Book Reviews


Despite its title, this is not a book about phytogeography. As the subtitle Plant Taxonomic Database Standards 2 reveals, this book is essentially a universal coding system for geographical regions, expressly developed for the use in databases.

The necessity for such standards is not to be disputed, and the book should therefore receive unqualified welcome from the scientific community. The life of botanists has become much easier, in fact, by the general acceptance found by important standards (such as the other "Brummit," Authors of Plant Names, and the Index Herbariorum). The International Working Group on Taxonomic Databases also should be commended for its endeavor to standardize fields of knowledge—the very basis for easy communication and information transfer between scientists, plus the compatibility of data bases worldwide.

The present, second edition of the World Geographical Scheme for Recording Plant Distributions comes nine years after the first. On pages xi-xv, its hierarchical scheme is explained, which establishes the following four categories: Level 1, Continents; Level 2, Regions; Level 3, Botanical Countries; and Level 4, Basic Recording Units.

Since the classification is a mixture of political geography and phytogeography, inconsistencies are unavoidably introduced; however, such inconsistencies are entirely irrelevant to the usefulness of the work.


Geologists often consider plant cover to be one of those unfortunate phenomena which interfere with their work, while rocks, to many botanists, represent no more than a foothold for plants. Although the nature of the subsoil is rarely indicated on herbarium specimens, the geological substrate nevertheless plays an important role in selecting which plants are able to grow in a particular area. This, and the fact that certain plants accumulate heavy metals, can in turn be used in geological mapping and mineral exploration.

The interplay between the lithosphere and the biosphere should be of interest to both groups of scientists. Professor Arthur R. Kruckeberg has spent much of his life working in this interdisciplinary field, particularly with the "serpentine syndrome." (These ultramafic rocks have suites of toxic metals which prevent the colonization of all but indifferent species or those plants which have developed a specific tolerance for heavy metals.) In the course of the past fifty years he has built up an intimate knowledge of the interrelations between geological substrates and plant communities which he has now summarized in book form.

After an introductory chapter setting the scene for the geological plant interface, Kruckeberg traces the origins of what he calls "geodaphics." Considering their highly developed civilizations, it seems curious that little attention was paid to this link between plants and the environment by Greek and Roman intellectuals. It was left to the all-rounder Franz Unger (1800–1870), the first Professor of Plant Physiology at the University of Vienna, to point out the differences between the plant communities growing on limestone and slate. Whether these differences were governed by the chemical or physical properties of the soils remained a matter for debate until the 1920's when the role of the colloidal fraction and its function in cation exchange in soils was finally recognized. In the United States, it took until the 20th century before the role of the geological substrate in controlling plant distribution received serious consideration. Kruckeberg makes up for this shortfall by devoting his longest chapter (126 pp.) to a detailed discussion of the effects of lithology on plant communities. Although other rock types are considered, special emphasis is placed on the plant response to ultramafic and limestone substrates in various parts of the world.

While the nature of the bedrock undoubtedly has an important influence on vegetation and plant distribution, another result of geologic processes—topography—can be equally important. Here factors such as slope, aspect, exposure, and elevation come into play. The steepness of a slope may prevent certain species from gaining a foothold, a phenomenon often seen on volcanoes and inselbergs. Such mountains, which tower above the surrounding country, often have a distinctive flora, although much depends on the degree of geographical isolation of the individual peak and the amount of time that has elapsed since its formation. Moreover, by influencing wind circulation and causing other orographic effects, mountains change the local climate and thus affect the vegetation.

When mountain ranges lie in the path of the prevailing winds, causing these to lose their water vapor, they create an effect on a regional scale; in the lee of the mountains, a rain shadow with more xerophytic plant communities develops. However, as Kruck-