

high standard of excellence; and there appear to be no ordinary cases, when the judgment, which the farmer could pass on the value of his manure on the basis of his own experience, would be enough better when aided by the results of a chemical examination, to compensate for the cost of these results.

Besides the stable manure, however, he uses other fertilizers, which are sold in the market, and which he buys to make up for a deficiency in the home-made product. The most important of these is some prepared form or another of phosphate of lime, the use of which constitutes an important feature in English husbandry, in connection with the production of roots for fodder; sometimes it is nothing but finely ground bone; sometimes this bone has been treated with oil-of-vitriol in order to render the phosphoric acid more soluble, and so more easily accessible to the plant; this product is the so-called superphosphate; sometimes finely ground rock, rich in phosphoric acid, or mineral phosphate as it is frequently called, is treated in the same manner; sometimes salts of potash, or compounds containing nitrogen are added; moreover the process of manufacturing the superphosphate can be so manipulated as to bring into a soluble form more or less phosphoric acid, according to the pleasure of the maker; and as a superphosphate gets old, more or less of the phosphoric acid that was at first soluble in it passes back into an insoluble and less valuable form again. Thus it is easy to see that under the name of superphosphate, and still more under the name of phosphate, we by no means have an article of commerce that is always of the same composition, or of the same value to the consumer.

In these commercial phosphates, and fertilizers generally, the inorganic or non-volatile part predominates, and often largely. Their value depends exclusively upon the phosphoric acid, nitrogen, and potash, that they contain; that is, there is nothing else in these manures, which, considering the comparative small quantity that is put on the land, can be supposed to have any noticeable effect, or to contribute in any way to the return which the consumer expects to find in his increased crops, for this investment in additional food for them; and further, it is rare that there

is enough potash in the manure; again, the amount of potash is worth more than the lumps are, and the data of the fertilizer.

The variation of phosphate of bone-meal contains 10 per cent. of phosphoric acid, containing less than 10 per cent. called phosphate of lime at the same time than while a good phosphate of nitrogen, the Now, at a low price you buy in a pound for the soluble phosphate, valuable for its it evidently in a transaction, its nitrogen, ton, or there only 20 pounds bought mainly reference to you every pound \$50, containing I am quite acid at all sold in this not be entirely considerable in acid, according to third or a