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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), 82. Used by permission of the estate of Edwin Tunis

Ropewalk

The Newsletter for
Shipwrights of Central Ohio

August 2020

Next Meeting: September 19, 2020

"Soldering" – Alan Phelps

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August Newsletter

The Westerville Public Library, "Reserve a Room", has a notice stating: **This service is temporarily unavailable due to Coronavirus prevention. For more information, visit this page.** Since I was on that page and there were no other notices, my assumption is they do not have an opening date for inside access to the library. So, we check weekly for changes.

I repeat my monthly advice: I urge all of you to take care of yourself and your families and especially those seniors who live close to you who may need errands run or someone to just call and check on them. Use this time also to get back in your shop building. Taking the time to do things that make you feel good is essential to survival in this modern world. Spending time ship modeling, reading, listening to music, or just sitting quietly watching nature from your porch or patio, allows you to recharge and absorb new ideas, information and you might discover something that speaks to you. In the end, it's all worth it.

Your editor.

August Meeting

Another Zoom meeting! Will this ever end? I have found, for some reason that eludes me, that preparing for Zoom meetings takes more time than for non-Zoom meetings. Maybe when we meet in person, conversations just naturally happen. In Zoom meetings, conversations do not seem to be spontaneous and so planning has to be more structured.

I am thankful for Bob (our Zoom Master) for taking on the responsibilities for scheduling, notification and hosting.

Business

Zoom

I fear that this method of meeting will continue through to 2021. So, we repeat this reminder since some of you are still not signing in. If you have tried to sign in and could not, contact Bob, *Please*. He can be reached at (rmains1@columbus.rr.com) and he can help you to connect.

Bob sends out a notice the week of the meeting with the web connection, meeting ID & PW. Check your spam files if you have not received the notice by Thursday before the meeting. In fact, check your spam file if you are not getting our notices or your monthly "Ropewalk", which we usually send by the Tuesday after the meeting date.

For you who will be sharing Power Point (PPT) presentations in the future, here are some guidelines:

- First, download the Zoom App to your device. When you click on the App, the screen will ask if you want to join a meeting., click on that and enter the meeting ID, hit enter. It will ask you for the password, enter it and hit enter.
- Open your PPT presentation, video, photo and click the *Share* button.
- In the sharing window that opens click on Microsoft PowerPoint to select it.
 - If your presentation includes narration, sound, or video: Check the *Share computer sound box*. If your computer prompts you to install the Zoom audio device, do it. Click on the *Share* button.
- In PowerPoint: Switch to Slide Show mode. Give your presentation/sharing. When done, click Zoom's *Stop Share* button

For Android phones and Tablets:

- Sign in to Zoom.
- Open a new window and open Power Point.
 - Open the PPT presentation and start the slide show.
- Toggle back to Zoom (use tabs)
- Click Share Screen
- All participants should now see your PPT presentation.
- When finished, click Stop Share.

We also need to remember, that when we are sharing our ship models, etc. if we click on the share button, the image everyone else will see on their screens will be their screen size, not the normal small window.

Road Trip

Our scheduled fall road trip to the National Museum of the Great Lakes, Toledo, Ohio has been canceled. With the threat of sharing COVID-19 during the drive up and back (over 2 hours each way) and the age of our members, Alan and I shared our concerns with those at the meeting today, and the consensus is to reschedule the road trip to 2021.

2020 Meeting Presentation

With the cancellation of our road trip for September, Alan Phelps has been rescheduled to fill that slot and will be leading a discussion on "Soldering". This leaves the remainder of the year open and we will be looking at tapping into the technical presentation that have been recorded by other ship modeling clubs around the US and maybe scheduling a guest speaker.

"Great Harry" Update

I received a response from the Royal Museums, Greenwich from my inquiry.

I wrote:

To: Royal Museums Greenwich Enquiries
<RMGEnquiries@rmg.co.uk>

Subject: Henry Grace a Dieu - 1514

CAUTION: This email originates outside of Royal Museums Greenwich. Do not click on links or attachments unless you recognize the sender and are expecting the links or attachments. If you are unsure, contact the sender to confirm that the email is genuine.

I am a ship modeler and president of a ship modeling club in central Ohio, USA. We have been asked to restore a ship model for a family in Cleveland. The model came to the USA at the turn of the 20th century when the owners grandfather emigrated from Germany. She had no name for the model and only knew it as a ship model sitting on a table in her grandfather's foyer in New York City.

I have included two photos (attached) one is of the model as it sits in her basement and the other of a model "Henry Grace a Dieu" that we found in a museum in Australia. We have sent queries to them for more information about their model. In our research we have found that a model of the "Great Harry" was displayed at the "Great Exhibition of 1851" at Hyde Park in London. We also have pictures of the model as displayed at the Exhibition. We believe that the owner's ancestry may have acquired the model at the Exhibition.

Recognizing that the model may have historical significance, we are researching to determine two things:

- 1, Are there plans for the *Henry Grace a Dieu-1514*;
- 2, Can you provide a reference source or book on rigging a 16th century, five masted carrack like the "Great Harry" or similar British vessel.

Their reply:

Thank you for the e-mail.

There are no surviving plans for ships built in the 16th century. Ship plans did not really 'start' before the mid-17th century and only became more common from the early 18th century, especially for warships. The merchant ship yards were a little later, as they still used models, rule of thumb &c...

I am not aware of any rigging references for 16th century carracks. You may have to study the illustration from the Anthony Roll for inspiration on how she looked and was rigged:

https://en.wikipedia.org/wiki/Henry_Grace_%C3%A0_Dieu#/media/File:AnthonyRoll-1_Great_Harry.jpg

There is a more general publication by Dr Frank Howard: *Sailing Ships of War, 1400-1860* that has a chapter on the period in question. I do not know how dated this is as it was published in 1979. Most of our office reference books start about 1650 with their discussions of warships.

We do have some illustration on the collection's website:
https://collections.rmg.co.uk/collections.html#!csearch:searchTerm=great_harry and some examples are below:
<https://collections.rmg.co.uk/collections/objects/66185.html>
- a model of the ship (not in the best condition)
<https://collections.rmg.co.uk/collections/objects/104431.html>
! - an illustration

These may give you some guidance on the rig and the look of the ship when you undertake the restoration.

