

## Reviews

### BIOLOGICAL EFFECTS OF RADIATION

*Actions of Radiations on Living Cells.* By D. E. Lea, M.A., Ph.D. (Pp. 402; illustrated. 21s.) Cambridge: The University Press. 1946.

Since the first use of radiation as a means of producing biological effects, both desirable and undesirable, there has been only a limited body of information available by which the worker with radiation could attempt to explain or understand its action. In this clearly written and thought-out work the author surveys the hitherto uncharted field of the immediate effects of radiation. Moreover he publishes charts which enable the serious worker to continue the exploration for himself.

Remembering that Lea has concerned himself with effects on visible structures on which experimental evidence is available and has only skirted the swamps of conjecture surrounding the more diffuse effects of radiation, we must admit that he has succeeded admirably in his aim. He starts by discussing the radiation and its physical properties, providing figures which must have required prodigious work to collect, and which form a basis for the detailed understanding necessary for all research workers in the subject. He goes on to discuss the chemical effects of radiation in an essentially quantitative way, based on the physical properties of the radiation and the ions which they produce and their relation to the aqueous medium in which their energy is absorbed. He then deals with the target hypothesis and its limitations. He considers its validity "unquestionable in the case of the inactivation of small viruses by radiation and the production of certain chromosome aberrations in higher cells," and "highly probable in the killing of larger viruses and bacteria and the production of gene mutations." He states that it is inapplicable to changes brought about by circulating blood or intra- or extracellular fluids affected by the radiation.

Lea specifies three types of investigation necessary to determine the applicability of the target theory to any given biological action—viz., the relation to dose, to dosage rate, and to the nature of the radiation—and lays down three corresponding criteria—viz., the survival curve is exponential, the effect is independent of dose rate, and the effect of gamma rays, hard x rays, soft x rays, neutrons, and alpha rays for a given dose decreases in that order. He provides graphs and figures which enable the investigator rapidly to determine target size from his own experimental results, and in subsequent chapters applies his criteria with such effect as to prove to our satisfaction that his statements quoted above are a true estimate of the position. The discussion of the effects of radiation on chromosomes is given in great detail.

No worker in the field of radiation should remain unacquainted with the contents of this book, though for the medically trained the physical and mathematical aspects may be too advanced for complete understanding. There is no doubt that this work is a masterpiece of clear and original thought applied to a most intricate subject, and that it will be considered in time as a classic work. It is to be hoped that Lea will bring the same power and energy to producing a similar work on other aspects of radiobiology hitherto unexplained. Explanation of the action of radiation brings us nearer to an understanding of the fundamentals of life.

### PSYCHOLOGICAL TESTS

*Manual of Diagnostic Psychological Testing.* II. Diagnostic Testing of Personality and Ideational Content. Review Series, Volume III, No. 1. By David Rapaport, Ph.D., and Ray Schafer, B.S., with the collaboration of Merton Gill, M.D. (Pp. 100; illustrated. \$0.75). New York: Josiah Macy, jun., Foundation.

This is the second part of a survey of psychological tests and is concerned with a review of the word association, Rorschach, and thematic association tests. These are tests of personality, of the way in which the subject approaches problems and the underlying impulses and conflicts which determine such approach. Each test is described in detail and its purposes are discussed. The methods of administration are described and the pitfalls in interpretation recorded. The results are then

set out in various groups such as schizophrenics, depressive neurotics, and normals.

The authors point out how the same sort of tendencies may be recognized through a series of tests, and make a plea for the use of a battery of tests instead of relying on single tests. They claim that it is possible in this way to distinguish between psychotics and neurotics and normals with a fair degree of certainty and, with sufficient care and variety of test, between preschizophrenics, depressives, and paranoids. It is obvious that if the promise of such distinctions can be maintained and extended it will have most important repercussions on medicine, especially in its preventive aspects, on vocational guidance, and in many other branches of social science. The present volume therefore merits close attention as a record of what has already been achieved and as a stimulus to further work.

### DISORDERS OF INNERVATION OF PHARYNX, LARYNX, AND OESOPHAGUS

*Les Troubles de L'innervation Pharyngo-Laryngée et Oesophagienne.* By Prof. F. J. Collet. (Pp. 320; 22 figures. 300 francs.) Paris: Masson et Cie. 1946.

The innervation of the pharynx, larynx, and oesophagus though well understood in broad outline, has always given rise to perplexities and apparently paradoxical phenomena matters of detail, which have at times been the grounds of heated dispute. Prof. Collet in his recently published book of the disorders of innervation of the pharynx, larynx, and oesophagus gives in great detail the fruits of half a century of careful observation and profound study of these questions. He has nothing original to say he at least presents these questions in full detail to the reader and avoids that over-simplification which is often thought sufficient but provides a very imperfect understanding of the subject. Clinical studies and case reports naturally figure largely in such a review, and the author is still inclined to rely rather on a description of syndromes than to elucidate the underlying processes or lesions which cause the syndromes. He therefore dismisses rather lightly the plea made by Burger some ten years ago for the abolition of eponymous syndromes and the substitution for them of a system of groups of paralyses at different levels based on a rigidly scientific anatomical localization. The eponymous syndromes have in fact of themselves no anatomic basis, with the exception of that of Tapia and possibly Avellis, and are modifications of the group of associated paralyses originally described by Hughlings Jackson; and they have the further disadvantage that the different varieties are difficult to remember by their authors' names. This comment is made in order to illustrate the conservative attitude of Prof. Collet to his subject, but he has omitted no detail in his description, and, as the borderland of neurology and laryngology in the territory concerned, his book is of interest to specialists in those branches as well as to those who practise general medicine.

### SURGERY FOR DENTAL STUDENTS

*Essentials of Surgery for Dental Students.* By J. Cosbie Ross, M.B., Ch.M., F.R.C.S. (Pp. 284; illustrated. 20s.) Edinburgh: E. and S. Livingstone.

The curriculum for the dental student requires that he should have some knowledge of general surgery and especially of that of the head and neck. To gain this from study of the medical student's textbook of surgery is a very unsatisfactory method of procedure, not only on account of the difficulties of picking out the essential parts but also because the detailed description often goes far beyond that which the dental student wants. The need therefore arises for a smaller textbook dealing with those aspects of surgery which are of interest to the dentist in just such detail as he requires. This need appears to be adequately met in Mr. Cosbie Ross's *Essentials of Surgery for Dental Students*. The author, who is lecturer to dental students in the University of Liverpool, is evidently very well acquainted with the type of teaching which the dental student appreciates. The whole of the matter is of course quite orthodox, but it is clearly laid out with appropriate headings in heavier type. The illustrations deserve special praise—they are exceptionally good, much to the point, and the reproduction is perfect; as the author says in his preface, "In the confident belief that one