SPILING

This is an abridged version of a tutorial prepared for an NRG presentation by Bob Filipowski. The contents has been edited to address overlap with Part 1, Hull Planking, February 2017. For review purpose some material within is retained.

The reader is advised to read Part 1 prior to Part 2 to understand some cross referencing

SPILING

A very special thanks to Bob Filipowski, former NRG Secretary, for the use of his excellent work herein and his support.

Thank you also to Model Expo, Dover Publications and Brown, Son and Ferguson LTD for permission to use graphics within their publications that have supplemented Bob’s original work.

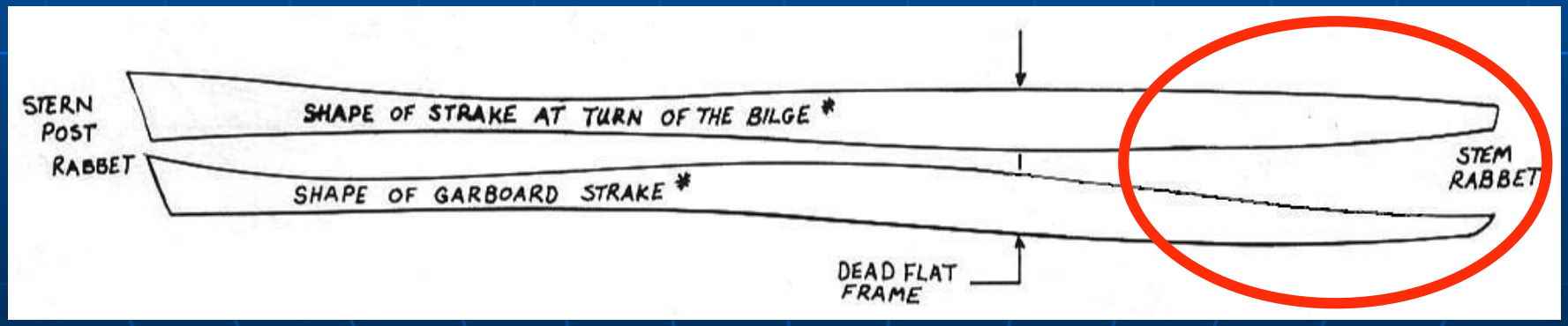
Sketch by H.C. Inches – *The Great Lakes Wooden Shipbuilding Era*

- Spiling was originally the ship carpenter's pronunciation of "spoiling". It determined the part of the plank to be "spoiled", that is, cut off and wasted.

E. W. Petrejus

Planking Principles I

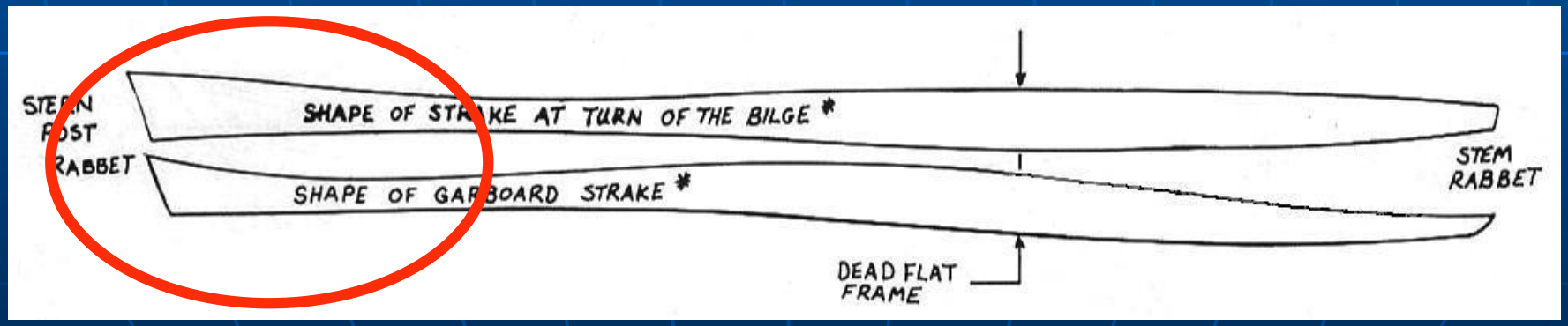
Due to the reduced girth of the hull at the bow, maintaining a fixed number of strakes will require that they be made so narrow that it becomes impossible to fasten them.



Sketch by Jim Roberts
Planking the Built-up Ship Model

Planking Principles I

At the stern the situation can be reversed as the surface area increases resulting in gaps, which must be filled in one way or another.

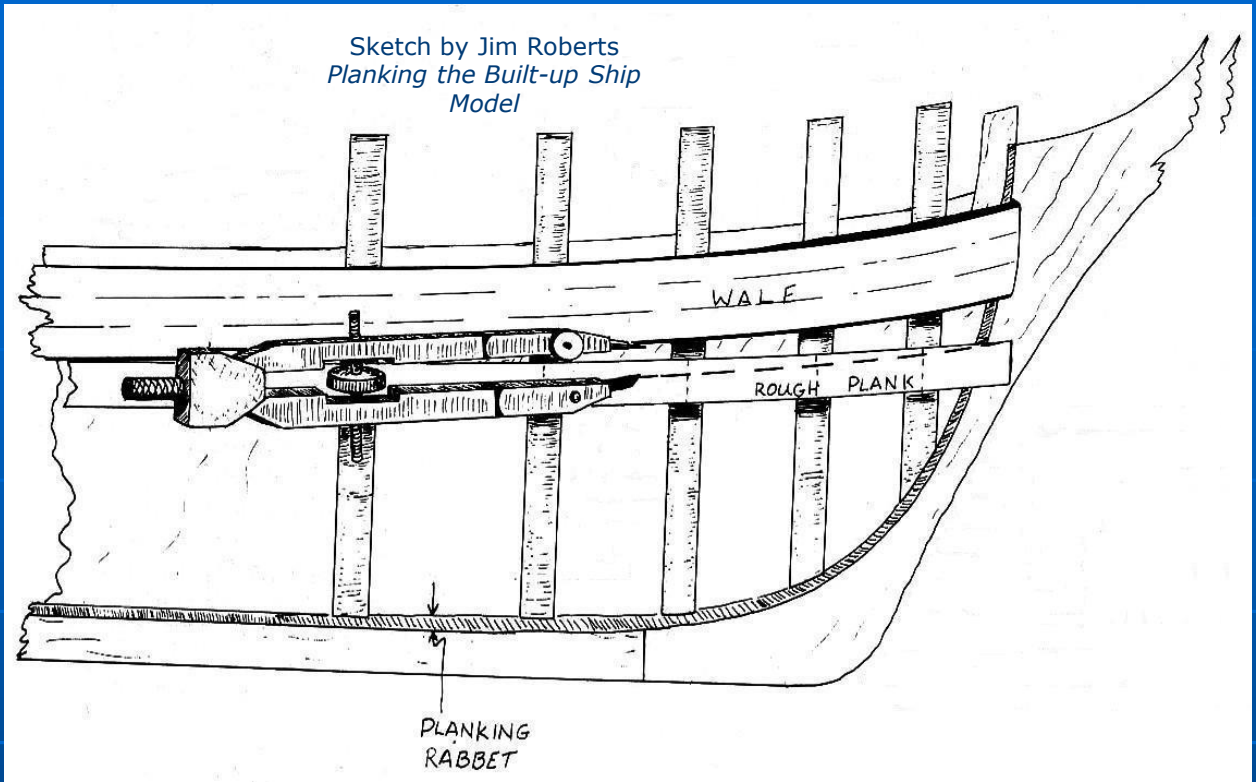


Sketch by Jim Roberts
Planking the Built-up Ship Model

Planking Principles II

- Planks, if allowed to follow the contour of the hull, will have a tendency to curve upwards at the bow and stern.
- A plank is said to have too much "sny" if this is excessive.

So, what exactly is spiling?



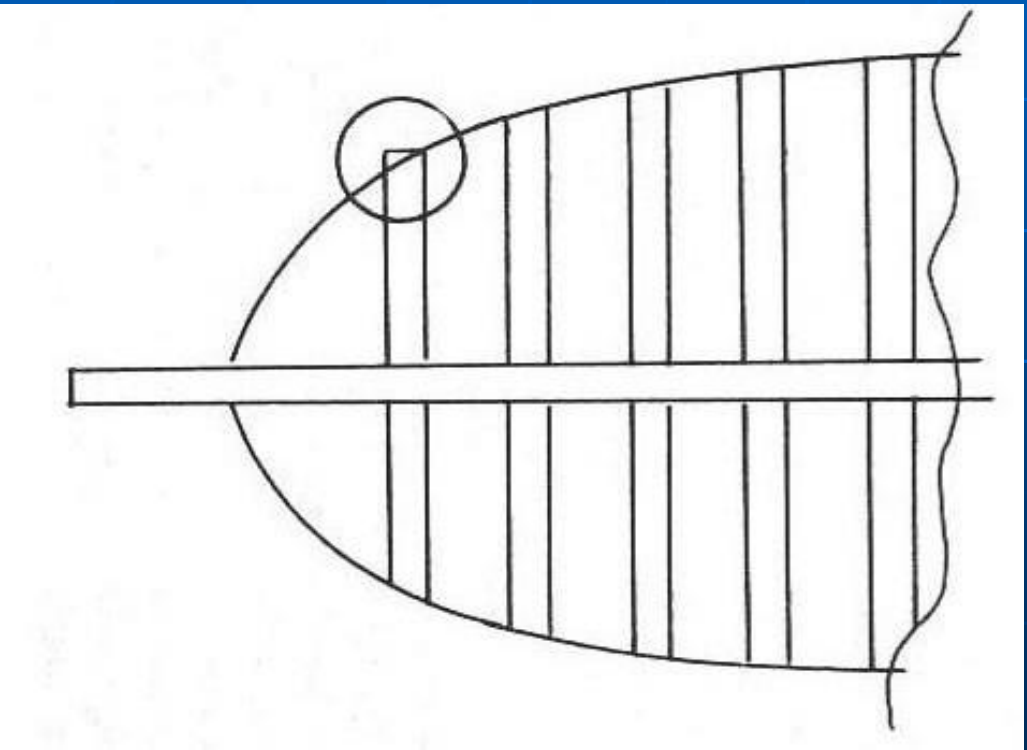
Sketch by Jim Roberts
Planking the Built-up Ship Model

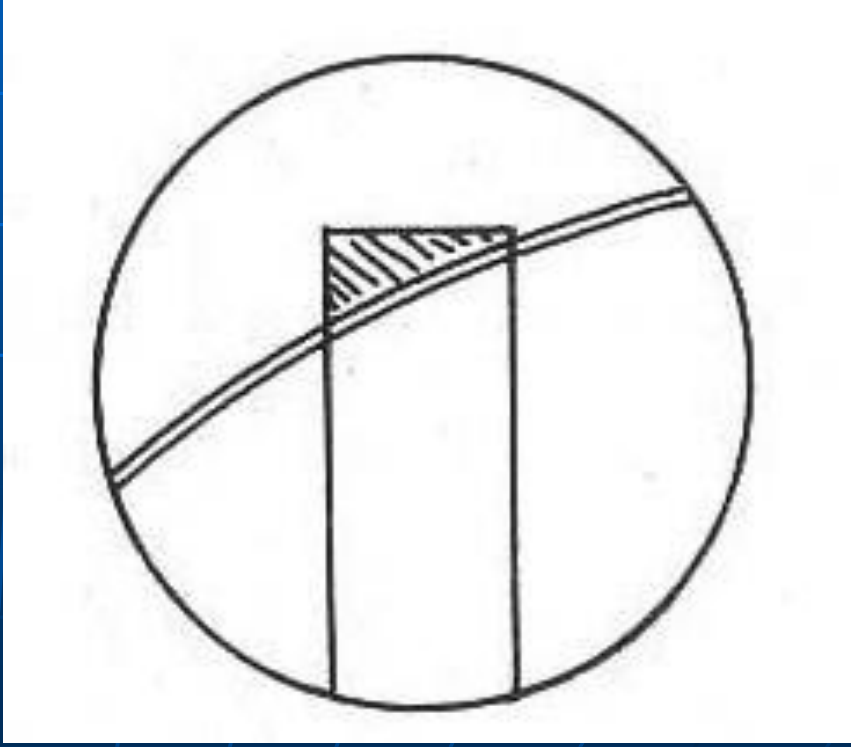
- **Spiling is a method used for finding the shape of a hull plank. This is accomplished by taking a series of offset measurements at points along its length from a parallel fixed reference point such as the edge of a plank already fitted in place.**

Hull Preparation

Hull preparation is an <u>absolute must</u> before any planking can begin.

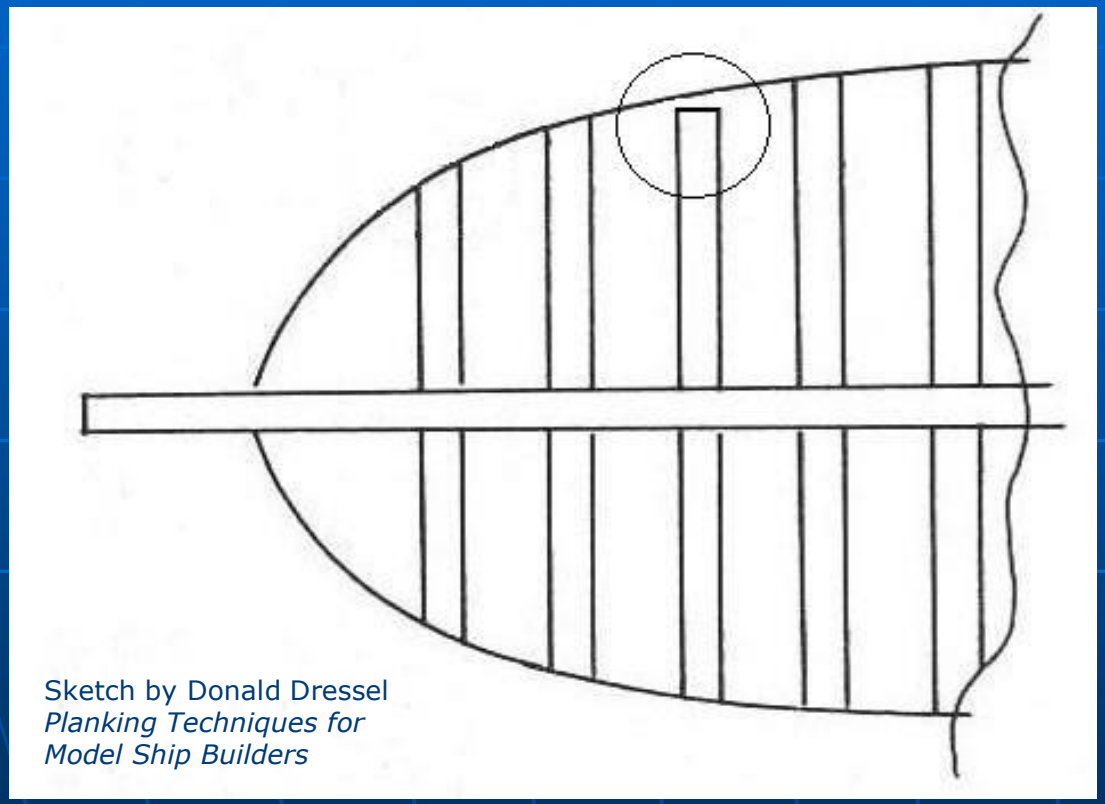
High points on frames or bulkheads need to be beveled. If not taken care of, unsightly "knuckles" or high spots will occur.



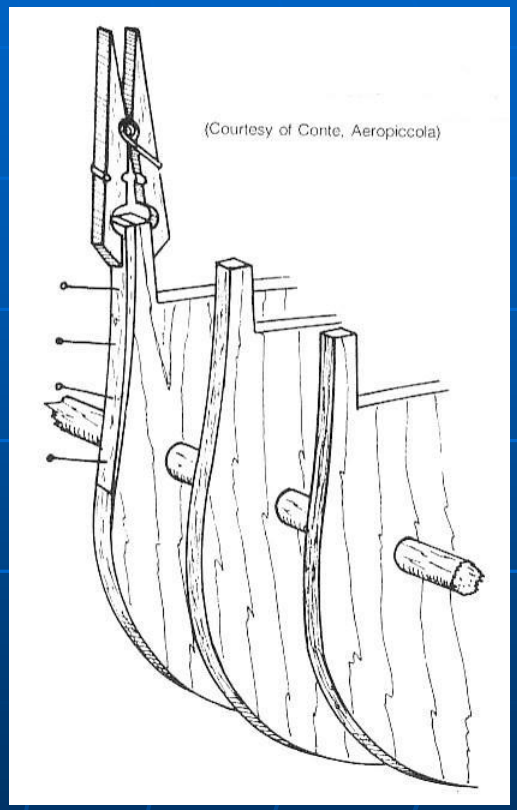


Sketches by Donald Dressel
Planking Techniques for Model Ship Builders

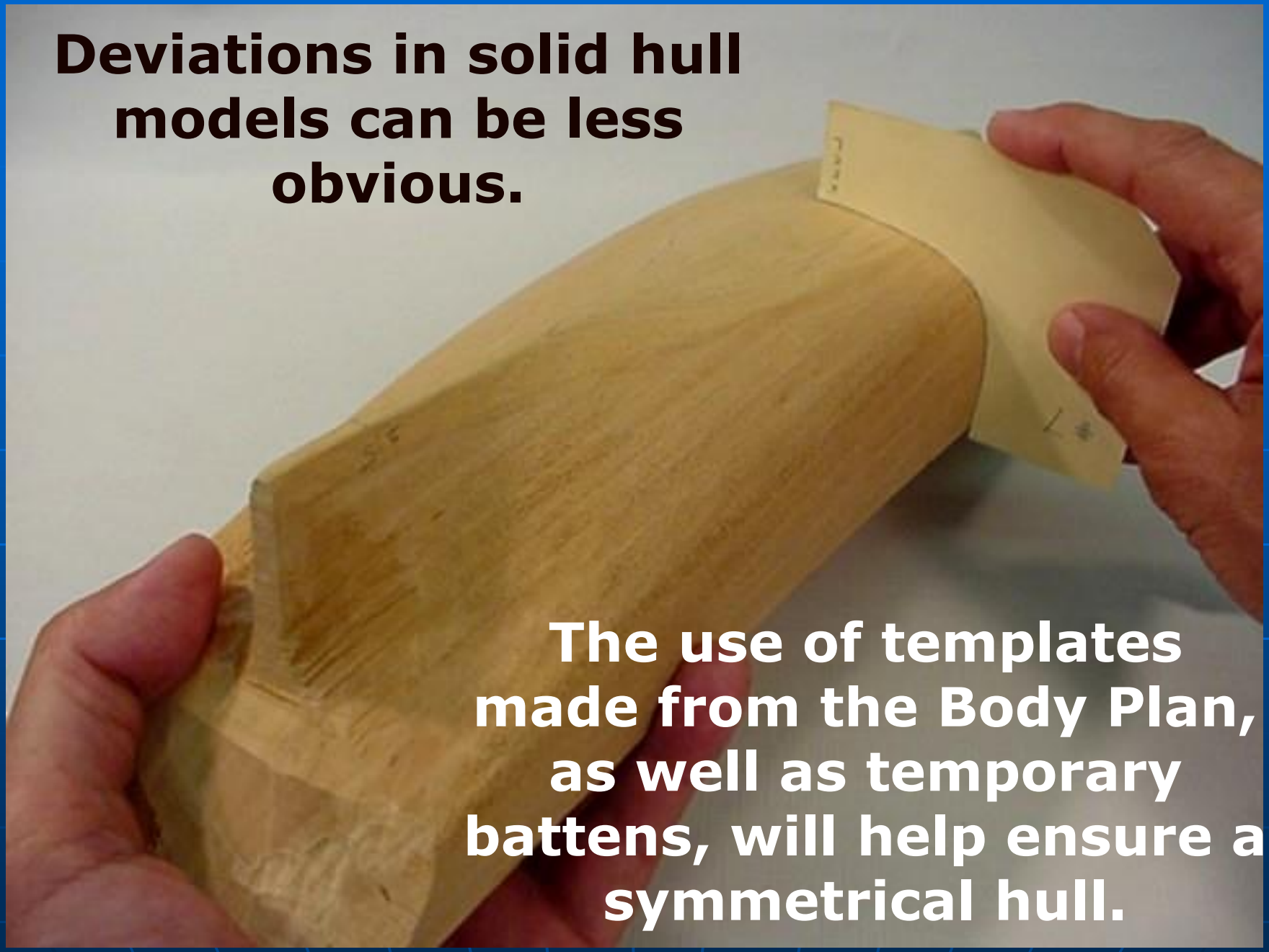
Undersized frames or bulkheads will cause dips in the planking or create soft spots in the hull.



Sketch by Donald Dressel
Planking Techniques for Model Ship Builders

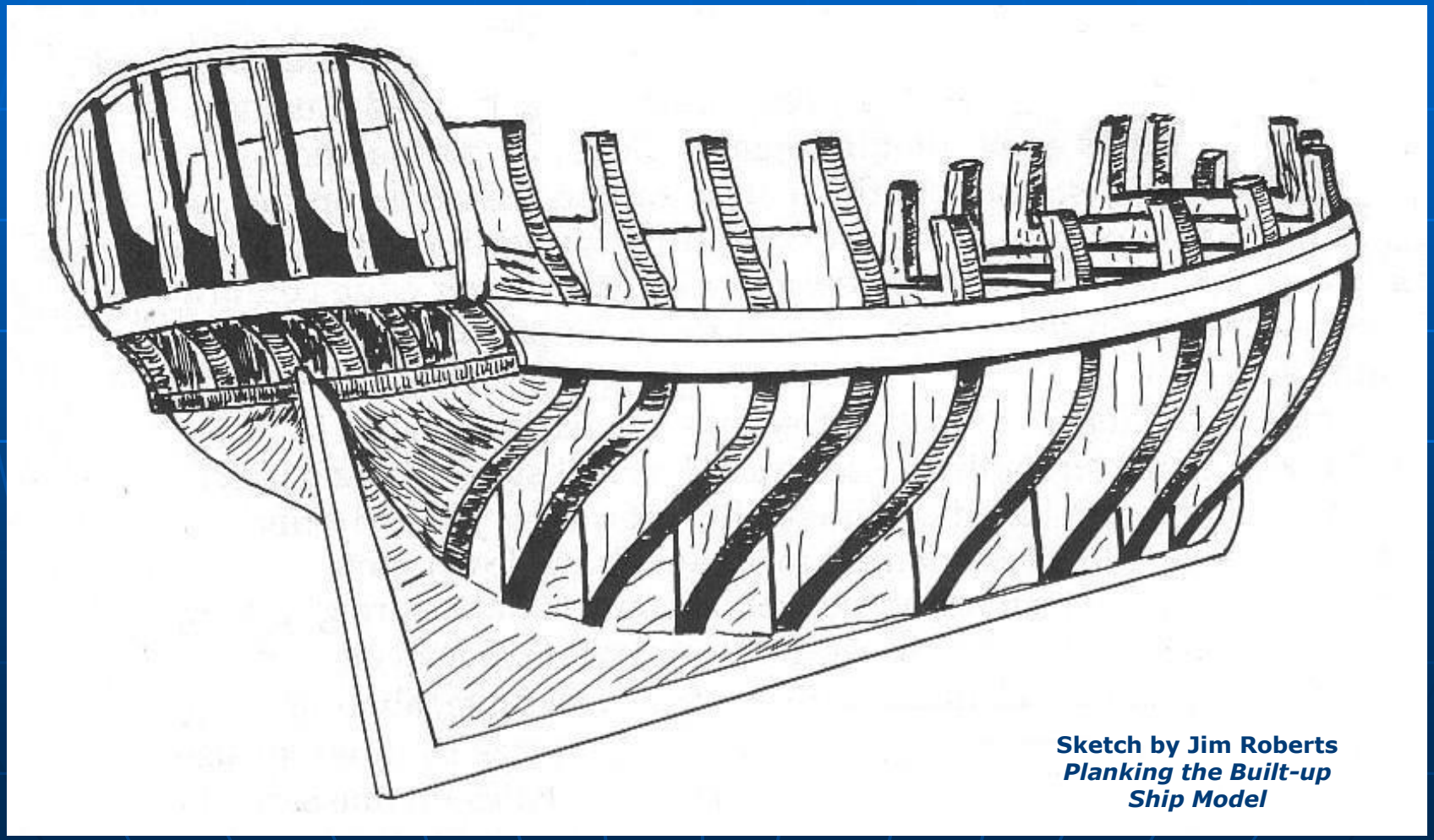


Shims applied to these areas will eliminate this problem.


Deviations in solid hull models can be less obvious.
The use of templates made from the Body Plan, as well as temporary battens, will help ensure a symmetrical hull.

The Main Wale

The wales will establish the upper reference point needed for planking the lower hull.



Sketch by Jim Roberts
Planking the Built-up Ship Model

Planning your planking job

The following applies to the finish layer of planking. It is not necessary to follow these principles for sub layer planking

Plank Length

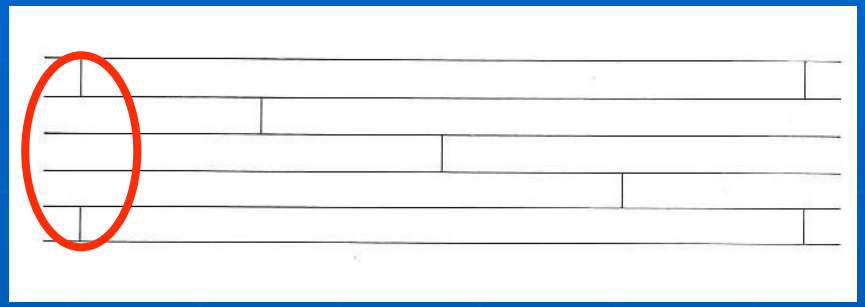
- End of plank locations
- Butt Joint Pattern

- A maximum plank length would have been around 30 feet, although 20 to 26 foot lengths were more practical and likely.

- Later in the nineteenth century shorter lengths of 16 to 18 feet became common. This was most true in Europe.

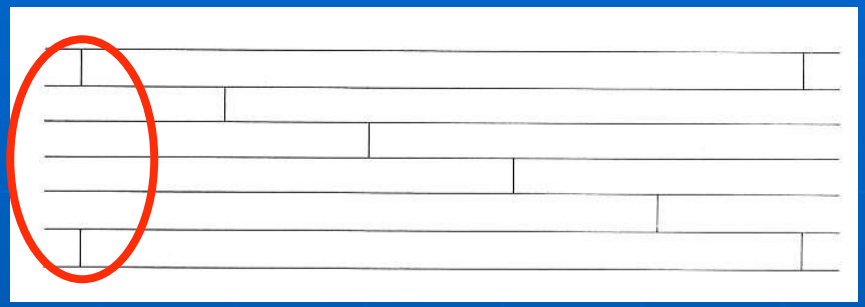
Shift Butt Patterns

Sketch by Wolfram zu Mondfeld – *Historic Ship Models*

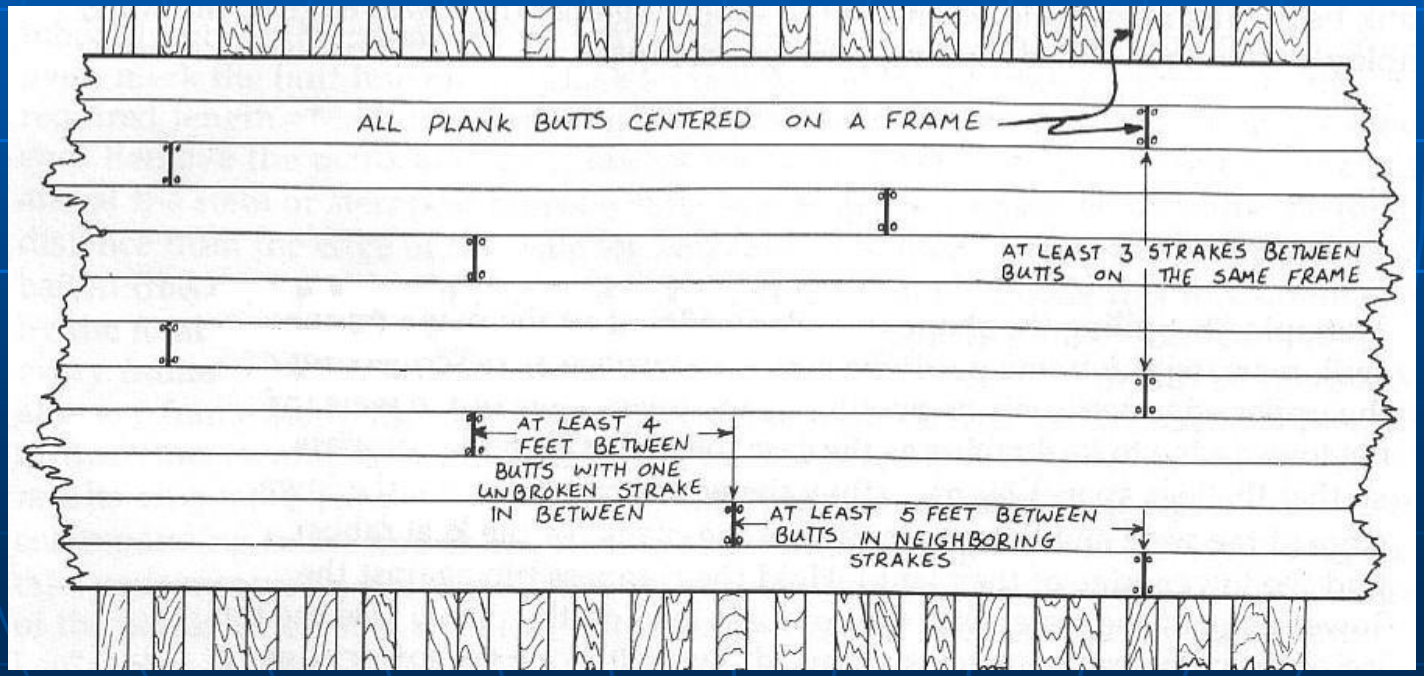


Three Plank Shift

Sketch by Wolfram zu Mondfeld – *Historic Ship Models*



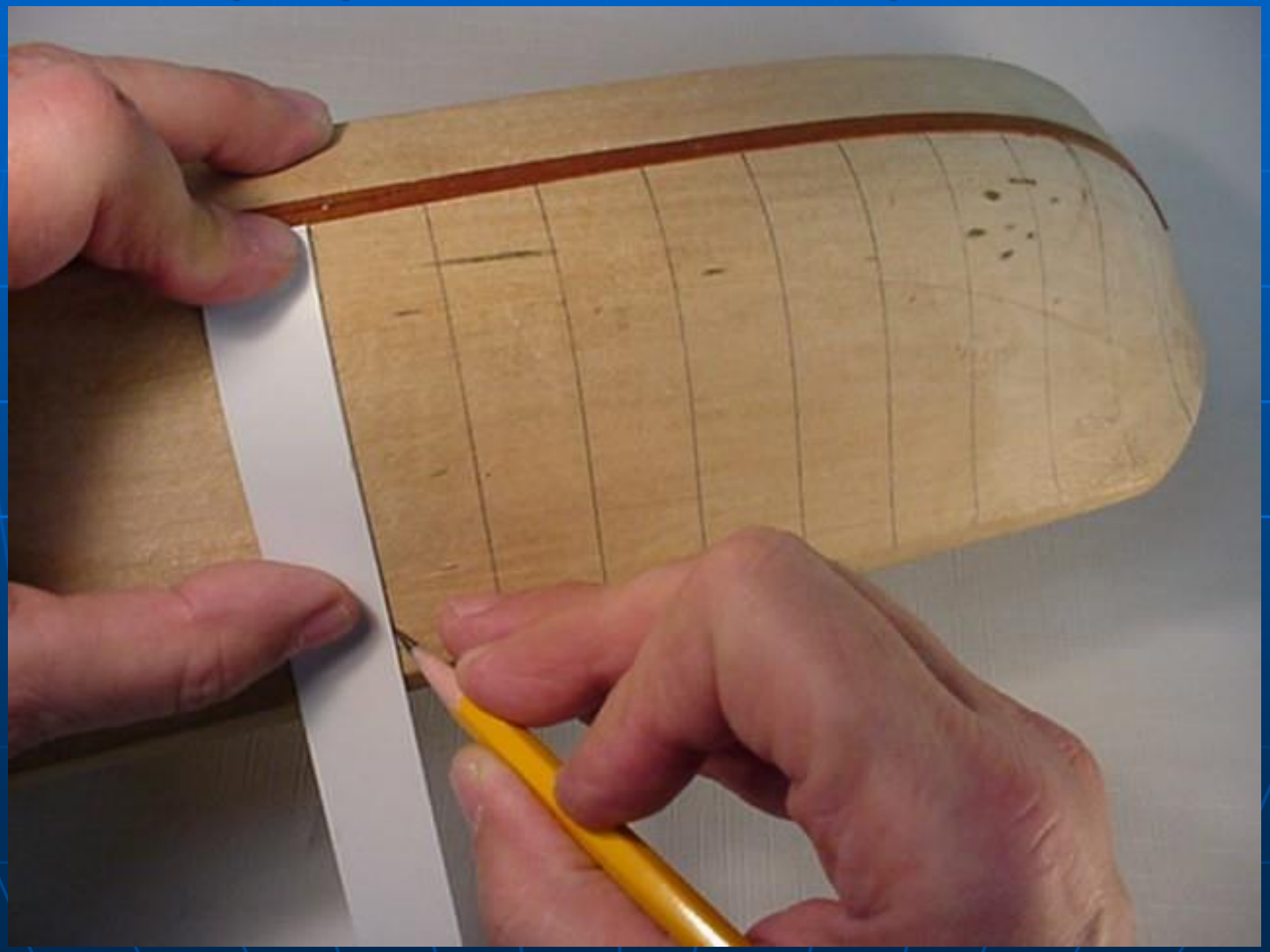
Four Plank Shift



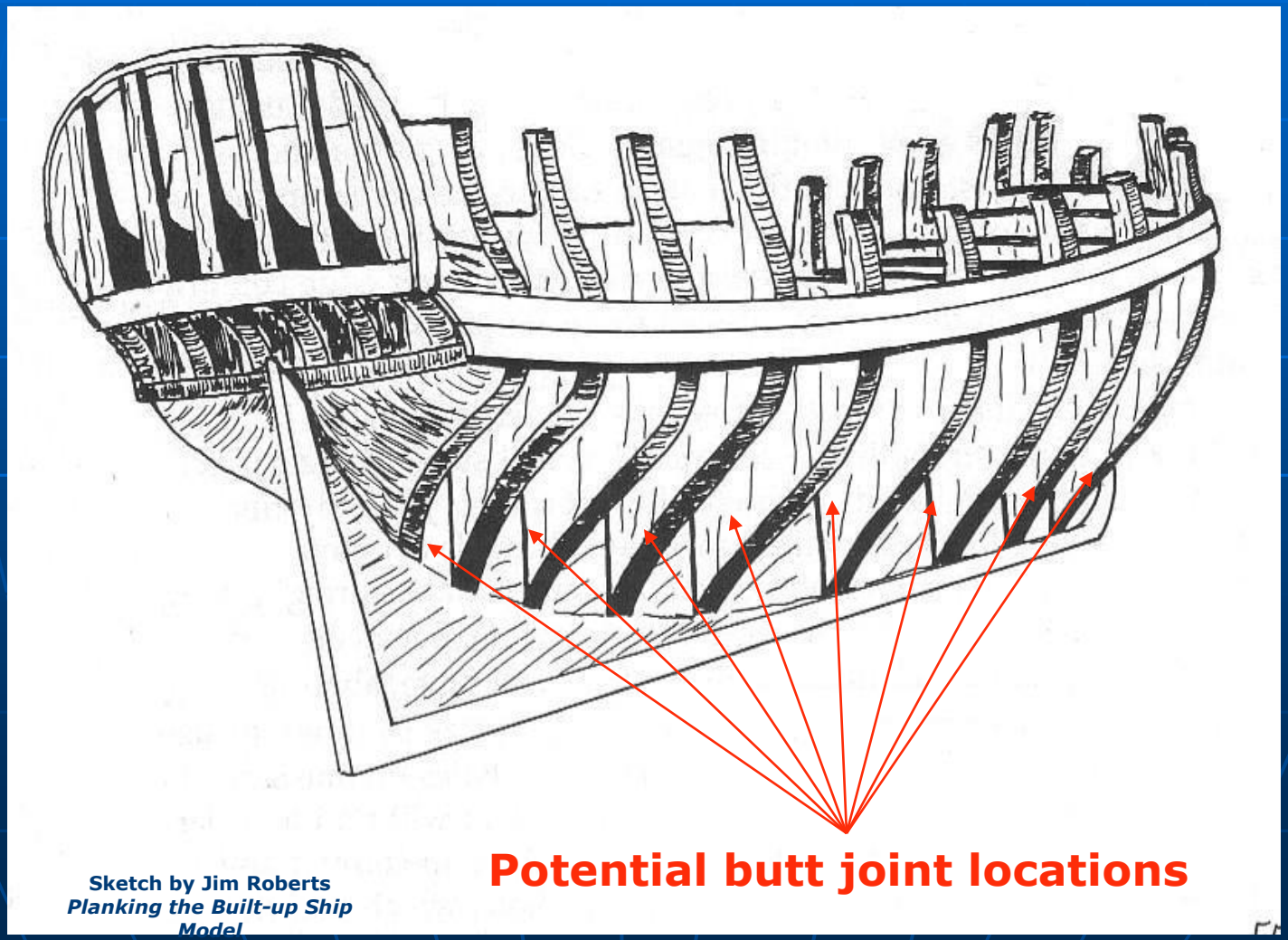
Random Pattern … Sort of

Sketch by Jim Roberts
Planking the Built-up Ship Model

Once you have selected a plank length, and shift butt pattern, draw vertical lines at the proper intervals on your hull.



