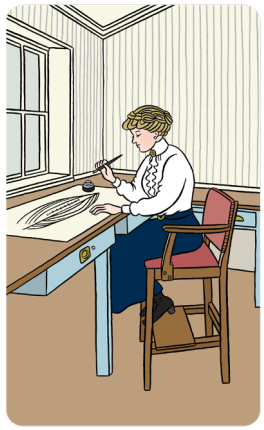
Working at the Denny Tank

Tracers and analysts



Denny employed women in its drawing office as tracers and analysts. All technical plans were drawn by hand on paper. The tracers copied out the draughtmen's rough plans to make them neat and readable. The analysts examined the results from the tank tests.

Were the ship plans drawn in pencil or ink?

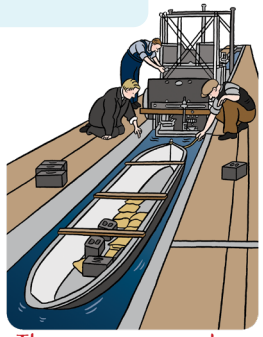
Model-makers

The model shop turned the plan designs into accurate scale models. The ship model hulls were moulded in wax and skilfully trimmed and shaped by hand before testing.

Find the names of two tools used for shaping the wax hulls.

Naval architects

The experiment tank was built for testing different shaped model hulls. The testers measured how efficiently the new ship hull designs could move through water and against waves.



The carriage recording the test results travelled along rails at speeds of up to 19 kilometres per hour (12 miles per hour).

TRUE or FALSE ?

Did you know?

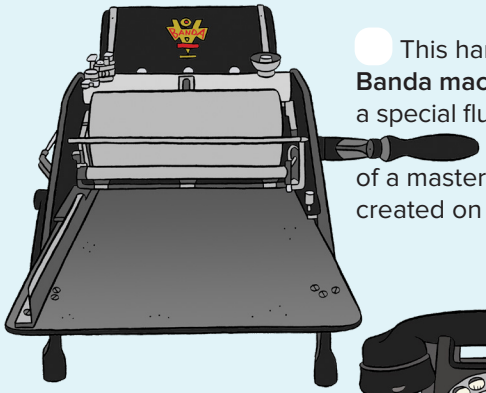
New shipbuilding test tanks are traditionally christened with a bottle of water taken from the Denny "Mother Tank".

Explore upstairs in the drawing office

This workspace displays drawing office tools and equipment that were used by staff long before the invention of computers, printers and digital calculators.

Tick all the things that you spot. Which object doesn't belong in this room? You will find it in the tank superintendent's office.

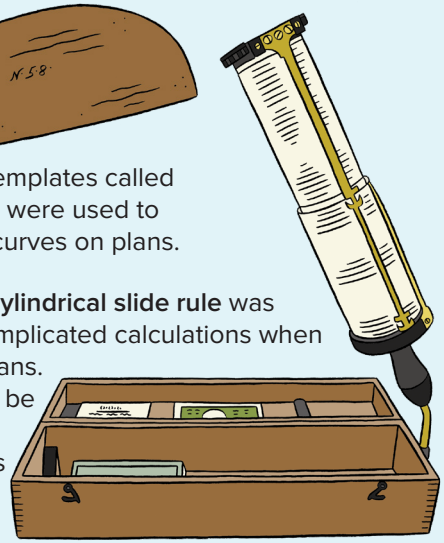
Dividers were used for measuring and transferring dimensions on ship plans.



This hand-operated **Banda machine** used a special fluid to make paper copies of a master document created on waxy paper.

This landline **desk telephone** had a handset to listen and speak into and a finger dial to call a number.

Wooden templates called **French curves** were used to draw smooth curves on plans.



The **Fuller's cylindrical slide rule** was used to make complicated calculations when preparing ship plans. The barrels could be turned to line up the metal pointers with different number scales.

