Tree structure

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Tree Structure

What's the Problem?

What is good structure?

Outline of topics

1. **Forest grown vs. open grown tree**
2. Codominant stems
3. Good branch attachment
4. Structurally sound tree

1. Forest grown tree

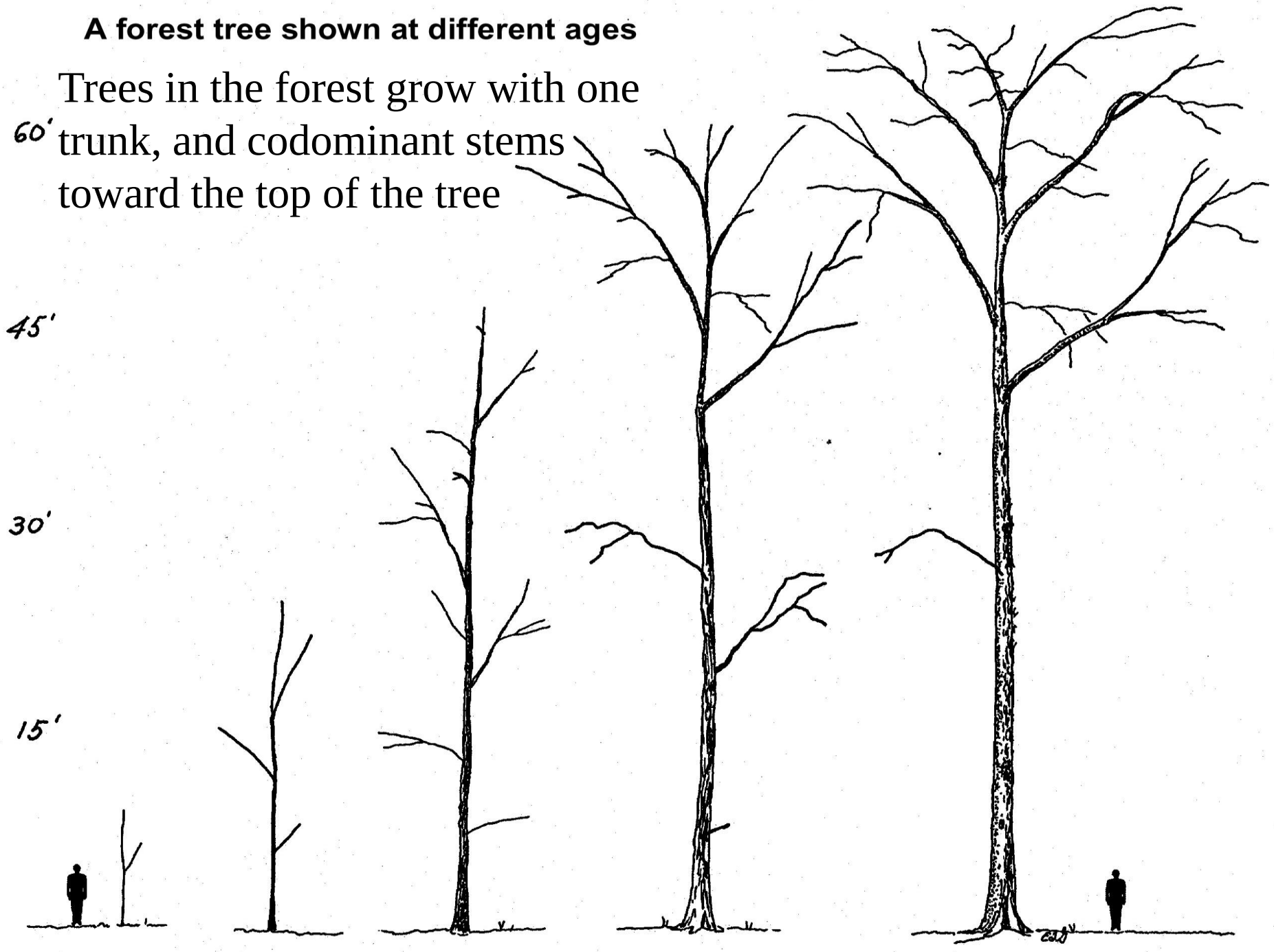
vs.

Open grown tree

- How do they develop on their own?

A forest tree shown at different ages

Trees in the forest grow with one trunk, and codominant stems toward the top of the tree



