

Town Sewage.

A good deal of light is thrown on the subject of town sewage, so far as the possibility of turning it to agricultural account is concerned, by the ordinary experience of the farmer.

1. It is the experience of the farmer that manure is just food *minus* growth, and that it is rich or poor according to nutritiveness of the food and the meagreness of the growth. He knows that the manure from store-fed growing stock is less fertilising and powerful than that from well-fed fattening-beasts. Now, man is one of the best fed of the "domestic animals," and inference seems unavoidable.

2. Although it is certainly true that we have nothing in ordinary agriculture corresponding to the immense quantities of fertilising matter which are thus poured over the sewage meadows of Edinburgh and Carlisle—nothing corresponding to the 300 animals in one case, 200 animals in the other, averaging probably 20 or 25 lbs. a quarter, whose waste is in these two instances applied per acre; yet it is undoubtedly the experience of the farmer that an increasing intensity of manuring is the rule, and is found profitable. Of that our columns have for several past weeks given ample evidence.

Mr. Hudson, of Castleacre, on his 800 acres of arable land, must use 40 tons of guano, 4 tons of nitrate of soda, and 25 tons of superphosphate and lime per annum, costing close on 20s. an acre over the whole of his farm. And besides this he consumes immense quantities of purchased cattle food, which goes to enrich the farm-yard dung. Mr. Howard, of Biddenham, Bedford, consumes £1,000 worth of cake and other cattle foods per annum, and thus enriches the manure of the stock on a farm of 300 acres of arable land and 120 acres of pasture. Mr. Paget, M.P., of Ruddington Grange, Nottingham, consumes 30 tons of cake and 200 quarters of corn, costing probably upwards of £500 or even £600, on 150 acres of arable land and 180 acres of pasture. Mr. Melvin, of Bonnington, Ratho, on a farm of 600 to 700 acres, spends £1,000 on artificial and purchased manures. Mr. Campbell, of Buscott Park, Lechlade, has found it profitable, after drainage, to apply $1\frac{1}{2}$ cwt. of Peruvian guano, 3 cwt. of superphosphate of lime, 1 cwt. of nitrate of soda, 15 bushels of bone-dust, and 1 cwt. of common salt per acre over his permanent pastures, and thereafter to feed sheep, five to eight of the large Lincoln sheep per acre, giving them cake in addition daily on the grass. This treatment has been adopted with great success over more than 1,000 acres of permanent grass. On an East Lothian farm of about 300 acres of arable land known to us, 18 tons of Peruvian guano, 12 tons of

bones and superphosphate, 6 tons of nitrate of soda, 3 tons of rape dust, and 3 tons of common salt are used, costing close on £400 per annum. On a farm of 280 acres of arable and 400 acres of pasture near Tavistock, Mr. Horswell applies 3 to 5 cwt. of Peruvian guano per acre to about 50 acres of swedes and mangels, consuming also with feeding cattle about 60 acres of barley and oats, about 25 tons of oil-cake, and 20 tons of bran per annum. The expenditure here must be £700 in cattle food, and £150 in artificial manures, on 280 acres of plough land.

These, then are ample illustrations of the fact that enormous quantities of fertilising matters are now commonly applied in English agriculture to the soil—that the soil is indeed being considered as a machine through which we put as much of the raw material of farm produce as by means of certain crops it will profitably convert, and that, therefore, there is nothing in ordinary agriculture to forbid the possibility of even the extraordinary supplies of fertilising matter which town sewers now for the most part send to waste being profitably used on a comparatively small extent of land.

3. It is the farmer's experience, moreover, that manure is more effective in the liquid than the solid form. If any one wants proof of that let him read Mr. Rustan's capital paper on the water drill in the 20th volume of the English Agricultural Society's Journal. Four to ten tons per acre of mangel wurzel, 30 to 40 per cent. of coleseed, a greatly increased produce of oats per acre, is obtained by the simple expedient of "flushing" in the manure that is applied at seed time with 3 or 4 hundred gallons of water to the acre. Another illustration of the advantage of putting manure in with water is seen in the superior efficiency which artificial manures exhibit in Scotland and the wetter climates of the island generally, as compared with their effect in the south-eastern drier countries. A third illustration of the same truth is found in the experience of the manure manufacturer and merchant, that a dry season is fatal to his trade. As a general rule, farmers do not buy these things until they are prepared to use them. And they know that it is useless to apply them in a dry state of the land and of the weather. The consequence is, we are informed, that nobody in the country uses the electric telegraph more than the agriculturist or his agent the local manure dealer, on any change of weather, as from a drought to rain, at this time of the year. The Thameside manufacturer is thus urged to the utmost, and superphosphates are sent off at the rate of hundreds of tons a day during the first wet week in April, May, or June, after a period of drought. It is undoubtedly also true that