

© 1957 Edwin Tunis

While one man cranks the spinner, the one holding the "top" walks backwards as the rope is twisted. From Edwin Tunis, *The Young United States, 1783 to 1830* (New York: World Publishing Co., 1969). Used by permission of the estate of Edwin Tunis.

Ropewalk

The Newsletter for
Shipwrights of Ohio—June 2025

Our Next Meeting: July 16, 2025;
 Hybrid –
“Jigs & Fixtures for Ship Modeling”
 by Darrell Markijohn

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June

Editors Comments;

If you could not make the meeting, either in-person or via zoom, you missed a very informative presentation on photo-etching. We had nine in-person and five on Zoom.

Joining us at the library were Roger Baughman from Columbus, Phil Neldon from Twinsburg. On Zoom, Carolina Gonzalez-Allera from Idaho Falls, ID. Welcome. A good turnout Saturday morning,

The July meeting presentation subject is on “Jigs & Fixtures that we have used in ship modeling”. We all have come up with a jig, fixture or tool that has help us in our modeling. Plan to share that during the July 19th meeting. If you have not, then plan to attend and find out what your fellow shipwrights have come up with that will help you in your modeling.

As always, take care of yourself and your families, look to those you know who may need help or are lonely and may be in need of human contact.

If you have not gotten your Covid, Flu, Measles or RSV shots, please do. Stay safe and healthy. Till next month. Your editor.

Heads Up:

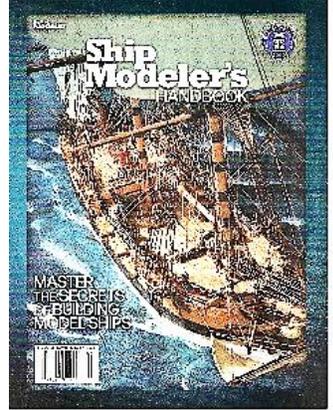
From Artesania Latina. “We need to inform you that customers are being targeted by a web spoofing scam involving our brand image.

We don’t know the exact scope of the scam or which countries it affects, but we are aware of at least three URLs that are copies of our website, offering our catalog in a supposed clearance sale with deep discounts. The scam is being advertised through various Facebook and Instagram accounts.

We are taking the appropriate legal measures to try to stop this activity.

Our website is artesianialatina.net, no other. Thank you for your understanding.”

Ship Modeler’s Handbook



Still, You do not have your copy?

Contact Bob Mains or John Boeck, they have a few left and it is free, and we are paying the postage.

We are indebted to John Boeck for ordering a quantity of the handbooks for you, our members.

The handbook is a joint venture between “Fine Scale Modeler & the Nautical Research Guild. To quote from the editor’s page: “you will find advise and step-by-step how-to articles on everything from choosing the proper tools to do a particular job to strategies for building ships from wood, plastic, and even paper.”

To receive a personal copy of the handbook, contact Bob Mains at rmains1@columbus.rr.com. All costs are being covered by your ship modeling club.

Reminders & Announcements

Modeling Events

2025 NRG Photographic Ship Model Comp.

This is your chance to have your work judged and receive comments on how to improve. The competition judges your work against a set of standards and better yet, you don’t have to transport your model anywhere.

Time to dust off that camera and start taking pictures of the ship model you want to enter. The 2025 NRG Ship Model Photo Contest, the fifth photo contest since 2011, is open to the members of the NRG for an entry fee of \$30 per model. Registration for the competition opened on June 16, 2025.

Because, the “Shipwrights of Ohio” is a NRG Chapter Club, non-NRG members, within the club membership, are offered a special competition entry fee for \$50. You can enter a model and also receive a one-year Nautical Research Guild digital membership at half the normal yearly price.

View the competition rules and download the Entry Form, at www.thenrg.org/2025photocompetition. The forms are in pdf format and can be read with Adobe Reader. If you do not have this free application already installed, the following link will install it for you. <https://get.adobe.com/reader/>

All photos and supporting documentation requested will be submitted on-line. Entrants will also receive a written review of their model. Gold, Silver and Bronze awards will be awarded for the First, Second and Third place models in three categories: Novice, Apprentice and Master. A “Best of Show” will be awarded to the best “Gold” winner.

For NRG members, the entry fee will be \$30 per model entered. Entries can be submitted starting on Monday June 16, 2025. Entries must be submitted before or by Thursday, July 31, 2025. I repeat, to view the complete rules and download the Entry Form, go to www.thenrg.org/2025photocompetition.

Winners will be announced at the Annual Member’s Meeting, 4th Q/2025.

American River Roots Festival

Cincinnati – October 08-12, 2025

This festival is a signature event for America’s 250th year celebration. Come celebrate as they host a unique fusion of Music, Cuisine, Culture and Cruises on the Cincinnati, Covington and Newport riverfronts.

www.americasriverroots.com

Sea History Activity

LST-325 Ship Memorial: The LST-325, commenced summer hours April 1, 2025. The LST is docked on the Ohio River at Evansville, Ind.

Her annual cruise is scheduled for September 3 – October 2, 2025, where she will stop at Muscatine, IA, Alton, IL, Cape Girardeau, MO before returning to Evansville, IND, October 01, 2025.

SeaWatch Books

Received this announcement a few weeks ago and it brought back memories. For those of us that have been modeling for years, the magazine “Ships in Scale” was one of our primary reference sources. Clayton Feldman was owner/author/publisher of the magazine as well as the forum web site by the same name.

Early in 2026, SeaWatch books will be relaunching the *Ships of Scale* magazine. The role of *Ships in Scale* will be focused more on the learning and how-to of the hobby. To learn more, go to:

www.shipsinscale.com

Presentation:

The June presentation, by Steven Keller, was on “Photo Etching Ship Model Parts”. He started out with a slide of the Manua Models kit of the *Cutty Sark* that included Wood Sticks, Laser cut wood, brass fittings, copper plates, thread, a direction booklet and



Photo etched parts.



NOTE: Your editor, knows little about this process and to be honest, is to old to want to learn. That said, the following are copies of the Powerpoint slides contents.

Presentation Overview:

- Model Part Fabrication: Pluses and Minuses
 - Selection of Fabrication Method
- Photo Etching
 - How does it work
 - Pros and Cons of Purchasing vs. Fabricating
- Commercial Photo Etched Products
- Do it Yourself Photo Etching
 - Step by Step Procedure with Examples

Fabrication Categories

Additive

Parts are built up using materials to create the part.

Think of a painter adding paint to the canvas or casting bricks that can be added to form a wall

Subtractive

Parts are created by selectively removing material from a mass.

Think of a sculptor removing all the stone that doesn't look like the figure or a wood carver cutting, carving and sanding material to create the figurehead.

Fabrication Methods: Pluses and Minuses

+ Additive

Adhering pieces

Building out masts and spars

Planking hulls

Glueing or soldering pieces

Casting

Resin, Britannia, polystyrene

Fillers

Epoxy resins, body fillers, plastic wood, paint

3D Printing

Painting

- Subtractive

Mechanical

Carving, gouging, scribing

Sanding, filing, buffing

Milling, drilling, routing

Water jet cutting

Thermal

Laser ablation

Laser Embossing

Laser Cutting

Wood, acrylic, metals

Chemical

Photo etching

Cutting

Embossing

Weathering

Selection of Fabrication Method

Considerations for the selection of an appropriate method for part fabrication

Size and desired level of detail for the part.

Size tolerance for the fabrication method – carving versus laser cutting

Personal preference for part material – wood, metal, cloth, paper, plastic, glass, thread

Material limitations

Size tolerance for part detail: wood grain

Mechanical strength of formed part

Durability and aging characteristics:

wood (*moisture*), brass, lead (*corrosion*), plastic (*thermal*)

Method may work on a limited selection of materials:

laser cutting -wood, paper, cloth, metal, glass

Post fabrication treatments:

glueing, painting, staining, soldering

Photo Etching – Just what is it?

Photo Etching - Common phrase of the more formal name **Photochemical Machining (PCM)**. Also called chemical, photochemical etching, or chemical milling. (*Machining implies use of a machine. Although it is a chemical not mechanical process that replicates routing and cutting which are both subtractive methods*)

For Ship Modeling

Photo etching is commonly performed on soft sheet metals, especially brass and copper.