- If you are building a plank-on-bulkhead model, select the bulkheads, which most closely correspond to the locations you would have wanted.



Sketch by Jim Roberts
Planking the Built-up Ship Model

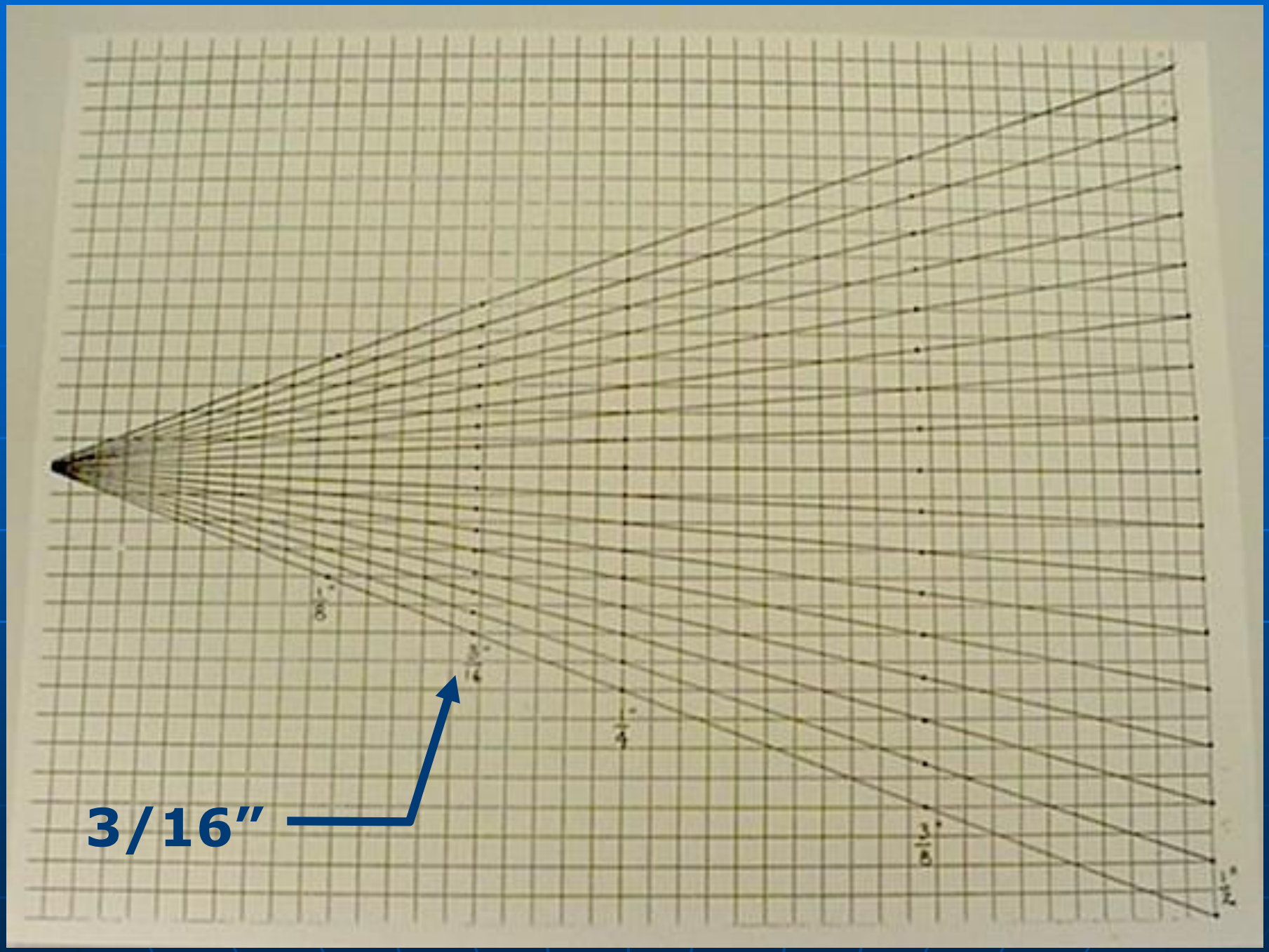
Median Plank Width

Generally this section addresses scratch building.
However one can adapt this to kits.
Refer to Hull Planking Part 1 to learn more.

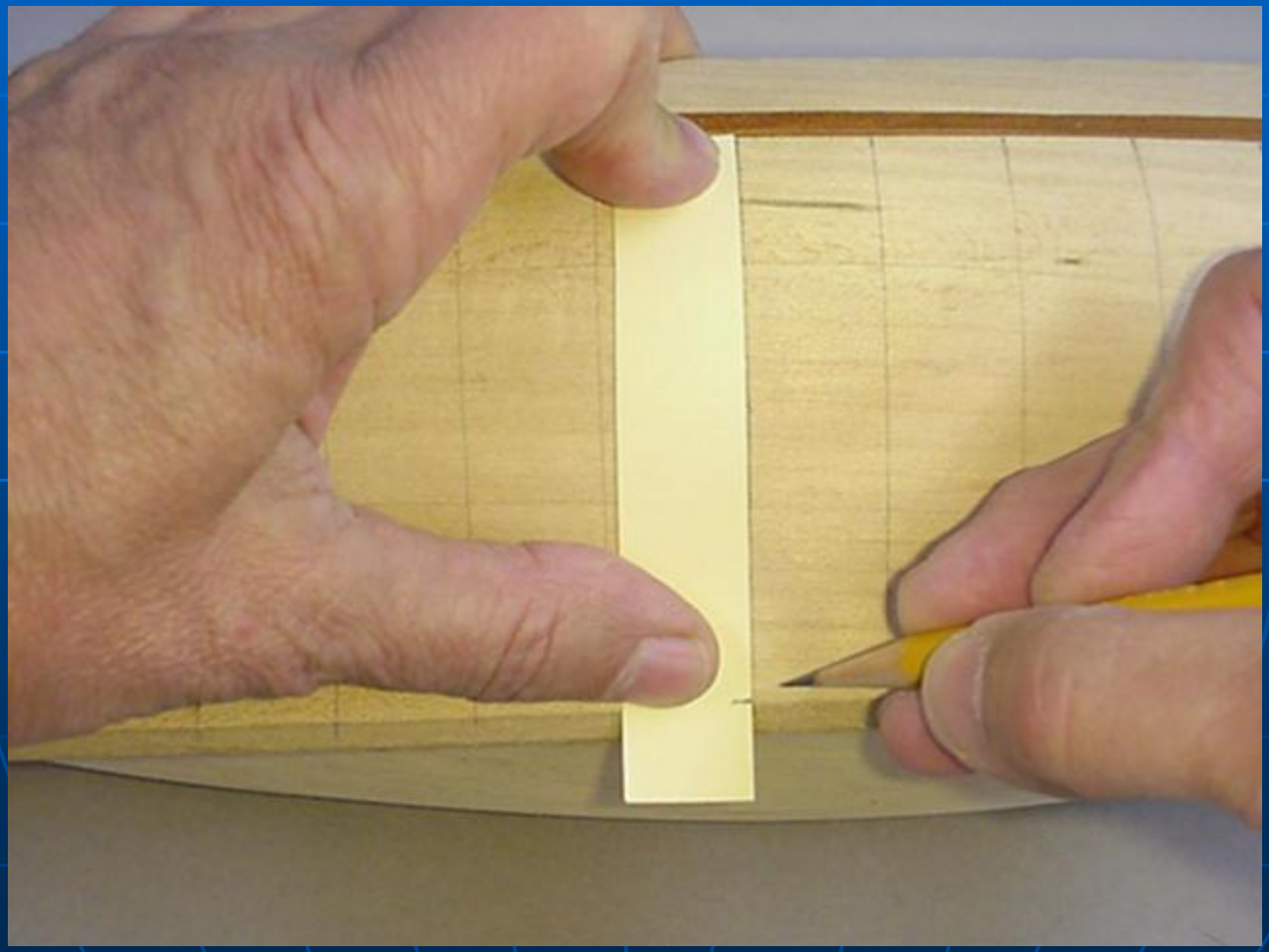
Determining your median plank width.

- The median plank width is the standard plank width dimension that all your planking calculations will be based on.
- It is normally figured from the midship, or dead flat frame.
- The median width of most planking used on ships during the eighteenth and nineteenth centuries was generally between 4 to 12 inches.
- Once you have decided on a width, that figure must be converted to the scale in which you are working.

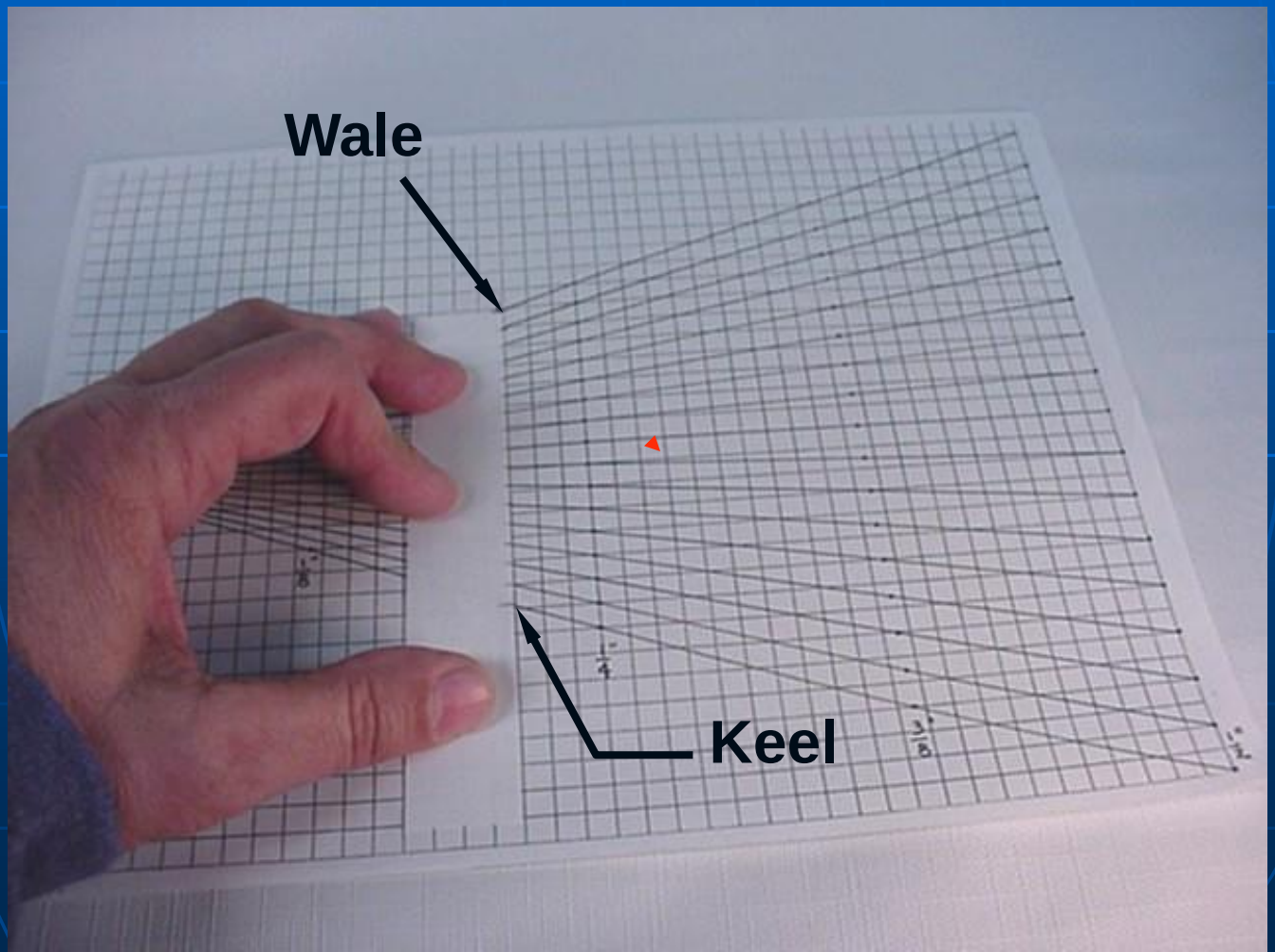
- Scale of model: 1/4″ = 1 Foot
- Selected plank width: 9″
- 9″ ÷ 12″ (1 Foot) = .750 or 3/4
- 3/4 x 1/4″ = 3/16″
- The projected median plank width for this model will be 3/16″.


3/16”

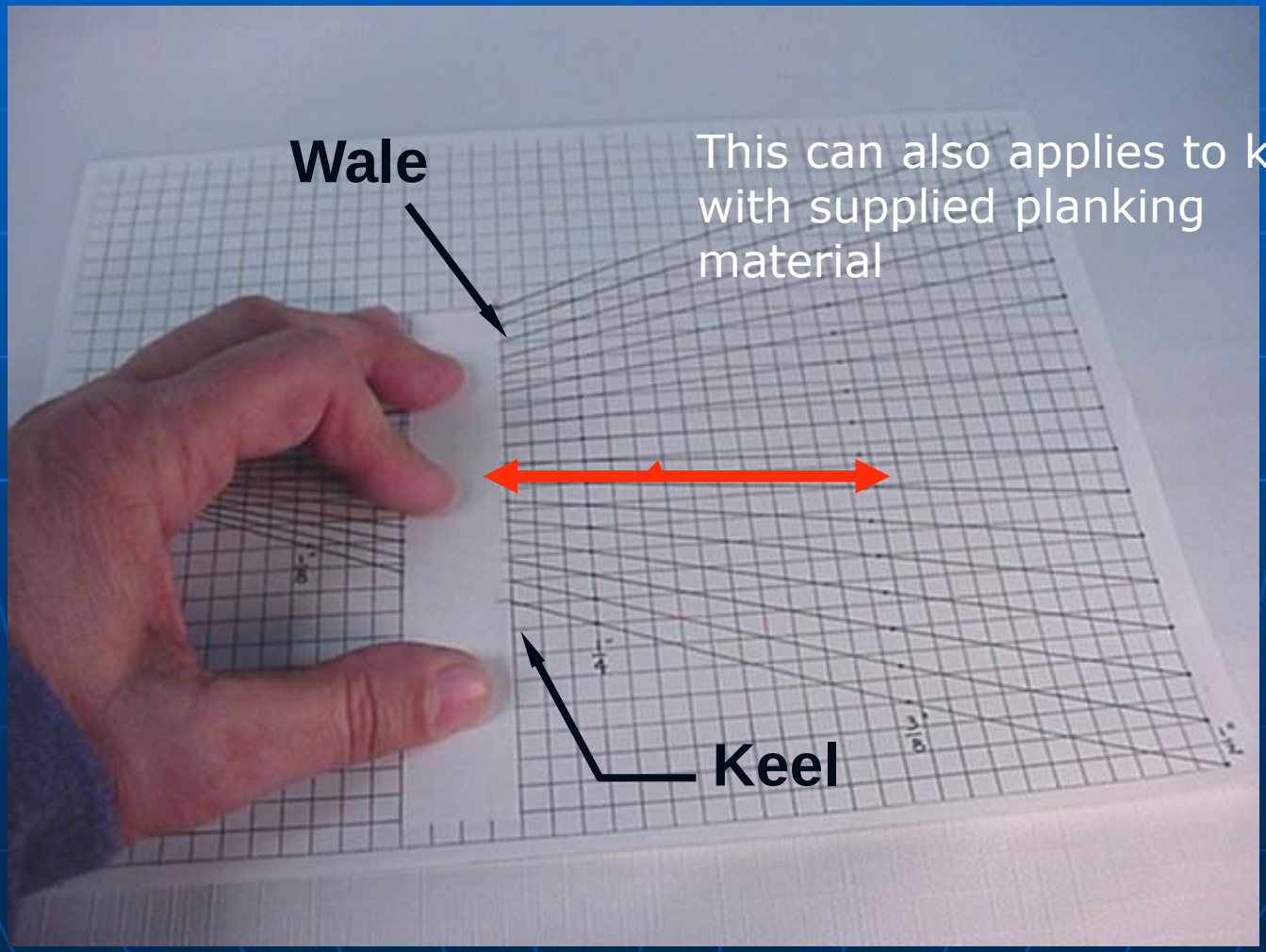
After you have determined what the median plank width will be, lay a strip of paper or card stock at the midship frame, and mark off the distance from the underside of the wale to the keel.



Place the marked stock on the grid at the point, which corresponds to the median plank width you have chosen.

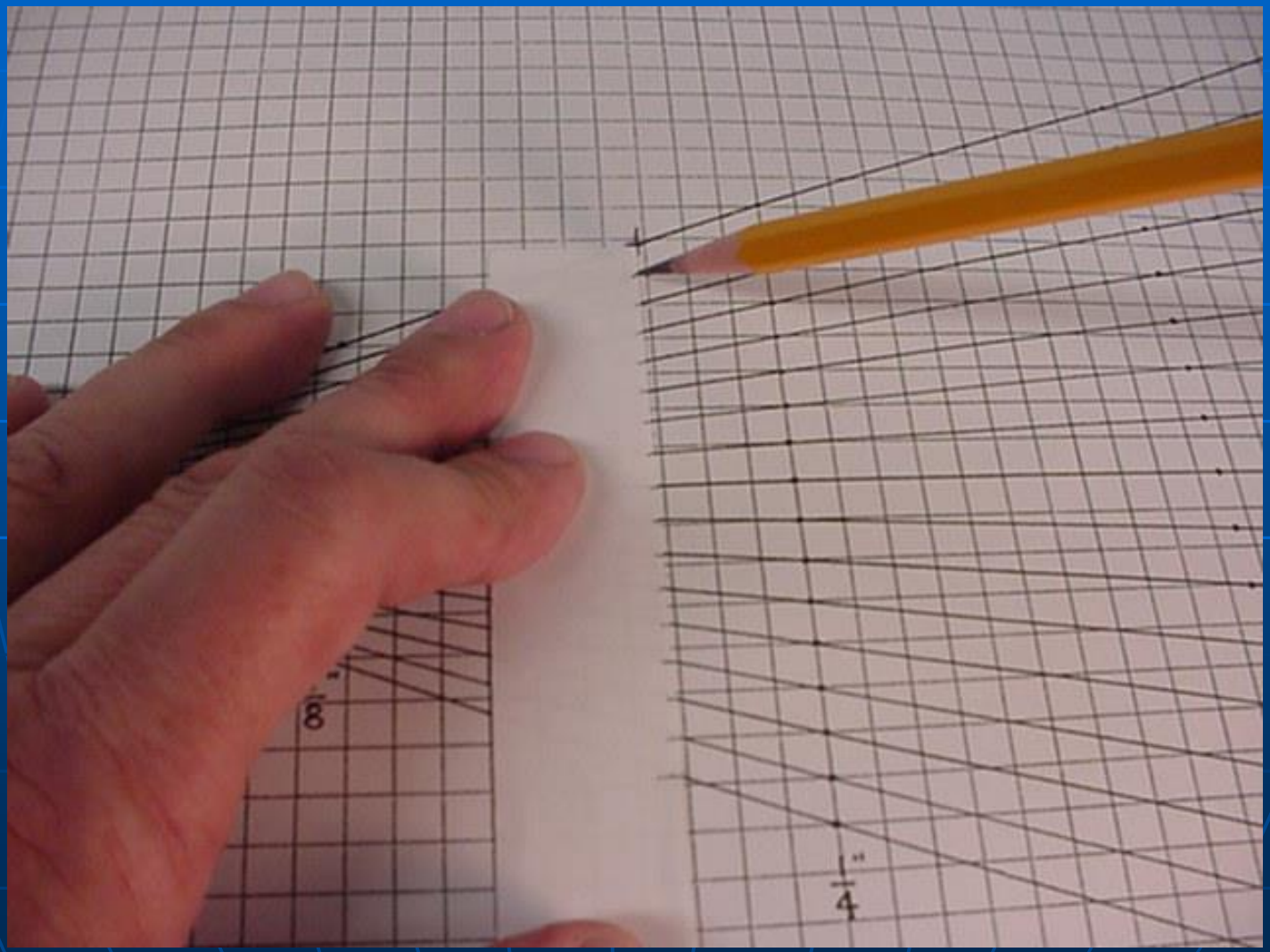


If the distance between the wale and the keel does not fall on two intersecting diagonals, move the stock forward or backward until it does.

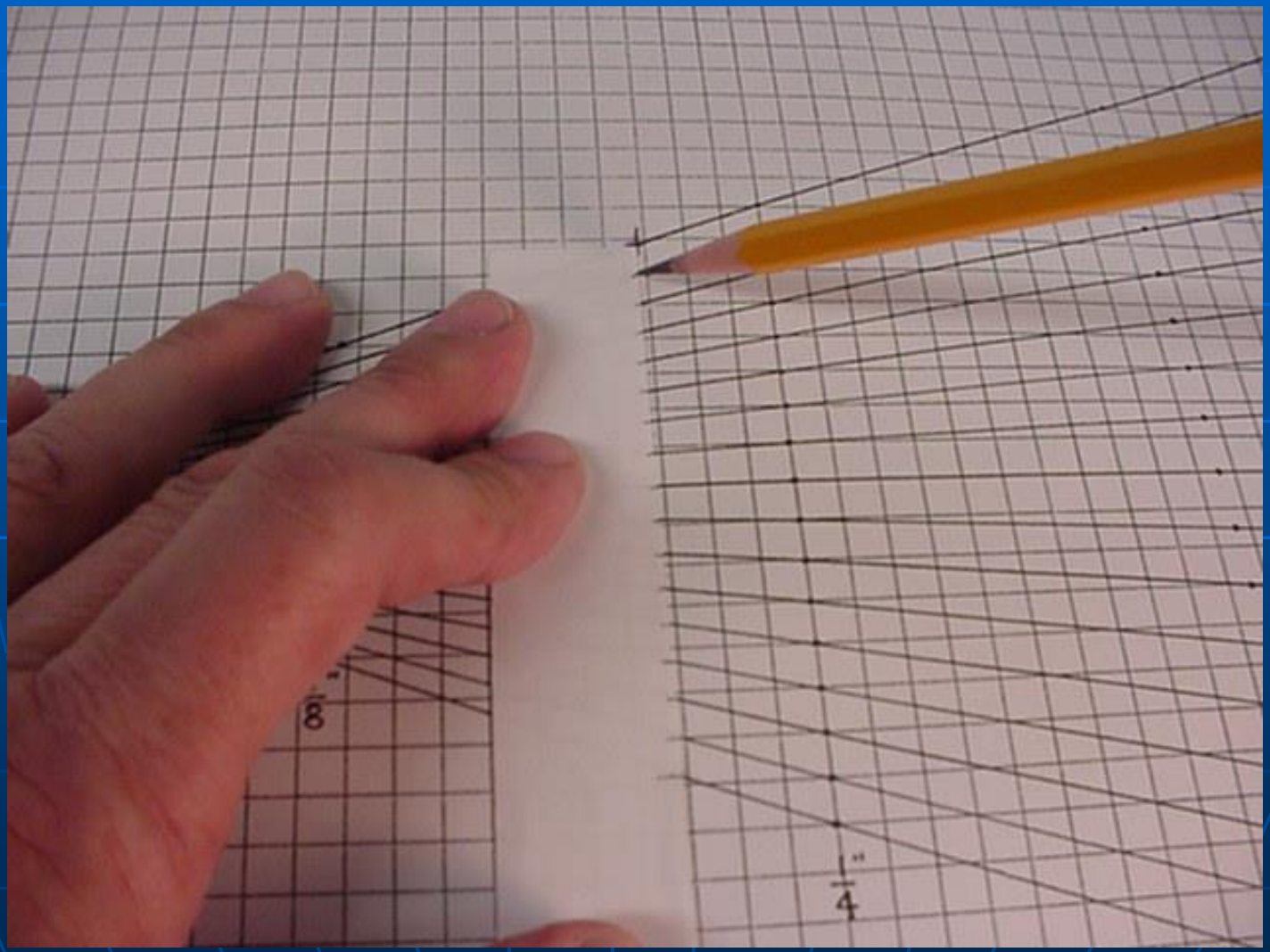


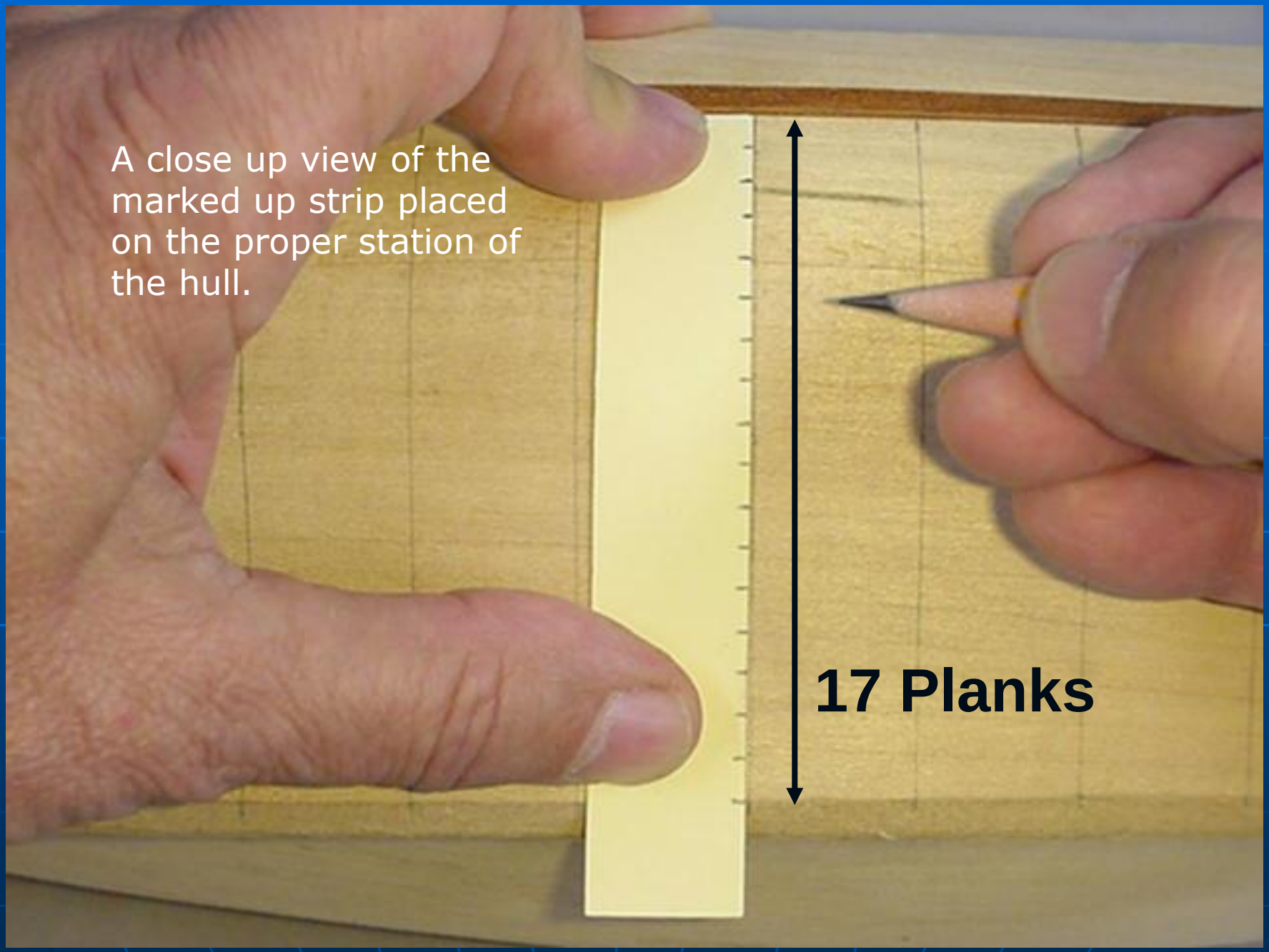
This can also applies to kits with supplied planking material

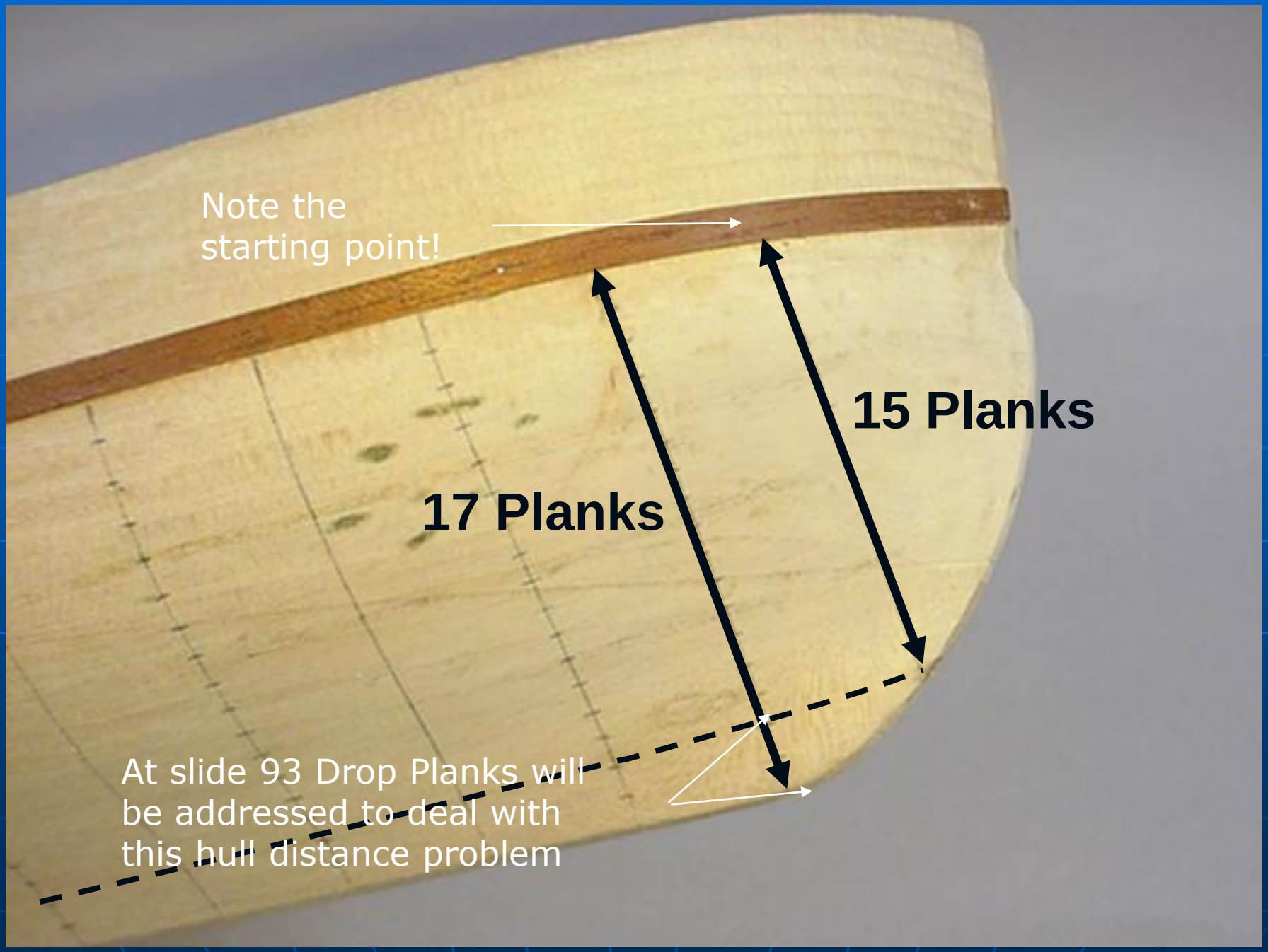
Mark the points at which the diagonals intersect the marked stock.

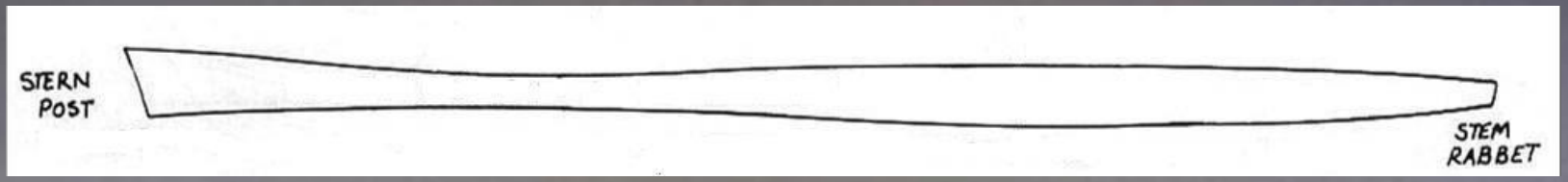


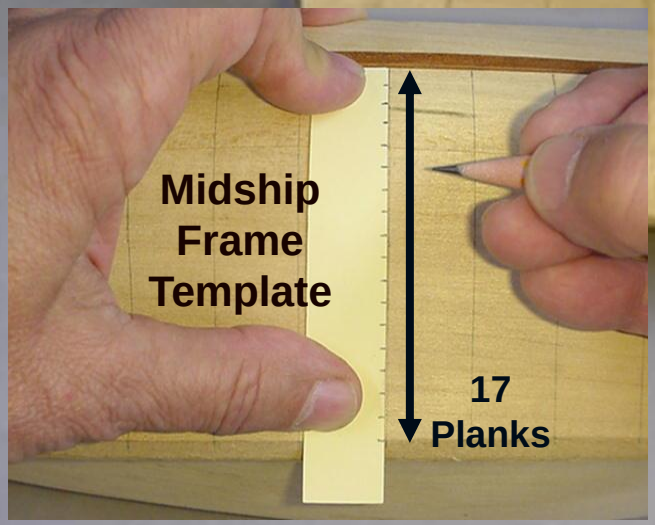
The distance between each of these points will be your final median plank width.



