

case. This is clearly evident in the field relations exposed in the crustal sections in Phanerozoic mountain chains of Europe, which is the home of granitisation hypothesis. In the present volume the transformists' case is beautifully presented by J.A. Roddick, who tries to demolish the popular magmatic criteria like sharp contacts and chilled margins, cross cutting relations and dykes, other igneous textures and structures, deformational features and Sr isotope ratios.

The volume starts with a well stated introduction to granitisation by Drescher-Kaden in English and German. H. Termier and G. Termier (in French) describe the transformation of granite to diorite by assimilation of volcano-sedimentary rocks through transition rocks called 'prediorites' from the Tichka Massif of Atlas Mountains, Morocco. R. Pieruccini (in Italian) describes the general geochemical criteria of granitisation. Augustithis introduces the transformists' school of thought in petrology and pictorially illustrates the metamorphic - metasomatic origin of granophyres of layered complexes, including that of the Ezhimala intrusion in Kerala. He further elaborates the idea of remobilisation of chromite to refute its classic igneous differentiation origin, citing among others the chromite occurrence of Wankur in Andhra Pradesh, which is interpreted as a metamorphosed fossil placer by S.R. Sarma in 1960.

H. R. Wenk in an elaborate paper traces the evolutionary history of Bergell Granite in the Alps, which is widely regarded as large postkinematic pluton and favours its transformation from older rocks of similar composition. M. Palivcova describes two basic bodies from Southern Adamello massif, Italy, correlates them with appenitic suite and favours their origin by recrystallisation and metasomatism of basaltic parents. N. Edelman advocates metamorphic origin of the deep level pegmatites from the Finnish Archipelago. V.C. Cela and A. A. Yague give a comprehensive account of the granitisation processes in the Hercynian massif of Spain.

The volume is well got up and is free from errors. The English has a Continental flavour as most contributors are from Europe, but is readily understood. The advocacy of alternative hypothesis is always welcome as it tends to check the tyranny of majority opinion, and on this count alone this volume deserves a place in the earth science libraries.

*Geological Survey of India
Training Institute
Hyderabad - 500 068.*

M. RAMAKRISHNAN

GEOMORPHOLOGY IN THE TROPICS - A study of Weathering and Denudation in low Latitudes. 1994 by Michael F. Thomas. John Wiley & Sons. 460p.

The data base during the last two decades since the author's earlier book on *Tropical Geomorphology* (1974) was published, has increased many fold and it is in the fitness of things that he has attempted to write almost a fresh up-to-date book on the same subject. The emphasis is on "humid tropics" as there are already many publications dealing with arid environments. It is no longer relevant to explain all major landforms in terms of simple concept of repeated uplifts, dissection and planation, though these episodes do control their evolution. Multicomplexity of processes and inheritance of forms from earlier environments are increasingly emphasized (as ably attempted earlier in 1974 by Garner in his book on *Origin of Landscapes*) and one finds in the present volume very detailed treatment of residual profiles, surface forms, deposits of different ages and types, effects of palaeoclimates etc. In this an attempt is also made to move slowly from the earlier practice of explaining landforms

purely from a chronological perspective to include the precepts of hydrology and hydraulics, with a lot of data from field and laboratory observations from related disciplines.

The content (given in considerable detail) is divided into four parts. Part I deals with Processes and Products of Weathering. The geochemical pathways of weathering (pp. 39-47) would be of interest to researchers. The importance of study of saprolites, soils, sediments, and natural waters, with examples, is also brought forth here. For those who talk of 'standard profile' in laterite (pp. 67-68) it is clearly demonstrated that there can perhaps be only 'an average profile' in terms of succession of horizons. Those who wish to study in detail the West Coast lateritic plateaus of India, may do well to note that there is a 'laterite family of deposits' (fig. 4.3, p.92) and the example from Ivory Coast will be of interest. That bauxites need not form as horizontal layers is illustrated with examples (Fi. 4.14, p.109).

Part II deals with Denudation Processes. The role of rainfall (duration, intensity, intervals), besides others, as a major factor in the formation and distribution of landforms and deposits in the humid tropics is presented in this section. "Pipe flow" (pp. 131-134) and its penetrative capacities have not been well studied in our country, though there have been passing mention of this process in some papers dealing with the Chambal valley in Rajasthan. The relationship between rainfall and the incidence of landslides and their recurrence intervals is an interesting study (pp.169-170), that can be emulated with profit in our country.

Part III deals with Quaternary Environmental Change and Landform Development. One of the significant factors in the geomorphology of the tropical regions is that they escaped direct effects of Quaternary glaciation and this has perhaps enabled them to retain evidences of longer geomorphic history. It is increasingly realised that even during a short period of less than 2 million years during Quaternary there have been many climatic changes. Whereas Table 7.1 (p. 194) gives a list of all the types of studies than can be made (with some examples within the text), Table 7.2 (p. 202) gives the ocean sediment signals of Quaternary climatic changes - a source of information not envisaged about a couple of decades ago. That there can be so many methods of study of the form and content of alluvial-colluvial deposits in the tropics is shown by numerous examples (pp. 247-273).

Part IV deals with Evolution of Tropical Landscapes. Etchplain receives special treatment from the author apparently convinced by this process as enunciated by Budel (pp. 287-310). In the final analysis it is the treatment of Terrain Units in the tropical landscapes (Table 10.1. p.312) and the landforms associated with them (pp. 311-352) that would be of immediate interest even to a novice in tropical geomorphology. The Long-Term Landform Evolution (pp. 353-387) is an apt culmination presenting the general views regarding the stages of evolution of landforms in the tropics, most of which do not go beyond 140 m.y., containing imprints on them of many features as evidences of processes and climates to which the individual regions (possibly separated due to rifts and plate tectonic movements) have been exposed to. The References are exhaustive and the Author and Subject Index are useful appendages.

This well-written volume has presented the existing data base on tropical geomorphology and is definitely more than a "modest contribution" from the author and deserves to be read and consulted by not only earth scientists but also engineers, ecologists and pedologists interested in the subject.

R.V.

"How much easier it is to be critical than to be correct"

BENJAMIN DISRAELI