Codominant stems form far up into the canopy on most forest trees

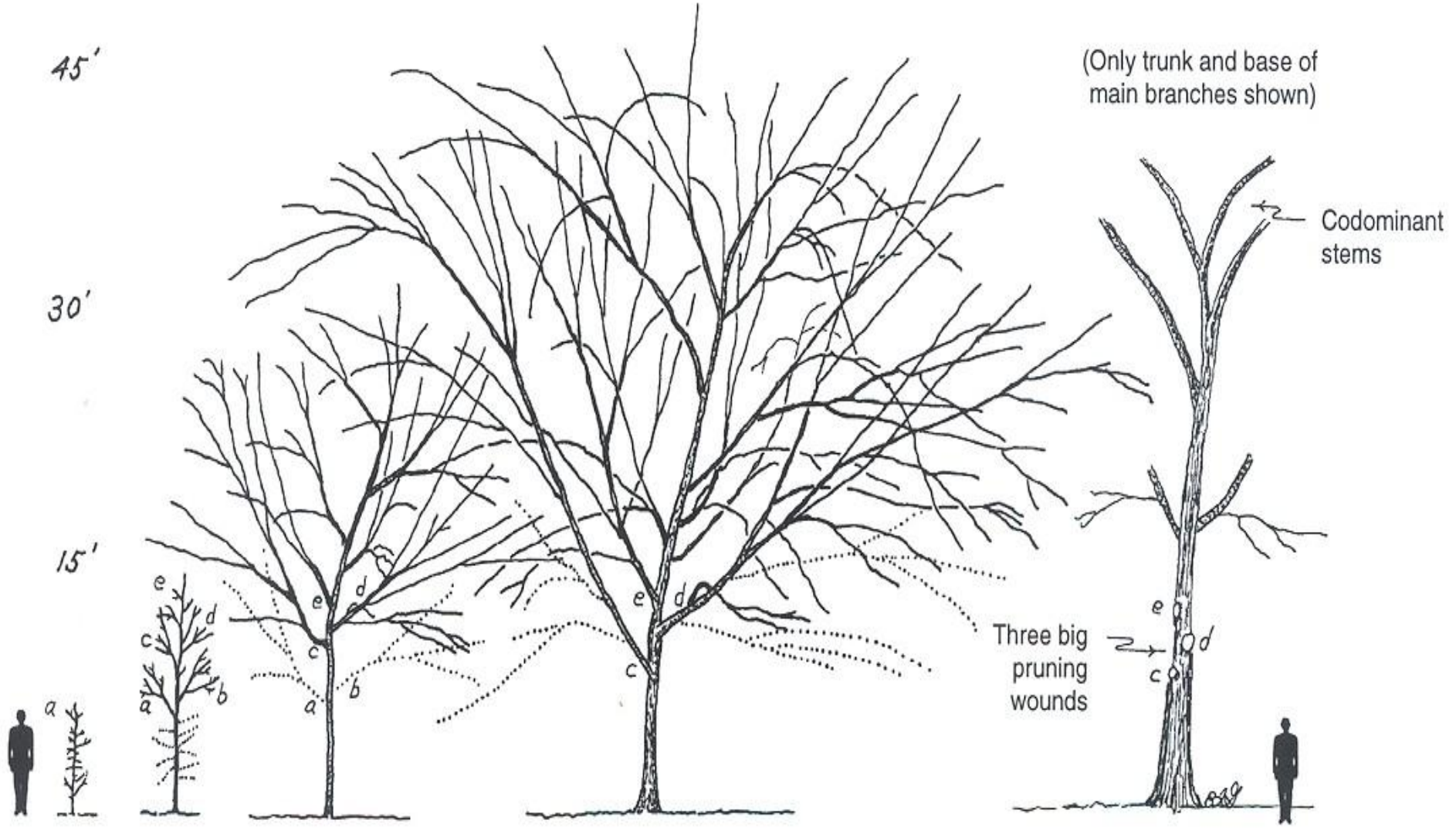
Open grown trees

- Canopy develops low on the trunk
- Canopy spreads wide
- Tree is often wider than tall

Its party time for all

Its all about access to sunlight

A landscape tree shown at different ages



Appears to be a nice tree


Close-up of base of tree

Same tree five years later


"Fall down go boom tree"
Keep an eye on this side of the tree


"I thought I heard something
creak last night"

What is good structure?

