

It starts with an account of the physics of the atmosphere, and of the physiologically relevant aspects of aerodynamics. All aspects of the effects of reduced barometric pressure are then considered, including decompression sickness and the effects of the rapid decompression that follows failure of a pressure cabin at high altitude. The effects of hypoxia, thermal stress, acceleration in various axes, and of noise and vibration, and the means that may be adopted to counteract these stresses occupy a major portion of the book. Visual auditory and spatial perception are accorded an important place. The concluding sections on factors affecting aircrew performance, and on the causation, results and prevention of accidents contain lessons that could be, and should be, immediately applied more generally, and in particular in relation to the quantitatively much more important case of road accidents. It is remarkable that only very recently has there been any widespread interest in applying to road vehicle design and passenger protection principles that have been well understood for many years by aviation physiologists.

The editor and authors are to be warmly congratulated. The production is good, but the weight (3.2 kg) restricts in some measure the circumstances in which the book can comfortably be read. A. D. M. GREENFIELD

RUSSIAN TREMATODOLOGY

Essentials of Trematodology

By K. I. Skrjabin. (Trematodes of Animals and Man, Vol. 18.) Translated from the Russian. Pp. 532. (Jerusalem: Israel Program for Scientific Translations; London: Oldbourne Press, 1965.) 135s.

THIS book is a translation of Volume 18 of a Russian series about which I have made some comments in a previous review¹.

It provides a good impression of the tremendous effort which Academician K. I. Skrjabin and his colleagues have made to record what is known about the structure of the digenetic trematodes and to use this information to formulate a system of classification. Descriptions of species are transcribed in great detail from original papers and books; accounts from various authorities sometimes given, always separately. Such a huge compilation may represent a sense of fairness as well as a craving for completeness down to the last detail, but the reader must often use his own judgment and sometimes his discretion because, sad to say, many examples of bad workmanship have been accepted at their face value. The text is overburdened with unsifted information and loaded with unusual terms such as "pedicellate suckers", "large scanty eggs", "cuticle unspinose", "ovate unlobed ovary" and "sexual anlage", as well as innumerable roundabout expressions. The edges of the body may be "decurving ventrally", "eyelets" are said to be "strewn over the 'cervical' region" and one organ may wind "convolutedly anteriorly directly behind" another. Measurements are given (in mm) to one, two or three places of decimals indiscriminately, the dimensions of eggs sometimes to four places, with a pretence of accuracy to one-tenth of a micron. Figures are often devoid of scales indicating sizes and captions are generally inadequate. There are 21 diagrams in Figs. 128 and 129 representing developing cercariae and their parts but the single scale which each figure carries clearly does not refer to all the diagrams, none of which is explicable in terms of a common caption which simply states "developmental cycle".

All these shortcomings transcend mere blemishes and the reader can hardly be expected to agree that the "essentials of trematodology" have been presented succinctly. I have already expressed my opinion (loc. cit.) about the use of keys, which entails constant revision as the bounds of knowledge expand, sometimes revealing

previous misconceptions. It is certain that we shall need to know much more about the development and life cycles of the Digenea before we can contemplate "the creation of a new and superior system". Russian attempts to formulate such a scheme may be praiseworthy but they also seem to be premature. We may have to apply the principles of numerical taxonomy by the use of computers and with greater international co-operation than has been practised so far before attempting to formulate a practicable scheme. Some readers may welcome the compilation of such information as appears in these pages but others may feel disposed to check original descriptions and formulate more usable diagnoses for themselves. This appraisal is not intended to be harsh but only to indicate that the approach to "truth" must be gradual and not final and irrevocable. BEN DAWES

¹ Dawes, B, *Nature*, 203, 1318 (1964).

MICROBIOCHEMISTRY

Chemical Microbiology

By Anthony H. Rose. Pp. viii+247. (London: Butterworth and Co. (Publishers), Ltd., 1965.) 37s. 6d.

ONE of the signs of the rapid growth of both biochemistry and microbiology in recent years has been the proliferation of textbooks for these subjects. Well over twenty-five texts, published *de novo* or revised since 1960, are available for undergraduate students of biochemistry. A similar situation exists in the case of microbiology. In spite of the increasing use of biochemical concepts and techniques by microbiologists, and the immensely useful contributions that have been made to general biochemical knowledge as the result of using micro-organisms, relatively few textbooks exist which cover the interdisciplinary area of chemical microbiology. This may be a consequence of the compartmentalization of the physical and biological sciences in institutions of advanced education, and it is certainly not a reflexion of the research situation, in which rapid progress continues to be made in the study of microbial life at the molecular level.

In the forties Marjorie Stephenson's *Bacterial Metabolism* inspired a whole generation of chemical microbiologists, and a limited number of monographs on the life and chemical activities of bacteria have since stimulated the enthusiasm of undergraduates for the subject. Such monographs rapidly become outdated, however, and if revised tend to increase in size and cost. The time was ripe for the appearance of a concise, well balanced, intellectually rigorous and yet readable undergraduate text of chemical microbiology. Dr. Rose's book suits the need admirably.

The book is intended for students with a basic knowledge of both microbiology (*pace* bacteriology) and biochemistry, but is introductory for those wishing to combine such knowledge in further studies. Familiarity with basic biochemistry is essential for an understanding of the various and numerous metabolic schemes, most of which indicate the nature of intermediates by name only. Although about half the text is devoted specifically to different aspects of microbial metabolism, additional chapters are concerned with "chemical anatomy", the environment, growth, reproduction and survival. In general, the author's intention to balance a consideration of microbial metabolisms against the relationship between structure and function and the more physiological aspects of microbial activity, has been realized. This balance, together with the carefully planned structure evident in each chapter, and the pleasing narrative style should make the book popular with its intended readers. References at the end of each chapter are mainly to review articles, although particularly significant reports in the primary literature are also included. It is noteworthy that more than 70 per cent of the references are to material