

This table shows that whilst a ton of straw and of chaff removes little more than half the quantity of phosphoric acid that the grain does, it nevertheless takes away twice as much potash. If then a field which produces straw is deficient in grain, add the phosphates, if the grains be large, with a weak straw, add potash, or lime it, that which can eliminate or extract potash from the soil, if present, should be employed.

I scarcely deem it worth the time to mention further proofs of the necessity of thorough chemical examination preliminary to the manuring of land, nor of the value of the substances enumerated by me, and given in the above table. The *universalis consensus hominum*, the general experience of mankind in every age, bears involuntary testimony to their truth, in the application of manures. Lime and substances containing lime, have been applied for centuries. Ashes have proved their general utility by the concurrence of thousands of experiments; that general utility depends on the fact that they contain all of the mineral substances necessary to crops; whilst the fertility of land, from its organic matter and the changes which it induces, were familiar to Homer, many centuries before the Christian era.

Within the last few years Baron Liebig, a master genius—one of those great, vast and comprehensive minds whose ideas become facts for mankind—reviewing the experience of those who had preceded him, and exploring with indomitable energy and skill the composition of the earth, causing its produce to speak—giving to each tree, plant and shrub a tongue to utter words of eternal truth—to disclose their composition, and to show their necessities, has explained the laws for the production of vegetable life, in a simple and plain, yet thorough and irrefutable manner. Though at first these explanations may bear the imperfection incidental to all human productions, yet the pathway is clearly marked out, the goal of truth designated, and light abundantly furnished to lead those who sincerely seek to attain it.

It was not to be expected that opposition to long conceded notions would not be resisted, or that the promulgation of new views would not be attacked by some who had entertained different opinions hallowed by long association; and hence we find here some sneering at that which they have not the knowledge to understand nor the industry to learn, whilst in other places the doctrine of the “mineral theory” has been attacked with vigor, industry and learning. But who does not remember how all great discoveries have been resisted? how vaccination was hooted at? and how electricity and gas were placed with one of the greatest humbugs of the day? Yet no one feels safe now without vaccination. Gas for the purposes of light has become as common in our large cities as candles, and by the aid of electricity, time and space have become almost annihilated. None have ever been able yet