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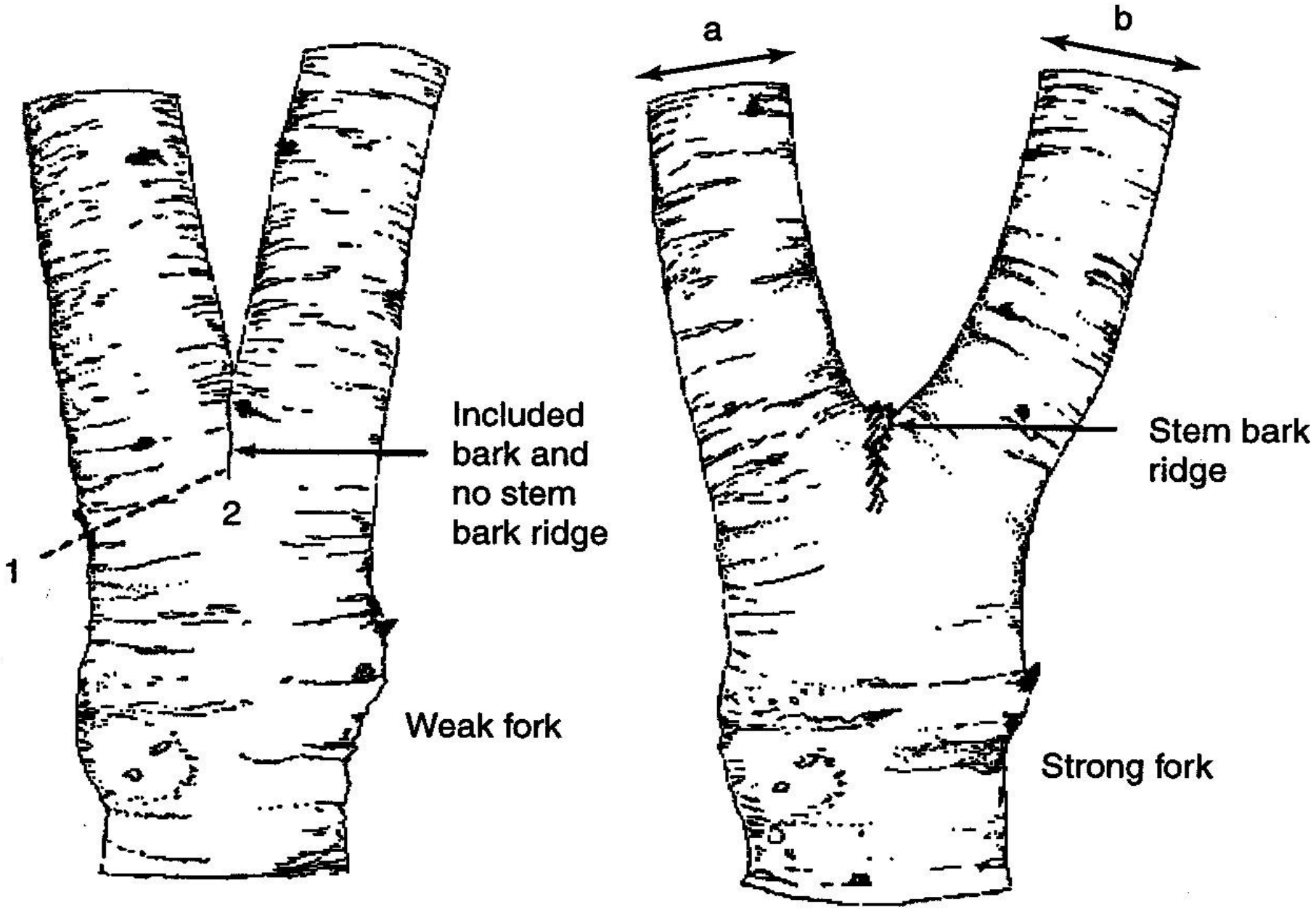
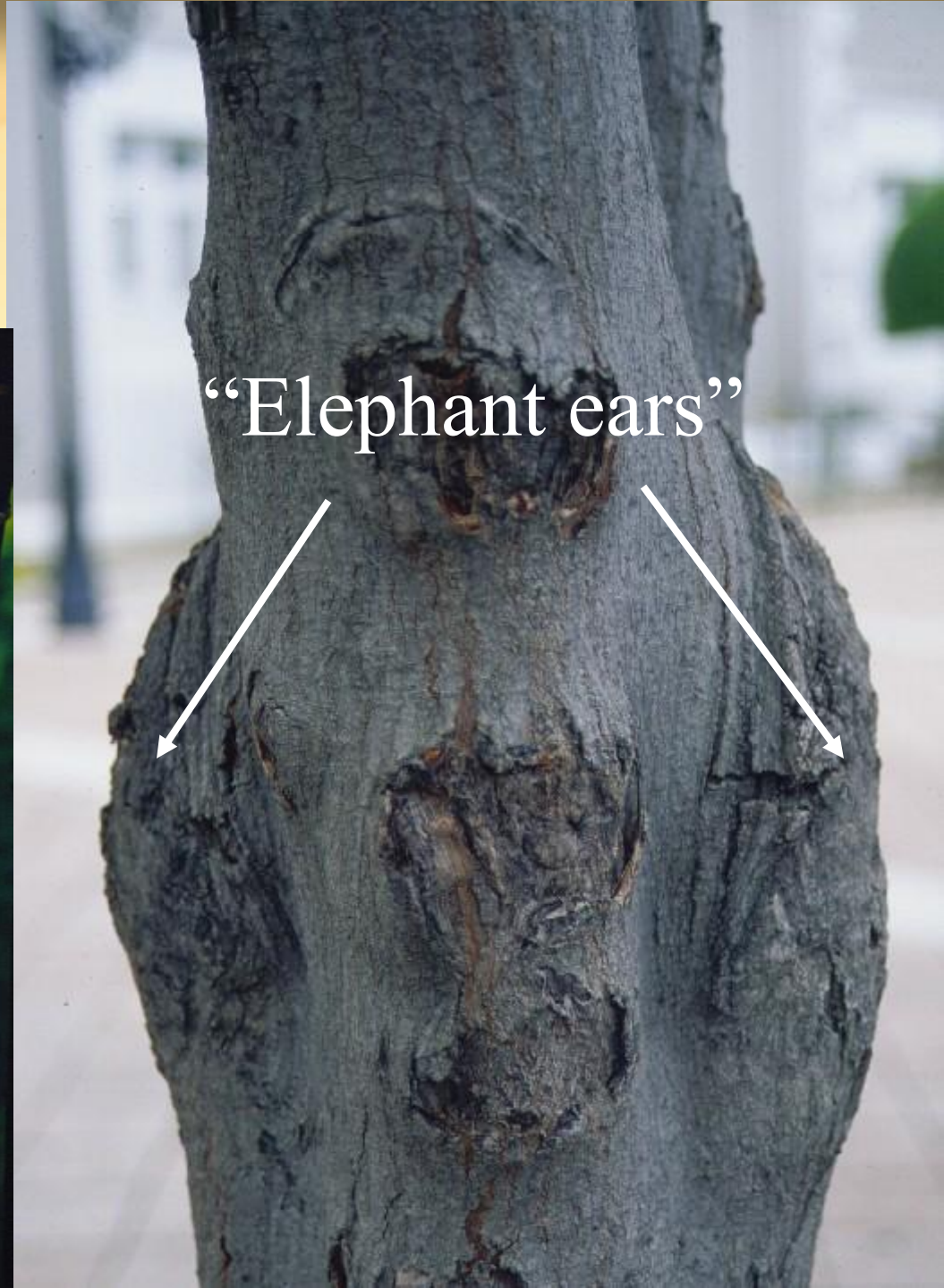
2. Codominant stems

