tables of physical constants for sucrose and Ficoll to detailed discussions about the suitability of methods for separating ribosomes, viruses, nuclei, mitochondria, lysosomes, plasma membranes, or whole cells. Useful, too, are the "do's" and "don'ts", reminiscent of advice on cookery or travel (". . . US commercial sugar is to be avoided . . ."), in spite of an occasional lapse into the near-incomprehensible ("It should not be thought that *all* lysosomes come under the umbrella of the GERL system . . ."). The subject index is particularly welcome.

The second aim is less successful. The limitations imposed by the low production cost make it a somewhat bewildering manual. The grouping into seven sections is at best clumsy ("various elements including whole cells and non-hepatic subcellular organelles"), at worst incorrect ("particles not bounded by a membrane, especially ribosomes and viruses"). The success of any introductory book is, after all, largely a measure of the clarity of presentation.

The editor apologizes for providing glossy instead of vinyl covers, because of "adhesion problems". He should take heart from the fact that this symposium amply demonstrates the ingenuity of the contributors in solving a more fundamental problem—that of the adhesion between the components of living cells.

C. A. PASTERNAK

Reptile Metabolism

The Temperature and Water Relations of Reptiles. By J. L. Cloudsley-Thompson. Pp. vi+159. (Merrow: Watford, Hertfordshire, 1971.) £2.50.

I THINK it is fair to say that reptiles have a fascination for most people but especially to biologists, most of whom work in an academic system that is largely organized about man and other mammals. There is a strong imaginative interest in the lives of creatures that may eat enough food in four days to keep them for the next 6–9 months, live through all their lives without drinking, that may withstand loss of 40 per cent of their body water, but may die when exposed continuously to "optimal" temperatures. Added to this is a particular sympathy for animals that have to go and sit in the Sun after meals to get warm enough to digest them, while we only have to find the heat to cook them. Reptiles have to achieve by ingenuity what their more sophisticated mammalian and avian colleagues are naturally equipped to do with their internal temperature-controlling systems. They do, by their behaviour, achieve a considerable degree of control of body temperatures at levels that may be up to 30° C above air temperature, for example, by spending time at intervals acting as their own greenhouses and storing heat from the Sun. They may even sunbathe in water under a layer of ice.

The greater part (about three-quarters) of the book is about the temperature relations of reptiles; the rest about water relations, though the two are connected to some extent. It is a book that is packed with information, based on about 500 references, given, happily, with their titles (as well as 200 odd references not quoted in the text in a supplementary section). The references, in fact, have an interest of their own because more than 60 per cent of them come from the decade 1960–1969. If one counts them up by date from the year 1900 one finds the following numbers in successive decades starting with 1900–1909, 2, 5, 6, 30, 48, 86, 311. This is something like logarithmic growth with a doubling time of about eight years. Looking forward one can predict by the year 2000 about 1.5 papers a day on the topic of temperature and water relations of reptiles.

I find this an excellent thought and I hope the prediction may be correct; though I suppose I should add to this the hope that the papers will reflect an increase of interest and respect for reptiles, and not the results of research under contract to some future user.

R. D. HARKNESS

Crocodilians

The Last of the Ruling Reptiles: Alligators, Crocodiles and their Kin. By Wilfred T. Neill. Pp. xvii+486. (Columbia University Press: New York and London, 1971.) £7.50.

THE appearance of Wilfred T. Neill's important book, the first to deal comprehensively with crocodilian biology, will be most welcome to herpetologists, naturalists, and to all who share concern for an ancient and vanishing group of animals.

The work is divided into five parts, dealing respectively with legendary crocodiliana, biological classification and past history of the group, the natural history of the American alligator, and of the other living species. There is an admirable account of crocodilian fossil history, which has extended over more than 200 million years; of radiation in structure and habit, as seen in the diverse forms which existed in past ages — forms gigantic and minute, horned or almost toothless, maritime, freshwater and terrestrial; and of links established between the ancient and modern species. New light is thrown on the interesting question whether the thecodont ancestors of crocodiles were bipedal by a comparative study of bipedalism in modern lizards. The living crocodilians, of which there are some twenty-three species, receive separate and detailed treatment — taxonomic history, geographical range, habitat and ecological relationships, feeding habits and enemies, reproductive biology and social organization being among the topics reviewed.

Several chapters, and much space elsewhere in the book, are devoted to the exposure of fallacies and legends found in accounts by early natural-historians and uncritically accepted by later writers. Here the author's approach is unduly sceptical. In sifting truth from chaff he casts doubt upon many aspects of crocodilian behaviour that have been reliably observed and reported. For example, in his account of the Nile crocodile he regards as apocryphal the well-attested fact that the young call their parents at hatching time. He denies that the female excavates the nest, although observations of hundreds of nests on the Victoria Nile, Lake Rudolf and in Zululand have shown that successful hatching cannot take place without such assistance. The facts that the female subsequently conducts her brood to a refuge, and that the hatchlings remain gregarious and receive close and continued parental care, are dismissed as myths. In stating that there is scant evidence of territoriality in this species the author disregards work by Modha on Central Island, Lake Rudolf (though Modha's paper is included in the bibliography). Battles between adult crocodiles have been witnessed and filmed: but Neill says there is no convincing evidence that battles take place. Ignoring evidence to the contrary, he supports his statement by asserting that most mutilations found in crocodiles were probably received by hatchlings "which thereafter bore the signs of a narrow escape from some predator": in fact, the incidence of injuries in a wild population is known to increase progressively with age, and to be far higher among males than females.

Such faults, however, do not prevent this from being a fascinating book. The 152 text-figures add much to its value: they include useful maps showing ranges of the several species, and many original photographs—those of crocodilians mostly from Ross Allen's Reptile Institute, Florida. There is an extensive bibliography.

Neill doubts that any crocodilian species will persist in nature beyond the present century; and accordingly he suspects that his book will be the last to deal broadly with crocodilian biology. It is hoped that his prediction in both respects, will prove to be mistaken.

HUGH B. COTT