I am very sorry not to be of more assistance with this, but sadly the records are lacking.

Yours sincerely,

Jeremy Michell

Senior Curator: Maritime Technologies

Direct +44 (0)20 8312 8600

Royal Museums Greenwich

With the above response, we will be using the digital photos of the model of the "Great Harry" from the Powerhouse Museum, Sidney, Aus. starting with fabricating the "stepped" masts and replacement of the missing yards.

Presentation:

Ropewalk

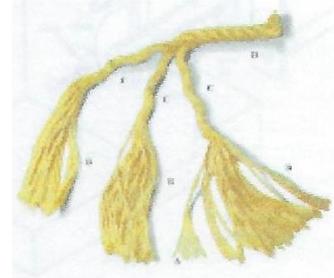
Our main presentation consisted of three parts: "Rope – A Tutorial", "Ropewalk – Model Expo" and "Do It Yourself Ropewalk" by Jerry Amato.

Rope – A tutorial: We started with a comparison of early kits from the 60's which came with a spool of black thread and a spool of white thread to be used for all standing and running rigging. Since the 60's, cordage for ship models has improved. Today you can purchase from major vendors cordage that varies from .080" down to .008" dia. But, cordage on a sailing vessel varies. Checking Steel's "Elements of Mastmaking Sailmaking and Rigging", one quickly realizes that the cordage used will vary based of the size of the ship, and what it is used for. Steel lists for the foremast on ships with the following gun displacements: 110-74, 64, 50-36, 32-28, 24, 22-20, & 18-14; the following cordage" Shrouds – lower: 11", 10 ½", 8 ½", 8", 7 ½", 7"; Stays: 18", 16", 13", 12", 11", 9 ½"; Lifts-Foreyard: 4 ½", 4", 3 ½", 3"; Braces-Foreyard: 4 ½"; 4", 3 ½", 3", 2 ½"; Based upon the above, you would have to have access to up to 16 different sizes of cordage to build those models.

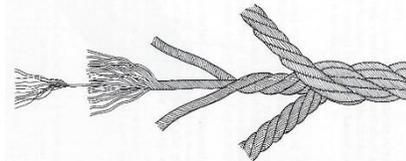
Understand, that to 99.99% of the viewers of your ship models, they would probable not be able to

tell whether the cordage you used on your model was out-of-scale or the correct size for the ship you are building, but you may.

So, if you are looking to have your cordage to be closer to the actual but to scale, you may have to make your own using a ropewalk. It may helpful to have knowledge of the anatomy of rope. The following photo shows the four parts, bottom to top: a-fibers, b-yarns, c-strands, d-rope.



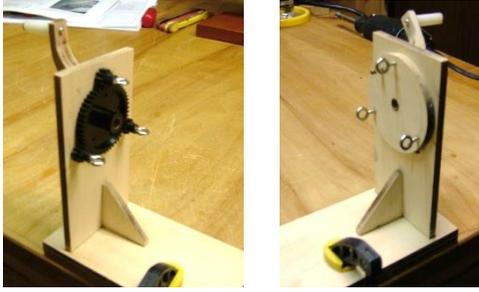
If you were laying up a cable, your parts would be: fiber, yarns, strands, rope, cablets (under 9") or cables (over 9") as shown below, left to right.



We then covered left & right-hand laid cordage, serving a rope and a serving machine. We moved on to existing ropewalks with picture from Mystic Seaport (compliment of Mike Dowler) and the Chatham Dockyard in the UK. Chatham is still operational and the ropewalk is 1,128 feet long and 42 feet wide. It can make a 1.000-foot long rope. FYI, the HMS Victory requires 31 miles of rope for her rigging.

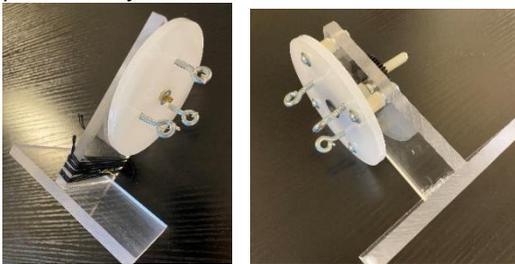
Also, in my research, I found that Xenia, OH, a town of 24,000 located east of Dayton and about 50 miles from Columbus, had a ropewalk that was operated by the Hooven & Allison Co. from 1869 – 2003 that produced nylon, polymer and twine ropes. The building was destroyed by fire in 2004.

We then moved on to sharing two different ropewalks. The first was the simple ropewalk that was available from Model expo for \$39.99. It had two parts, both winders with the left side (black gears) to tighten the three strands and the right side (wood wheel) wind the rope.



Using the ropewalk as it came from the box, limits the operator to finished rope lengths to 35" length. During the first phase, the operator needs to maintain pressure on the righthand unit while tightening the strands using the left-hand unit, thus limiting the length to the space between units to the distance between your left and right hands with your arms stretched apart. Bottom line, to make the amount of cordage required for the 31 miles of cordage, at scale, needed for the HMS Victory, would require a strong left and right arm to wind and much time and patience.

Jerry Amato had built his own "Do-It-Yourself" ropewalk, much sturdier than the Model Expo one. His can make a longer rope and be powered by an electric drill.



The left photo is the "tail" and the right the "gear head". This unit can make up to an eight-foot length of rope.



August 16, 2020

Ships on Deck:

Here is what your fellow craftsman have been doing during our staying at home.

Martha – a Draketail

John Boeck



A Chesapeake Bay Maritime Museum model of an early 1900's crabbing workboat. Dovetail, or draketail boats were built in the early 1900s with gasoline engines and a special stern that looked like a motor racer. *Martha* was built in 1934 for \$350 and was used for oyster tonging and trolling for crabs. She was named after the owner's daughter, Martha Lewis. These boats have many names, and are referred to as ducktail, draketail, torpedo-stern, or Hoopers Island launches, after the island in Dorchester County, Maryland, where they originate.

Queen Anne Barge

Dr, Mike Dowler



More progress on the *Queen Anne Barge*. The sweeps are complete as is the rudder and tiller. The flags have been shaped and attached to the poles. (see article by Mike on his flags under "Tips") He needs to choose a base for the final display and is still working on the carvings. Once completed and attached will bring this build to a close.

