Boxes & Hollow Vessels

Course number 95744046

Mt. Diablo Adult Education

A division of the Mt. Diablo Unified School District

Serving Life Long Learning

One Santa Barbara Road, Pleasant Hill, CA 94523 (925) 937-1530

Rules of classroom conduct

- Always maintain a safe work environment for yourself and others
  - Always wear safety glasses or face shields as required
  - Advise instructor of any safety concerns or issues
- Clean up at the end of each class
  - Your work area/lathe
  - The class room floors and tables
  - Sharpening center
  - Replace all tools/accessories into the proper location
- Always sign in on arrival
  - Advise instructor if you plan on leaving early
- Be responsible for your own personal tools/equipment

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Turning an End Grain Box

Introduction

This one simple technique to follow
Adapt/modify as you progress
Always follow the step in sequence
Use dry, tight grain hardwoods for best results

Requirements

Requires Four jaw chuck
Spindle roughing gouge
Shallow fluted gouge
Parting tool
Small round nosed scraper

- Mount blank between centers and round out stock.
- Add tendons on both ends

- Mark out your box approximately
- ¼, , ½ , ¼, and label each section

- Place the top end tendon in your four jaw chuck.
- Add a wide parting cut to define the box lid tendon

- Part off the base/jam chuck sections
- Leave a small tendon on the lid side for reference

- Here is the lid section ready to hollow out

- Hollow out the lid while leaving a small reference edge from the tendon

- Square out the inside of the lid removing the remaining tendon
- Use a parting tool or a square end scraper
- Remember to keep the inside of the lid edge absolutely square

- Readjust the lid carefully until the base section's tendon fits tightly

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- Sand and finish the inside of the lid
- Be careful to not change the inside of the lid shoulder
- Measure and record the inside depth of the lid

- Remount the base section in the four jaw chuck

- Firmly attach the lid section

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- In the lid fits a little loose insert a paper shim or moisten the base tendon

- Bring up the tails tock for additional support

- Transfer the measured lid inside depth to the exterior with a pencil

- Shape the exterior of the box and lid
- Be careful to not cut into the lid interior!

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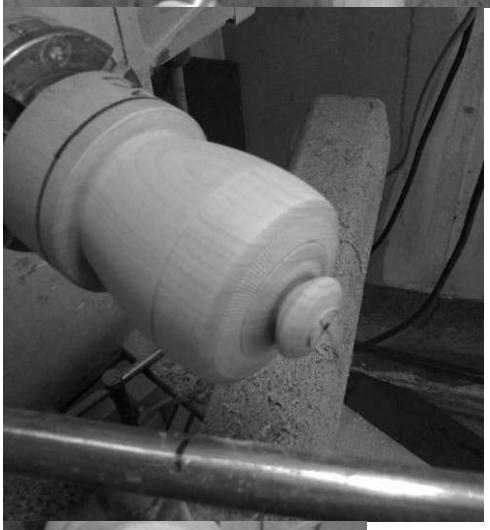
- Sand and complete the box exterior

- Remove the tail stock and carefully complete the lid shape



- Make the final cuts on the lid vary carefully
- Press in towards the base while making the cuts

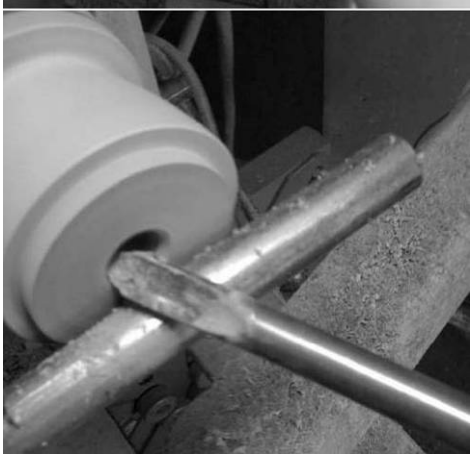
- Sand and complete the lid

- The lid is now complete and can be put aside while the base is developed

- Using your shallow fluted gouge, drill a depth hole into the base to make the exact depth needed

