

next article is one on 'Some Interactions of Gases with Metals and Crystalline Solids' by Dr. Roberts. This report makes very interesting reading, no doubt due to the fact that Dr. Roberts himself has been responsible for a considerable portion of the developments embodied in the article. This is followed by a report on 'Viscosity and the Nature of Substances of High Molecular Weights in Solution' by Dr. Eirich. It is unfortunate that this article is without a bibliography so necessary in reports giving recent advances. We are told that this was due to the internment of the author while engaged on this report. Advances in Astrophysics are treated in two articles, one by Dr. Thackeray on 'Solar Physics' and the other by Dr. Hunter on 'The Absorption of Light in Interstellar Space'.

The article by Dr. Feather dealing with 'Gamma Radiations Emitted during Nuclear Processes' deserves particular notice. The whole subject is surveyed in a comprehensive manner. No one who wants to get acquainted with the present position in regard to this intriguing phenomenon connected with nuclear processes could afford to ignore this very interesting Report. The other article on Modern Physics is by Dr. Peierls on 'The Bohr Theory of Nuclear Disintegration'. This deserves special mention for the clear and lucid manner in which he has made a difficult subject intelligible to the average reader. He has achieved this by confining himself mainly to the phenomenological aspect of the theory.

Last comes a very readable article by Dr. Ferguson dealing with the history of 'The Development of the Teaching of Experimental Physics in British Universities'.

In conclusion, we warmly recommend this volume to all those who wish to keep themselves abreast of the latest developments in the realm of contemporary Physics.

B. V. R.

A Text-Book of Electricity and Magnetism. By G. R. Noakes. (Macmillan & Co., London), 1941. Pp. x + 513. Price 8sh. 6d.

Of the many text-books on electricity and magnetism so far available, the needs of the B.Sc. students of Indian universities were best met by the well-known book of Starling. That book, particularly in its most recent edition, was so good that we could not recommend a better one to our students.

Here we have before us now a book which bids fair to outrival 'Starling'. On account of the fact that in this book modern developments have not been added during a process of revision, but the treatment is uniformly modern throughout, it will have a distinct advantage for some time to come over new editions of well-established texts. The even balance between pure theory and technical applications maintained in this work will recommend its adoption in preference to others where one or the other aspect has been stressed. The treatment is throughout elegant and the uniform use of the calculus has no doubt contributed to this happy result. Without sacrificing a thorough presentation of the older material, the author has succeeded in incorporating adequate descriptions of modern advances such as the Van de Graaff generator, hot cathode lamps, the M. K. S. system of units, recent determinations of the electronic charge, mass-spectrographs, electron optics, electron configurations in atoms, artificial radioactivity, the cyclotron, Heisenberg's theory of Ferromagnetism, cosmic rays, the mesotron and so on. The illustrations are numerous and well chosen. There is a set of problems at the end of each chapter and some hints for the solution of difficult ones are included at the end. The price is also moderate and compares favourably with that of similar books. We have no hesitation in recommending this book as being eminently suited to fulfil the requirements of the pass degree examinations of Indian universities.

T. S. S.

Electrotechnics (The Honorary Secretary, *Electrotechnics*, Indian Institute of Science, Bangalore), 1941. Price Rs. 2.

This is the fourteenth number of the Journal of the Electrical Engineering Society which is published once a year. The issue opens with an "Editorial" which is mainly devoted to the consideration of the relation between industrial research and industrialisation. This is perhaps a topic of special significance at the present time and some of the observations made in the course of the Editorial are interesting. It is pointed out that a mere programme of industrial research—however successful—cannot automatically lead to the industrialisation of the country. Successful research and its subsequent exploitation are two distinct problems, each beset with its own peculiar difficulties.

After describing briefly the manner in which this problem was solved by countries which were similarly situated as India is to-day, warning is given that it may turn out to be a mere waste of time and energy to concentrate on researches connected with industries which have been already highly developed elsewhere. Finally, indication is given as to what type of industrial researches are likely to prove most useful at the present time.

The Editorial is followed by a number of articles of a technical nature. These may be divided into two groups—those dealing with problems in Heavy Electrical Engineering and those dealing with problems in Light Current Engineering. In the first group there is an interesting article by Prof. E. W. Marchant describing the recent development in the Liverpool University Laboratories, thus giving information on the progress that is being made in the teaching of Electrical Engineering in Great Britain. In the second group there is an article entitled "Whistling Meteors" which reports a very interesting discovery made by the Research Department of the All-India Radio.

The articles on the earthing of neutrals and on an alteration to an X-ray unit, as also the note on Kelvin's Law, should be specially interesting to the field engineers. Standard tests on broadcast receivers form the subject-matter of an article which describes the equipment and the procedure adopted in carrying out these tests, while in another article are described briefly the processes of manufacture of fixed resistors for radio purposes. There is a topical article on the "Cyclotron", its construction and use.

Towards the end of the issue a special section is devoted to the Department of Electrical Technology, Indian Institute of Science, which gives useful and interesting information for all those connected with the Department. Other interesting items are, Book Reviews, List of Members of the Electrical Engineering Society, etc.

The Journal is maintaining its usual high standard both as regards the nature of the contents and the get-up and an important point which may be mentioned in this connection is that this is the only journal of its kind published in India.

Manufacture of Dry Cells in India. Bulletin No. 23 of Indian Industrial Research. By Joglekar, Subbramaiah and Verman.

This Bulletin is the result of more than six years' research carried out by three workers in the Research Department of the Alipore Test House. It gives a brief account of the theory of dry cells and goes on to describe in some detail their construction and operation and the raw materials and machinery used for their manufacture. The methods used for testing dry cells, defects and their remedies, etc., are also described. A short account of the economics of dry cell manufacture is also included and the Bulletin concludes with an excellent bibliography of the available literature on the subject which will be of very great use to would-be manufacturers and others interested in dry cells.

The information given in the Bulletin will serve as an excellent introduction to scientists, manufacturers and others who are not very familiar with the subject, but it is very doubtful if it will enable any one, who is not already something of an expert in the line, to produce dry cells of good quality without carrying out a considerable amount of experimental work himself. On the other hand, it is only fair to point out that would-be manufacturers could probably get any information not found in the Bulletin by consulting the authors. Most of the technical information contained in the Bulletin will be found scattered in the literature. There are a few important points, however, worth mentioning. One of these is a process (patented by two of the authors) for activating natural manganese dioxide which enables the output of dry cells to be increased by fifty per cent. Such activated manganese dioxides have been on the market for some years but were hitherto entirely of foreign origin. The authors have also devised a number of hand- and power-operated machines, for the various operations involved in the manufacture of dry cells such as the rolling of the zinc, the pressing of the dollies, etc. These machines are illustrated in the Bulletin and will no doubt prove very valuable.

A few errors of omission might perhaps be pointed out. No mention is made of the fact—well known to manufacturers of dry cells—that the state of hydration of the manganese dioxide has a profound influence on its depolarizing properties. Other things being equal, it has been found that a highly