

peculiar requirements of our farm crops are ascertained and economical means of supplying these wants are suggested. After studying the conversion of soil substances and of the constituents of the air into vegetable tissues, chemistry further endeavours to learn the function of these latter when used as food by animals. Thus, experimental research has shown that starch, sugar, gums, etc. (the class of nutrients known generally under the term carbohydrates) fibre and oil, products of vegetable metabolism are chiefly of service in the animal system in producing heat and supplying energy for work, while the albuminoids or nitrogenous organic matter elaborated by plants find their chief function as flesh formers and in supplying the requisite constituents for the production of blood, milk, wool, etc.

It may be urged that these are for the most part questions of vegetable and animal physiology, and rightly so; but is not physiology a name for that special branch of chemistry that seeks to explain the changes in matter that attend or are produced by the vital functions of plants and animals? At all events, physiology is largely chemistry, for if the former science tells us that living matter is composed of cells capable of nutrition and reproduction, the latter shows how the changes of the matter within the cells, primarily leading to their nutrition, and secondarily to their reproduction, are true chemical transformations.

Concerning Agriculture, we may say, adopting a definition given for English grammar by an old author that it is "both a science and an art." It is the oldest of all arts, save perhaps that of the chase. The art of husbandry includes and imparts skill in all farming operations—draining, plowing, harrowing, seeding, cultivating, harvesting, threshing, and indeed all work concerning the culture of the field and the care of farm animals. Of late years great progress has been made in agriculture as an art, and this principally through the introduction and assistance of improved implements and machinery. The sickle and the flail are almost forgotten instruments of the past, and many of the implements—