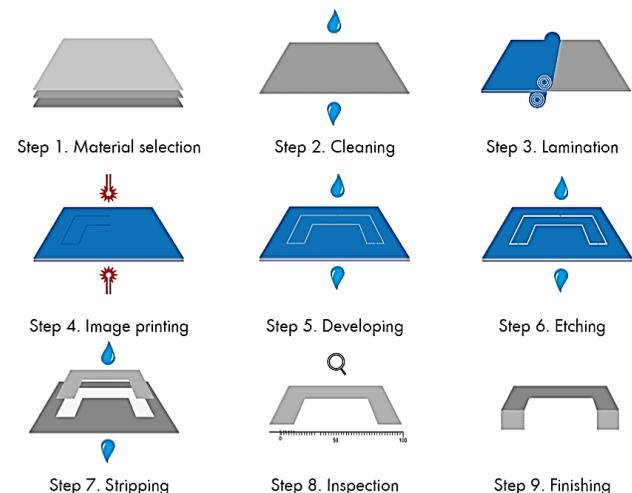
Essentially, it is the selective dissolution of unprotected regions by corrosive chemicals leaving protected regions in the shape of the desired part. Photoresists are light sensitive polymers that harden under UV light to form a protective barrier.

Resulting parts are:

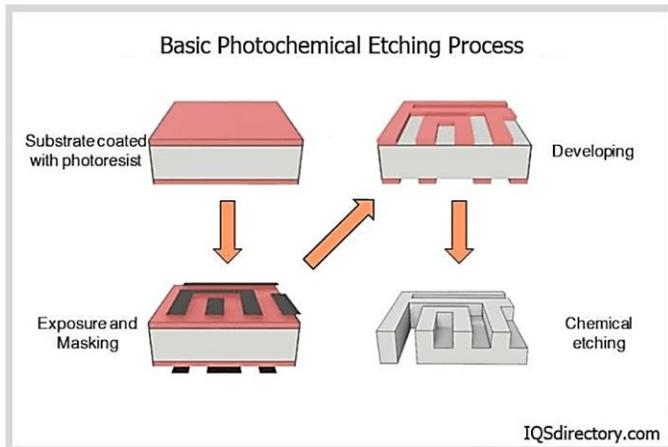
- Flat, having a thickness of the metal sheet they are cut from
- Intricate and highly precise, with tight tolerances of less than a human hair ($\pm 0.001''$ 25 μm).
- Malleable and have very good specific strength.
- Can be surface embossed to show depth, rivets, text, etc.

<https://english.stackexchange.com/>

Photo Etching – How does it work?



<https://www.pcmproducts.com/master-guide-photo-etching-finishing/>

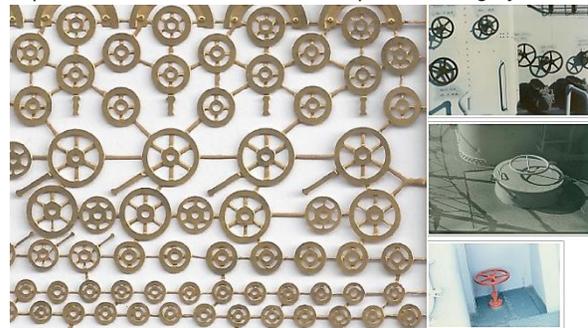


Commercial Photo-Etched Products

Detail that inspires and motivates

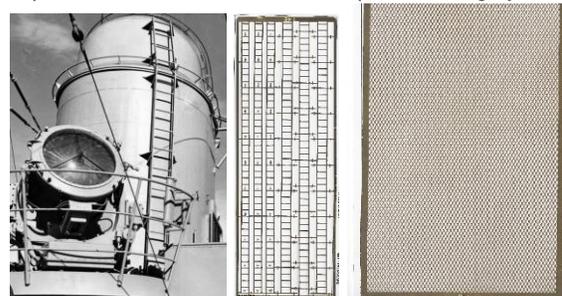
Valve Wheels at 1:48 scale:

<https://www.scalelinkfretcetera.co.uk/product-category/frets/>



Vertical Ladders and Vent Grill at 1:48 scale:

<https://www.scalelinkfretcetera.co.uk/product-category/frets/>



A Few Photo Etch Part Suppliers

HiSModel:

<https://www.hismodel.com/en/kovove-prislusenstvi-a-fotolepty/>

Loyalhanna Dockyard

<https://www.loyalhannadockyard.com/PE%20LIST.htm>

Dry Dock Models and Parts

<https://drydockmodelsandparts.com/collections/photo-etch-parts-and-accessories>

Eduard Store

<https://www.eduard.com/Eduard/Photo-etched-parts/>

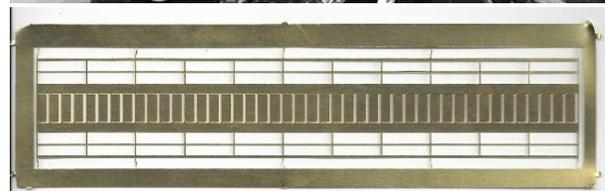
White Ensign Models

<https://www.whiteensignmodels.com/c/Photo+Etch/12/1/>

Candidates for Home Photo-Etched Parts

Challenge for Accuracy and Detail

Floater Net Baskets and Inclined Ladders at 1:48 scale:



Example of Photo Etched Inclined Stairs

Decision Time: *To do or not to do, that is the question.*

What is the easiest way to get something done?

Have someone else do it for you.

What is the least satisfying way to build a ship model?

Have someone else do it for you

Outsourcing

Benefits

Really nice parts. Look excellent!

Resilient – bend but don't break.

Great for a large number of replicates

(copper plates, stanchions)

Disadvantages (Risks)

The part does not meet your needs or desires.

(It looks bad, unrealistic, or out of scale)

Costs prohibitive –

\$20 for some stock fittings

\$300 minimum for custom fittings (set up charges)

Do it yourself

Benefits

Opportunity to get exactly what you want.

Essential for scratch-built models having a unique scale or design.

Satisfaction of completing yet another part of your model.

The opportunity to gain many skills.

Disadvantages (Risks)

Can be considered REALLY HARD TO DO.

Gain skill might have cost to it.

Expendables can add up for replicate trials to get the part the way you want it.

Must have tolerance for handling some rather nasty chemicals.

Many skills are involved. All are necessary to achieve a quality part

Bottom line, you do what you gotta do!

Do it Yourself Photo Etching

Experiences with the Pro-Etch System¹.

¹<https://micromark.com/products/micro-mark-pro-etch-photo-etch-system>

The Pro-Etch System (Mirco-Mark) was used to etch custom parts. Retail \$120 (discount \$20).



Another perspective on this system at MSW:

<https://modelshipworld.com/topic/8385-first-attempts-at-photo-etch-with-micro-mark-pro-etch/>

Do it Yourself Photo Etching

The Etching Process: Step by Step Procedure and Observations

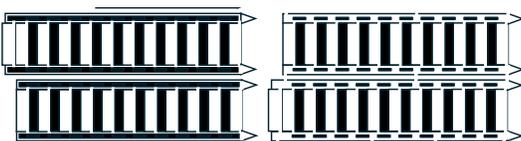
Step 1: Design Creation

In chemical etching, designs are created and developed using specialized software and applications like Adobe Illustrator, AutoCAD, and SolidWorks. In this case, I simply used MS PowerPoint to create my designs. Scaling was not consistent with printing, so it had to be adjusted to get the right dimensions.

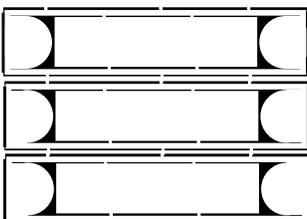
Design had to be printed on an inkjet printer for best quality. The kit provided inkjet transparency films for use as masks.

Two-sided printing is used to reduce tapered edges and to enable embossing on one side. Front and backs cut to size, aligned and taped together with the ink facing the inside.

Inclined Ladders



Floater Net Baskets



Step 2: Material Selection and Preparation

The kit provides one brass and one stainless steel plates, both at 0.005". This was too thin for the parts so 0.010" brass sheets were used instead.

Both sides of the brass plate were buffed with a 300-grit polishing pad.

Step 3: Photoresist Coating Application

The cleaned brass plate was wet with water and the photoresist film was applied.