Typhoon

Alan Phelps



Allen has his model tested and ready for a launch. Beautiful model.

Armed Virginia Sloop 1768

Bill Nyberg

Back in the May "Ropewalk", I had attached the transom to the hull. In June, I bumped the model and the glue joints popped loose. Reglued them in place and moved on the fairing the hull frames when again the transom glue joints popped again. The transom sits on the ends off the curved supports without any other support as shown on the left.



I cleaned up the old glue from the supports and fitted braces on each side to support the transom to the framing as seen in the picture to the right.

The LSS kit was designed to be a partially planked hull. I plan to plank the whole hull in cherry. This means I don't have enough lumber so sanding billets to size was an alternative. An afternoon in the garage with my Byrnes Model Machine sander, I reduced 12 1/4" x 2.5" x 24" cherry billets to size, resulting is 1-scupper strake at 5/32", 2-wale strakes at 4/32", 6-hull planks at 3/32" and 2-deck plank billet at 2/32". One sandy afternoons work.



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That was followed by making the trunnel stock as seen on the right.

Rail Roding

Stan Ross



Before and after. Stan has three switches mounted with two to go. His engines were too big for the turntable so he is replacing it. Stan says he is getting too old to climb onto this table, but so far, so good. He is also finishing a a new engine house.



Odds and Ends

Nautical Terms

Yard: The horizontal spar from which a square sail is suspended. The spar on which a lugsail or Gunter (a fore and aft **sail** set abaft (behind) the mast) sail is set. A dockyard or shipyard.

Yard number: Each shipyard typically numbers the ships that it has built in consecutive order. One use is to identify the ship before a name has been chosen. The US started issuing ships numbers in the mid-1860's when the completed ship was enrolled.

Yard tackle: Tackles to raise boats.

Yardarm: The very end of a yard. Often mistaken for a *yard*, which refers to the entire spar. As in to hang "from the yardarm" and the sun being "over the yardarm" (late enough to have a drink).

Yar: *Of a vessel, especially of a sailing vessel:* Quick, agile, and easy to steer, *hand (q.v.)*, and *reef (q.v.)*.

Yarr: Acknowledgement of an order, or agreement. Also *aye, aye*.

Yaw: A vessel's rotational motion about the vertical axis, causing the fore and aft ends to swing from side to side repetitively.

Yawl: A fore-and-aft rigged sailing vessel with two masts, main and mizzen, the mizzen stepped abaft the rudder post. 2. An un-decked boat, often beach-launched, worked under both oar and sail. Generally, clinker built. Used for fishing, serving ships in anchorages, salvage work, etc. Those from the northern parts of Britain tended to be double ended.

Yawl boat: A rowboat on davits at the stern of the boat.

Glossary of Nautical terms Wikipedia

Other Notes: "Stuff" - Tugs & Things

Nautical Research Guild

Nautical Research Journal

A little blatant advertisement. If you are not already an NRG member, go to info@thenauticalresearchguild.org. Yearly subscription is available in three forms: Print copy, On-Line copy (E-Journal) and a combined both Print & On-line.

Print Journal - \$50

E-Journal - \$40

Combined - \$65

Books

In last months "Ropewalk" I mentioned that I was re-reading the Patrick O'Brian, 20-book series on Aubrey-Maturin and their adventures in Nelson's Navy. Mike Dowler responded and his note follows:

"As the last few newsletters have had a short discussion about books, I thought I would list out a few that I have read over the years. I believe most people will be familiar with these selections but maybe a few will be new options. The Marryat books are all available at Project Gutenberg as well as the Internet Archive. While not a comprehensive list it certainly has enough to keep anyone busy during the shutdowns.

Aubrey/Maturin by Patrick O'Brian. A series of 20 books which need no introduction. I always like to recommend that you don't forget the 21st book in the series simply called 21. It's the actual hand written notes of the 21st book in the series that were in process of being developed/edited upon the time of his death. Each page has the hand written journal Notes on one side with the corresponding page having the typed translation. It is a very rough draft but it is a very nice addition/finale to the series. Many supplemental books in print as well.

Hornblower collection by C. S. Forester. A collection of 11 books as well as a few supplemental

books dealing with background etc. Also, a limited television series which I quite liked that <sort of> follows our young hero.

The Ramage collection by Dudley Pope. 18 books in this series. Main protagonist is the son of a famous Admiral who had been court marshaled and who has to deal with this fall out in his own career.

The Adventures of Charles Hayden by S. Thomas Russell. So far, a 4-book series with main protagonist being born of an English father and a French mother leads to some interesting plot points along the way.

Alan Lewrie Naval Adventures by Dewey Lambdin. OMG 25 books in this series. Similar to O'Brian there are many detailed in-depth descriptions of sailing. Has more of "so-called romance" than some of the other series which may turn some off.

The Nathan Peake Novels by Seth Hunter. Interestingly the main character starts this series of 6 books already a commander. Balancing the sea as well as land this series does have some interesting Paris scenes during the reign of terror.

The Nathaniel Drinkwater collection by Richard Woodman. The 14 books in this series similar to the above although the protagonist definitely has more faults than a few other main characters.

The Bolitho Novels by Alexander Kent. Up to 30 novels depending on how you count them (first book has 3 novels in one for what it's worth) Personally I thought some of the characters a bit 2 dimensional and sometimes a bit hard to follow.

Kydd Sea Adventures by Julian Stockwin. 22 novels and counting (oct2020) written by the author who himself was sent to sea as a young teenager. Of note this series starts with the main character being pressed and thrown into a 98-gun ship of the line. While not totally unheard of, it was extraordinarily unlikely to go from pressed landsman to command. This series does have a different tone than the others due to that experience.

Captain Frederick Marryat deserves special attention. Writing Mr. Midshipman Easy (most well-known), Snarley-yow, Poor Jack, The Three Cutters, The Privateersman, Masterman Ready, The Phantom Ship, and The Pirate among others. Captain Marryat (1792-1848) was a Royal Navy officer who's served as a midshipman under Lord Cochrane. As a personal witness to life in the Navy he was one of the first authors to write sea stories.

