

measurements of plant growth, taken both in the laboratory and the field, and it is obvious that no single volume could attempt to cover this material in any detail. This book does, however, set the scene for the more detailed reports, which have either preceded it or may now be anticipated. It is therefore aimed at the general biologist and presents a glimpse of the full spectrum of IBP work, but at the same time the fact that many papers contain previously unpublished results will make it appeal to research workers in the immediate field of productivity.

The first two parts of the book (out of a total of seven) are concerned with data accumulated on the primary production of terrestrial and aquatic ecosystems. Some of the individual papers within these parts are very broad, for example about 35 pages each on the productivity of forests, grazing lands and tundra, respectively. Such summaries must have been very difficult to write but more effort to avoid a parochial approach could have been made, especially by Kira, whose paper on forests is illustrated almost entirely by examples from Japan. The paper on grazing lands by Caldwell pays particular attention to the relative importance of the C4 pathway of photosynthesis in these habitats and provides a useful synthesis of this subject.

Although about a third of the earth's surface is technically arid (potential evapotranspiration exceeding precipitation), this is not reflected in the volume of literature relating to these situations. The inclusion of a chapter on primary production in deserts is therefore particularly welcome, especially the section dealing with the contribution of lichens to the energy input of such ecosystems.

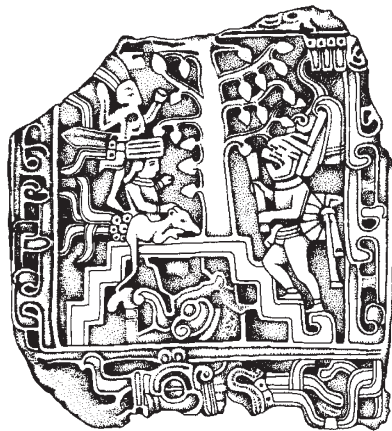
If the surface area of the earth occupied by an ecosystem is the grounds for justifying its inclusion in this volume, then the agricultural ecosystems of the world certainly deserve a place. A chapter by Loomis and Gerakis is given over to this subject. They concentrate on crop adaptations and show how the photosynthetic characteristics for which selection has been made in domesticated plants varies with latitude. C4 species being little used in latitudes higher than 40°.

Aquatic ecosystems, both freshwater and marine, are discussed at some length and the contribution to productivity by macrophytes and microphytes is considered. The figure derived for the global production of marine microphytes in these chapters (31×10^9 t carbon yr⁻¹) is in close agreement with previously published figures.

The second half of the book turns from the study of whole ecosystems to more physiological aspects of the behaviour of light in plant canopies, photosynthetic studies of individual

species and the influence of environmental stresses upon photosynthesis and the use which is made of photosynthates.

Perhaps the most important contribution which this book makes is that it brings together reviews, most of which are extensive and well written, on a wide range of subjects from whole ecosystems, through whole plant physiology to subcellular biochemical ones. In doing this it may encourage workers in one field to become more aware of developments in related areas and to apply this knowledge to their own problems. Since the communication of ideas seems to be one of the greatest



Cocoa tree shown in bas relief on a Mayan stone tablet (1.3 × 1.3 cm) of the Late Classic Period (AD 600-900, from El Tajin, Veracruz, now at Instituto Nacional de Antropología e Historia Jalapa, Veracruz, Mexico. Taken from Diseases of Cocoa by C. A. Thorold. Pp. viii + 423. (Clarendon: Oxford, 1975.) £11.00.

stumbling blocks to the general advancement of science, this book must be considered a valuable contribution. Indeed, if IBP had achieved no more than the bringing together of ecologists, physiologists and biochemists, then it would still have been worthwhile.

The price of this book precludes a very wide market, outside the better-endowed libraries, and this is unfortunate because many of the contributions would have been very useful to research workers and students alike.

P. D. Moore

Small Mammals: Their Productivity and Population Dynamics. (International Biological Programme 5.) Edited by F. B. Golley, K. Petruszewicz and L. Ryskowski. Pp. xxv + 451. (Cambridge University: Cambridge, London, New York and Melbourne, September 1975.) £12.

NINE years of collaboration by small mammal biologists from twenty-seven countries led to this volume, number 5

in the IBP series. No-one, least of all the editors and contributors, would claim that all there is to be known about small mammals has been fully researched and documented but this does not mean that the present work has had too short a gestation period. Its birth is timely, its development has been satisfactory and its information content is something on which to reflect. For the first time we are provided, within the covers of one book, with an overview of developments in the global study of small mammals. Theory, practice, results and hypothesis, as related to small mammal productivity and population dynamics, all have their place.

The contributors seem to have experienced difficulty in defining the upper size limits of a small mammal but 5 to 6 kg is among the highest figures quoted; bobcats (*Lynx rufus*) can therefore be considered as representing a large 'small mammal' (chapter 8). Among the small mammals, however, most information derives from rodents and it is not surprising that much of the text is devoted to this group of animals. Needless to say gaps in our knowledge of small mammals are referred to on both a taxonomic (For example, bats) and geographical (For example, the tropics) scale.

The ecological implications of being a small mammal are highlighted in the introduction and the importance of these animals as consumers within natural and man-modified ecosystems is clearly indicated. This theme is returned to later, particularly in chapters 10-13, in which the role of small mammals in arctic, temperate, tropical, and eurasian desert systems is reviewed. It is also referred to in chapter 14, in which control measures for small mammals which are either agricultural pests or disease vectors are stressed.

To study the status and role of a small mammal population within any ecosystem it is not only necessary to have a clear idea of the aims of the study but also some idea of the methods to be used in achieving the objective. The second part of the introduction provides a theoretical treatment of productivity investigations and as such provides a useful background to chapters 2-9. Early chapters cover aspects such as population density estimation and methods of age determination. Demographic patterns are reviewed on a worldwide scale and the role of dispersal in population regulation is discussed. Chapter 6 provides evidence of the value of morpho-physiological indices as predictors of the present and future state of population processes, particularly those concerned with population fluctuations. The three fol-