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Book Reviews

CHEMISTRY OF THROMBOLYSIS: HUMAN FIBRINOLYTIC ENZYMES. By Kurt N. von Kaulla. Pp. xvi + 333 (including Index). Charles C. Thomas, Springfield, Ill., U.S.A., 1963. $12.75.

Although the phenomenon had been recorded before, Denis is usually credited with being the first to describe in 1838 the spontaneous dissolution of a fibrin clot on storage. This phenomenon was termed fibrinolysis by Dastre in 1893, but remained a relatively neglected field of research. The attentions of haematologists were chiefly confined to the mechanisms of clot formation rather than the subsequent history of the fibrin clot. The past few decades have seen renewed interest in fibrinolysis and thrombolysis (the latter term denoting the intra-vascular dissolution of a thrombus). The current theory of fibrinolysis holds that circulating blood contains an enzyme precursor, plasminogen, which may be activated by a variety of activators or activating procedures to produce the enzyme, plasmin. The proteolytic enzyme, plasmin, then hydrolyses the polymer, fibrin, into fibrinopeptides and fibrinolysates, thus the fibrin meshwork of a clot is broken down. In the circulating blood under normal conditions there is an excess of an anti-plasmin which inhibits plasmin so that when blood is shed the normal prothrombin-thrombin-fibrin mechanism produces a clot.

Dr. von Kaulla of the University of Colorado School of Medicine has written the first comprehensive monograph on the physiological and pathological aspects of fibrinolysis. His own research work in this field, covering many aspects, such as the measurement of the excretion of urokinase in man or an extensive investigation into non-enzyme compounds which increase fibrinolysis, makes him well qualified for the authorship of such a book.

After an interesting account of the historical development of the study of fibrinolysis, the text proper begins with a consideration of the basic components of the fibrinolytic system which is a very clear account of current fact and theory backed up by a comprehensive bibliography.

The next three chapters are devoted to methods of measuring fibrinolytic activity and its component factors; there is a mixture of the description of principles of methods with detailed technical procedures. The plasminogen activator urokinase, which can now be extracted from human urine, is given a chapter on its own which includes a full account of the author's technique for urokinase estimation and a consideration of the significance of the results, with case history illustrations. There is a comprehensive tabular review of diseases, observations and references, in the chapter on fibrinolysis and diseases, which will prove to be an invaluable reference list. The account of maternal and neo-natal fibrinolytic systems is shorter than the importance of this aspect of fibrinolysis would seem to warrant.

The discussions on the influence of dietary lipaemia and cholesterolaemia of the fibrinolytic system and on the interactions of the clotting and fibrinolytic systems are made in an unbiased and scientific manner.

The remainder of the book is devoted to the therapeutic uses to which knowledge of fibrinolytic mechanisms may be put in thrombolytic therapy in man and animals and in the treatment of fibrin deposits in extra-vascular sites. Chapter 21 is forward-looking in being an account of a study of synthetic non-enzyme compounds which increase fibrinolysis. The first to be investigated was ethylurethan. The hydrotropic activity of such compounds is suggested as a probable mechanism of action. Of 147 hydrotropic chemicals tested, 53 were found to induce fibrinolysis.

Dr. von Kaulla's book is easy to read and its usefulness as a book of reference enhanced by separate Author and Subject Indices. The high reputation enjoyed by the publisher is well maintained by this volume. It is a book which may be studied with profit by all concerned with the study of a subject which promises to be of increasing importance.

A. T. BIRMINGHAM

GENERAL MICROBIOLOGY. Second Edition. By R. Y. Stanier, M. Doudoroff and E. A. Adelberg. Pp. xiii + 753 (including Index). Macmillan & Co. Ltd., London, 1963. 50s.

One of the most impressive aspects of this very good book is the wealth of illustrations. The tables and figures are well conceived and executed. The general layout also shows much evidence of care and attention in the communication of ideas. The book is to be recommended to students requiring a general, broad introduction to microbiology.

Many students now study microbiology without the benefit of a background in general biology. Such students are considered by the authors who stress general biological principles at appropriate points and in fact make little assumption of prior biological knowledge.

All the basic aspects of microbiology are adequately covered and in particular the sections on metabolism and genetics are models of clear, logical presentation. In addition most topics of special interest to students of the medical sciences are considered in reasonable detail. There are some exceptions, however. The section on antibacterial agents is too scanty and could well be expanded to cover dynamics of disinfection, dilution and temperature coefficients. Nevertheless it is pleasing to see these agents classified according to their effects on the cell rather than on their chemical structure.

Methods of sterilisation are treated inadequately for pharmaceutical microbiologists, particularly in view of the recent advances made in this field. An improvement would be to treat sterilisation as part of the chapter dealing with the effect of environment on growth and death rather than as part of a chapter on History. The lethal effects on micro-organisms of ionising radiations is allotted only one paragraph and this is insufficient from a pharmaceutical standpoint. From the same point of view the principles of antibiotic production are almost completely neglected. It is a pity that some elementary material such as the diagrams relating to refraction of light and focusing by lenses should be included at the expense of less elementary material. But it is clear that the authors do not set out completely to cover every aspect of microbiology and the omissions mentioned are comparatively minor ones.

M. R. W. BROWN