

The Ecological Context has an abundance of charts packed with information. Their contents are perhaps justified within the catholicity of "planetary housekeeping". In addition to prosaic down-to-earth charts of biogeochemical cycles, we are given insights into such things as "Man's increasing vertical mobility", and "Man's increase of knowledge: Time, space, energy, and electromagnetic spectrum". There is a chart on "The progress of computer technique" which depicts the number of computers installed in various countries up to 1965. It is fortunate that the sources of the charts are given because the book is without an index and the reader who turns to it for information will have to do his own searching.

Like so many "significant documents" on environmental subjects, the book disturbs me. Ecology as a discipline has a structure but many of its basic concepts lack the solid, factual and predictive content that are the necessary foundations for its progress as a science and as ground rules for the management of renewable resources. Too much should not be written into, or out of, the still far from complete structure of ecology. Perhaps I take too pessimistic a view of the dangers which beset ecology now that it has entered the public domain. If I do, it is because I believe that whilst it has many lessons for those concerned with environmental management, those who dispense it should not disguise its limitations.

Man's Impact on the Global Environment makes it very clear that we cannot rely on many of the data now available to us. In commenting on them they say: "In the process of making judgements we found that critically needed data were fragmentary, contradictory, and in some cases completely unavailable. This was true for all types of data—scientific, technical, economic, industrial and social." Plans are now being drawn up to ensure that some time in the future we shall have more reliable data. Several international organizations and committees are now giving consideration to the establishment of a global network for monitoring the environment. ICSU through its Special Committee on Problems of the Environment (SCOPE) has produced a monitoring programme which incorporates many of the proposals made by SCEP. The International Biological Programme (IBP) is approaching its final stages and its studies on biological production, although patchy in their coverage of the principal biomes of the world, form a sound basis for the development of certain aspects of monitoring and for the extension of research on the biosphere. The UNESCO programme *Man and the Biosphere* (MAB) which becomes operational in 1972 will, it is hoped, draw heavily on the achievements of

IBP. As yet, the mechanisms for the integration of these and other international efforts are inadequate. Furthermore they neglect important aspects of the man-environment system. The management of the world's resources, the development of solutions to the different population problems, the development of the physical, mental and social needs of the animal *Homo sapiens*, require more than a knowledge of the environment and the effects of pollutants; they demand major changes in the way of life of the species.

Have we the time or the sense of purpose to reach reasonable compromises on a global scale? The UN 1972 Conference on the Human Environment may represent mankind's last chance to provide a fully integrated approach towards the prevention of catastrophe. I hope that those who represent governments at Stockholm will do more than glance at *Man and the Ecosphere* and will certainly read the first thirty-six pages of *Man's Impact on the Global Environment*.

J. B. CRAGG

Amateur Astronomy

Guide to the Planets. By Patrick Moore. Pp. 224+16 plates. (Lutterworth: London, October 1971.) £2.50.

THIS is a new, considerably revised version of a book the last edition of which appeared nearly ten years ago. Much astronomical progress has been made during the interim, and Mr Moore presents this new material, as well as the old, in a very readable way. The result is a book well suited to the amateur astronomer, or keen sixth-former, who seems to be in the author's mind. The considerable number of clearly drawn diagrams are a valuable adjunct to the text, and are of particular value in providing a feel for the relative sizes of objects and of orbits in the solar system.

Mr Moore tends to be rather dogmatic in some of his statements. "Telstar," he informs us, "is still in orbit, though its power has long since failed . . . we could never find it again even if there were any point in looking for it." But there is much to be said for reducing qualifying remarks in an introductory text to the minimum compatible with reasonable accuracy. In fact, very little of the information can be faulted, and the few errors that do occur are mainly trivial. One exception is the assertion that ". . . the inner [Van Allen belt] is made up chiefly of protons, while the outer consists mainly of electrons". A sixth-former who had learnt something of electrostatic forces between similarly charged particles might pardonably feel confused. Some explanation should there-

fore have been given in terms of the particle energies.

The book's chief strength is at the same time its main limitation—namely, its emphasis on amateur interest in the planets. The strength of this approach is evident: Mr Moore can surely claim to have authoritative knowledge of the interests of amateur astronomers. (I suspect, however, that there is an element of mythology in his constant emphasis on the historical importance of amateur studies of the planets during the present century.) But there are many fascinating problems concerning the planets that are not directly related to an amateur astronomer's observations, yet which would certainly enrich his interests. We might, for example, have been told something of commensurabilities between planetary, and satellite, orbits. This is a current area of debate amongst professional astronomers. Again, the most disappointing part of the book is that devoted to the origin of the planets. The great amount of recent, relevant research in this area is largely ignored.

This sometimes excessive emphasis on the amateur approach also appears in the short reading list at the end of the book, for it consists almost entirely of works written by amateurs. Various recent publications, especially some from the United States, have been written by professionals, yet would be of considerable potential value to amateurs. Nevertheless, this is a generally excellent text at the introductory level.

A. J. MEADOWS

Magnetism

Structure and Properties of Magnetic Materials. By D. J. Craik. (Applied Physics Series.) Pp. 244. (Pion: London, 1971.) n.p.

THIS book is the first in a series of textbooks on applied physics, the editor of the series being Professor H. J. Goldsmid. In it the author sets out to provide the groundwork required for an understanding of the behaviour and properties of modern magnetic materials. It begins with a discussion of magnetostatics at the level required for an understanding of magnetic domains and of permanent magnet materials. This is followed by a section somewhat curiously entitled "Magnetic dipoles in applied fields". It deals with the classical (Langevin) theory of paramagnetism, anisotropy fields and magnetic measurements. In the next chapter "Atomic structure" the author makes a valiant though only partially successful attempt to discuss the electronic structure of multi-electron atoms in terms of quantum mechanics and then proceeds to a basically qualitative but rather more successful discussion of