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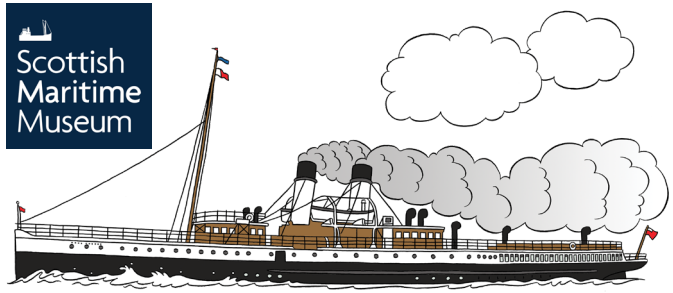
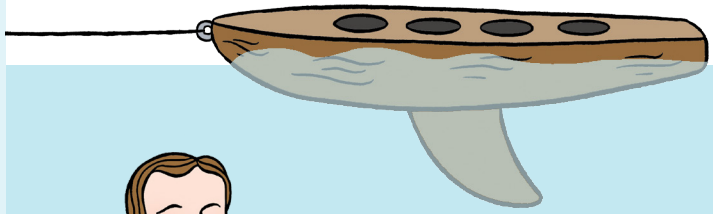
Scottish Maritime Museum



Discover the science of shipbuilding

Get hands-on at Dumbarton's world-famous Denny Ship Model Experiment Tank



My name is William Denny III. It was my idea to build the world's first commercial ship model testing tank here at the Denny Brothers' ship-building yard in 1883. Our pioneering research and experiments helped us to build exciting new ship designs up until 1963.

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Test model ship hulls using the experiment mini-tank

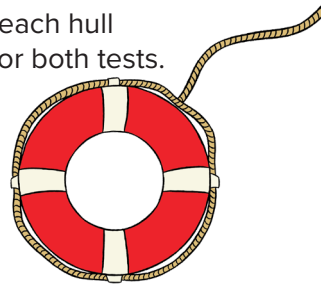
Test and compare two different-shaped model ship hulls. Note your results below.

Follow the instructions on the wall, which explain how to attach the hulls to the towing mechanism and time each experiment.

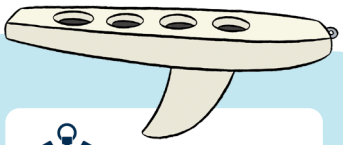
Time the number of seconds it takes each hull to travel from one side of the tank to the other. Repeat the test with the wavemaker switched on.

Describe how efficiently each hull moves through the water for both tests.

Analyse your results. Which hull shape number is fastest and moves most easily through the water?



Hull shape 1

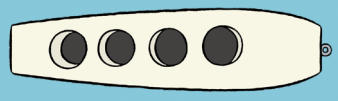


Travel time in calm water:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

Travel time through waves:

- Sails in straight line
- Sails off course
- Overturns
- Sinks



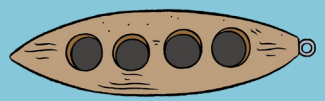
Hull shape 2

Travel time in calm water:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

Travel time through waves:

- Sails in straight line
- Sails off course
- Overturns
- Sinks



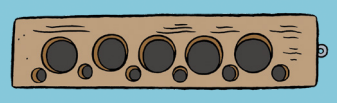
Hull shape 3

Travel time in calm water:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

Travel time through waves:

- Sails in straight line
- Sails off course
- Overturns
- Sinks



Hull shape 4

Travel time in calm water:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

Travel time through waves:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

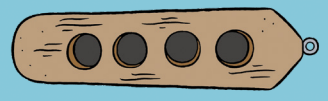
Hull shape 5

Travel time in calm water:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

Travel time through waves:

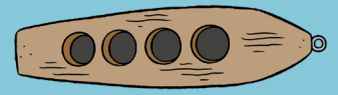
- Sails in straight line
- Sails off course
- Overturns
- Sinks



Hull shape 6

Travel time in calm water:

- Sails in straight line
- Sails off course
- Overturns
- Sinks

Travel time through waves:

- Sails in straight line
- Sails off course
- Overturns
- Sinks