If anyone has some other recommendations, I would love to hear them."

Thank you, Mike. You have listed a few that I have not read. For those of you who may not know, Lord Cochrane was a very interesting seaman and his adventures/experiences became to base for the

Hornblower and Aubrey characters. You may want to pick up Christopher Lloyd's "Lord Cochrane: A Heart of Oak Sea classic.

Tips

Flags

Good afternoon ship modelers!

I wanted to share how I made the flags for my recent model *The Queen Anne Barge* by Syren Shipmodel Co.

This is pretty easy to accomplish especially after a few practice runs and I would definitely encourage you to give it a try.

This flag described here took me 15 minutes to make (start to finish) including the time it took to take pictures.

I will include a bunch of pictures so you can see what I am describing.

First, I got some tissue paper from the Admiral. It is the kind you find in [Christmas](#) presents and new shirts come wrapped in. I found a piece big enough with as few creases as possible and then taped it to a regular piece of computer paper making sure the entire edge of the tissue is taped down with the Scotch tape.



After determining which side of the computer paper gets printed, I made sure this was positioned properly and just ran this through my normal ink-jet printer.

Here is what it looks like just after printing. (Flag pictures provided by Syren). One note is that the ink does seem to come out a little bit wet and I just waited a few minutes for it to dry. You also may have to do this a few times to get a clear one as there was occasionally a small smear of ink that showed up. (see the bottom right quadrant of the lower flag). For this demo this is good enough.



The tissue paper is thin enough that the ink goes through the tissue and the pattern is very similar on both sides as seen here. It is hard to tell the difference between the sides.

I cut these out with an #11-blade scalpel and metal straight edge.



I folded a very small edge to the side of the flag and used some black thread to tie the flag to a pole through the doubled-up material.



I used Krylon Matte fixative to wet down the flag. This is where I think that practicing a few times would be beneficial. This product has a temperature and humidity limitation and it seemed to work better indoors (with ventilation as it does stink) for me as it was 85deg and very high humidity when I first tried using it.



This stuff will defiantly stick the flag to your utensils/fingers/itself. A few failed attempts occurred as I was trying to unstick it from my fingers or the tools or itself. I used a few different sizes of paint brush handles/wooden dowels/ instruments to get it into shape.



After wetting



Then it was just a matter of bending and shaping so you get to a pleasing final shape. You can spray again if needed and start over.



One thing to note (and I hope you can see this picture) if you use too much spray at once or in the humidity you can get a whitish frosting residue which looks bad.



After a bit of practice, the flags come out very nicely. Final result about 15 minutes total time.



I hope this helps and would encourage anyone to give this a try if you are planning to place flags on your models.

See you next time. Deo Volente. Michael Dowler

Tugs

Apache



Pictured, the tug *Apache* takes a break after towing barges along the Northwest Coast between ports in Oregon, Washington and Alaska.

Built in 1968, by Halter Marine Inc. of New Orleans for Crowley Marine Service Inc, San Francisco. Her length was 112.1', hull depth at 11.2' and her hull breadth at 34', she had a gross tonnage of 194. She was a twin screw rated at 3,000 horsepower.

After completion of her trials, she was dispatched to Baltimore to pick up an atomic power-generating plant for the Pacific Island of Kwajalein. She was later reflagged for charter to BP Oil Co., London. She towed oil barge 450-2 from Pedernales, Venezuela to Point Fortin, Trinidad. In 2006, the tug was acquired by the Saje Shipping Co., of Lagos, Nigeria and renamed *Senators*. Final disposition – Unknown.

(Original Source: "On the Hawser" by Steven Lang and Peter H. Spectre, 1980)

Hercules



The *Hercules* is shown coming to dock in San Francisco. She is rather unusual, due to her short house. Built in 1967 by Mangone Shipbuilding, Inc., Houston, TX for Crowley Marine. She was designed for handling anchors for off-shore oil-drilling rigs in Alaskan waters.

She had a steel hull with a length of 81.4', hull depth of 9.2' and hull breadth of 28'. She was equipped with two, Caterpillar D-398-B diesel engines, with Lufkin reduction gears at a ratio of 5.932:1, turning two five bladed, stainless steel, fixed pitch propellers. Rated at 2,000 horsepower.

She is also equipped for general towing, both inland and offshore. She is equipped with a waterfall towing winch, which consists of two drums – one drum lower than, and aft of, the other. The winch is powered by a separate diesel engine.

The *Hercules* is still listed as a Puget Sound Tug by Dunlap Towing Co. LaConner, WA, who acquired her in 2007.

Original Source: "On the Hawser" by Steven Lang and Peter H. Spectre, 1980

Presentation Schedule:

2020

- Jan 18 — Research
- Feb 15 — Scratch Building
- Mar 21 — Canceled
- Apr 18 — Zoom Training
- May 16 — Bending Wood — Zoom
- Jun 20 — Small Boat Making — Zoom
- Jul 18 — Fairing a Hull/Cooper Plating — Zoom
- Aug 15 — Rope Walk
- Sep 19 — Soldering
- Oct 17 — Open
- Nov 21 — Open
- Dec 19 — Open

Events & Dates to Note:

2020

Toledo Antique & Classic Boat Show
 Promenade Dock, Maumee River, Toledo, OH
Aug 22-23, 2020

2021

IPMS Columbus
47th Anniversary BLIZZCON
 Arts Impact Middle School
 680 Jack Gibbs Blvd. Columbus 43215
Saturday, February 20, 2021

Miami Valley Woodcarving Show
 Christ United Methodist Church
 700 Marshall Rd., Middletown, Ohio 45044
March 7 & 8, 2020

66th "Weak Signals" R/C Model Show
 Seagate Convention Ctr.
 401 Jefferson Ave. Toledo, OH
April 02-04, 2020

31st North American Model Engineering Expo.
 Yack Arena
 Wyandotte, MI
April 23-24, 2021

44th Midwestern Model & Boat Show,
 Wisconsin Maritime Museum, Manitowoc, WI
May 14 – 16, 2021

Constant Scale R/C Run – Carmel, Ind.
 Indianapolis Admirals reflecting pond
 Carmel, IN
May 15 & 16, 2021

NRG Conference
 Channel Islands Maritime Museum
 Oxnard, CA
Oct. 21-23, 2021

August 16, 2020

Lakeside Antique & Classic Wooden Boat

Lakeside Hotel, Lakeside, OH
July 18, 2021

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THE NAUTICAL RESEARCH GUILD
 "ADVANCING SHIP MODELING THROUGH RESEARCH"

Annual membership includes our world-renowned quarterly magazine, Nautical Research Journal, which features photographs and articles on ship model building, naval architecture, merchant and naval ship construction, maritime trade, nautical and maritime history, nautical archaeology and maritime art.

