

Log and tree measurements as related to wood product applications



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Grading is used to make volume information from the **scale** more meaningful and useful to traders in timber and managers of forest resources.

The **quality and potential end use** of logs has significant influence on their value.

Grading must also be **responsive to changes in utilization**, forest practices and administration.

British Columbia Ministry of Forests, Lands and Natural Resource Operations (2011)
Scaling Manual. Timber Pricing Branch



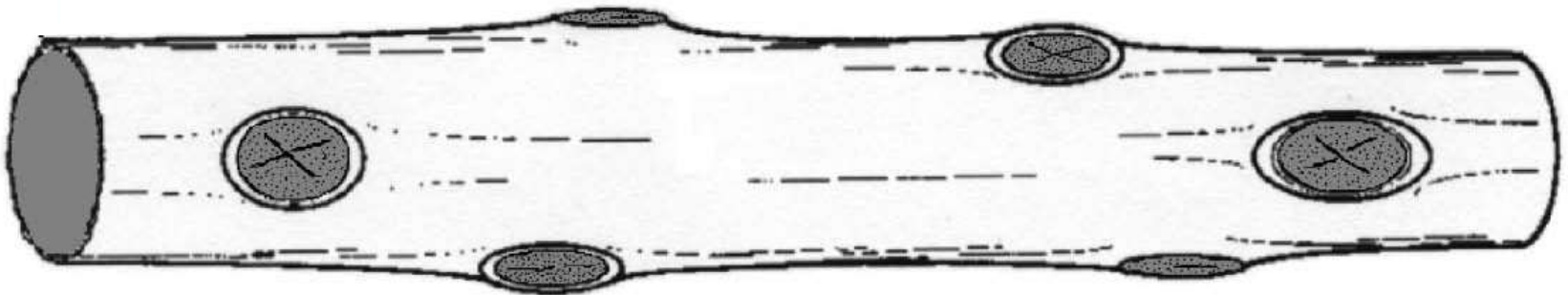
Impact of:

- **Knots**
- **Blue stain**
- **Twist**
- **Sweep**
- **Shorter rotation age**
 - **Juvenile wood**
 - **Wide growth rings**



Impact of knots

- Size of knots
- Type of knots
- Distribution of knots



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Conditions under which volume loss due to knots may occur:

- a. Large knots in whorls.
- b. Unusually large knots.
- c. Grain distortion caused by adventitious bud swellings around larger knots.
- d. Several large knots on the same face.

Actual loss from knots should be ascertained by mill visits.

Northwest Log Rules Advisory Group (2011) Official Log Scaling and Grading Rules.



Effect on Strength



(STRUCTURAL JOISTS and PLANKS)

■ 62.12

NO. 2

2" to 4" Thick

5" and Wider

Characteristics permitted and limiting provisions shall be:

