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Wood in the Construction of Mill Buildings

Is It a Suitable Material?—Large Factory Built Only Five Years Ago to Be Torn Down and Replaced by Reinforced Concrete—Corrosive Sublimate Suggested as Preservative Where Conditions Are Favorable to Growth of Fungi—Ten Precautions to Be Taken Against Decay

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FREQUENTLY have the Forest Products Laboratories had occasion to draw attention to the serious financial losses resulting from the ravages of so-called dry rot in mill or factory buildings of wooden construction. Numerous cases in which this trouble has occurred in Canadian buildings have been carefully investigated, and one of these which has been under observation for upwards of a year affords a typical example of a deplorable state of affairs which could have been entirely avoided had those concerned in the erection of the building been guided by the necessary knowledge of the technology of timber and the mechanism of the decay of wood.

From the point of view of the owners of the building, the facts are as follow: Five years ago a large factory building was constructed with heavy timber columns and beams and laminated floors of 2-in. x 6-in. planks, overlaid by $\frac{7}{8}$ -in. hardwood. The timber was but partially seasoned when installed. The operations carried on in the building are such that the relative humidity in the interior is usually high. Serious decay was first noted about three years after the erection of the factory, and

have decided to replace entirely with reinforced concrete at an estimated expenditure of \$100,000.

The decay of wood is due to the action upon it of low forms of plants known as wood-destroying fungi and bacteria. For practical purposes the bacteria may be ignored. The germs of decay are not inherent in timber; infection must come from outside, and sound wood becomes infected in two ways, namely, by contact with

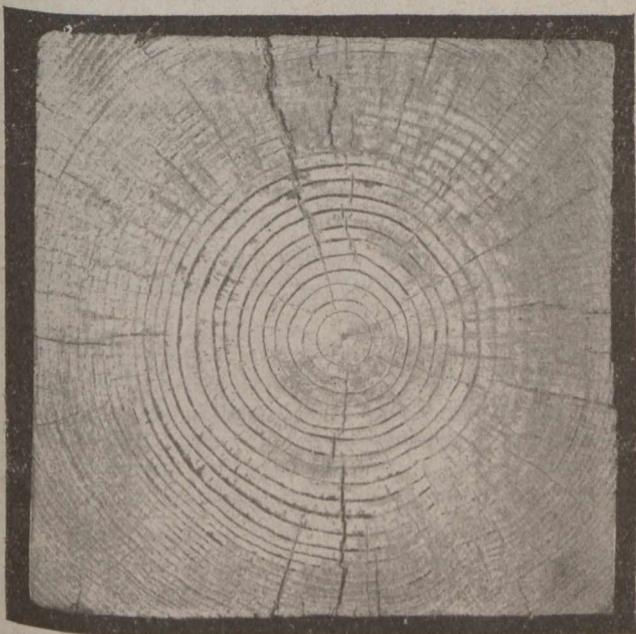


Fig. 1—Rapid Growth and Low Density

since that time has apparently become steadily worse. The tearing out of practically the whole of the timber construction has now become imperative, and the owners

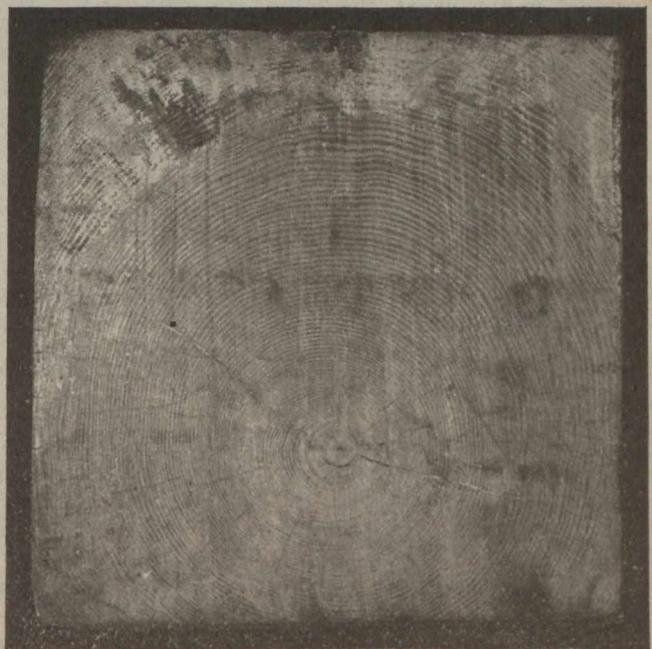


Fig. 2—Slow Growth and High Density

either tissue or spores of a wood-destroying fungus under suitable conditions of temperature, moisture and air supply. It should be noted that this is not merely an interesting theory. It is a hard fact proved beyond dispute by extensive research and thousands of carefully conducted tests, and we can now induce decay in timber at will in the laboratory. A number of kinds of fungi which can be definitely identified are responsible for the destruction of timber in buildings.

In the particular case under discussion the range of temperature and relative humidity of the air in the factory were such as to provide exceedingly favorable conditions for the growth of several of the most destructive kinds. In addition, the unseasoned state of the timber facilitated decay because it was not even necessary for the wood to