Other benefits include discounts on annual conferences, ship modeling seminars, NRG products and juried model competitions which are offered exclusively to Guild members. We hope you will consider joining our ongoing celebration of model ships and maritime history.





For more information contact us at: www.thenrg.org or call 585 968 8111

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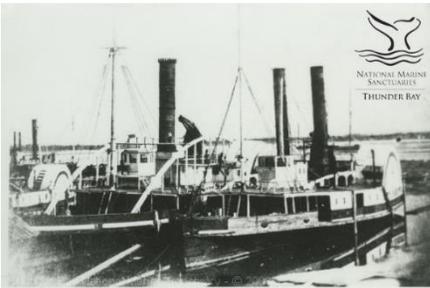
Email: shipwright@wowway.com

Wooden Steamers

1850

Belle: The shipyard of Bidwell & Banta, Buffalo, NY, built for Abell, Snow & Co., of Buffalo, a wooden sidewheel steamer with measures of: 142.0' x 21.7' x 8.2' and a tonnage (old style) of 240. She was equipped with (2) low pressure engines that had been originally installed in the sidewheel steamer *Express* (US-1839). The *Belle* was launched March 17, 1850 and was destined for the passenger, package freight coasting trade along Lake Erie between Buffalo, NY and Erie, PA, with stops at Silver Creek, Dunkirk, and Barcelona, NY. Her master of the 1850-51 season was Captain R. B. Despard.

In the spring of 1852, the *Belle* was chartered to Charles Thompson, Collingwood, Ont. and ran between Sturgeon Bay, with stops at Penetanguishene, and Owen Sound, Ont., and Sault Ste. Marie, MI. Her master was Captain Alexander M. McGregor. May 1852, in-route to Owen Sound, Ont. from the lower lakes, the steamer *Belle* struck a rock at Cape Crocker, Bruce Peninsula, Ont., Georgian Bay, during heavy fog, and became stranded. The passengers and crew made shore safely but with increasing winds and weather, the *Belle*, which had been expected to be released and repaired, was pounded by northern winds and waves and reduced to a wreck. No lives lost. Property loss set at \$15,000.



City of Hamilton: P. Beupre, master carpenter, built a wooden sidewheel steamer, at the David Tate Yard, Bath, Ont., for G. H. Davy, et al, of Napanee, Ont., that when enrolled at Kingston, Ont. on December 06th, 1850, had the measures recorded of 156' x 24.7' x 8.6' and unit tons of 240 918/3500. Her actual engine is unknown, but she was to have received the engine from the steamers *Champlain* (C-1838); *Eclipse* (C-1837); *Adelaide* (C-1830), *Alciope* (C-1828) and originally installed in the *Frontenac* (C-1816). The engine stroke had been

lengthened 2 feet. She was built for the passenger trade between Toronto and Hamilton, Ont.

Early in January of 1851, her ownership was changed to Donald Bethune, Toronto, Ont. During 1851/52 winter layup, the steamer was altered and improved by the Niagara Harbour & Dock Co. June 1852, while lying at a Toronto wharf, sparks from her stack ignited a fire on the dock's storehouse roof. The fire was extinguished before much damage was done. Master of steamer for the 1853 season was Captain Gordon. May 1853, while approaching Brown's Wharf, Toronto, in a violent gale, the steamer struck the pier, snapping a chain attached to a sidewheel fender which then struck a bystander who was injured. July of that year, she broke her shaft while entering Toronto Bay. Her master for the 1854 season was Captain James Dick.

June of 1854, ownership of the steamer was changed to John H. Cameron, Captain Chambers, et al., Bellville, Ont. who renamed her to *City of the Bay*. Master of the steamer for the remainder of the 1854 season was Captain McGill Chambers and for the 1855 season, Captain R. Munroe. May 1855, a schooner collided with the *City of the Bay* damaging the steamers woodwork. September 1855, the *City of the Bay* broke her shaft while on her run. She was repaired. May 1856, while getting up steam prior to leaving the wharf at Kingston, it was discovered that someone had removed the valves from the force pumps (which feed the boilers), thus rendering the *City of the Bay* liable to be blown up. A reward for information was tendered.

Ownership of the sidewheel steamer *City of the Bay* was changed in 1862 to Calvin & Breck, Kingston, Ont. He had her rebuilt by Henry Roney, Garden Island and lengthened to 171.4'. Her enrollment tonnage was changed to 224.4-unit tons, and she was renamed back to *City of Hamilton*. Calvin & Breck designated her to be used as a towboat in 1862. Her registered tonnage was changed to 391 grt in 1869. She was rebuilt in 1870 as a towboat for the timber trade, towing timber rafts. November 1872, the towboat steamer *City of Hamilton*, with six barges in tow, all partially laden with pig iron, went aground just after leaving the Edwardsburg Canal. The barges broke away and ran down the Gallops Rapids on the St. Lawrence River, where they were able to anchor. The steamer released herself and then picked up the barges and continued her tow to Montreal. The sidewheel steamer *City of Hamilton* was laid up at Garden Island after 1874 and her enrollment surrendered and endorsed as "abandoned" in 1875.

Dover: D. McSwain built a wooden sidewheel steamer for the passenger, package freight trade on the Cayuga Canal, Grand River between Branford and Dunnville, Ont. Her measures were 95.5' x 28.1' x 5.1' and 64-unit tons. She was equipped with a horizontal high-pressure engine with a 16" bore x 48" stroke and was rated at 72 horse power, builder unknown. Her master for the 1850 – 63 seasons was her builder and owner, Captain McSwain. September 1860, while lying at Walters Wharf, Cayuga, Ont. on the Grand River, the steamer *Dover* caught fire and burned to her water's edge. She was rebuilt in 1860 and continued her runs on the Grand River.

