

## BOOK REVIEWS

Physiological aspects of flight by Robert J. Del Vecchio. Dowling College Press, Oakdale, New York, pp. vii + 161, Price not stated.

Books dealing comprehensively with various aspects of Aviation Medicine are very few. After the publication of German Aviation Medicine and the text book by Armstrong, the students of this speciality had to wait for more than a decade to obtain standard books like those edited by Gillies and Randall and very recently the one by Dhenin. Therefore, a book in this field at this time is most welcome.

The book under review is written as a 'study reference for the pursuit of learning about the physiological aspects of flight' and as a 'a ready source of information for the student who is pursuing a career on Aviation'. The author has devoted a chapter each to almost all the major aspects of Aviation Medicine though there are a few notable omissions, viz., Aircraft Oxygen Systems, Short duration Accelerations, Aircraft Accidents and Accident Investigation. At the end of each chapter review questions are given which are intended to be of help to the student.

The main blemishes of the book lie in the language, expression and build up of the subjects. Almost all the pages of the book with very few exceptions contain one or more statements which can give misleading or inadequate knowledge to an uninitiated reader. Those who are familiar with the subject may have to make an effort to suppress the misdirected pull from information presented in the book. A few examples are cited below :

### CHAPTER 1

(a) Page 2—Composition of the atmosphere is given with the total exceeding 100%. The composition of the dry gases should have been separately given with a mention of variability in water vapour.

(b) Page 3—Under density it is mentioned that 'decrease in pressure with altitude causes the air to be less dense and this makes it more difficult to talk or cough'. It could be the lowered density which causes the lower pressures at altitude. There are a number of consequences of density changes which are more important to Aviation Physiology than those on cough or talk.

(c) *Page 8*— $P_1 V_1 = P_2 V_2$  should read  $P_1 V_1 = P_2 V_2$ . This could be a misprint. There is no requirement to put 5 steps of calculations to establish that volume changes to 5000 cc from 1000 cc when the pressure becomes 1/5. Volume at 1/5 atmosphere is given as 'X' to start with and after two steps as 'V2'.

## CHAPTER 2

(d) *Page 13*—Partial pressure of oxygen in the alveoli is the most significant factor for the human body, but no means is provided to know this at different altitudes. 'Experiments have shown that the blood is not directly proportional to the partial pressures' should probably read that the oxygen saturation of the blood is not...

## CHAPTER 3

(e) *Page 21*—The statement 'just as ambient air becomes incapable of sustaining life above 10,000 ft, 100 per cent oxygen at ambient pressures above 40,000 feet will produce adverse effects on the flyer'. This can give rise to a feeling that 100% oxygen breathing at 40,000 ft is hazardous, whilst it is certainly helpful in maintaining an oxygen saturation of nearly 90% in the blood and considered adequate to avoid any serious deleterious effects on human physiology and human functions. It is, of course, inadequate to the same degree as breathing ambient air at 10,000 ft.

Numerous examples of similar nature can be cited and the book is, therefore, not recommended for the purpose for which it is intended.

No bibliographies or references or subject index are given in this book.

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**Medical laboratory manual for tropical countries. Vol. I.** by Monica Cheesbrough, 1981. £ 4.70 for developing countries, £ 7.60 in UK, Europe and North America. Orders to : Miss Monica Cheesbrough, 14, Bevills Close, Doddington, March, Cambridgeshire, England, PE 15 OTT.

This is an excellent laboratory manual prepared keeping in view the needs of the tropical countries. It will be a very useful guide for the laboratory technicians and medicos.

The book has four sections : Introduction to the laboratory, Anatomy and Physiology, Medical Parasitology and Clinical Chemistry. Each section in turn is organised into chapters. On the whole, the book is well organised and well written.

The first section has 5 chapters. The material presented in these chapters is of general interest. The author brings out the essential role of laboratory as an integral part of health service in these chapters. She deals with the establishment of laboratory network

connecting laboratories at district, regional and central level and brings out how such a network would better serve the community. Communication among laboratories, maintenance of records, etc., are some of the other issues that are discussed in chapter 1. Safety in the laboratory, laboratory equipment, microscopy and the health centre laboratory are remaining four chapters in Section 1. The principles of some of the sophisticated clinical instruments and guidelines for the selection of equipment are given in these chapters.

Section II on anatomy and physiology has six chapters dealing with organisation and framework of the human body and the functions of various organs in the human system. The presentation is simple and serves the purpose of educating the prospective laboratory technician with different systems of the human body and the organs of which each is composed.

