

of man. There is something peculiarly appropriate in the fact that Sir Arthur has spent his years of retirement within sight of Darwin's old home, which he helped to dedicate as a public trust in memory of the great naturalist.

MONOGRAPH ON THE LARYNX

The Comparative Anatomy and Physiology of the Larynx

By V. E. Negus. Pp. xix+230. (London: William Heinemann Medical Books, Ltd., 1949.) 30s. net.

MR. V. E. NEGUS has enriched a masterly condensation and re-arrangement of his book, "The Mechanism of the Larynx", by further observation and original thought during the past twenty years in order to produce the present work. The evolution of the larynx is traced from its earliest appearance, and a critical assessment of its anatomical modifications is correlated with the habits and physiological requirements of the animal.

Laryngeal modifications associated with the prevention of entry of fluid or foodstuffs into the lungs are discussed relative to the position of the larynx and the presence of lateral food channels. The calibre of the air passages, the variations in the form of the laryngeal cartilages and the influence of an inlet valve at the glottis are judged according to the habits of the animals, including the free use of the forelimbs. Emphasis is directed to the importance of air sacs, whether buccal, laryngeal, thoracic or abdominal in position, as they function in the re-breathing of air by an internal mechanism of respiration. Sound production as a means of communication necessitated by the normal habits of animals is studied by an extensive survey of comparative anatomical material, and the relationship of sound production to the sense of hearing is fully discussed. The author accounts for all the characteristics of the human larynx by reasons other than phonation, showing, however, that the larynx of man proves to be a tool equal to the demands of his intelligence.

A chapter on the "Anatomy of the Human Larynx" describes its regional anatomy in detail, and includes sections on its prenatal and postnatal growth and position. "Observations on the Evolution of Man from the Evidence of the Larynx" provides a stimulating topic for Appendix 1, which relates human evolution to laryngeal morphology and details the degenerations and altered position of the larynx associated with the adoption of an erect posture. The progressive reduction in the powers of olfaction and exercise tolerance is seen to be compensated by increased cerebral development.

Appendix 2 discusses the general adaptability and evolution of those structures which are utilized in sound production. The resonators, the separation of the epiglottis from the soft palate and the general structure of the oral cavity are all subjects for comment. Evidence presented suggests that early man was provided with a larynx as efficient as modern man but lacked the intelligence to use it. The author is convinced of the truth of Semon's Law and in Appendix 3 discusses critically the relevant factors in the evolution of the sphincteric and dilator muscles of the larynx.

The method of arrangement and production of this book is excellent. The illustrations are profuse

in number, beautifully reproduced and include outlines of animals studied, as well as regional dissections carried out by the author. Many of the specimens from which illustrations are drawn are housed in the Royal College of Surgeons' Museum, the number given to the illustration in the book corresponding for ease of reference to the number in the collection.

A foreword is written by Sir Arthur Keith, and a list of chapters and headings is reinforced by a list of illustrations arranged under chapter headings, as well as a general index and an index of illustrations arranged alphabetically. The author explains the absence of a bibliography as an attempt to curtail the size of the book; the eleven chapters and three appendixes each possesses a summary of conclusions helpful to the reader. Those interested in the larynx, either as a subject for research and teaching or from a clinical point of view, will benefit by the wealth of information contained in this book.

C. HOWARD TONGE

SOME STUDIES OF BACTERIAL MORPHOLOGY

The Cytology and Life-History of Bacteria

By Dr. K. A. Bisset. Pp. xii+136. (Edinburgh: E. and S. Livingstone, Ltd., 1950.) 18s. 6d. net.

AN increasing interest, particularly over the past few years, has been directed to the fundamentals of bacterial structure and behaviour. In this short monograph, much of the work already published is reviewed, and Dr. K. A. Bisset describes the results of his own studies and discusses their interpretation.

While orthodox methods of staining dried preparations are of considerable value in applied bacteriology, they are firmly criticized here because they obscure delicate internal structure and may often produce artefacts. A number of special techniques for the demonstration of chromatinic material or of cell walls and other surface components is given; of these, the author finds most informative the acid-Giemsa method of Robinow and makes extensive use of tannic acid-violet staining and of colony imprint preparations. It is disappointing that the possibilities of the phase-contrast microscope could not be explored here; brief reference is made to the value of this method and to the more limited applications of electron and ultra-violet microscopy.

Chromatinic and other structures have been examined in many forms of bacteria at different phases of growth and multiplication, and it is possible to define two main types of fission—that of unicellular smooth organisms and that of rough forms which possess four cells. The same refinements of technique are used for demonstrating stages in the formation of spores, microcysts or resting cells. The more controversial aspects of the subject are discussed in a section on the nature of the bacterial chromosome and in later chapters which deal with sexuality, life-cycles and macroformations.

The interpretation of observations of this sort on fixed and stained preparations is often far from easy, and it seems likely that the use and further development of techniques for examining living bacteria are likely to prove of great value in resolving some of these problems. It is significant, for example, that Klieneberger-Nobel has only recently accepted that