

author states that the term parasitoid will not be used in the book, but he proceeds to do so on page 111! The author is obviously very much more at home when writing on parasitic Hymenoptera (chapter 8) and presents an excellent review of their structure, function and ecology extending over seventy-three pages (compared with ninety-four pages for all insects with parasitic adults). Thirteen families of protelean parasitic Diptera are likewise covered in some detail and these chapters are eminently suitable for post-graduate reading. The characteristics of biological control of insect pests form the substance of chapter 10. Fly larvae which parasitize vertebrates (chapter 14) might appropriately have been included in the first section.

This book fulfils a real need for a variety of students, it is well composed, is illustrated with clear line drawings of the highest quality, and the whole is completed by a substantial list of relevant references.

DON. R. ARTHUR

Life on Earth

The Nature of Life: Earth, Plants, Animals, Man and Their Effect on Each Other. By Lorus Milne and Margery Milne. Pp. 320. (Cassell: London, August 1971.) £5.50.

Lorus and Margery Milne have produced a beautifully illustrated book about the life on this planet. It is not a technical book, but the text is informative and full of interesting miscellaneous facts, for example, that the shell of the foraminiferan *Globorotalia* coils clockwise when the climate is warm and anticlockwise when it is colder and that this has enabled geologists to obtain a measure of the temperature of the sea at different times.

The book covers all the continents of the world as well as the oceans, describing the geology, climate and forms of life to be found there. It would have been greatly improved by the use of good maps of the places being described. As it is, the almost complete absence of any maps means that one is constantly coming up against the names of faraway places, the locations of which are only dimly remembered from school geography.

The final chapter is about the damage which the human species has done and is continuing to do to its environment. Although the message is now a commonplace one, it is difficult not to be impressed all over again by the fact that one species of mammal and one species of bird become extinct, on the average, every eight months, often as the direct result of human activity.

The Milnes should succeed in inducing in the reader the desire to visit and

explore as they have done and to see for himself the beautiful and varied faunas they describe.

MARIAN DAWKINS

A Young Science

An Introduction to Psychopharmacology. By Richard H. Rech and Kenneth E. Moore. Pp. xii+353. (Raven: New York, 1971. Distributed in the Eastern Hemisphere by North Holland, Amsterdam.) £4.65.

Psychopharmacology and the Individual Patient. Edited by J. R. Wittenborn, Solomon Goldberg and Phillip R. A. May. Pp. 256. (Raven: New York, May 1971. Distributed in the Eastern Hemisphere by Pitman Medical and Scientific, London.) £5.50.

PSYCHOPHARMACOLOGY is somewhat isolated from disciplines such as neuropharmacology, psychophysiology and neurochemistry and is not yet integrated with its most relevant basic sciences, pharmacology and experimental psychology. Only psychiatry has developed a common area with psychopharmacology, that of drug therapy in mental illness. The reasons for this state of affairs which continues nearly twenty years after the discovery of the first of the modern psychotropic drugs, chlorpromazine, lie in the recent historical development of the subject. Most, if not all, of the important new psychotropic drugs were discovered by serendipitous accident. Thus, chlorpromazine and imipramine were first noted to have potentially useful actions in patients. Psychiatrists using these drugs on the wards and in their out-patient clinics quickly realized that real therapeutic advances were being made with essentially new drug types. Pharmacologists and psychologists then sought actions of these drugs both in animals and in normal humans which would provide some rationale for their therapeutic effects.

In spite of all the research effort of the past two decades, the mode of action of most psychotropic drugs remains obscure or, more strictly speaking, the clinical relevance of the pharmacological actions which have been found remains unproven. For example, for some time after the introduction of the tricyclic anti-depressants, their mode of action was unexplained. Eventually it was found that they inhibited the reuptake of noradrenaline from the synaptic cleft. The other class of anti-depressants, the monoamine oxidase inhibitors, had from the start been assumed to owe their clinical action to that implied in their generic name. However, it now seems possible that they, too, inhibit noradrenaline uptake and that their enzyme-inhibiting properties may be less relevant.

For these and many other reasons, psychopharmacology has remained a loose federation of disciplines rather than a coherent subject, and at the clinical level it is probably the most empirical branch of therapeutics. These two multi-author American books represent two different approaches to the problem of maturing psychopharmacology from the empirical to the rational. *An Introduction to Psychopharmacology* aims at providing for the neophyte background reading in cognate subjects. Two rather breathless chapters attempt the impossible task of outlining pharmacology, psychology, neuroanatomy, and neurophysiology in eighty pages: there are many basic texts more suitable for this purpose. The remaining chapters are much more successful, covering biochemical aspects, the limbic system, electrophysiology, conditioning and animal testing of new drugs, with two clinical chapters on tranquilizers and anti-depressants. Except for the chapter on anti-depressants which is in the "in my experience" style, the scientific standard is high and the material presented is critically appraised. Useful key references and reviews are included. The chapter by K. E. Moore on "Biochemical correlates of behavioral effects" is very balanced and avoids the overstated claims of those who believe that biochemical mechanisms in adult mental illnesses are already apparent.

Psychopharmacology and the Individual Patient is disappointing and will be of interest to very few people. It comprises the proceedings of a meeting of the Prediction Study Group of the American College of Neuropsychopharmacology held in December 1968. The object of the research projects described in this book is to predict which patient will respond to which drug. A typical study follows this recipe: take about 500 patients, measure them on about seventy-five variables, clinical and demographic, treat them with one or more drugs and assess the outcome. Use complicated statistics to see which variables influence the outcome. The results are not only indigestible but only about twenty per cent of the outcome variance can be predicted, rendering the exercise unproductive. One reason for this failure may lie in the neglect by the investigators of pharmacological factors. Only in the excellent introductory chapter by S. Gershon is attention drawn to the marked variation between patients in plasma levels of many psychotropic drugs. The reluctance of many investigators to use pharmacological techniques in clinical studies will perpetuate the isolation of psychopharmacology which will be unfortunate as such techniques promise to rationalize our clinical use of psychotropic drugs.

MALCOLM LADER