Stems nearly same diameter

Two codominant stems



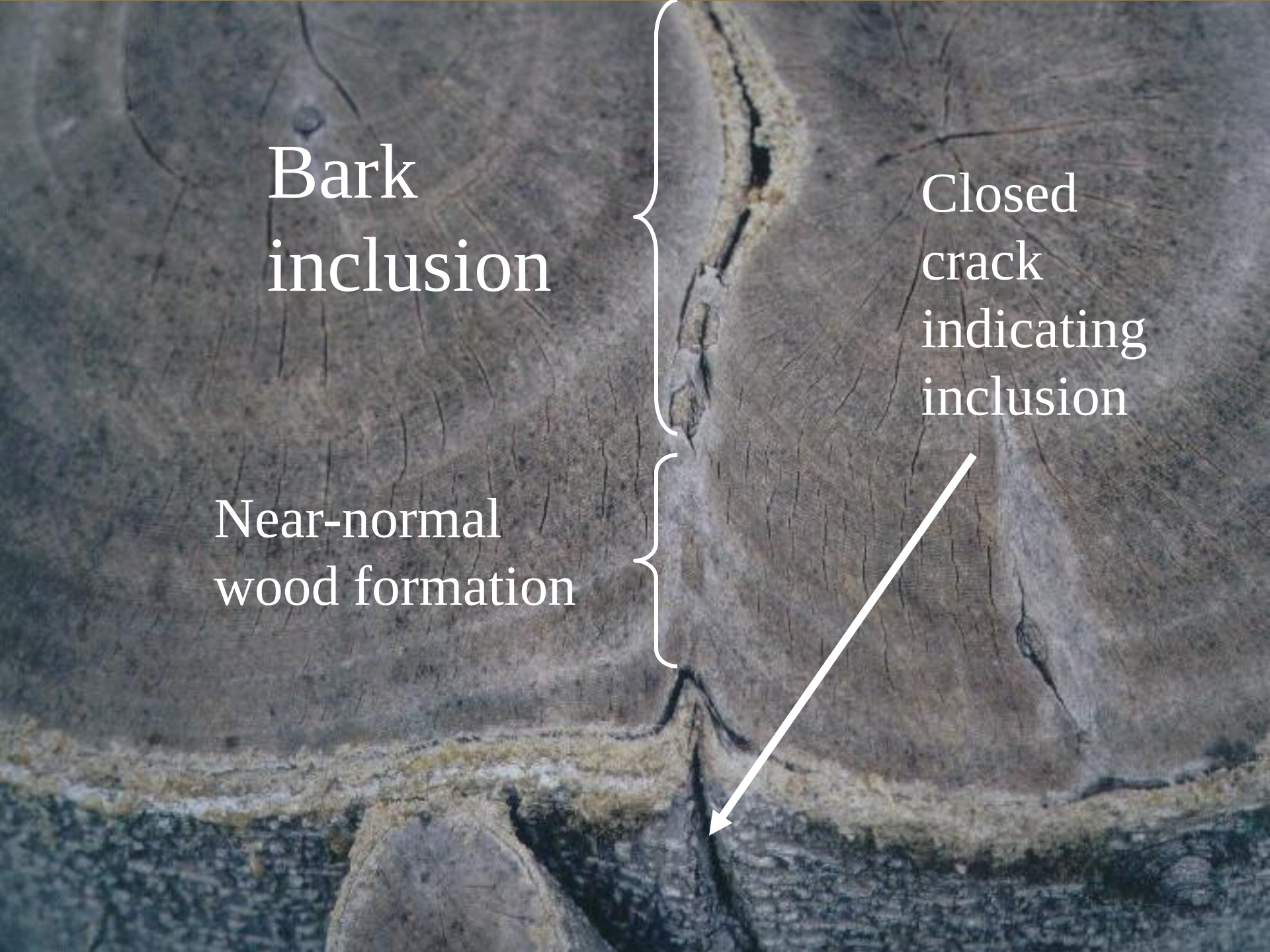
These are weak



Why are they a problem?

Included bark beginning to form


Bark inclusion
Decay and discoloration from self wounding


Bark inclusion
Closed crack indicating inclusion
Near-normal wood formation


Bark inclusion
Closure crack indicating inclusion


Bark inclusion
(Not a codominant stem!)


Close-up of closure crack

What is good structure?