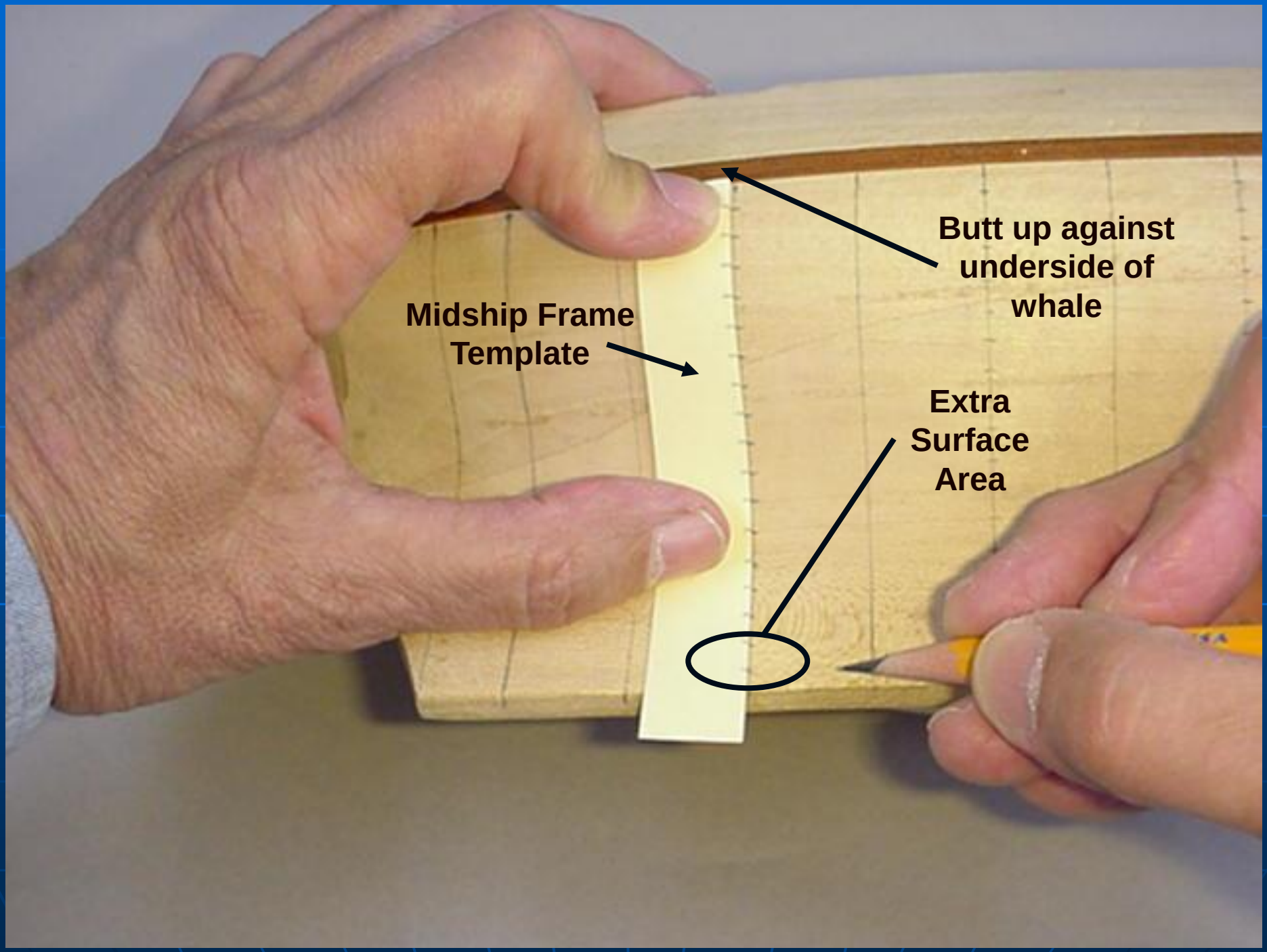

A close up view of the marked up strip placed on the proper station of the hull.
17 Planks

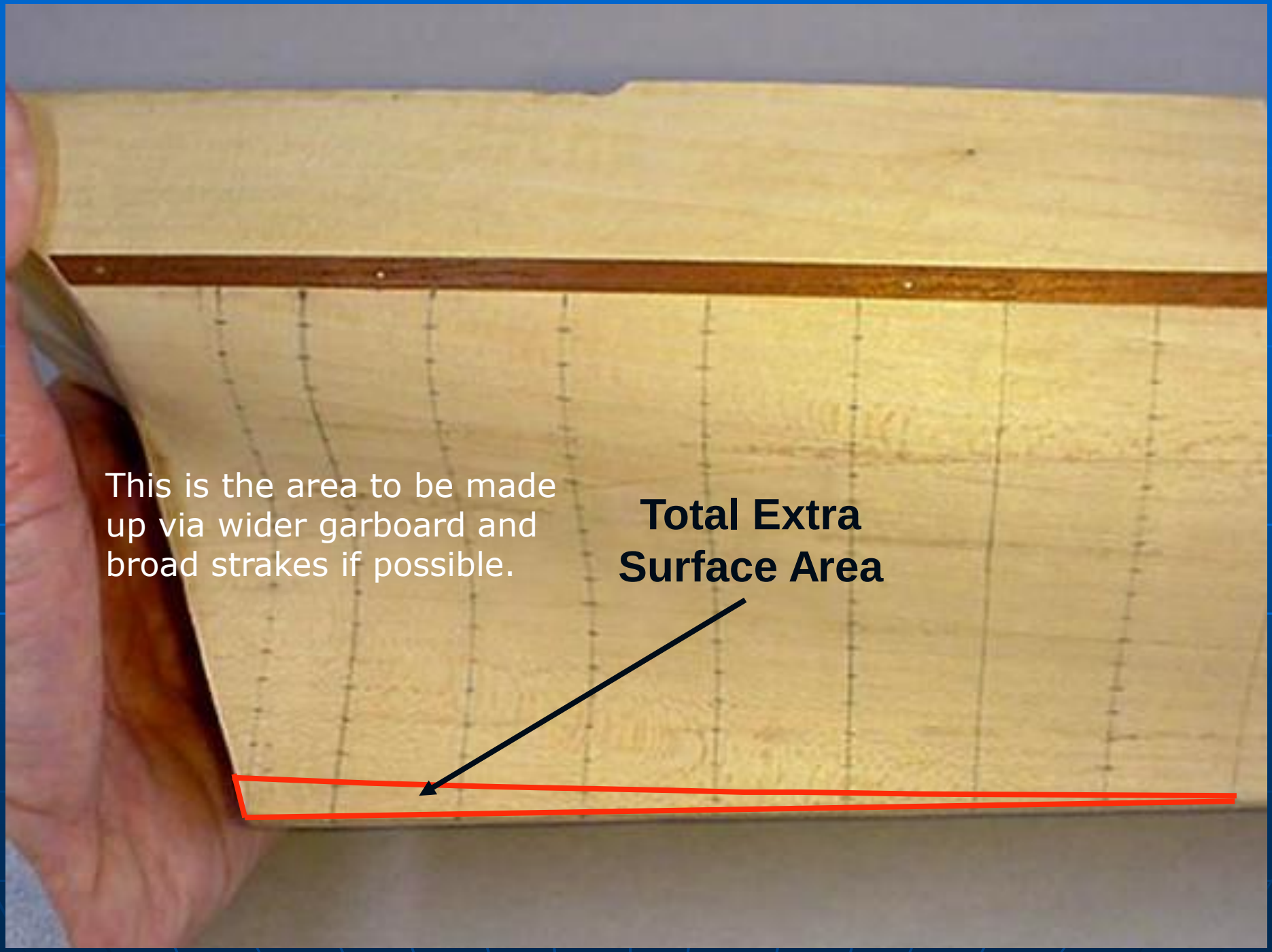

Note the
starting point!
15 Planks
17 Planks
At slide 93 Drop Planks will
be addressed to deal with
this hull distance problem





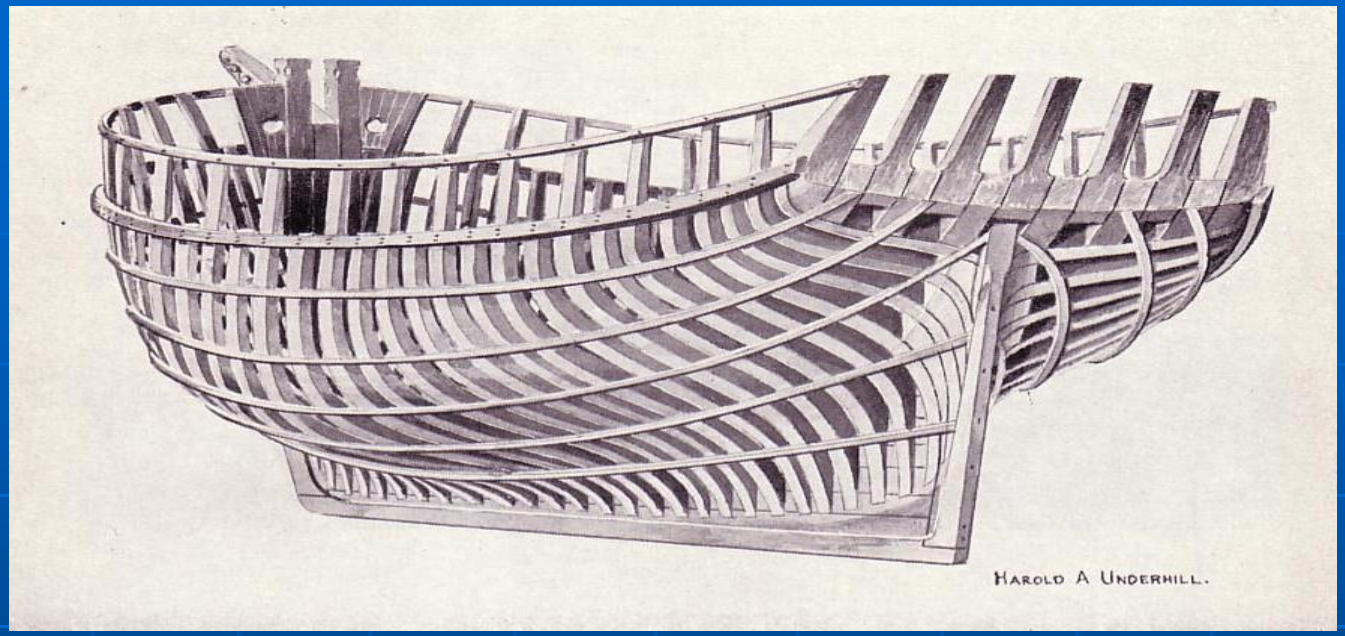
EQUAL


Butt up against underside of whale
Midship Frame Template
Extra Surface Area


This is the area to be made up via wider garboard and broad strakes if possible.
Total Extra Surface Area

BATTENS

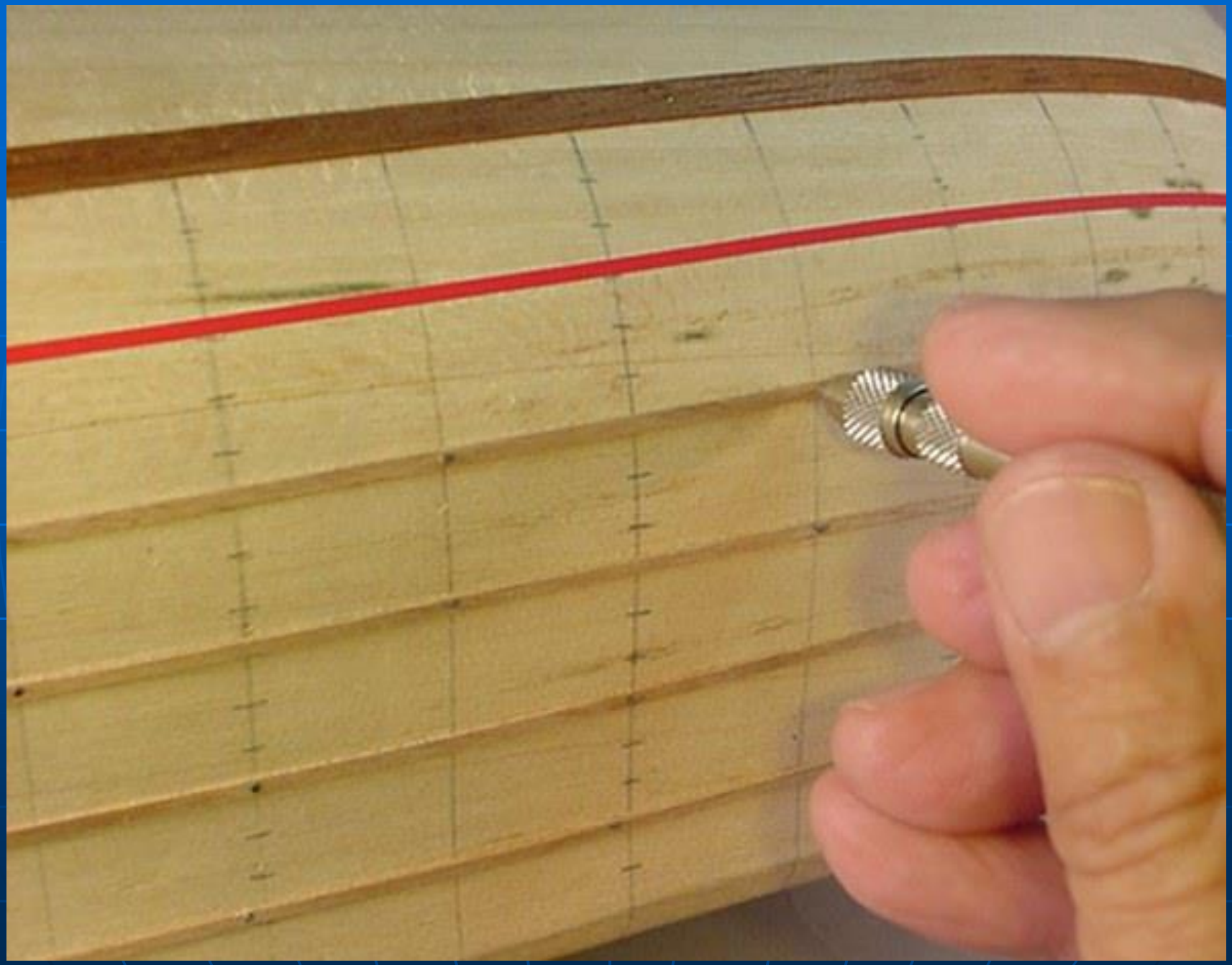
The Importance of Battens

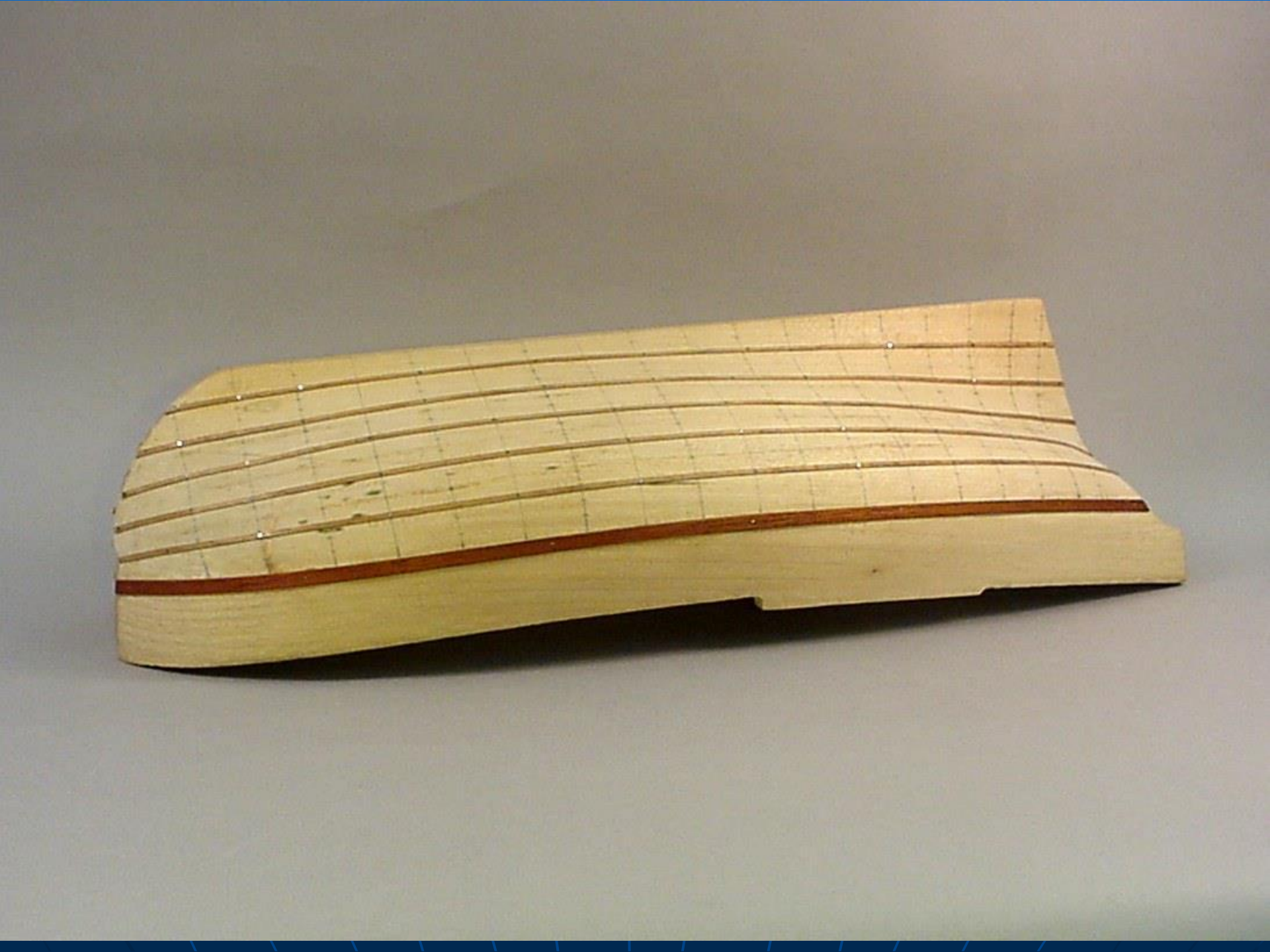


Battens help determine whether your hull is properly shaped.

Battens provide an early visual indicator as to whether stealers and drop planks will be required.

The symmetry of the plank runs between the port and starboard sides of the hull are more easily achieved.

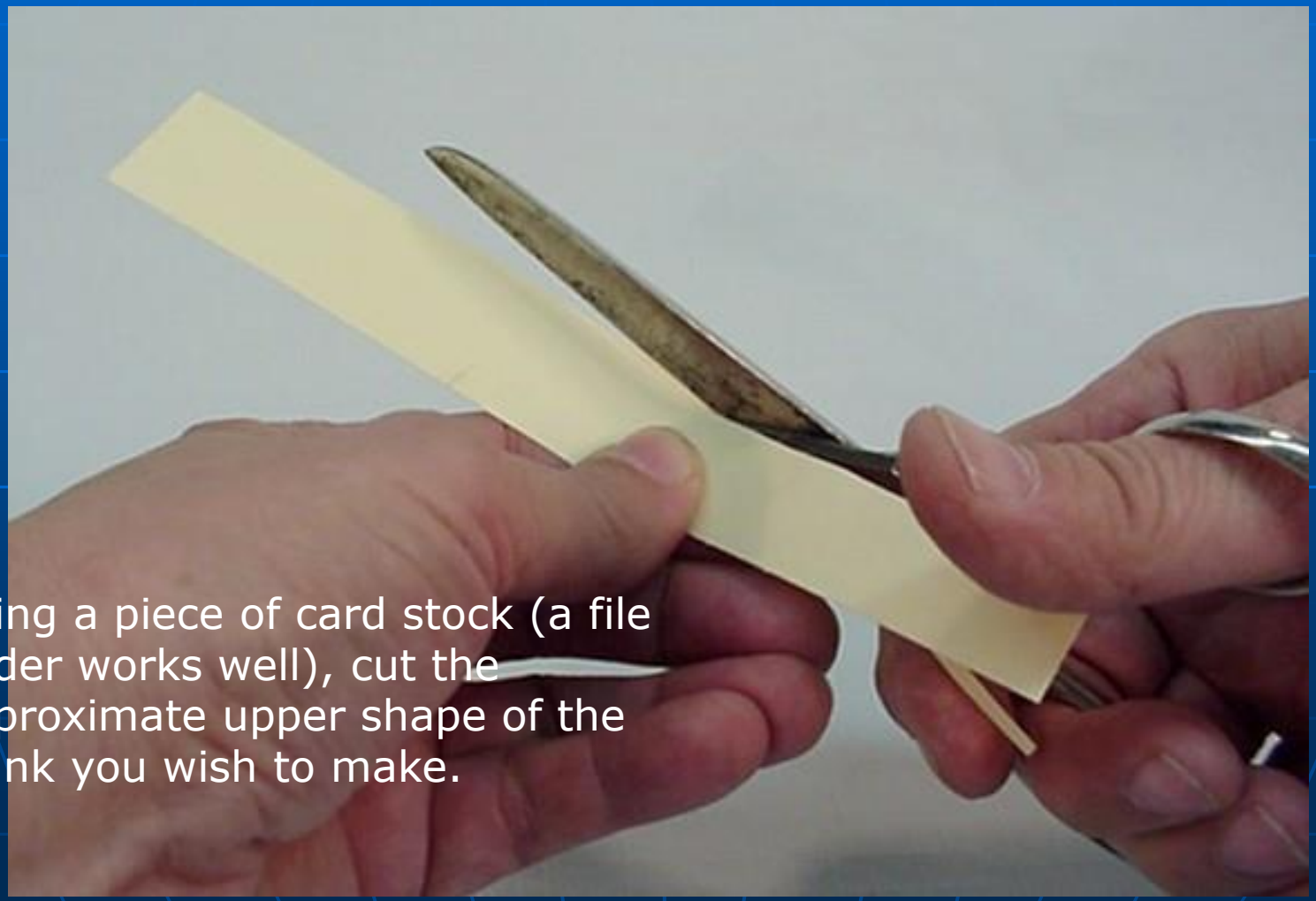




Plank Construction

In Part 1 the planking graph helped determine the width of a plank at specific points along the hull. How to fit the plank to a complex surface was not addressed. The following can be followed to ensure a plank lays flat at the bow especially.

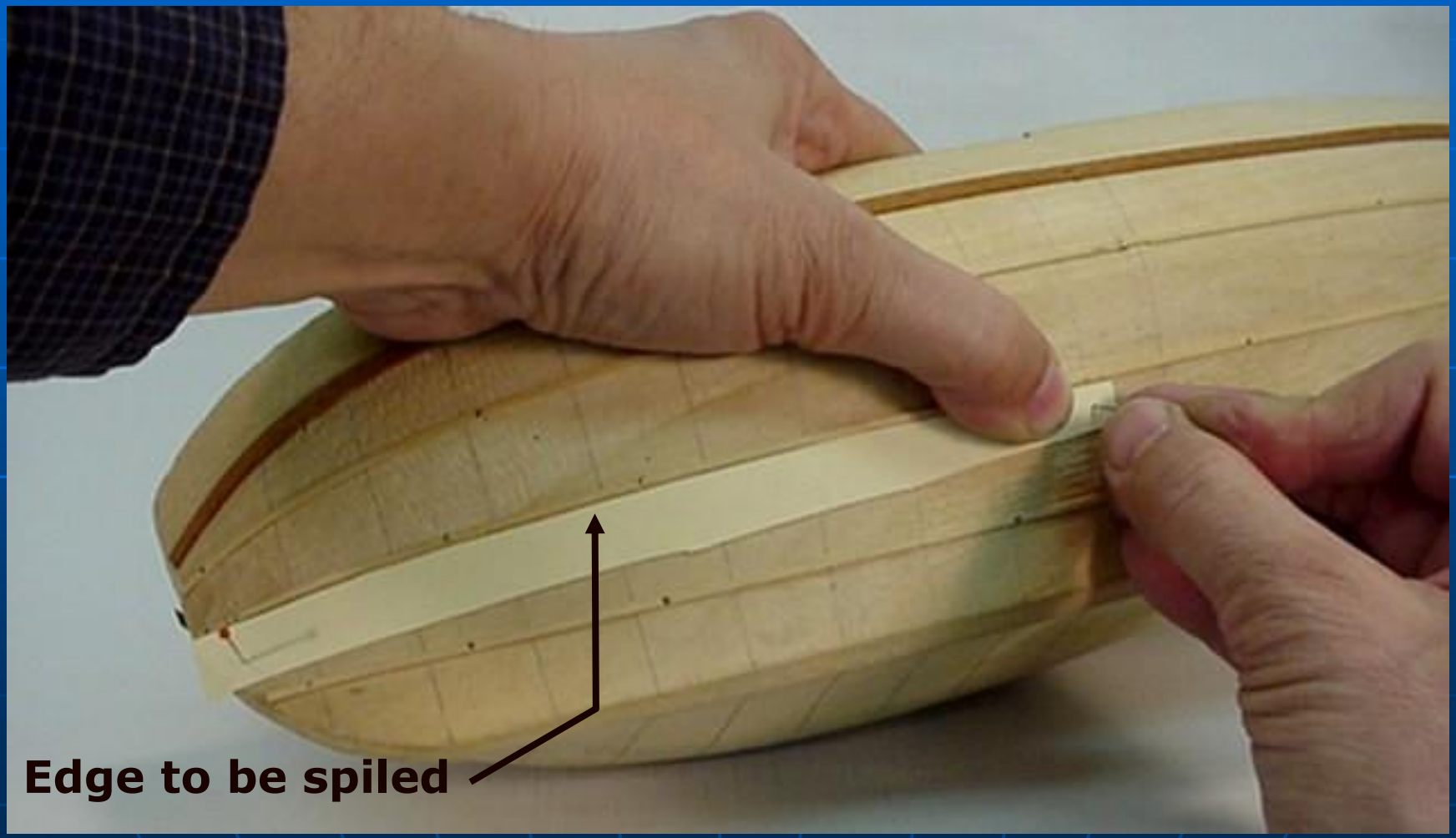
Configuring a Spiling Template



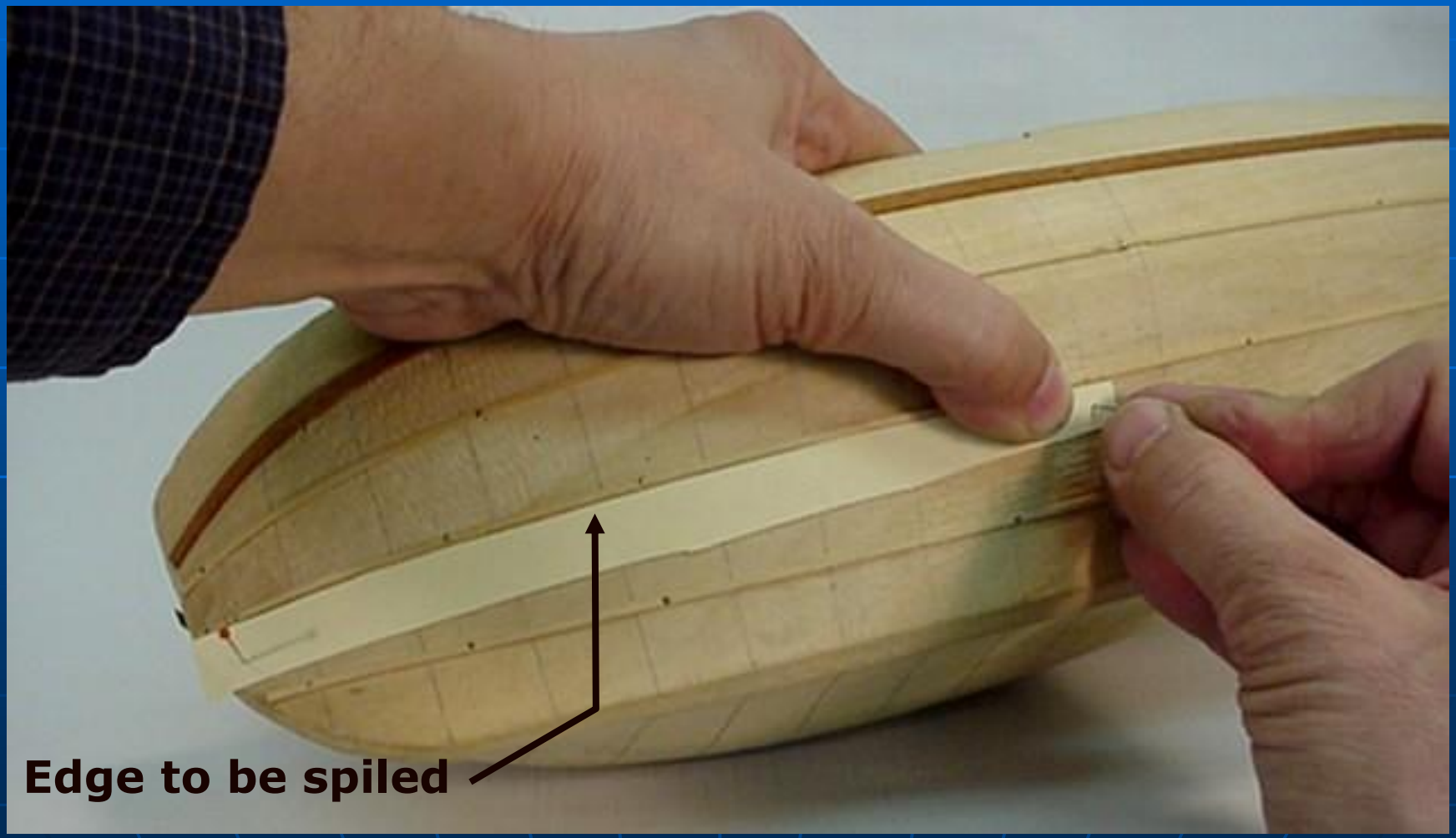
Using a piece of card stock (a file folder works well), cut the approximate upper shape of the plank you wish to make.

Pin the strip to the hull at the desired location.

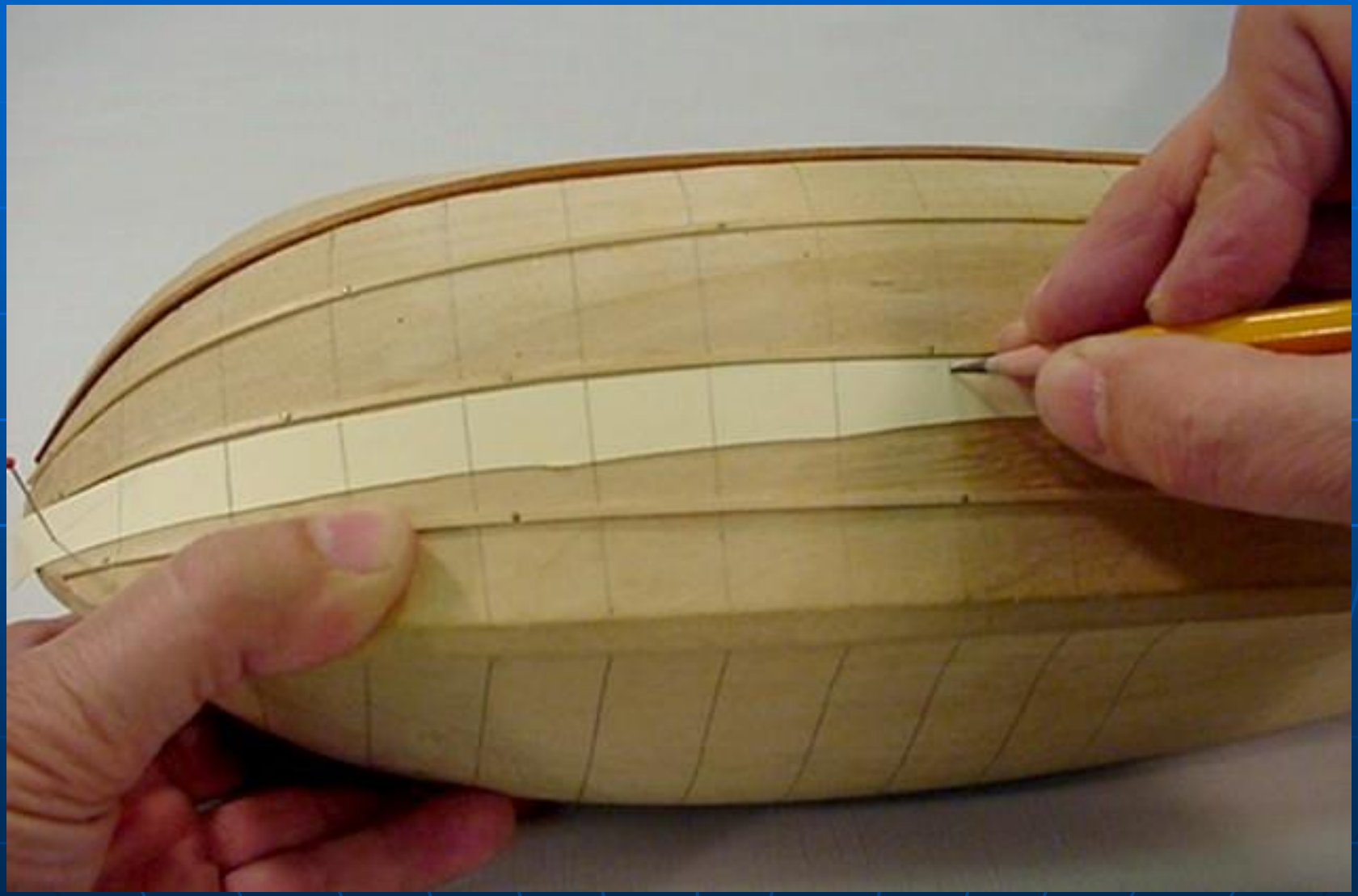
Leave a slight gap between the strip and the batten or mounted plank. This will help keep the compass point on track while spiling.



Be sure that the strip lays completely flat against the hull.



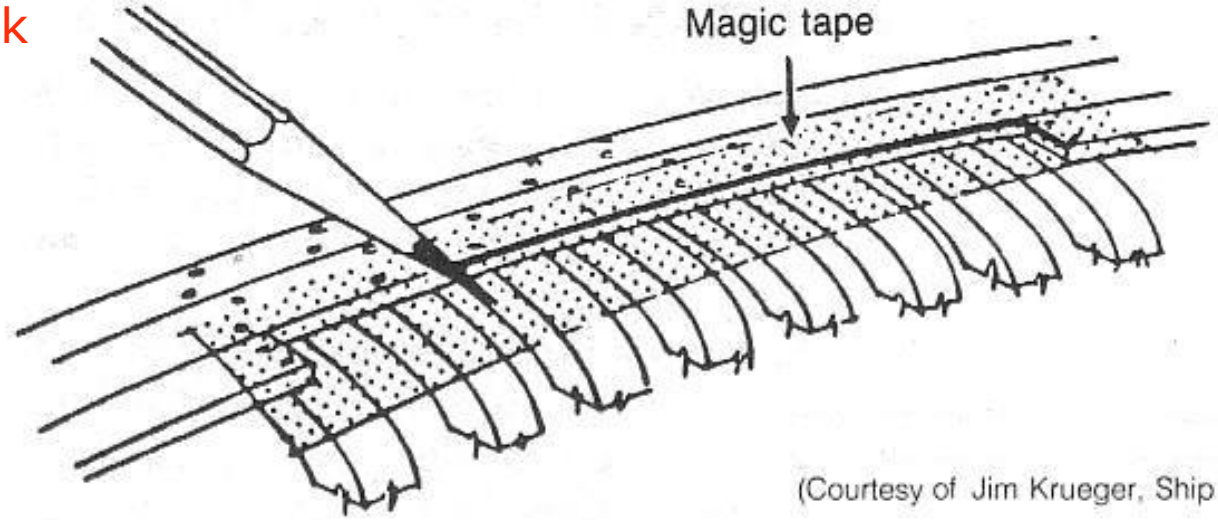
Mark the locations of the plank butt joints on the strip.



