

THE DISEASES OF OCCUPATIONS

by
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A complete clinical survey
of all the known hazards of occupations
including the latest methods of treatment.
In itself the book constitutes a textbook of
clinical industrial medicine

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THE DISEASES OF OCCUPATIONS

To the memory of
HUBERT M. TURNBULL, F.R.S.
with affection, gratitude and
deep respect

PREFACE

IN this book it has been my purpose to review on a broad basis and with emphasis on its clinical aspects the problem of disease in relation to occupation. Every type of occupation is considered, whether it belongs to an industry or not. The work embodies the experience of twenty years' teaching and is designed to be of use to the student, the general practitioner and the consultant. The industrial medical officer and the works' chemist will need to consult books which are larger and more detailed than this.

The point of view is that of the general physician; unhappily I have never held a post as factory doctor. In using the clinical approach I have had always in mind the need to establish the subject on an academic footing, and I have merely put together something of what is known about occupational diseases, in order to lay down a basis upon which the practising doctor may build.

I have kept in mind the importance of describing the chemical composition of the materials handled in various occupations. Where I have described at length the use in industry of such harmless substances as chalk and limestone, the object has been to stress the fact that dirty and dusty conditions of working are not necessarily dangerous to health. In dealing with industrial poisons and dusts, I have given special emphasis to the mechanism by which poisoning occurs and the means of prevention used. Wherever possible, detailed descriptions of industrial processes and working conditions are given.

A large number of illustrations of factories and workshops is included with the object of giving at least an approximate idea of trade processes. The limitations of this method are, of course, realized. I have not been concerned solely with what happens in Great Britain: my review takes into account occupational disease in any part of the world. It follows that I have recorded certain descriptions of working conditions and diseases which I have not had the opportunity to study personally.

Some of the subject-matter refers to diseases which are rare or even obsolete. Thus I felt that it was worth while to describe phosphorus poisoning in detail, because history proves that very serious disease may sometimes exist in an industry without medical men knowing anything about it, and that every known hygienic measure may prove to be unavailing for the prevention of certain kinds of industrial poisoning.

Sometimes conditions unrelated to occupation have been described because of the light they throw upon what happens in industry. Injuries by lightning stroke and the disasters of Hiroshima and Nagasaki are examples of this. It has been necessary often to approach the subject

historically, in order to show what has been achieved or what yet requires to be done.

The opening chapters depict in a disjointed way something of the historical, social and economic background of the occupations men follow. These chapters are amateur and merit the comment of Sir Robert Hutchison that to write about the history of medicine is itself a physical sign of cerebral arteriosclerosis in the writer.

In the preparation of this work I have had the valuable assistance of Dr. P. Lesley Bidstrup and Dr. Ian Lodge Patch. In addition I have had the help and advice of many other friends and colleagues, only a few of whom are mentioned in the text. I am particularly indebted to Dr. J. N. Agate, Dr. J. M. Barnes, Professor S. P. Bedson, Dr. J. A. Bonnell, Dr. E. Boyland, the late Dr. J. C. Bridge, Miss H. M. Buckell, the late Professor W. Bulloch, Mr. R. Drew, Dr. D. E. Freeland, Dr. J. R. Gilmour, Dr. H. C. Hamilton, Dr. D. G. Harvey, Dr. S. A. Henry, Mr. C. Hunter, Miss E. K. Hunter, the late Dr. H. Hunter, Mr. J. A. Hunter, Professor L. Hunter, Dr. M. E. F. Hunter, Dr. M. H. Jupe, Professor Sir Ernest Kennaway, Mr. E. King, Dr. C. A. Klein, Professor R. E. Lane, Mr. D. Lawford, Dr. W. H. Linnell, Dr. R. Lovell, Dr. E. R. A. Merewether, Dr. E. L. Middleton, the late Dr. G. Riddoch, Professor S. Russ, Professor Dorothy Russell, Dr. R. S. F. Schilling, Dr. W. A. M. Smart, Professor H. M. Turnbull, Dr. E. Williams and Dr. W. W. Woods.

I wish to express my appreciation of the generous treatment, both of myself and my staff, by the Medical Research Council. The equipment and maintenance of the Department for Research in Industrial Medicine at the London Hospital which I have the honour to direct has made possible a number of investigations described here in detail.

I am indebted to friends and colleagues in many parts of the world who have arranged for me to visit mines, shipyards and factories, as well as departments for research. It is a pleasure to acknowledge the kindness of executives in a great number of industrial firms who have supplied me with information and photographs, and given me free access to their works.

For many of the clinical photographs reproduced here, my thanks are due to the late Mr. H. J. Suggars, himself a victim of an occupational disease. Other excellent reproductions and all the charts are the work of Mr. H. S. Edwards. My grateful thanks are due to Mrs. Margaret Adams upon whom the arduous task of making accurate copies in type has mainly fallen. For help in reading the proofs I have to thank many friends and especially my clinical ward clerks.

