

# TIMBER

Lecture - 2

Course Coordinator

Dr. Raju Sharma

Assistant Professor

Department of Civil Engineering

Thapar Institute of Engineering and Technology

Patiala, Punjab

# Content

1

## Defects in Timber

Defects in Timber

2

## Characteristics of Timber

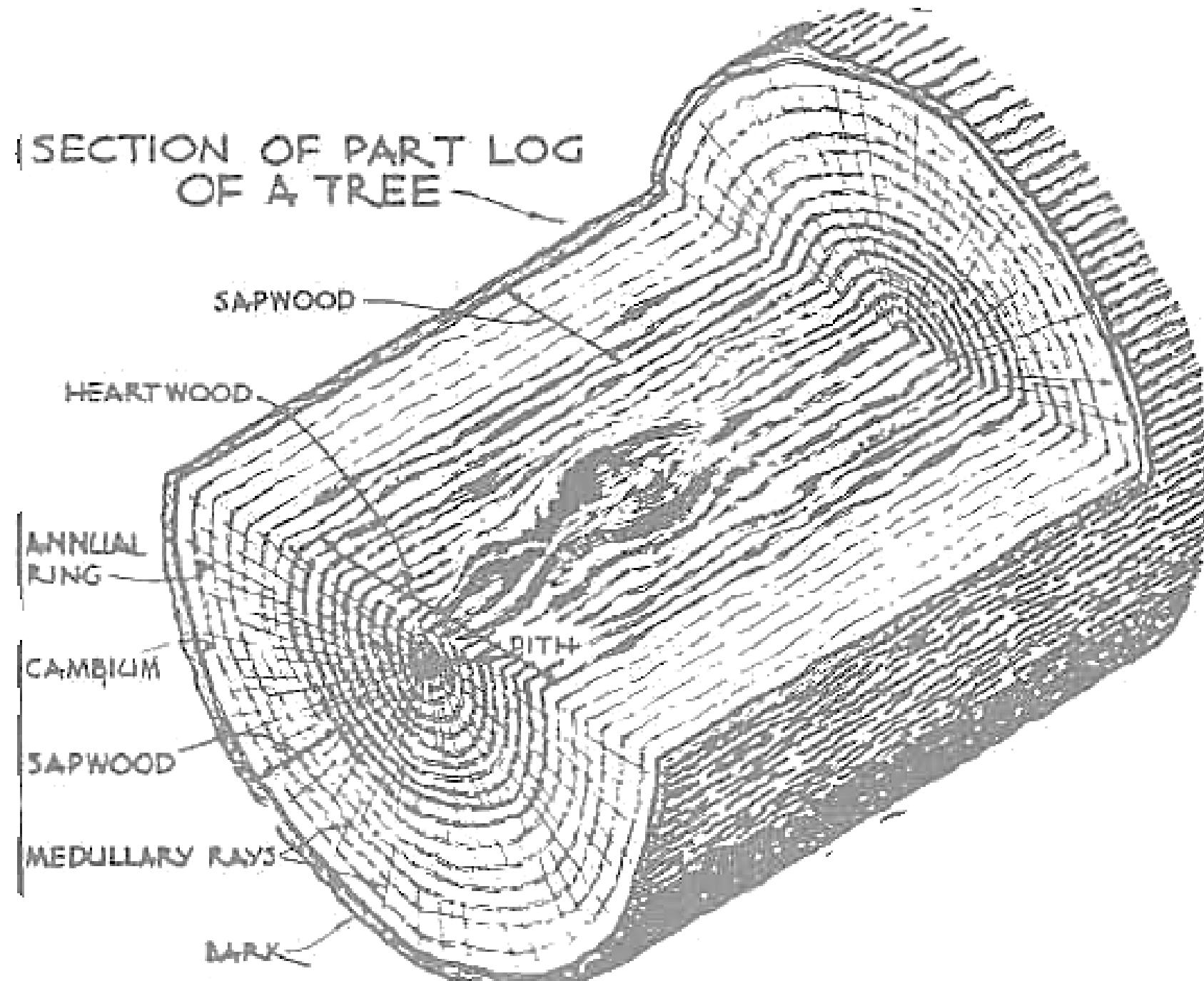
Characteristics of Timber

3

## Summary

Summary

# Section of Log of Tree



# Defects in Timber

## Defects due to Abnormal Growth

Heart Shakes

Star Shakes

Cup Shakes

Radial Shakes

Ring Galls

Wind Cracks

Knots

Dead Wood

Twisted Fibers

Rupture

# Defects in Timber

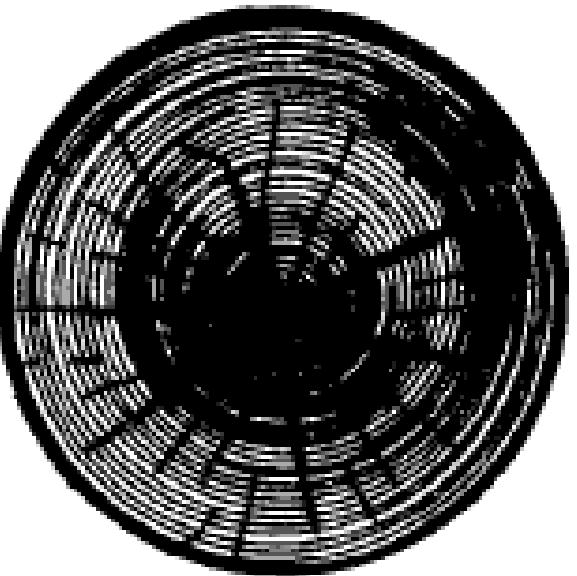