Set the gap on your compass to a distance that allows you to easily follow the contour of the edge you are duplicating.

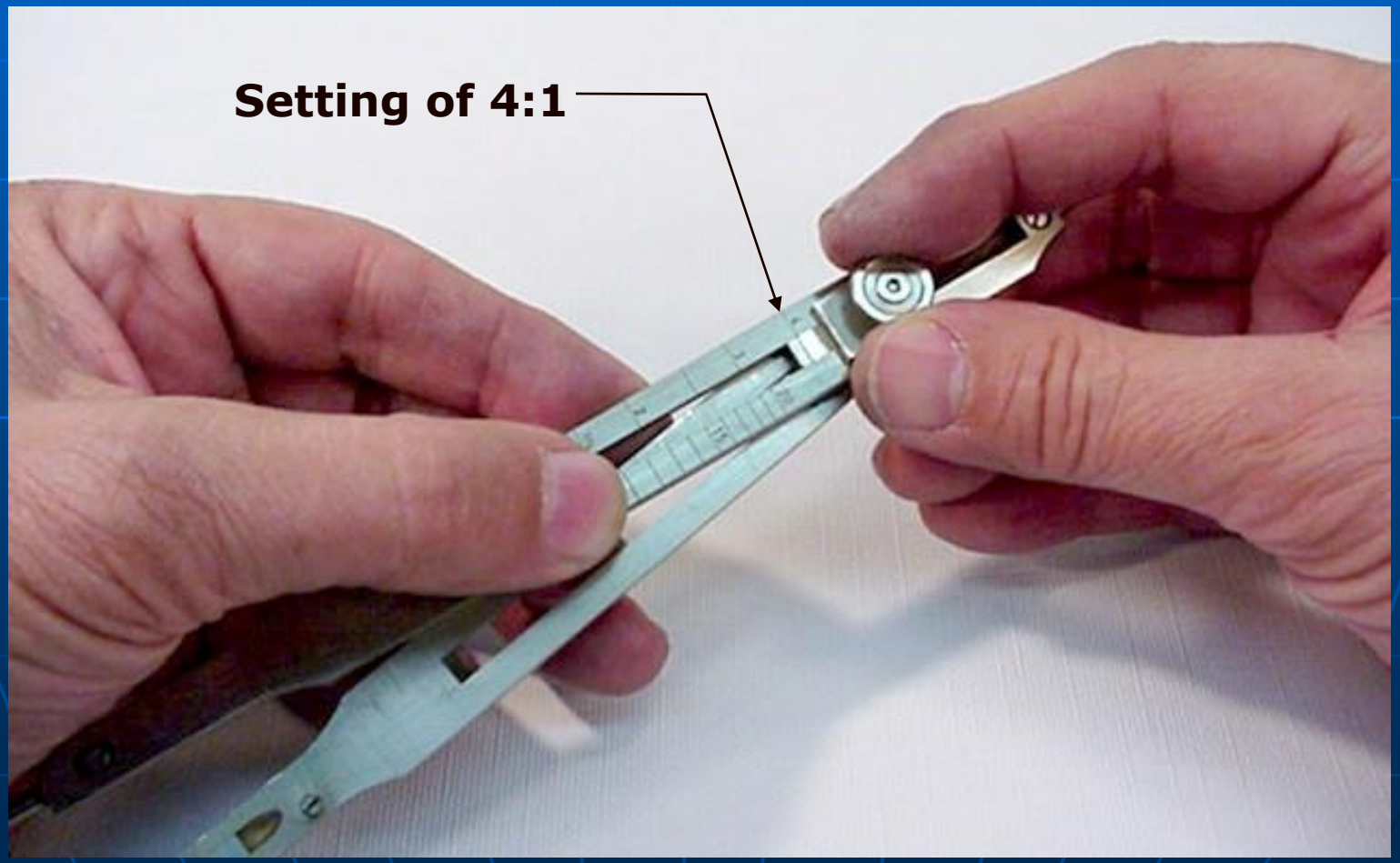
Another Method of Spiling a Plank

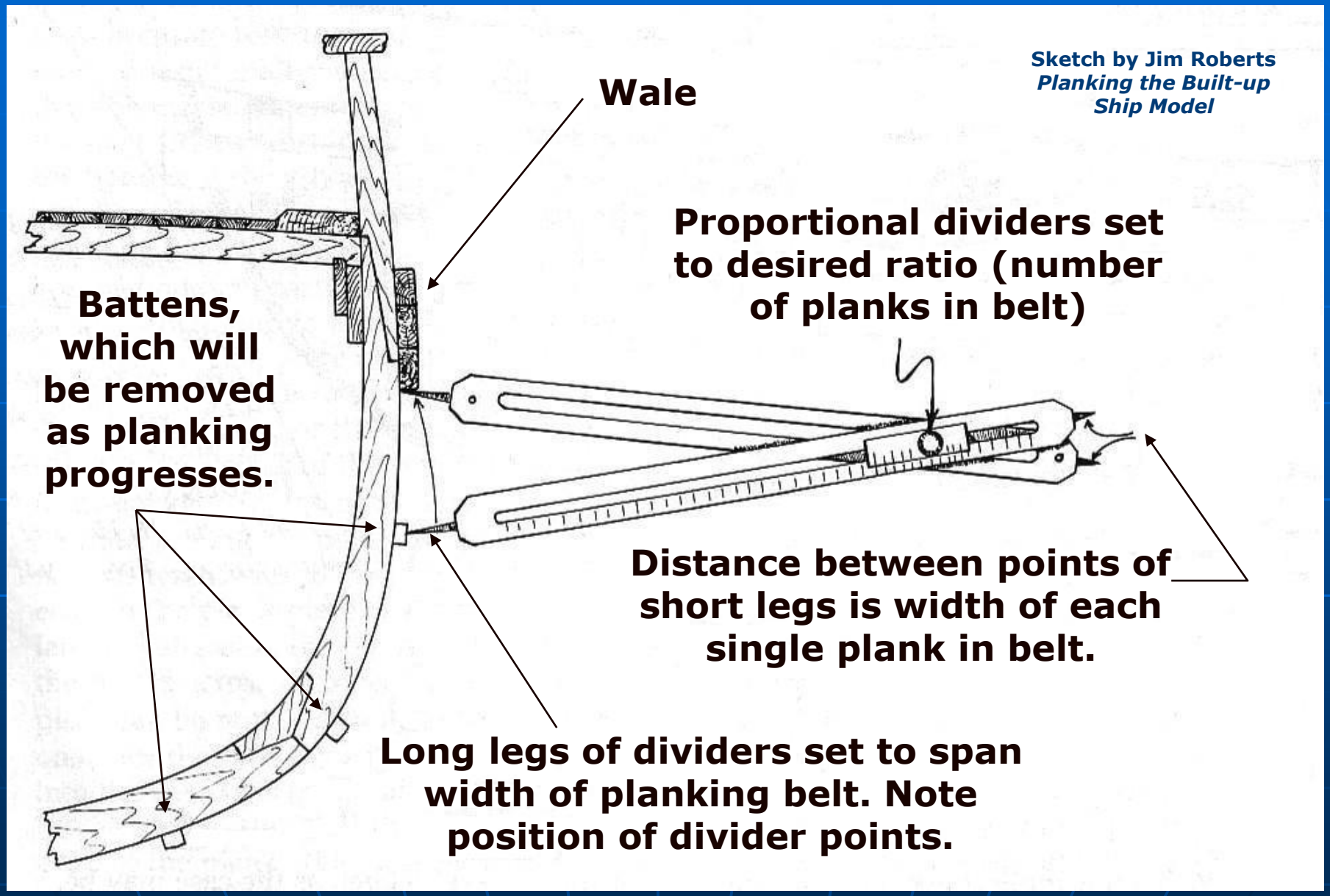
Rub the side of the pencil over the adjacent edge of the neighbor plank



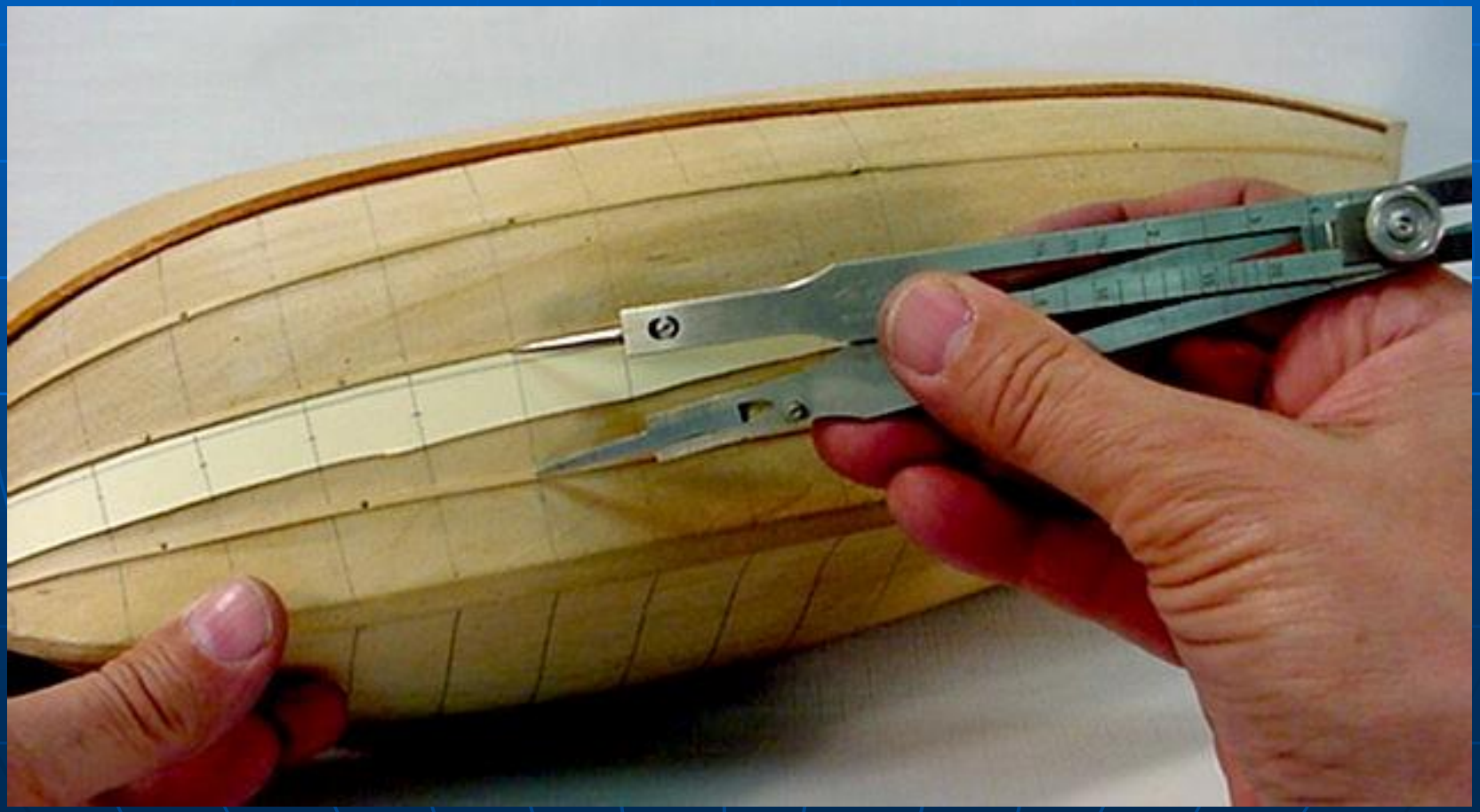
(Courtesy of Jim Krueger, Ship Modeler's Association)

The next step is to determine the plank width. One may use the planking graph or use dividers proportional dividers to do so. Proportional divider method shown here. Set the dial indicator on your proportional dividers for the number of strakes (rows of planks), which will be laid between the two battens.

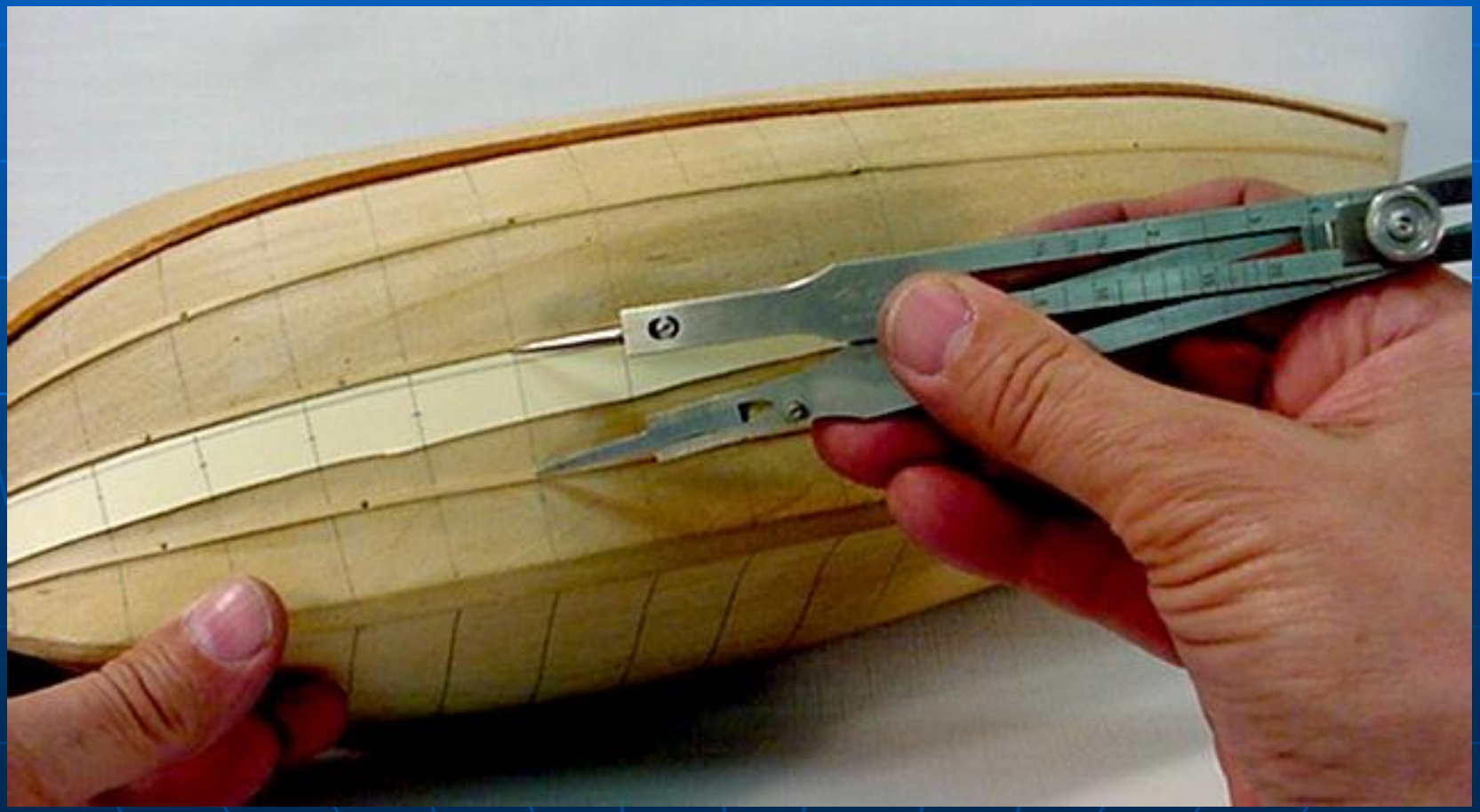



Sketch by Jim Roberts
Planking the Built-up Ship Model
Wale
Proportional dividers set to desired ratio (number of planks in belt)
Battens, which will be removed as planking progresses.
Distance between points of short legs is width of each single plank in belt.
Long legs of dividers set to span width of planking belt. Note position of divider points.

A number of options are available at this point.



OPTION 1: The template can be removed, and trimmed along the spiled line. The resulting curve and station lines can then be transferred to the planking material where the plank's width will be plotted.

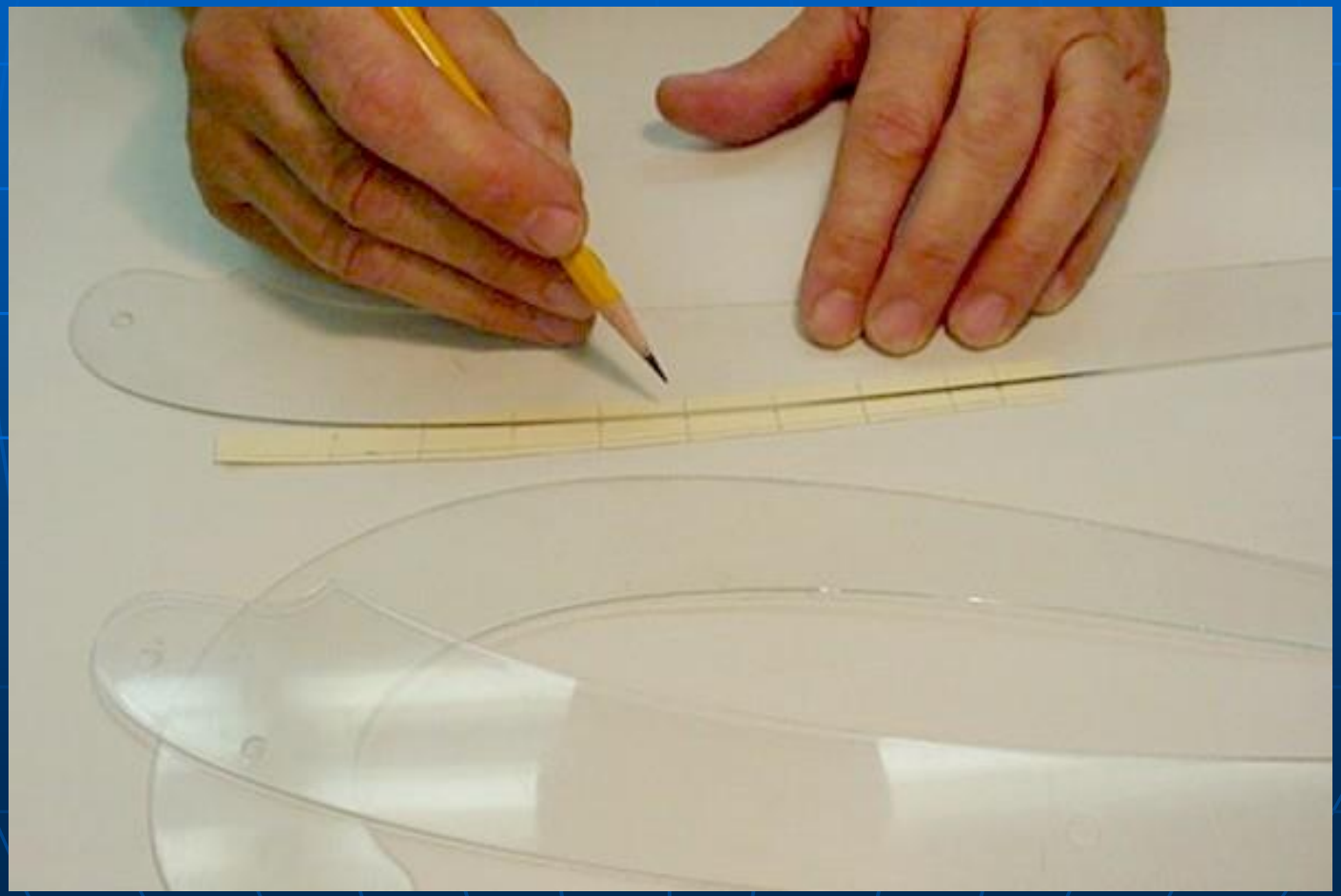


OPTION 2: The plank's width can be plotted on the template at each station line (on or off the hull), and the finished shape can then be cut out and transferred to your stock.

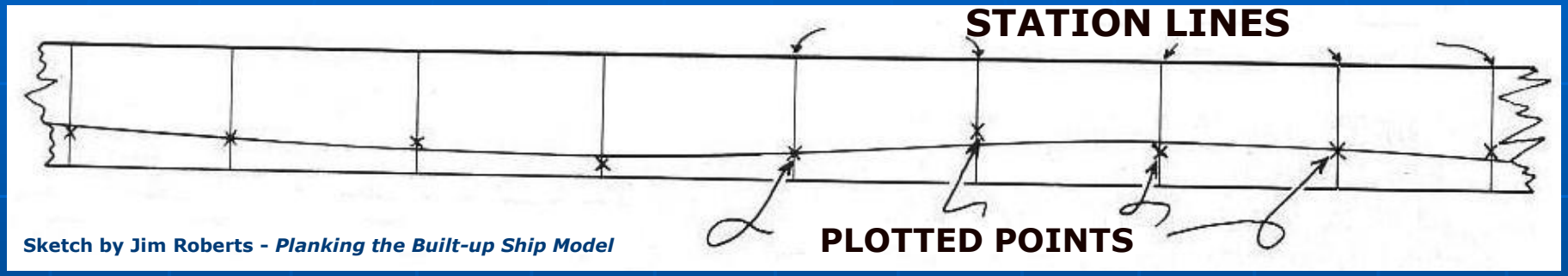
This second procedure can result in a slightly wider plank, so use a sharp pencil, and sand to the inside of your outline.

Remember: The more points you plot, the easier the next step will be.

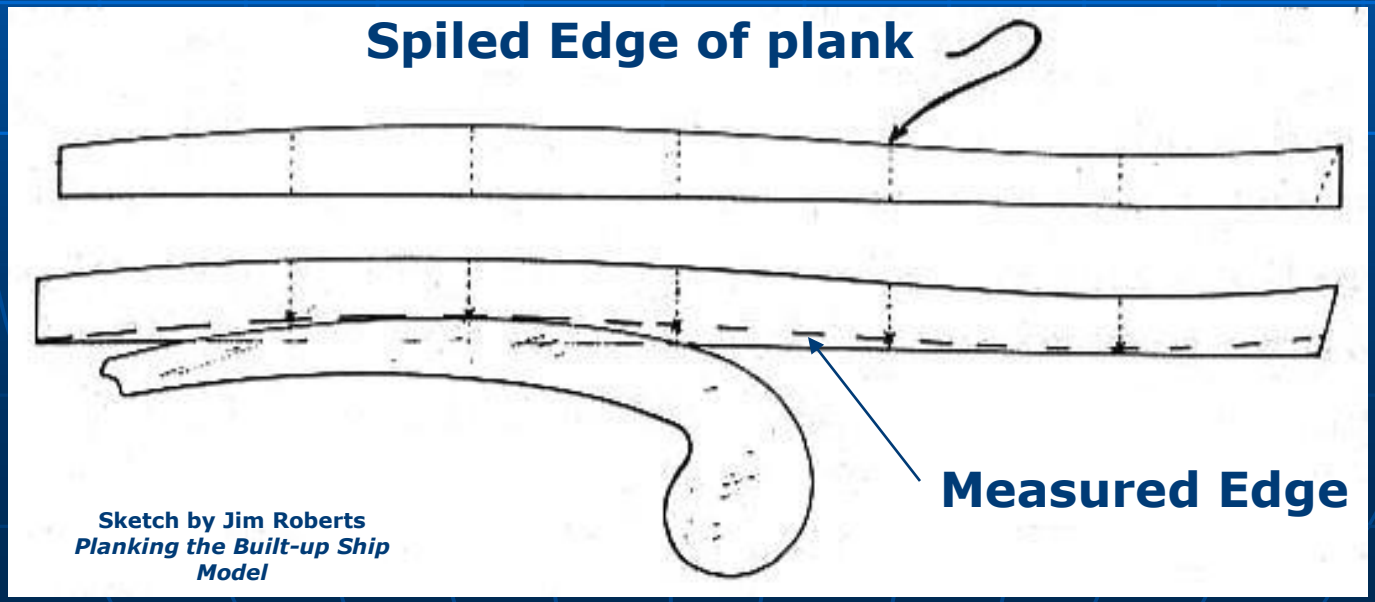
Once you are satisfied with the number of points you have plotted, the shape of your plank can be drawn with the help of ship's curves.



If the curve cannot be drawn through every point, draw an "averaged" cutting line through as many points as possible.

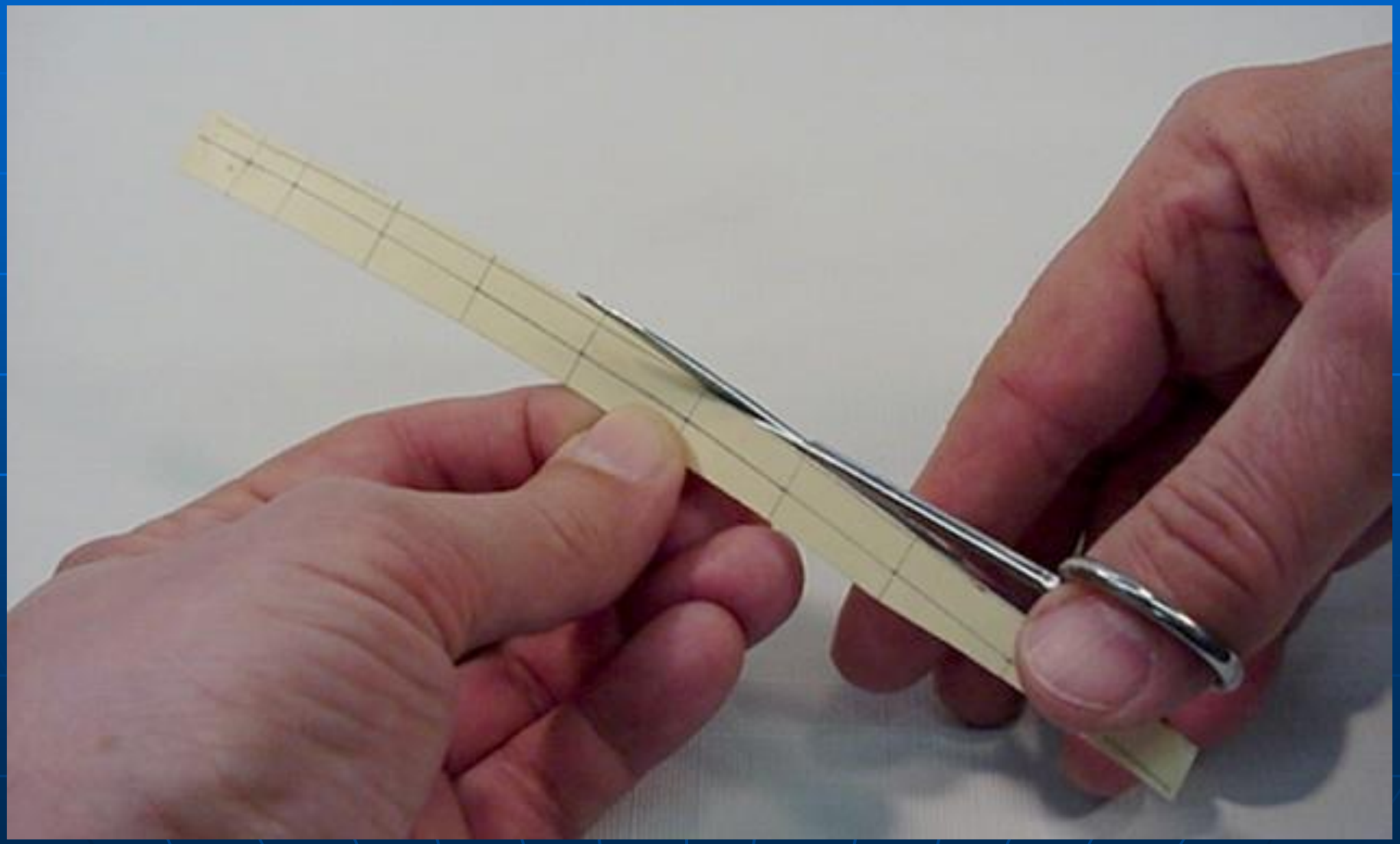


Sketch by Jim Roberts - *Planking the Built-up Ship Model*

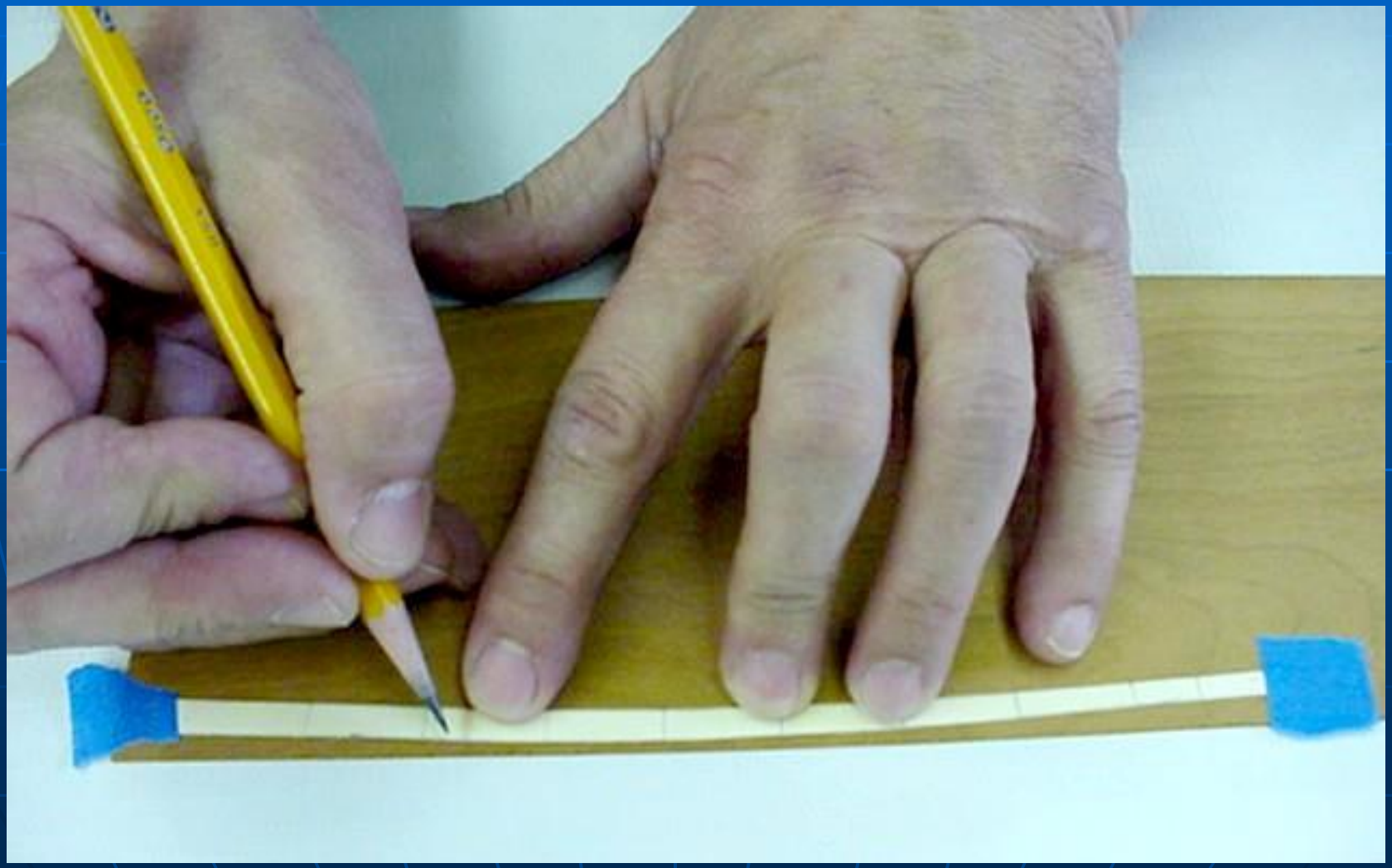


Sketch by Jim Roberts
Planking the Built-up Ship Model

After you have completed drawing the lower curve, carefully cut the template out.

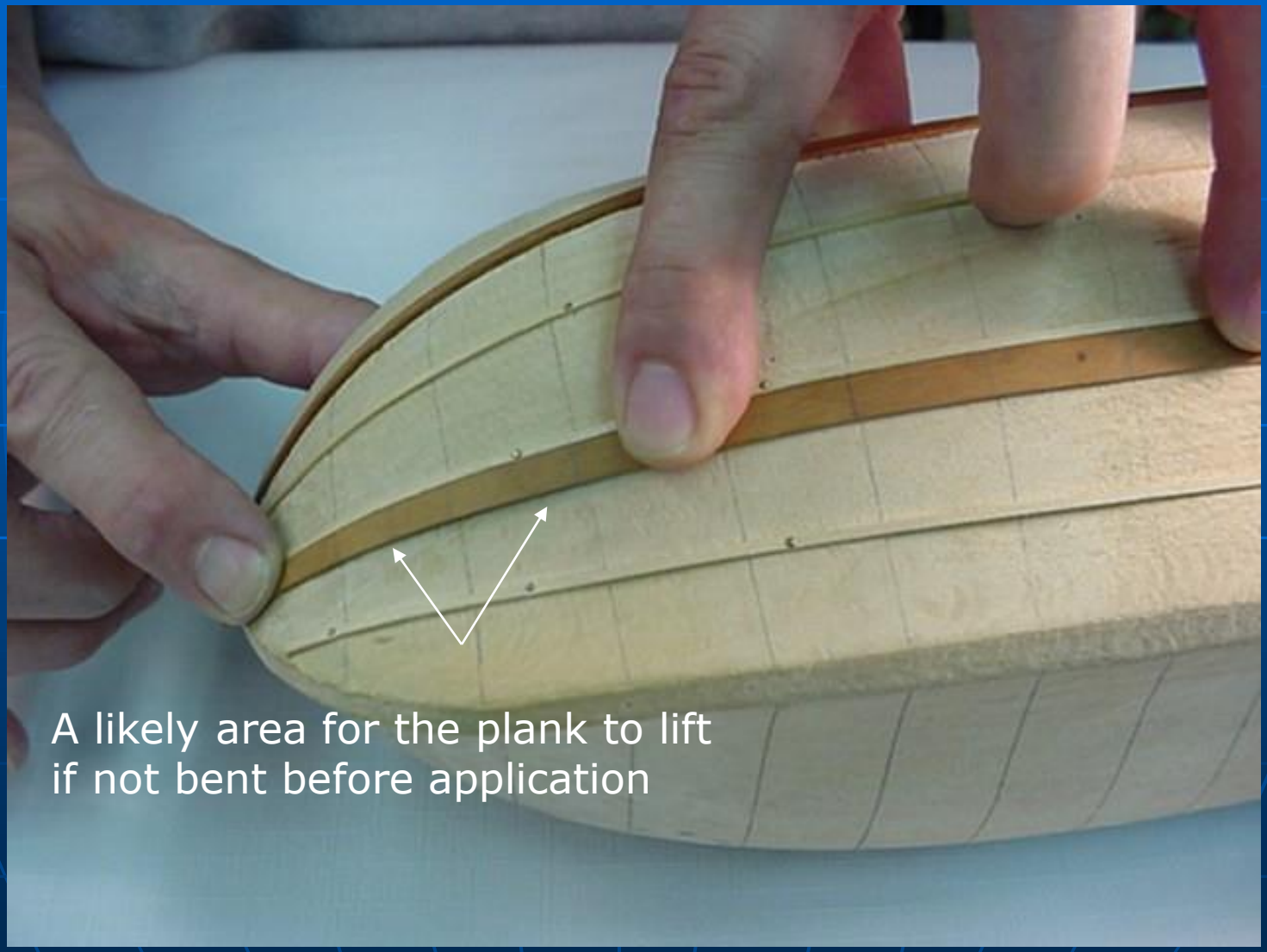


Transfer the shape of the template, along with at least one station line, to your planking material.