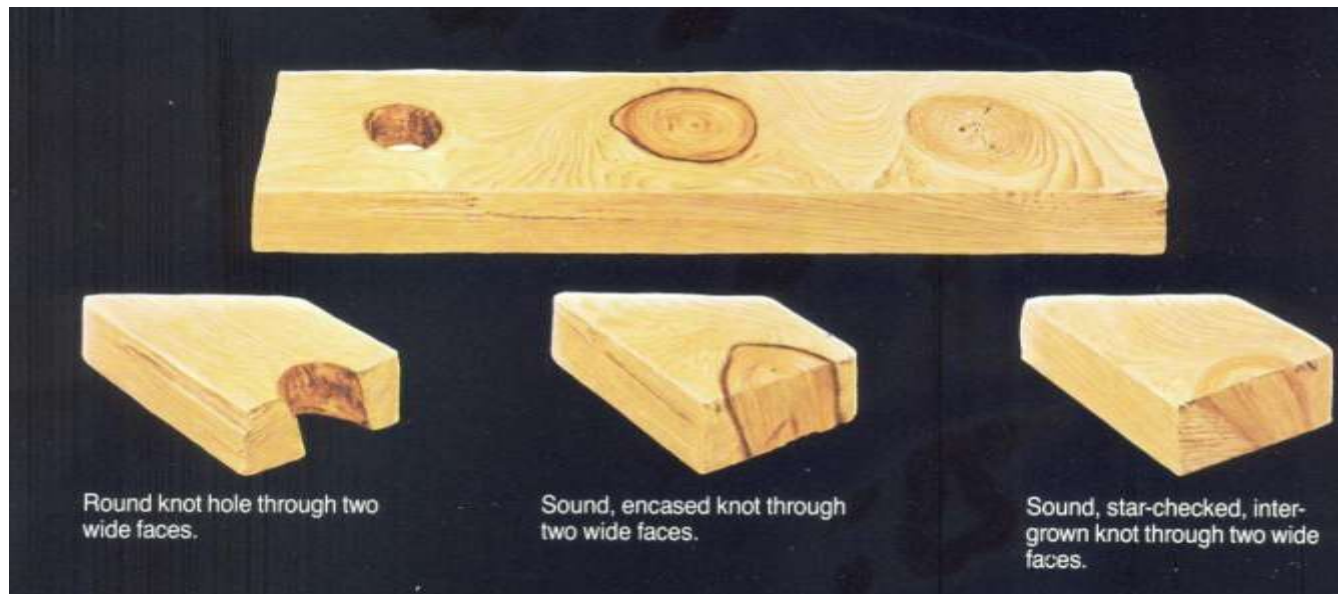
Checks – Seasoning checks not limited. Through checks at ends are limited as splits.

Grain – Medium. See Section 170.00.

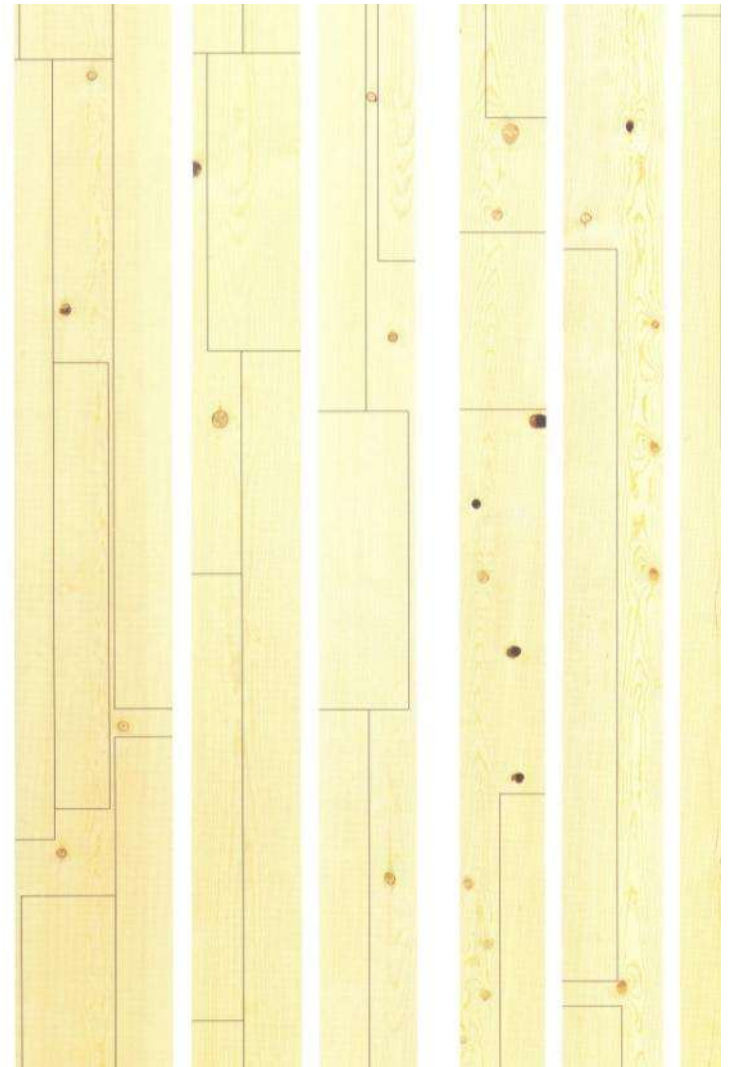
Knots – Well spaced knots of any quality are permitted in sizes not to exceed the following or equivalent displacement:

Nominal Width	At Edge Wide Face	Centerline Wide Face	Holes (Any Cause)	
5"	1 ⁵ / ₈ "	2 ³ / ₈ "	1 ³ / ₈ "	} One hole or equivalent smaller holes per 2 lin. ft.
6"	1 ⁷ / ₈ "	2 ⁷ / ₈ "	1 ¹ / ₂ "	
8"	2 ¹ / ₂ "	3 ¹ / ₂ "	2"	
10"	3 ¹ / ₄ "	4 ¹ / ₄ "	2 ¹ / ₂ "	
12"	3 ³ / ₄ "	4 ³ / ₄ "	3"	
14"	4 ¹ / ₈ "	5 ¹ / ₄ "	3 ¹ / ₂ "	
16"	4 ¹ / ₄ "	5 ³ / ₄ "	4"	
18"	4 ³ / ₈ "	5 ⁷ / ₈ "	4 ¹ / ₂ "	





Effect on Appearance



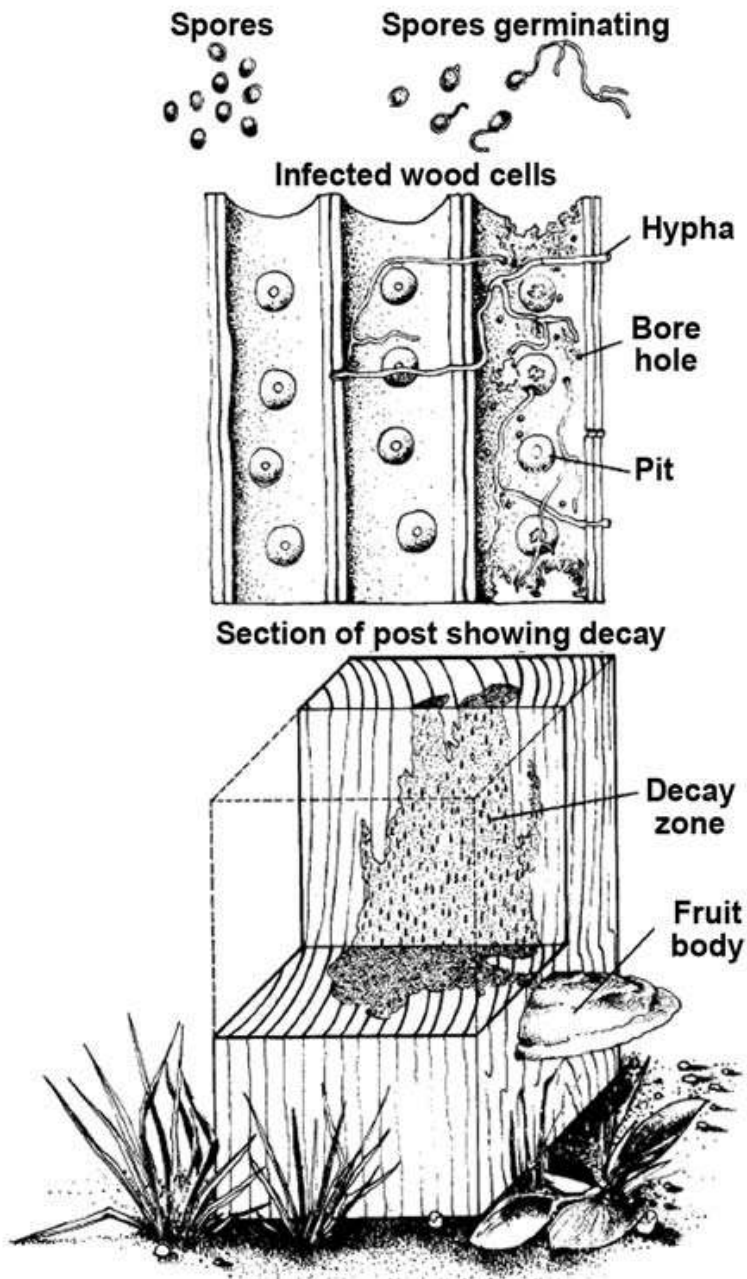
Impact of Blue stain



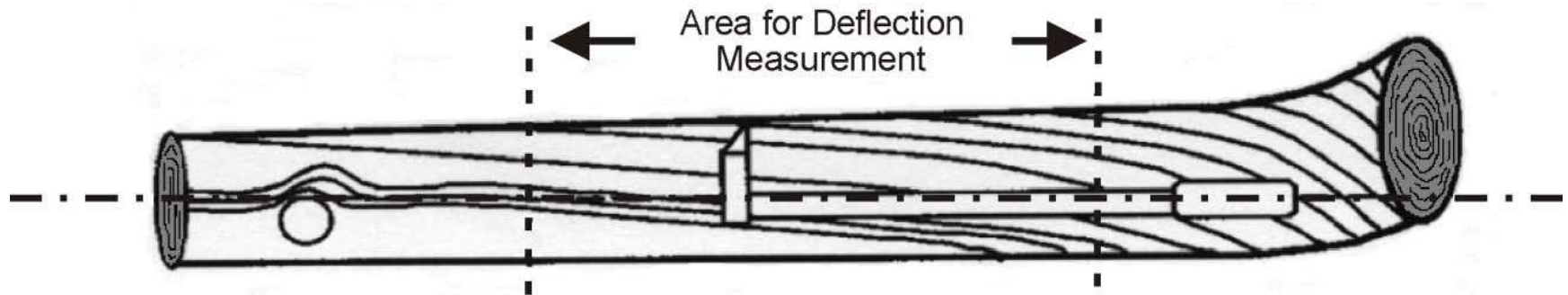
Blue stain



- Strength not affected
- Wood more permeable
 - May cause over-absorbency of glue, paint, or wood preservative
 - May not be satisfactory for outdoor exposure because of its greater water absorbency (may lead to decay)



Impact of Twist (Spiral grain)





9.4.3 Twist (Spiral Grain)

To manufacture merchantable lumber the grain deflection over the 15 rad (30 cm) section **cannot exceed 7 percent for grade code 1 and 15 percent for grade code 2**, of the reference diameter.

British Columbia Ministry of Forests, Lands and Natural Resource Operations (2011) Scaling Manual. Timber Pricing Branch

DOUGLAS FIR PEELER LOGS

No. 1 & No. 2 Peeler

Logs shall be suitable for rotary cutting of clear, uniform-colored face stock veneer. Such logs shall meet at least the following minimum exterior characteristics:

Slope of Grain – Not to exceed 3” per foot.

Northwest Log Rules Advisory Group (2011) Official Log Scaling and Grading Rules.



(STRUCTURAL JOISTS and PLANKS)

■ 62.12

NO. 2
2" to 4" Thick
5" and Wider

Characteristics permitted and limiting provisions shall be:

Slope of Grain – 1 in 8.

Warp – Light. See Section 752.00.

TWIST TABLE

Length in Feet	Twist	Face Width					
		2"	3"& 4"	5"& 6"	8"	10"	12"
8	Very Light	1/8	1/4	3/8	1/2	5/8	3/4
	Light	1/4	1/2	3/4	1	1 1/4	1 1/2
	Medium	3/8	3/4	1 1/8	1 1/2	1 7/8	2 1/4
	Heavy	1/2	1	1 1/2	2	2 1/2	3