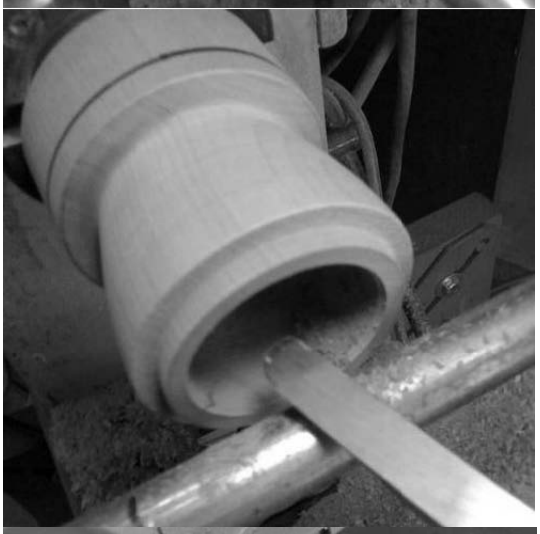
- Mark the final depth onto the exterior of the base section

- Begin hollowing the base by using the outside wing of the shallow fluted gouge sweeping form the center hole to the outside



- Stop the hollowing cut at least 3/16 inch from the inside of the tendon.

- When the depth is reached a round nosed scraper will complete the hollowing process and shape the interior
- Do not further reduce the tendon!



- Sand and complete the interior

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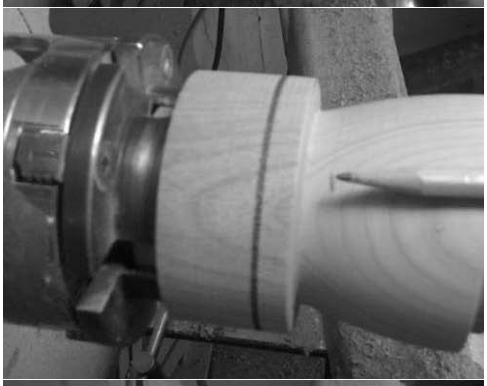
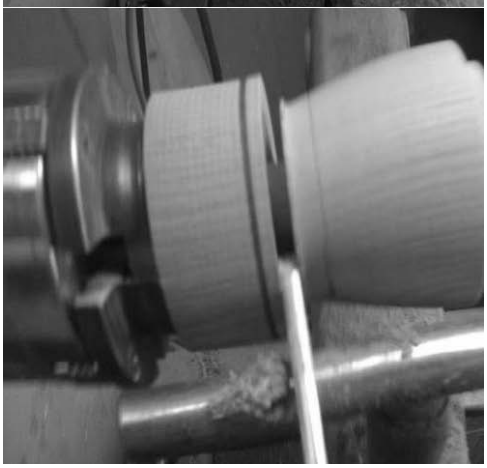
- Slightly under cut the lip of the exterior tendon
- Lightly sand the tendon to reduce the tight fit that was originally needed for the lid
- Test the final fit with the lid as needed

- Re-measure the interior depth

- Remark the depth on the exterior in preparation for parting off the base



- Make a parting cut approximately 30%-40% of the needed depth



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- Complete the shaping of the base section

- Sand and complete the finishing of the base
- Part off the base section from the jam chuck section

- Carefully measure the outside diameter of the base tendon

- Transfer the measurement to the face of the flattened and smoother jam chuck

- Using a parting tool or square nosed scraper, turn away the INSIDE of the mark
- The cuts should be straight and square

- Text the fit of the base on to the jam chuck

- Make sure the fit is tight

- Turn the bottom of the box base
- Slightly undercut the base

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- Work carefully toward the center
- Press toward the headstock while making the cuts

- Sand and finish the bottom

- Attach the lid
- Your done

End Grain Goblet

Goals & Objectives

- Learn end grain hollowing techniques

Materials & Supplies

- Wood blank 3x3x8
- Four jaw chuck
- Spindle Roughing Gouge (SRG)
- Shallow fluted gouge
- (Skew chisel)
- Drill bits and Jacobs chuck
- Parting tool & calipers
- Sand paper & finish

Process

- Mount between centers
  - Turn round and add tendon for chuck
- Screw chuck and bring up the tailstock for additional support
  - Re-true the blank
- With shallow fluted gouge shape the goblet bowl on the tail stock end of the billet
  - Complete its shape to approximately ¾ of the length