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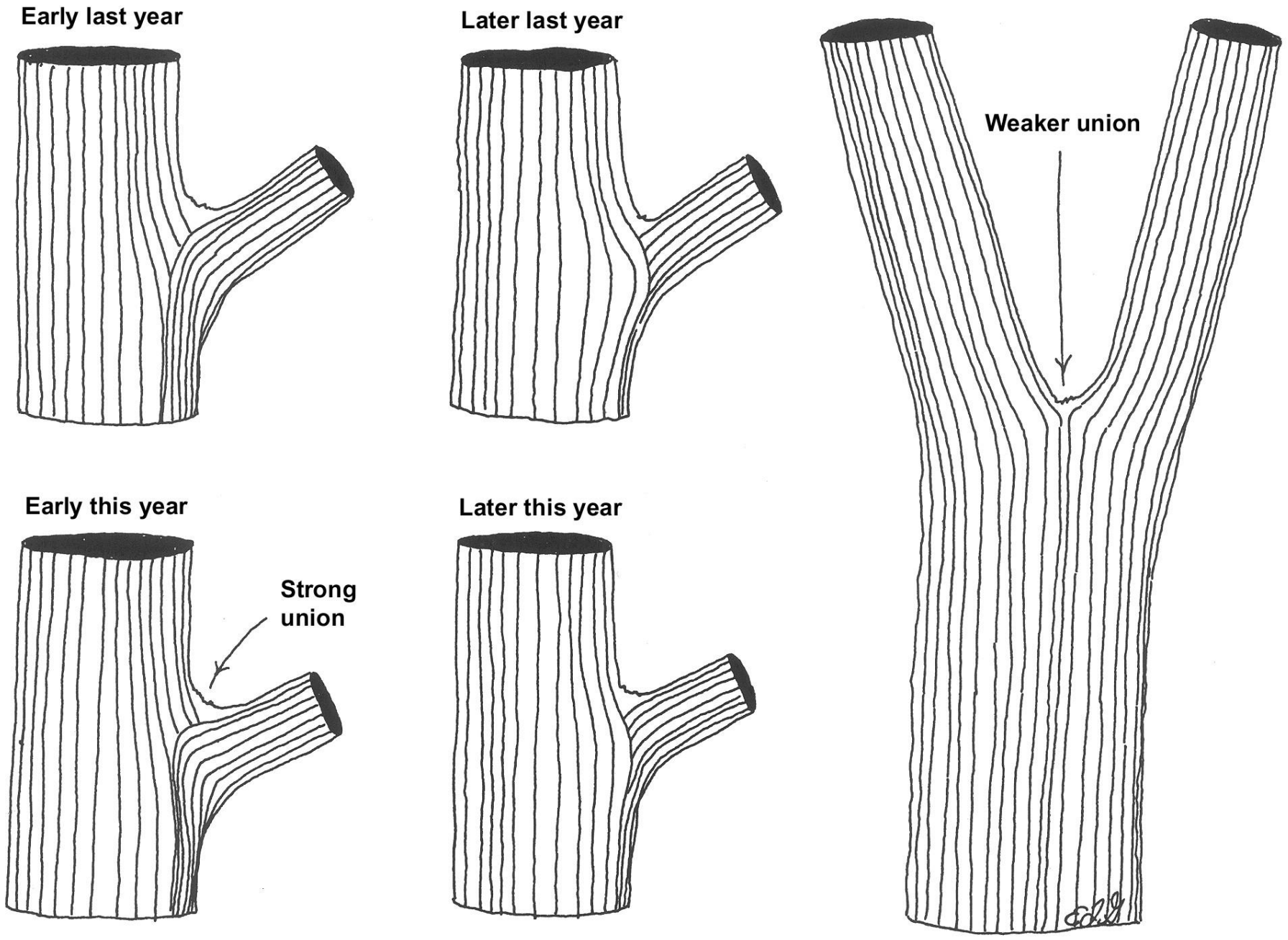
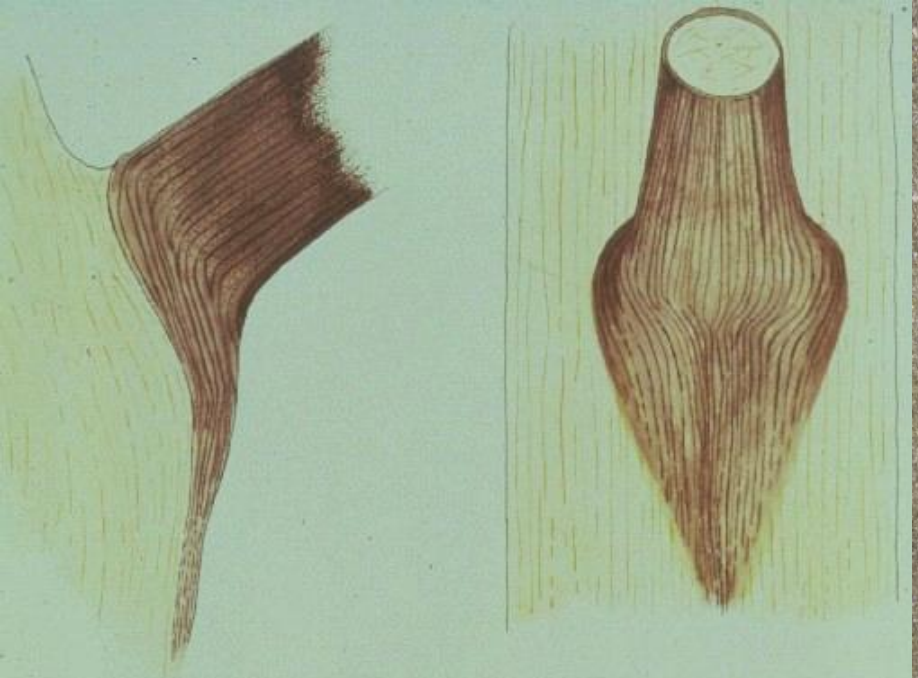
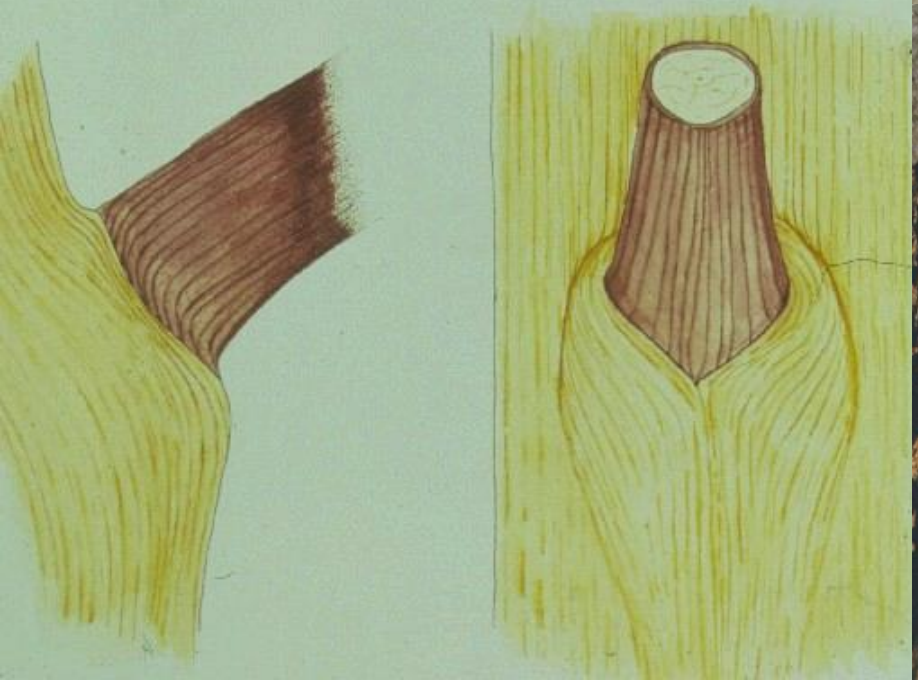
3. Good branch attachment

- How does a BRANCH form?
- What are the indicators?