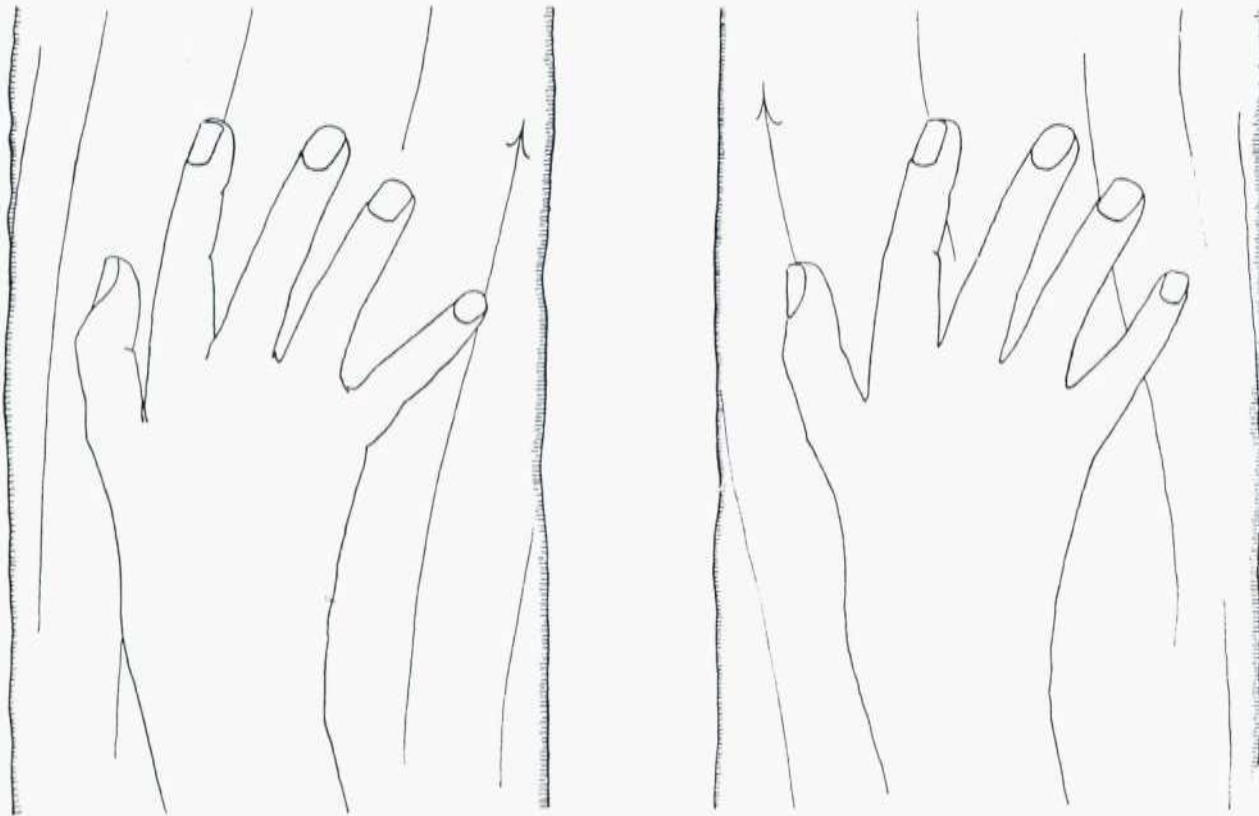
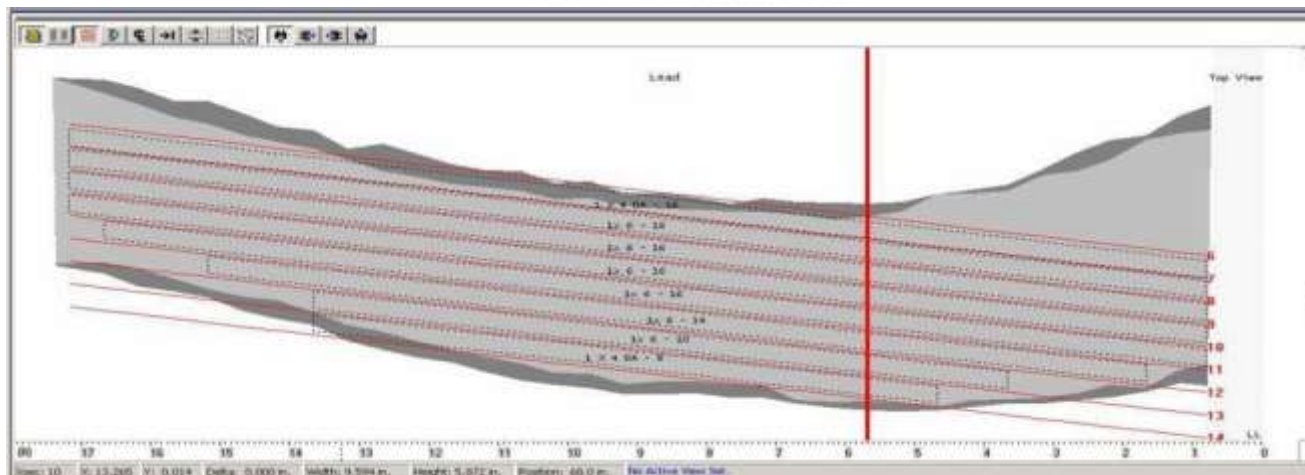