Her ownership was changed to Laughlin McCallum, Dunnville, Ont. in 1864 and she continued to be used on the Grand River until her 1872 rebuild. Her rebuild was at Dunnville, Ont: where she was enrolled with measures: 95.0' x 28.0 and tonnage of 165 grt. At her enrollment in May 1872, she was renamed to *Georgiana*. May 1874, the steamer *Georgiana* went on the rocks at Grafton, Ont, Lake Ontario.

The following year, 1875, her ownership was changed to Horace Thompson & John Gidley, Penetanguishene, Ont. She moved to Georgian Bay and ran between Midland, Penetanguishene, Victoria Harbor, Waubaushene on Severn Sound and Collingwood, Ont. on Georgian Bay. November 1877, the steamer *Georgiana* went aground on Stag Island, St. Clair River. Released. She was rebuilt during winter 1878 layup at Penetang, Ont. and issued official Canadian number 71137: 93.0' x 17.0'; 100 grt.

Her ownership was changed in 1879 to C. Beck Co., Penetang, Ont. In the 1881 winter layup, the steamer *Georgiana* was rebuilt as a barge. April 1882, the barge *Georgiana* stranded on Frying Pan Island, Georgian Bay.

In 1885, ownership of the barge *Georgiana* was changed to John Gidley, Penetanguishene, Ont. who had her converted to a propeller for use as a tug. The following year, 1886, her enrollment as tug *Georgiana* was surrendered in endorsed "broken up".

Note: On the Thunder Bay National Marine Sanctuary Collection, the sidewheel steamer "Dover" under final disposition lists: Beached, possibly abandoned near Copperhead Island, Georgian Bay, Lake Huron, dated 1895. R.L. Polk & Co. lists the *Georgiana* as a propeller in 1888 at 104 tons and owned by H.H. Thompson, Dunnville, Ont.

Highlander: Augustin Cantin shipyard at Montreal, Que. built for Sir John Hamilton, Kingston, Ont. (1/3), McPherson & Crane, Montreal, Que. (1/3), and Hooker & Holton (1/3), a wooden sidewheel steamer with measures: 173.0' x 40.0' x 9.0', and tonnage of 300. She was built as a mail steamer for the lake and river passenger, package freight trade and was equipped with two vertical beam engines, each with a 132" stroke, that had been built by Ward & Brush, Montreal, Que. and originally installed in the sidewheel steamer *Highlander* (1840). Her master for the 1850-54 seasons was Captain Stearns. April 1853, the steamer *Highlander* broke her piston rod near Kingston, Ont., Lake Ontario.

April 1853, her ownership was changed to a confederation called the "Watertown, Cape Vincent and Canada Steamboat Company", Cape Vincent, Ont. and the steamer *Highlander* ran in connection with the Rome and Watertown Railroad. Her master for the 1853 season was Captain C. Perry. In March 1855, the steamer *Highlander* was chartered to the Northern Railroad Company with the intent to provide a direct connection from New York City to Chicago, IL. A traveler would leave by train from New York City in the morning and reach Rochester, NY in the evening, then take a night steamer, the *Highlander*, to Toronto, then continuing by morning train reaching Collingwood, Ont. where they would take a steamer from Collingwood to Chicago, IL, a journey of 48 to 50 hours.

Ownership of the steamer *Highlander* was changed in 1856 to John McPherson, Montreal, Que. Her masters for the 1856 & 57 seasons were Captain McBride (1856), Captain P. G. Chrysler (1857) and Captain Schofield (1857). Due to the 1857 recession and the reduced passenger traffic, the steamer *Highlander* was laid up at Kingston, Ont. in 1860. In 1861, the steamer *Highlander* operated as a towboat for Holcomb, Cowan & Co.

November 1861, her ownership was changed to Calvin & Breck, Garden Island, Ont. Operating as a tow boat, she was taking on wood at Garden Island, when a squall struck, breaking her moorings, she drifted against a post, staving a hole in her hull and sank. Raised and repaired during the winter 1861/62 layup. She was chartered to the Government Tug Line for the 1862 season. She operated as a barge and in December 1871 she was laid up in winter quarters at Garden Island, Ont. where she caught fire and burned to a total loss.

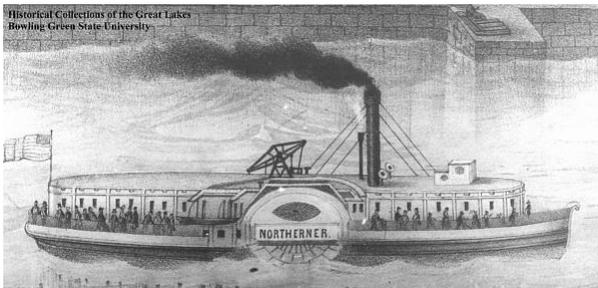
Henry A. Kent: Fredrick N. Jones, Buffalo, NY, built a wooden propeller for the bulk freight trade with her owners consisting of a partnership: James C. Evans, Buffalo, NY; Leander M. Hubby, Arthur

Hughes, Cleveland, OH. She was enrolled at Buffalo, NY, May 10, 1850 and her measure recorded as: 162' 5" x 25' 2" x 11' 4" with her tonnage (old style): 442 27/95. Her engine is unknown. Her master for the 1850 season was Captain Brundage. She ran Buffalo – Toledo, Detroit & Chicago. December 1853, she collided with a scow at Detroit, MI. Her master for the 1854 season was Captain Calvin Herrick. May 1854, bound up from Buffalo for Milwaukee and Chicago, laden with general merchandise, the *Henry A. Kent* caught fire in her cargo hold while 8 miles off Gravelly Bay, (Port Colborne) Ont., Lake Erie, and burned to her waterline then broke in half and sank. The crew had abandoned the vessel in her yawl and made it to the Canadian shore. No lives were lost.