## Shakes

These are longitudinal separations in the wood between the annual rings. These lengthwise separations reduce the allowable shear strength without much effect on compressive and tensile values. The separations make the wood undesirable when appearance is important. Boths the shakes and checks if present near the neutral plane of a beam they may materially weaken its resistance to horizontal shear.

# Defects in Timber

## Heart Shakes

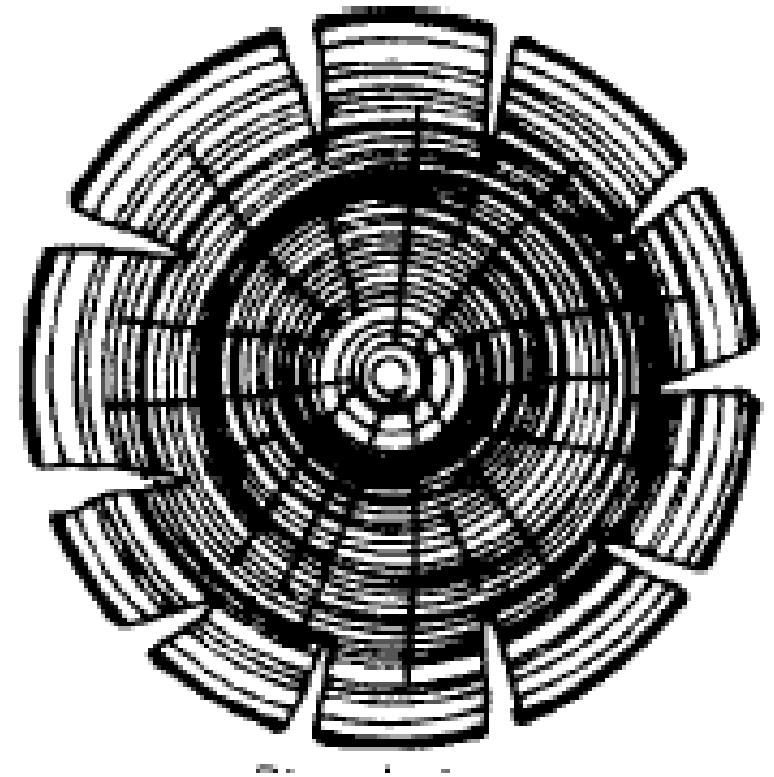
These are **splits** occurring in the **centre of the tree** and **running from the pith** (inner most part) towards the sap wood from the **medullary** (vascular tissues) **rays**. Heart shakes are caused due to **shrinkage of interior parts** due to age. A heart shake straight across the trunk is not a serious defect.



