Although this book is designed primarily for specialists in personnel selection and vocational guidance, it can be recommended also to those who, while not specialists in this field, are often expected to be by virtue of their role and status in industry.

Professor Vernon's book, The Structure of Human Abilities, the first of a new series entitled "Methoden's Manuals of Modern Psychology," is intended by its author to provide in a simple, non-technical form that "acquaintance with the principles and results of factor analysis necessary for the study and practice of educational, vocational, or other branches of applied psychology". There will be many readers of this journal who do not feel any great stirrings within them to make the acquaintance of factor analysis. For them the attraction of this book by the Professor of Educational Psychology in the University of London is more likely to lie in his second purpose:

"To bring together the large number of publications in this field, in Britain and America, which at first sight appear to give contradictory and confusing accounts of mental structure, and to show that they can be fitted into one consistent—even if incomplete—picture."

He has achieved a considerable success in both these aims. Like Professor Super, he realizes that any mention of mathematics tends to "frighten or antagonise many of the teachers, employers, and others who are most prone to discuss abilities unscientifically", but goes on boldly to demonstrate very convincingly that the basic principles of factor analysis are really quite simple to those who have not made up their minds in advance that they couldn't possibly grasp them. The nature of such mathematically derived factors in psychology is stated clearly as "categories for classifying mental or behavioural performances, rather than as entities in the mind or nervous system", and the author is consistent in opposing the assumptions that underly the "faculty" approach of many professionally qualified people to the subject of human abilities. The book is committed to the "hierarchical" theory which has developed steadily in this country during the past 40 years, giving prime importance to "general mental ability" (Spearman's "g") and then to two well-marked group factors styled "v: ed." (verbal: educational) and "k: m" (spatial: mechanical). He adopts a pragmatic criterion for the general acceptance of further major group factors at this level, namely that they shall be shown to have importance in their application to educational, occupational or other fields in daily life. In this he typifies the British position in contrast to that of the Americans, and in the process makes it clear that the latter are already showing some signs of recognizing the points of contact revealed even while adhering to the Thurstone "multiple factor" approach popular there. Apart from examples in the text, this receives lucid treatment in a short appendix, and the 265-item bibliography should provide adequate source material for those who wish to follow-up in detail any special aspect of human abilities. It is a little surprising to find on the last page of the Appendix a defence of "the I.Q., or other comparable measures for adult purposes" which does not more fully indicate the great importance now attached to the "other comparable measures". Although Professor Vernon is concerned to show the relation between the hierarchical theory of human abilities and the satisfactory nature of reliable tests yielding a global score which can be expressed in the form of an intelligence quotient, no risks should be taken which may result in the perpetuation of the use of I.Q. measures for adult intelligence which are derived from the "mental age" concept familiar from the Stanford-Binet scale. Another criticism is the absence of an overall summary in which the conclusions of various chapters can be brought together. An important summarizing paragraph occurs on page 86, at the end of Chapter VII, which is entitled "Practice, Difficulty, Speed and Other Factors"—not a place where one would expect to find it—but the main text ends on page 128 with only the usual chapter summary. This is not an easy book, but that is because understanding of the mental functions cannot be made easy. Professor Vernon's book constitutes an important step in the process of making available to the layman the results of immense quantities of research into the nature of human abilities as particularly related to educational and occupational problems.

These two books, one American and the other British, give some indication of the rapid development of the theoretical, methodological, and practical aspects of one of the younger branches of scientific enquiry. Both authors are rightly modest about the limits of present knowledge; both are aware of the dangers of over-enthusiasm; both are explicit that users of psychological methods and assessments must accept rigorous standards of administration and evaluation; and both expect the intelligent cooperation of their non-specialist readers to the extent of mastering simple mathematical and logical concepts, and of the adoption of an unprejudiced attitude towards their subject matter. In the reviewer's opinion, both have rendered a service to many, such as those engaged in industrial medicine, who have recognized the importance in their daily work and relationships of having some reliable information about these matters.

ALASTAIR HERON


It is useful to pause and take stock of the situation, to look back on what has been done, and to see clearly the tasks that lie ahead. To keep up to date with advances in industrial medicine is a formidable problem. We therefore owe a debt to the British Council for gathering a symposium, which brings us up to date with the present state of knowledge concerning industrial hazards. It does not pretend to be an exhaustive account of every aspect of industrial medicine; skin and bladder cancer, for example, are not mentioned, although readers of this Bulletin will remember a previous number devoted to "Chemical Carcinogenesis", but its scope is sufficiently wide for Dr. Ragan to say in his preface: "It is unlikely that the doctor who spends all or part of his time in industry will encounter the
majority of the hazards described here". Our individual horizons tend to be limited, but it is necessary that we should be aware of the clinical, pathological and preventive aspects of all the hazards in the wide field of industrial medicine.

