boy would collect in 312 days 187,800 worms: consequently one rook's work is nearly equal to one boy and six-tenths of another boy, which would make 10,000 rooks' work equal to that of 16,000 boys; and the wages of the latter, at the rate of 9d. per day for each boy, would amount to £600 per day, or £3,500 per week of six days, or £187,500 for 52 weeks. Upon Mr. G. Pearce's calculation, his acre and a half of turnips saved was worth from £5 to £6, say on average £6. *According to this the produce saved by 10,000 rooks in a year would be worth £998,400, extending over 1,197,400 acres.*

What man in his senses, then, would destroy the rook?

There is another fact that agricultural observers are apt to forget. When they see the rooks pulling the young turnips or the grain, if they will take the trouble to closely examine the spot, they will find that the rook has been working *for the farmer, not against him*, and that the turnips or grain so pulled up were at the moment being devoured by a worm or insect, and that the rook only pulled up and exposed to the sight seed already damaged or destroyed, and in laying bare the one destruction he stopped the further ravage, and by putting an end to the turnip or seed that had been poisonously assailed, and would have come to nothing, he found and exterminated the progenitor of legions of insects, that would have damaged the soil in future years. Let me, then, beseech the farmer to abstain from poison, and from the wanton destruction of the most useful life. *The rook is really the cheapest servant that the farmer has.*

GRANTLEY F. BERKELEY.

MANURES.

We subjoin an extended extract from a lecture recently delivered before the Ayrshire Agricultural Association by Professor Anderson, Chemist to the Highland Society of Scotland:—

Artificial manures differ from farm-yard manure in this respect—that, whereas the latter contained everything that the plant contained, the former supplied only certain parts. Artificial manures could never be put together in the place of the farm yard manure. They could never permanently cultivate the soil by their use alone, but merely employed them as valuable auxiliaries. Their use was principally to supply the soil with phosphoric acid and nitrogen; it was not necessary that they should be employed to supply lime, magnesia, &c., which could be easily supplied otherwise. They were used to supply these things which had been carried away in more than their fair proportion. The most of the artificial manures were of this kind. Some of them had only one ingredient, as, for example, nitrate of soda, which contained only nitrogen. Ordinary superphosphate and dissolved bones supplied both phosphoric acid and nitrogen. When they came to Peruvian guano they found that it supplied phosphoric acid, ammonia, potash, and certain other substances, such as magnesia, &c. The lecturer referred to the difference between the mode of applying farm-yard and artificial manures. When they applied 20, 40, or 50 tons of farm-yard manure to the soil they absolutely applied a greater quantity of valuable substance than when they applied 5 or 6 cwt. of artificial manure. The principal difference in the action of the two species of manures was that farm-yard manure might be applied in great quantities, but it was sometimes, owing to its condition, a considerable time in the ground before it came available to the plant, while artificial manures had the advantage of being instantly available. This was preeminently the case with Peruvian guano. When they passed from this to bones they found that they were not immediately available, and, in point of fact, in the last century when bones were used in enormous qualities, they did not at once produce the effects which were expected. But a great step in advance was made when these bones were dissolved by means of acid, and brought into a state in which they were immediately available to the plant. After this had been accomplished it was found that other substances could be employed in this manner as well as bones. Some years ago coprolities had been discovered, which were now of great importance as manures. They were first found in Suffolk, then in Cambridge, and later in France. Enormous quantities of these had been found and turned to account in the manufacturing of manures. They owed their introduction as manures to Mr. Lawes, a very distinguished agriculturist. The nature of these coprolites was a subject of great importance, and one about which there was a great difference of opinion. It had been maintained that they were very inferior to superphosphates derived from bones, and as the subject was one which had been somewhat warmly discussed, he had been asked to say a word or two with reference to it on the present occasion. The lecturer then proceeded to state that one of the principal recommendations of farm-yard manure was that, besides being a source of food to the plants, it also served to promote decay in the soil, which was essential to their growth. A superphosphate made from bones also promoted decomposition of the soil, and it was here that bones had the advantage over the coprolite. So far as mere supply of food to the plants was concerned, they were equal, but there was a difference with regard to their agency on the soil. He would, however, be