

points out (1914) the value of such knowledge to the following classes of people: (1) Scientific men engaged in the investigation of problems relating to plant-production, to farm-management, to farm demonstration, to stock-raising, to problems of rural organization, to road-building—in short, to many branches of agricultural science; (2) the farmer; (3) colonists, colonization agencies, investors, development organizations, and individuals; (4) students of geographic, social, and economic sciences without reference to agricultural industries.

In the 1922 report of the United States Secretary of Agriculture it is stated (page 392) that the soil-survey work is the basis for the experimentation of the various State agricultural experiment stations. As a result of this classification of the soils varietal and fertilizer tests are being established on the large and important soil types of the United States. That the soil type possesses individual characteristics is becoming more and more recognized by the agriculturist, county farm adviser, and extension-service director. The peculiarities of the various soils must be considered if we are to make the greatest progress in plant breeding and selection, in fertilizer practice, in cultivation—in fact, in all work looking to improvement of cultivated crops.

THE BASIS OF CLASSIFICATION.

Every branch of natural science is dependent on some classification of the elements with which it deals before much progress may be made. In chemistry the discovery of the periodic law provided a scheme of classification into which all the known elements could be placed, and in which any future discoveries could be fitted. In botany and zoology schemes of classification based on the natural relationship of plants and animals have been indispensable to the study of those sciences, and in geology a classification based on the age of the rocks has been necessary. So, with soil science—at present in its infancy—it is equally necessary that some scheme of classification should be adopted.

The character which both the British and American authorities are agreed upon accepting as the key to the classification of soils is the size of the particles, and the proportion of the differently sized particles which make up a soil. Hall and Russell, the Rothamsted agricultural chemists, recommend that for the purpose of a survey a large number of soils should be submitted to mechanical analysis, including the determination of the organic matter and of calcium carbonate, and that then a carefully chosen representative set should be analysed chemically so as to characterize the type; these can further serve as standards with which farmers' samples can be compared by the citric-acid method of determining available plant-food. These English authorities agree with Whitney (Chief of the United States Bureau of Soils) that mechanical analysis should form the basis of the survey, because it alone takes into account those physical functions—the regulation of the water-supply and therefore of the temperature, of the air-supply, and of ease of cultivation, &c.—that play so large a part in determining the value of a soil. This method of classification is, however, not applicable either to chalk