First, a protective film is removed, and the film was slide over the wet brass surface like a decal. Both sides were done this way.

The coated plate was placed between two coated cardstock papers and run through the laminator.

Step 4: UV Light Exposure and Development

The sheet is placed between two acrylic plates.

Both sides were exposed to direct sunlight for 20-30 seconds.

This, caused the photoresist material to polymerize and harden wherever the light touches it. During development, the soft or unexposed photoresist is washed away, leaving only the hard photoresist. This will protect certain areas of the sheet from the etchant, enabling the desired parts to be formed.

Step 5: Preparation for Chemical Etching

Before etching the second applying film was removed to expose the photoresist.

The plate was washed in a dilute sodium hydroxide solution to remove the non-polymerized photoresist exposing areas to etch away. The plate is brushed with a paint brush to assist in removal.

Step 6: Chemical Etching Procedure

The plate is then immersed in a bath of ferric chloride etchant.

An air pump is attached to a sparge that continues to mix the bath.



Step 7: Photoresist Stripping and Final Inspection

When etching is complete, the plate is washed and immersed in concentrated sodium hydroxide solution. This loosens the hardened photoresist to enable its removal.

The Final Parts: Inclined Ladders

The etching process did not work well. The solid regions were too thin and the strength suffered. One reason might be combination of embossment and fine lines. Notice the embossment attempt on the "back" mask.

Etching was also non-uniform in different locations.

This design will be abandoned.



The Final Parts: Floater Net Baskets

The etching process worked quite well. The etched regions were clean, and the parts were nicely formed.



Summary:

Commercial photo etching can produce exceptionally high-fidelity parts.

Parts selection is limited. Specialized parts exist, but not for all applications.

Custom etching services are prohibitively expensive.

Do it yourself kit from Micro-Mark, at \$120 is worth considering.

- However, the learning curve is steep, and the process lacks specificity.
- Be prepared for false starts and botched runs. Be sure it is a sunny day.
- The fidelity of parts is limited, but results can be good for parts with coarse features.
- The process involves caustic chemicals and noxious vapors. Consider all safety precautions when conducting the process.

Ships on Deck

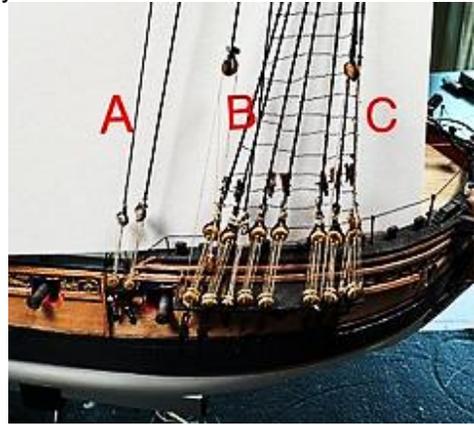
The intro photos for each ship shown before the title is for reference to what the model may look like when finished.



HMS Sphinx

By Cliff Mitchell

Enclosed is my Progress on the *HMS Sphinx*. I am continuing work on the rigging, specifically the Backstays.



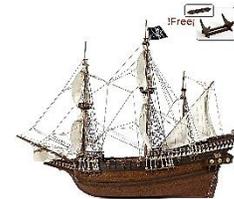
The picture shows the following:

A represents the BACKSTAYS

B represents the SHIFTING BACKSTAYS

C presents the BREAST BACKSTAYS

These were added to FORE, MAIN and MIZZEN masts.



Buccaneer

by Jim Oberst

I'm working on the OcCre *Buccaneer*, my first wood ship model. Just a few more things to do on the hull, then I'll start on the deck items. It's far from perfect, but I think should be a fairly good model when finished. I'm learning a lot about what works and what doesn't.





Black Pearl

By Phil Neldon

Phil shared with us, that he is working on a POB model of the *Black Pearl*, a pirate ship built for the movie "Pirates of the Caribbean". He is building her from plans. He asked the question, if I knew where he could purchase the stern "fancy work" shown below.



The photo is from ModelShipMaster.com, a commission model builder firm.

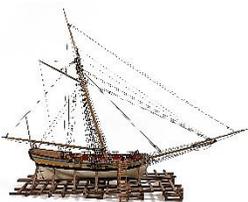
It appears the only model ship kit available is from ZHL Model, China and is available through Amazon.com.



Sovereign of the Seas

By Roger Baugham

Roger joined us for his second visit. He is building a model ship kit purchased over 40 years ago from A.J. Fisher when they were located in the Detroit area. It is a solid hull kit. We look forward to progress photos of your work.

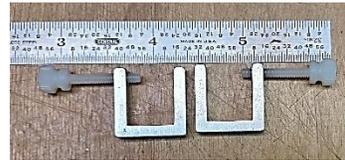


Armed Virginia Sloop – 1768

By William Nyberg

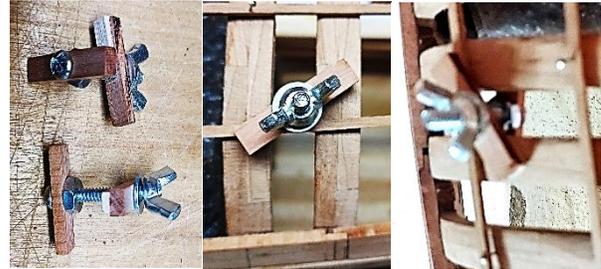
Preparing to plank the hull and in the process determining how to clamp the planks to the hull frames. The model is built at 1:32 scale, with frames 3/8" thick and "room & space" between frames at 3/8".

In building my Hannah, I used small, square C-clamps.



The problem with them, was when tighten on steamed wet wood, they left an indentation.

My solution is a parallel clamp, with one jaw able to provide pressure against the inside surface of the frame and the outside jaw against the plank. The width of the jaws would have to fit through the space between the frames.



Only need 51 more to be assembled.

Tugs: Great Lakes

Foundation Victor 1956



The steel towboat *Foundation Victor* was built in 1956 at Lauzon, Quebec, by George Davie Shipbuilding & Repair Co. Her original owner was McKeil Work Boats Ltd. She was assigned official number C188996 and her measures recorded as 90.6' x 28.2' x 13'; 244 grt.

Ownership of the tug was changed in 1963, to Foundation Maritime, Ltd. In 1967, ownership was changed to Foundation Co. on Canada, Ltd.

In 1973, her ownership was listed as Eastern Canada Towing, Ltd. And her name changed to *Point Victor*.

In 1977, her ownership was changed to Pitts Engineering Construction, Ltd. And she was renamed *Kay Cole*.

BGSU University Libraries; Historical Collections of the Great Lakes & Alpena County George N. Fletcher: Public Library; C. Patrick Labadie Collection

Fox - 1900



The wooden sidewheel tug *Fox* was built for the in 1904. U.S. Engineer's Department in 1900, at Oshkosh, WI. Her measures were: 107' 9" x 30' x 5', 128 grt. She was purchased by D.A. Cady, Omro, WI. Rebuilt, her measures were changed to: 96' x 29' x 4', 87 grt. Her official number was 107854 and renamed to *Albatross*. The sidewheel tug was abandoned in 1924.

