



# ANTIBIOTICS



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## Preface

The purpose of this book is to present in a succinct, integrated plan the facts and principles of fundamental and permanent value relating to antibiotics. Much of this information is now widely scattered in thousands of publications embracing the vast scientific literature of the subject. Some of it is derived from the authors' own researches in this field published over a period of years.

The object has been, first, to give an understanding of the fact that, in developing chemical therapy by means of antibiotics, man has merely adapted to his own ends the capacity that certain microorganisms possess to wage a war of extermination against other microorganisms, and, second, to present a general survey of the principles involved in the industrial, commercial, pharmaceutical, and medical aspects of the field of antibiotics.

The advent, about 1942, of the modern era of antibiotic chemotherapy for the treatment of systemic infections unquestionably marks one of the greatest advances in man's continuing battle against infectious diseases.

In terms of human suffering that has been alleviated, the discovery of practical means of applying microbial antagonisms for curative purposes easily ranks with the great contribution of the nineteenth century, i. e., the introduction of anesthesia in surgery one hundred years earlier.

In terms of volume, the industrial production of antibiotics outranks all other medicinals. It has been estimated that in 1948 penicillin and streptomycin alone accounted for more than one half of manufacturers' income from the sale of synthetic drugs. This figure is especially impressive when it is realized that penicillin first became available commercially in 1943 and that streptomycin was not available com-

mercially until two or three years later. Within the last year three additional antibiotics, bacitracin, aureomycin, and chloromycetin have become available. More will undoubtedly follow.

Penicillin proved to be of immense value in World War II, not only in humanitarian terms, but also in military terms, because its use returned to active service many men who otherwise would have succumbed to infection or would have been permanently disabled. In the same way, on a larger scale, many other antibiotics are proving of immense economic as well as humanitarian value in the post-war era, by reducing periods of hospitalization or of quarantine, and by rehabilitating many chronic cases. Thus, proper use of antibiotics lightens the financial burden of public health and welfare agencies.

For this reason, countries not self-sufficient with respect to production of antibiotics, find it economically advantageous to spend their limited supplies of dollars for importation of these agents in preference to a number of other "essential" commodities. Drug exports from the United States for 1948 totaled 191 million dollars: approximately 40 per cent of this sum was spent for antibiotics (mostly penicillin and streptomycin).

Antibiotics have been used largely for treatment of human patients, but with increasing production, the cost of penicillin has dropped so markedly that its wide application in veterinary medicine has become practicable, resulting in large savings for cattle, dairy, poultry, and other livestock industries. With time, similar developments may be expected for other antibiotics.

There is a genuine need for a treatment of the broad principles of antibiotics and antibiotic chemotherapy sufficiently comprehensive to satisfy those whose business is concerned with the health sciences but not so technical as to discourage the interested individual whose major activities lie in other fields.

The authors modestly hope that the present volume will help to satisfy this need by filling the gap between the necessarily brief popular accounts on the one hand and the technical accounts intended for specialists on the other hand.

Since the aim of this book has been to achieve an integration of pertinent facts and principles in a coherent picture, no attempt has been made to cite exhaustively all of the extensive literature pertaining to the several aspects of the subject, but all important critical review papers are listed, as are the principal scientific articles of historical interest.

ROBERTSON PRATT  
JEAN DUFRENOY

It is with deep appreciation that we acknowledge the services of Louise Noack Gray, who designed the cover of this book, and the ceaseless secretarial and proofreading labors of my wife, Jean, and my mother.

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