# Defects in Timber

## Star Shakes

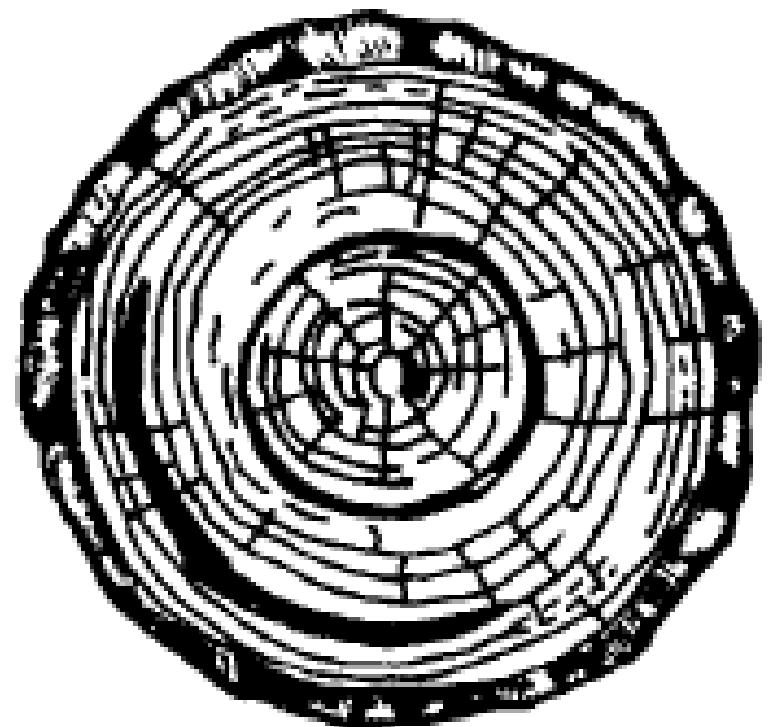
These are splits which radiate from the centre of the timber or from the bark (outer side), running in the planes of medullary rays. These occur due to severe frost or scorching heat of the sun.



# Defects in Timber

## Cup Shakes

These are curved splits which separate the whole or part of one annual ring from another. These are caused due to the unequal growth of the timber.



# Defects in Timber

## Radial Shakes

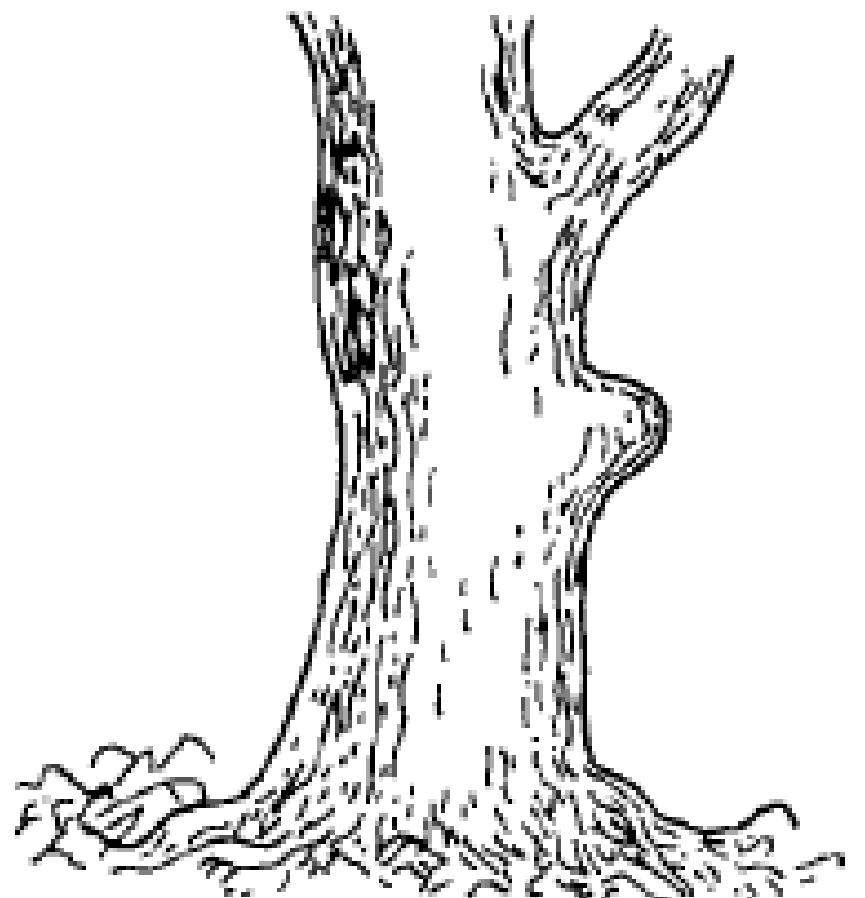
These are similar to the star shakes and occur in felled timber when exposed to the sun during seasoning. Radial shakes are generally irregular, fine and numerous. In this many splits are appeared.