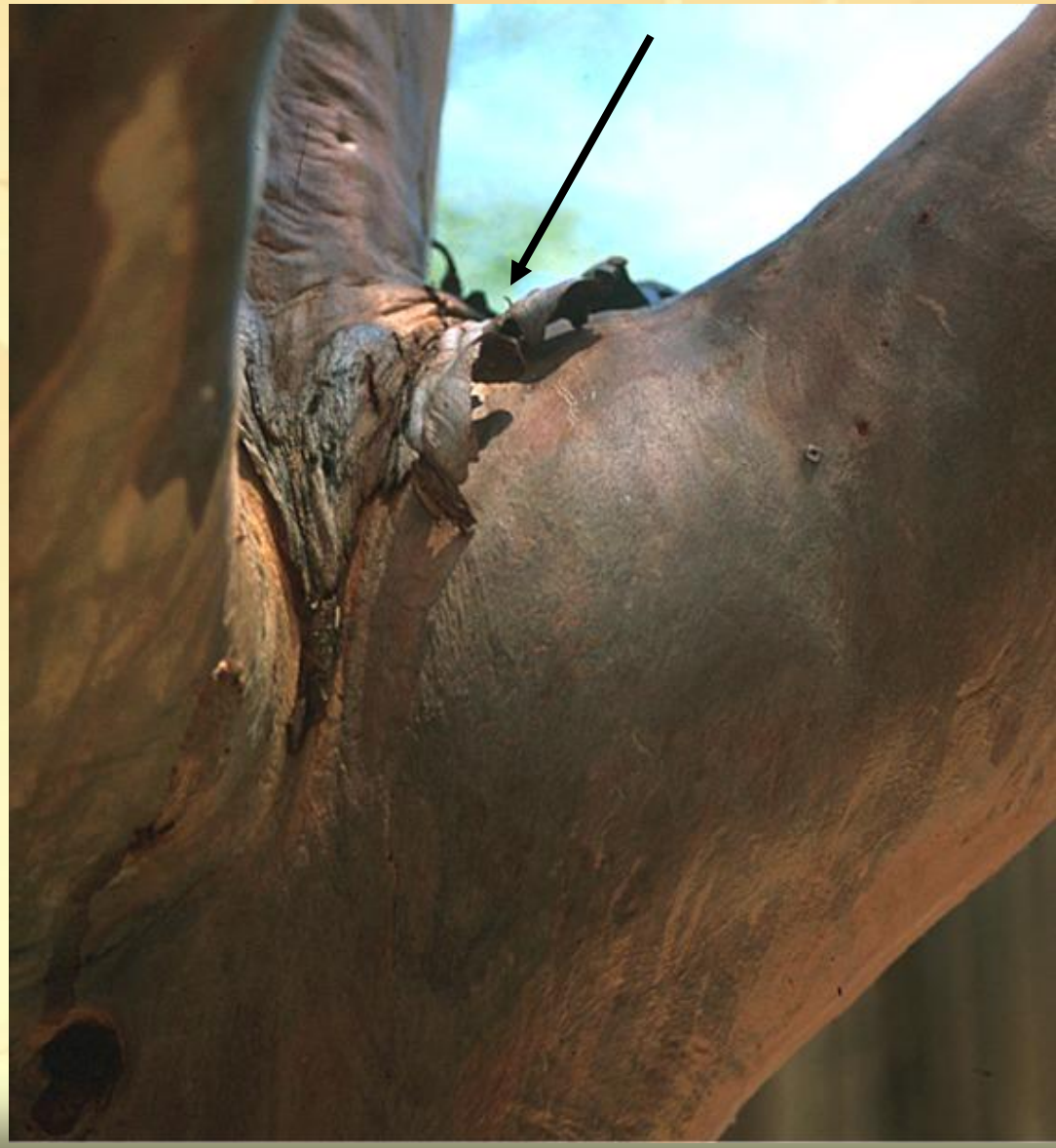

Early last year
Later last year
Weaker union
Early this year
Strong union
Later this year
Dominant trunk with one branch
Codominant stems

