

acid he is using is diluted with five or six times its weight of water it will do; or he may dissolve an ounce of sulphate of copper in a quart of water, and try it; if necessary, the feet may be wrapped, inclosing a little tow and tar; but the main thing is to pare the hoofs properly and in that case it will perhaps be found that the calf can walk quite well, and may be turned out into good dry pasture.—W. D.]

Water for cattle.—The Professor commenced this third head of his lecture by remarking that he believed it was a generally observed fact, that cattle liked the water of ponds, while they disliked that of limestone springs; that they preferred to quench their thirst in a green offensive collection of stagnant water, rather than in a running spring. In Bedfordshire he had seen cattle much relish a bad water filled with confervæ and animalculæ, which, however, was the only water to which they happened to have access. Farmers generally supposed that the cattle were fond of such water on account of the green, vegetable matter it contained; and a distinguished professor had explained the fact by supposing such water to be “meat and drink” for the cattle. It was certain they did not like hard water; and it gave a staring coat for horses when they were obliged to drink it; and when it was considered that water, in chalk districts, contained from 60 to 70 grains of carbonate of lime in the gallon, while London water (which was hard compared to others,) contained only from fifteen to sixteen grains, it would be obvious how much difference would be found to exist in different waters. He regarded a good supply of water essential to health; and thought it a point of great importance to ascertain the kinds of water most suitable to the animal economy, under different local circumstances. Professor Way concluded his lecture by expressing a hope that the members present would communicate to the meeting such cases of the practical effects of hard water, on the health of cattle, as it had been his object in the remarks he had then made, to elicit from them.

CIRCUMSTANCES WHICH MODIFY THE QUANTITY OF LIME THAT OUGHT TO BE ADDED TO THE LAND.

There are many circumstances, as I have said which will modify the quantity of lime that may most profitably be added to the land. Thus—

1°. *The nature of the soil* must be considered.

a. A light, sandy soil must not be so heavily limed as a stiff clay. This is a familiar fact to every farmer. Besides those purposes which the lime serves in the lighter soil, it is applied to stiff clays with the view of opening and rendering them more friable and mellow. This of course

requires the presence of an additional quantity. In a clay soil, also, the minute particles of lime are apt to become coated over with a thin layer of impervious clay which prevents many of them for a long time from exerting their full effect in promoting the growth of plants. For this reason also, a larger proportion is useful. Lastly, lime cannot be diffused through a clay soil so easily or so completely as through a light or sandy soil, and therefore it must be added in larger quantity, in order that it may be made equally accessible to the roots of plants.

Hence in the same neighbourhood, as in parts of Renfrewshire, where 2 or 2½ tons are considered enough for the hill-side (sharp or gravelly) land, 6 to 8 tons are considered indispensable on the heavy land of the bottoms.

b. Such again, as are poor in vegetable matter will bear less lime than such as are rich in decaying animals and plants. One of the uses of the lime is to combine with substances which are naturally produced during the decay of vegetable matter in the soil—the larger the quantity, therefore, of the dead roots and other parts of plants, the greater will be the demand for lime to perform this function. Besides, as dead plants afford the food on which new races of plants live, and as lime promotes the decay of the former and the preparation of the food they contain, it must be advantageous to the immediate fertility of the soil to add lime more abundantly when much vegetable or animal matter exists in the soil.

Still all soils, in which vegetable matter abounds will not bear in an equal degree the application of large doses of lime. Our dry, moorish heaths, covered with a black vegetable mould of a few inches thick, resting on a gravelly subsoil, often give excellent crops of oats, and even turnips and barley, when first broken up and limed, but afterwards become too light and open to grow oats and clover successfully. To such soils lime should not be added too lavishly; and means should be taken, by deep ploughing or otherwise, to mix up and solidify the surface soil, that it may contain on the whole a smaller per centage of organic matter than the few inches at the top usually do in their natural state.

2°. *The state of the soil* is also of great consequence. If the land be wet and undrained, a larger dose of lime must be laid on. The moisture, like the coating of clay above referred to, shuts out the air, and prevents the lime from having its full effect. The coldness of such soils also checks the decomposing action of the lime upon the soil, and causes the production of a larger proportion of acid matter—for both of which reasons more lime is required. Further, in wet land a portion of the lime not unfrequently forms insoluble compounds—muriates, silicates, &c.—which do not act in the usual way in bene-