

## BOOK REVIEWS

**CHEMICAL SEDIMENTS AND GEOMORPHOLOGY : Precipitates and Residua in the near surface Environment.** Edited by A. S. Goudie and Kenneth Pye (1983), Academic Press, London, 439 pages, Price £35, \$ 58.

The near surface terrestrial chemical sediments have remained, paradoxically, far away from in-depth investigations all these years excepting by way of localized studies culminating in sporadic publications in select parts of the globe. Although late, this need to know more about the chemical sediments and weathering residua not merely for their academic value but for their economic importance also, is met by the volume under review.

The volume contains 14 Chapters in which the first Chapter, authored by the editors (Goudie and Pye) is, necessarily, aimed at introducing the subject and defining the frontiers of the themes. Laterites by M. J. Mc Farlane (Chapter-2), Silcrete by M. J. Summerfield (Chapter-3), Calcrete by A. S. Goudie (Chapter-4), Gypsum crusts by A. Watson (Chapter-5), Evaporite sedimentation by A. Watson (Chapter-6), Surface efflorescences and nitrate beds by A. S. Goudie (Chapter-7), Desert Varnish by W. B. Whelley (Chapter-8), Red beds by K. Pye (Chapter-9), Aeolianite by R. A. M. Gardner (Chapter-10), Chemical Sedimentation in caves by P. A. Bull (Chapter-11), Lacustrine Chemical Sediments by H. P. Eugster and K. Kelts (Chapter-12), Phosphate rock on coral reef islands by D. R. Stoddart and T. P. Scoffin (Chapter-13) and Beach rock and intertidal cements by T. P. Scoffin and D. R. Stoddart (Chapter-14), constitute the other Chapters in this volume.

All the themes have been well-conceived and the data judiciously compiled and presented. Initiating, with a definition of the material/product, the respective authors have cogently summarized and coherently synthesised the state-of-art knowledge on their geographic distribution, field characters, geomorphic implications, chemistry and mineralogy, and genetic aspects, including models. The gaps in our comprehension and scope for future studies are prudently highlighted, at appropriate places. There are a good number of illustrative field photographs in each chapter. Perhaps some colour photographs would have been more appealing to the reader.

From the Indian Geologist's viewpoint, however, Chapters 2 to 9 and 14 are of particular relevance. India was once regarded as the chief source of saltpetre used in Europe and the U.S.A. for the manufacture of gun powder. With the advent of the Chilean nitrate into the market, the Indian industry declined. Likewise, the Borax from Ladakh region was mainly utilized by European ceramic industry till late 19th century. It's importance was lost due to new finds in U.S.A., U.S.S.R., Italy and other countries. Somehow, these deposits seem to have skipped the attention of the author in Chapter 7. Such examples of missing credits can be cited in each Chapter. It must, however, be admitted that it is well-nigh impossible to collate all the data either due to paucity of published accounts or relative inaccessibility of scattered published information.

Inclusion of Porcellanite as an equivalent to Silcrete (Chapter-3) is perhaps debatable from the Indian viewpoint.

Studies on laterite have gained momentum in recent years especially under the Project IGCP 129 and some references do appear in Chapter 2. 'Relatively rarely,

where strong leaching conditions occur, feldspars alter directly to gibbsite'. The East Coast Bauxite deposits of India have conclusively proved the direct transformation of feldspar to gibbsite. Therefore, direct transformation of feldspar to gibbsite can no more be considered a rare phenomenon. There has been steady accumulation of data on laterites and, understandably, it is indeed difficult to incorporate in a single review the varied facets of study undertaken in different tropical belts of the globe.

Duricrusts result in positive relief and have a direct effect on slope hydrology, sediment transport and slope evolution. Duricrusts and other chemical sediments like gypsum, halite etc. are indicators of palaeoenvironmental conditions in certain cases and point to palaeo-hydrological conditions in closed link basins. Chemical sediments are increasingly being used for both absolute and relative dating of Cenozoic sedimentary sequences. Chemical sediments in Quaternary environments provide useful modern analogues which aid in interpretation of the stratigraphic record. They are also useful in facies reconstruction. With the type of data presented to prove the validity of the above conclusions, this volume is expected to be of special relevance to those engaged in the study of Quaternary geology and Geomorphology, in particular.

The very fact that several Chapters were contributed by geographers of repute is sufficient proof of the inter-relationship subsisting between Earth Science and Physical Geography.

The volume will form an invaluable asset to both individual scientists and institutional libraries though the price may be slightly prohibitive for the former in the developing and underdeveloped countries.

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ATMOSPHERIC TURBULENCE AND AIR POLLUTION MODELLING. Editors F. T. M. Nieuwstadt and H. van Dop, D. Riedel Publishing Co. 1982, pages 358 Price DFL 100/-

This book forms one of a series of publications entitled 'Atmospheric Sciences Library'. It is based on the lectures presented during a course on 'Atmospheric Turbulence and Air Pollution Modelling' held in the Hague in September 1981 sponsored by the Royal Netherlands Meteorological Institute at which eminent specialists presented the latest developments in their respective fields. 'The editors have combined and integrated the various contributions to produce a rounded text on boundary layer physics'.

The contents of the book can be classified into two parts. The first part, consisting of the first four Chapters, deals with turbulence in the atmospheric boundary layer, and the second part, consisting of the later three Chapters, deals with diffusion in the atmospheric boundary layer in different stratification conditions and calculation of the spread of pollutants. The topics dealt with in each of the Chapters are given very clearly in the section on 'contents' on pages (v) to (ix) which is very well arranged with distinctive pagination for each topic so that it is very easy for the reader to pick out and refer to the particular topic in which he is interested.

The most interesting Chapters are Chapter 4 on 'Observed characteristics of the atmosphere boundary layer', Chapter 5 on 'Diffusion on the convective boundary layer', Chapter 6 on 'Diffusion in the stable boundary layer' and Chapter 7 on 'Applications in air pollution modelling'. Chapter 7 is specially interesting as it