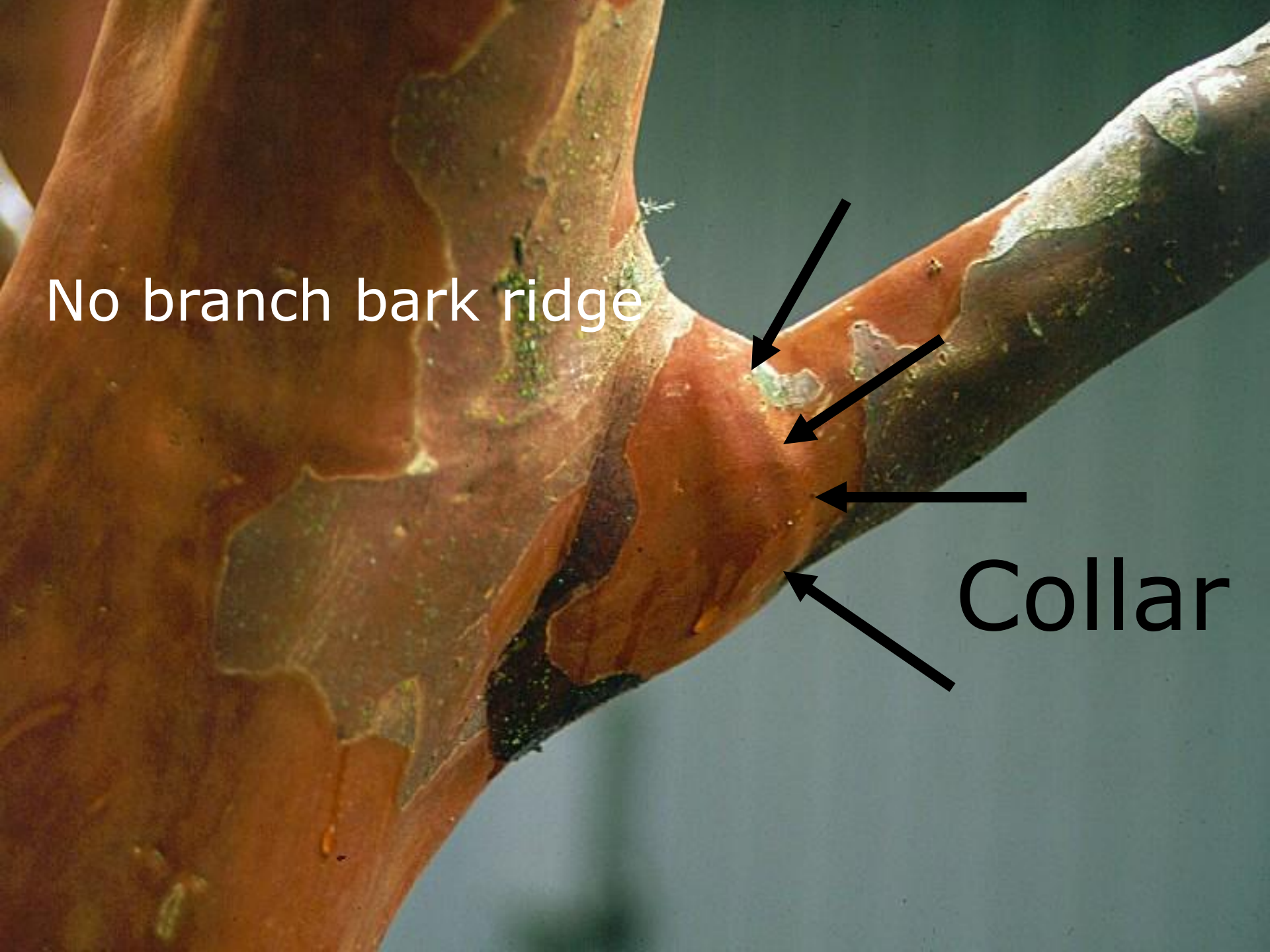




Branch bark ridge present

- Some branch unions have a prominent branch bark ridge




No branch bark ridge
Collar

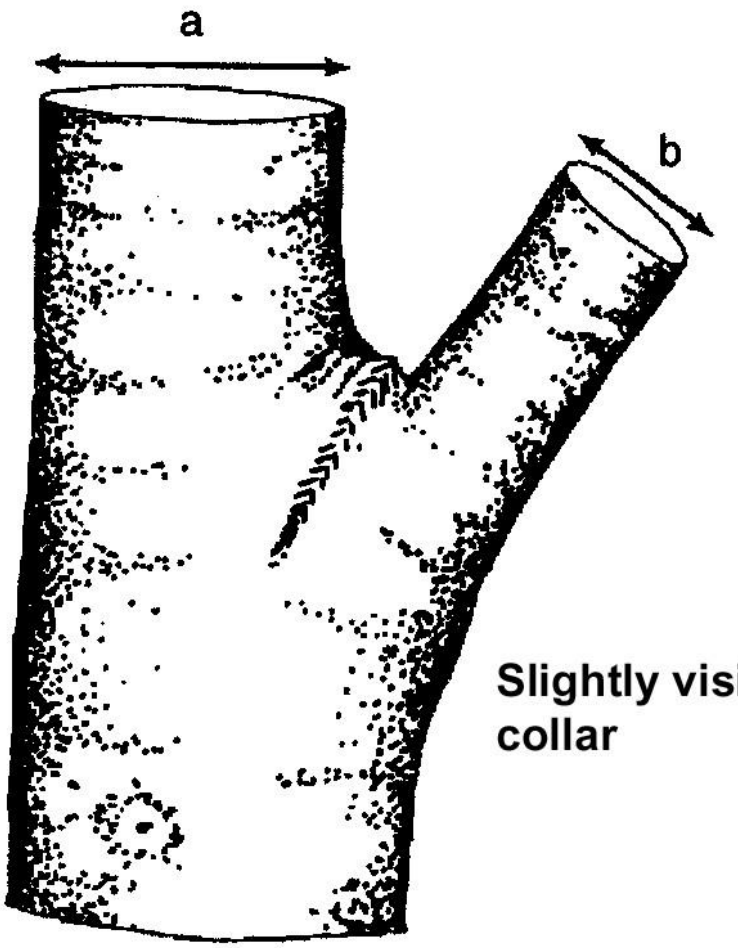
Pine union

- Collar is visible as a swelling at the base of the branch
- Branch bark ridge (arrows) is visible as a dark, rough bark region on the top and sides of the union

