

towns. The Company will also take as much at night as in the day, each hour being burdened with a twenty-fourth part of the daily total. If the sewage which reaches Crossness during the night is materially weaker than that which arrives in the day, the Company are placed at a manifest disadvantage by this arrangement. As to the constitution of the manure, we may observe that at Hastings seven tons of native guano contain three tons twelve hundredweight of A B C, the remaining three tons eight hundredweights being, therefore, due to the sewage. The proportions in this case, being as 17 to 18, are nearly equal. As an approximation we might assume an actual equality in regard to the London sewage. If this be so, the 400 tons of native guano to be produced daily at Crossness would contain 200 tons of sewage deposit, obtained from 2,232 tons of liquid. When the works are in operation, we shall expect to find the deposit somewhat heavier than this, and the yield of measure exceeding the estimated quantity of 400 tons per day.

LECTURE ON THE MANAGEMENT AND TREATMENT OF GRASS LAND.

(Continued from last number.)

The Improvement of Land which was already in a state of Permanent Pasture.—Upon the point whether grass land should be broken up, the landlord and tenant might have different opinions. The tenant having only a transient interest in the land might like to break up even his first-rate grass land, because he might think it would benefit him, but the landlord, looking further ahead, might be sorry to see such land broken up. But with reference to inferior grass land a good deal had been said about the propriety of breaking it up. As regarded clay land of inferior pasture, they knew that Tables could be constructed to show that it would yield much greater produce if it were arable. But increased produce was not the only thing to consider. He had no hesitation in saying that if the greater portion of clay land pastures of a poor kind had the capital expended upon them which would be expended in breaking them up, and applied in the form of manure they would be brought into a more remunerative condition than if they were broken up arable land. With reference to the improvement of land which was already in pasture a good deal had been written, and, considering the importance of the subject, a great deal more might be written. At the same time, in examining the essays upon this subject, he could not but be struck with the fact that there was very little to be said about it. Mr. Cadle contributed a very able essay to the Journal of the Royal Agricultural Society upon

the treatment of grass land. The simple expedients set forth in this essay were draining and liberal management. This was his opinion, and he hoped they would bear him out. It appeared to him that the apparent failure [of drainage] in grass land was simply due to the dying out of injurious grass. Drainage must, however, be supplemented by liberal treatment. The lecturer recommended a dressing of farmyard manure if it could be obtained. If this could not be obtained, guano or superphosphate would be a good substitute. He then referred to the result of the treatment of Mr. Ruck (Braydon Manor Farm). He had visited Mr. Ruck's farm, and could say that this treatment of the pasture lands had rendered them very much more valuable. The land on this farm was mole-drained, and not tile-drained. The land lay upon Oxford clay, and the mole-drain was used by means of Fowler's 12-horse engine, the whole process costing £1 per acre. That was cheap. Mr. Ruck then manured with Peruvian guano and superphosphate and lime. These dressings were applied in the years '62, '63, and '65, to which was added a very valuable compost by deepening the ditches, &c. The consequence of this was a very great improvement in the grass land. It was rather difficult for him to point out the exact improvements, but he might mention that in 1864 the land was considered to be worth 30s. per acre, whereas the land was bought in 1862, 300 acres for £4000, or about £14 fee simple per acre. It appeared upon comparing the experience of many men with regard to the improvement of grass land that the idea that draining was prejudicial to grass land must be dismissed from their minds. Draining might be followed by a certain diminution in the grass, but if supplemented by manure they would find that it would be an improvement.

The General Management and Manuring of Grass Land.—One of the first points in connection with this part of his subject was the collection of the droppings of cattle. Sheep distributed their manure very equally over the land, but cattle frequently dropped their dung in one place, and thus the dung was wasted. More than this, it had a prejudicial effect; for the next year in those spots where the manure had been dropped there would be hassocks of coarse grass which nothing would touch. He thought, therefore, that they ought to collect the manure of cattle, make it into a compost, and then proceed to distribute it equally over the land. The next point was one of some importance, viz., the even eating of grass land. They should not allow the grass in any part of a field to run to seed. There was nothing which exhausted the land so much as to allow grass to run to seed or to get too ripe. The grass should be eaten evenly,

and if the cattle would not eat it evenly it should be cut.

Then there was another point which was of some importance, viz., that once a year, at midsummer, the grass ought to be eaten down bare. They ought not to stock land too early in the spring; if they did, they would find that the prospects of the whole season were injured. Stock ought to be changed from a worse to a better pasture; and in buying stock, it was necessary that they should consider the pasture which they came from. As to manuring, farmyard manure, when it could be obtained in sufficient quantity. The lecturer then referred to the experiments which Mr. Lawes had made at Rothamsted. There certain plots of land had been portioned out for the growth of grasses under different treatments. These experiments had been carried on for a long series of years, and proved that under certain treatment the germinacious or true grasses preponderated greatly, that under different treatment the leguminous (which included Clover) grasses were produced in greater quantity, thus demonstrating that some manures had the power of developing certain species of grass. After expressing an opinion in favour of the use of farmyard manure if it could be obtained in sufficient quantity, he referred to the use of bone manure as a means of improving grass land, observing that a few years ago a good deal of excitement was caused by the wonderful effect of bone manures upon the grass land in Cheshire and in other parts of England. They had a great effect, but they would not find that the application of bone manures, or superphosphates, was invariably attended with great improvement. The lecturer concluded his address by observing, that he hoped to hear the opinions of the practical agriculturists present upon the subject he had been speaking of.

DISCUSSION.

From the discussion which followed the reading of the above paper, we make the following brief extracts:—

Mr. MORDECAI JONES agreed with what the lecturer had said about Clover. He took a farm at Aberdare about nine years ago. Everything had been allowed to go to ruin. He tried superphosphate, and soon the land appeared all white. He was asked what he had been doing. Had he been sowing lime? "No," he replied; and he showed to his querist the beautiful white Dutch which had come up.

Mr. OVERTON said he could vouch for the astonishing benefit which had been conferred on the land referred to by Mr. Jones by the use of superphosphate. The land was situated in a most bleak position, but good crops of hay had been raised on it. Mr. Overton then referred to a case in which he had used superphosphate unsuccessfully, but said, perhaps his failure