

its title "Forward with Science" implies, is on the whole optimistic) Dr. Rusk looks to the spread of scientific education among the masses, and to an evolution from within science itself of some moral sense to replace the religious idea of 'sin'. He also cherishes the belief that there is some esoteric relation between science and democracy. In fact he repeats this theme so often that one wonders whether he is not practising a form of Couéism, and hopes by saying it often enough to make it come true; especially as he shows himself fully aware of the fact that, however it may be with science, her half-sister technology sits openly in the market-place ready to bestow her favours on anyone who is prepared to make a bid for them. "Science", he concludes, "is a self-perpetuating movement which can scarcely be stopped. In totalitarian states it has been controlled for purposes of military aggression, and in democratic nations it has risen up in its might to combat totalitarianism. But a controlled science is not a free science, and the essence of science is to be free. Social planning may seek to control the impact on society, but it must not control the spirit of science. Indeed, a free science more than anything else can make social planning possible and workable. But this in turn implies a high technical and moral and social level, and such a level cannot be attained through soft living or soft education, of which there has been too much."

"Forward with Science" is not a great book—one would scarcely rank it higher than first-class journalism—but it is a thoroughly honest attempt by a physicist who has read widely, thought seriously and who has more than average skill in putting his ideas clearly before the average reader, to deal with problems of urgent importance. As such it can be commended to the attention of the rapidly growing circle of readers who are becoming concerned about the impact of the tidal wave of science on the social structure. There is much in the book which deserves anxious thought.

Although, following the lead given by the author himself in his preface, we have dealt mainly with the sociological chapters in the book, it may be added that between them, like the jam in a sandwich, there are some very well-written accounts of the very latest developments in atomic and theoretical physics. Dr. Rusk is unusually successful to conveying to the lay reader the essence of these outstanding achievements of modern science, without worrying him with details which would only confuse, without adding anything of real importance. We may add that the illustrations, with which the book is amply furnished, are the most pleasing we have seen for a long while.

In conclusion, there is one sentence in the preface which I hope Dr. Rusk will agree to modify in his second edition. It reads: "If the scientific and technical level of our nation is continually to rise, as it must *if we are to retain world leadership*, the achievements of science cannot remain only for the cloistered few." The words in italics are, of course, common form, and could easily be paralleled from articles and reports in Great Britain and no doubt in Germany, the U.S.S.R. and elsewhere, but has not the time arrived when men of science, at any rate, might come to regard their work not as part of an international struggle for world leadership but rather as a common service for the good of humanity as a whole? If not, the outlook for society is indeed bleak. I feel sure that Dr. Rusk will agree.

J. A. CROWTHER.

## ABSORPTION SPECTRA IN MEDICINE

### Spectrophotometry in Medicine

Being the authorised translation of "Medizinische Spektrophotometrie" by Dr. Ludwig Heilmeyer. Translated by Dr. A. Jordan and T. L. Tippell. Pp. xiv + 280. (London: Adam Hilger, Ltd., 1943.) 30s.net.

THE German edition of this work was published in 1933 by G. Fischer of Jena. The author, working at the Laboratory of Clinical Medicine at the University of Jena, had by then made substantial use of modern methods of spectrophotometry for investigating body fluids, and at the outbreak of the War was still publishing valuable work in this field. His book received scant attention in British and American journals, but as the subject-matter grew in interest and significance and a knowledge of spectrophotometric technique became more widespread, the need was felt for a translation. The book was naturally somewhat out of date in 1939 and it cannot be doubted that, but for the War, Heilmeyer would have desired to revise some of the chapters rather drastically for the English edition.

The translators were faced with a difficult problem. The symbols in use in spectrophotometry have now been agreed upon and differ from those used in the German original, and the newer ones have been used throughout the translation. The description of spectrophotometric technique has been discreetly brought up to date, and here and there useful foot-notes on recent work have been added. The work as a whole, however, remains as it was written and the very careful translation deals faithfully even with some obscure passages.

It is necessary to emphasize that clinicians and research workers using this book will need to search the literature of the last ten years for themselves.

The work consists of six parts. The first deals with the theory and technique of spectrophotometry and is excellent. The second is concerned with absorption spectra applied to blood and haemoglobin derivatives, and provides a very convenient summary of a difficult field. Part 3 covers the first breakdown products of haemoglobin, and is a section which will need much revision and amplification in the light of recent work. The fourth part deals with blood serum and both normal and pathological serum pigments. Bilirubin and synthetic bilirubinoid pigments, as well as the lipochrome pigments, are reviewed, but there is no mention of vitamin A, concerning the determination of which in sera there is now a considerable literature. The next part discusses the spectrophotometry of urine, urobilin, urobilinogen and uroerythrin, together with urochromes A and B. Haemoglobinuria and porphyrinuria are considered as fully as the state of knowledge in 1932 justified. There is finally a short section on bile, ascitic fluid and cerebrospinal fluid. The translation is ably and copiously indexed.

The chief virtue of Heilmeyer's book is that it unites a thorough knowledge of spectrophotometry with the systematic study of pathological material available in a university clinical laboratory. In this respect it is unique and indispensable. It shows convincingly how much has been achieved in the field, and it is greatly to be hoped that this translation will prepare the way for a new edition after the War. In the meantime the present issue can do much to promote co-operation between spectroscopists and pathologists.

R. A. MORTON.