Book Reviews

Geomorphologic Theory

Climatic Geomorphology. JULIUS BÜDEL. Translated from the German edition (Berlin, 1977) by Lenore Fischer and Detlef Busche. Princeton University Press, Princeton, N.J., 1982. xx, 444 pp., illus. Cloth, $50; paper, $18.50.

The lack of a generally accepted paradigm has plagued geomorphic research ever since its practitioners became disillusioned with the elegant concepts of landscape youth, maturity, and old age that were espoused by William Morris Davis. As one attempted alternative to Davisian theory, climatic geomorphology found its main adherents in Europe, where it was championed in France by J. Tricart and A. Cailleux and in Germany by J. Büdel. Because most American and British geomorphologists have emphasized the study of individual geomorphic processes, the synthesis provided by climatic geomorphology has considerable interest. The theory holds that modern relief-forming mechanisms differ as a function of climate and that their relief products define major morphoclimatic zones on the globe. Moreover, little of the extant relief is the product of modern relief-forming processes, but most is inherited from past morphoclimatic controls.

Büdel, now professor emeritus of geography at the University of Würzburg, has for nearly 50 years been an eloquent spokesman for the climatic morphogenetic approach to geomorphology. This translation of his 1977 volume, *Klima-Geomorphologie*, will bring Büdel's fascinating view of geomorphology to a wide audience. Unfortunately the book does little to dispel several well-known criticisms of climatic geomorphology. Indeed, climatic theories of landscape development are so generalized that few components of the worldwide schemes have been adequately tested. Much of the theory is descriptive, organizing various qualitative associations between landforms and climate. Numerous questions concerning process are simply left unanswered. We know, for example, that landforms considered diagnostic for interpreting past climate, such as bornhardts and tower karst, have profound lithologic and structural controls, yet Büdel consistently ignores much of structural and tectonic geomorphology.

By focusing on the origins of valleys Büdel renews the theme that James Hutton used to transform landscape description to a science. The prominence of valley cutting during the Pleistocene poses a special enigma to geomorphologists in central Europe, since neither Tertiary nor modern rivers seem to have been effective at valley cutting. Büdel explains this paradox by the ice-rind (*Eisrinde*) effect, an explanation that came from his work on the Stauferland expeditions to Svalbard (Spitzbergen). Fragmentation of bedrock by ground ice beneath a periglacial river is thought to facilitate vertical fluvial erosion during glacial phases of the Pleistocene. Modern rivers flow in relict periglacial valleys and are clearly ineffective at vertical erosion.

The Tertiary geomorphic activity in central Europe seems to have been characterized by the development of low relief plains, now preserved as erosion surfaces on the uplands (classically illustrated in the Middle Rhine Valley). Büdel argues that these surfaces are inherited from ancient periods of tropical planation. Even the pediments of winter cold-climate deserts, such as in Iran and the southwestern United States, are ascribed to predefinition by older etchplains of the "tropicoid paleo-earth." Though many geomorphologists may fail to see the tropical paleoforms recognized by Büdel in Spitzbergen and in the Alps, all will be intrigued by his lucid discussion of modern tropical relief. Excellent field examples raise stimulating questions concerning the nature and origin of tropical landscapes.

The translators have generally accomplished wonders with a German vocabulary for which English equivalents are commonly inappropriate. Terms such as *Rumpffläche*, *Eisrinde*, and *doppelte Einebnung* all have critical meanings in Büdel's system of morphogenesis, and their translations ("etchplain," "ice rind," and "double planation," respectively) can only partially convey important subtleties of usage. The author's literary style is refreshing in a scientific monograph, yet it can border on verbosity and mixed metaphor. Thus, Büdel writes, "Chemically derived paleosol relicts . . . indicate that current transformation processes are merely performing on the stage set by inherited etchplain environments." The glossary is an essential component of this work; an atlas would be a welcome addition for locating numerous reference points in central Germany, India, Ethiopia, Morocco, and the central Sahara.

Despite the limitations of climatic geomorphology as a unifying theory and of German writing as a model of clarity and brevity, this is certainly a worthwhile book. The publishers deserve great praise for bringing this major work to a large English-speaking readership. In addition to the important exposition of climatic geomorphic theory, professional geomorphologists will enjoy Büdel's insightful criticism of competing geomorphic doctrines and his light description of field experiences. One sympathizes with his image of the north European geomorphologist longing for work in the Alps while awaiting the coming rainy season at a tropical field site. Moreover, one can also appreciate his parable concerning a misguided process geomorphologist "of a generation who no longer read A. Penck." This fictitious scientist studied processes on Alpine upland surfaces by "modern" methods, including soil analysis, grain-size distributions, clay mineralogy, slopewash monitoring, morphometry, and statistical analysis. Büdel observes, "His conclusion was that these processes created the trough shoulders of the Alps. His evidence for the certitude of these results was the indubitable precision of the analysis." The neglected fact was that the measured modern processes are all completely ineffective in modifying landforms that are relict from ancient times and that were formed by processes controlled by a completely different climate from that prevailing today.

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The Disposal of Public Land

Westward in Eden. The Public Lands and the Conservation Movement. WILLIAM K. WYANT. University of California Press, Berkeley, 1982. xiv, 536 pp., illus. $24.50.

The Politics of Wilderness Preservation. CRAIG W. ALLIN. Greenwood, Westport, Conn., 1982. xvi, 304 pp. $27.50. Contributions in Political Science, no. 64.

The story of how land and other natural resources belonging to the American public were distributed during the 19th century is a depressing tale of fraud and plunder perpetrated by citizens high and