It is difficult to do justice to the contributors in a short review, particularly as they have each produced interesting accounts of their own particular subjects. Little more can be done than to give a very broad outline of the contents of this instructive series of papers.

Dr. Donald Hunter discusses the toxic metals, omitting those already familiar. In addition to a timely survey of beryllium he reviews the literature of cadmium, osmium, platinum, selenium, tellurium, uranium, and vanadium. Chrome and manganese, well known in the literature, have come into increased use of recent years, and their effects are also described. He draws attention to the importance of substituting harmless halophosphates for beryllium salts in the manufacture of fluorescent lamps, and says that these halophosphates must be used.

Dr. Taylor deals with the toxic effects of some new compounds not in common use but likely to become of great importance, among them the silicones and the fluorinated paraffins. His paper illustrates the great value that the chemist can be to the industrial hygienist in elucidating toxic hazards before substances are brought into general use.

Dr. Browning, whose new edition of "Toxicology of Industrial Solvents" is still awaited, reviews the properties, industrial uses, and toxicology of the aromatic and cyclic hydrocarbons, impressing on us once again the dangers of benzene. Too much cannot be said about the toxic effect of this common solvent. Many chemists would do well to remember the recent dictum of a chemical works manager: "Benzene is not a hexagonal solid, it is a colourless liquid which gives off a dangerous vapour".

The new organic insecticides have been much in the news, and it has been shown that many of them are as toxic to man as they are to the insects. Dr. Barnes describes them and points out that, although the acute manifestations are becoming well known, the effect of absorption of small doses over a long period is neither easy to estimate in experimental animals, or to predict in human beings. As we cannot prevent their use, we must be prepared with methods to eliminate their undesirable effects. These are particularly difficult to apply without effective legislation.

The paper on occupational skin diseases by Squire, Cruickshank, and Topley is an excellent piece of fundamental research. They approach this vexatious problem from the statistical, clinical, and bacteriological angles and, having shown from national and local statistics how the incidence of dermatitis has been rising, they discover in the course of a field investigation the substances responsible for dermatitis in the light engineering industry. Measures for prevention and treatment, based on clinical and bacteriological findings, are suggested, but it is emphasized that there is still need for further research.

Respiratory disease is the subject of the next three papers. Fletcher and Gough describe their work on coal miner's pneumoconiosis, illustrating their article with some excellent pictures of Dr. Gough's whole-lung sections. Dr. Middleton, whose international reputation is well known, gives a short, concise, yet easily assimilable account of silicosis and other pneumoconioses. His ease of presentation of this wide subject is a tribute to his long experience. Fresh interest has recently been aroused in the problem of byssinosis in the cotton industry, and Dr. Schilling gives an account of some of the work done recently by the Department of Occupational Health at Manchester University. He clears up the confusion which has existed in the literature between "mill fever" and "Monday fever", and draws attention to the new method of oiling cotton which bids fair to remove much of the trouble arising in cotton card rooms.

Dr. Edson reviews the occupational radiation hazards. After listing the occupations which present these hazards he shows what clinical results have appeared from exposure, and, having pointed out the methods of evaluating radiation hazards and measuring doses, he discusses radiation protection, pointing out that health supervision, although essential, is no substitute for the proper planning of methods and training of operatives. As a depressing corollary to Edson's paper, Dr. Loutit discusses the treatment of the radiation syndrome. Although positive information is scanty, efforts are still being made to discover methods of preventing the ill-effects of over-exposure to radiations, and certain lines of research appear hopeful.

The last three papers in the symposium concern industrial injuries. Dr. Bull analyses and classifies them, pointing out from his experience that probably only one-seventh of the total injuries received are actually treated at the works surgery. He illustrates the proportions of incidence and of lost time due to compensation accidents, and analyses the fatal industrial accidents in the Birmingham area. Apart from the prevention of specific injuries, he points out that recent advances in treatment, such as the closure of major open wounds and chemotherapy, could be used more extensively. Whitfield stresses the importance of record keeping. He admits that although it is possible to do much by the design of equipment, and by paying attention to lighting, temperature, humidity, and hours of work, there remains the problem of individual emotional and social conditions which are difficult to assess, and play a large part in the cause of accidents. The prevention of sepsis in minor industrial wounds is discussed by Dr. Williams, who has done so much to elucidate this problem. A great deal can be done by organization in the factory surgery and using a "non-touch" technique, but there are two problems which remain unsolved: (1) the prevention of the trivial wounds which lead to bacterial invasion, and (2) some method of treatment capable of being used in the many factories which have no adequately trained first-aid workers.

