be the produce of animal life, analagous to iron in blood, or lime in the bones of animals.

A hundred years before, practical metallurgists thought that the extraction of metal from a mineral was the result of chemical operation; that the metal was not a distinct body, but the result of a chemical experiment. Then, again, they believed that everything depended upon the mode of procedure, or even the form of the furnace. Ability, or as they said again experience, determined the extraction of much or little of the metal. One obtained 30 per cent, of lead, and 0.2 of silver; another got 40 to 50 of lead, and 0.3 of silver, another, again, 60 per cent. of lead, and still more silver than the preceding ones. Then, as they could not comprehend that the ability of a man or his experience limited him, they went further, and ended by believing that not only all lead ore could be changed into lead itself, but that other substances which contained no lead could be changed into it.

The ideas of the cultivator were, as regarded his fields, precisely those of the metallurgist of the last century. He also thought his labor and ability produced the crops, and that it only depended upon possessing a good method of culture to produce fine crops upon any field whatever.

The metallurgists of our time know, by chemical analysis, what they themselves have learned to practise, that lead ore contains from 80 per cent. of lead, and not more; that the rest is sulpher, and that their ability consists in separating the sulphur from the lead without losing any of the metal.

The object of the metallurgist is still the same—obtaining lead, but in a different manner. That to which he directs his attention is, not the lead, but the sulpher, which retains the lead, and prevents it appearing what it is; and whilst his great care is to separate the sulpher, he obtains more lead at a smaller cost.

In the same manner chemical analysis proved to the cultivator that his soil, down to a certain depth, contains only a limited quantity of the conditions for the growth of plants; it showed him what forms of alimentary substances are necessary to serve for the nutrition of plants. It thus made him see that stable dung, though excellent in itself, is not sufficient to keep the land from diminishing in fertility; that the use of dung alone, produced upon a farm, will not increase the quantity of alimentary substances contained in the earth; that it only puts them in movement, and displaces them; that with dung they could only give to the surface of an exhausted wheat field what had been taken from it under the form of fodder plants; that it can give no more to a field than what was taken from it, to the impoverishing of another; that the revenue of one who uses nothing but stable dung is like a life interest, with which he exhausts his capital.

The term artificial manure is not altogether exact, for art cannot produce that manure: it only reunites the constituent parts of dung, and mixes them in a manner suitable to the wants of each plant.

The state of agriculture now can be described in a few words. What cultivators thirty years ago thought impossible is now not only possible but has come into general use; they thought it was impossible to manufacture anything that would take the place of stable dung. It will suffice, with reference to this, just to glance at what the Duke of Argyle said in his lecture at the opening of the Society of Naturalists in Glasgow; that in 1854 already 60,000 tons of artificial manure had been made in England, and that in the preceeding year the farmers of England, France, and Germany had used in their fields more than ten million metrical quintals of this manure. As one quintal of that manure increases upon an average the produce of a field three quintals of rye or its equivalent, so a field gives that quantity more than it would have yielded with stable-dung; it is easy to calculate what a mass of alimentary substances we have enriched ourselves with by the use of the manure.

A single chemical preparation, that of superphosphate of lime, has been known in England as of so much importance in the cultivation of turnips and fodder, that it is calculated the produce in meat and grain has increased since the introduction of this manure in the same proportion as if the extent of cultivable land had been increased one fifth. We can form an idea of the consumption of this article if we consider that it is prepared with sulphuric acid, and that the preparation of sulphuric acid in England, has been nearly doubled since the use of superphosphate of lime.

Still, the production of alimentary substances, and the wants of the populations in Europe, are far from being in a state to inspire confidence. The equilibrium between production and consumption resembles a balance, where a slight increase of weight occasions not oscillation, but complete fall of the scale. Thus the failure of one crop, that of potatoes in 1847, has made, in spite of a good grain harvest, enormous price in bread, and caused a famine in Ireland, Silesia, and Spessart. The importions of corn and flour from countries out of Europe have, until now, sufficed to maintain a sort of equilibrium; but it is certain that a maritime war which would not be of very long duration, but which would hinder the arrival of corn and flour, guano, and other manures, would extend over all England a famine in its most horrible form.

This rapid glance at modern agriculture serves to show how and in what manner science has made itself generally useful Recently the proposition was made and adopted by the Chamber of Deputies, Bavaria, of addressing to his majesty the king that he would give to the academy a direction more useful to the kingdom of Bavaria. That proposition is remarkable, because it shows how little extended a