

BOOK REVIEW

Bailey's Text-book of Histology :—15th Edition, Revised by Wilfred M. Copenhagen, Ph. D. Professor of Anatomy in Columbia University, The Williams & Wilkins Company, Baltimore, Scientific Book Agency, Calcutta, 1964, Pages 679, Indian Edition Price Rs. 20.00.

The first edition was written by Professor Frederick R. Bailey at the College of Physicians and Surgeons and was published by William Wood and Company in 1904. Professor Bailey, with assistance from Professor Oliver Strong on the nervous system, continued the book through the sixth edition published in 1920. Although the text has been rewritten by a number of authors since the time of Professor Bailey it has adhered to his objective of emphasizing fundamentals.

There have been marked advances in microscopic anatomy since the last edition of this text-book was published in 1958. Improved techniques for the preparation of thin sections for electron microscopy have given better resolution in electron micrographs; new methods have been devised for combining some histochemical and autoradiographic techniques with electron microscopy; and new *informations have been gained by histochemical and autoradiographic techniques in light microscopy.* Immunohistological techniques, X-ray diffraction studies and polarization microscopy have also contributed new information. In the present edition Professor Copenhagen has revised almost all chapters and large sections of some chapters have been rewritten to replace out of date interpretations with current information. Throughout the book, fundamental principles stand out from details and correlation of structure and function is especially stressed. The quality of certain illustrations has been improved and many new colour plates have been added. The Indian Edition has been published by Scientific Book Agency, Calcutta with the assistance of the Joint Indian American Standard Works Programme.

M. L. GUPTA & K. P. KHUTETA

An Introduction to Human Physiology : By J. H. Green, M. A., M. B., B. Chir., Ph.D., A.R.I.C., Reader in Physiology in the University of London, Oxford University Press, Amen House, London, 1963, Pages 153, Price 21 s.

This book, which provides a completely up-to-date introduction to human physiology together with a brief introduction to biochemistry, will be specially useful to dental, nursing and physiotherapy students. It will also prove useful for medical students as an introductory book and as a text-book for a short course in physiology. This book gives, in a clear and concise manner, the basic concepts of human physiology unobscured by controversy and provides a framework to which

additional knowledge may be added by the attendance at systematic lectures and by consulting the larger text-books. A brief guide to this additional reading is given at the end of each chapter.

In the sections on blood circulation, respiration, kidney and nerve-muscle a short account of the apparatus commonly employed in practical classes has been included at appropriate places to integrate the practical class experiments with the theory. The book has 204 illustrations which form a valuable feature of this book.

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Dr. M. L. Gupta
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PROFESSOR ALAN HODGKIN
Nobel Laureate (1963)

Professor Alan Hodgkin is a pioneer in research into the physiology of nervous conduction, and in 1963 was joint winner, with Professor Andrew Huxley and Professor Sir John Eccles of Australia, for this work. His research has been carried out for the most part at Cambridge, where he has been Fellow of Trinity College since 1936, and since 1952 Foulerton Research Professor of the Royal Society. He was elected a Fellow of the Royal Society in 1948.

Alan Lloyd Hodgkin was born on 5th February, 1914, and was educated at Gresham's School, Holt, and at Trinity College, Cambridge. His life as a Cambridge don was interrupted by war service; during the years 1939 to 1945 he was a Scientific Officer engaged on work on radar for the Air Ministry and the Ministry of Aircraft Production. In 1945 he became Lecturer and later Assistant Director of Research at Cambridge, a post he held until receiving his professorship. In 1938 he spent a year in the United States as Rockefeller Fellow, working at the Rockefeller Institute of Medical Research in New York.

Professor Hodgkin has been awarded the Baly Medal of the Royal College of Physicians and the Royal Medal of the Royal Society. He is an Honorary M.D. of the Universities of Berne and Louvain, and an Honorary D.Sc. of Sheffield. In 1959 he was appointed, for a four-year term, a member of the Medical Research Council.

In the post-war period the work of Hodgkin and Huxley produced the modern picture of nerve conduction. The two men took up again investigations, interrupted by the war, into the ionic mechanisms involved in excitation of the membrane of peripheral nerve fibres. Their work had far-reaching results, so that the Swedish scientist Ragnar Grant said of them and of Eccles: "A milestone has been passed in the knowledge of nerve excitation". They had at their disposal new types of equipment, including micro-electrodes which could be inserted into cells, so as to record their electrical potentials



PROFESSOR ALAN HODGKIN, F.R.S.

directly, the electron microscope, and radioisotopes, which made it possible to label the ions in the nerve fibre and its surroundings.

Sir Cyril Hinshelwood gave a resume of Hodgkin's work when the latter, in December 1958, was awarded the Royal Medal of the Royal Society. After speaking of his first experiments, he went on :—

“Hodgkin was a pioneer in measuring the electrical constants of nerve by square-pulse analysis; he and Cole measured the core and sheath resistances of the giant squid nerve fibre; later, with Rushton, he extended the method to measure the capacitance of the nerve membrane.

“He was the first to observe and record the ‘sub-threshold’ responses of nerves and muscles when stimulated with currents too weak to initiate a propagated impulse.

“Hodgkin was among the first to record the electrical activity of nerve and muscle with electrodes inside the single cell, a powerful and, eventually, much-used technique. He and Huxley found by this means that the resting potential across the membrane was reversed during the nerve impulse. Hodgkin and Katz then demonstrated that the reversal of potential varied with the external sodium concentration in a way which showed that the inward current was carried by sodium ions. These observations were followed by the discovery that the action potential was generated by the influx of sodium ions in muscle as well as nerve.

“Hodgkin, Huxley and Katz studied the relationship between current and voltage in the nerve membrane. The currents were shown to be due to alterations in the permeability of the membrane to sodium and potassium ions, which were caused by changes of potential and accounted quantitatively for the propagation of the nerve impulse.

“All Hodgkin's work (said Sir Cyril in conclusion) is elegant, conclusive and clear. He has applied new physical methods to biological problems and made quantitative measurements at every stage. It is largely owing to his work and influence that coherent and well-supported evidence now exists for the mechanism of nervous conduction.”

Professor Hodgkin has recently been investigating muscle fibres, and has published some results of his research. He lectured to the International Congress of Physiological Scientists at their 1959 meeting at Buenos Aires, and was one of the lecturers at the tercentenary celebrations of the Royal Society.