Kossuth: Located on the Niagara River, above the falls, Henry A. Chase, Tonawanda, NY, built a wooden paddlewheel steamer for use in the towing trade. Her first enrollment at Buffalo, NY, May 11, 1850, her measures were recorded as: 97' x 18' 8" x 7' with a tonnage (old style) of 178 60/95. Her engine was unknown. She was one of only a few steamers on the Great lakes with a stern paddle wheel They were mostly used for towing on rivers or harbors. Little is known of her history, except that she went through a number of owner changes before wrecking in 1858.

Her original owner in 1850 was P. C. Russell et al, Syracuse, NY. Her ownership was changed in April 1855 to William H. A. Smith et al, Chicago, IL. September 1856, her ownership was changed to Thompson J. S. Flint, Chicago & Charles B. Holmes. Her master for the 1856 season was Captain William F. Cushing.

May 1858, while bound from Chicago, IL for White Lake, MI, the paddlewheel tug *Kossuth* encountered a northwest gale on Lake Michigan. She tried to seek shelter at Muskegon, MI harbor, but she struck a bar and foundered. The storm pounded her to pieces. No lives lost.



Mithune: Means couple or union and was originally started early in 1849 by George S. Weeks, Oswego, August 16, 2020

NY. She was enrolled May 10, 1850 at Oswego, by her owner the Ontario & St. Lawrence Steamboat Co. Ogdensburg, NY, as a wooden sidewheel steamer, and was listed with measures: 232' x 30.5' x 12.5' and a tonnage (old style) of 905. She was equipped with a vertical beam engine: 60" bore x 144" stroke built by H.R. Dunham & Co., New York, NY. She was built for the passenger, package freight trade and ran on Lake Ontario from Oswego to Lewiston, NY on the Niagara River. Her master for the 1850-51 season was Captain R.F. Childs. In August 1854, the walking beam of the steamer *Mithune* broke and the descending connecting rod and piston punched through the cylinder, badly wrecking the engine. Her damage loss was set at \$7,000. She was renamed *Northerner* in 1854 after being repaired.

Her master for the 1856 season was Captain Darius Cole. The wide spread panic of 1857 seriously affected all lake commerce, especially passenger traffic and the sidewheel steamer *Northerner* was laid up during the depression of 1857. In 1858, failing to weather the depression, the Ontario & St. Lawrence Steamboat Co. went into liquidation. A new corporation was formed and the sidewheel steamer *Northerner* was transferred to American Steamship Co, Ogdensburg, NY. Her master for the 1858 season was Captain John H. Ledyard.

Business had not recovered in 1858 and the American Steamship Co. sent the steamer *Northerner* under the command of Captain Kilby, down the St. Lawrence River to New York for use on the east coast.

With the start of the "War Between the States", the Union needed ships for transport and blockade duty. December 1861, the steamer *Northerner* was sold to the U.S. War Department, Quartermaster General for use as a U.S. Army transport and supply steamer for \$70,000. Her final Great Lakes enrollment was surrendered at Ogdensburg, NY, December 2, 1861.

The steamer *Northerner* participated in the Battle of Roanoke Island, which was an amphibious operation fought on February 7–8, 1862, in the North Carolina Sounds. The attacking force consisted of a flotilla of gunboats of the Union Navy drawn from the North Atlantic Blockading Squadron and a separate group of gunboats under Union Army control, and an army division led by Brig. General Ambrose E. Burnside. April 1862, the steamer *Northerner* carried troops for a raid up the Pasquotank River off Albemarle Sound. Records indicate that the steamer *Northerner* was owned by the United States on Oct. 15, 1864 and she is reported to be in the Chesapeake in May 1865.

The U.S. War Department, Quartermaster General, sold the steamer *Northerner* to Robert Lehr, Baltimore, MD for \$41,000, October 19, 1865. She was resold to the Powhatan Steamboat Co. and redocumented November 4, 1865 with measures: 238.16 x 31 x 12.42; 1061.77 grt; and renamed *State of Virginia*, US-22096. The *State of Virginia* was assigned a route from Baltimore, MD to Richmond, VA.

1875, the ownership of the steamer *State of Virginia* was changed to the Baltimore Steam Packet Co. for \$13,000. The following year, her engine was removed and installed in the steamer *Florida*. The hull of the steamer *State of Virginia* was dismantled and abandoned.



Ocean: Eber B. Ward, Detroit, MI, purchased the wooden sidewheel steamer built by J. L. Wolverton (Marine City) MI. The steamer, enrolled at Detroit, June 25, 1850, had measures of: 245' 4" x 33' 6" x 13' 3" and a tonnage (old style) of 1052.3. She was equipped with a vertical beam, low pressure engine, that had a 60.5" bore x 132" stroke and had been built by T. F. Secor Works, New York City. Her boiler was 11' x 30'. She was built for the passenger, package freight trade and had a capacity for 600 passengers. She was assigned to the North Shore Line running from Detroit, MI to Buffalo, NY with the steamers *Mayflower* (US-1849) and *Atlantic* (US-1848). Her master for the 1850-51 season was Captain Willoughby. In August of 1850, the steamer *Ocean* collided with, and badly damaged, the schooner *Adrian* (US-1848) on Lake Erie She was towed into the Detroit River for repairs.

Master of the steamer *Ocean* for the 1852 season was Captain McBride. July 1852, when the steamer was about fifteen miles out in Lake Erie from the Detroit River, the *Ocean* broke her shaft and had to be towed back to Detroit for repairs. October of the same year, the steamer *Ocean* collided with the schooner *Mansfield* (US-1847) near Long Point, Ont., Lake Erie and was towed back to Buffalo, NY for repairs. Loss was set at \$5,000.

Her master for the 1854 – 58 seasons was Captain Charles C. Blodgett with Henry Odette as chief engineer in 1858. June 1855, bound up in

morning fog, the steamer *Ocean* went ashore on a little island "Mammy Judy" twelve miles below Detroit, MI on the Detroit River. Her passengers and baggage were brought up to the city by another steamer with the *Ocean* following sometime later.

