

it has within the last ten years, "given to Agriculture the most complete explanations of the nutrition of plants and of the sources of their food." It had not then, as now, "shown that plants must obtain from the soil, as well as from the atmosphere, a certain number of elements, if they are to be developed and thrive on the soil."

To this, and this alone, is to be attributed the causes of its uncertainty, its conflicting theories, its defective practice. In an article published recently in one of the English reviews, to which I am under many obligations, a most interesting and lengthy history is given of the literature, state and condition of ancient Agriculture, and its excellence being considered and proven in many instances, equal to that of the present century, notwithstanding we are accustomed to view ourselves as superior in every thing to every age that has preceded us. The writer does not mention, however, that whatever our Agriculture may have been ten years ago, it has vastly improved since; more improvement having taken place within that time than in any ten previous centuries, and that improvement due to the application of the science of Chemistry to Agriculture, which will eventually, judging of the future by the past, give us a perfect system of Agriculture.

An empirical system—that is, a system founded on mere experiment—the observation of the effects of agents without being traced to their causes; without understanding the reason of their action, or the manner in which they act, cannot give improvement beyond a certain point or a certain space. It cannot be broad, general, universal and perfect; it must of necessity be narrow, contracted and defective in its application. A rational system, on the other hand, a system based on experiment, with a full knowledge of all the causes which induce its success or failure, with a thorough understanding of all the properties of different elements entering into any combination, with a knowledge of the causes of failure, and a knowledge of means to avert those causes, must in Agriculture be general and cosmical. In its essence, Truth, it will teach truth every where; it will point out error so plainly that it can never long wear the livery of truth; "Truth, that pillar of the earth, yet a cloudy pillar; that golden and narrow line which the very powers and virtues that lean upon it bend; which policy and prudence conceal; which kindness and courtesy modify; which courage overshadows with his shield, imagination covers with her wings, and charity dims with her tears."

Lord Bacon observes that those systems which are based on truth and knowledge always increase, whilst those grounded on speculation increase not, and history has shown this to be the case universally. How important, then, is it to apply to an art—the most important of all arts—knowledge, instead of suffering it to run in wild speculation and error. A knowledge of history has shown