provoked. Because of the contributions made by immunologists—unfamiliar with, but nevertheless fascinated by parasitology—the discussions are particularly valuable to those more familiar with the parasite systems. It is only recently that we have come to appreciate the ability of parasites to evade immunity and it is not surprising that more questions were posed than answered at this symposium. It is suggested in the introduction, however, that within the next 20 years we shall have successful immunoprophylaxis of many parasite diseases. Immunologists searching for more practical areas of research would be well advised to read this book. **S. R. Smithers**

Proceedings of the 6th Berkeley Symposium on Mathematical Statistics and Probability. Vol. 4: *Biology and Health.* Edited by L. M. Le Cam, Lerzy Neyman, and Elizabeth L. Scott. Pp. xvi+353. (University of California Press: Berkeley, Los Angeles and London, 1972.) £11.50.

THE Proceedings of the Berkeley Symposia are too well-known to require much introduction. Volume IV (Biology and Health) of the Sixth Symposium contains 25 papers divided into five sections covering "Clinical Trials and Sequential Procedures", "Population studies and branching processes," "Biostatistics", "Cellular Phenomena and Carcinogenesis" and "Psychological Aspects of Observational Studies".

Although the papers on clinical trials and sequential methods were interesting, the important distinction between the two objectives of clinical trials (decision making and investigation of the natural history of diseases) was not made. The extent to which the decision orientated, sequential design can satisfy the second objective is arguable and it would have been valuable to have some discussion of that point. Another basic problem of the application of sequential designs in clinical trials is their dependence on a single response variable both for the stopping rule and the final decision. In many trials situations, however, particularly with chronic diseases, there is no single response variable of major interest. Instead, a battery of responses, of more or less equal status, are noted. To use a sequential design in this situation implies that one response variable must be chosen subjectively as being that on which the sequential procedure depends. Some discussion of these and other difficulties would have given a better balance to this section.

Although most of the papers give interesting mathematical treatment to realistic biological problems, the relevance of some of the papers to *Biology and Health* is not obvious, a pity in a volume with this title. **J. A. Anderson**

. . . growing old

Intrinsic Mutagenesis. A Genetic Approach to Ageing. By Sir Macfarlane Burnet. Pp. ix + 244. (MTP Medical and Technical Publishing: Lancaster, 1974.) £6.75.

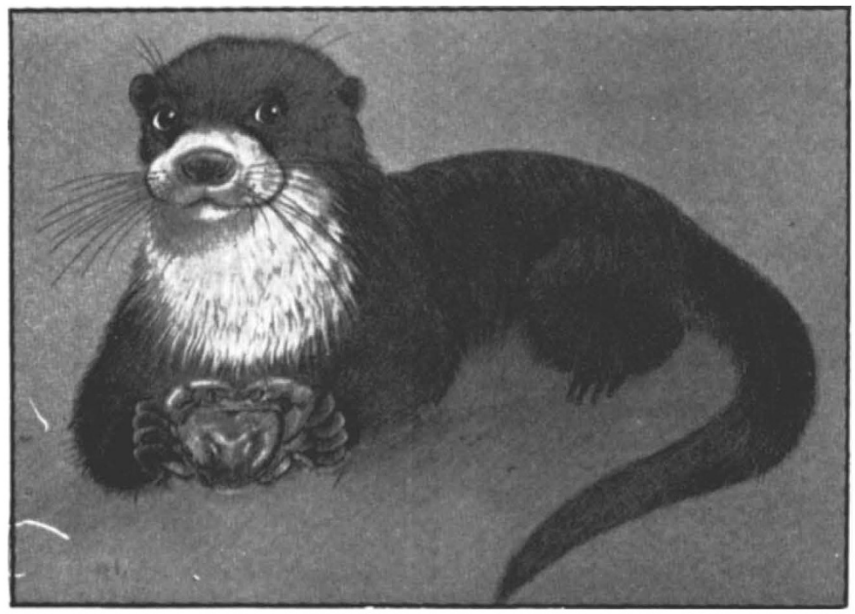
OVER the years since gerontology became a recognisable discipline, there seem to have been almost as many theories of ageing as there have been workers in the field. This top heavy development, and the relative dirth of contributions from the more renowned workers in those research fields which have a bearing on the ageing process, may well have been responsible for the very tardy award of any accolade of respectability to gerontology. Recently, however, writers such as Sir MacFarlane Burnet have entered the field and are doing much to elevate age research to its proper place among the biological sciences. This book cannot but continue this highly desirable process.

There are two broad theories of ageing, both of which have been under continuous discussion over the past decade. On the one hand are the theories that ascribe programmed origins to the ageing process; on the other hand, the theories that ascribe stochastic or random origins to that process. Sir MacFarlane considers both theories, and develops a new concept in which parts of both have a role to play. His present theory is based on the belief that a certain degree of mutation is required to provide the optimal introduction of the new information necessary for a species to survive in a continuously changing environment. At the same time such mutation defines the typical lifespan of the somatic cells and the organism as a whole.

In many respects this monograph provides the biological counterpart to Burch's more mathematical treatment of the same problem (*An Inquiry Concerning Growth, Disease and Ageing;* Oliver and Boyd, Edinburgh, 1968), but Sir MacFarlane has been able to draw on the mass of material which has been published since 1968. Of the references quoted, 60% are drawn from works published during the last six years. And Sir MacFarlane's approach is an improvement on that of Burch, in that it discusses the involvement of environmental factors.

Drawing facts from studies of both microbiological and mammalian cell lines, Sir MacFarlane suggests that errors introduced into DNA by faulty expression of those enzyme systems which control the repair of the nucleic acid chains may determine not only the life span of the organism, but also the incidence of age-mediated lesions. These, because of failures in the normal surveillance mechanisms of the body—age related reductions in T and B cell populations—may induce a degree of error accumulation similar in many respects to that which, according to Orgel, results from faulty protein synthesis.

Once again Sir MacFarlane has presented us with a monograph which is both thought provoking and on which future experimental work may be based. All-in-all this book is well worth reading, and it will be quoted often as the study of the ageing process develops. **David A. Hall**



Aonyx capensis, the cape clawless otter. From *The Carnivores of West Africa.* By D. R. Rosevear. Pp. vii+548+11 plates. (British Museum– Natural History: London, 1974.) £18.50.