

## Reviews

### I

*Der Atmosphärische Staub* by Walter Fett. Published by VEB Deutscher Verlag Der Wissenschaften, Berlin, 1958; pp. xvi, 310 ; 69 figures and 40 tables.

Philosophically speaking dust is the symbol of perishability, and also the symbol of all beginnings. Materially speaking dust represents the most irksome and uncontrollable feature of the lowest layers of the atmosphere, where man spends most of his life. The book under review is a comprehensive account of (1) the nature, properties and behaviour of atmospheric dust—(Section I), and (2) its role in modern civilisation—(Section II).

The book is not an encyclopedia on the subject, but is a convenient and handy monograph. It contains extensive references and brief summaries on all aspects of atmospheric dust, and with its help one can gather the necessary background information for the intense study and investigation of any aspect of atmospheric dust.

The topics dealt with are—(1) The origin and nature of dust, (2) The characteristic properties of dust, (3) The measurement, probing and classification of dust, (4) Distribution of dust, (5) Dust and Geophysics, (6) Dust and Geology, (7) Dust and Botany, (8) Dust in Medicine and Hygiene and (9) Dust in Technology, Industry and the Home. The Decimal Classifications of all topics which are likely to deal with atmospheric dust, directly or indirectly, are given along with their titles at the end of the book. This is a novel feature and of great use for workers in the field. The reviewer was a bit surprised to see that there are nearly 400 topics with Decimal Notations, which can contain information on dust. The bibliography listed consists of nearly 800 references to published literature, and adds considerably to the usefulness of the book. Although there is a bias in favour of German literature, references to publications in English are not absent. The book has been completed early in 1957, and the references are brought up to the end of 1956.

This monograph is a mine of factual information; theoretical discussions of atmospheric diffusion, production and deposition of dust etc do not find a place in it. The meteorological fields of Atmospheric pollution, of Artificial precipitation and of Atmospheric fall-out, have come to prominence in the last two decades, and investigators in these fields, need a good background knowledge of the nature, properties and role of atmospheric dust. These investigators have every reason to be deeply indebted to the author for his effort in producing this brief but comprehensive monograph on 'Atmospheric Dust'.

P. R. PISHAROTY

## II

*The Earth's Problem Climates* by Glenn T. Trewartha. Published by The University of Wisconsin Press, Madison, 1961; pp. 334; price \$ 7.50.

Here is an excellent volume for the advanced student of climatology who has been tickled and intrigued many a time by the existence of peculiar phenomena that do not seem to fit in easily with the surrounding large scale patterns of climate. The climatic patterns appear to be quite orderly on the globe, yet they pose numerous problems of regional character, problems that arise out of the departure from the expected arrangement of climates as determined by the planetary controls. Such departures, in words of Trewartha, "represent the unusual, the atypical; they are the climatic anomalies". They are anomalies because the usual macroclimatic controls fail to explain them. These anomalies become riddles in the sense that we lack an understanding of the atmospheric controls that are responsible for their unusual character. However, it seems likely that, to quote the author again, "some climates which appear to be anomalous will, upon a more complete understanding of atmospheric controls, lose much of their unusual or enigmatic character and seem to be more a part of the normal climatic pattern" (p. 5).

The author's main object has been to prepare an inventory of earth's problem climates and describe their characteristics. The 'what' and 'where' of the unique climates led him to the 'why' and he suggests explanations for some of these anomalous climates. In describing the anomalous character of problem climates and for explanation of the usual climates, Trewartha has emphasized atmospheric perturbations and genesis ("the dynamic process in which climatic differentiation is rooted").

The book is divided into twenty chapters grouped under six parts, one part each for Latin America (Five chapters), Australia-New Zealand-Equatorial Pacific (One chapter), Africa (Four chapters), Southern and Eastern Asia (Three chapters), Europe and the Mediterranean Borderlands (Three chapters), and Anglo-America (Four chapters). Twentyone pages of notes contain references to the vast literature drawn upon by the author. The book has 168 illustrations, the part on Anglo-America containing most (48) and the part on "there down under" continent containing least (5) diagrams.

