

expenditure has been incurred, the land having been full of great blocks of stones, all of which have been removed, either by being broken and placed in drains, or by being carried bodily from the field, or by breaking them to pieces, and then covering them with trenched earth to a depth beyond the reach of the plough. This latter operation is at present being carried into effect on a corner of a field for the purpose of making the fence straight. The ground is literally paved with huge blocks of gritstone, which are blown to pieces by gunpowder, or split by wedges, and then, after being spread along the face of a trench, are covered to a considerable depth by fine friable soil, got by the workmen in great abundance under the bed of the different massive blocks as they are removed. The cost of this operation is £50 an acre, and can only be justified on the score of convenience in laying out the adjoining better land. But the reclamation of the whole farm has been an expensive operation, 200 acres of it having cost £15 an acre for drainage, trenching, and fences.

The arable land is managed on the four-course system, with this peculiarity, that on the upper land oats are the only corn crop taken, and on the lower and richer land wheat only. On the upper land the turnips and clover are both eaten on the land, the sheep getting also cake or corn. On the lower land the turnips draw for consumption in the stalls, and the clover is cut for soiling or for hay. The general style of management is as follows:—1st, the “seeds,” which are a mixture of 14 lbs. of red clover and 2 pecks of Italian ryegrass per acre, are watered with liquid manure from the tank in April. The first cut is made into hay, and the ground is then watered a second time with the best effect. The second cut is given to the horses, and to the cows when the grass on the pastures begins to fail, in August, at which time the gritstone land gives way, and the cows fall off in produce a-half cwt. of cheese as compared with those fed on limestone land. The cut grass more than counterbalances this natural defect of the soil, the increase of produce in consequence of this additional food being from a  $\frac{1}{2}$  to 1 cwt. of cheese each. The whole of this land is ploughed up for wheat in October, the worst of it being first dressed with 10 tons of farm-yard dung per acre. The land is then sown with (second) wheat, 8 to 10 pecks of Spalding's Prolific being drilled across it, in rows of 7 to 8 inches apart. The wheat crop is never hoed. Last year the average yield was 48 bushels an acre. When the crop has been harvested the stubble is gone over by men with forks, who fork out all the twitch. This, after being exposed to the weather, is gathered into heaps and mixed with lime. The land is then ploughed and prepared in spring for (third) Swedes, mangel, and yellow bullock turnips. The Swedes are sown in the end of May, 20 tons of dung being previously spread in the ridges. The crop averages 20

tons. It is in all cases drawn in autumn and pitted. The other green crops are treated in the same way. On the most distant and elevated fields 16 bushels of bones and 1 cwt. of guano per acre are used without dung, which cannot be conveniently taken so far; but the crop is there consumed on the field by sheep, the turnips having been previously taken up and pitted in little heaps, to preserve them from frost or other injury. The turnips are taken out of the little pits as required, and given, cut to the sheep in troughs, with  $\frac{1}{2}$  lb. to 1 lb. of cake each daily. The green crop is followed by wheat on the best land, by oats on the inferior land.

The cattle being all fed in stalls, and the buildings spouted to carry off rain water, a large quantity of liquid manure is collected in an underground tank, which is found most valuable as an application to young grass. The dairy produce chiefly consists of cheese, which weigh from 27 lbs. to 30 lbs. each. They are colored, and salted by being placed in brine in a trough for two days. The calves are fed for the first fortnight on four quarts of new milk a-day each, for the second fortnight on six quarts, and after that on scalded whey and 1 lb. of oilcake, steeped over night in boiling water and hay tea.

The accounts on this farm are kept minutely and accurately, and for last year they show a charge in addition to the old rent of 7 per cent. interest on expenditure on buildings, 5 per cent. on other permanent improvements, 10 per cent. on implements, 10 per cent. on live stock, amounting altogether to £885 against the farm for rent and interest of capital. After deducting an abatement of 10 per cent. on the rent for “present prices,” and adding the usual expenses of cultivation, the produce of the farm in stock and crop last year leave a balance over to the credit of the farm. Mr. Thornhill has, therefore, the satisfaction of having furnished remunerative employment to a large extent by his enterprise, besides ameliorating the face of the country and engaging himself in an occupation most useful to the neighborhood, and which not only does not interfere with, but adds zest and interest to the other occupations of a resident landlord.

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DR. VOELCKER, in the present number, contributes an able and well-digested paper “On the Effects of Burnt Clay as a Manure,” and gives some carefully managed experiments in confirmation of his views on the subject and concludes by recapitulating the principal and most practical facts, as follows:—

1. The mechanical changes produced on clay upon burning, which by no means are unimportant, nevertheless do not sufficiently explain the fertilizing effects of burnt clay.