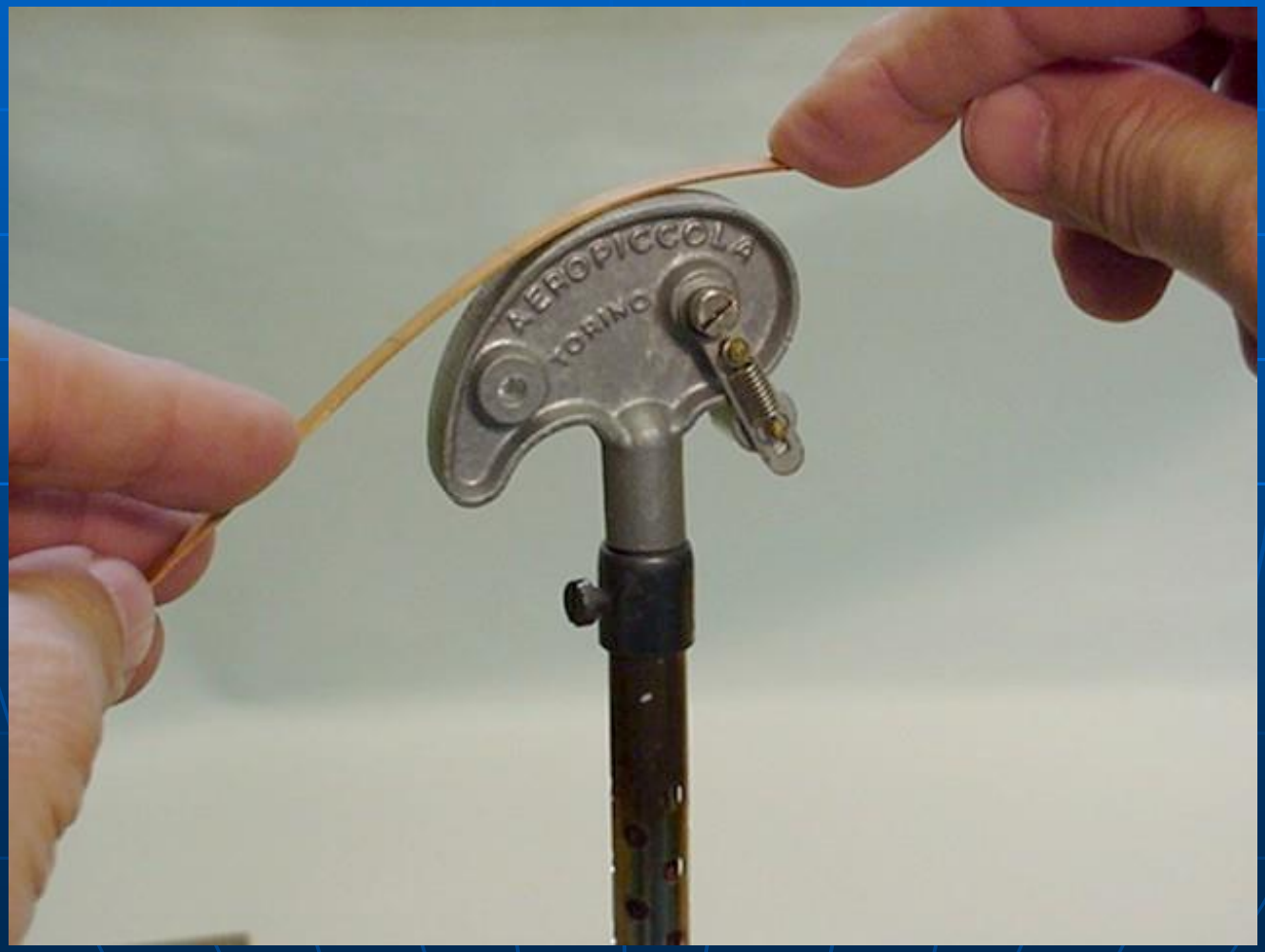
If the template conforms to the contour of the corresponding batten or plank on the other side of the hull, time can be saved by making a second plank.

After you have cut out and sanded your plank to shape, check for proper fit.

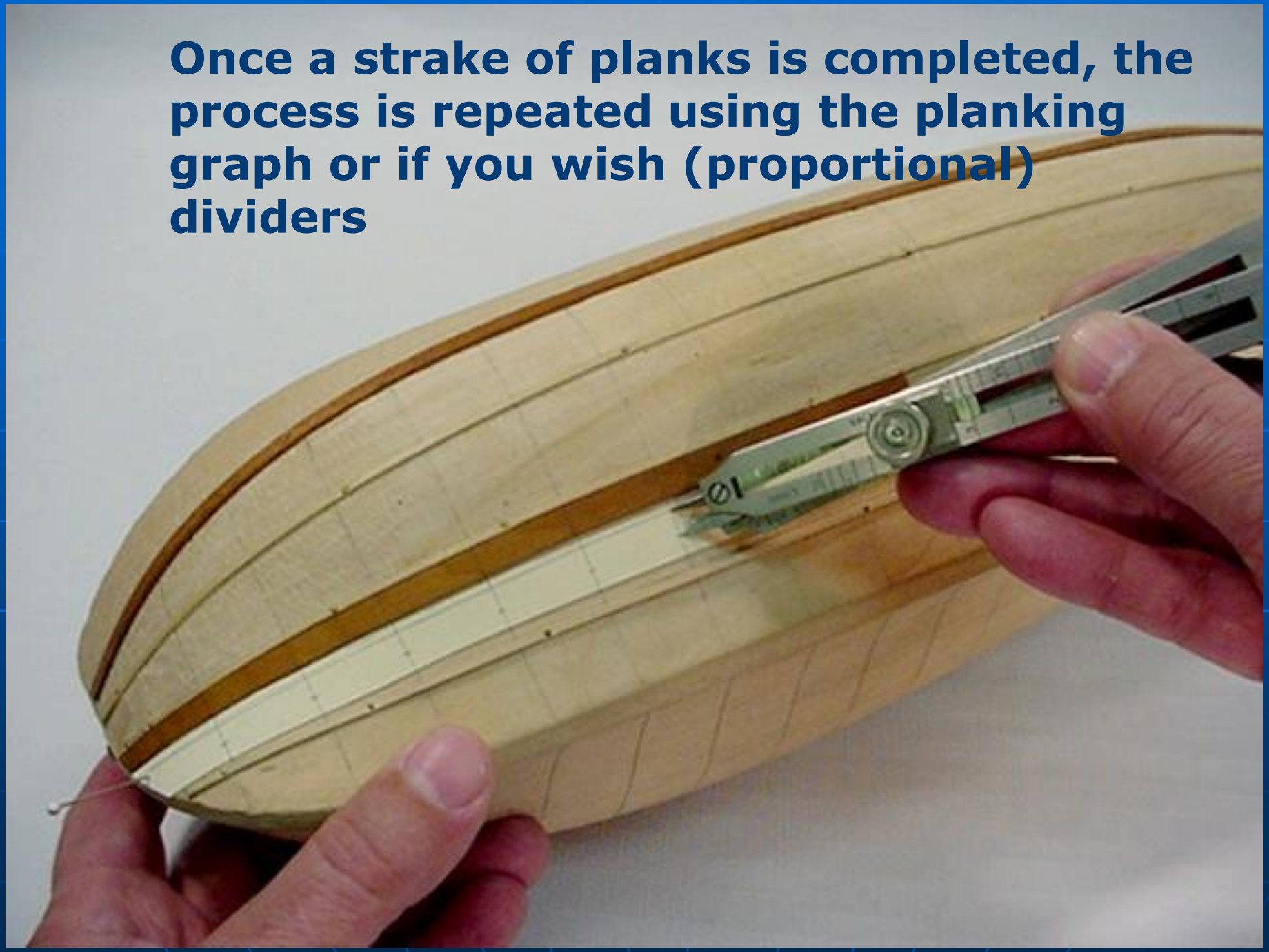


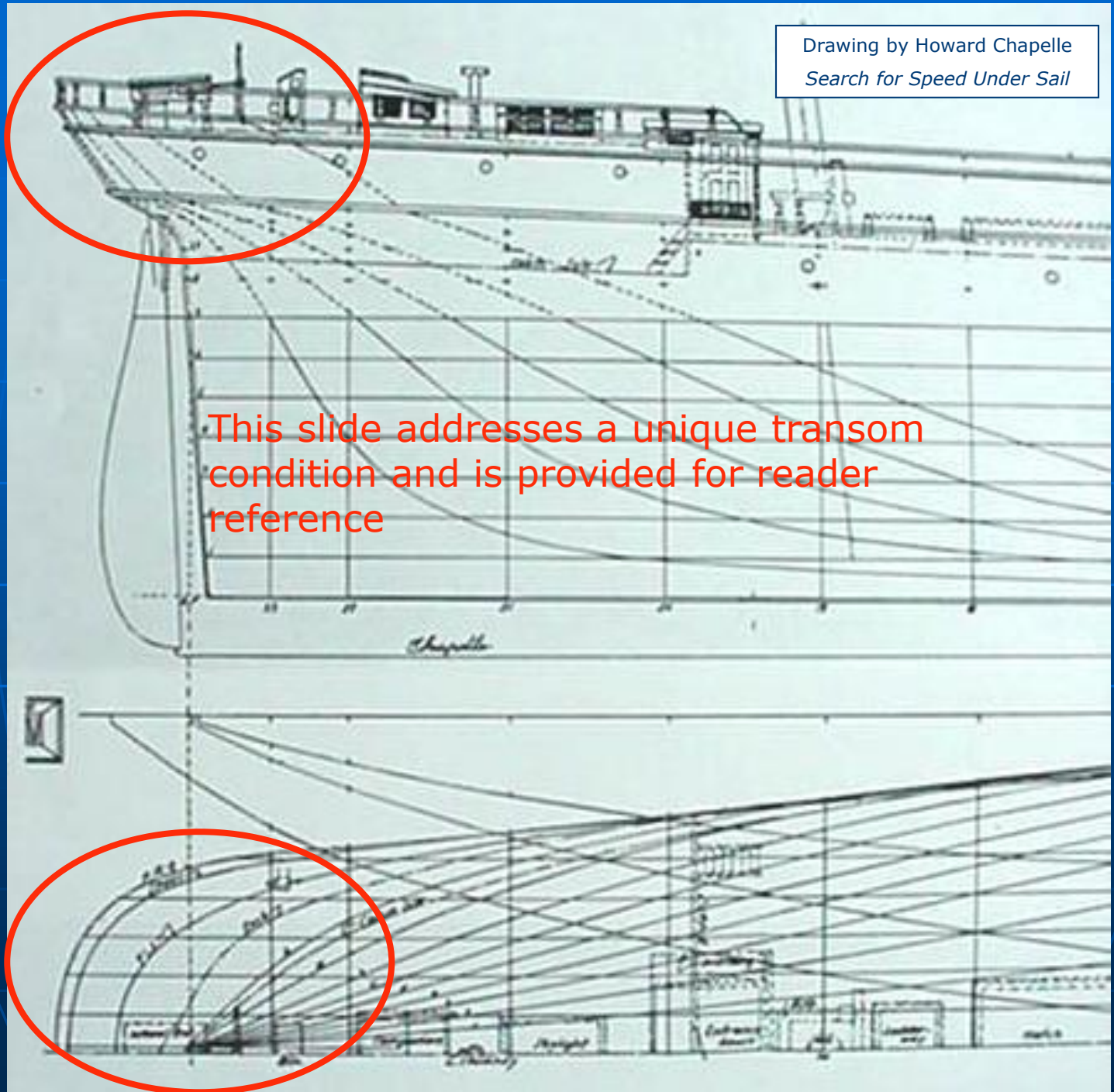
Common tools used for bending planks.

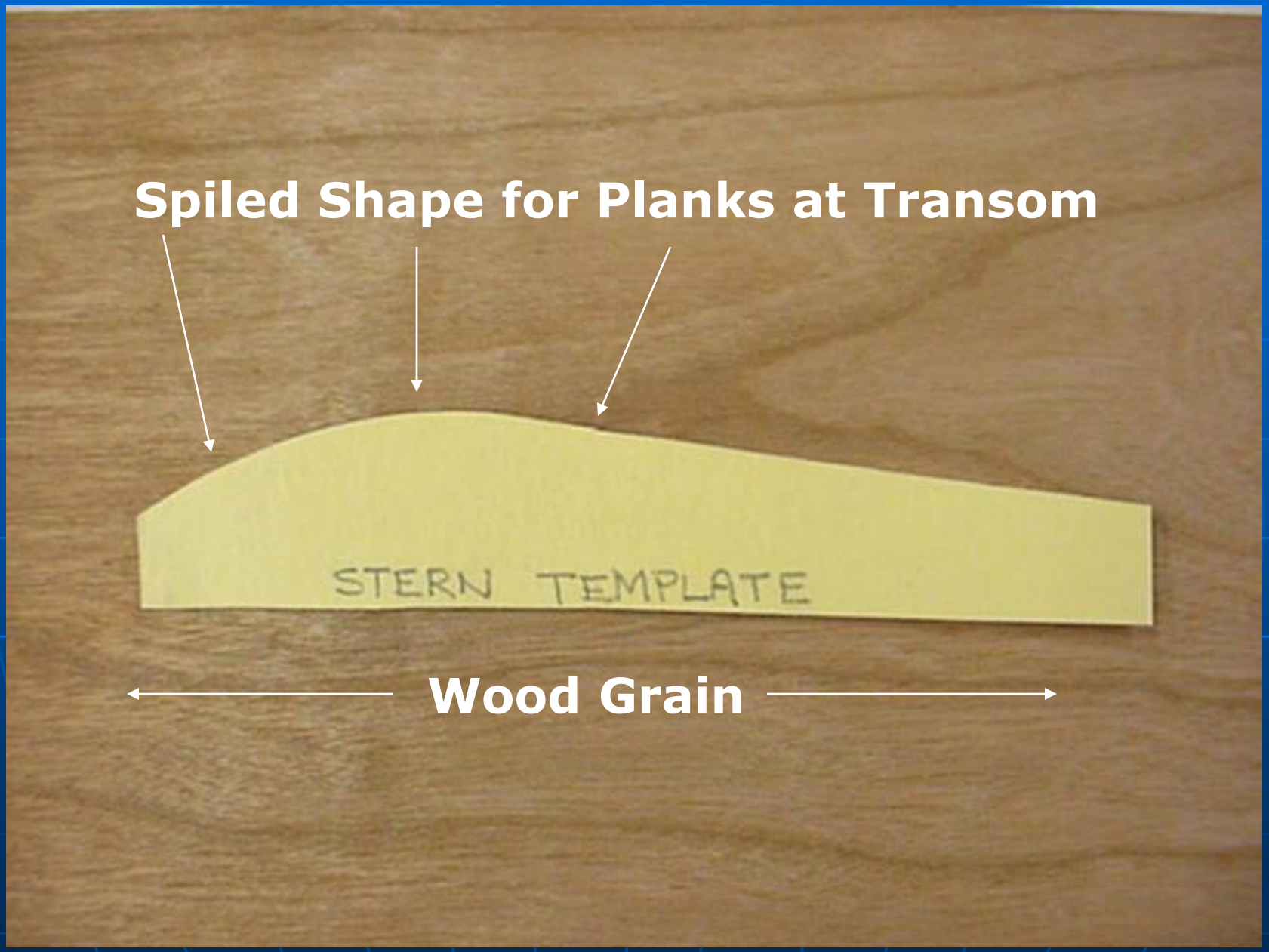
Depending on the species and thickness of the wood, it is possible to make minor bends without wetting it. Harder woods may require deliberate soaking.

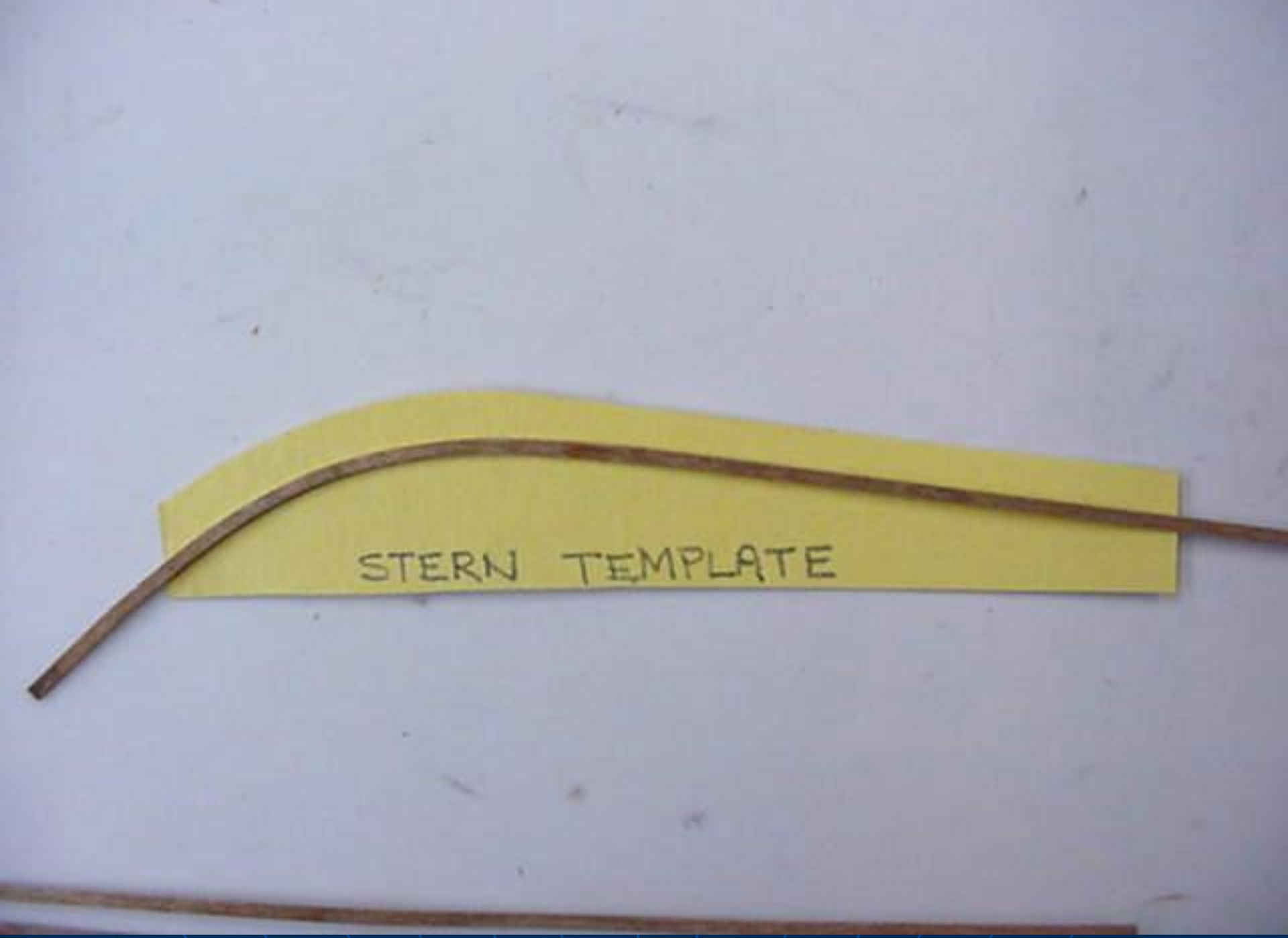


Once a strake of planks is completed, the process is repeated using the planking graph or if you wish (proportional) dividers



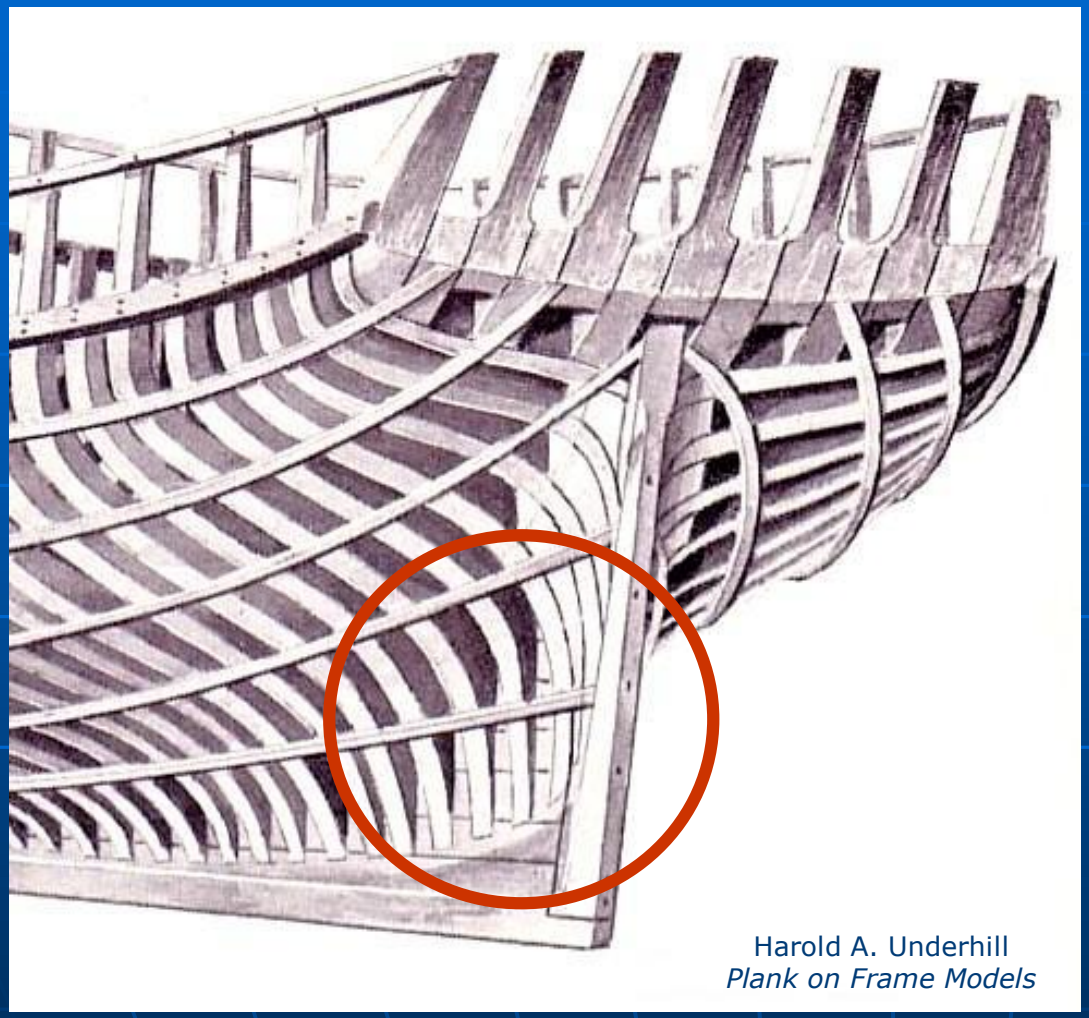

Drawing by Howard Chapelle
Search for Speed Under Sail
This slide addresses a unique transom condition and is provided for reader reference


Spiled Shape for Planks at Transom
STERN TEMPLATE
Wood Grain

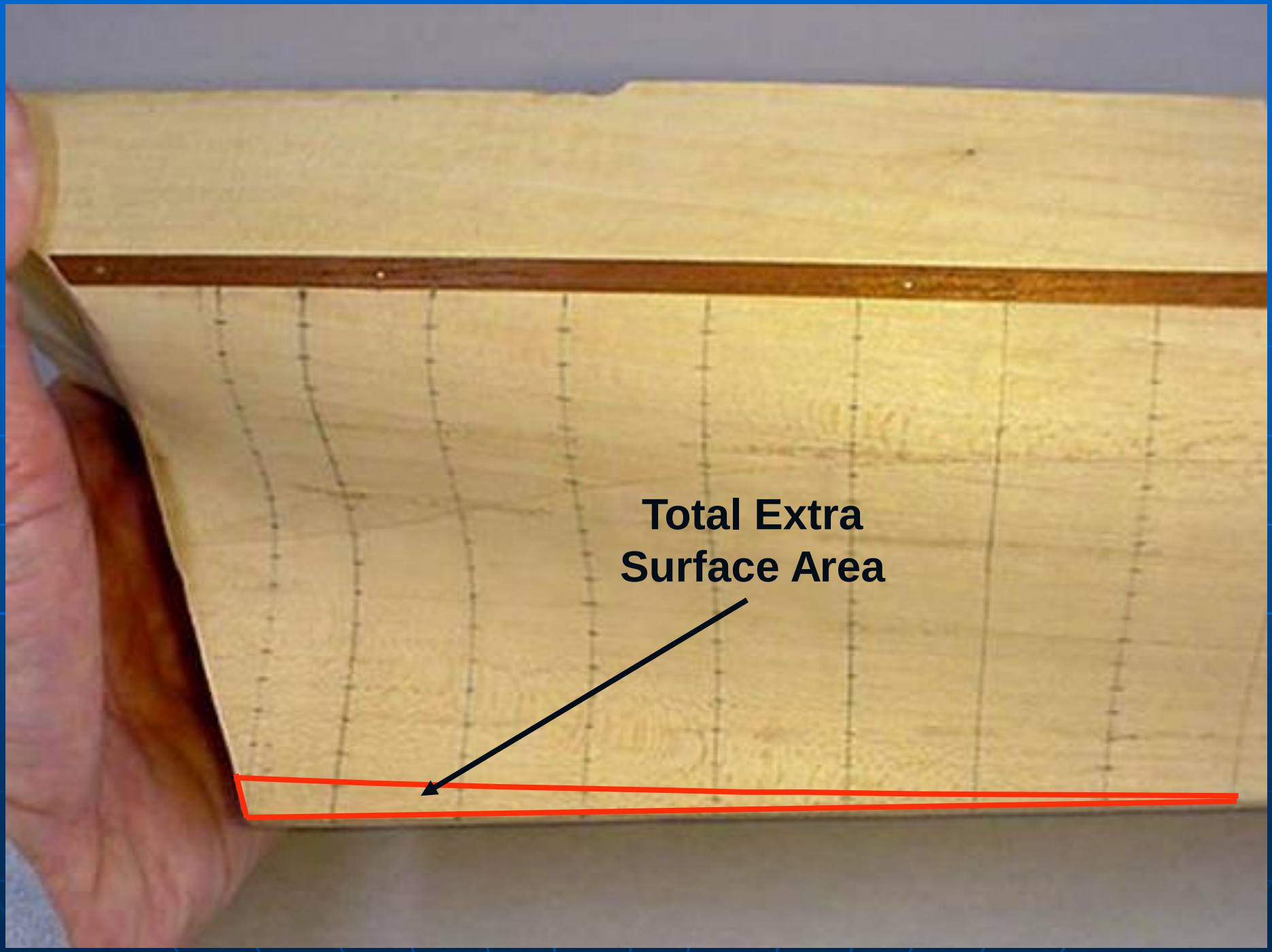

STERN TEMPLATE

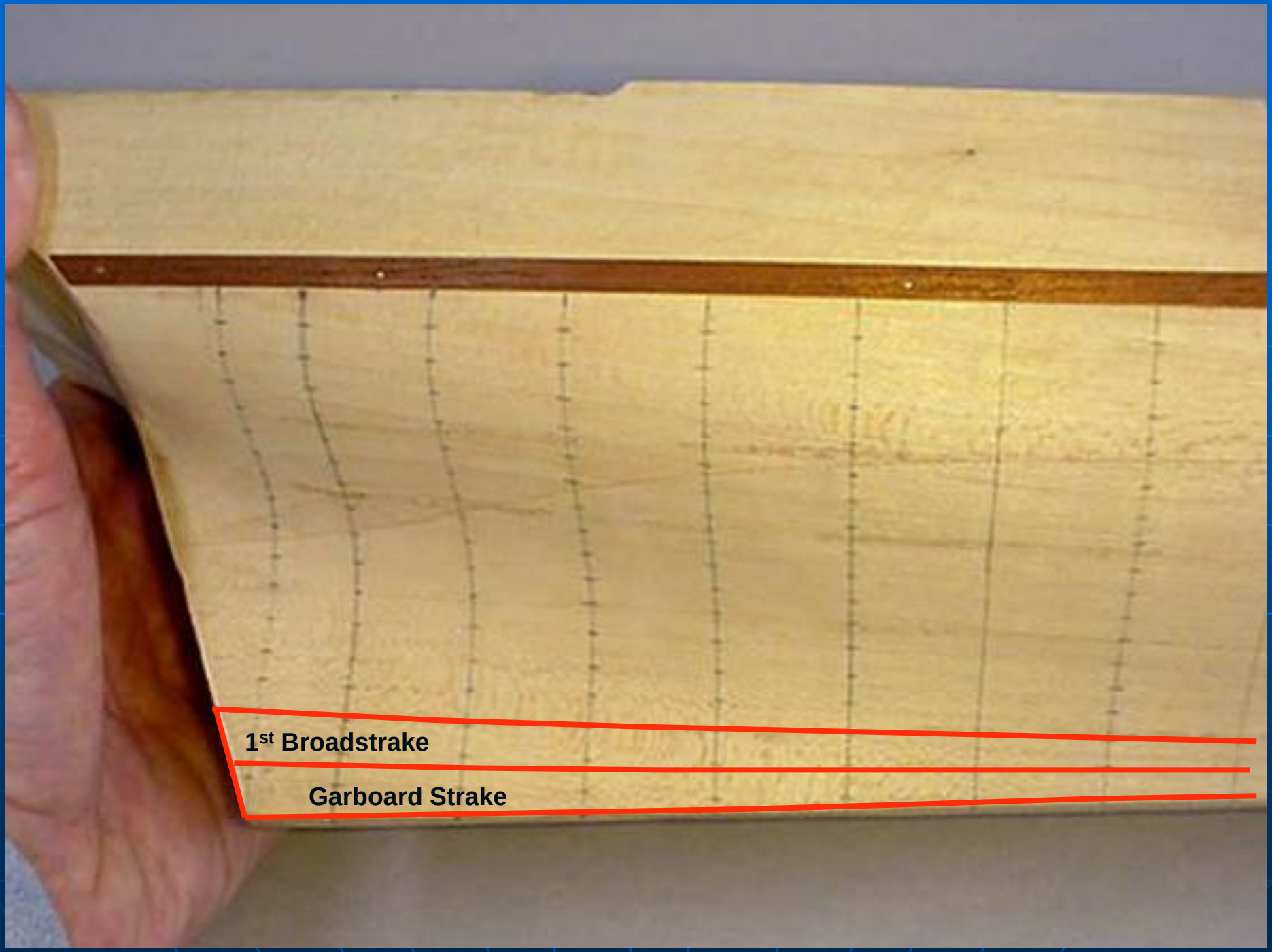
Stealers

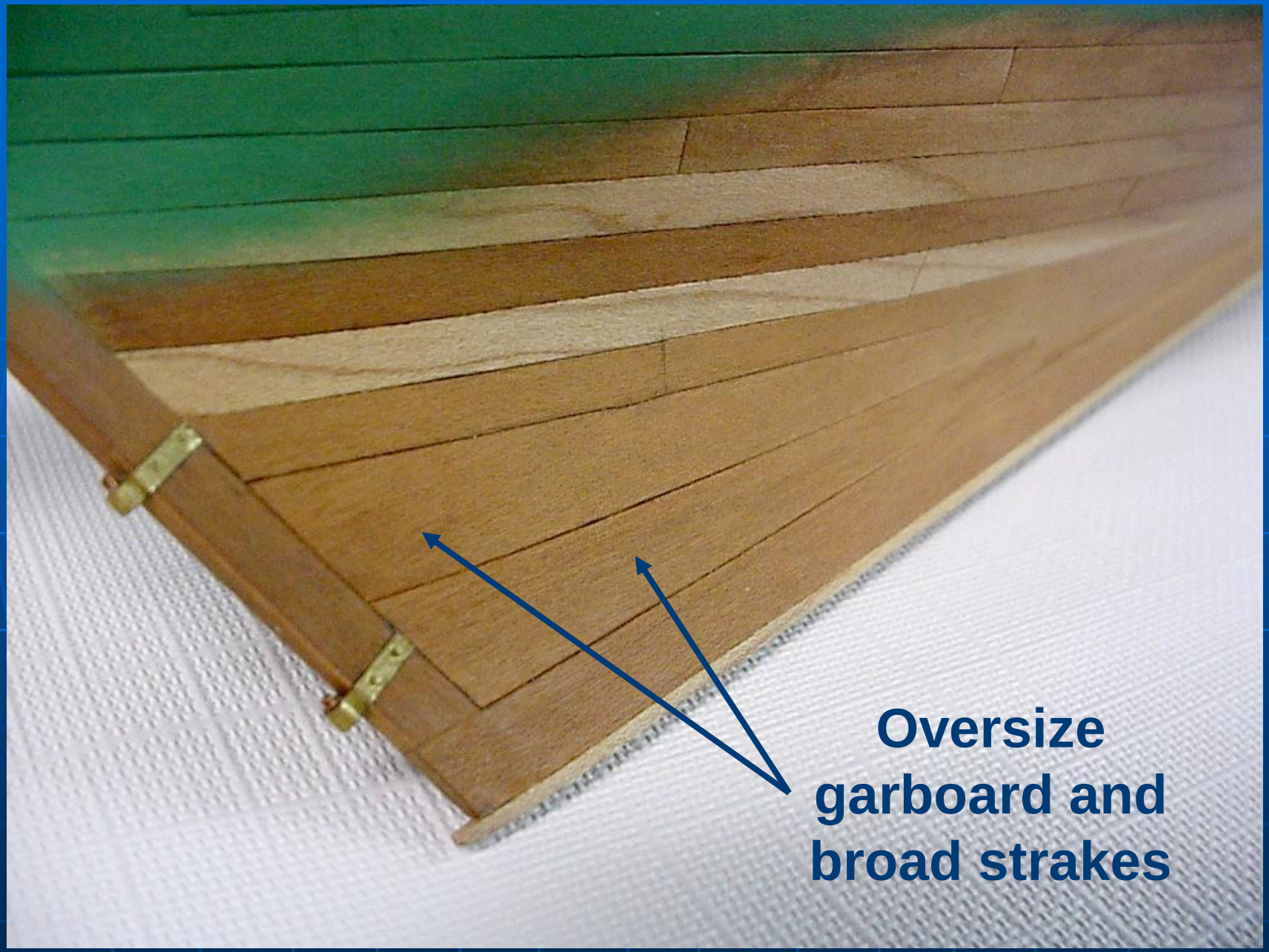
Or Steelers

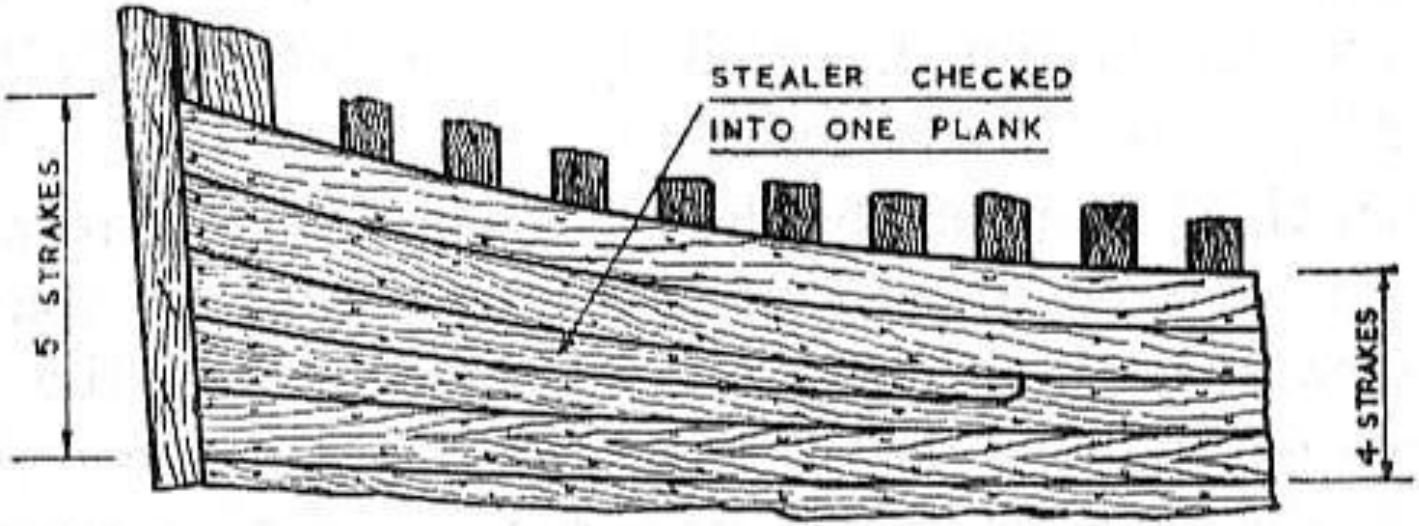


Stealers help you to compensate for the increased surface area at the stern of a vessel.