BGSU University Libraries; Historical Collections of the Great Lakes & Alpena County George N. Fletcher: Public Library; C. Patrick Labadie Collection

Events & Dates to Note:

2025 Tentative Schedule

~~Columbus Woodworking Show~~
Ohio Expo Center
January 17-19, 2025

~~IPMS Columbus~~
~~BLIZZCON 2025~~
Makoy Center, Hilliard, OH
Saturday, February 22, 2025

~~Miami Valley Woodcarving Show~~
Christ United Methodist Church
Middletown, OH
March 1-2, 2025

~~46th Midwestern Model & Boat Show,~~
Wisconsin Maritime Museum, Manitowec, WI
May 16-18, 2025

~~Bluejacket Rigging Class~~
Fireside Inn, Belfast, ME
<https://www.bluejacketinc.com>
May 18-22, 2025

2025 Photographic Ship Model Competition
NRG Sponsored
Registration opened June 16, 2025, \$30 entry fee
Entries must be submitted by July 31, 2025
Winners will be announced at Annual Members Meeting

Great Lakes Tall Ship Festival,
Cleveland
July 4-7, 2025

Lakeside Antique & Classic Wooden Boat
Lakeside Hotel, Lakeside, OH
July 20, 2025

Columbus Air Show
U.S. Navy "Blue Angles"
Rickenbacker International Airport
August 22-24, 2025

Ohio River Sternwheel Festival
Riverfront Park, Marietta, OH
September 5-7, 2025

"America's River Roots Festival"
Cincinnati, Covington and Newport riverfronts
Oct. 08 - 12, 2025

"The Art of Wood" – woodcarvers show
Sauder Village, Archbold, OH
October 24 & 25, 2025

Miniature Society Show & Sale
St. John's Evangelical Lutheran Church
Grove City, OH
November 15, 2025

Shipwrights of Ohio 2025 Officers & Staff

President – Bob Mains.....614-306-6866
Vice Pres. – Cliff Mitchell614-890-6164
Communications – Bill Nyberg..614-370-5895
Recruitment – Jeff Northup740-585-0383
Treasurer – Lee Kimmins.....614-378-9344
Web Master – John Boeck..... 937-620-0258
Zoom Master – Steven Keller.. 513-280-2210
Web Site: www.shipwrightsofohio.com
Email: shipwright@breezelineohio.net

Presentation Schedule:

2025 – Schedule Tentative

Jan 18 – Scale Comparison Thread to Actual Rope Lines
Feb 15 – (to be rescheduled) to May
Mar 15 – Fixtures: Anchors
Apr 19 – Ships in a Bottle
May 17 – History of Ships WW 2
June 21 – Photo Etching Brass Parts
July 19 – Jigs & Fixtures – ship modeling
Aug 16 – Planking a Wooden-hulled Ship
Sep 20 – Bending Wood
Oct 18 – Lofting & Reading Ships Plans
Nov 15 – Power & Hand Tools in Ship Modeling
Dec 20 – Card Modeling

Editor: William Nyberg
Shipwrights of Ohio
Shipwright@breezelineohio.net



Cargo Hold

www.shipwrightsofohio.com/cargo_hold/

Here you will find how to order **Challenge Coins**, as shown above, on left, that have been used historically for identification within an organization, Recognition of achievements, Appreciation of services and Trading/Collecting. Our Shipwrights of Ohio coin contains both the Club Logo and the Club Coat-of-Arms.

You can also order Logo shirts from "Lands End". They offer an on-line link for direct, personal purchases of many of their products without Shipwrights of Ohio logo.

There are currently two logo styles available:

- Full Club logo – with Motto, for digital print use on the backside of T-shirts. 10" or 12" round.
- Small Club logo – without Motto for embroidered or digital print on the front of items. 4" round.



Wooden Steamers on the Great Lakes

Researched & Written
By William E. Nyberg

The Gilded Age was a period in the United States from 1873 to the early 1890s, and was marked by rapid economic growth, political corruption, and social inequality:

- **Economic growth:** The US became the world's leading producer of coal, oil, steel, and food, and saw a huge increase in the importance of the factory system, railroads, mining, and finance.
- **Political corruption:** The Gilded Age was marked by widespread political corruption, with wealthy industrialists and bankers holding the most political power. Tammany politicians in New York used fraud, violence, and intimidation to win elections.
- **Social inequality:** The Gilded Age saw the rise of two distinct classes, separated by a gulf of wealth and circumstance. Women faced a sexual double standard and inequalities in marriage, with limited access to divorce and few long-term career options.
- **The Gilded Age name:** The term comes from the 1873 novel "The Gilded Age" by Mark Twain and Charles Dudley Warner, which satirically depicted the era's corruption and political figures.
- **The Panic of 1873** was blamed for setting off the economic depression that lasted from 1873 to 1879. This period was called the Great Depression, until the even greater depression of 1893 received that label, which it held until the even greater contraction in the 1930s—now known as the Great Depression.
- **Other events during the period** were: The US seized the Philippines, Puerto Rico, and Cuba after the Spanish-American War.

Supporting the economic growth was the change from wooden vessels on the Great Lakes to larger iron and then steel vessels. To transfer the growing needs of the steel mills and the transfer of grain crops to populated areas, Great Lakes ships needed to be structurally stronger to support the increase cargo weight. Longer vessels were required to support the larger cargos and this required stronger hulls to prevent "hogging" which impacted wooden ships structural keels.

The first two iron hulled vessels were built on the Great Lakes in 1844, The *Colonel Albert* for the U.S. Army, at Buffalo, NY; and the *USS Michigan*, for the U.S. Navy, at Erie, PA. The first steel vessel was the propeller, *William Chisholm* built by Globe Iron Works at Cleveland, OH in 1884.

1876



Armenia: David McMurchy, at Picton, Ontario, built a wooden propeller for the passenger, package freight trade. She was enrolled at Picton, in July 1876. Her recorded measures were; 100.0' x 18.0' x 7.0'; 109.99 grt, 84.71 net. She was powered by a high-pressure condensing engine, 16" bore x 18" stroke, 200 HP, built by Atlantic Foundry, Kingston, Ont. Steam was generated by a firebox boiler, 5' x 11', 80 pounds steam. Her assigned official number was C71209. She was owned by David & William McMurchy, Picton, Ont. who would run her between Picton, Ont. to Alexandria Bay, on the St Lawrence River. Her master for the 1876 season was Captain Johnson with G. Simmons as chief engineer.

Ownership of the propeller *Armenia* was changed in 1877 to R. Johnson. Her masters were Captain William Porter for the 1877 season and Captain Jas. Collier for the 1878 season. In February 1882. The *Armenia* sank at Deseronto, Ont., Bay of Quinte after getting up on the ice, opening her seams and filling the hold with water.

In November 1882, ownership of the propeller *Armenia* was changed to William J. Browne

Ownership of the propeller *Armenia* was changed to Deseronto Navigation Co. Ltd., Deseronto, Ont. in 1883. Her master for the 1883 – 89 seasons was Captain S. Anderson.

Ownership of the propeller *Armenia* was changed, in April 1884, to William Geo. Shaw, Toronto, Ont. In June of that same year, ownership was changed to Samuel S. Hutton, Toronto. In 1889, the propeller *Armenia* was rebuilt, and her enrollment tonnage changed to: 110 net tons.

June 1894, ownership of the propeller *Armenia* was changed to Frederik S. Rathbun, Deseronto, Ont. and then transferred to the Rathbun Co., Deseronto, Ont.

Final enrollment of the propeller *Armenia* was surrendered at Deseronto, Ont., November 23, 1909 and endorsed "broken up".



William Armstrong: A. & J. W. Wood, Ogdensburg, NY, built a wooden propeller to be used in the railroad car ferry to transport rail cars across the St. Lawrence River, between Brockville, Ont. and Morristown, NY. The *William Armstrong* was fitted for breaking ice. Her initial enrollment was issued at Ogdensburg, NY, in April 1877. Her owner was Captain David H. Lyon, Brockville, Ont. and her measures recorded as: 105.0' x 30.0' x 6.0'; 181.25 grt, 90.62 net. She was equipped with a

high-pressure engine, 16" bore x 16" stroke, 340 horsepower @ 140rpm, built by Jno King & Co., Oswego, NY in 1875. Steam was generated by a two, firebox boilers, 5' x 10', 95 psi, built by Kings Works. Her official number was 80613. Master of the *William Armstrong* for the 1876 season was Captain David H. Lyons.

In 1888, the propeller *William Armstrong* was operated by the Canadian Pacific Car & passenger transfer Company, Brockville, Ont. Her master for the 1889 season was Captain Leonard with Mr. Duquet as engineer. In June 1889, the car ferry *William Armstrong*, with three heavily loaded cars and a freight car aboard, while half way between Brockville, Ont. and Morristown, NY, careened over and sank, stern foremost, in 83 feet of water. One life lost. The rail cars had not been loaded properly, causing her stern to dip under water. In June 1890, the *William Armstrong* was finally raised, almost a year after she sank in the St. Lawrence River and had been abandoned by her owner. He states that the cost of raising the car ferry exceeds the value of the ferry. Captain Lyons had purchased another car ferry, *South Eastern* (C80690) who had begun to ferry cars the first of June 1890. The *William Armstrong* was placed on the marine railway at Ogdensburg for repairs. David Lyons was still listed as her owner. While on the marine railway, the *William Armstrong* had her upper works changed; was raised at the bow and stern; and cabins built amidships on both sides of the track, leaving her open for freight cars. She was relaunched and her master was Captain Anderson. She was placed on her old route between Morristown, NY and Prescott, Ont. in December 1890. In November 1904, the car ferry *William Armstrong*, connecting with the Canadian Pacific Railroad, cleared for Prescott, Ont. with two cars loaded with steel rails. The fastening holding the cars on the deck broke, allowing the cars to run along their tracks, crashing through the stern and hung over the end of the boat. The *Armstrong* filled with water and sank stern first. The crew escaped. She was raised and repaired.