In over 300 pages of the text, the author presents a brilliant analysis of the problems in regional climatology. Such unusual features as the northward displacement and intense aridity of the Chilean-Peruvian BW climates, or the decrease in rainfall seawards from inland in Patagonia, or the abnormal pre-solstice temperature maximum in the month of May in India, or the meagre rainfall in Tropical East Africa north of the equator during the high-sun period and numerous others, are lucidly described and explanations offered for their uniqueness.

Of particular interest to geographers in this country is chapter eleven, "The Indian Subcontinent", where the author gives a resume of recent concepts concerning seasonal circulations over the region, followed by a discussion of unusual climatic features. In the discussion on seasonal weather in India-Pakistan, the author describes the premonsoon period (March-May) as Spring weather (p. 157). This reviewer, like many others in India, would take an issue on this point. In the northern plains of India, March could perhaps be said to have spring weather but surely, latter half of April and entire May can hardly be termed

spring weather. Over the major part of the sub-continent, May is the hottest month with daytime air temperatures in excess of 110°F. This seems rather odd for spring weather. Strangely, the author himself describes the unusually hot weather of this period in these words:

"A notable feature of India's climate is the abnormally high temperatures of the hot season, coupled with the fact that the maximum usually is reached in May, and therefore precedes the period of maximum insolation (Koppen's *g*, or Ganges Type). In May over one-half of the subcontinent experiences average temperatures above 90°, and a considerable area in the interior averages above 95°" (p. 165).

Notwithstanding the minor point at issue noted above, this book should be read by all interested in understanding the complexities in global pattern of climates, and it should be a compulsory reading for advanced students at our universities. The book is indeed a unique contribution to the study of the unusual and unique climates of the earth.

SHYAM S. BHATIA

### III

*Manual of Field Geology*\* by Robert R. Compton. Published by John Wiley & Sons, New York and London, 1962; pp. x+378 including Appendices and Index; Numerous text-figures; price; \$7.50.

There are a few excellent books on Field Geology, by F. H. Lahee, by Bailey Willis, by Forrester and by Greenly and Williams in the English language. The one by Lahee has gone through seven or eight editions. A new book is nevertheless quite welcome for it starts without the specific bias of the earlier books and gives adequate emphasis to the new tools and methods. Such are the use of the telescopic alidade which in conjunction with the Plane Table is now-a-days used extensively for detailed mapping, especially of mineralised areas; and the use of aerial photographs in mapping. During the years since the Second World War, very large tracts of the earth have been covered by aerial photography and such photographs are used in a routine manner by all the great Surveys of the world and by the major mineral and oil companies. Structural petrology now forms an important part of the mapping and study of igneous and metamorphic complexes.

In a handy volume of 325 pages a very balanced treatment of the whole subject of geological mapping in all its aspects is achieved by the author who is Professor of Geology in the Stanford University of California. There are 15 chapters. They deal with the nature of geological data to be collected and recorded, the use of the various tools employed in the collection of data—*viz.*, the compass, clinometer, level, aneroid, plane table, alidade etc. Procedures for plane table and telescopic alidade surveys are described fully and clearly with examples. The planning of the survey and a discussion of the mapping and sampling procedures are then dealt with concisely. There is an interesting chapter dealing with the scope and drafting of geological reports with emphasis on the aim of the report, *i.e.*, the type of data required by the employer or consumer. The last four chapters deal with the special features to be noted in the survey of sedimentary, volcanic, igneous and metamorphic rocks, each of which have their problems and methods of treatment. There are several appendices: list of field equipment

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(several of which are forgotten or ignored by geologists); abbreviations used in notes and in maps; symbols in use in printed topographic maps and those used by geologists for geological features; a conversion table of British to metric units; table of trigonometric functions; a protractor chart for mutual conversion of true and apparent dips. A 15-page index comes at the end.

Some of the rather voluminous notes on structural geology and rock textures etc given in the earlier books are given here in a more condensed way. The different topics are, however, found to be quite adequately treated, and each chapter ends with a good bibliography where additional material on any special aspects can be found for detailed study. There are numerous line drawings and diagrams explaining all the important features which a field geologist need to know about.