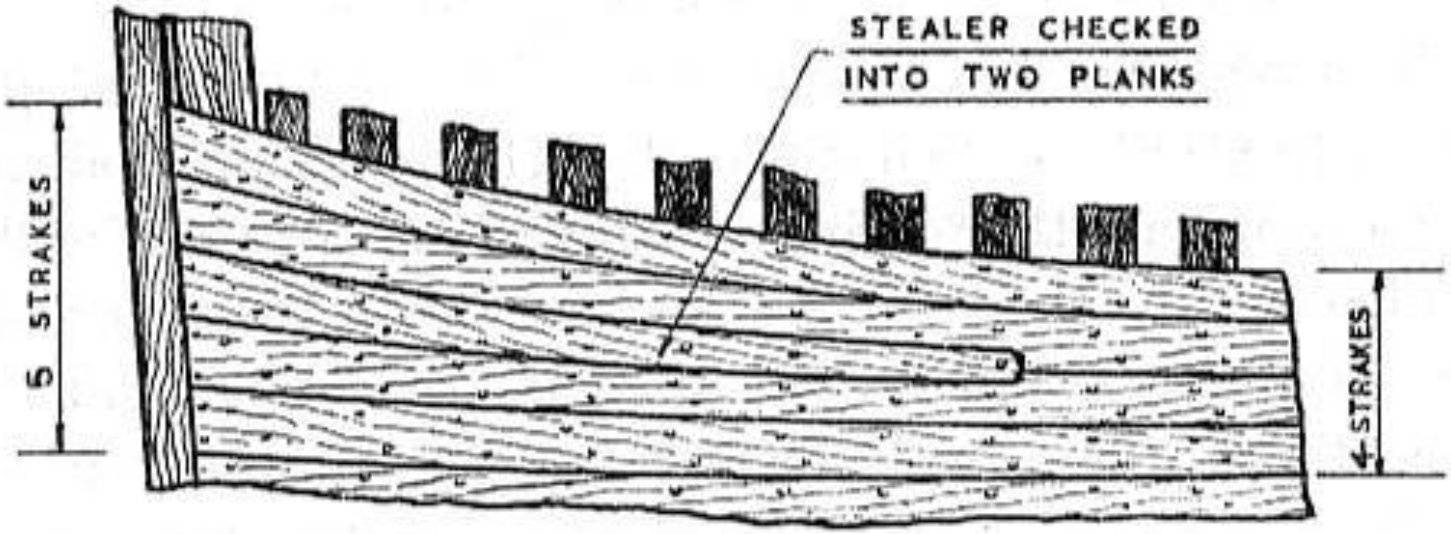

Total Extra
Surface Area


1st Broadstrake
Garboard Strake


Oversize
garboard and
broad strakes



½ Check Stealer

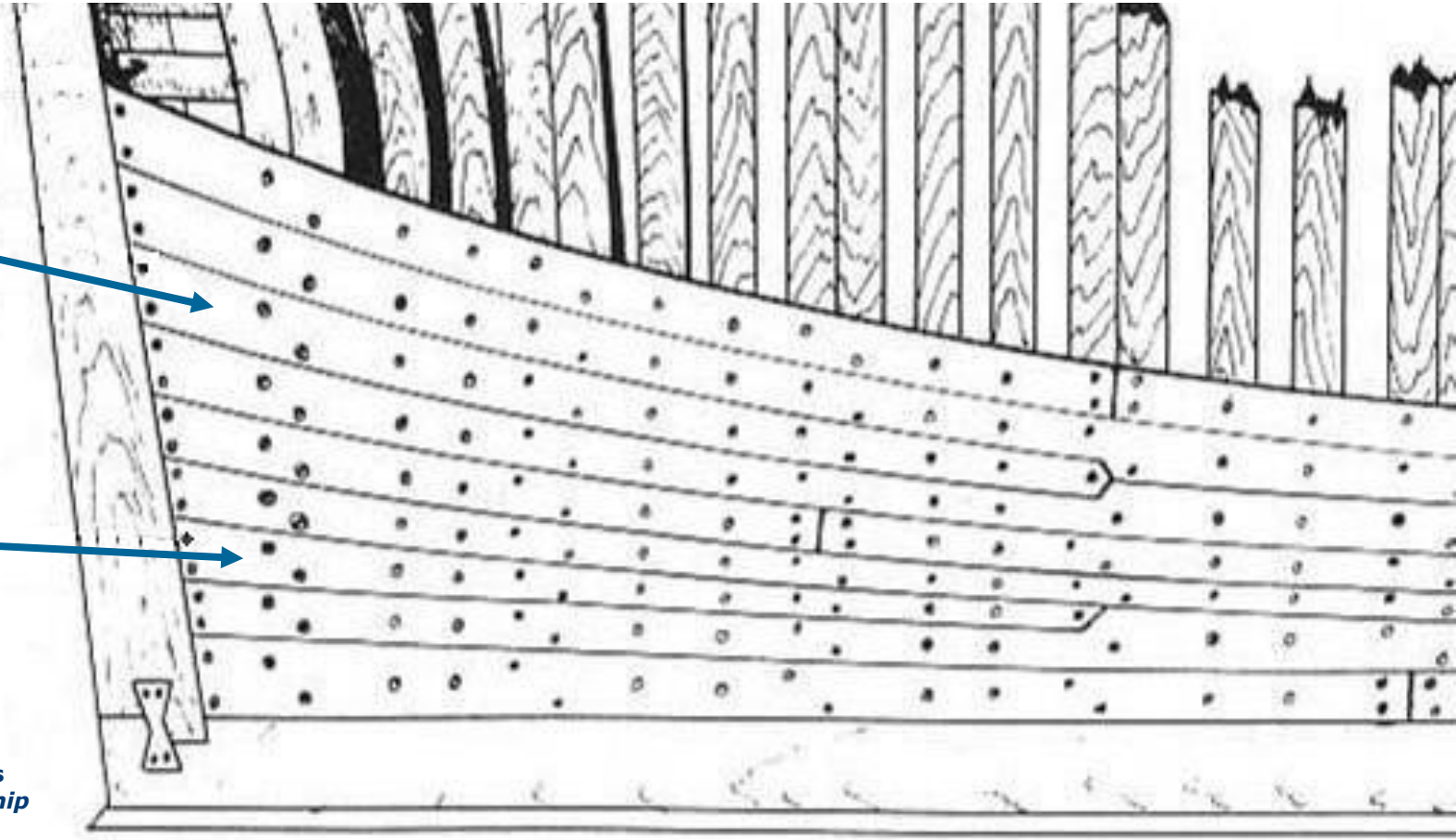


¼ Check Stealer

Sketch by Harold A. Underhill – *Plank on Frame Models*

Arrangement of stealers

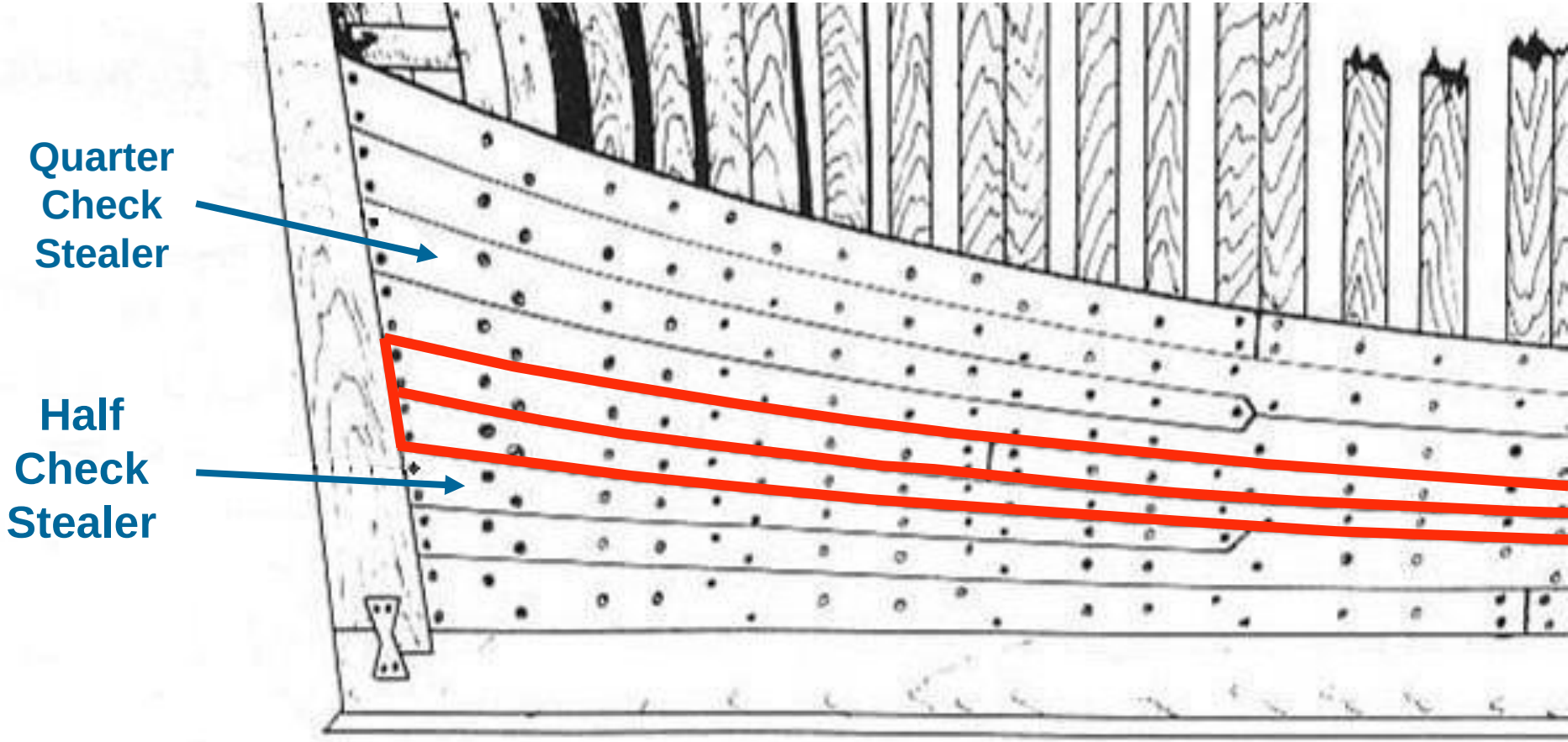
If more than one stealer is required, they should not be located on adjacent planks.



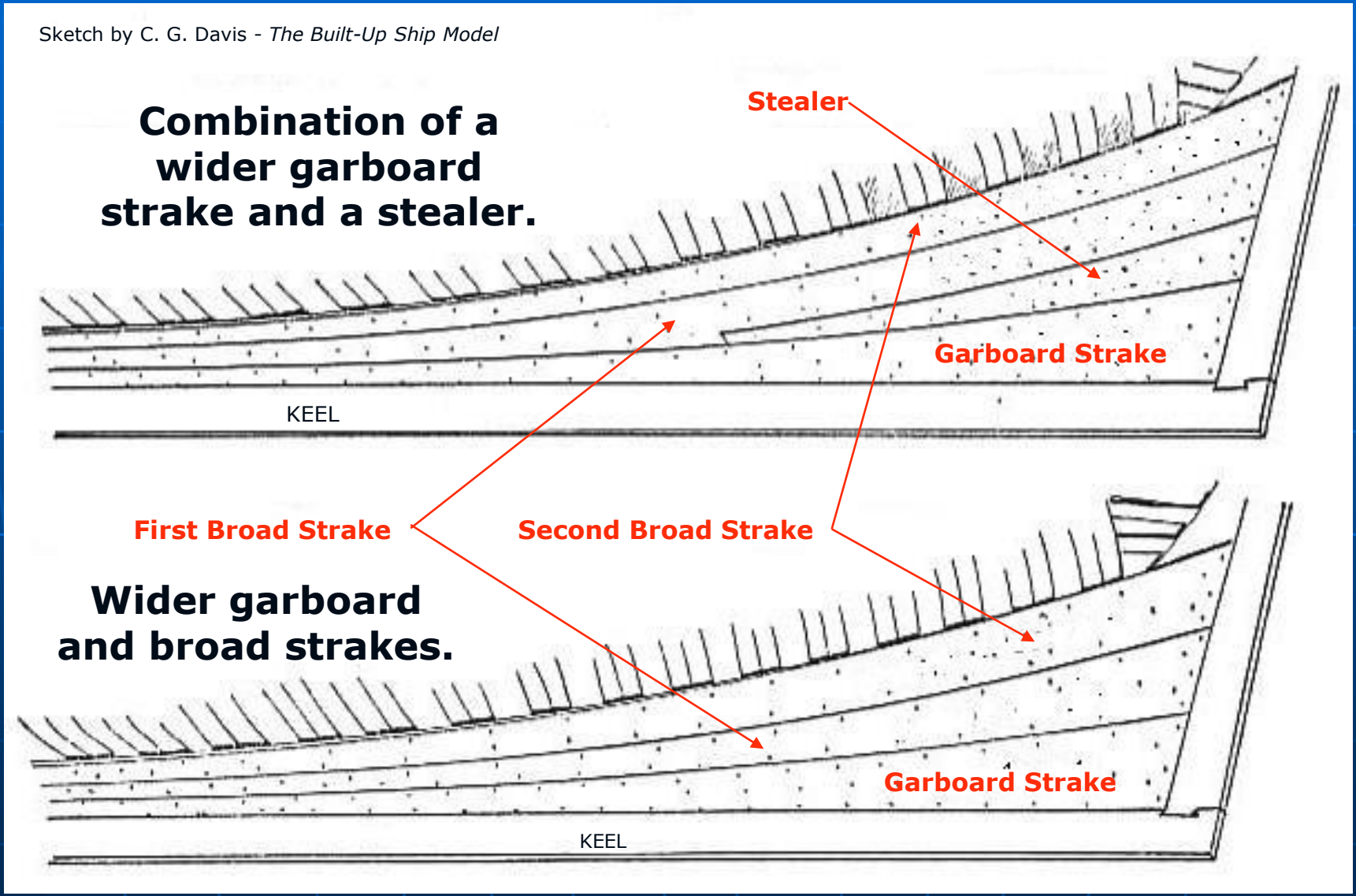
Sketch by Jim Roberts
Planking the Built-up Ship Model

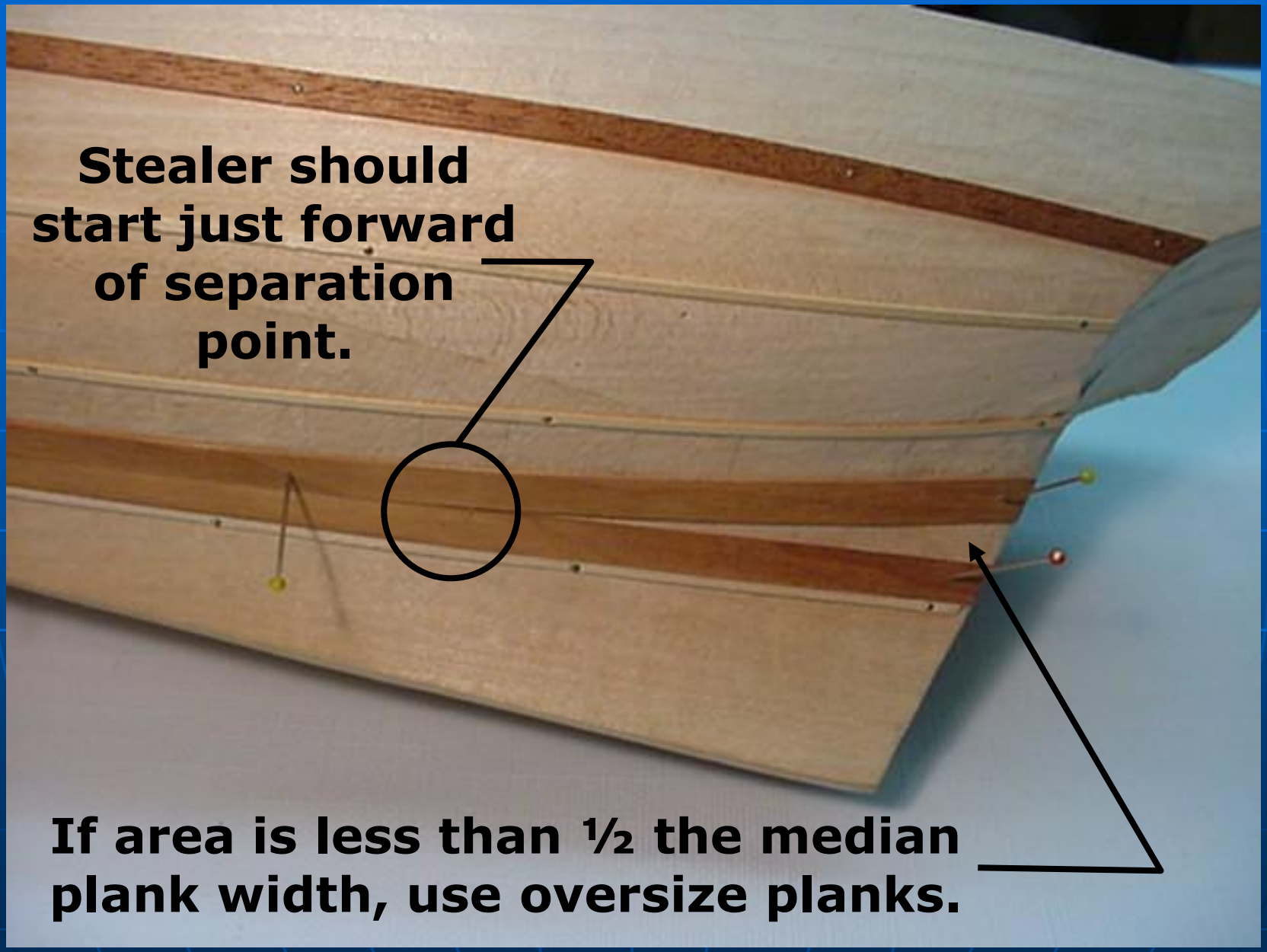
Sketch by Jim Roberts
Planking the Built-up Ship Model

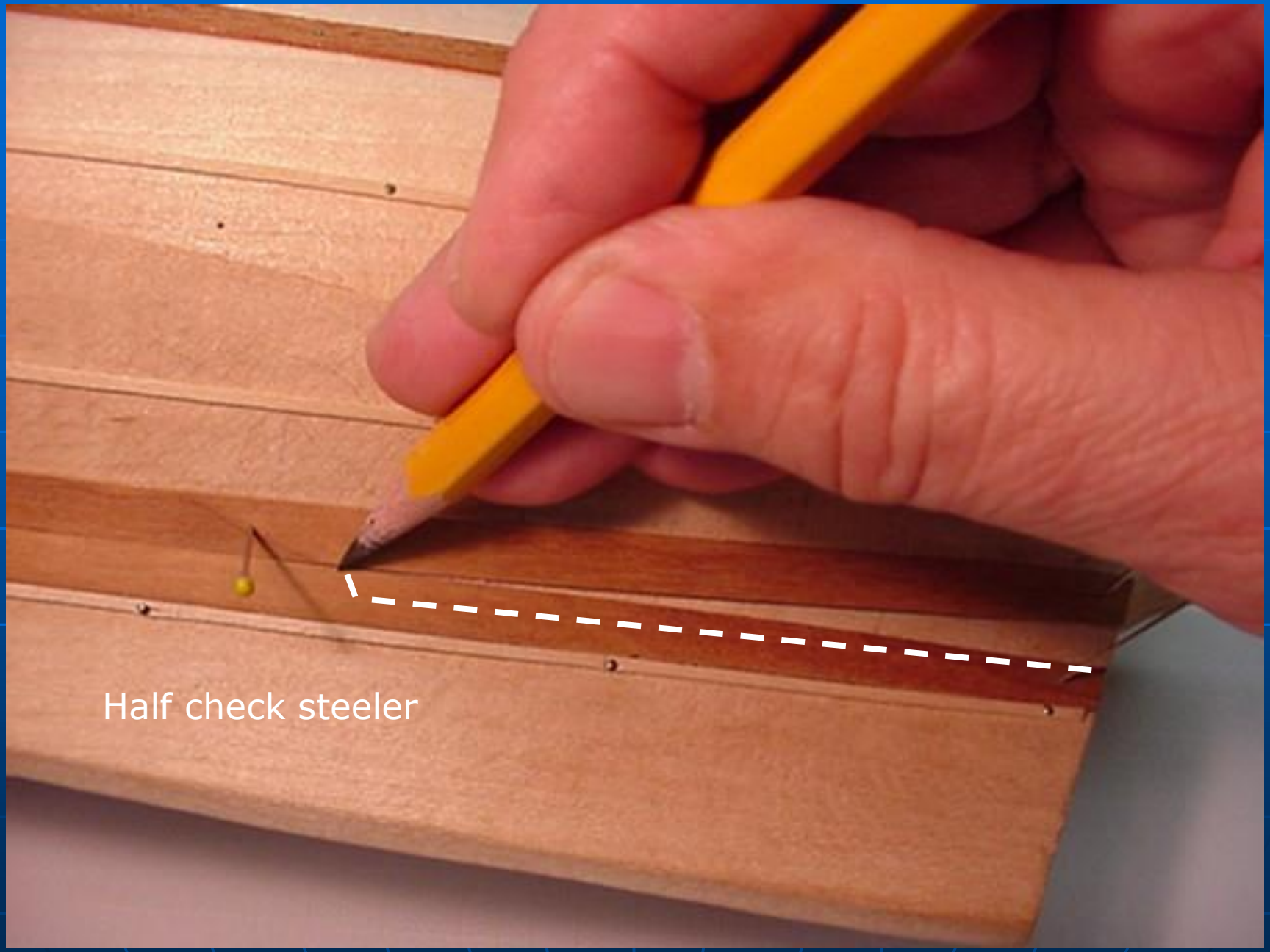
Underhill states that "one unbroken strake" is required, while Roberts recommends a spacing of at least two normal planks.



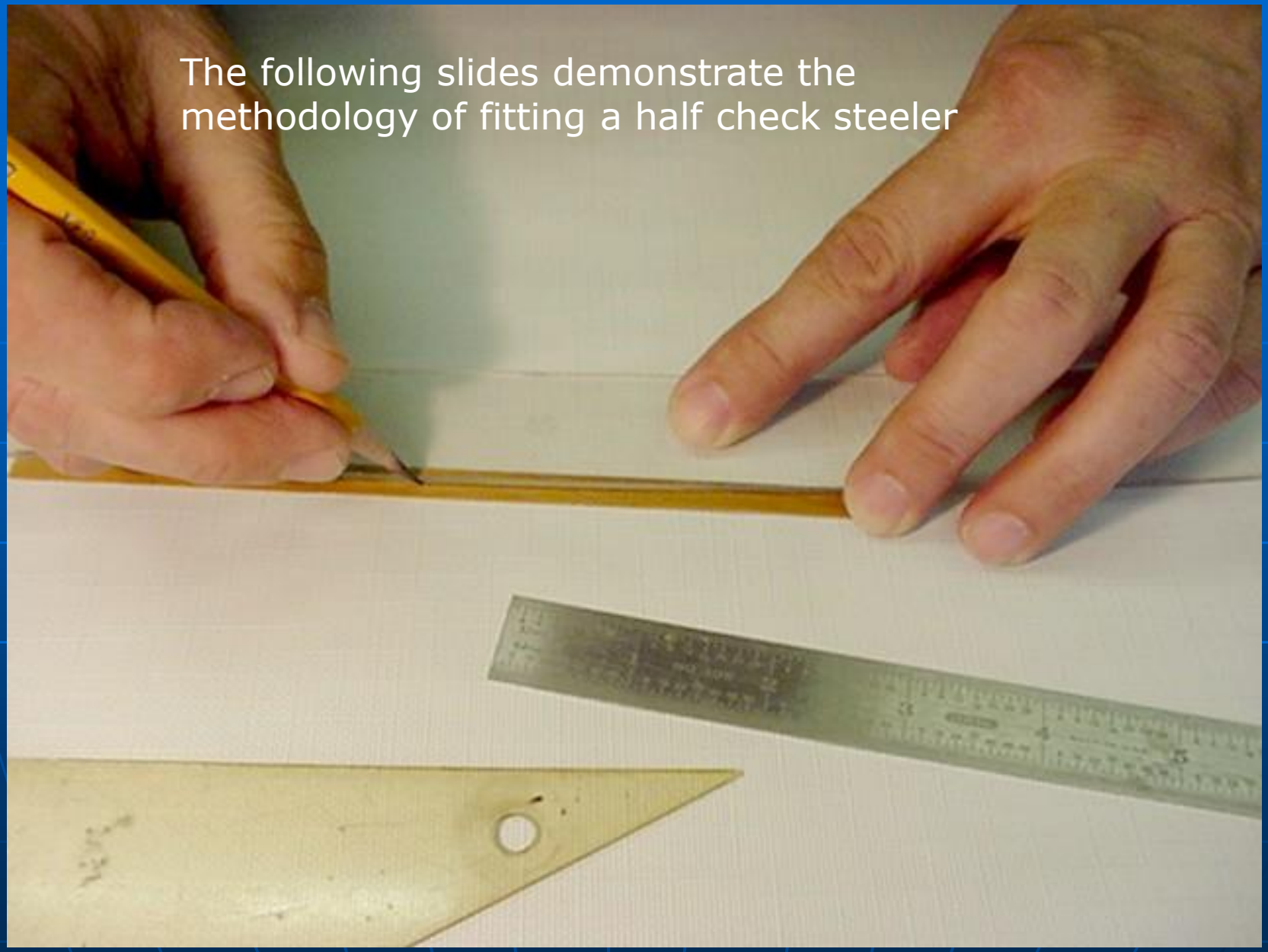
The third method involves the use of both stealers and a wider garboard strake.

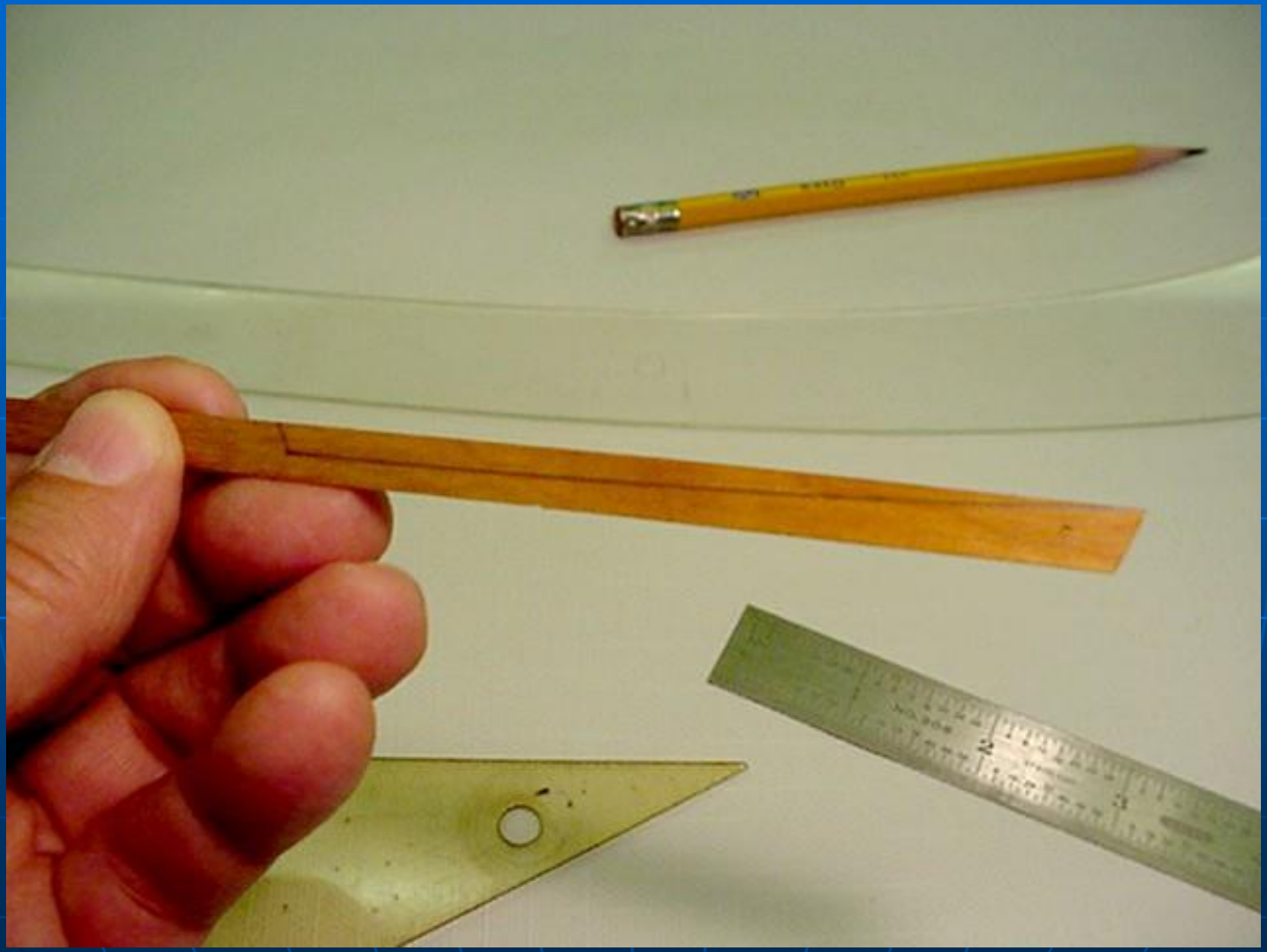



Stealer should start just forward of separation point.
If area is less than ½ the median plank width, use oversize planks.