Wood orientation at union

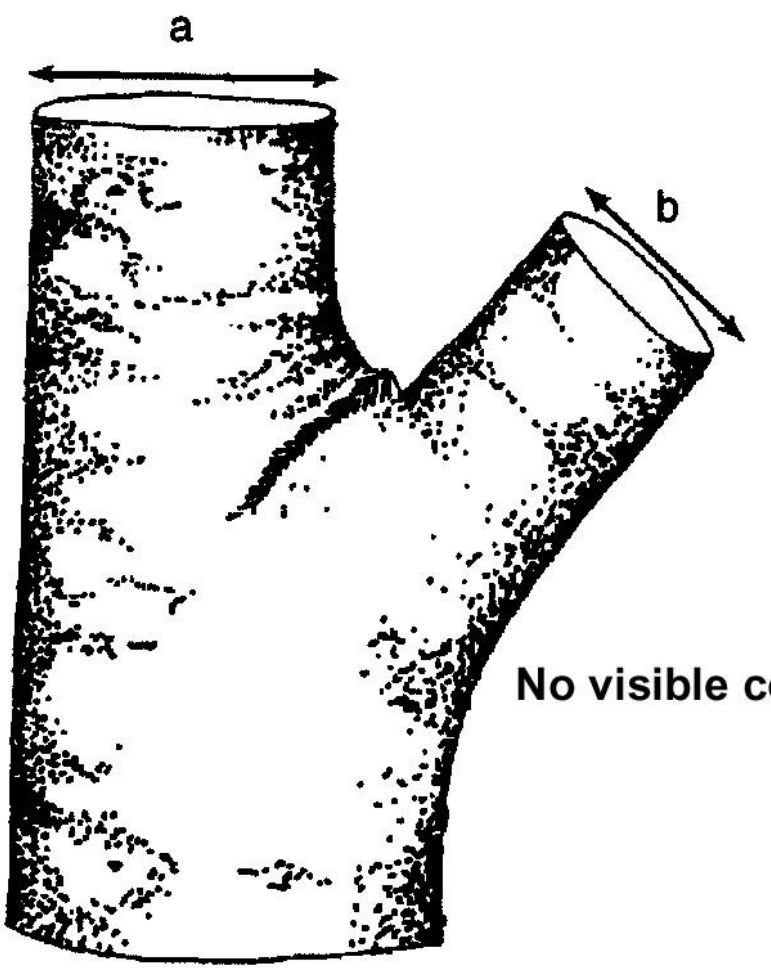
- Peel the bark from the union
- Note how trunk wood grows out onto the base of the branch (dotted line is edge of trunk wood)

Desirable branch size



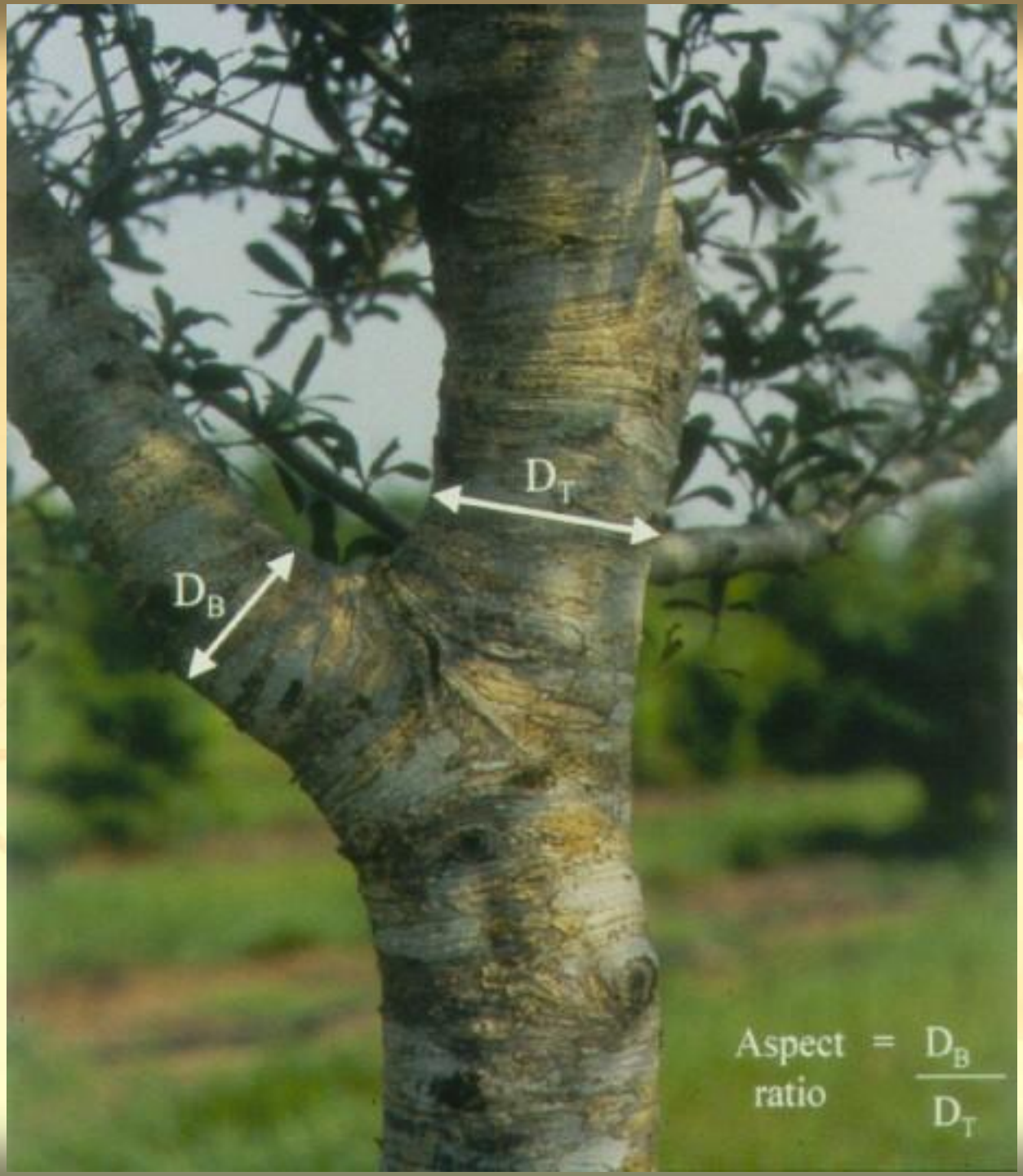
Slightly visible collar

Most preferred branch size:
b < .5a



No visible collar

Preferred branch size:
b = .5 to .75a


D_T
D_B
Aspect ratio = $\frac{D_B}{D_T}$


Strong union
Weak union

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4. Structurally sound tree

- Scaffold branches spaced vertically.
  - Rule of thumb: about 5% of tree's ultimate height.
- Scaffold branches spaced radially;
  none directly above another.
- Consistently maintain 60% L.C.R.

Good structure

Stems too close together

Pruning –

Is a solution that will be discussed in another presentation.

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