# Defects in Timber

## Ring Galls

Curved swelling resulted from the growth of sap wood layers on wound, left by falling or cut off branch in an irregular manner caused because the new growth does not unite properly with the old wood and leaves a cavity where decaying action may set in.



# Defects in Timber

## Wind Cracks

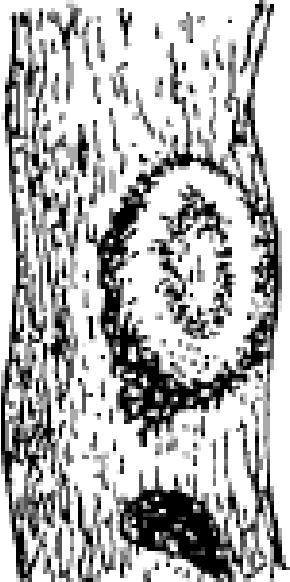
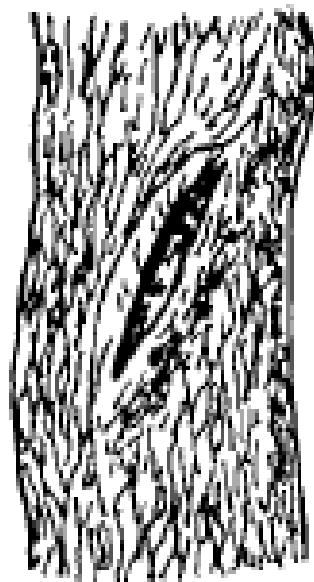
These are shakes or splits on the sides of a bark of timber due to shrinkage of exterior surface exposed to atmospheric influence.

## Knots

These are the roots of the small branches of the tree. These are not harmful.

## Dead Wood

It is the deficient in strength and weight and is the result of trees being felled after maturity.



# Defects in Timber

## Twisted Fibers

These are caused by wind constantly turning the trunk of young tree in one direction

## Rupture

This is caused due to injury or impact.

# Defects in Timber

## Defects due to Conversion

Conversion is the term used to describe the process whereby the felled tree is converted into marketable sizes of timber. Conversion defects are basically due to unsound practice in milling or attempts to economies during conversion of timber. A wane occurs in timber which contains, on one or more faces, part of the bark or the rounded periphery of the trunk. This reduces the cross sectional area, with consequent reduction in strength in the parts affected. Excessive slope of grains may also be classed as a conversion defect when conversion has not been done parallel to the axis of the trunk.

# Defects in Timber

## Defects due to Seasoning

These defects are directly caused by the movement which occurs in timber due to changes in moisture content. Excessive or uneven drying, exposure to wind and rain, and poor stacking during seasoning can all produce distortions in timber. These defects result in loosening of fixings or disruption of decoration, or both. The common types of seasoning defects are:

crecks—longitudinal separation of fibres not extending throughout the cross-section of wood; splitting—separation of fibres extending through a piece of timber from one face to another; warpage—consists of cupping, twisting and bowing.

# Characteristics of Good Timber

Sweet Smell and a  
Shining Fresh Cut Surface

Heavy Weight

Dark Colour

No Wooliness at  
Fresh Cut Surface

Free From the Defects in  
Timber

When Struck Sonorous  
Sound is Produced

Compact  
Medullary Rays

Narrow Annual Rings, Closer  
the Rings Greater is the  
Strength



# Summary

- ❖ Defects in Timber
- ❖ Characteristics of Good Timber

# THANK YOU