

contemporary theory of aging. Unfortunately, despite the author's best attempts to clarify his theory with respect to other theories, it still appears (to me) to be a vague concept. Fresh ideas in gerontology are certainly welcome. However, if they are to be widely accepted, they must be clearly explained and readily understood by other gerontologists who are not necessarily specialists in the field in question. Unfortunately, the evolutionary theory has not yet been clearly explained to those of us who are not evolutionary biologists. Thus, despite this book's being the most comprehensive review ever published on the subject, I still agree with Hart and Turturro's statement (1985) that 'the interesting but as yet unconvincing work of Rose . . . on evolutionary theories of aging has, unfortunately, not yet been elaborated'. Nevertheless, the book is a provocative one and should be read by biologists and gerontologists interested in theories of aging. It is reasonably priced — considering the specialized nature of the book — and this should foster its wider dissemination.

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The Biology of Life Span: A Quantitative Approach

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The authors have published papers worthy of note in the international literature for more than a decade. The antecedent of their book is a Russian work, similarly entitled, with a somewhat reduced content. The main virtue of the book is an originally interdisciplinary viewpoint. To discuss the theme it is indeed indispensable

to be knowledgeable about a lot of disciplines with very different centres of interest. Such disciplines are: human and experimental aging, human gerontology, demography, population biology and ecology, socioeconomical factors on the human side, on the other side genetical questions, morbidity and mortality statistics, temporal process in the cells, biochemistry, cytology and chapters of reliability theory. One could continue their list; moreover, the relations between the members of the list evoke new questions, since the issue is life itself. At the same time, when one poses the question of the theoretical completeness of the book, we must mention that it does not treat particulars on botanical life span studies. The wide-ranging knowledge of the authors is reflected also in mastering the cross-references between the different topics, but at some places we feel the texture of the references is too crowded.

The first and introductory chapter treats just the disciplinarity of the issue of life span. Chapter 2 is devoted to the interspecies variability of lifetime. The authors express the view that both the genetical variability of the studied cohort and the stochastic character of the environmental factors play a role. Parallel with the classical treatment of death experience there is a critical review of the problems of the Gompertz-Makeham law. The authors' knowledge of the literature is brilliant: they mention, from the extreme value theory of Gumbel to the Skurnick-Kemeny model, almost all essential moments of the questions. Their own results are also presented. At the end of the chapter a number of unsolved problems are reviewed. The solution of these can be made in a speculative way and by using easily accessible statistics. Thus the analysis of these problems can be recommended to the attention of home researchers, taking into account the recent circumstances of the country. The Gompertz-Makeham and the Weibull function occur also with emphasis in the chapter devoted to the human life span. Comparing both functions, the authors stress the disadvantages of the (generalised) Weibull functions. They often refer to their own results at this point; for example, the discovery of the fact that the secular decrease of middle aged people is composed of an intensively decreasing socio-economical component and a stable, biological (endogen) component. A long list of data on maximal human life span estimations is given. The 'date' written in Genesis is also presented, giving a solid irony to the discussion of the gloomy theme. The authors outline their own notable results at the chapter's end. According to this, an exponential relation exists between the two parameters of the Gompertz-Makeham function. The parameters of this relationship are species-specific. From this follows the phenomenon that the straight lines characterising the age dependence of the logarithm of death intensity intersect each other at a single point (see the illustration on the cover).

The next chapter discusses mechanisms determining life span. It is a noteworthy fact that the exogen and endogen factors, which have a decreasing effect on the expectable life span, are already active in the gametic 'age'. It is important to dispel the misbelief of the universally longer life span of females. A number of new observations show the mythical nature of such a primacy of the females. Without doubt, the subchapter on life span prolongation possibilities (basically: hypothermia and caloric restriction) is reduced, although it is well-rounded and balanced. The last chapter discusses mathematical models of life span. The authors present here a very good

collection of literature to illustrate enormous mathematical mistakes. Further on, they treat thoroughly the literature of models based on extreme value theory. This is one of the most interesting parts of the book: reliability theory models are discussed here to interpret the aging phenomenon. It is to be hoped that the knowledge of these models will spread very soon in the common scientific knowledge of our country.

To sum up, the book is substantial, interesting and brings fresh air. We can confidently commend its study to all scientists in the field of all mentioned disciplines.

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