Ownership of the car ferry *William Armstrong* was changed to the Prescott & Ogdensburg Ferry Co., Prescott, Ont. She was enrolled at Prescott, Ont. in 1912, as *William Armstrong*, official # 107688: 105' x 31' x 9.4'; 318 grt, 225 net.

Ownership of the car ferry *William Armstrong* was changed in 1913, to Robert Weddell, Trenton, Ont. She was rebuilt as a drill-barge and renamed *Mons Meg*, C107688m 291 grt.

In 1938, the drill-barge *Mons Meg* was abandoned.



Empress of India: At the E. W. Rathbun & Co. Yard, Mill Point (Deseronto), Ont.; William Jamieson, master carpenter, built a wooden sidewheel steamer, for A. W. Hepburn, Picton, Ont., to be used for the passenger excursion trade and chartered to the Toronto Navigation Company, Toronto, Ont. Assigned official number C72998, her measures were: 170.0' x 26.0' x 8.5'; 579.05 grt, 335.85 net. She was powered by a Vertical Beam, Low Pressure engine, 33.5" bore x 96" stroke, 75 horse power, built by H. P. Rathbun & Son, Mill Point, Ont. in 1876. Masters who served the steamer *Empress of India* in 1876 and 1877 were: Captain Albert H. White; Captain Nelson Hudgins; and Captain James Collier.

In 1878, the sidewheel steamer *Empress of India* was chartered to the Imperial Navigation Co. and operated between Burlington & Hamilton, Ont. and east of Toronto to Oshawa and Bowmanville, Ont. In May of 1878, the steamer *Empress of India*, with eighteen persons aboard, became unmanageable and capsized over Blaine's Dam on the Grand River at Galt, Ont. 10 lives lost. In September of that year, the *Empress of India*, on an excursion trip, damaged one of her paddles going down the river. Repaired. In April 1879, the steamer *Empress of India* received a new shaft at Calvin & Breck, Garden Island, Ont. in September of that same year, the steamer *Empress of India*, with an Odd Fellow's excursion party on board consisting of 600 persons, leaving Picton harbor, lost a key securing the buckets to her shaft, rendering the wheel useless. The vessel was navigated to Stone Mills foundry where another key was secured. Later that same month, the *Empress of India* went aground at Northport, Prince Edward Island on her trip to Toronto from Belleville, Ont. Her master for the 1880 season was Captain VanDusen.

In March 1881, ownership of the steamer *Empress of India* was changed to W. E. Smith for \$12,000. In 1883, she was placed on the Toronto to Niagara Falls route. She was reboilered in 1884 and had further rebuilds in 1886 and 1891. Masters of the steamer *Empress of India* were: Captain W. VanVlack for the 1885-1888 seasons; Captain George O'Brien for the 1889 – 1896 seasons. Her engineers were: Messrs. O'Reilly, 1887 season; A. McBryde, 1888 season; R. McCaul for the 1893 season; and Francis Summerville for the 1896 season as engineers. The first enrollment issued at Picton, Ont. for the steamer *Empress of India* in noted on May 19, 1893. The sidewheel steamer *Empress of India* was rebuilt at Picton, Ont, 185.1, x 26.0, x 9.7'; 700 grt, 374 net, and renamed the *Argyle*. Her enrollment was updated at Picton, Ont. April 24, 1899 and she was assigned a new registry number C94926, because of her major rebuild. She also received a new condensing engine, 274 horse power, built by George Busch & Co., Montreal, P.Q. in 1888. Masters of the sidewheel steamer *Argyle* were Captain W. H. Soames, 1898 season; Captain George O'Brien, 1899 – 1902 seasons; with John Hazelett as engineer for the 1899 – 1902 seasons.

For the 1899 season, the steamer *Argyle* was operated by Hepburn's Lake Ontario Navigation Co. and ran from Toronto to Newcastle, Port Hope, Cobourg and Olcott Beach. Her masters were: Captain John McLaughlin, 1904 season with Daniel Brisban as engineer.

In 1907, the sidewheel steamer *Argyle* was sold at auction to F.T. Hutchinson's, Argyle Steamship Co. Ltd., Toronto, Ont.

In February 1911, ownership of the steamer *Argyle* was changed to the Grimsby Beach & South Shore Navigation Co., Toronto, Ont. in 1914, the sidewheel steamer was renamed *Frontier* listing her owner as the Argyle Steamship Co. Ltd., Toronto, Ont.

In 1915, ownership of the steamer *Frontier* was changed to the Peoples Steamboat Co., Chatham, Ont.

In August 1915, ownership of the steamer *Frontier* was changed to the Frontier Steamship Co. for excursion trips from Detroit, MI. In 1916, while lying idle in the Thames River, under the Chatham bridge at Chatham, Ont., the sidewheel steamer *Frontier* settled to the bottom. She was raised by the Reid Wrecking Co. Ltd., Sarnia, Ont. and towed to Detroit, where her superstructure was removed. The steamer was then taken to Lake St. Clair and laid to rest in the swamp at the Windmill Point "bone yard".



Excelsior: Detroit Dry Dock Co. at Detroit, MI, built a wooden propeller for the Detroit and Windsor Ferry. Co. to be used for the Detroit River passenger ferry service between Detroit, and Windsor, ONT. She would also be used as an excursion boat to Belle Isle Park. Initial enrollment, at Detroit, in May 1876, recorded the following measures: 116.0' x 29.25' x 10.66'; 229.0 grt. 129.0 net. She was powered by a High Pressure, Non-Condensing engine, 22" bore x 24" stroke, 360 horse power, built by Dry Dock Engine Works, Detroit, MI in 1876. Steam was generated by a firebox boiler, 8' x 18', 90 pounds steam, built by Desotelle & Hutton, Detroit, MI in 1876. During the build her hull number was 00030 and when enrolled she was assigned official number 135209.

December 1876, the propeller *Excelsior* plied between the C. & L.H. Railroad dock and the G.W. Depot on the Canadian side of the Detroit River. June 1877, while lying at her wharf at Detroit, the propeller *Excelsior* was struck by the scow *J. F. Jones* amidships causing \$150 damage. In January 1879, the propeller *Excelsior* became ice bound. She was towed to the drydock by the ferry *Fortune* (U120202).

Ownership of the propeller *Excelsior* was changed in 1877 to W.L. Horn, Detroit.

Ownership of the propeller *Excelsior* was changed in 1881 to Pridgeon & A. Schinenberg, Detroit. Masters of the propeller *Excelsior*, by season were Captain John Foster – 1895; Captain William Carolan – 1896 with Charles Alder in 1893 and George L. Brackett in 1894 as chief engineer. In February 1897, the propeller *Excelsior* collided with the car ferry *Lansdowne* (U88629) at Windsor, Ont. in the fog. Master of the propeller *Excelsior*, in 1898 was: Captain G. Horn – 1898.

Ownership of the propeller *Excelsior* was changed in 1899 to the Detroit, Belle Isle & Windsor ferry Co. Masters of the propeller *Excelsior*, by season were: Captain Fred Jarvis, 1899–1901; Captain Archie J. Bain, 1902–06, and 1908–10; Captain William Firby, 1907 & 1911–1912. Her chief engineer in 1899 – 1928 was Simon Merrill.

The propeller *Excelsior*, in 1917, was renamed *Pontiac* (U135209) and her measures recorded as: 116.0' x 29.3' x 10.8'; 229 grt, 129 net.

Masters of the propeller *Pontiac*, by season, were Captain Thomas E. Murray - 1917-21; Captain Charles A. Anderson - 1923 & 1925; Captain John H. Sinclair – 1924; Captain Fred A. West - 1925 & 1927; Captain William Mooney - 1926 & 1929-31; Captain Damise Jacques – 1927; and Captain L. P. Anderholt - 1928.