Field geology is rather a neglected subject in India in spite of the special attention being given to it in recent years by a special Committee constituted by the University Grants Commission. The Geological Survey Department also conducts an annual camp for training its own new recruits and a few University staff, but it has tended to become drab and stereotyped because really competent men are not always sent to the camps as teachers. Amongst the majority of the University men there is a lack of enthusiasm for roughing it out in the field, for only that way can good field work be done and not by riding in cars or on bicycles. Indian Universities now-a-days turn out over 350 M.Sc. graduates in Geology per year and it is time that much more serious attention is paid to field geology than at present, for without it geology will become an arm-chair affair. A book like this will, it is hoped, enthuse the teachers and students and give them full guidance in carrying out work of a high order. The reviewer recommends this book highly to the attention of all geologists who are not cooped up in the laboratory or the library but who like to see things in the field even if it means much walking and climbing. The printing and get-up of the book are up to the best American Standard, though the price is rather high for Indian students. Perhaps an Asian edition would be able to bring it within the reach of the large number of students in this part of world.

M. S. KRISHNAN

#### IV

*Atlantic Hurricanes* by Gordon E. Dunn and Banner I. Miller. Published by Louisiana State University Press, Interscience Publishers, Inc., New York, 1960; pp. 326+xx; price \$10.00.

Meteorologists all over the world, and cyclonologists in particular, should welcome this well got-up book on hurricanes at a time when attention of scientists and laymen alike is being more and more directed to the understanding of the nature of the devastating tropical storms, known over different regions as hurricanes, cyclones and typhoons. Compared to publications on other topics in meteorology books on tropical storms are comparatively slow in coming out. Therefore, so thorough and informative a book as the one under review, from authors who are eminently qualified to write about the different aspects of hurricanes, is of considerable interest.

The book is written in clear style without complicated mathematical or abstruse theoretical treatment, is well illustrated and readable and would make an excellent addition on the shelf of the average reader with scientific interest. But more than that, the comprehensive scope of the book and the treatment of the subject of hurricanes in all their aspects including the use of modern techniques of investigation by means of radar, aircraft reconnaissance and even artificial satellites, make the publication a useful handbook for the professional meteorologist as well as a valuable text-book for the student of meteorology well upto the undergraduate courses.

The first five chapters of the book give an account of hurricanes in general and describe the general weather in the tropics where these storms tend to develop, followed by the climatology of the Atlantic Hurricanes, their physical characteristics and the nature of some related phenomena, such as swells and surges. The sixth and seventh chapters are devoted to the energy of hurricanes and the theories of their formation. The next three chapters deal with the practical aspects of the hurricane warning system of the United States Weather Bureau and of the methods used for locating and tracking these storms including the modern techniques employed for forecasting their movement. Chapter eleven is devoted to the intensification and dissipation of the hurricane and the next one to its destructive forces. Then follow two chapters on the preparation for meeting the hurricane and its after-effects and gives interesting information about hurricane hazards by regions in the U.S.A. The final chapter is an exciting one, on research—a look into the future. This includes what are perhaps still, somewhat controversial topics of controlling the hurricane and harnessing its energy as well as ideas not yet too firmly established. Nonetheless, the chapter is of considerable scientific interest and is certainly stimulating. The appendix giving a glossary of meteorological terms, the comprehensive list of references and a good index enhance the usefulness of the book.

One of the authors, Gordon E. Dunn was the Chief District Meteorologist at the U.S. Weather Bureau at Miami with the primary responsibility of issuing hurricane warnings for the eastern coast of the States; while the other, Banner I. Miller was Research Meteorologist at the National Hurricane Research Centre. A book from their pen, therefore, can claim to be authoritative and, as such, should find a place in every scientific library. It goes almost without saying that similar treatises on the tropical storms of the other regions, such as the Indian Ocean and the China Sea, would form very valuable companion volumes to the present publication under review. May one hope that these will be forthcoming before much longer?

One minor point of criticism regarding the treatment of the subject may not be out of place to mention. Perhaps some readers will share a feeling that it would have helped in a more orderly development of the subject if the matter in chapters eleven and twelve, *viz.*, intensification and dissipation of hurricanes and their destructive forces respectively, had followed immediately after chapter seven on formation of the hurricane. And finally, how one would wish that the price of this 350 pages book, despite very good paper and printing, were not as high as 10 dollars so that it could be more readily available to a larger number of readers who might like to possess the volume.

S. BASU