Above all I am deeply grateful for the constant help, kindly interest, forbearance and devotion of my wife during the many years which were given to the task of writing this book.

DONALD HUNTER.

The London Hospital, E.1.
January, 1955.

PREFACE TO THE SECOND EDITION

I AM glad to have the opportunity of correcting and amplifying certain statements of fact. Some few additions have been made to the opening chapters on the history of the subject, eleven new illustrations have been added and the index has been enlarged and improved. The descriptions of poisoning by vanadium, manganese and cadmium have been brought up to date, the latter with the help of Dr. John Bonnell. New sections on thallium poisoning, on iron and steel foundries and on the hazards of work in sewers have been added. I am indebted to Dr. John Rogan for new information on the National Coal Board Medical Service and on the Coal Industry Social Welfare Organization. I wish to thank Dr. John Watkins-Pitchford for information bringing up to date the Industrial Injuries Scheme of the Ministry of Pensions and National Insurance. I am greatly indebted to the printers and publishers for the excellent work put into the production of the book.

DONALD HUNTER.

The London Hospital, E.I.
January, 1957.

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CHAPTER I

MAN AND HIS WORK

OCCUPATIONS DETERMINED BY CLIMATE

THE occupations followed by different groups of mankind originally depended on geographical surroundings, for not all parts of the world are equally adapted to the needs of man. Broadly speaking, all land is either forest land, grassland or desert. Over the centuries each of these has led to the development of special occupations which have exercised the most profound influence on the lives of the races engaged in them.

Climate of the Tundra

The frozen desert surrounding the Arctic Ocean is known as the tundra in Russia and the Barren Lands in Canada. Buried in winter beneath a sheet of snow, it awakens with the tardy spring to a green life of great intensity. The sun melts the surface snow, but even in the height of summer it is powerless to penetrate more than a few inches into the permanently frozen soil. The surface soil is a thin layer affording nourishment only for those plants whose roots penetrate but a few inches. Stunted bushes such as cranberry and whortleberry grow abundantly half hidden among the moss which is the characteristic vegetation of the tundra. Huge tracts are covered by bog moss on the lower slopes and by reindeer moss on the higher ground, brightened in summer with flowers of all colours. For two-thirds of the year all vegetable life is hidden beneath the snow and the only traces of animal life are the footprints of fox or reindeer on its surface. The only important animal on the tundra is the reindeer (fig. 1). It is indifferent to cold and feeds on the reindeer moss, which it procures in winter by digging with its forefeet in the snow (Ratzel, 1898).

Occupations in the Tundra

The tundra is inhabited by various races, which are of necessity very thinly scattered. The Eskimo are a coastal people deriving their sustenance entirely from the sea. In the tundra of the Old World we have Lapps and Finns in the west, and many similar tribes farther east, such as Yuraks, Samoyeds and Yakuts. Agriculture is, of course, impossible in a soil which scarcely thaws. In the three months of summer when the rivers melt, fish become abundant. Fishing and the hunting of small animals are the chief summer occupations, and the drying of fish for winter use is an important part of the women's work. The only occupation possible in winter is the hunting of furred animals on the edge of the forests which bound the tundra to the south.



FIG. 1.—Samoyed Encampment in the Siberian Tundra
(Drawn from life by G. Sundblad, 1898)

Nomadic Mode of Life

The inhabitants lead a nomadic life, for reindeer cannot be kept in captivity and must be allowed to wander in quest of food. The owners are obliged to follow their herds from one feeding-ground to another, in order to obtain their milk for food and their services for draught. Hunting and fishing are likewise occupations which necessitate frequent moves, for game would soon be exhausted if they were always carried on over the same area. The division of labour between the sexes is that best suited to the mode of life. The men do most of the actual work of procuring food, by hunting and fishing. They also make and mend the necessary weapons. Women's work consists of making the most economical use of the supplies which the men procure. In summer, on the tundra, their task is to clean the fish caught and to dry any surplus for winter use. Their spare time is occupied in helping the children to collect berries and in watching that the reindeer do not stray too far to be milked.

Importance of the Reindeer

The importance of the reindeer both alive and dead can hardly be realized. In life it makes it possible to move freely from one part of the tundra to another. Dead, every portion of its carcass is valuable. The flesh supplies food, the bones and horns are used for implements, the tendons for thread and the skins when made into leather provide shelter and clothing. Prosperity is measured by the possession of reindeer. To have them is to be a rich man; to depend on fishing only is to be a poor one, and to live from hand to mouth (Herbertsen and Herbertsen, 1911).