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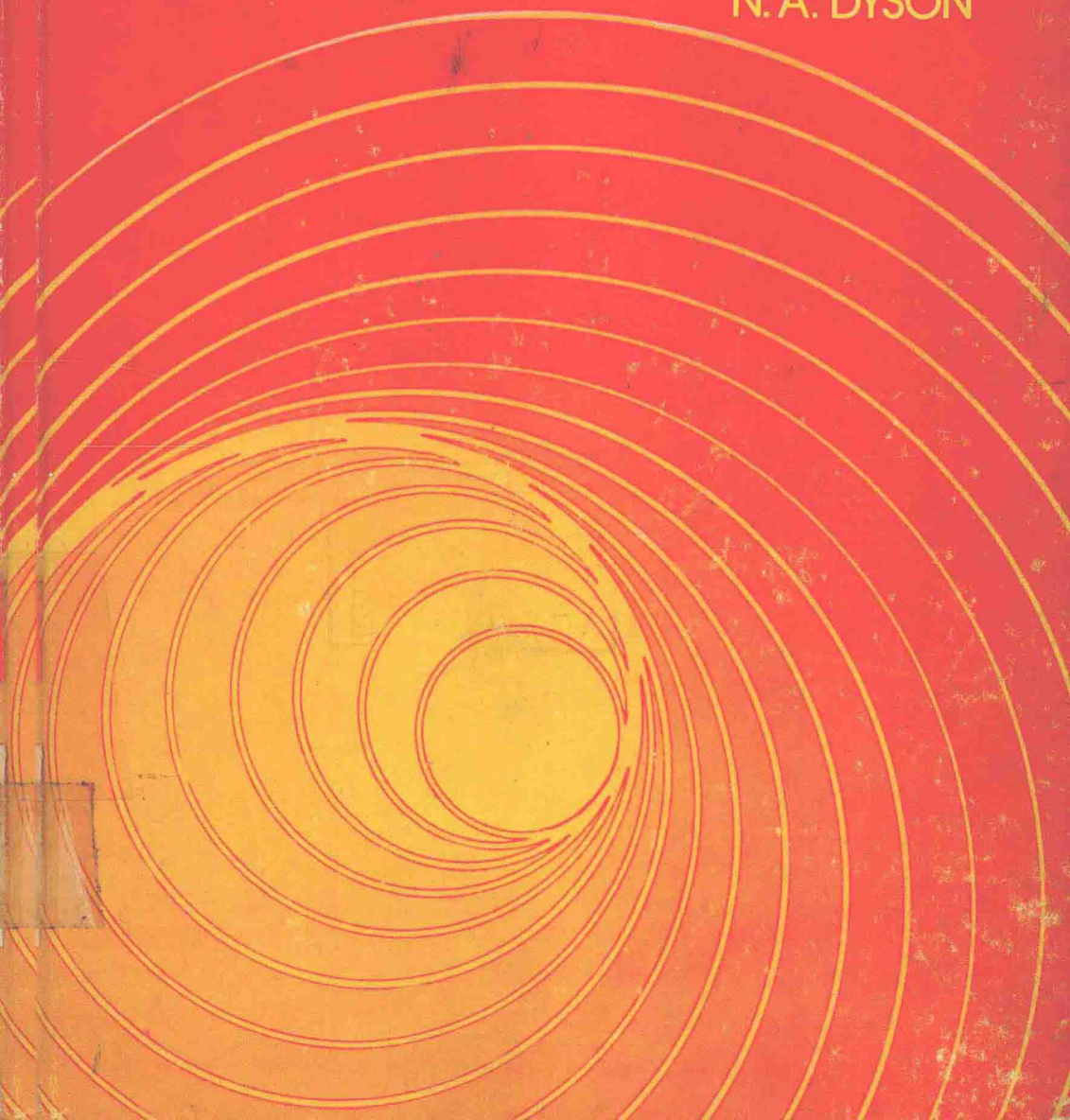
an introduction to

Nuclear Physics with Applications in Medicine and Biology

N. A. DYSON



AN INTRODUCTION TO NUCLEAR PHYSICS, WITH APPLICATIONS IN MEDICINE AND BIOLOGY

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Author's Preface

This book was written to provide a concise account of the applications of nuclear physics to medical and biological science. In order to do this, it seemed necessary to outline some rather basic aspects of nuclear and radiation physics and, in its final form, something approaching half the book is devoted to laying these foundations. The book will therefore be of interest not only to those undergraduates and postgraduates who are devoting their main effort to medical physics, but also to those students who are looking primarily for an introduction to nuclear physics together with an account of some of the ways in which it impinges on the work of other scientists.

The book, then, should appeal to many undergraduates, including those who, in their final year, have selected a biomedical type of option as a means of broadening their scientific interest and also perhaps in order to explore a possible career avenue. The book will also be of value to postgraduates in various disciplines—those who are pursuing post-graduate courses in medical or medically-oriented physics; those who are seeking to become radiobiologists (whether originally students of physics, biology or medicine); and those who, as undergraduates, sought to combine physics with other subjects such as biology or environmental science, and are now needing to develop their nuclear physics to a more useful level than they were able to prior to graduation. Finally, it is hoped that physicists and others who have already embarked on careers in medical physics or environmental science may find the book to be of value.

The *Further Reading* to which the student's attention is particularly drawn, lists those works which for the most part are standard texts in nuclear physics, medical physics, and other more specialised areas of medicine and biology. This book will fulfil one of its purposes if it successfully launches the physicist into a systematic study of the uses of radioisotopes in clinical medicine, or the environmental scientist into the study of the detection and measurement of nuclear radiation. Many of the works listed under this heading contain very extensive lists of references which will assist the reader in his quest for more specialised and detailed material.

I am greatly indebted to Mrs Z. Drolc of the Queen Elizabeth Hospital, Birmingham and to Dr R. G. Harris of the University of Birmingham for reading substantial sections of the text, and for helping me by discussion of the subject matter. Also, I owe a debt to the Series Editor, Professor E. H. Grant, Queen Elizabeth College, University of London, for reading the whole text, and for providing guidance at all stages of preparation. Needless to say, any errors, or infelicities of balance, remain the Author's responsibility. The bulk of the typing was carried out by Mrs Sue Yeomans and Mrs June Layton, to whom my sincere thanks are due.

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Working on the premise that all ventures of this type can benefit from contact with those for whom the work is intended, the Author would welcome criticisms and suggestions, from readers, whether students, teachers, research workers, or others working in this field, towards improvement of the book in any future edition or reprinting.

N. A. Dyson
University of Birmingham,
April 1981