

HOW TREE AND LOG QUALITY AFFECT PRODUCT QUALITY

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HARDWOOD
Value Improvement Project

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Log Value

1. Grade- measure of the quality of the log and the lumber that will come from it.



How Log Grade Affects Lumber

Grade and value of lumber produced from black cherry logs of different grades, expressed as board feet of 4/4 lumber sawn from 16" diameter, 12' long logs, based on prices for Appalachian hardwoods in 2009.

Log Grade	FAS & Select	#1 C	#2C	#3C	Total Lumber Value
High (F1)	59	20	17	12	\$111
Medium (F2)	28	38	22	20	\$79
Low (F3)	15	46	23	23	\$65

Log Value

1. Grade- measure of the quality of the log and the lumber that will come from it.
2. Scale- measure of the quantity of lumber within the log.
3. Species- different species are used for different products and have different values.



Factors that Affect Log Grade

- Stem bulges
- Seams and cracks
- Rot and ring shake
- Insect and bird holes
- Knots and bark distortions

Stem Bulges

General enlargement of the stem of a tree or log

- Evidence of internal rot
- Not normally included in logs



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Seams and Cracks

Splits of the fibers in a tree or log

- Causes:
 - Wind
 - Lightning
 - Frost
 - Injury from falling trees
- Rot is often associated with seams



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Open Seam in Cherry

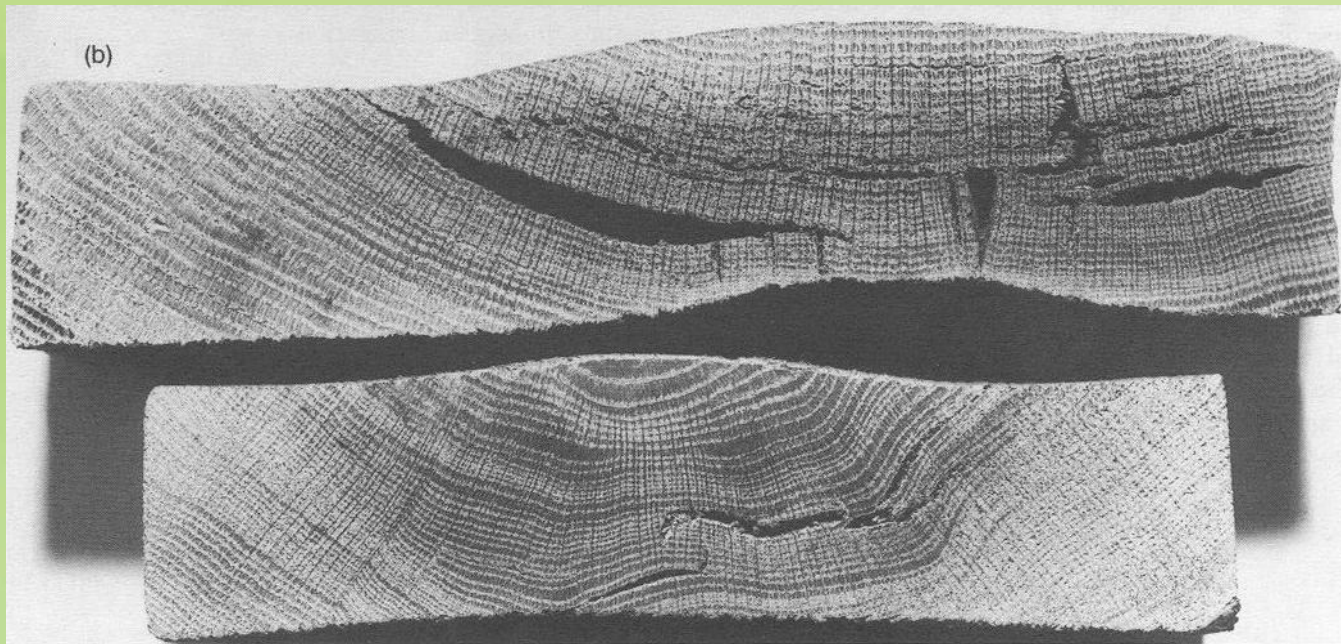


Open Seam in Cherry



Ring Shake

- Separation parallel to the growth rings either within or between 2 growth rings.



