be formed."

LIME AS MANURE.

(Abridged from *The Farmers' Directory*).

The operation of fire on limestone expels certain portions of water and carbonic acid, leaving nearly pure calcareous earth. It neutralizes acid salts, and consequently it will act powerfully on all peat soils, but will not give tenacity to sands, or friability to clay which chalk will effect: when slaked it is of such extraordinary divisibility, that it is capable of much more intimate combination with other substances than either marl or chalk.

The state in which lime is applied, is either fresh from the kiln, while hot, or else after it is slaked.

When newly burned, it is in its most active state, and possesses great power in destroying such animal and vegetable substances as come in contact with it, and is very properly called *quick lime*.

"When applied to peaty or boggy earth and all such soils as have remained in an uncultivated state, covered with coarse plants, it is found to be very beneficial, converting them into a mucus, which the atmosphere turns into vegetable mould. It is peculiarly well calculated for grass lands, the produce of which is so sour that the cattle will not touch it, as it destroys all acidity; for instance, if a handful of lime be thrown upon a spot of long rank grass, the cattle will afterwards eat it close to the ground."

It is a well ascertained fact, that land that has been limed, greatly improves the quality of the grain, having a thinner skin and yielding much more flour than from ground where it has never been made use of.

The quantity of lime to be applied per acre, varies greatly according to the soil; it should be scattered over, so as to come in contact with the whole of the surface, and in ploughing care should be taken not to plough it in too deep. It is equally beneficial on poor as on rich soils, and requires to be mixed and incorporated with but a small portion of earth to render it highly productive.