In June 1934, the propeller *Pontiac*, while being converted to a show boat, burned at the foot South Pelham Ave. Detroit. The fire tug *John Kendall* (U229098) pulled the hulk over and beached her at the foot of Swain Ave.

Fortune: Originally built as a wooden schooner barge for the bulk freight trade by Thomas Zealand, Hamilton, Ont. in 1876. Initial enrollment was recorded at Hamilton, Ont. in April 1877. Her measures were: 110.0' x 26.0' x 9.2'; 201.13 grt. She was assigned official number C71156. Her original owner was Captain Edward Zealand, Hamilton, Ont.

Ownership of the schooner *Fortune* was changed in 1883, to Elizabeth Jane Peters, Windsor, Ont. The schooner

was rebuilt as a propeller steambarge and received a high pressure, upright engine, 20" bore x 20" stroke, 50 horse power, built by J. J. Vaughan, Whitehall, NY in 1864. The engine was initially installed in the American tug *L. A. Senecal* (C51685). Registered as a steam barge *Fortune* at Hamilton, Ont. January 1883 with measurements: 110.0 x 26.0 x 9.20; 282.86 grt, 167.71 net. Assigned official number C77699. Bound for Buffalo, NY in October 1884, the steam barge *Fortune*, laden with elm bolts, was driven ashore during a storm three miles west of Long Point, Ont., Lake Erie. She broke in three pieces and was abandoned. No lives lost.

Her enrollment record was closed December 9, 1884, with her final disposition "wrecked".



R. B. Hayes: At Sandusky, OH on the south shore of Lake Erie, John E. Monk built a wooden sidewheel steamer for a consortium of owners, Doville et al, all from Sandusky, to be used for the passenger, package freight trade servicing the Lake Erie Islands. Her first enrollment was issued at her home port of Sandusky in November 1876. Her recorded measures were: 134.0' x 21.0' x 7.5'; 164.0 grt, 82.0 net. She was powered by a high-pressure engine, 24" bore x 60" stroke, 170 horsepower, built by Keatz & Kramer Machine Co., Sandusky, in 1876. Steam was generated by a firebox boiler, 7' x 14', 80 pounds steam, built by Neil & Moore, also at Sandusky, in 1876. She was assigned official number 110297. Master of the steamer *R. B. Hayes* was Captain Warren B. Morris for the 1880 – 87 seasons with J. C. Bennet as chief engineer in 1880 & 81. During winter layup of 1884, the steamer *R. B. Hayes*, while laid up at Sandusky, had her machinery overhauled and the hull strengthened by the addition of a number of timbers. Master of the steamer *R. B. Hayes* for the 1887 to 1889 seasons was Captain W. J. Strickland.

In 1892, ownership of the sidewheel steamer *R. B. Hayes* was changed to C. Boetz, Sandusky, OH.

In 1899, ownership of the steamer *R. B. Hayes* was changed to G. A. Boeckling, Sandusky, OH.

In 1911, ownership of the steamer *R. B. Hayes* was changed to Alexander Clifford et al, Saginaw, MI.

In 1912, ownership of the steamer *R. B. Hayes* was changed to Captain E. J. Donaghue, Detroit, MI. He was also her master for that year.

In 1915, ownership of the steamer *R. B. Hayes* was changed to Jos. Bourassa, Houghton, MI.

In 1916, the steamer *R. B. Hayes* was brought back to Ohio, when her ownership was changed to the Cedar Point Resort, Cedar Point, OH.

In 1919, the Bay Transportation Co. of Sandusky, OH purchased ownership of the sidewheel steamer *R. B. Hayes*.

In 1924, the sidewheel steamer *R. B. Hayes* was abandoned and dismantled at Sandusky, OH.

Final enrollment for the sidewheel steamer *R. B. Hayes* was surrendered at Sandusky, OH, in 1924, and endorsed as "abandoned".



Northerner: John J. Hill at Marine City, MI, with James Doran as master carpenter, built a wooden barge with two decks, for Wards Lake Superior Line. Her investors were: John M. Nicol, ½ share; Eber B. Ward, ½ share, both from Detroit, MI. She was initial enrolled at Detroit in June 1876. Her recorded measures were: 220.0' x 34.6' x 14.0'; 1214.45 grt, 1038.38 net. Her official number was 67128. She was launched for use as a barge and was towed by the propeller tug *Anne L. Smith* (U1387) through the 1876 season. She ran between Duluth, MN and Buffalo, NY.

In May 1877, ownership of the barge *Northerner* was transferred to John M. Nicol, Detroit, MI; et al. In July 1877, the steambarge *Chauncey Hurlbut* (U125238) with her consort *Northerner* went ashore on Russell's Island, Lake Huron. Released. May 1880, the barge *Northerner* received a low-pressure engine. 50" bore x 40" stroke built by Riverside Iron Works, Detroit, MI; steam was generated by a boiler 10' x 20'. Her enrollment rig was changed to propeller at Detroit. In September 1882, the propeller *Northerner* collided with, and sank the schooner *George D. Russell* (U85267) off Garden River, near Little Lake George, St. Mary's River. Three lives lost. In May 1883, the propeller *Northerner*, with the schooner *Ida Keith* (U100110) in tow, collided in the harbor at Chicago. The upper works of the *Northerner*, on the port quarter, were badly raked. Repaired.

For the 1885 season, the propeller *Northerner* was chartered by Grand Trunk Railroad to run Milwaukee & Grand Haven, MI. April 1886, the propeller *Northerner* was holed while at Erie PA. Repaired. In November of that same year, the propeller *Northerner's* cargo of limestone became wet and caught fire. The propeller burned to the water's edge. She sank at the north dock, Kelly's Island, OH. She was declared a total loss.

Final enrollment for the propeller *Northerner* was surrendered at Detroit, MI, November 30, 1886 and endorsed "stranded and burned".

January 1887, ownership of the hulk *Northerner* was purchased by Captain Thomas Maytham, Buffalo, for \$2,500. He raised hulk and towed her to Cleveland, OH for rebuild in May 1887. The *Northerner's* engine and boiler were found in good shape. She was cleaned out and trimmed at Presley's slip before entering Cleveland Drydock Co. for rebuilt as a bulk freighter at Cleveland, OH. A new temporary enrollment was issued in August 1887 with new measures: 220' x 37' x 13'; 1391.41 grt - 1136.33 net. In July 1889, her engine was damaged while on Lake Michigan. She was towed to Milwaukee for repairs.

In 1892, ownership of the propeller *Northerner* was changed to the Rochester Transit Co., Rochester, NY. in December 1892, the propeller *Northerner*, down bound from Ashland, WI, Lake Superior, laden with oil and railroad ties, stranded outside L'Anse, MI, Lake Superior. She was towed into L'Anse, MI, in leaking condition. At her dock that night, she caught fire and burned to total loss. A frantic effort was made to extinguish the blaze before it reached the cargo, but once it did the *Northerner*, the dock and the warehouse facility were destroyed by the blaze. The burned-out hulk of the *Northerner* was raised, stripped and the hull sank at the end of the dock.

In the 1920's, the sunken remains of the *Northerner* were blasted out when Ford Motor Co. built new docks at L'Anse.



Andrew J. Smith: Union Dry Dock Co., Buffalo, NY, built a wooden towboat, hull # 00009, for Labau Fortier, Buffalo. Enrolled at Buffalo, in May 1876, her measures were: 117.1' x 23.6' x 8.4'; 235.58 grt, 168.15 net. She was powered by a high-pressure non-condensing engine, 24.75" bore x 36" stroke, built by King Iron Works, Buffalo. Steam was generated by a tubular boiler, 8'6" x 18', 45 pounds steam, built by M. Riter Co., Buffalo. Her official number was 105624. The tug *Andrew J. Smith* was built for towing on the Detroit River and for wrecking purposes. Her master for the 1877 & 78 seasons was Captain Peter Kenney.

In 1879, ownership of the tug *Andrew J. Smith* was transferred to L.B. Fortier, et.al., Buffalo, NY.

In 1883, ownership of the tug *Andrew J. Smith* was changed to Rice, et.al., Buffalo.

Later in 1883, ownership of the tug *Andrew J. Smith* was changed to S.A. Murphy, Detroit.