- (Drill depth hole from tailstock end to approximately 90% of the bowl depth
  - May use a shallow fluted gouge or a Jacobs chuck & drill bit
- Remove the tail stock
  - With the shallow fluted gouge, open the interior of the bowl
  - Center out to rim
  - Check wall thickness and depth frequently
  - Sand to final
  - Insert a tennis ball into the completed bowl and re insert the tail stock center
- Reduce the stem carefully from the tailstock end toward the drive center with the shallow fluted gouge
- Shape the base
- Sand exterior
- Part off

End Grain Hollow Vessels

Basic consideration for first turnings

- Keep your first project unbder 8 inches in length
- If your are turning green wood
  - Keep the piece wrapped in cellophane and filled with wet chips between turning sessions
  - Do not revisit the exterior shape after completion
- Do not develop a shape with extreme curves – rather gentle sloaping sides
- Provide a large opening through which to turn
- Open the interior volume with a large drill to 95% of total depth

Tools and accessories needed

- Tools required
  - Bowl gouge and shear scraper for shaping the exterior
  - Straight and curved interior hollowing scrapers for the interior
  - Bright light to view interior
  - Calipers able to measure all interior curves
  - A spoon for removing compacted ships
  - Set of Forstner bits and Jacobs chuck for drill pilot hole
  - Four jaw chuck

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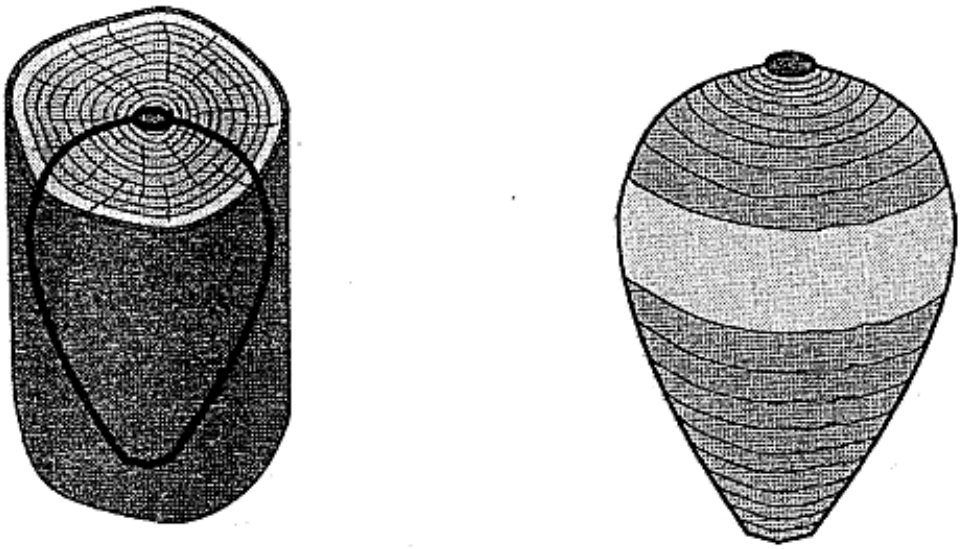
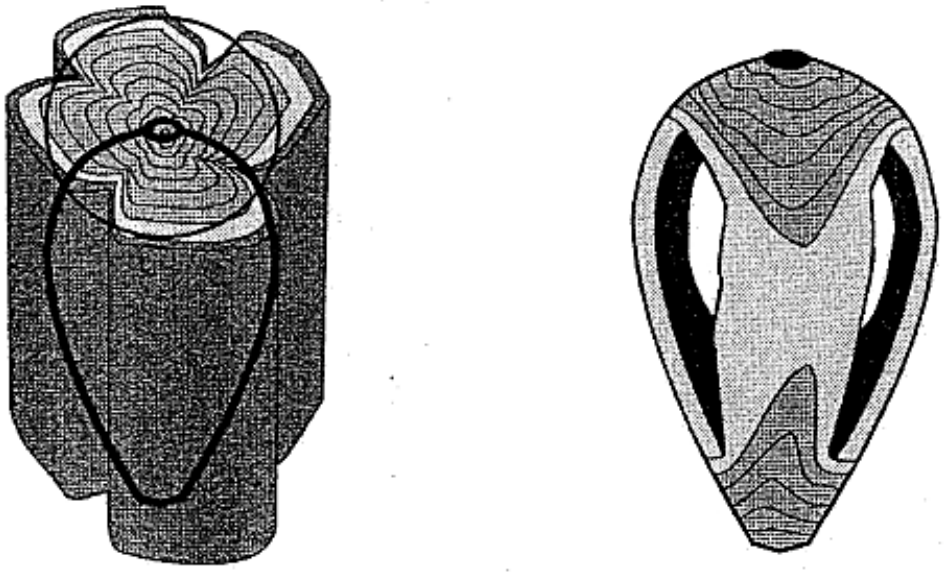
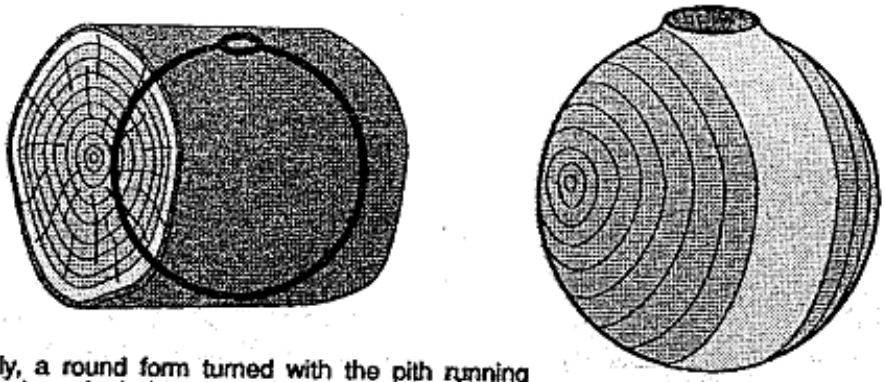
Basic forms of hollow vessels