Bird Peck

- Fresh open peck is not a grading defect.
- Older callused bird peck is.



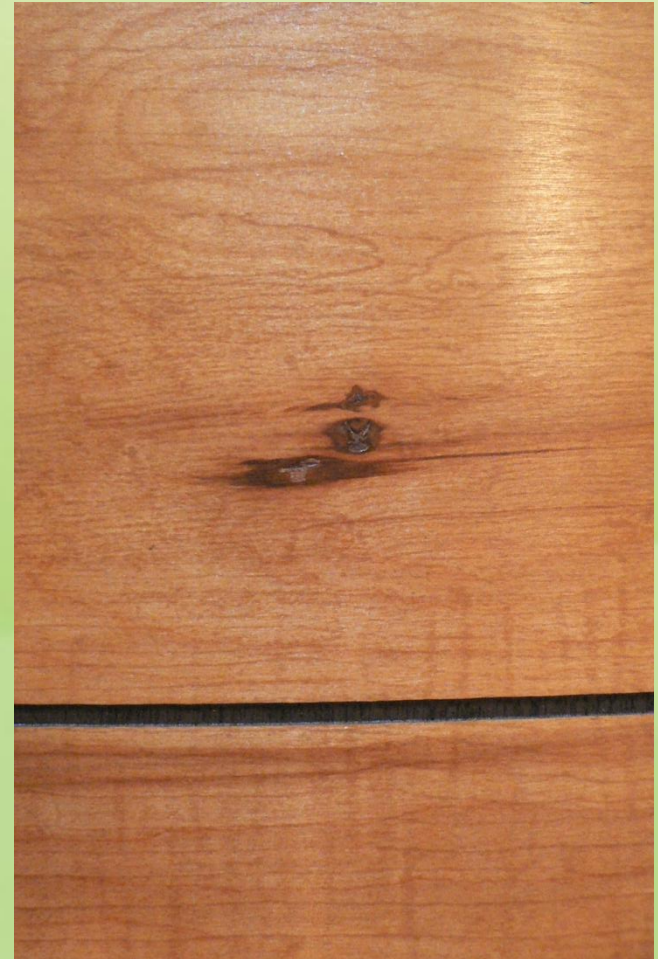
- Older callused bird peck is a grading defect



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Bird Peck in Lumber



Knots and Bark Distortions

- Bark distortions are an indication of a knot deeper inside the tree.



