

THURSDAY, JULY 6, 1916.

OCCUPATION AND HEALTH.

Occupations: From the Social, Hygienic, and Medical Points of View. By Sir Thomas Oliver. Pp. x+110. (Cambridge: At the University Press, 1916.) Price 6s. net.

THE subject of this book is the influence of occupation upon health. After a brief historical introduction the author deals with the effect upon health of contamination of the air by smoke and dust, both out of doors and in factories, this discussion being followed by chapters on fatigue, on the hygienic condition of factories, on the relation of occupation to mortality, and on the choice of a career. Finally, an account is given of the harmful effects of certain dusty occupations, of gases, and of electric currents.

The brief space at his disposal and the wide scope of the subject have doubtless made it impossible for the author to give more than the merest outline of the relation of occupation to health. He does not appear, however, to have been altogether happy in his treatment of the question. Although the book contains a mass of interesting information, the reader constantly receives the impression that he is being presented with a succession of disconnected and unrelated statements. No stress has been laid upon fundamental principles, such as that health may be affected either by the nature of the occupation, or by the conditions in which the occupation is carried on. Nor has any attempt been made to distinguish essential from subsidiary factors. The chapter on fatigue, for example, contains scarcely any reference to the means by which industrial fatigue can be recognised or prevented, although recent work has shown both that diminished output is the surest evidence of fatigue, and that the introduction of short rest periods at intervals during the working day lessens the risk of over-fatigue. In view of the extreme importance of the subject, both for employer and employed, a fuller treatment of industrial fatigue would have been advantageous. The book suffers, moreover, from faulty English and from much needless repetition; a paragraph on pp. 55 and 56 is reproduced, for instance, almost word for word on pp. 65 and 66.

The least satisfactory portions of the book are those dealing with the causation of fatigue, and with the action of gases on the body; these are not up to date. In the section on the causation and nature of fatigue the author adopts the obsolete view that toxins formed during muscular exercise are the cause of fatigue; and no reference is made to the modern conception of fatigue, although most, if not all, physiologists now hold that the accumulation of lactic acid in active muscles is an important factor in its production. Again, in the chapter on gases, the author speaks of carbon monoxide toxæmia and apparently regards this gas as directly poisonous; thus the statement is made (p. 89) that

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carbon monoxide "may exercise a paralysing influence upon the nerves of the heart, or upon the nerve centres in the medulla oblongata." These statements are erroneous, since Haldane has shown that carbon monoxide is not directly poisonous, and that its harmful effects are due solely to the fact that it displaces oxygen from combination with hæmoglobin; and their inclusion in this book seriously detracts from its scientific value.

In spite of these defects the book contains much that is useful, especially in the chapters on factory hygiene and on dusty occupations, and although it cannot be recommended from a scientific point of view it may prove of value to the general reader.

F. A. B.

EXPERIMENTAL SPECTROSCOPY.

Collected Papers on Spectroscopy. By Prof. G. D. Liveing and Sir J. Dewar. Pp. xv+566. (Cambridge: At the University Press, 1915.) Price 30s. net.

THE names of Profs. Liveing and Dewar stand out prominently in the history of modern spectroscopy, and the publication of their collected papers will be cordially welcomed by all who are interested in this rapidly advancing subject. The chief results of their investigations have doubtless already become widely known through references which have appeared in textbooks and in papers by other workers, but to those actually engaged in spectroscopic research it will be a great convenience to have the complete papers in this handy form. Moreover, it will be especially stimulating to students to be able to follow, step by step, the development of the authors' ideas and methods of observation.

The papers have been reprinted from the original sources, with only printers' errors corrected and the addition of a diagram for the sake of greater clearness in the description of an instrument. It may be questioned whether the wisest course has been adopted in the arrangement of the papers, which merely follow each other in the order of dates of publication. There are several instances in which a number of different papers refer to the same subject, and an arrangement in groups would not often have required the dividing up of a paper into sections. Inconvenience arising from the plan adopted, however, is considerably reduced by the addition of a classified index. There is also a useful index of names.

Excluding abstracts of papers which also appear in full, and a few lectures dealing with subjects of the authors' researches, the number of separate papers is about seventy, dating from 1877 to 1904. The first is a brief account of the phosphorescence and flame spectra of calcium fluoride, and it is fortunate that this is the only case in which positions in the spectrum are not expressed on the scale of wave-lengths. It is not possible even to enumerate the subjects of the remaining papers, but it may be mentioned that among the more extensive investigations, each of which occupies several papers, are those on the reversal

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