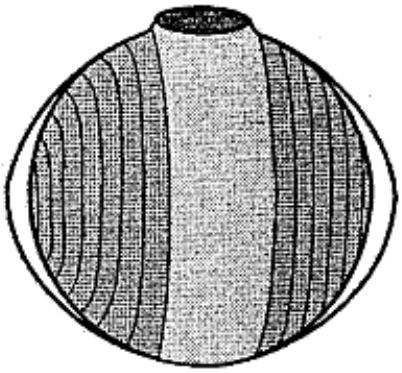
Theoretically, a form turned with the vertical axis through the pith and the larger diameter through the sapwood will have a light ring around the widest portion, with a concentric circular grain pattern.



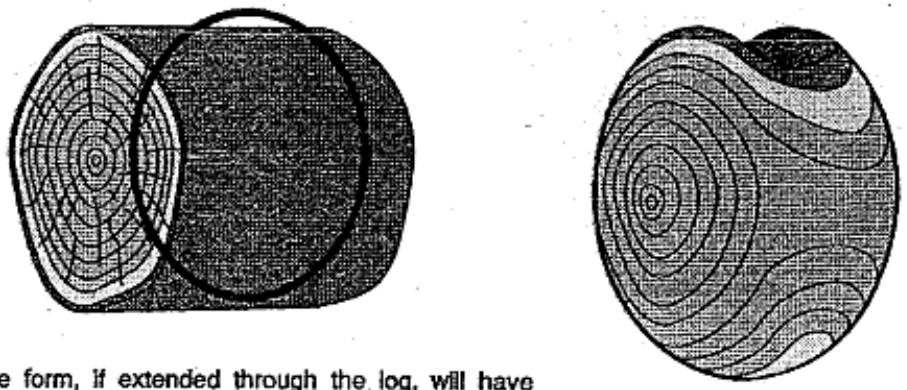
A vase form turned from a convoluted log will have openings along the sides where the wider portion of the form intersects the air.



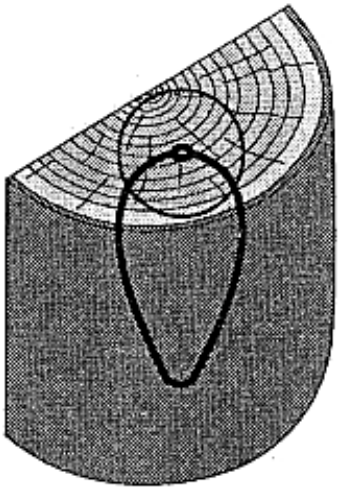
Theoretically, a round form turned with the pith running horizontally through the form will have a light band running from the rim down and around the sides. The rings of the log will show as concentric circles on both sides of the shape.