Knots and Bark Distortions



Medium Bark Distortion





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Light Bark Distortion



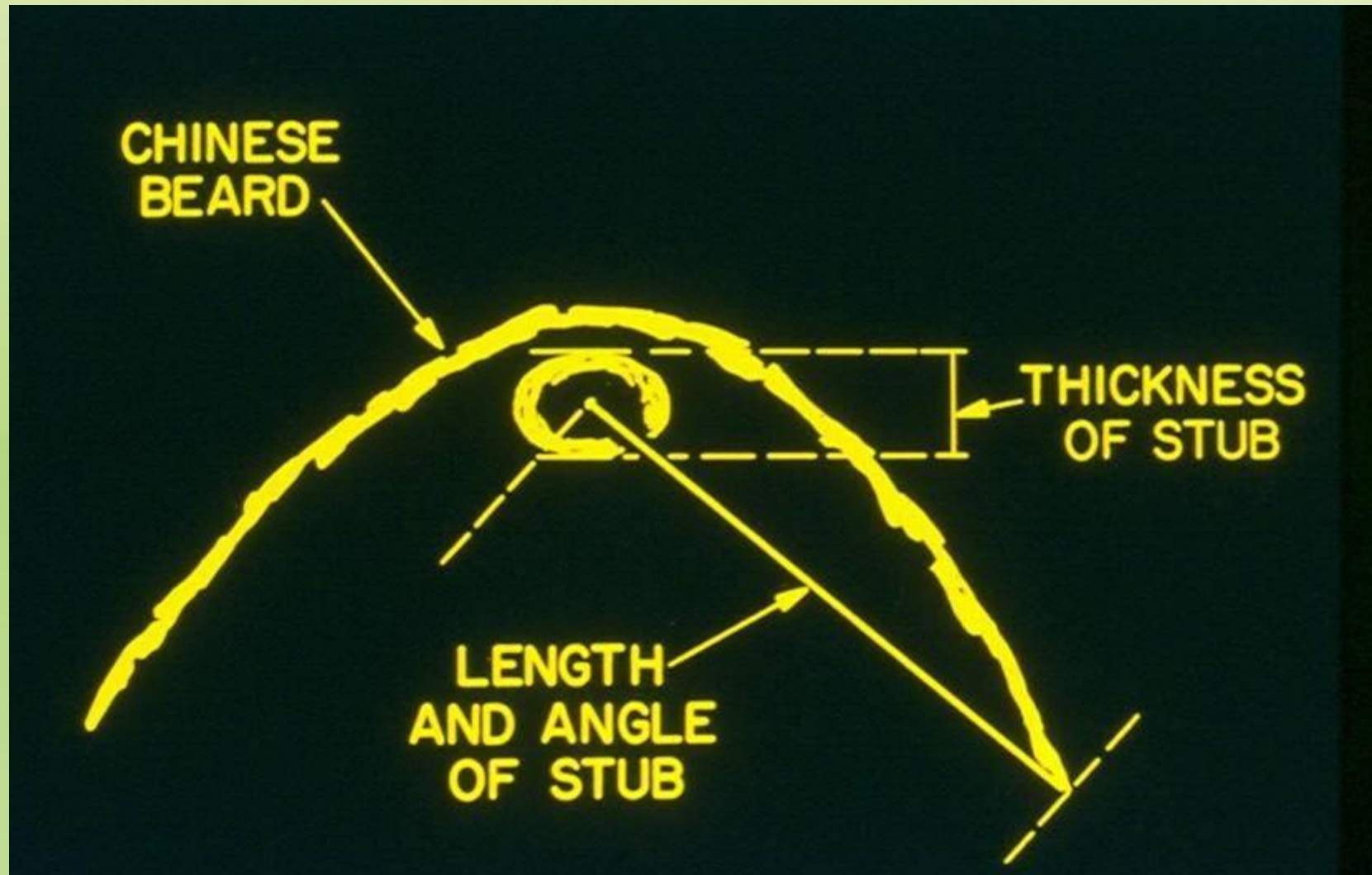
Light Bark Distortion



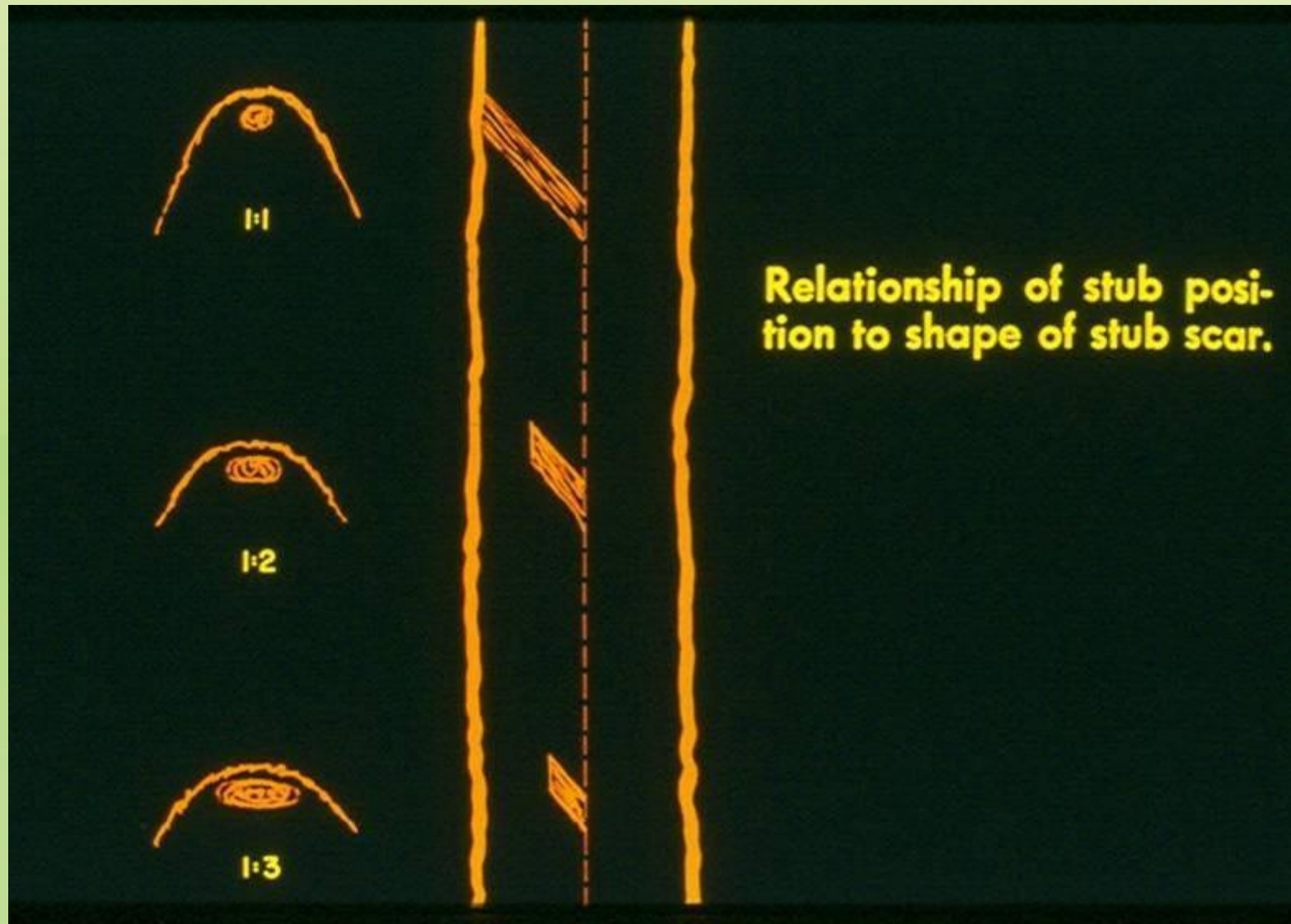
The Chinese Beard



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Adventitious Bud Clusters

- Dormant buds along the stem.
- May originate from wounding or bruising of the cambium
- Direct sun from heavy thinning stimulates branch development
- Connected to center of stem
 - Can be activated at any time
 - Activation leads to branch development
 - Epicormic branching varies greatly between species







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Runs from the pith to the surface





Veneer Logs

- Avoids all of the things we looked at already
 - Looking for zero or very few, very minor defects
- May also be judged on:
 - Color and amount of sapwood vs.. heartwood
 - Straightness
 - Off-center pith
 - Growth rate (growth ring width)

