

Astronomy: Principles and Practice

A E Roy and D Clarke

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Astronomy: Structure of the Universe

A E Roy and D Clarke

2nd edition October 1982
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The two volumes are very successful in giving a clear exposition and in driving points home. Nature

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The Observatory

Weak Interactions

D Bailin

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The Politics of Clean Air is avowedly a history and as such a success. It is sober and (to the credit of Mary Anderson) well-documented, yet at the same time is remarkably readable. Only when dealing with two of their themes do the authors drop the dispassionate air of the historian, and then perhaps intentionally. First, between the lines of the book runs respect — even affection — for the dogged chemists of the Inspectorate in their uncomfortable role as mediators between the interests of public, industrialists and civil servants. Second, in a restrained way the book is a campaigning document for bpm and thus pertinent at a time when the European Economic Community is applying the contrary policy of presumptive standards. The “calmly reasonable” Lord Stratheden and Campbell failed, but the policy of bpm which embodies that virtue has brought us a long way. Latter-day environmentalists might wonder, however, whether it is far enough and fast enough, and whether the policy will survive future international strains. They are also likely to doubt that one of Stratheden and Campbell’s other virtues, endless patience, is a quality appropriate for their cause in the 1980s. □

Tim Lincoln is the Book Review Editor of Nature.

An unearthy air

Conway Leovy

Weather and Climate on Planets. By K.Y. Kondratyev and G.E. Hunt. Pp.755. ISBN 0-08-026493-X. (Pergamon: 1982.) \$95, £50.

AFTER a decade of remarkable activity, a pause in planetary exploration is occurring, notwithstanding the forthcoming Galileo Jupiter orbiter-probe mission, the Large Space Telescope and the possibility that other planetary missions now under consideration may eventually fly. To some extent this pause is a consequence of the successes which have been achieved; to obtain more results of comparable scientific value while retaining wide popular interest will require extraordinary imagination and further technological innovation. Consequently, it is unclear whether the current hiatus will be followed by renewed efforts to explore the planets, or whether it really signals the declining phase of this civilization’s ambitious Solar System exploration venture.

In either case, the pause marks a period of assessment and synthesis of the results obtained so far. Such a synthesis is well underway and has already led to a new understanding of the factors which govern the formation of planets, and the present states and evolutionary histories of their

interiors, surfaces and atmospheres. A clearer picture of the uniqueness of planet Earth is emerging. In this context, *Weather and Climate on Planets* is timely.

An introductory chapter begins with a descriptive overview of the setting and properties of the planets and of theories of the origin and evolution of their atmospheres. But the major part of the book, the remaining three chapters, consists of separate self-contained reviews of the atmospheres of Venus, Mars and Jupiter. Aside from Earth, these planets have the most intensively explored and best understood atmospheres. Moreover, they are representative of the broad range of planetary atmospheres: the first two are terrestrial planets with very thick and very thin atmospheres respectively, predominantly composed of CO₂, the last is a giant planet with an atmosphere of nearly solar composition.

In the book each atmosphere is treated comprehensively, with detailed discussions of composition, distributions of temperature and density, cloud processes, circulation and, to a more limited extent, upper atmosphere aeronomical processes. Appropriately, the bulk of the text is devoted to the findings of the most important planetary spacecraft missions of the past decade: Venera 8–12, Pioneer Venus, Mariner 9, Viking 1 and 2, Pioneer 10 and 11, and Voyager 1 and 2.

Unfortunately, the book does not live up to its promise, largely because the authors do not discriminate clearly between superseded models or interpretations and later, more definitive, measurements. The result is a monograph that is long, unnecessarily repetitive and too often confusing. The treatment of argon on Mars can serve to illustrate this point. The Martian argon concentration is given in composition tables in at least four different places. In three of these, it is given variously in the range 15 to 50 per cent. A fourth table does present the definitive Viking measurement (1.6 per cent), and the careful reader could conclude that this is the correct value. However, a few pages later, confusion is re-introduced in the discussion of a pre-Viking model of the Martian volatile inventory, based on the erroneous argon concentration of 28 per cent.

Overall, the book appears to have been constructed too hastily by the publisher as well as the authors. The number of textual errors, improperly printed or inadequately annotated figures and tables, and erroneous references is more than just annoying. Although it provides a comprehensive literature survey which will be helpful for specialists, and I find the rather complete survey of the Russian language literature to be particularly welcome, the non-specialist is likely to find this book heavy going. □

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