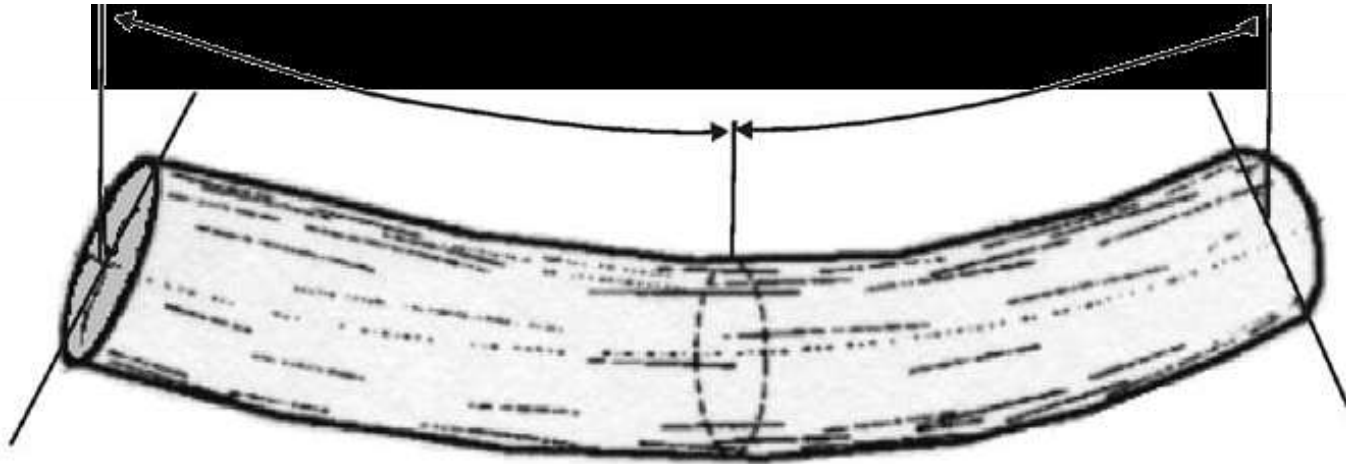


