Antarctic Soils and Soil Forming Processes


This volume actually includes much more than the title indicates. Soils and soil formation are discussed only in a short concluding article by the editor and F. C. Ugolini. The bulk of the volume consists of five additional articles by other investigators which describe the climate, the geomorphology and glacial history of Antarctica, the development of polygons and a method of dating geomorphic surfaces by them, the meager terrestrial vegetation, and the ecology of the soil microorganisms. Apart from being essential background for pedologic study, these articles and the accompanying illustrations give an excellent picture of the areas around the fringes of the continent that are free of ice.

These areas are not only very cold but, because of low relative humidity and desiccating winds, are also very dry. The flora is made up mostly of lichens, algae, mosses, and fungi, and even these survive only in a few favored spots. Except in rookeries where bird droppings accumulate, the soils are nearly completely free of organic matter. Nevertheless, weathering processes—chemical as well as physical—go on in this cold desert, salts migrate within the profiles and salt crusts form in depressions, zones of lime or gypsum accumulation occur in some areas, crusts of desert varnish are common on older deposits, and a brown surface horizon develops with time. Whether these are geochemical or pedologic processes and, indeed, whether the word soil can properly be used to describe these barren materials, are debatable points, but it is certainly true that they are legitimate objects of study by soil scientists.

Tedrow and Ugolini have classified the soils—if that is what they are—of Antarctica into six rather loosely defined great soil groups. One, the “Ahumic” soils, includes most of the soils that show some horizon differentiation. Soils with a sparse cover of lichens and mosses and with very thin organic horizons are separated as “Protoranker” soils. Colonial accumulations in rookeries are called “Omnihumic” soils. Soils with salt crusts are “Evaporite” soils. Recently deposited glacial and alluvial materials are grouped with the Regosols (these are not also ahumic). Exposures of hard bedrock are described as Lithosols, but few would think of these as soils at any latitude. In the reviewer’s opinion it is unlikely that this classification will be widely accepted, but this is of no great importance. The volume as a whole is a significant contribution which will be of considerable interest to anyone concerned with the soils of cold regions or with the initial phases of soil development in glaciated areas and will be a useful reference for workers in both antarctic and arctic regions—Samuel Rieger, Soil Conservation Service, USDA, Palmer, Alaska.

Soil Science Translations Available from the Clearinghouse, US Department of Commerce

The following is a recent list of publications from Russian, Polish, and Yugoslavian scientific and technical journals and books which may be obtained from the Clearinghouse for Federal Scientific and Technical Information (formerly OTS), US Department of Commerce, Springfield, Virginia 22151. These translations were completed under the Special Foreign Currency Science Information Program, formerly called the Public Law 490 Translation Program. The cost of each publication is $8.00, regardless of the number of pages; this price became effective Jan. 1, 1967. Books at this price are a special bargain; they are published in paper backs rather than in hard covers. Order publications by number and title. Checks or money order payable to “The Clearinghouse” must be enclosed with orders for these publications. Additions to this list will be announced periodically.—Anton J. Vessel, for SSSA Translations Committee.

BOOK REVIEWS


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