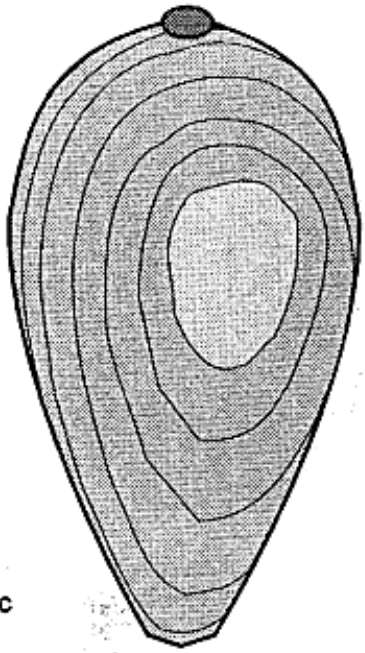


If this form is turned thin enough, the shrinking growth rings will force the pith outward into a football shape instead of cracking.

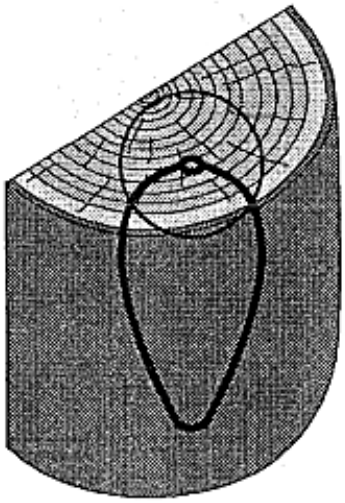


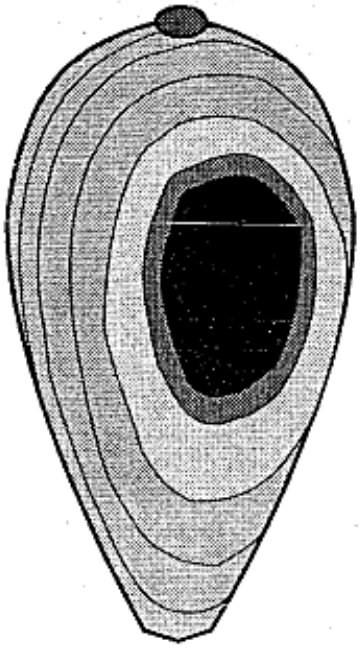
That same form, if extended through the log, will have a natural undulating rim surrounded by bark and sapwood.



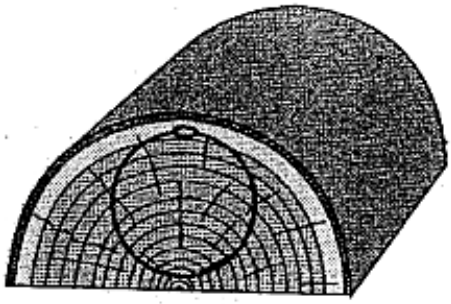


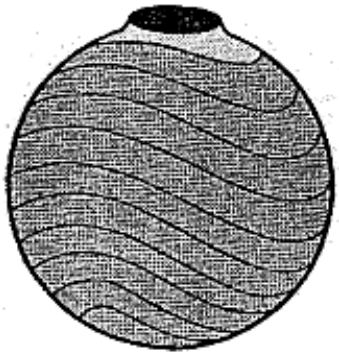
Turning a form in which the diameter extends into the sapwood will show a sapwood patch at the widest portion, surrounded with concentric ovals to the other side.



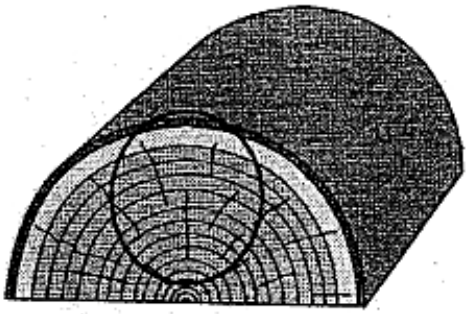


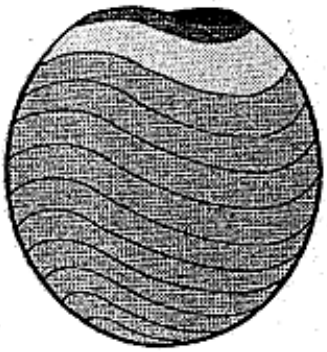
If that diameter overextends the bark, a hole will occur on the side at the widest portion, surrounded by the bark edge and sapwood.