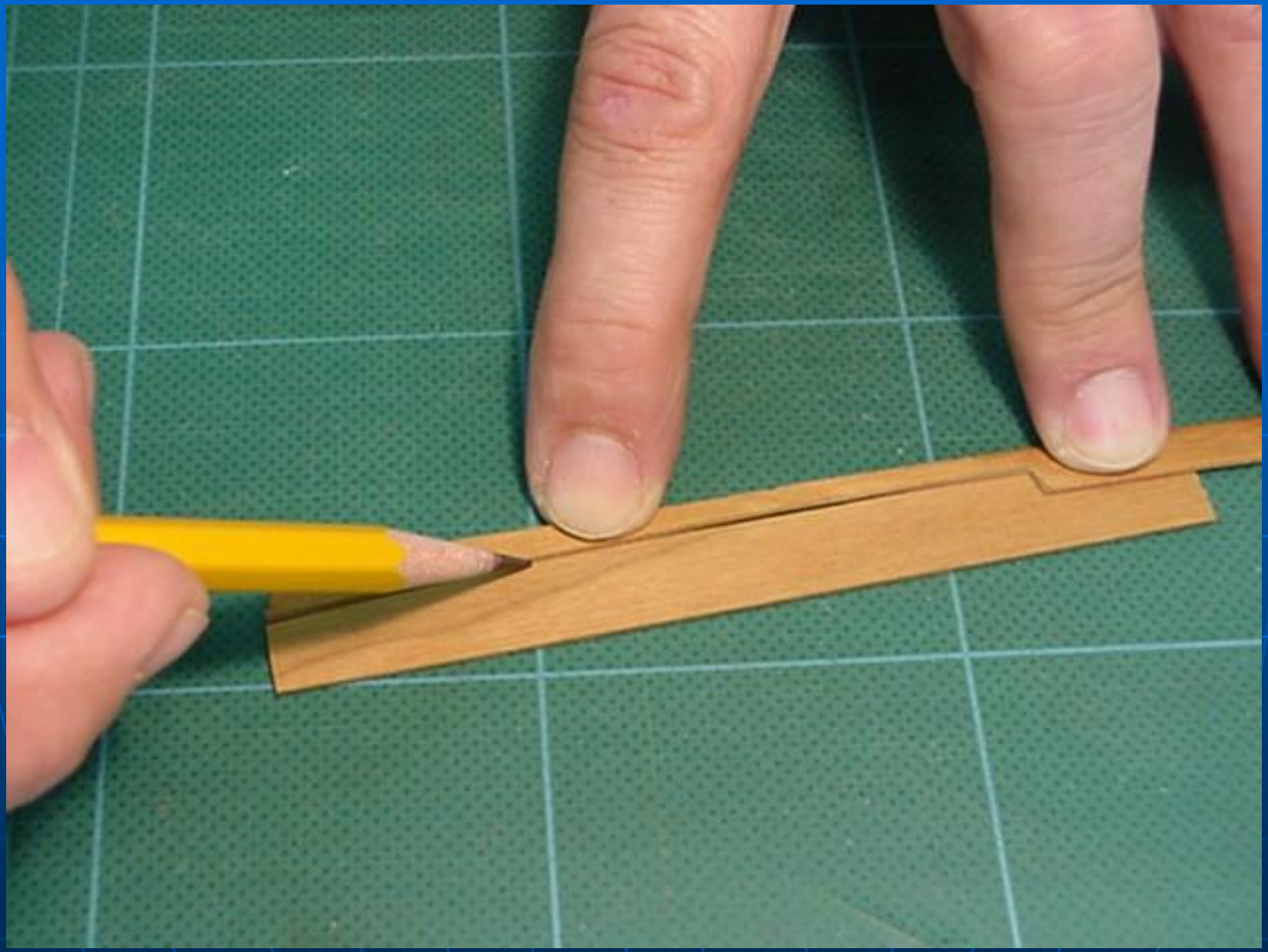

Half check steeler


Quarter check steeler

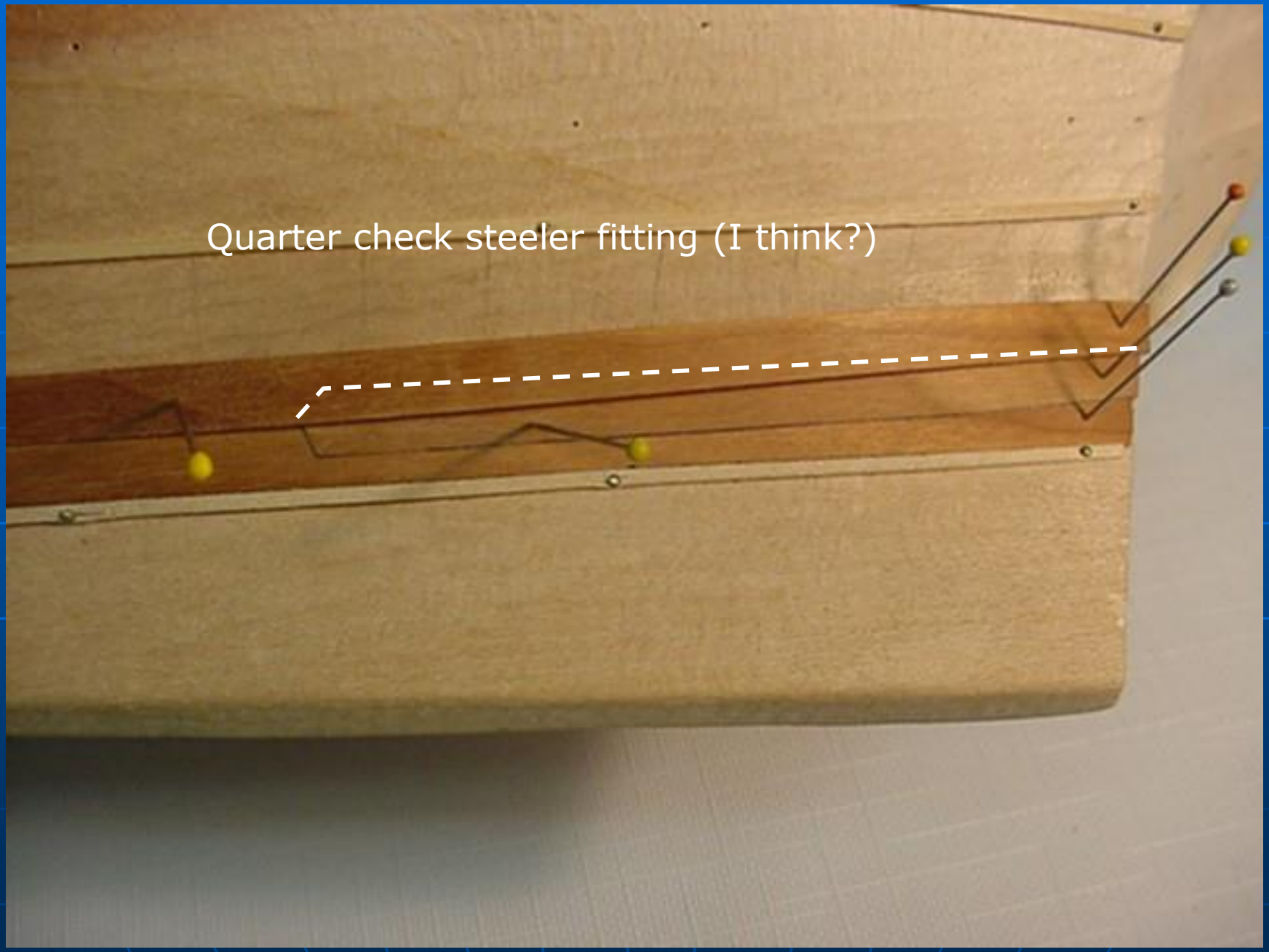

The following slides demonstrate the
methodology of fitting a half check steeler

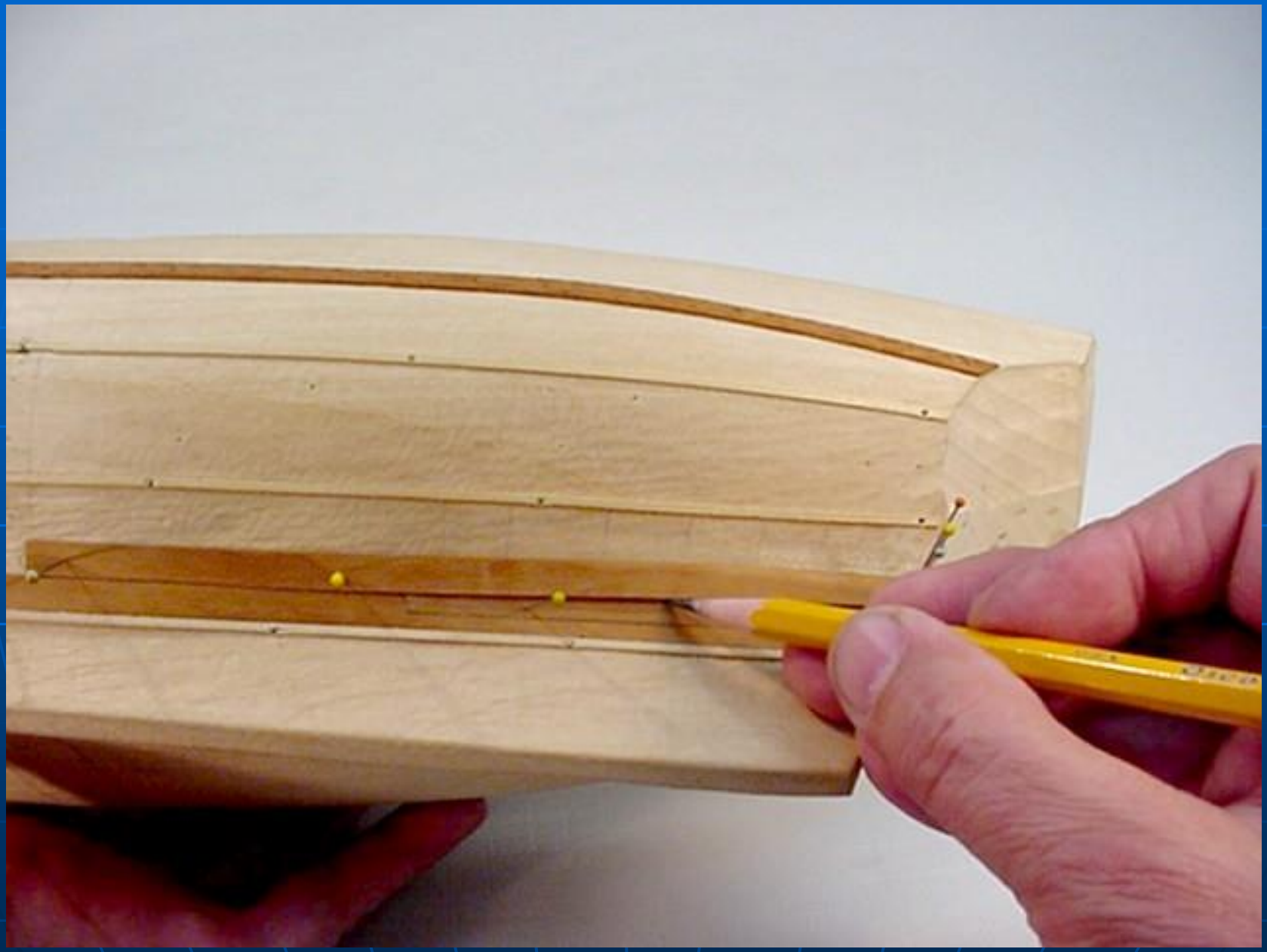


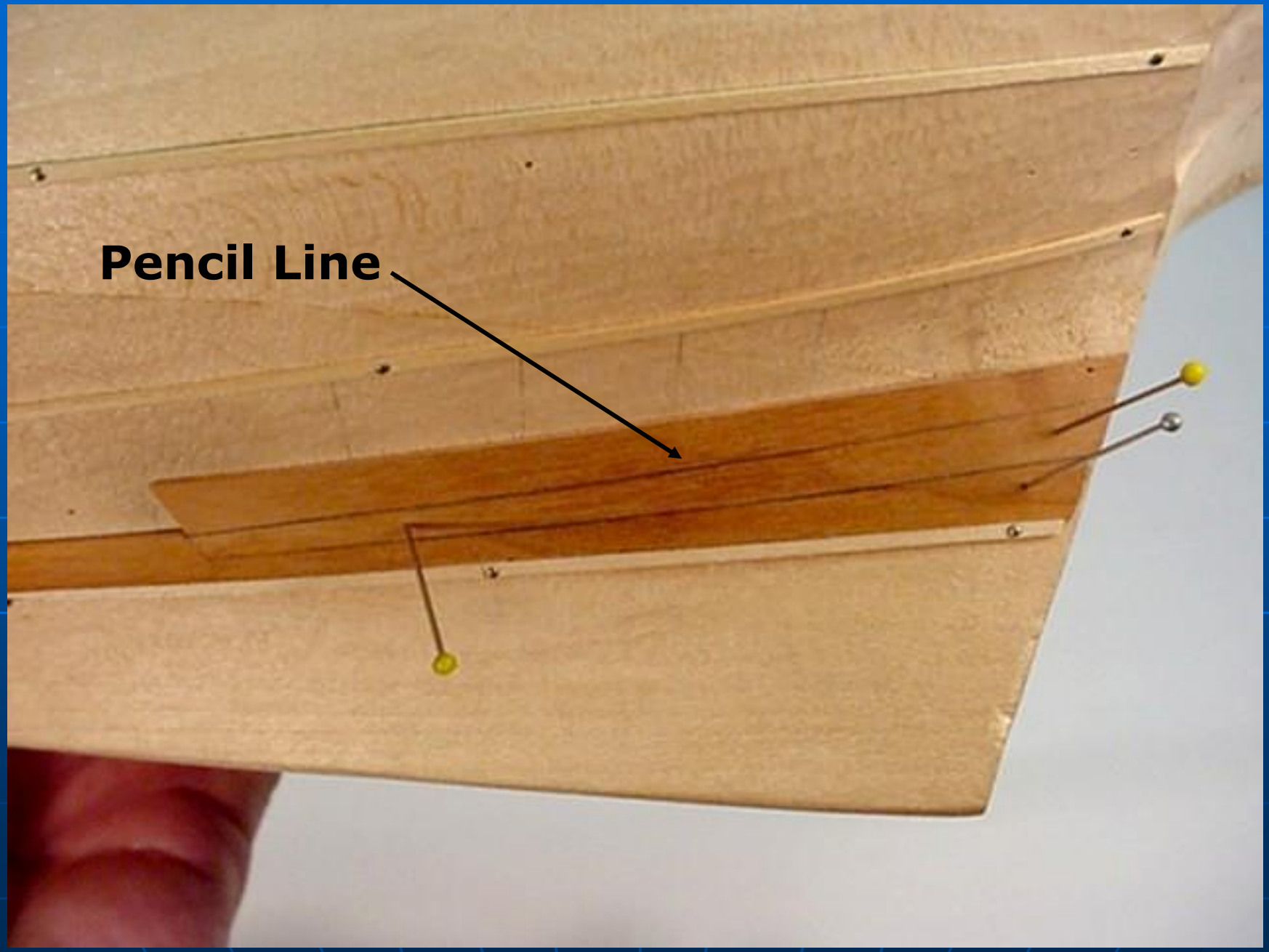

X-ACTO X2000



Half check steeler and fitted blank applied to the hull in preparation for defining the upper edge of the plank


Quarter check steeler fitting (I think?)




Pencil Line

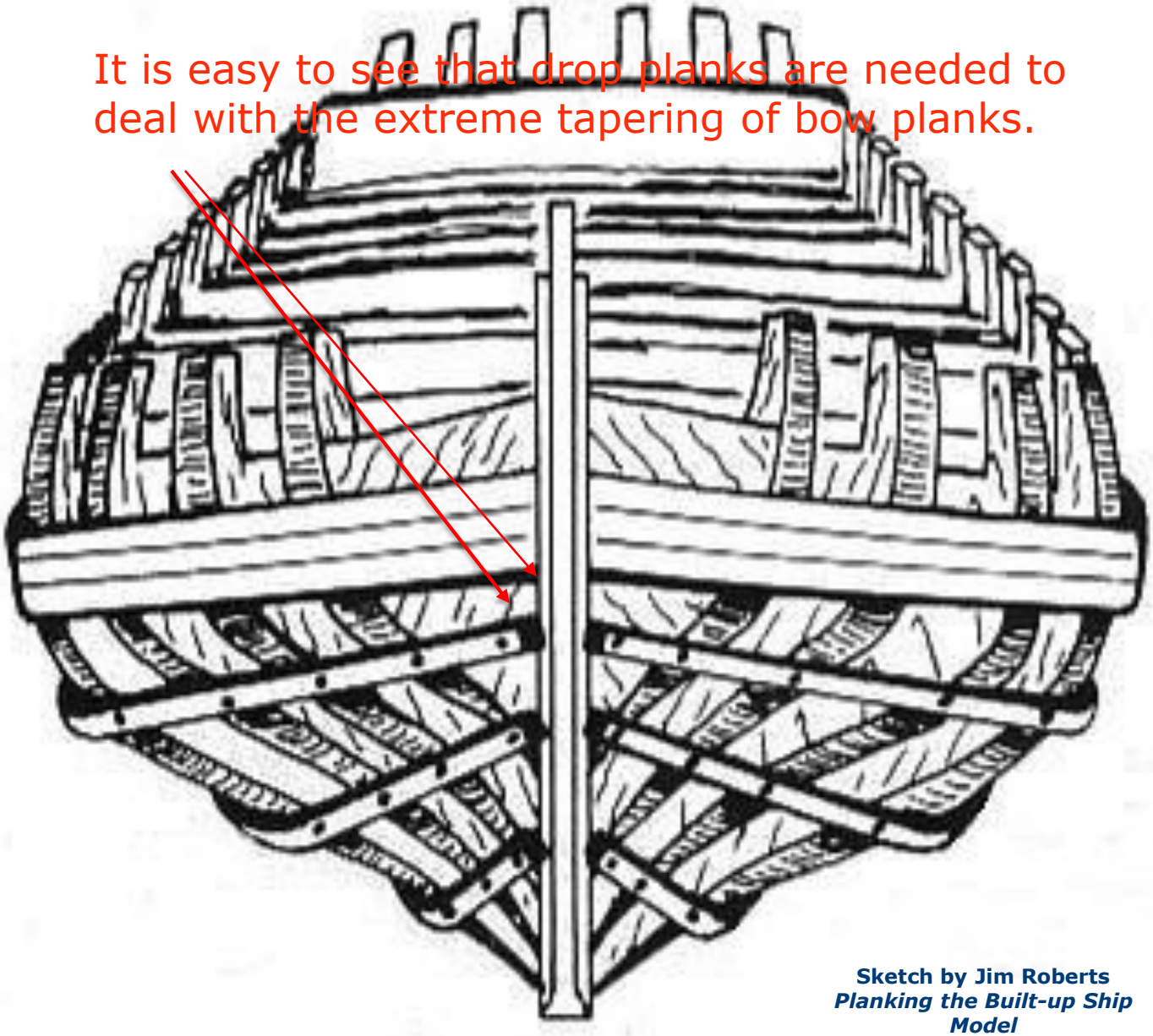

Make sure the transition from
plank to stealer is true and fair.


The finished product!


Scoring the caulking line

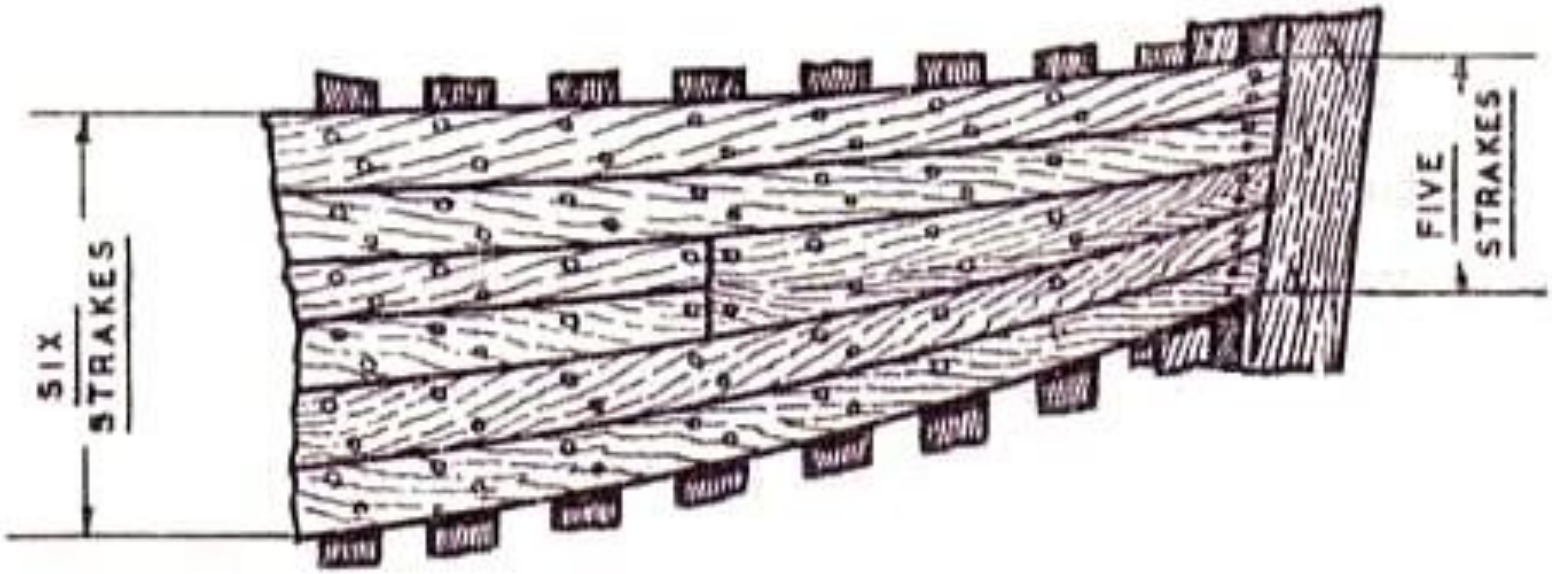
Drop Planks

It is easy to see that drop planks are needed to deal with the extreme tapering of bow planks.



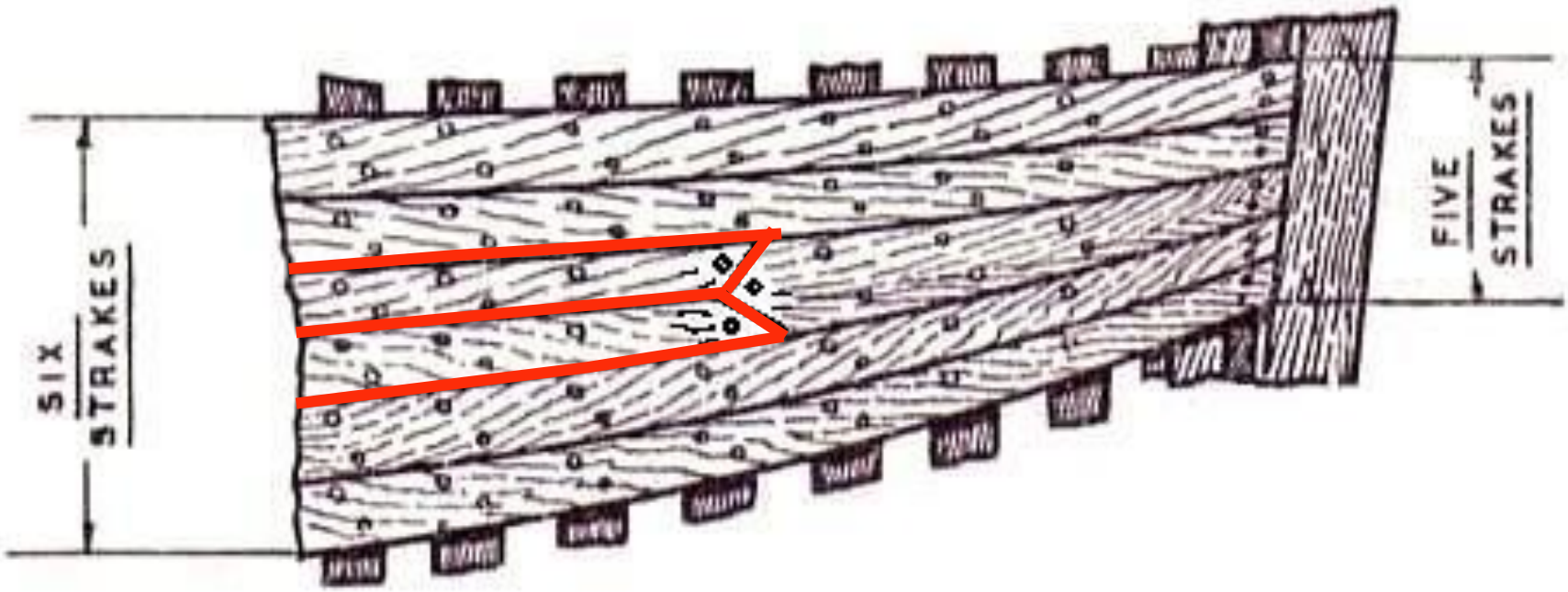
Sketch by Jim Roberts
Planking the Built-up Ship Model

Drop plank variations.

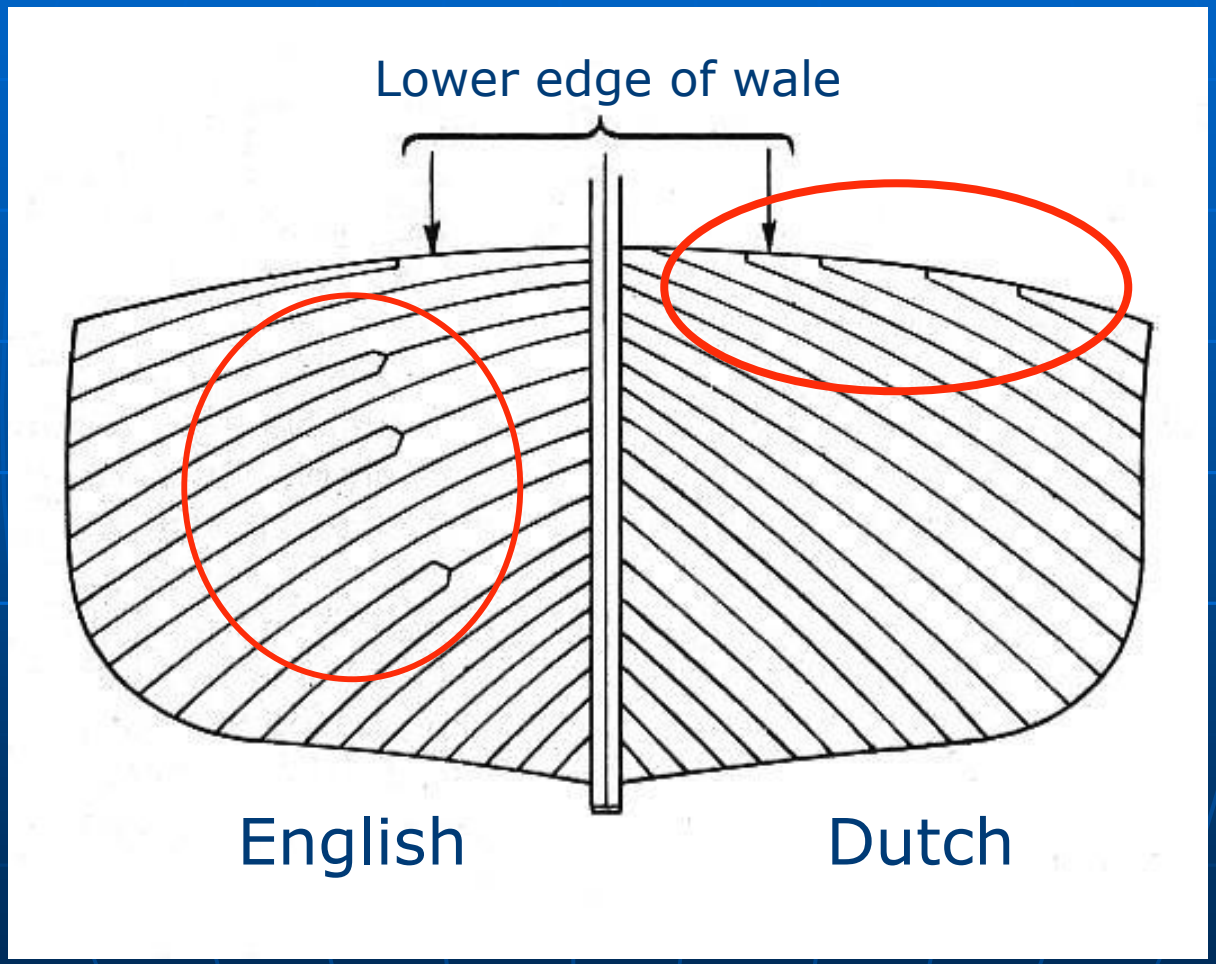


Sketch by Harold A. Underhill
Plank on Frame Models

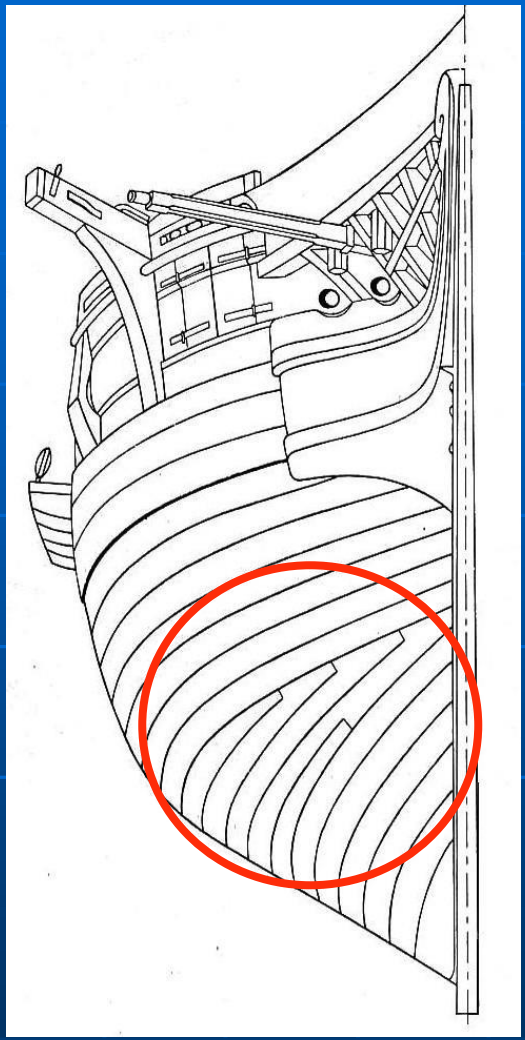
Drop plank variations.



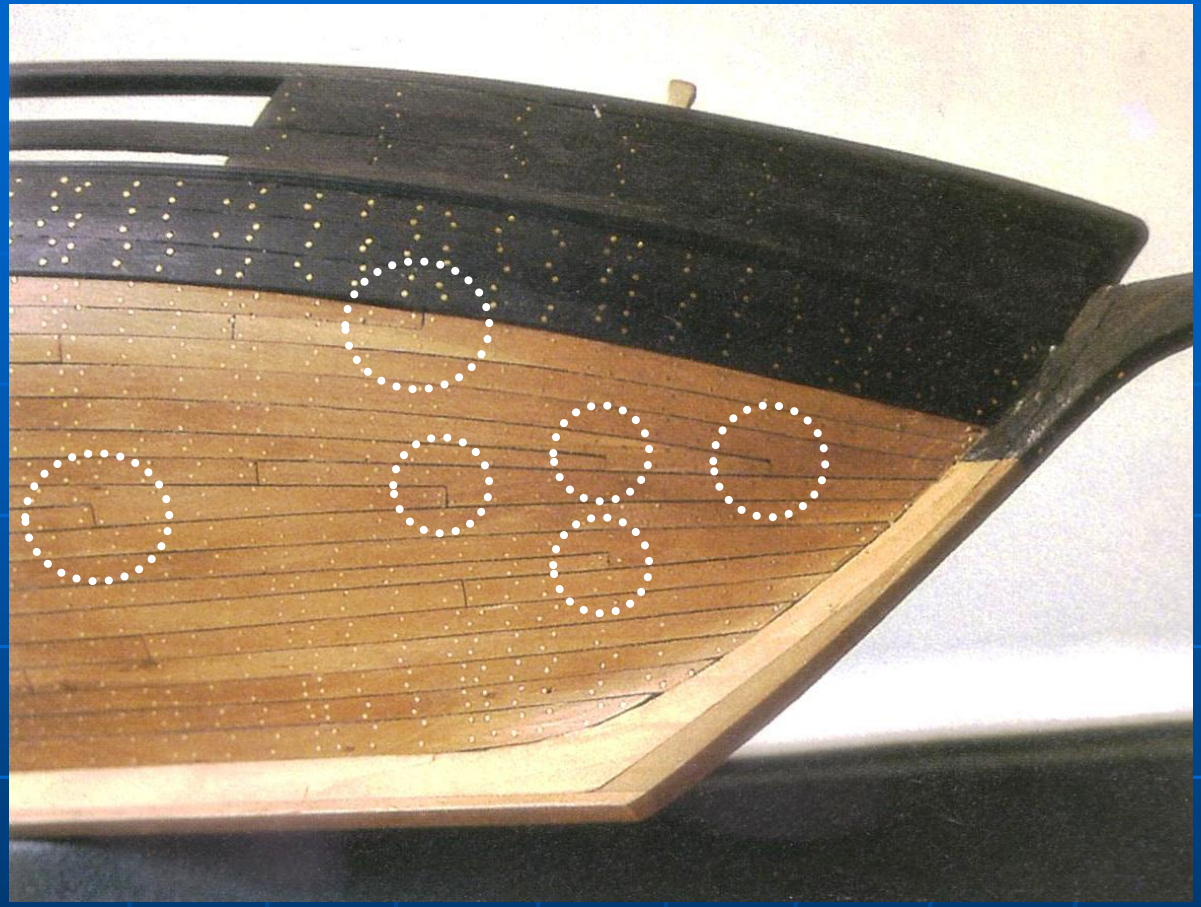
Drop plank variations.



Sketch by E. W. Petrejus – *Modeling the Brig-of-War "Irene"*

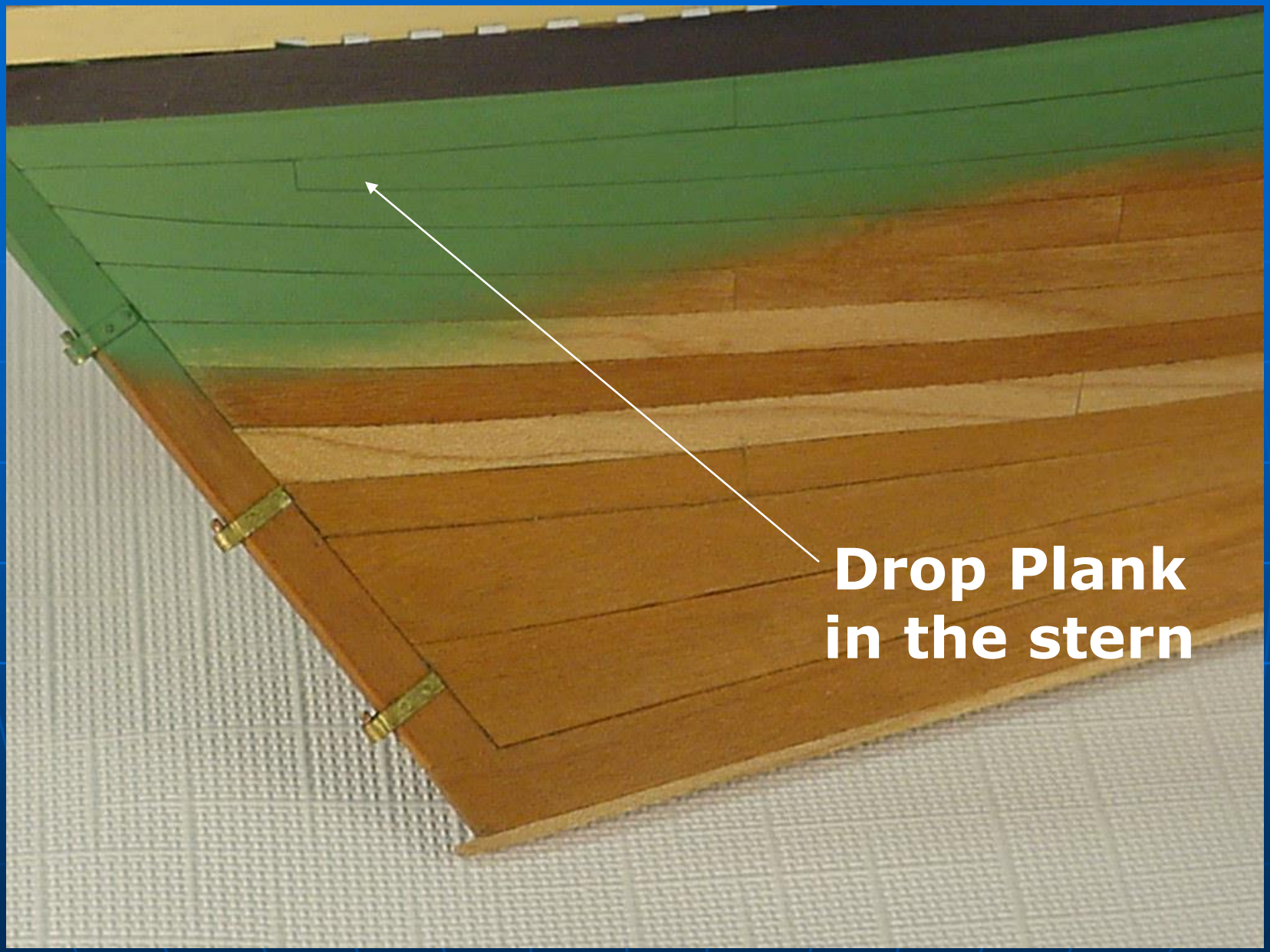


Sketch by E. W. Petrejus –
Modeling the Brig-of-War "Irene"

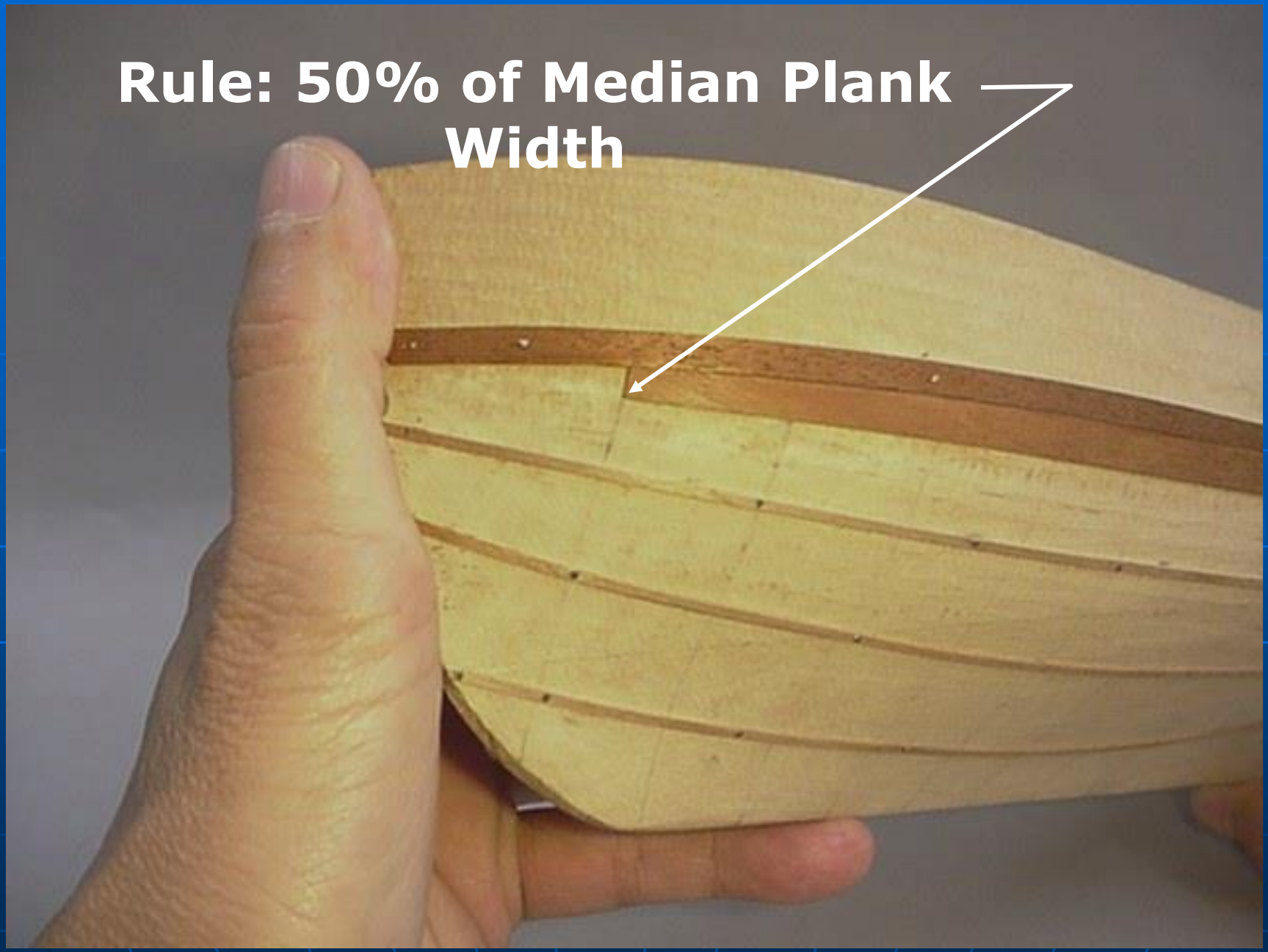


La Jacinthe by Bernard Frölich - *The Art of Ship Modeling*

Extreme examples of drop planks on different bow types.


