The Earth in Decay
A History of British Geomorphology 1578–1878

This is an excellent book. From the subtitle one might gather that it deals with a very narrow subject, British geomorphology from 1578–1878. However, because of the developments in the field during this time span were made by British workers and because the author does a good job of bringing in the influence of developments in other places, the book applies very well to the development of geomorphology in general. The book should interest soil geologists, some soil conservationists, and anyone who has a general interest in science history.

The author states that he found the history of the subject of geomorphology to go back much farther than he originally had thought. He was originally going to start his book with Hutton in the late 18th century, instead he went back to William Bourne, who wrote a book called “Treasure for Travelers” in the late 16th century. He points out in much detail the tremendous influence of many parameters of the Bible and various interpretations of it, on early geomorphologic thought. This influence was of two types. First, there was the acceptance by early geomorphologists, if they may be called that, of such things as The Flood, and the short age of the earth (a few thousand years). This blinded them to the tremendous amount of work that running water had done during geologic time. Secondly, there were different interpretations of the Deity. With the Reformation there developed a concept of a benevolent Deity, which contrasted with what Davies calls “the old Greek view of an angry vengeful judge who had ordained that there should be a progressive, punitive deification of the entire universe.” Because of the dominance after the Restoration of the benevolent Deity concept, there arose what the author calls the “De-nudation Dilemma.” How could a benevolent Deity allow the tarring down of his creation by erosion? Davies has previously written papers about this aspect of geomorphology history, and he covers it thoroughly here. The author sees the development of the concepts of subaerial denudation (proposed by Hutton in the late 18th century) that finally became accepted during the 19th century as finally breaking the Dilemma.

The author does a good job of relating the history of geomorphology to the history of geology and earth science generally. He indicates that geomorphology had several cycles of intense or renewed interest interspersed with other times of little interest in the subject. Sometimes, as in the early 19th century, the lapse in interest coincided with heightened interest in other branches of geology. He points out the importance of the development of glacial geology in removing certain objections to what he calls the “fluvial doctrine,” especially in giving a plausible origin of lakes that could not be explained by fluvial processes. In contrast, the great significance that some British geologists attached to erosion by the sea held back acceptance of the importance of subaerial denudation.

Soils are mentioned in several places in the book. One of the most interesting aspects to the reviewer was how examination of highly weathered soils buried under volcanic deposits in Italy (where the deposits were known to date from about 200 BC and have little soil development) helped to lead to more accurate appreciation of the antiquity of the earth. A tremendous character who played a part in the development of geomorphologic thought in Britain are covered, many in much detail (some may feel too much). Some of these, such as Hutton, Playfair, Lyell, Agassiz (who visited Britain), and even Darwin (who was interested in geomorphology as well as in evolution) have previously had their names firmly etched in history. Many, many others are discussed that the reviewer had never encountered previously, and the author of the book is to be commended for doing so throughout the book and bringing forth the contributions and backgrounds of those who deserve to be mentioned—showing that there have been many heroes, and many mistakes made too, in the development of the science of geomorphology.

The author is a Fellow of Trinity College, in Dublin, and a lecturer in the Department of Geography there. He had access to and claims that more than one thousand books, pamphlets and papers published before 1808 were examined in search of geomorphic material, in addition to selected manuscript material in some ten British and Irish libraries.

Readers with mainly a scientific background may have some difficulty with the vocabulary, especially that dealing with religious concepts. However, it doesn’t hurt a person to go to the dictionary now and then. A glossary of geomorphic terms is given in the book, especially for historians of science unfamiliar with the terminology. The reviewer also found several terms there that he was glad to have explained.—D. S. FANNING, Associate Professor of Soil Science, University of Maryland, College Park, Md. 20742.

West African Agriculture
Vol. 1, West African Soils, by Peter M. Akin, 332 pp. and Vol. 2, West African Crops, by F. R. Irvine, which were first published in 1934 and 1936 respectively, the book is an aid to students taking Agricultural Science. . . in Secondary Schools, Middle Schools, Training Colleges for Teachers, and in Agricultural Schools and Colleges.

West Africa, as used in these books, includes the land area from approximately 12° north latitude and 6° east longitude to 16° west longitude. Most of the examples and references refer to Nigeria, Togo, Dahomey, Ghana, Ivory Coast, Liberia, and Sierra Leone.

Volume 1 is a comprehensive introductory treatment of soils which appears best suited for college and university students. It includes a two-chapter introduction on soils as they occur in the field and important soil properties. Part 2, “Soil Formation,” includes a general section on rocks, soil forming minerals (including general ionic structures of the silicates) followed by a unit on the geology of West Africa and soils of West Africa in relation to relief and geomorphology. The soils which occur in rain forest and adjacent moist savanna areas receive much more discussion than do soils of the dry savanna and desert to the north.

Part 3 treats soil water, soil air, and chemical aspects of the essential elements under the general heading, “The Soil and The Plant.” The final section, entitled “Soil Examination, Management, and Improvement,” includes a comprehensive chapter on surveying, classifying, and analyzing soils, followed by two brief chapters on “Shifting Cultivation and Mechanized Agriculture” and “Manures, Fertilizers and Their Use.” The discussion of shifting cultivation is descriptive and traditional, with a brief section devoted to possible modifications or substitutes for this widely used system. Of these modifications, tree crops are considered by the author to be the most viable alternative for rain forest areas.

One sentence is devoted to the discussion of the integrated package of practices—better seed supply, better crop varieties, better control of insects and diseases, wider use of irrigation, improved rotations, use of organic and inorganic fertilizers, and general improvement in soil productivity—which is beginning to be seen as the cornerstone of improved crop production in the tropics and the subtropics. After giving passing mention to this key concept of interaction, the author moves immediately to mechanization; mostly to the east. The reviewer also found very few discussions of the forest areas of West Africa. The important point, that spectacularly increased productivity in the hot humid tropics need not be tied to mechanization and that over reliance on mechanization in areas of abundant, low cost labor and limited industrialization can be counter productive, is not mentioned.

Fertilizer responses in West Africa are discussed very briefly (six pages), with the main emphasis being given to the variable nature of responses obtained in various field experiments and the FAO fertilizer demonstrations of 1962–65.

Volume 2—West African Crops—deals with 42 West African crops or groups of closely related crops in 220 pages. The groups of crops included are cash crops (cocoa, coffee, oil palm, sugar, tobacco, and other), vegetables, root crops, legumes, and others. For each crop there is generally a brief (1- to 3-paragraph) discussion of: origin, varieties, environment, cultivation, yields, uses, diseases, and pests. Thus, the book resembles