Fig 50

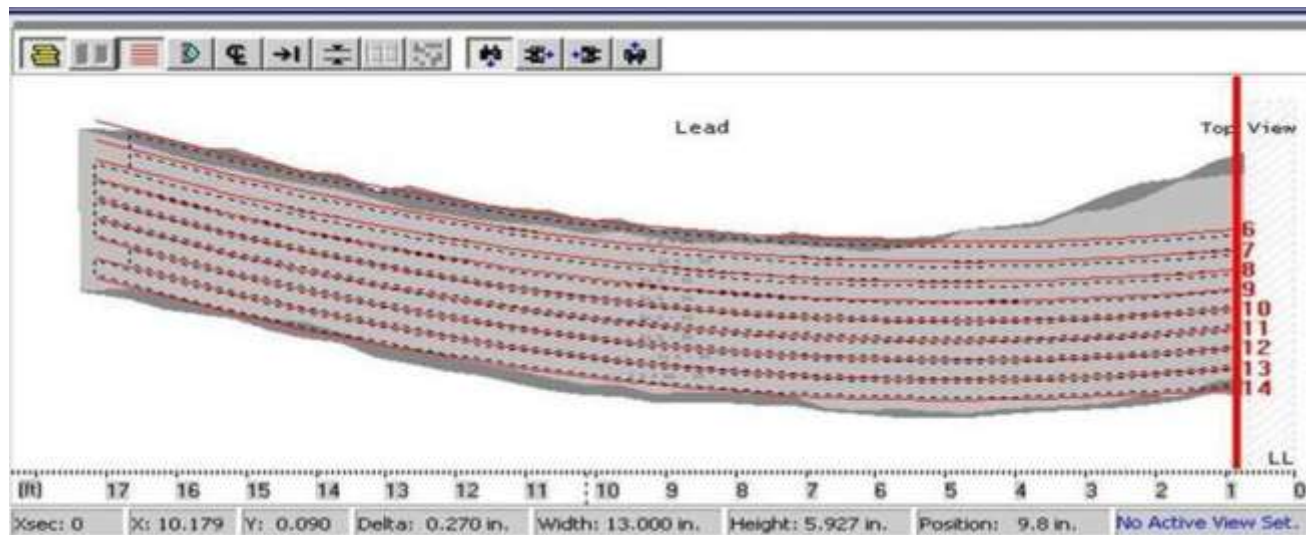
The traditional Bavarian carpenter's technique for determining spiral grain. If the spiral is in the direction of the little finger (left), it is right handed; if it follows the thumb (right), it is left handed. In the former case, the wood is usable, but should be rejected for building purposes in the latter instance.



