Meeting of lizards and ecologists

Mark Williamson

Lizard Ecology: Studies of a Model Organism.
Edited by Raymond B. Huey, Eric R. Pianka and Thomas W. Schoener.
Harvard University Press: 1983. Pp.501. $35, £29.75.

FRASER Darling used to advise that the way to start writing is to put a semi-colon in the middle of a blank page. A similar technique has been used in this survey. Most of the chapters started as papers given at a symposium in December 1980, and these have been topped and tailed with introductions to the three main sections and to the book as a whole, and a final overview. The intention is to cover not all but several aspects of lizard ecology, evaluating progress in the past fifteen years.

Much of modern ecological theory stems from the study of birds, particularly from the work of David Lack and Robert MacArthur. The title, and some of the comments, suggests that lizards could be equivalent to birds as model organisms for understanding ecology. They are certainly different, less diverse but far from uniform. The major difference is that lizards are low-energy animals, with the advantages of being easy to observe and capture, hardy in captivity, and many species, particularly in the American west, are abundant. But although the low-energy theme recurs through the papers it is a muted refrain; most authors expound their subject for its own sake, and only by inference compare their subject with the high-energy birds and mammals.

The three sections cover the main aspects of modern ecology. The first quarter of the book is on physiological ecology, an overview and four weakly co-ordinated chapters in different styles. Of the three chapters concerned with energy, one is a long and experimentally sophisticated field study of one species (*Uta stansburiana*), one a short survey of locomotion and metabolism in the laboratory, the third a not very successful attempt to understand distributional limits from the effect of temperature on activity. The other chapter in this section is on the physiological consequences of lizard malaria; this disease causes roughly a 20% decrease in physiological performance, but it may not affect population density. The rest of the book is similar in style, a mixture of detailed studies, broad surveys and loose ends.

The second section, another quarter of the book, is on behavioural ecology and is much concerned with the slippery topic of home range, in *Uta* again, and in relation to sex dimorphism. A short chapter by Regal on adaptive zone and behaviour does address the question of how lizards differ from birds and mammals, the physiological and anatomical limitations of ecological performance, and the diversity of life styles in lizards. Other chapters are less successful.

That leaves half the book for population and community ecology, which is certainly not unreasonable in relation to the excitement of work in those fields in the past couple of decades. The section starts with a sound and helpful overview by Thomas Schoener, and ends with a personal, and more amusing, conclusion by the ornithologist Peter Grant. In between, half the space is taken by *Anolis* in the West Indies. On the Greater Antilles this genus has had a most interesting adaptive radiation, and Ernest Williams extends his previous study on Puerto Rico to encompass Hispaniola and Jamaica, around fifty species in all. In contrast, on the Lesser Antilles there are never more than two species on any one island, and Roughgarden, Heckel and Fuentes consider whether there has been co-evolution of competing populations. Their empirical evidence is reasonably convincing, their mathematical modelling less so. But certainly studies on *Anolis* are important for all ecologists, evolutionists and biogeographers. Chapters by Dunham, by Huey and Pianka, and by Case are also concerned with the measurement of competition, and whether niche overlap is a quantifiable concept. This is an active and controversial field, and the papers here make a useful contribution.

Overall this volume is as patchy as most reports on symposia; the attempts at cohesion are rather flimsy. For instance, the references are grouped at the end, but arranged by chapter and not unified. Lizards have much to tell ecologists, but for the moment those outside the field will have to make their own assessment of the extent to which knowledge of lizard ecology bears on their interests. □

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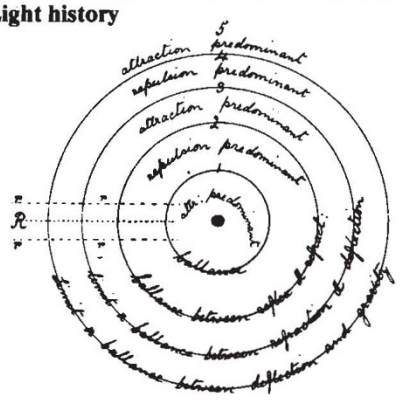
Light history



William Herschel's diagram of 1780, showing his conception of the force field surrounding a particle of matter. The illustration is taken from *Optics after Newton*, by Geoffrey Cantor, recently published by Manchester University Press. Price is £20.

More or less belief in reproduction

John Habgood

The Biology of Religion.
By V. Reynolds and R.E.S. Tanner.
Longman: 1983. Pp.332. £14.95, $30.

THOSE who enjoy out-of-the-way information will find plenty to entertain them in this fascinating book. Where else could one lay one's hand on comparative figures for obesity among Trappist and Benedictine monks? Or on the Tibetan custom of drinking tea out of a cauldron which has just held a corpse? Or find a discussion of the relationship between wet-nursing, infant mortality and Christian beliefs about sexuality in seventeenth-century France? There are paragraphs here on everything from Islamic divorce to religious massacres. The hugely varied religious beliefs and practices of mankind have been combed for anything which might be thought to have a bearing on the health, survival and reproductive potential of those who profess them. The result is a book which is a delight to read, or to browse in, and which assembles an uncommonly comprehensive range of scientific studies on religious practice across the world.

The bulk of the material is arranged in terms of the human life-cycle, and the religious rituals and moral attitudes associated with each stage in human development in different religious cultures are assessed in terms of their reproductive consequences. There is a somewhat shorter section which tackles specifically the relationship between religion and disease. The results are not always what the protagonists of different religions might wish to believe. There is an uncomfortable suggestion, for instance, that the Flagellants, whose response to the Black Death in the fourteenth century was to go around the countryside flogging themselves to demonstrate their penitence, were actually instrumental in spreading infection.

The layout of the book, with its wide margins and numerous line-drawings, might give the impression that it is designed more for the coffee table than as a serious scientific study. But although the authors hope that general readers will be interested, as surely they will, their main purpose is to expound and test a hypothesis about cultural evolution, using religion as a convenient cultural indicator. It is on this level, therefore, and not as an entertaining compendium, that the work must ultimately be judged.

In the authors' own words, the hypothesis is

that the more unpredictable the total environment is perceived to be, the more people will