In 1886, ownership of the tug *Andrew J. Smith* was changed to Preston Brady. He had her rebuilt at Manitowoc, WI and had her engine rebuilt: steeple compound, 17", 36" bore x 36" stroke, 470 horsepower. She also received a scotch boiler 11'6" x 13', 145 pounds steam, built by Manitowoc Boiler Works.

In 1899, ownership of the tug *Andrew J. Smith* was changed to Frank Perry, Sault Ste. Marie, MI.

In 1905, ownership of the tug *Andrew J. Smith* was sold Canadian to Frank Perry, Sault Ste. Marie, ONT and registered as *Andrew J. Smith*, C117031, 117' x 23.6' x 8.6', 387 gross tons.

In 1918, ownership of the tug *Andrew J. Smith* was changed to North Channel Tug Company, Cutler, Ontario, 209 grt.

In 1918, the *Andrew J. Smith* was abandoned at Sault Ste. Marie, Ont. Enrollment closed.



Ella M. Smith: Abram Smith & Sons, Algonac, MI; with George King as master carpenter, built a wooden tug (towboat) for himself, to be used towing lumber rafts. Enrolled at Port Huron, MI, her measures were recorded as: 87.75' x 20.25' x 9.33'; 151.97 grt, 118.94 net. She was powered by a low-pressure engine, 22" bore x 24" stroke. Steam was generated by boiler 6'7" x 17'. Her official number was: 135262. In 1894, the tug *Ella M. Smith* was overhauled & fumigated due to a case of

smallpox on board. The following year, 1895, the tug *Ella M. Smith* sank at French River, Ontario, Georgian Bay, Lake Huron. Her master in 1897 was Captain Abel Voisine.

Ownership of the tug *Ella M. Smith* was changed in 1899, to L.S. Boutell, Bay City, Michigan. She was re-engine: steeple compound, 16", 30" bore x 26" stroke, 275 horsepower, built by Bay City Iron Works and received a new boiler, 8' x 14'.

Ownership of the tug *Ella M. Smith* was changed in 1901, to Peter C. Smith, Saginaw Bay Towing Company, West Bay City.

In May 1902, ownership of the tug *Ella M. Smith* was changed to James Playfair, and she was rebuilt and renamed *Williams*: 87.75' x 19.5' x 8.89', 89 grt.

Final enrollment for the tug *Williams* was surrendered March 18, 1907, at Buffalo, NY, and endorsed "abandoned".



Tempest: Duncan Robertson, at Grand Haven, MI, built a wooden steambarge for the bulk freight "lumber" trade. Her original owner was: Heber Squire, ½ shares; and T. Stewart White, ½ shares, both from Grand Haven, MI. Enrolled at Grand Haven, May 12, 1876, her measures recorded as: 150.0' x 26.0' x 9.42'; 283.24 grt. She was powered by a Steeple Compound engine, 18", 36" bore x 32" stroke, 325 horsepower, from Samuel F. Hodge Company, Detroit, MI. Steam was generated by a firebox boiler, 5.5' x 12', 80 pounds steam. The steambarge *Tempest* was assigned official number 145105. Her master for the 1876 season was Captain Jerome McBride.

Ownership of the steambarge *Tempest* was changed in April 1877, to Edward P. Ferry, 3/8 shares; T. Stewart White, 3/8 shares, both from Grand Haven; and George E. Dowling, ¼ shares, Montague, MI.

Ownership of the steambarge *Tempest* was transferred, in April 1878, to: T. Stewart White, ½ share; Edward P. Ferry, ¼ share, both from Grand Haven; George E. Dowling, ¼ share, Montague, MI. her tonnage was recorded as 257.65 grt.

In March 1882, ownership of the steambarge *Tempest* was transferred to: T. Stewart White, Grand Haven; George E. Dowling, Montague; et al. In October of that year, the steambarge *Tempest* was damaged in a collision with barges towed by propeller *Boscobel* off Whitefish Point, Mi, Lake Superior. Repaired. In April 1883, her recorded tonnage was changed to: 246.73 grt, 183.63 net.

Ownership of the steambarge *Tempest* was changed in May 1888, to Kelly's Island Lime & Transport Co., Cleveland, OH. In May 1889, while at dock in Algonac, MI, Saint Clair River, water from a thunder squall seeped through the deck of the steambarge *Tempest*, into the lime cargo causing a fire that burned the vessel to water's edge. Total loss. Final enrollment for the steambarge *Tempest* was surrendered on June 11, 1889, at Cleveland, OH. and endorsed as "vessel lost".

In April 1890, ownership of the hulk of the steambarge *Tempest* was changed to Alex. Anderson; William Anderson; C.A. Blood; Ada Foster; and Mrs. J.C. Hagen; all 1.5 share owners from Marine City, MI. The steambarge *Tempest* was

raised and rebuilt at Anderson Shipyard, Marine City, MI and re-enrolled with measures: 137.75 x 27 x 11; 369.56 grt, 260.15 net. Ownership of the steambarge *Tempest* was changed in April 1891 to C.A. Blood, Marine City, MI; et al. Master of the steambarge *Tempest* in 1899 was Captain Joseph Lowes and in 1900, Captain George B. Kendall with Charles Schunck as chief engineer.

In April 1900, ownership of the steambarge *Tempest* was changed to Mrs. J.C. Miller, Marine City, MI.

In April 1901, ownership of the steambarge *Tempest* was changed to Martha Miller, 19/20 shares; and Charles E. Kobel, 1/20 shares, both from Marine City, MI.

In February 1902, ownership of the steambarge *Tempest* was changed to H. Leonard Wilton; William C. Quinlan; and William Pringle; all 1/3 shares and from Detroit, MI.

In September 1902, ownership of the steambarge *Tempest* was transferred to H. Leonard Wilton, 2/3 shares; and William C. Quinlan, 1/3 share, both from Detroit, MI. In December 1905, the steambarge *Tempest* was damaged by fire while at Grace Harbor Lumber Co., Detroit, MI. Masters of the steambarge *Tempest* were: Captain William P. Quinlan in 1905 with Robert Graig as engineer; and Captain William Quinlan for the 1906-08 seasons, William Hamilton and William Pritchard as engineers.

Ownership of the steambarge *Tempest* was changed in September 1908, to Seymour Wells, ½ shares; and Fred J. Eber, ½ shares, both from Tonawanda, NY.

In January 1909, ownership of the steambarge *Tempest* was transferred to Seymour Wells, Tonawanda, NY. Masters of the steambarge *Tempest* were Captain Joseph Paya and Captain Harry Beauvais for the 1909 season. In June 1909, while unloading a cargo of coal from Cleveland, the steambarge *Tempest* caught fire and burned at Galnais Dock, Parry Island, Parry Sound, Georgian Bay. Six lives of the twelve aboard were lost.



Wissahickon: The Union Dry Dock, at Buffalo, NY, built a wooden propeller, hull number 00008, for the Erie & Western Transportation Co. Erie, PA. The first enrollment was issued at Erie, PA, September 14, 1876. The recorded measures were: 238.16' x 35.50' x 14.66'; 1619.53 grt, 1423.37 net. She was powered by a: Perry & Lay, Steeple Compound engine, 25", 54" bore x 32" stroke, 550 horse power, built at King Iron Works by H.G. Trout, Buffalo, NY. Steam was generated by a boiler, 90 pounds steam. She was assigned official number 80598. The *Wissahickon* was built for the package freight trade, between Buffalo, NY and Chicago, IL. Master of the propeller *Wissahickon*, for the 1876 & 1877 seasons was Captain H. A. Sission with Michael Hughes as first engineer. In October 1876, the propeller *Wissahickon* went aground in the Chicago River. Released. In October 1877, the *Wissahickon* backed into the schooner *J. V. Jones* (U75766) in the South Branch, Chicago River. Both vessels repaired. In May 1879, the *Wissahickon* ran aground on Peche Island, Detroit River. Released. In the fall of 1880, the *Wissahickon* ran down the schooner *J. & A. Stronach* (U12978) in South Manitou Harbor, Lake Michigan during a southwest gale. Both repaired.