Impact of sweep



Curve sawing



Impact of sweep on curved-sawn lumber

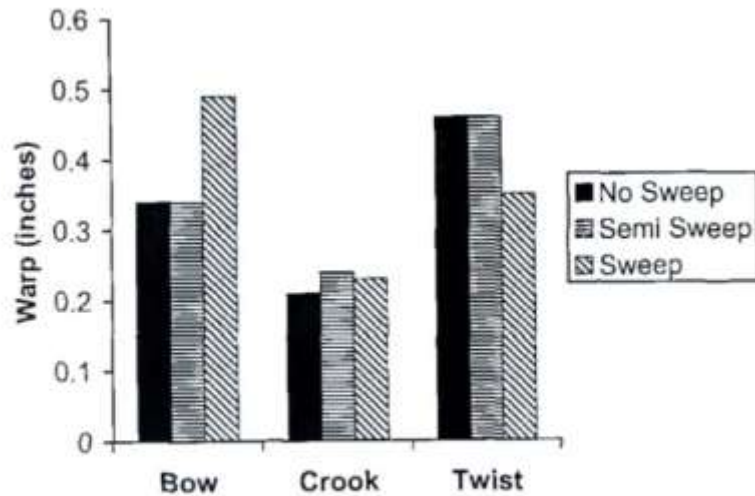


Figure 1. — Mean bow, crook, and twist measurements taken shortly after drying for lumber from the three log-sweep groups.

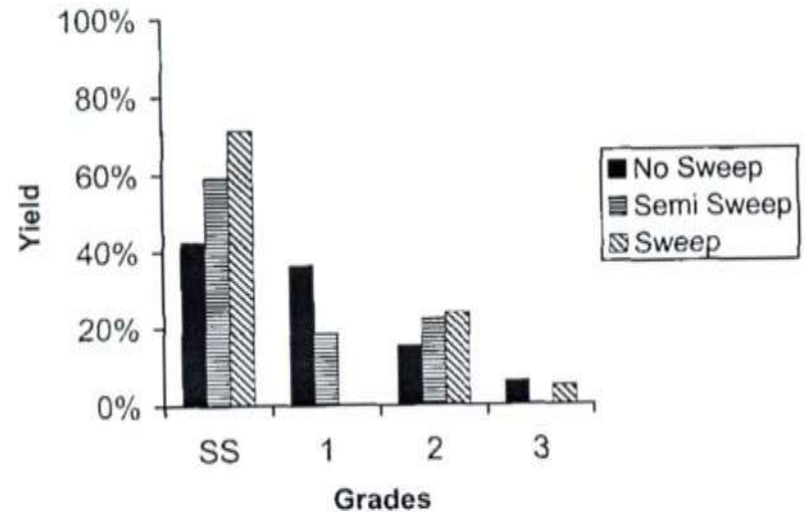


Figure 3. — WWPA structural joists and planks grades (6) for lumber from the three log-sweep groups.

