
REVIEWS

Mineral Metabolism. By Alfred T. Shohl. (Reinhold Publishing Corporation, New York; Chapman & Hall Ltd., London), 1939. Pp. x + 384. Price 30*sh.*

At the commencement of the last decade, scientific investigators in the field of nutrition felt the urge of a new approach to the problem of human nutrition. It was becoming increasingly evident that nutriment meant more than the calories and the "building units" derived from carbohydrates and proteins and that there was something more fundamental which catalysed the entire chain of biochemical reactions, generalised as metabolism. The effect of traces of highly active and specific compounds like vitamins and the function of minerals and other "trace" elements, were unravelled. Interest in these fields, vitamins and minerals, was aroused and during the last fifteen years, there has accumulated a great mass of data regarding the role of minerals in the field of nutrition.

The volume under review represents a praiseworthy and successful attempt at giving a connected and readable account of the various aspects of mineral metabolism. In a series of fourteen chapters, the author has tried to cover this comparatively new field of human nutrition. Particular attention may be invited to the chapters relating to calcium and magnesium, phosphorus, iron, iodine and trace elements, which respectively deal with the function of these minerals. The interrelationships between a few of these elements and some of the vitamins and hormones, calcium and calciferol, calcium and parathyroids, iodine and the thyroids, are discussed in great detail.

Physicians and dieticians will feel particularly grateful to the author for the last chapter on mineral intakes, balances and requirements, which discusses the mineral requirements of the adult man, the pregnant and the lactating woman and the growing infant. The comprehensive and well-documented bibliography appended at the end of each chapter is helpful to those interested in diving deep into the subject. This is a volume which will be welcomed not only by the scientific investigator devoted to researches in the science of animal nutrition

but also to physicians, physiologists, pediatricians and dieticians, who are interested in the application of these fundamental results to human welfare.

Biological Aspects of Infectious Diseases. By F. M. Burnet. (The University Press, Cambridge), 1940. Pp. vii + 310. Price 15*sh.*

This is an unusual volume which discusses the problem of infectious diseases of man from the point of view of a biologist. The author is of the opinion that a biological approach to this problem might offer a better means of understanding and controlling diseases which constitute an important aspect of human life.

The five parts which include the twenty-five chapters of the volume, present the varied aspects of the problem—the ecological considerations of the incidence and spread of infection, the evolution of infection and defence, the variety and nature of the infective agents, the nature and significance of immunity, the mechanism of the causation and the control of infectious diseases and the future evolution of infection in relation to man. Some of the important infectious diseases,—diphtheria, influenza, cholera, plague, malaria, yellow fever, etc.,—are discussed against a historical background of their first incidence and their subsequent spread and control.

Under the caption "How infections spread", the author has given an illuminating survey of the modes and mechanisms of the spread of infection under the conditions of modern life. Infections which incriminate the lower part of the digestive tract are spread by the dissemination of faecal material which might contaminate water, milk, and food in many a direct and indirect way, the finger and the fly constituting the principal agencies in this respect. An efficient sewage disposal, a pure water supply, stringent food laws, supply of hygienic milk and personal cleanliness, have together conspired to conquer many of these diseases. An outbreak of typhoid or an epidemic of infantile diarrhoea, should therefore be looked upon as a civic disgrace. It is a well established fact that typhoid fever and filthy drains go together and the most

elementary precaution that an enlightened municipality should take is to keep drinking water and sewage out of each other's way.

"Droplet infection" or infection by the respiratory route is another mode of spread of disease, and this form of spread is considered to be the most important route by which infections spread among the more advanced communities.

Other forms of spread which are peculiar to the social diseases, and the "unnatural" spread of diseases through bites of insect vectors are discussed in a very interesting manner.

The outlook for the future, as visualised by the author, appears alarming; most of the new diseases which have recently appeared constitute infections of the brain and the spinal cord. The nature of certain rare illnesses which occur, particularly in infants, and which are labelled encephalitis, still remains obscure; another disquieting possibility which the author fears, is the attempt on the part of the belligerents to disseminate infection artificially. The attack through the bacteriological weapons would remain invisible and unknown and death would be delayed for days. How such an insidious weapon is to be combated, is a problem of the future but let us all hope that an unhappy problem with such tragic consequences will never arise.

The volume represents a highly fascinating and stimulating account of the biological aspects of infectious diseases which afflict man and is one which is bound to command the attention of a wide circle of readers.

Practical Solution of Torsional Vibration Problems. Vol. II. By W. Ker Wilson. (Chapman & Hall, Ltd., London), 1941. Second Edition. Pp. xxi + 694. Price 42sh.

This is a continuation of the first volume published in 1940 by the same author. The opening chapter (Ch. 7) deals with the determination of stresses due to torsional vibration at resonant speeds. A clear conception of damped and undamped vibrations, damping coefficient, the dynamic magnifier, etc., is first given and their application is then illustrated in the design of vibration recording instruments, vibrographs, accelerometers or flexibly supported machines.

This is followed by the study of exciting and damping forces with reference to propellers, air-screws and engines. The cases of apparent damping—as contrasted with the usual type of damping which functions by changing the vibrational energy into heat—viscous damping, overall damping and elastic hysteresis damping are then discussed with special reference to engine crankshaft systems. A brief account is then given of the nature and physical properties of the materials used in the manufacture of these crankshafts and this is followed by the calculation of torsional vibration stresses in them, illustrated with reference to all possible types. Typical stress diagrams are also given.

The next chapter (Ch. 8) is devoted to a detailed description and method of using different types of instruments for the measurement of torsional vibration amplitudes and stresses. The Junkers Torsiograph, the Geiger Torsiograph for low and high speeds, the D. V. L. Torsiograph, the Rotational Accelerometer, Askania Hand Torsiograph, M. I. T. Sperry Torsional Vibration Measuring Equipment, the R. A. E. Mark Va Torsiograph, the D. V. L. Recording Torsionmeter are all described with necessary details and methods of using and calibration. How the torsiograph records obtained from these instruments can be analysed and measurements made are illustrated in the next chapter, taking into consideration all typical cases. This is followed, in Chapter 10, by an exhaustive study of the methods adopted for securing a safe working speed range by an appropriate adjustment of the natural frequency or in other words by reducing the amplitude of torsional vibration by altering the position of critical speed. Four such methods are given in good detail. In all these the reduction of vibration amplitudes is accomplished without any appreciable absorption of the exciting energy. By frictional damping devices, however, it is possible to introduce into the system additional work absorbing forces which operate when the amplitude exceeds a predetermined amount; three methods of doing this have been described. In multi-cylinder engines it is sometimes possible to obtain a favourable damping effect by a different method, by alteration of the firing order, and the author has shown with illustrative examples, how this can be effected.