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DECAY OF TIMBER AND ITS PREVENTION

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PREFACE

IN previous publications by the authors descriptions have been given of the principal decays affecting oak (1936), softwoods (1938), and British hardwoods (1942). Copies of these publications are no longer available and instead of reprinting them separately it was decided to bring them together in one volume, together with a considerable amount of additional information. Chapters on the technique of examining decayed wood and the physiology of wood-rotting fungi have been included.

All the available information has been summarized about the different types of decay commonly occurring in various timber structures such as buildings, boats, aircraft, etc., as well as that concerning the rotting of sleepers, poles and fencing.

The resistance to decay of various composite materials prepared from wood is discussed and the factors responsible for the natural durability of timber described.

There is a chapter on wood preservatives and methods for their application in which special reference is made to the use of laboratory methods for their evaluation.

Staining of timber by fungi and methods for its prevention are dealt with in the concluding chapters.

There are few if any modern text books in the English language which deal comprehensively with the problem of timber decay and its prevention, and although there are sections devoted to the deterioration of forest products in several American text books on forest pathology, these refer primarily, of course, to conditions in the United States of America.

It is therefore hoped that the present volume will be useful not only to students and those taking up research in the subject, but also to foresters and to users of timber and to those who are responsible for its storage and preservation.

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CONTENTS

CHAPTER	PAGE
INTRODUCTION	I
Economic losses due to timber decay; earlier literature of the subject; historical development of the subject.	
I. CAUSES OF DECAY	5
Wood may disintegrate as a result of wear and other physical agencies, chemical action, insect attack or fungal decay; nature of fungi; fungi which attack wood, bacteria in wood.	
II. TECHNIQUE	11
Technique for examination of infected wood; microscopic examination; preparation of cultures; maintenance of collection of cultures; identification of cultures.	
III. PHYSIOLOGY OF WOOD-DESTROYING FUNGI	23
Distinctive physiological characteristics of wood-rotting fungi; nutrition; enzymes; respiration; growth in relation to hydrogen ion concentration and moisture content; effect of temperature; influence of radiation and electricity on growth; requirements for accessory growth substances; metabolic products.	
IV. EFFECTS OF FUNGAL DECAY ON WOOD	43
Effect of decay on physical properties and calorific value of wood; effect on appearance; chemical changes induced by decay; effect of decay on microscopic structure of wood.	
V. PRINCIPAL DECAYS OF STANDING TREES IN GREAT BRITAIN	55
Part I. Rots of Standing Conifers. Diagnostic tables; description of causal fungi and rots.	
VI. PRINCIPAL DECAYS OF STANDING TREES IN GREAT BRITAIN (<i>continued</i>)	87
Part II. Rots of Broadleaved Trees. Diagnostic tables; description of causal fungi and rots.	
VII. ROTS OF FELLED TIMBER AND OF TIMBER IN SERVICE IN THE OPEN	149
Diagnostic tables; description of causal fungi and rots.	
VIII. ROTS OF TIMBER IN BUILDINGS AND STRUCTURES	187
Diagnostic tables; description of causal fungi and rots.	
IX. PREVENTION OF DECAY IN FELLED AND CONVERTED TIMBER DURING STORAGE AND SHIPMENT	207
Care of felled logs; winter versus summer felling; seasoning and storage of sawn timber; deterioration of timber during shipment; sterilization of infected timber.	

CHAPTER	PAGE
X. DECAY OF TIMBER IN BUILDINGS, MINES, VEHICLES, AIR-CRAFT, SHIPS AND BOATS, SLEEPERS, POLES, FENCING AND IN HORTICULTURAL USE	217
XI. DETERIORATION OF COMPOSITE WOOD AND MANUFACTURED WOOD PRODUCTS	237
Plywood ; improved wood ; wood pulp ; wall boards, etc.	
XII. NATURAL DURABILITY OF TIMBER	243
Characteristics of naturally durable timbers ; laboratory tests of decay resistance ; interpretation of test results ; value of laboratory tests ; relative resistance to decay of home-grown timbers ; list of very resistant timbers ; utilization of naturally resistant timbers.	
XIII. PRESERVATION OF WOOD BY CHEMICALS	255
Chemicals used—tar oils, water-soluble and oil-soluble preservatives ; choice of preservatives ; methods of applying wood preservatives ; surface treatments ; impregnation treatments ; laboratory testing of wood preservatives—toxicity tests and tests of permanence ; field tests and service trials.	
XIV. STAINING AND DISCOLORATION OF TIMBER	267
Causes of staining ; oxidation and chemical stains ; stains caused by fungi—species of fungi concerned ; appearance of blue stain ; factors influencing development of fungal staining ; reproduction and spread of staining fungi ; association of staining fungi with insects ; effect of sap stain on properties of wood ; prevention of fungal staining.	
APPENDIX	285
British Standard method of test for the toxicity of wood preservatives to fungi.	
INDEX	291

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INTRODUCTION

AN attempt is usually made in text books on plant diseases to assess the amount of damage brought about by the diseases and to express this in terms of money. Since the value of a commodity has in the past depended at least in part on its relative abundance or scarcity, the losses due to disease cannot be expressed with any degree of accuracy as monetary losses. Estimates made in the U.S.A. indicated (1924) that the annual loss in that country from decay in wood products, when expressed in the equivalent of standing timber, reached nearly 4,000 million cubic feet. The approximate money value equivalent at that time being over 400 million dollars annually. It has been estimated that the loss due to this deterioration of wood in service in that country represented about 10 per cent. of the annual cut.

It is obvious that the risk of decay varies greatly from one class of wood products to another, and from one kind of timber to another. For instance, it is unlikely that furniture will often be exposed to conditions favourable to fungal decay, while fence posts are continuously exposed to such infection. The losses due to decay in service of various kinds of timber products ought therefore to be considered separately although losses during storage and seasoning may be common to them all.

The first realization that decay of timber was a matter of national importance came when it was found that wooden warships might become rapidly unserviceable as a result of their timbers rotting away and the supply of suitable oak wood for the construction and repair of the fleet remained a matter of great concern to the Navy Department until steel replaced timber for the construction of warships. Ramsbottom (1937) has given an interesting account of the disastrous outbreaks of rot in our warships at the beginning of the last century.

The problem of dry rot in buildings engaged the attention of architects and builders from the beginning of the nineteenth century onwards, and became increasingly serious as oak was gradually replaced by softwoods for building purposes. It is no less serious a problem to-day. A conservative estimate made in 1939 of the cost of repairing damage caused by dry rot indicated that this could not be less than £1,000,000 annually. It is certain that owing to neglect of property during the war this figure will be considerably exceeded during the next few years.

The railways soon realized the need for wood preservation and were quick to take advantage of the process for impregnating wood under pressure, which was patented by Bethell in 1838 and improved by Boulton in 1879, and the Post Office adopted a similar treatment for the telegraph poles, so that in this country decay of sleepers and poles to-day no longer presents an urgent problem.