Section III covered in about 170 pages has 12 chapters and provides a comprehensive treatment of parasitology. The idea of unparting knowledge of the principle and its clinical interpretation of each investigation is essential. Keeping this in view the author has extensively dealt in Section III the epidemiology, the clinical features of the parasites of medical importance, method of detection and interpretation of results in specimens and also serological diagnosis.

Section IV under the heading of clinical chemistry explains the methods, principles of chemical reactions, preparation of solutions and colorimetry. Methods of establishing a laboratory for clinical chemistry are well explained. The details of various chemical tests conducted for detection of metabolic disorders and disfunctions of the body are given.

The addresses of the manufacturers are given in Appendix II and almost all of them are from the Western world. There is a need for incorporating manufacturers addresses from countries to whom the manual is intended to.

The author has been very successful in providing a systematic treatment of various issues involved in establishing a laboratory. In the opinion of the reviewer, this manual is the best that has so far been published apart from the WHO publication 'Manual of Basic Techniques for a Health Laboratory'. I may, however, add that with a price of £ 4.70 plus £ 1.25 for postage, this book is beyond the reach of most Indians. I hope to see a cheaper edition in a few years time.

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**Introduction to modern mycology** by J. W. Deacon, Blackwell Scientific Publications, Oxford, 1980, pp. vii + 197, £ 6.50.

This text on the biology of fungi will be a useful one particularly for the undergraduate students of Indian universities. It provides a brief but an up-to-date account of fundamental concept in both basic and applied mycology—ranging from fungal taxonomy, metabolism, genetics to survival ecology and control measures. In all, there are 14 chapters. The first nine are devoted to topics like structure, growth, differentiation, metabolism, genetics and environmental factors controlling fungal growth. The next four chapters provide a concise account of interaction of fungi with their surrounding biosystems. Prevention and control of fungal growth is the subject-matter of the last chapter.

Although it is intended to be an introductory book on mycology, the first chapter will serve as a quick reference guide for the important characteristics of main classes. In each of these major classes the life cycle of a representative fungus is illustrated. The chapters on growth and differentiation have been succinctly written. They deal with various theories on mechanisms involved and experimental approaches to study the formation and growth of apices, branching of mycelia and patterns of budding in yeasts. Various hypotheses advanced to explain the conversion of mycelial to yeast phase in fungi parasitic to animals, the role of hormones in sexual reproduction, and specialized vegetative structures have been covered in the chapter on differentiation.

The fungal metabolism with particular reference to the specialized and unique features observed in fungi have been covered in a separate chapter. The aspects included are biosynthesis of chitin and formation of secondary metabolites like gibberellins, penicillin and aflatoxins. In recent years great strides have been made in the analysis of genetic systems of living organisms. Towards this, fungi like *Neurospora crassa*, *Saccharomyces cerevisiae*, in particular, have contributed in a significant measure. The chapter, besides presenting formal genetic systems based on sexual recombination, dealt with the alternate systems responsible for genetic variation in fungi, viz., heterokaryosis and parasexuality. A brief account of the characteristics of asexual spores, the external and internal factors favouring their dormancy and dispersal have also been included.

In the area of applied mycology separate chapters have been devoted to saprophytes and parasites. In each of these, considerable attention is paid to describe briefly their ecology, and biochemical adaptations for their mode of life. Among the parasites, plant parasites received special emphasis, elaborating their biochemical interactions with the host systems.

In summary, this book would be found useful by microbiologists and biologists. It highlights how fungi differ from other organisms and how they serve as interesting models to study basic and applied problems in biology. A good number of references to recent literature (both to texts and reviews) are provided at the end to enable the reader to go for further reading. Though the book can strongly be recommended for

undergraduates, they may find the price rather high. However, the libraries could obtain this in multiple copies.

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**The biology of respiration** by Christopher Bryant, Second edition, Edward Arnold (Publ.) Ltd., London, pp. 63, £ 2.60.

This little book is the 28 in the series in Biology published by the Institute of Biology, London, U.K., with a view to promote the dissemination of knowledge in the wide spectrum of biology. It is written in easy style and makes good reading. The scope of the book is defined as the study of biochemical processes of respiration and the differences therein in different organisms in relation to the environments they live in. The author developed this theme in 62 pages and spanned the subject-matter of ecology and respiration, respiration and electron transport, oxidative phosphorylation and anaerobiosis under a variety of conditions in the living animals, in intestinal parasites and the biome in sulphide layer. The treatment is at a basic level for a college science student to follow and gives experimental work also; for example, preparation of mitochondria. Though superficially this booklet gives an account of the comparative schemes of respiration used under different conditions of oxygen availability, reading the 'conclusions' one is left with the impression of triviality of example of 'dogs, tails and dogness'. The point could have been made equally well in simple scientific language but it is the author's choice. A biologist getting interested in the field of respiration would find this a useful book.

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