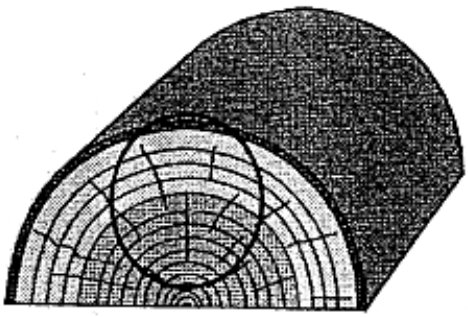


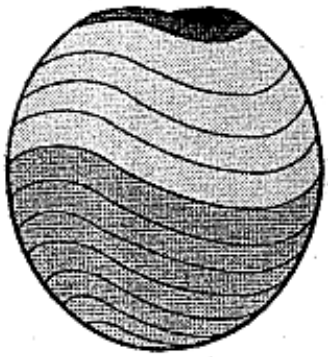
A form turned from half a log with the opening at the sapwood will have a light spot highlighting the opening and an undulating grain pattern surrounding it.



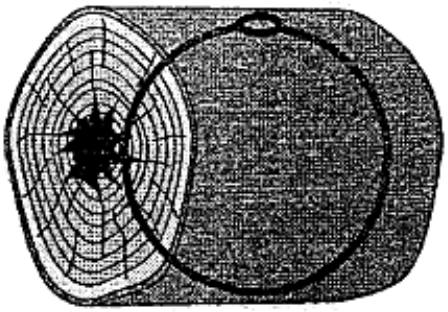


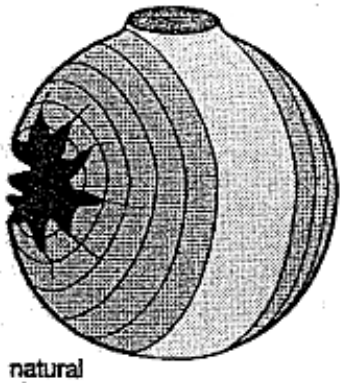
If that form is extended through the bark, a naturally undulating edge will be produced.



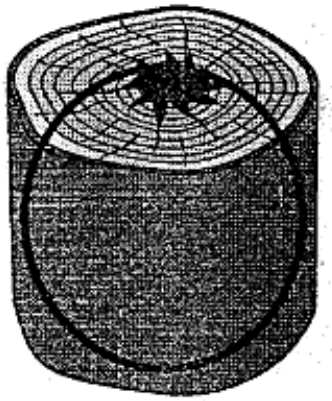


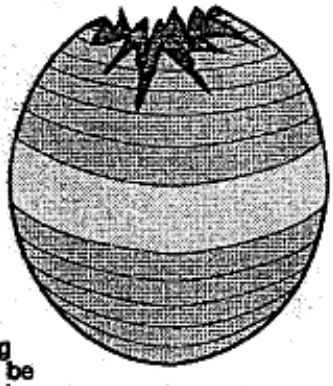
The same form turned from a log with a wide sapwood area will appear darker on the bottom and lighter on the top.



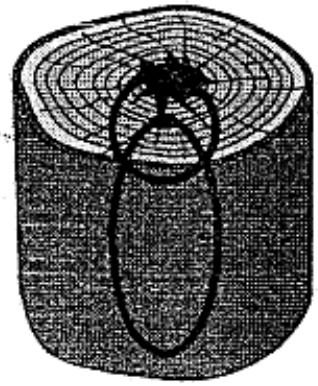


If the log has a natural hole through the pith, a natural opening will be formed on each side of the vessel.





If a similar form is turned from a log that has rot in the center, there will be a naturally rotten edge on the vessel.



A tall vessel turned with the wider diameter overextending the hollow center and the outside edge will have a hollow opening extending through the vessel.