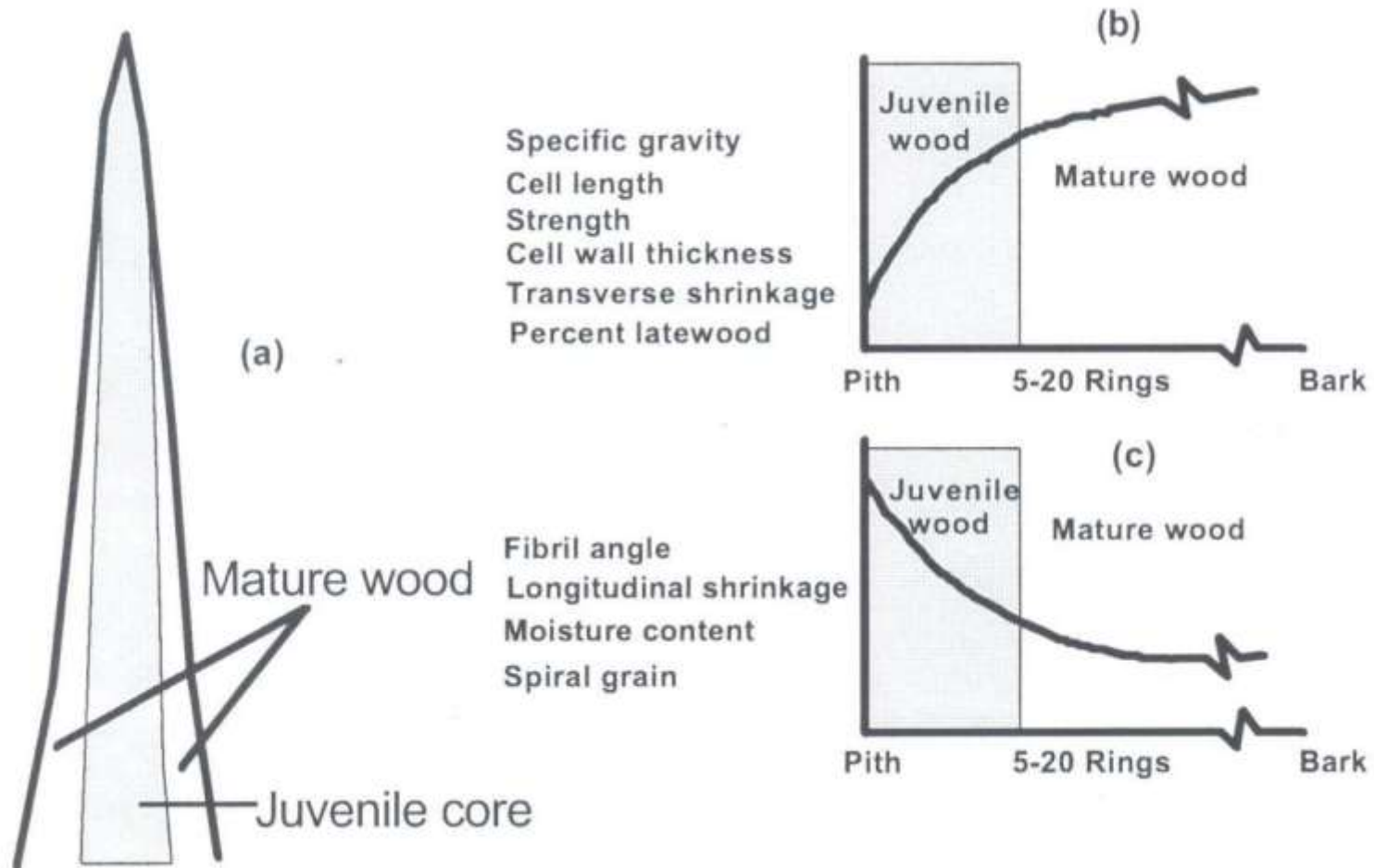


Impact of shorter rotation age

- Juvenile wood
- Wide growth rings



Juvenile wood



Wide growth rings

DOUGLAS FIR PEELER LOGS

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Annual Ring Count – 8 per inch.



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Summary

The **quality and potential end use** of logs has significant influence on their value. (2011 Scaling Manual)

Impact of:

- **Knots**
- **Blue stain**
- **Twist**
- **Sweep**
- **Shorter rotation age**
 - **Juvenile wood**
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