
Quite likely it is an understatement, but the author points out that "probably more than half the land surface [of Africa] carries a vegetation type of which grass is an essential feature." Since overgrazing is a common difficulty in much of Africa, range management knowledge of rapidly growing importance there and Rattray's volume, with its accompanying map of continental grass types, is of basic significance in providing for proper land use. The bulk of the book is devoted to brief discussions of the grass and other vegetation types given on the map. The composition, distribution, climatic and soil requirements of these types, and their values for grazing and as areas for cultivation are given. Twenty-three plant genera have been designated in distinguishing the various vegetative associations.

There are interesting brief analyses of successional changes, which review especially the effects of vegetation of fire, shifting cultivation, grazing, and trampling. There is a good bibliography. —GEORGE A. PETRIDES, Michigan State University, East Lansing.

SOIL STRUCTURE AND CONDITION OF ITS FORMATION. By P. V. Vershinn. Academy of Science, USSR. Moscow, Russia, 188 pp. 1958. (In Russian.)

In view of the importance that the Russian soil scientists place on soil structure, a monograph on soil structure is published periodically in the Soviet Union. The latest book on soil structure is that by Vershinn. Monographs of this type would naturally rely on Russian publications of which there are 120 references cited. However, 20 references of German, France, England and USA are used to support statements made in the monograph. The book is factual in that 53 tables and 41 figures are included as well as several data are given in tabular form but not numbered. The content of the book is given by chapters:

Chap. I. Concept of soil structure, its agronomical value and method of determination. Vershinn traces the study of soil structure from the time of Homer who mentions the friable structure of soil till the present day.

Chap. II. Cohesion of soil particles. Tensile stress of soil material measured by placing the soil in a figure-8 form and pulling the 2 halves apart. Crushing strength is also measured. As is obvious from these types of measurements that the moisture content, amount of organic matter, type of cations would affect the values obtained. Vershinn cites several tables and figures on this subject.

Chap. III. Crumbliness of soil mass into structural units. The effects of drying, freezing and thawing, cultivation, roots, and earthworms are discussed at length.

Chap. IV. Genesis of water-stable soil aggregates. Concept of water-stable aggregates includes the air inside the aggregate, moisture content of soil at the time of wetting, nature of cementing agents, and method of wetting. Importance of cations, especially calcium, is associated with the organic matter.

Chap. V. Microbiological factor of formation of soil structure. He differentiates labile and resistant water-stable aggregates formed by microorganisms. The former has compounds of protein type, the latter humic types. Climatic conditions give rise to these compounds—sierozems to labile types and chernozems to stabile types.

Chap. VI. Restoration and accumulation of water-stable aggregates under grasses.

Chap. VII. Artificial structural formation. (This is the longest chapter.) Work on artificial structural formers was begun in 1932 at the Agricultural Physics Institute. A discussion on the American synthetic products used for stabilizing structural units is given. Extensive use is made of the Kriilum articles which appeared in Soil Science in 1932. Much factual material is presented on the yields of crops (peanuts, barley, tomatoes, potatoes, oats, grasses, wheat) associated with water-stable aggregates where NPK fertilizer has been added.

The monograph is especially recommended to students studying Russian. The book is easy to read as the sentences are short and much of the text material refers to the tables and figures, hence the reading is easy to follow.—A. P. MAZURAK, University of Nebraska.