The plates illustrating the effects of beryllium, chrome, industrial dermatitis, coal miner's pneumoconiosis, and fullers' earth pneumoconiosis are well produced, but the photographs in the text leave much to be desired. This is a minor criticism, and does not detract from the conclusion that this work is a really important contri-
BOOK REVIEWS

Bution to industrial medicine. It is worth every penny of ten shillings. R. Murray


This book, the combined work of 31 contributors, most of whom are experts in some particular field of blind welfare, is the most comprehensive publication on the problem of the blind which has yet been written in the English language. The word "problem" is used advisedly because, although all the contributors are obvious enthusiasts and have much to say on what has been achieved, one is struck perhaps most forcibly by the emphasis they place on how much there is still to be learned of the psychology of the blind before his problem can be truly solved, on how far from their goal even the most highly organized schemes still are, and how still imperfect are the many devices which have been invented to aid the blind. The other striking general impression which the book gives is how far removed from benevolent but sterile patronage is modern blind welfare; with all its ramifications its single purpose is to make the blind self-respecting and self-supporting.

The book is divided into seven parts. The first is concerned with the history of modern work for the blind from its foundation in Paris in 1785, when he started the first school for the blind, to the complexity of agencies, associations, societies, schools, schemes and legislative acts which operate today in the United States, Great Britain, Canada, and continental Europe. A distinct difference is remarked upon in policy on the two sides of the Atlantic. In America this is based on the principle of, as far as possible, educating, rehabilitating and training the blind at or from his own home, whereas in Great Britain and Europe the preference is for residential institutions.

The next two parts cover education, psychology, rehabilitation and training in general, separate sections dealing with the pre-school child, schooling, the adult, the aged and deaf blind. If these 11 chapters with their multiplicity of agencies, organizations, schemes and acts, with a leavening of psychological terms and somewhat burdened by repetition make rather heavy going for the amateur, they cannot fail to bring home to him the magnitude of the problem and are certain to be of great value to the expert.

After a section on the military blind, which includes a concise review of St. Dunstans by Sir Ian Fraser, the last half of the book deals in detail with aids to the blind. It is both easy to read and of absorbing interest. First are discussed the time-tested aids such as Braille and its rivals (there is an interesting account of its history and of the "battle of the types"), the talking book, the white cane, proficiency with which requires quite an elaborate technique, and the guide dog. Mention is made of aids to cooking, sewing, various games, and a number of manual trades and other activities. There are three chapters on aids which are in process of development, such as the recording machine, and on methods of research into the efficiency of existing and experimental devices; two further chapters describe reading machines and their future potentialities and the possibility of employing phosphene phenomena in the production of artificial sight. A final chapter summarizes the causes of blindness.

With the qualification that 90% of the publication is American in subject matter and in method of presentation, it is certain to be of interest and value to anyone connected in any way with the welfare of the blind.

A. Lister


Those of us who had to deal with eye problems in industry during the war years were always grateful for the help and guidance given in the first edition of this book. At that time there was practically no literature dealing with these problems.

This new edition has been enlarged, and like the majority of American publications is well printed and profusely illustrated with a series of excellent and instructive photographs. The advice given throughout, both on methods of prevention and on treatment, is sound, but one wonders to what extent the various eye programmes described are found in industry in the United States.

While no one could possibly cavil at the necessity for an adequate pre-employment ophthalmic examination, yet one does wonder what may be the ultimate result of some of the complete screening procedures of all industrial employees. In many industries a strict interpretation of desirable visual standards for those already in employment might well lead to almost insoluble problems in job placement. While periodical examination is undoubtedly essential in certain specific instances, such as crane drivers and locomotive drivers, for the great majority of workers, the examination is possibly better confined at the present time to improving their visual capacity, rather than in finding them unsuitable, judged by an arbitrary standard, for an occupation which they may have had for many years.

In many British industries there is undoubtedly room for improvement in the methods of conducting the initial eye examination, which is still too often done in an unsatisfactory and slipshod manner, but the question of suitable visual standards in industry is still one which has to be settled arbitrarily, and is influenced, not only by the type of industry, but by the availability of labour. Many of us have experienced difficulty in assessing the question of depth perception, and it is interesting to find that even in the United States they have not yet developed an entirely satisfactory method for investigating this faculty.

In Great Britain, where there is at present full employment, the difficulty is not so much one of selection from a number of suitable persons, as one of making the best of the material available, and indeed of thinking more in terms of minimum visual standards.

The chapters dealing with treatment are undoubtedly rather too detailed for the average industrial medical officer, and perhaps more emphasis might be laid upon