of transmitters; whether the endometrial prostaglandins stimulate the normal catamenial contractions of the human myometrium, not only those in dysmenorrhoea; whether the intestinal prostaglandins are involved in the normal control of gastro-intestinal motility, or the irins (iris prostaglandins) in the responses of the eye to injury. None of these possibilities is mentioned.

The authors are obviously well aware of this general problem, and in their preface they express the hope, which I share, that this work will stimulate further research, with the aim of establishing the functional role of the prostaglandins (or their many roles ?). The clarity with which they have set out the facts may hide from the newcomer some of the inherent dangers in too facile an experimental approach. For example, to identify a prostaglandin in a tissue extract with reasonable certainty requires either chemical techniques that are available in few biological laboratories, or a tedious combination of multiple chromatographic and parallel bioassay methods. The recent finding by Nugteren, Vonkeman and van Dorp that prostaglandins may be formed from unsaturated fatty acids *in vitro* without the mediation of enzymes indicates the further danger that prostaglandins may arise as artefacts.

With the slight reservations mentioned (which in any case are largely matters of personal preference), this monograph may be recommended as almost an ideal introduction to the subject. V. R. PICKLES

NON-PROTEIN NITROGEN

Urea as a Protein Supplement

Edited by Michael H. Briggs. Pp. xi+466. (Oxford, London and New York: Pergamon Press, 1967.) 140*s*.; $18.

IT is pointed out in the preface of this book that there is competition between animals and man for the world's supply of plant protein, and it is inevitable that there is an increasing interest in alternative sources of nitrogen which can be used as animal foodstuffs. One of these sources is non-protein nitrogen, a subject which has received much attention by research workers and on which there is now a voluminous literature. An attempt has been made in this book to review and summarize the information which is available on the use of urea in animal nutrition, but as could be expected the discussion often strays into other forms of non-protein nitrogen. The major part of the book is concerned with ruminant physiology and with urea in the diet of the ruminant, but it also contains chapters on such topics as the world protein shortage and on methods of manufacturing urea. Although of some interest, manufacturing methods seem to be irrelevant to the subject under discussion and it is questionable whether the large section on these methods is justified.

The book is in the form of twenty-four contributions, each written by different authors, and it is perhaps inevitable that it should lack coherence. There is a large degree of repetition of information and even where there is a chapter on a particular aspect of the subject it is also covered to varying degrees in several other chapters. A much more readable and useful volume would have been produced if there had been better co-ordination of material contributed by the various authors and if they had been fewer in number. The order in which the subject matter has been presented could also be criticized and a minor irritant is the lack of standardization in the method of citing literature references and in spelling.

Because of its comprehensive nature this is perhaps not a book which will be read from cover to cover, but it will undoubtedly be useful for reference purposes as a review of extensive information on a diverse and complex subject.

J. C. MURDOCH

REPTILES AGAIN

Reptiles

By Angus d'A. Bellairs. Second edition. (Hutchinson University Library—Biological Sciences, 121.) Pp. 200. (London: Hutchinson and Co. (Publishers), Ltd., 1968.) 11*s*. 6*d*. net.

THIS little book, now in its second edition, still makes available a modern general account of reptiles at a remarkably modest price.

After ten years, however, more extensive revision was surely called for. For example, mention of the sensory pits, hair and tubercles on the scales of reptiles is omitted from both editions; Watson's study of *Millerosaurus* and Parrington's criticism of the division of amniotes into Sauropsida and Theropsida are not mentioned. Carr's work on green turtles in the Caribbean is cited, but Hendrickson's equally interesting work in Sarawak is not. No doubt, however, I would have overlooked some of the considerable recent advances that are included.

The illustrations of the first edition were noteworthy for the amount of information that they carried to the square inch. However, now that the work has passed through a second impression and reached a second edition I would have thought that the publishers owed it to Dr Bellairs to provide a little more space.

The text is carefully pitched so as to interest the general reader on the one hand and to lead the specialist to the technical literature on the other. GARTH UNDERWOOD

LIGHT AND RHYTHM

Insect Photoperiodism

By Stanley D. Beck. Pp. viii+288. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1968.) 116*s*.

THIS book is an account of the biology and physiology of insect photoperiodism at its widest and, as such, is a useful complement to the more ecological approach to the subject in A. S. Danilevskii's *Photoperiodism and Seasonal Development of Insects* (1961). The book opens with a description of photoperiod as a geophysical phenomenon which defines night and day, as well as heralding the seasonal changes in climate as a "token stimulus". This is followed by chapters on circadian rhythms of behaviour and physiological functions, and an account of the properties of such rhythms. The author discusses some of the problems involved in photoperiodism, such as: the reception of the light; the acceptance of "light-on" and "light-off" and the measurement of the time interval between them; the neuro-endocrine systems which are presumably "geared" to the biological clock; and the programming of development which takes place in the insect between the often widely separated sensitive period and the resulting photoperiodic effect. The sections on seasonal photoperiodism are accompanied by very useful synopses in table form of those insects showing embryonic, larval, pupal or imaginal diapause.

In the section on "Diapause and Time Relationships" the author reviews the two main hypotheses (hour-glass and circadian) to account for "time measurement" in photoperiodism. He rightly points out that the simple rhythmic hypothesis put forward by Bünning in 1935 is inadequate to account for many of the data available from the study of photoperiodic control of diapause in insects. However, Pittendrigh and Minis's "coincidence model", which attempts to equate them with the known properties of circadian rhythms, is barely mentioned. Not all the available data can be explained by this model, but it is the most plausible so far, especially for those species which show two "peaks" of diapause inhibition in response to "night interruption" experiments. It is evident that the author is looking for, and expects to