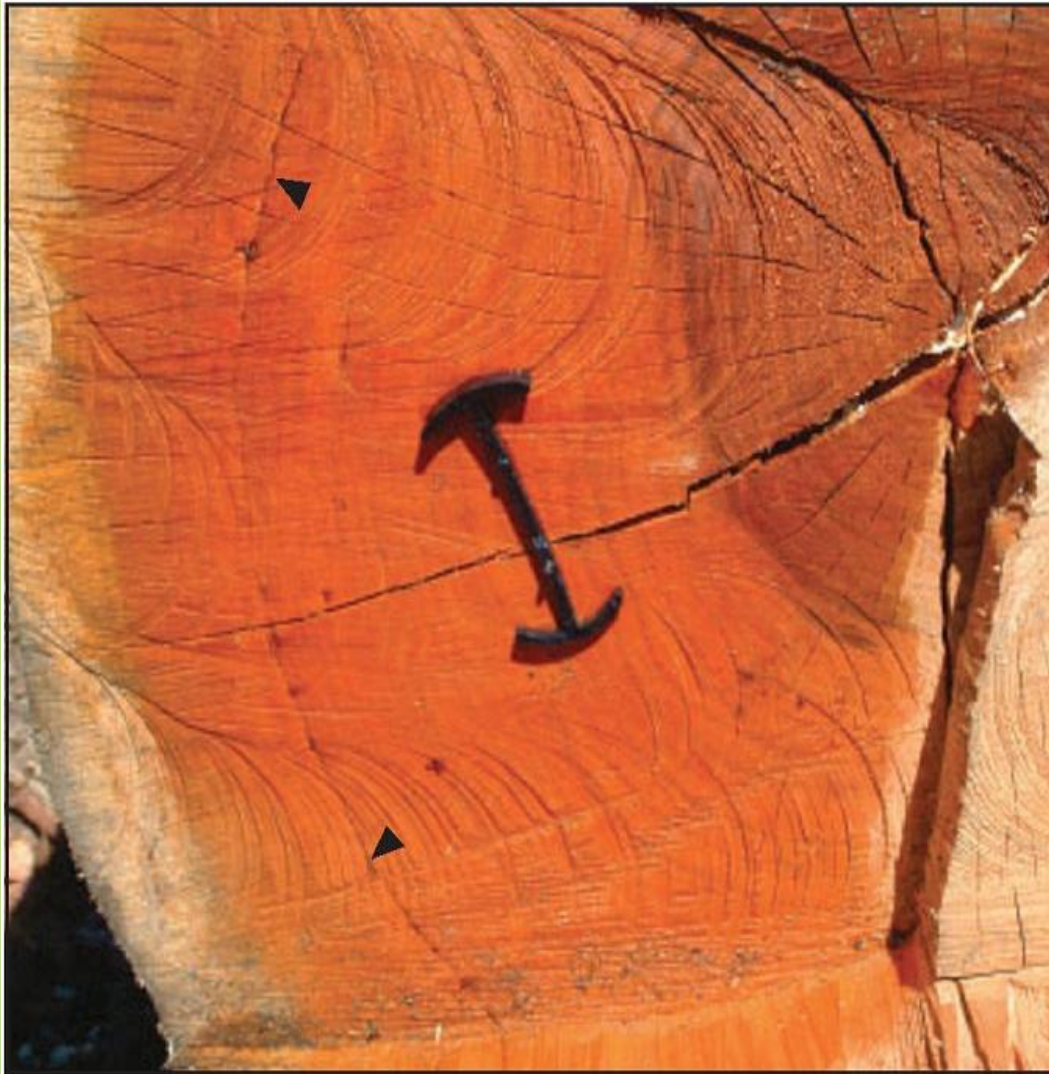
Bands of mineral streaks in red oak



Mineral streaks in red oak veneer



Gum ring in cherry



Gum ring in slice of cherry veneer



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In conclusion.....

- The wood industry wants perfect trees and perfect logs!!
 - Straight logs
 - Minimal defects
 - Minimal color issues such as mineral and gum.
 - Diameters large enough to get quality lumber and veneer

The landowner

- Understand what types of trees that could be removed to improve the stand.
 - For ex: removing some larger diameter, poor quality trees in favor of younger trees with better potential.
 - Understanding how thinning too heavily could POSSIBLY affect tree quality.
 - If interested in sawing your own logs, understand how these defects affect lumber quality.