Damage loss to the *Stronach* was \$8,163. In May 1882, the *Wissahickon*, laden with coal, while under tow by the tug *James Ash* (U75595), ran into the light canal steamer *Andrew Statler*, crushing her starboard side and causing damage to the dock, at Buffalo NY. Masters of the *Wissahickon* for the 1883 season was Captain Harvey Howard with Frederick Potts, 1884-87; William M. Phillipe in 1890; and Robert A. Noone 1892-94 as chief engineers. In March 1885, the propeller *Wissahickon* received steel arches, replacing her wooden ones. The new arches were stronger and weight about 25 tons less than the wooden arches. Laden with general merchandise, the *Wissahickon* stranded at Point Edward, Lake Huron. In July 1885. Released. Her cargo loss set at \$1,500. Her master and chief engineers for the 1896 to 1906 seasons were: Captain George McKay in 1896; Captain George Gutcher in 1898; Captain John J. McCarthy 1899-1900; with Frederick Rehbaum Sr. as engineer from 1892-1900. Captain Henry O. Cronkhite was master for the 1902 season and Captain Thomas J. Bell for the 1903 season with Archie B. Fraser 1902-03 as engineer; Captain E. E. Lodwick as master with Charles Hull as engineer for 1905; and Captain John McDonald with William Erskine (1906) as engineer in 1906. The final U.S. enrollment for the propeller *Wissahickon* was surrendered at Erie, PA, December 19, 1906, and endorsed "sold alien".

Ownership of the propeller *Wissahickon* was sold Canadian, in 1907, to Collingwood Shipping Company, Collingwood, Ont. and enrolled as *Wasaga* (C117084), 244 x 36 x 15; 1745 grt. In May 1910, the propeller *Wasaga*, laden with grain, went aground on the head of Stag Island, Saint Clair River. She was lightered 1,500 bushels of grain to be released. Her master for the 1910 season was Captain W. A. Glass. In November 1910, bound up from Toronto to Fort Williams, ONT, laden with farm machinery and supplies, the *Wasaga* caught fire and burned to the water's edge while lying in shelter from a heavy northwest gale at Copper Harbor, MI, Lake Superior. The hull and cargo were a total loss

Notes: (Note: new definitions list in red)

Black River, Ohio: Drains Medina County, emptying into Lake Erie at Lorain, OH.

Cargo-carrying capacity in cubic feet, another method of volumetric measurement. The capacity in cubic feet is then divided by 100 cubic feet of capacity per gross ton, resulting in a tonnage expressed in tons.

Freshet: a great rise or overflowing of a stream caused by heavy rains or melted snow.

Mail Steamer: Chartered by the Canadian government to carry the mail between ports.

Navigation: The reader may wonder what, with so few vessels on the lakes, why steamers could not avoid each other. Two main reasons, the visibility during storms and the vessels did not carry any lights so you came upon a vessel you could not determine if the vessel was approaching or departing from you.

Old Style Tonnage: The formula is: $Tonnage = ((length - (beam \times 3/5)) \times Beam \times Beam / 2) / 94$

where: *Length* is the length, in feet, from the stem to the sternpost; *Beam* is the maximum beam, in feet.

The Builder's Old Measurement formula remained in effect until the advent of steam propulsion. Steamships required a different method of estimating tonnage, because the ratio of length to beam was larger and a significant volume of internal space was used for boilers and machinery.

In 1849, the Moorsom System was created in Great Britain. The Moorsom system calculates the tonnage or cargo capacity of sailing ships as a basis for assessing harbour and other vessel fees.

Up to 1848, most freight was shipped, on steamers or propellers, as package freight. This meant that coal, grain, apples, and produce had been placed in a container or sack and carried aboard on the back of a laborer. Bulk freight in the form of lumber would have been loaded on barges and schooners and towed by a steam driven ship. In 1848, Joseph Arnold built at Port Huron, MI, a the steambarge *Petrel* (found in the third section) for the bulk freight trade answering a need to move bulk coal to the northern communities and iron ore, lumber, and grain south to the growing cities in the East.

By 1848, some ships built in that year, continued to operate beyond the "War of Rebellion" and may be listed with two different tonnage ratings. Most ships built on the Great Lakes were rated as Tonnage (Old Style). This dates back to the 1600's and comes to the U.S. from our cousins.

Tonnage (Old Style): The British took the length measurement from the outside of the stem to the outside of the sternpost; the Americans measured from inside the posts. The British measured breadth from outside the planks, whereas the American measured the breadth from inside the planks. Lastly, the British divided by 94, whereas the Americans divided by 95. The upshot was that American calculations gave a lower number than the British. For instance, when the British measured the captured *USS President* (a three-masted heavy frigate), their calculations gave her a burthen of $1533\frac{3}{4}$ tons, whereas the American calculations gave the burthen as 1444 tons. The British measure yields values about 6% greater than the American. The US system was in use from 1789 until 1864, when a modified version of the Moorsom System was adopted (see below).

Unit Ton - The unit of measure often used in specifying the size of a ship. There are three completely unrelated definitions for the word. One of them refers to weight, while the others refer to volume.

Measurement Ton (M/T) or Ship Ton Calculated as 40 cubic feet of cargo space. Example, a vessel having capacity of 10,000 M/T has a bale cubic of 400,000 cubic ft.

Register Ton - A measurement of cargo carrying capacity in cubic feet. One register ton is equivalent to 100 cubic feet of cargo space.

Weight Ton (W/T) - Calculated as a long ton (2,240 pounds)

In 1849, a Royal Commission was formed in England with the secretary of the commission as George Moorsom, and the resulting tonnage admeasurement system was called the "Moorsom System". The idea of this system is that the fees charged to vessels should be directly proportional to their potential earning capacity, i.e., the space occupied by passengers or cargo. A vessel is measured at a series of sections throughout its length, the transverse area determined at each section, and the areas integrated to determine the volume. The total internal volume was then divided by 100 to determine the vessel's "tonnage", since at that time, 100 cubic feet was determined to be the appropriate factor so that vessels would maintain approximately equal tonnages under the new and old regulations. There were two tonnages determined under the Moorsom System: "gross" and "net" tonnage.

Gross tonnage reflected the entire measured volume of the vessel less certain "exempted" spaces, initially spaces used only for the crew or for navigation of the vessel, and spaces in the superstructure not used for cargo. Net tonnage was equal to gross tonnage less a deduction for the machinery space, reflecting the earning capability of the vessel.

A measurement of the cargo-carrying capacity of merchant vessels depends not on weight, but on the volume available for carrying cargo. The basic units of measure are the *Register Ton*, equivalent to 100 cubic feet, and the *Measurement Ton*, equivalent to 40 cubic feet. The calculation of tonnage is complicated by many technical factors.

The current system of measurement for ships includes:

Gross Tons (GRT) - The entire internal cubic capacity of the ship expressed in tons of 100 cubic feet to the ton, except certain spaces which are exempted such as: peak and other tanks for water ballast, open forecandle bridge and poop, access of hatchways, certain light and air spaces, domes of skylights, condenser, anchor gear, steering gear, wheel house, galley and cabin for passengers.

Net Tons (NT)- Obtained from the gross tonnage by deducting crew and navigating spaces and allowances for propulsion machinery.

P.Q.: Province of Quebec

Packet Freight: almost every imaginable item of merchandise – bags of onions, grain, etc., processed foods, bags of coal, stoves, furniture, which can be packed and moved by manpower from dock to hold and reverse.

Room & Space: This term has a specific meaning in the context of shipbuilding, referring to the frame and the gap between the frames of a wooden ship's hull.

Patriot War: A conflict along the Canada – U.S. border where bands of raiders attacked the British colony of Upper Canada more than a dozen times between December 1837 and December 1838. This so-called war was not a conflict between nations; it was a war of ideas fought by like-minded people against British forces

Ship Inventory: Will include the names of wooden steamers that will not be identified in the manuscript. The research project that the information was gathered for included all wooden steamers built on the Great Lakes or St. Lawrence River and operated on the Great Lakes with a gross tonnage at or over 100 tons.

Up-bound: Going against the current – St. Lawrence River to Lake Superior. (Lake Michigan – steaming north)

Down-bound: Going with the current – Lake Superior to the Saint Lawrence River. (Lake Michigan – steaming south)

(Original Source: "Wooden Steamers on the Great Lakes" – Great Lakes Historical Society; Bowling Green State University – Historical Collection; Thunder Bay National Marine Sanctuary Collection; Maritime History of the Great Lakes; and the scanned newspaper collection of the Marine Museum of the Great Lakes, Kingston, Ont. and 746 additional documented sources.)