Drop Plank
in the stern

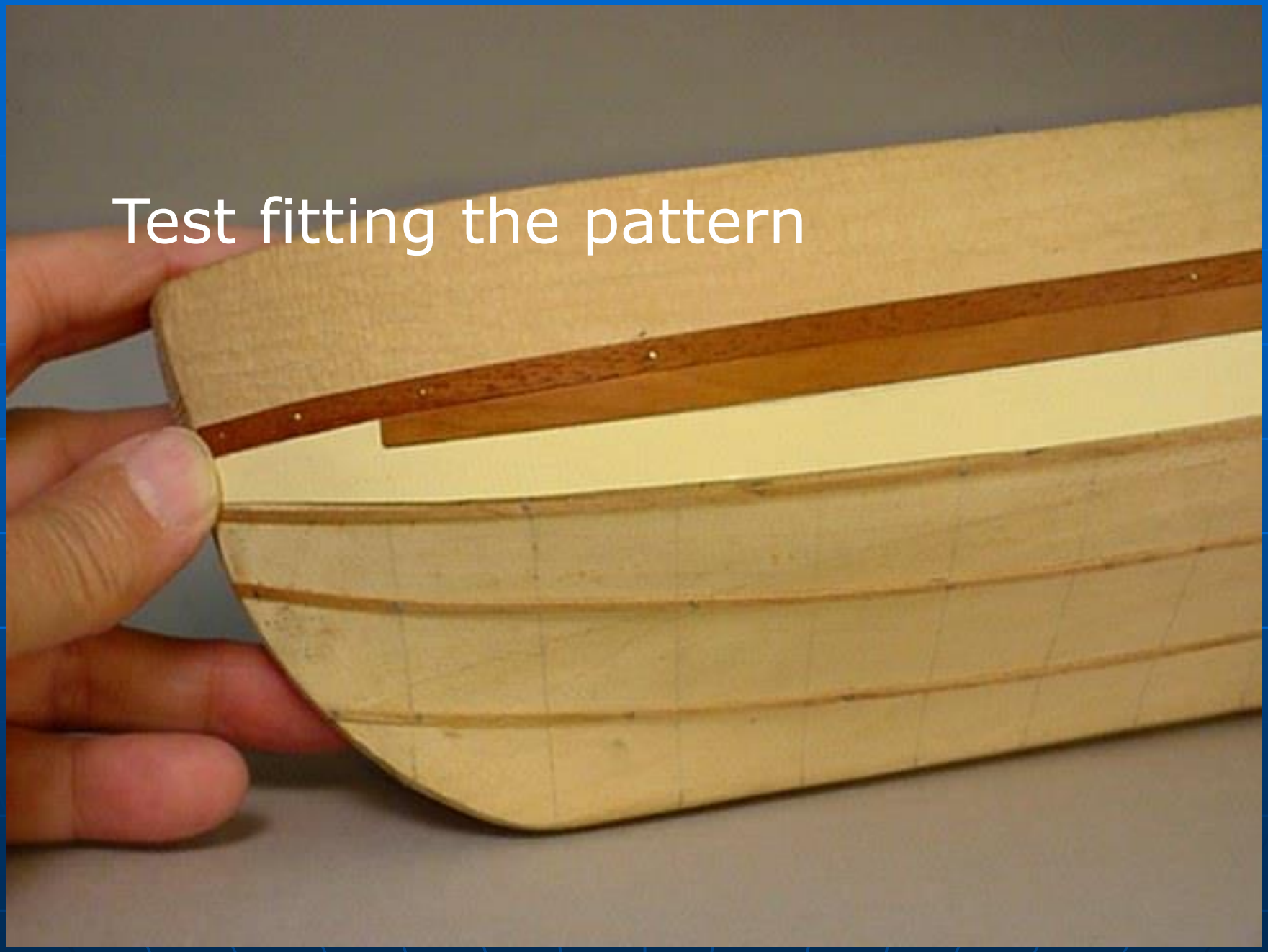

Snaped Plank

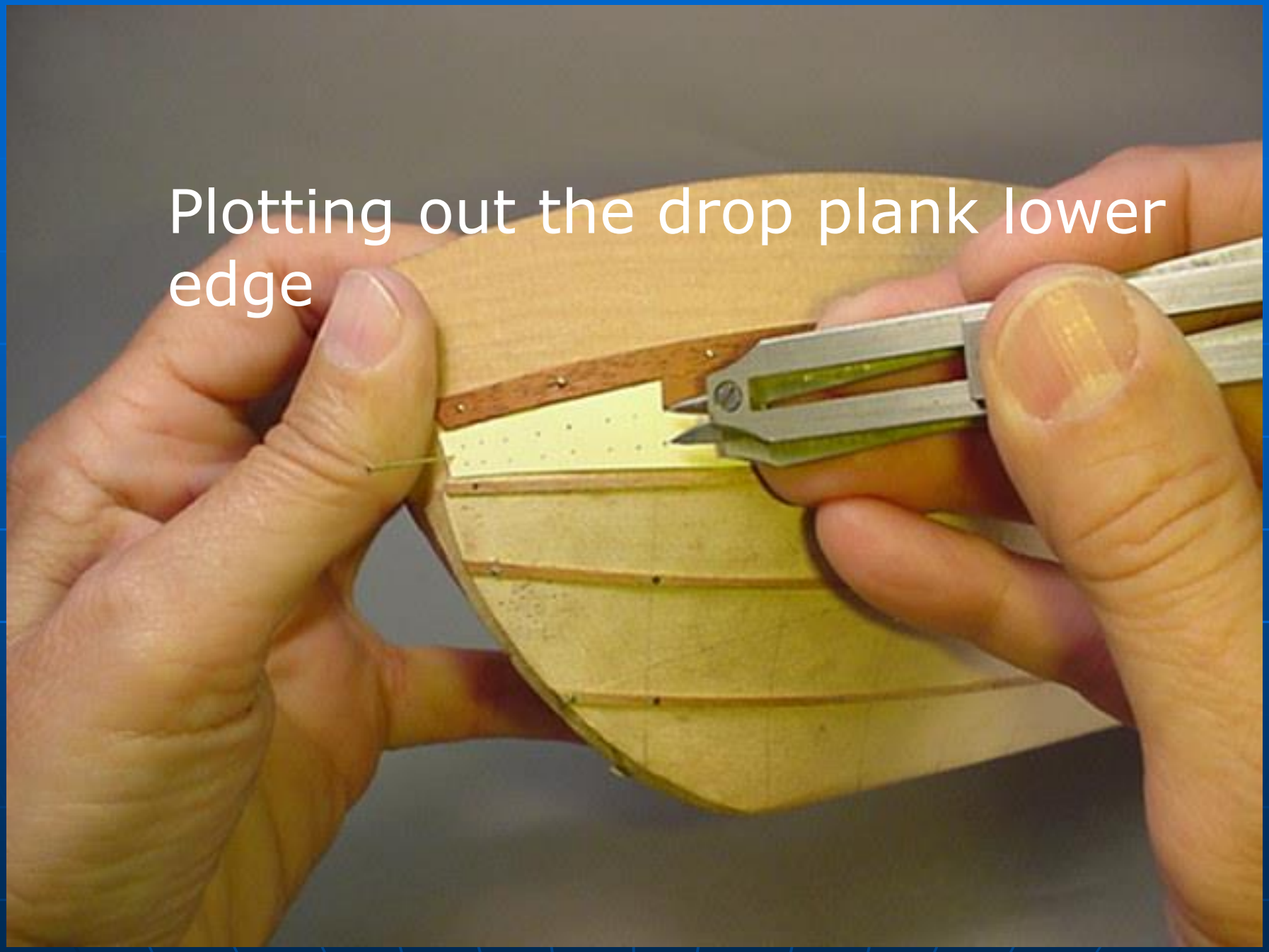

Rule: 50% of Median Plank Width

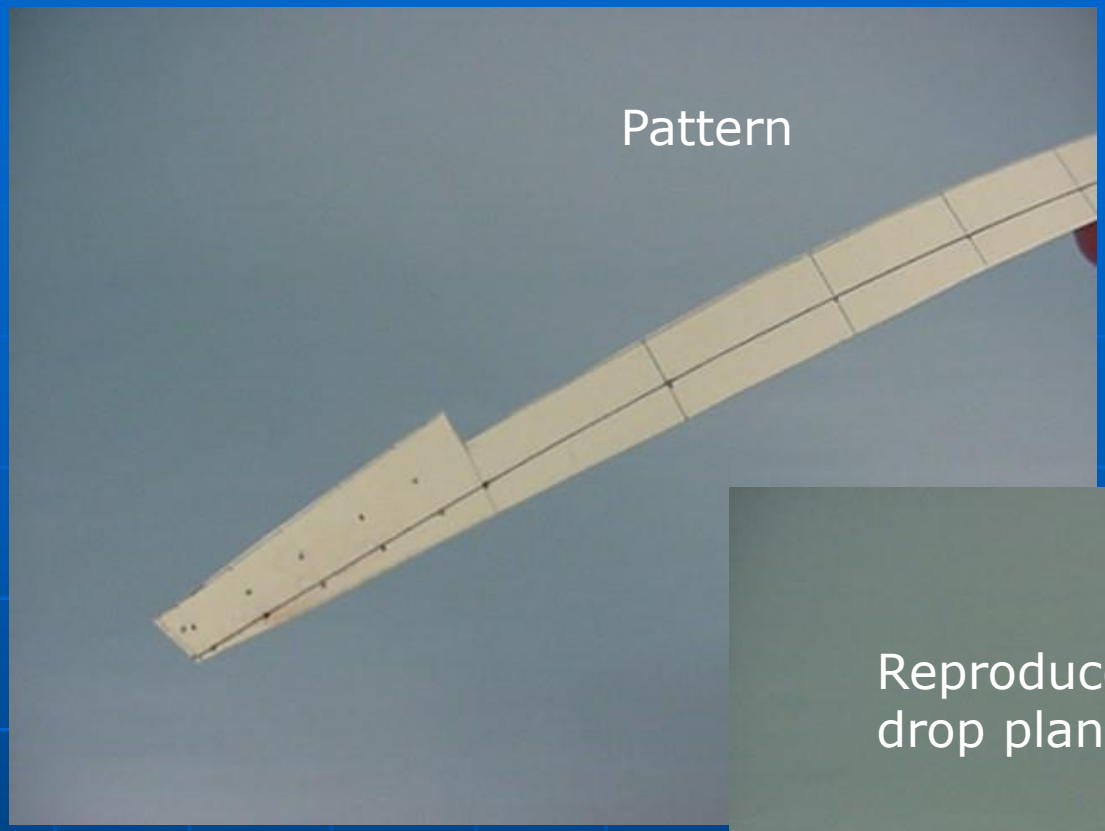

Using tape to determine the complex shape.
Apply the tape carefully. Avoid buckling, wrinkles and stretching.

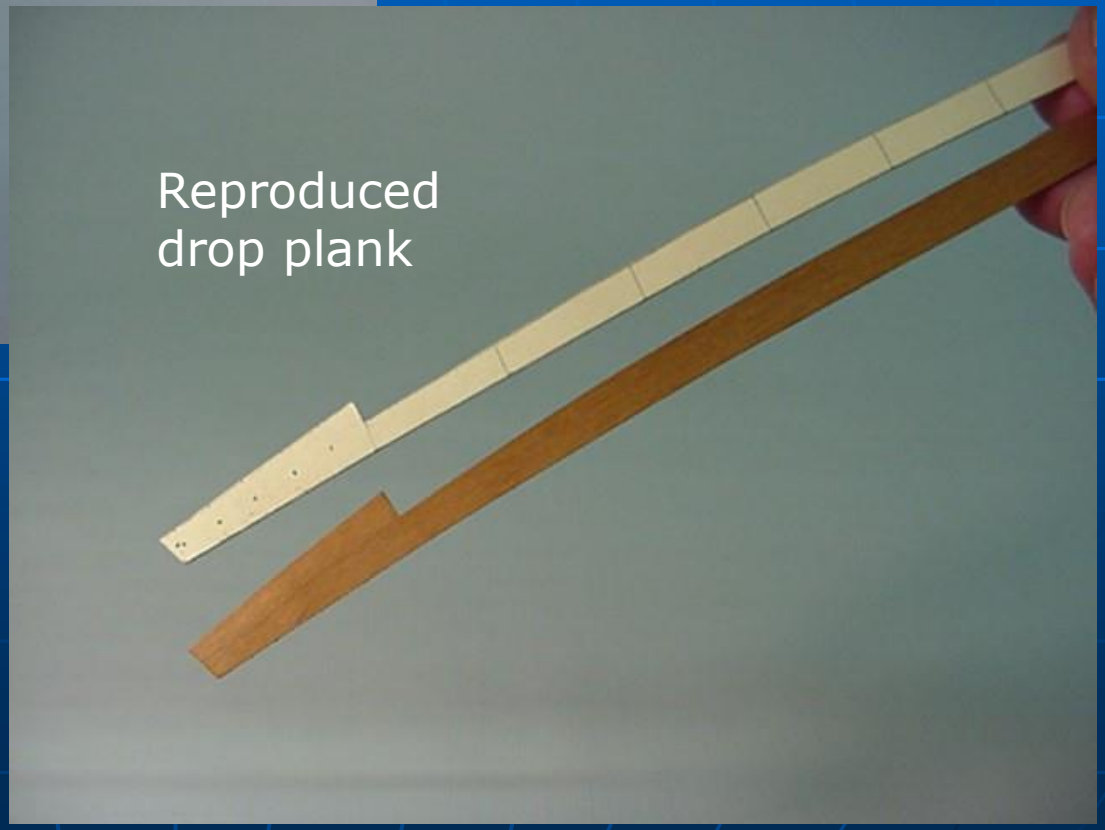
Tracing the upper edge pattern

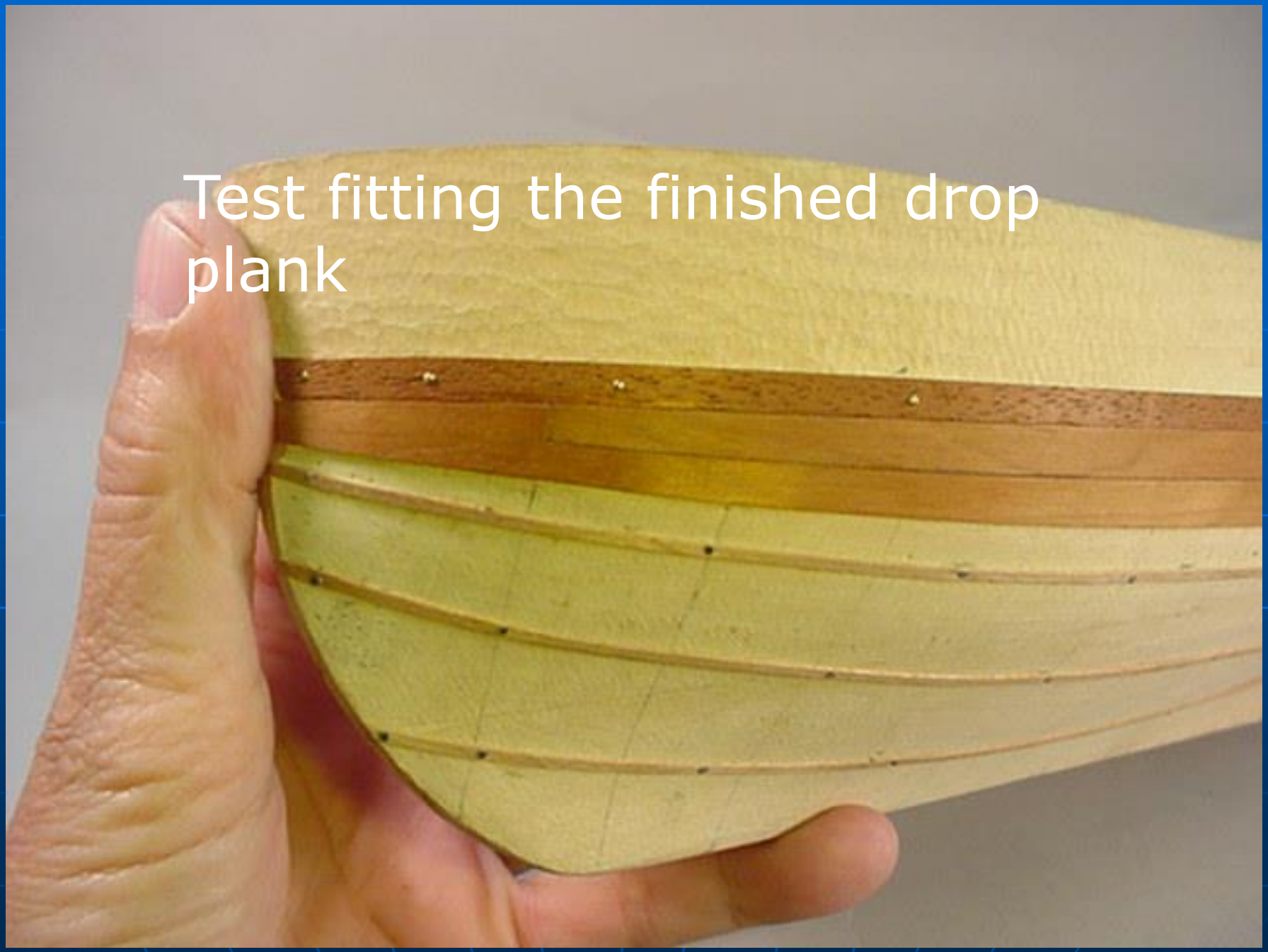
Removing the tape in preparation of pattern creation


Test fitting the pattern

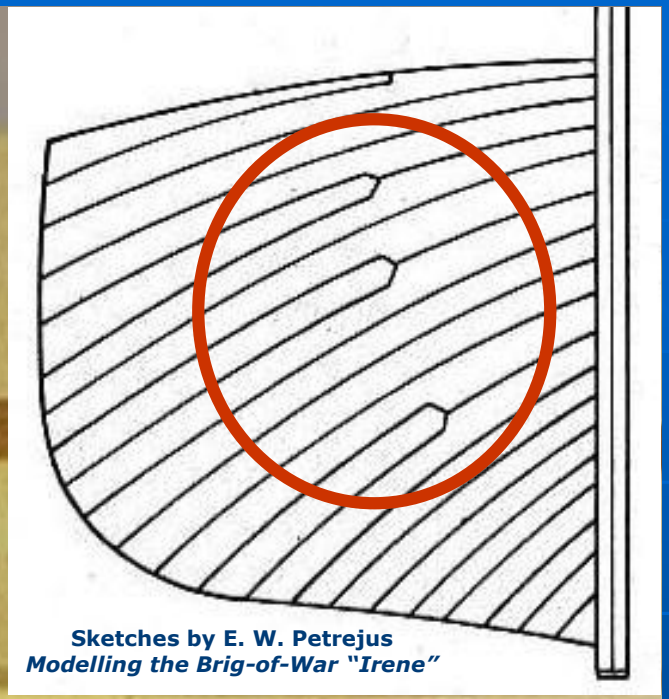

Plotting out the drop plank lower edge

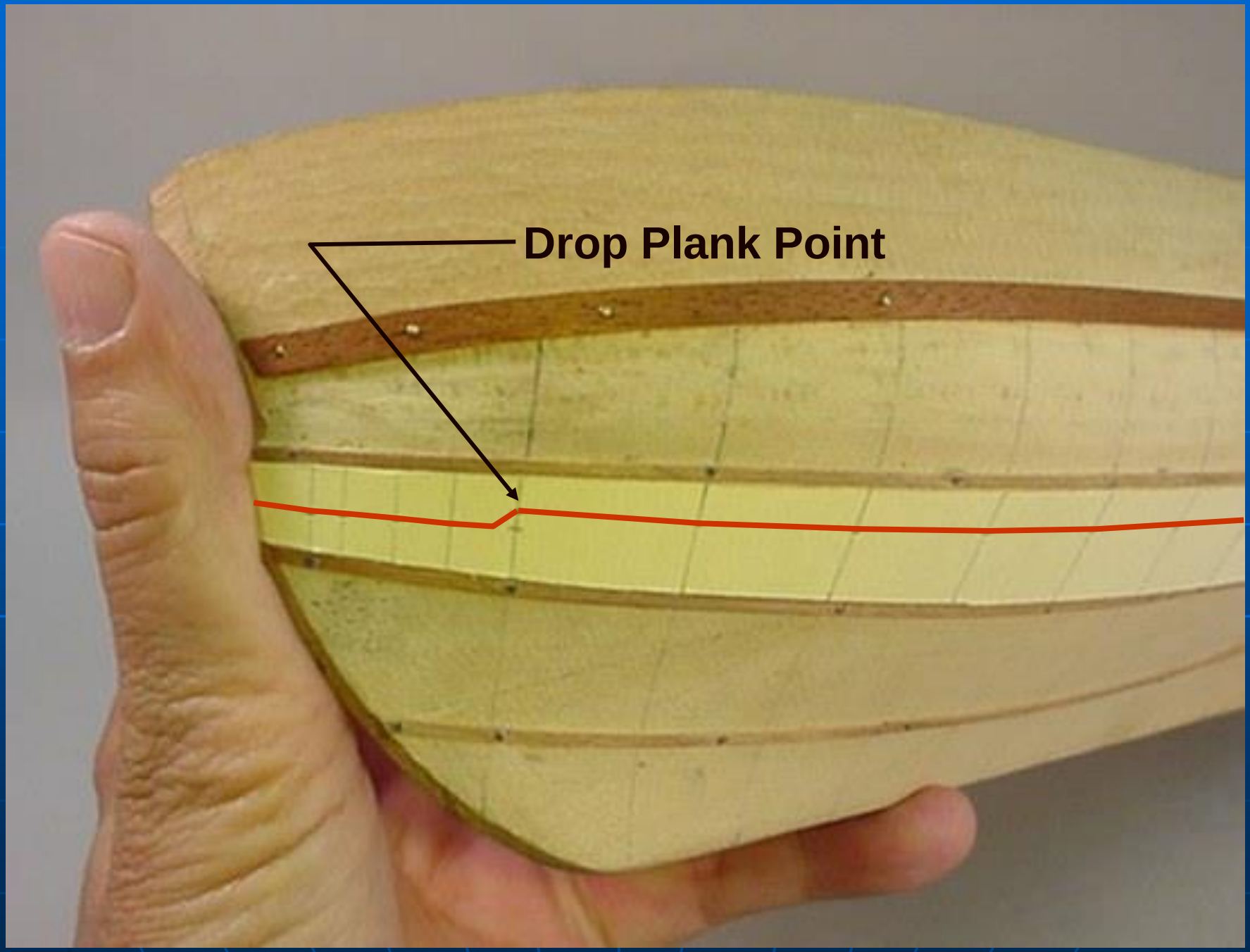

Pattern

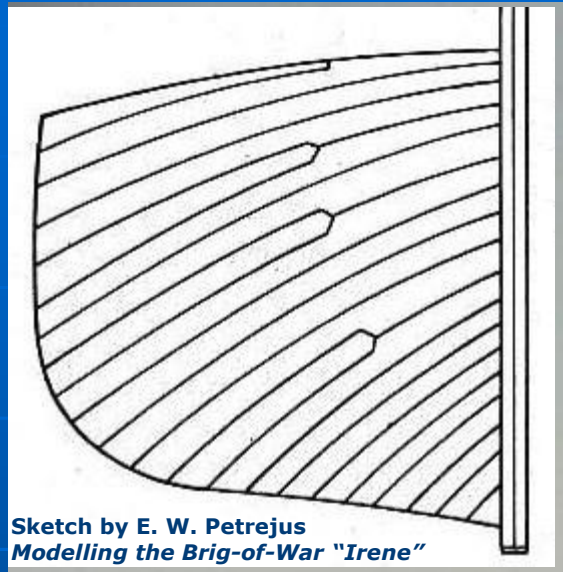

Reproduced
drop plank


Test fitting the finished drop plank

The alternate variation of a drop plank




Drop Plank Point

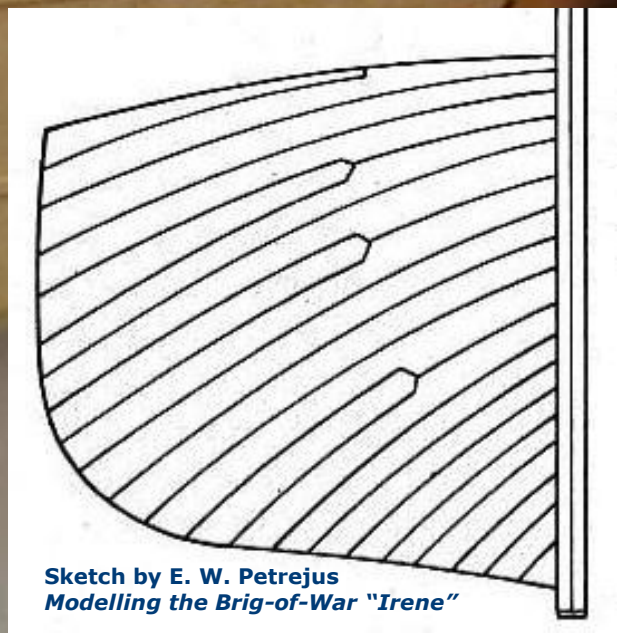


Sketch by E. W. Petrejus
Modelling the Brig-of-War "Irene"

This is the plank

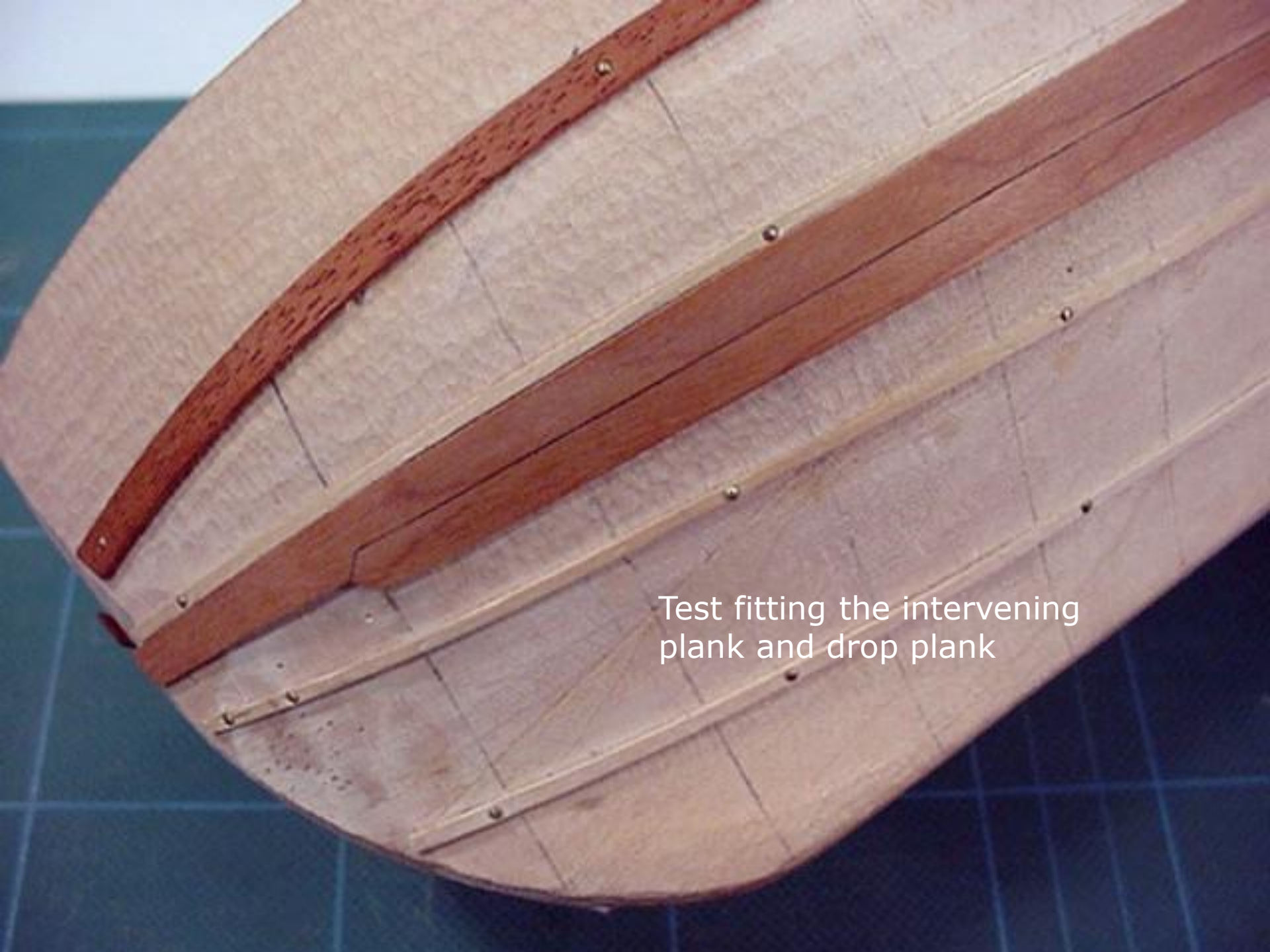
Not this

Use the completed plank as a template to form the upper edge of the next plank.



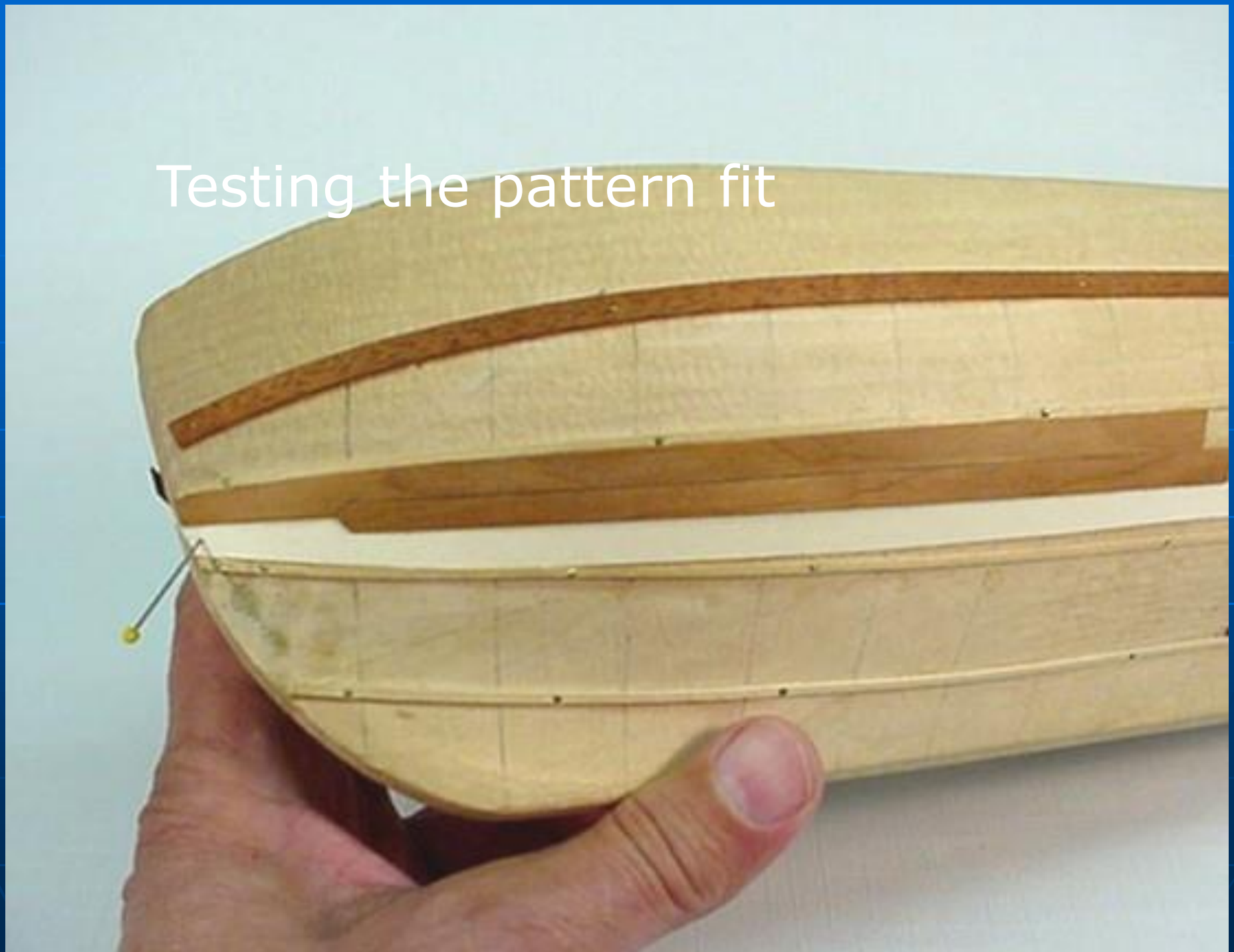
Sketch by E. W. Petrejus
Modelling the Brig-of-War "Irene"

Pattern and faithful plank creation


Test fitting the intervening
plank and drop plank

Using the tape method to create the pattern for the adjacent plank

Testing the pattern fit




A well executed result.
Would you not agree?

THE END