Ridley's method, but accurate determinations of primitive and derived are both critical for the validity of the test and potentially controversial. In addition, the method typically requires that the data for character and condition be scored nominally; thus it will not replace the more powerful statistical analyses discussed and used by Harvey, Clutton-Brock, and their colleagues, which remain extremely valuable whenever appropriate data are available.

In summary, this book could perhaps have been written as three papers. Although together they do not live up to the scope of the title, they are carefully prepared and clearly written and will be both useful and interesting for their respective audiences.

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Scottish Geology

Geology of Scotland. G. Y. CRAIG, Ed. Second edition. Halsted (Wiley), New York, 1983. xiv, 472 pp., illus., + plates. $54.95.

For two hundred years Scotland has been the breeding ground for many of the fundamental principles and ideas of geology because of its superbly exposed, rich, and varied terrain containing and adjacent to many ancient seats of learning. Consequently, many of the great names of the earth sciences are closely linked with Scottish researches: Hutton's elucidation of the stratigraphical principles involved in unconformity, Peach and Horne's discovery and mapping of the Moine Thrust, Lapworth's work on the stratigraphical paleontology of graptolites, Clough's analyses of fabrics and minor structures that were to pave the way for modern structural work, Read's work on the granite problem, Sutton and Watson's mapping of the Lewisian to show how complex event sequences can be deciphered in basement terrains, Kennedy's demonstration of major sinistral offset on the Great Glen Fault, and Ramsay's structural work that has led to the techniques of modern structural analysis.

It was against this background of geological discovery that Craig and Walton, the editors of the first, 1965, edition of *Geology of Scotland*, set themselves the formidable task of finding a group of authorities to summarize the geology of this small but well-known piece of Europe, with successful results. For the second edition, Craig's task was compounded by the occurrence of the plate tectonic revolution and the availability of many geophysical data, so that the rocks are susceptible to new interpretations. Assemblages in which this is the case include the Southern Uplands, an extensive zone of Ordovician-Silurian turbidite, shales, and cherts, interpreted by Legget and McKerrow as a subduction accretion prism, and the Ballantrae Complex, interpreted by Church and Gayer as an early Ordovician ophiolite complex; these interpretations allow more cohesive, less ad hoc analyses and syntheses of these terrains.

A book on a region, such as this, must be primarily a reliable source of data that are not overinterpreted. The second edition, with the addition of excellent new chapters on Devonian stratigraphy by Mykura and Devonian magmatism by Brown, has succeeded very much better than the first in this role. It is perhaps invidious to select individual contributions, but special mention must be made of the masterly summaries of Carboniferous stratigraphy and magmatism by Francis and Tertiary igneous rocks by Emeleus. The role of a regional text must, as a source of data, to a large extent subjugate the more expansive role as a purveyor of analysis and synthesis, but it is nevertheless a pity that there is not more interpretation of the Lower Palaeozoic rocks in the context of a broader regional Caledonian, perhaps even Appalachian, view. The broader view is to some extent provided by the beautifully organized and written introductory chapter by Harris on the growth and structure of Scotland, but more short, interpretative sections in individual chapters would enhance coherence for a non-British reader. However, in fairness, the overwhelming mass of data makes any interpretation vulnerable. The geological corollaries of plate tectonics are very complicated and still rather poorly understood on the medium and small scales. It is therefore easier to erect novel and provocative explanations for poorly known regions than for areas like Scotland.

Geology of Scotland is a scholarly work that will be the definitive source book for many years to come. The authors deserve praise for summarizing so many data in so modest a space. The work should be on the personal bookshelves of geologists worldwide; it is good reading and an inspirational source.

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The European Landscape

Geomorphology of Europe. CLIFFORD EMBLETON, Ed. Wiley-Interscience, New York, 1984. x, 465 pp., illus. $79.95.

The phenomenal diversity of the European landscape is matched only by the remarkably different approaches and assumptions of those who seek a scientific understanding of it. This book, a compilation of writings by members of the International Geographical Union Commission on Geomorphological Survey and Mapping, is the first comprehensive survey of the geomorphology of Europe. Similar regional landform analysis, sometimes called "physiography," was once the major activity of geomorphologists. In the first half of this century, regional landscapes were explained in terms of their structure, processes of erosion, and stage of development. Although this type of analysis continues in many countries, it has generally fallen from favor in Britain and the United States, where attention in recent decades has focused on small-scale landforms and short-acting processes that are most amenable to quantitative measurement, statistical analysis, and incorporation into a systems-analytical framework.

The key to appreciating this volume is the international perspective on geomorphology provided by abundant examples of what different geomorphologists do. Unfortunately, because author affiliations are not given, the matching of regional problems to regional methods of problem-solving becomes an exercise in library biographical searching. Moreover, the frustration of such searching is compounded by the more extensive representation of some nationalities (and nations) than of others. The major contributions in the book come from and deal with the United Kingdom (C. Embleton), the western Soviet Union (A. A. Aseev, N. V. Bashenina, O. K. Leont'ev, and others), Sweden (S. Rudberg), Czechoslovakia (J. Demek), and Spain (M. Sala). Shorter contributions come from Poland (R. Galon), France (F. Joly), Germany (J. F. Gellert), Switzerland (H. Leser), Austria (J. Fink), the Netherlands (J. A. ten Cate), Yugoslavia (I. Gams), Bulgaria (I. Vaptsarov), and Italy (G. B. Castiglioni and A. Sestini). Of the 16 geomorphological regions into which Europe is divided in the book, Hercynian Europe, with its Appalachian-type relief, receives 66 pages of discussion whereas the Balkans receive only 13 pages. Description of the fascinating landscapes of Greece is attempted in two pages.