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IGNORANCE THE GRAND HINDRANCE TO SUCCESSFUL FARMING.

CONTINUING our extracts from Professor Buckland's Address, before the New York State Agricultural Society, we come now to a passage on the above subject which is well worthy of a most attentive reading:

"Let us look at this matter for a few minutes in a familiar manner. Let us ask ourselves the question, *What is Agriculture?* and try to answer it as briefly and accurately as we can. Agriculture, it may be said, is the art of cultivating the soil for raising crops for the sustentation of man and animals. Now, who that reflects on what is involved in this short answer, can come to the conclusion that any man, provided he has powerful muscles, can make a farmer?

"The first thing that might strike the attention of a reflecting person, in the above definition, is the little word, '*soil*,' a term expressing not a simple, but an extremely complicated substance, comprising a variety of materials, in different chemical and mechanical conditions. In travelling through any considerable area of country, you pass over a diversified surface, composed of different soils, from the disintegration and commingling of the various underlying rocks, differing in some instances very widely from each other in chemical composition, and mechanical and hygrometric properties. To acquire what may be termed only a practical knowledge of soils, a life observation and farm-experience is required; and if we desire a minute and accurate acquaintance with particulars, on which much of success or loss in practice may depend, we are compelled to invoke the aid of the chemist and the geologist. The soil is a very complex thing, susceptible at the hands of man of great improvement, or, as is unhappily sometimes the case, of great deterioration; and no cultivator, however advanced his practice, or minute and extensive his observation, can obtain the maximum of profit and sustain the fertility of his land, without an acquaintance with those facts and laws, in relation thereto, which science has investigated and can alone explain.

"Again: The soil, air, and water contain all the constituents which the farmer by means of *cultivation* elaborates into crops, and it is from the former alone that they obtain their mineral or inorganic portion. Now mark what is implied by this single word, *cultivation*. It involves, of course, the use of tools, implements and machines, the efficiency of which mainly depends on their mechanical adaptation to the various kinds of soils, as regards texture, density, and relation to warmth and moisture, and also to the habits and special requirements of different crops. Between implements and machines constructed on the most approved principles of modern mechanics, and successful and profitable farming, there is an intimate and indissoluble connection. Take only that important and primitive symbol of husbandry, the plough, and, without going back to Egypt or the ancient Romans, compare, or rather contrast the implements that were in general use in Europe and on this Continent less than fifty years ago, with those of the present time, and you perceive at once how much depends upon the employment of such implements as are in their form and construction in accordance with the laws and well-ascertained formulas of mechanical philosophy.

Further: The farmer cultivates the soil for the exclusive purpose, in the first instance, of raising crops; in other words, such vegetable productions as are best suited to the soil, climate and markets. He ascends from the dead mineral earth to the living organized plant. A tiny seed is deposited in the earth, and under the influence of warmth and moisture germinates, assimilating materials from both the air and soil in the progress of growth, and after passing through a wonderful cycle of changes, reaches the condition of a perfect plant, ripens its seed, and thus secures the perpetuity of its species. Here he is brought directly in connection with the higher teachings of Chemistry and Vegetable Physiology.

The farmer has yet a further and higher Object: he raises plants for the sustentation of animals. This is the great and ultimate end of all agricultural operations. What a beautiful view is here