Ownership of the steamer *Ocean* was changed to Detroit & Cleveland Steamboat Navigation Co in 1856. April 1858, under the command of Captain Charles C. Blodgett, the steamer *Ocean* ran ashore on Point au Pelee, Ont., Lake Erie. She was pumped out and towed to Detroit for repairs. October 1861, the steamer *Ocean* was damaged in a collision with the schooner *Hubbard* (US-11179) on the Detroit River. March 1862, the steamer *Ocean* was taken in tow by the steamer *May Queen* (US-1853) to Trenton, MI to be converted to a tow barge. Her official enrollment at Detroit was changed to a sloop rigged lumber barge; 250' x 53' x 13', 900 grt. She would be towed by tug *Winslow* (US-1862) and had a carrying capacity for 782,000 feet lumber.

Ownership of the barge *Ocean* was changed to J. S. Ayers et al, Port Austin, MI and her enrollment updated with an official number of US-53063, an unrigged barge: 245.5 x 36.4 x 12.8, 578 grt on October 1866. May 1872, the barge *Ocean*, under tow, was dragged onto a reef by ice in Lake Erie and sank near Buffalo, NY. October 1873, the barge *Ocean*, laden with lumber, went ashore near Tawas, MI, Lake Huron during a storm. The tug *Rescue* pulled her off and while towing her down the lake, had to rescue the crew after the storm started to break the barge to pieces. No lives lost.



Saginaw: Benjamin B. Jones, built on the west bank of the Cuyahoga River at Ohio City, OH, a wooden propeller with measures of 155.1' x 26.0' x 10.7' and a tonnage (old style) of 407 22/95. Her engine was built by Bell & McNish, Buffalo, NY. Her owner, Franklin Millard, Saginaw, MI, enrolled her at Detroit, MI June 18, 1850. She was built for the bulk freight trade and would run between Buffalo and Saginaw under her master for the 1850 season, Captain E. A. Spencer. May 1851, while bound up from Buffalo, NY for Detroit, MI, the propeller *Saginaw* encountered a gale off Erie, PA on Lake

Erie. After four hours and not making headway, she put about and returned to Buffalo where she broached entering the harbor and ran her stem onto South pier. Her machinery became deranged and she fell off against the pier of the Erie Basin, carrying away part of her wheel then struck the steamer *Commerce* before reaching a safe mooring.

Ownership of the *Saginaw* was changed to Pearl L. Sternberg et al, Buffalo, NY June 1851. November 1853, while bound down from Chicago for Buffalo, the *Saginaw* lost a portion of her deck load during a storm on Lake Michigan.

Ownership of the *Saginaw* was changed to Mann, Vail & Company, Buffalo, NY, April 1854. While bound down from Chicago for Buffalo in October 1854, the *Saginaw* encountered heavy weather and had her bulwarks stove in, while making for the protection of Beaver Island, MI, Lake Michigan. The following month, she went ashore near Gibraltar, MI, Lake Erie. She was dry docked for repairs.

August 1855, her ownership was changed to C. Hitchcock & Company, Buffalo, NY. The following month she broke her shaft on Lake Huron requiring a tow to Detroit, MI for repairs.

March 1856, ownership of the *Saginaw* was changed to Western Transportation Company, Tonawanda, NY. March 1861, they chartered the *Saginaw* to The New York Rail Road. Her master for the 1861 season was Captain James Drake.

Ownership of the *Saginaw* was changed to Buffalo & Detroit Transportation Company, Buffalo, NY. Her enrollment was updated April 1865 when the propeller *Saginaw* was readmeasured: 2 decks, 1 mast, 154.5 x 27 x 9.4; 555.57 grt.

May 1866, her ownership was changed to E. W. Fitzhugh et al, Sandusky, OH. At enrollment she was assigned the official number US-22382. Her chief engineer for the 1866 season was Jeremiah Havelick. That month the *Saginaw* struck a scow at Erie, PA and sank. She was raised and the property loss was set at \$1,500.

April 1867, ownership of the propeller *Saginaw* was changed to Duncan Stewart & J. L. Hurd, Detroit, MI. She was badly damaged in a collision with the bark *Oneonta* (US-18887) on Lake Erie in September 1867. June 1869 she went aground on Bois Blanc Island in the Detroit River. She required her cargo to be lightered to be released.

Her ownership was changed in the following month to Lucius Young et al, Springwelk, MI. They had her rebuilt as a barge, with her enrollment updated to: 1 deck, no mast, 158 x 27 x 9.5; 311.92 grt. That same year, the barge *Saginaw*, laden with

lumber, became waterlogged while on Lake Erie. She was towed in for repairs. Her master for the 1870 season was Captain William Grey.

For the next three seasons her ownership changed to John P. Clark, Detroit, MI in October 1870, Jason W. Candler et al, Detroit, MI in July 1871, and William Rankin et al, Grosse Point, MI in April 1872

May 11, 1872, her ownership was changed to George W. King et al, Bay City, MI. Her master for the 1872 season was Captain James F. Trowell with W. H. Beltz listed as engineer for the 1873 season. The barge *Saginaw* was re-caulked and thoroughly overhauled at Wolf & Davidson's shipyard and released March 1873. During a gale on Lake Erie in October 1873, the barge *Saginaw* took on water and sank to a depth of 11 feet off Point Au Pelee, Ont. She was raised.

In April 1878, her enrollment states that the ownership of the barge *Saginaw* went through a number of changes starting in April 1878 with William Mitchell et al, Bay City, MI, January 1880 to Theresa Park et al, Bay City, MI, March 1880 to E. W. Hasking et al, East Saginaw, MI with a tonnage change to 296.33 net, and in September 1883 to Albert N. Gilbert et al, Algonac, MI. Her final owner is listed as Nelson Little et al, Port Huron, MI who changed her rig to a sloop in April 1885. Her enrollment was closed in 1887 and the sloop *Saginaw* was listed as "abandoned".

Wave: Charles Jennisin, Algonac, MI, built for Captain Roby of Perrysburg, OH and Mr. Studdiford of Monroe, MI, a wooden, sidewheel steamer for the passenger, package freight trade on Lake Erie. She was enrolled at Toledo, OH, May 20, 1850, with measures: 137' x 21' 6" x 8' and a tonnage (old style) of 207 86/95. Her engine is unknown. Her master for the 1850 season was Captain Roby.

November 1850 the ownership of the steamer *Wave* was changed to Captain Erastus Crocker, Buffalo, NY. Captain Crocker was her master for the 1850-51 seasons and ran her from Buffalo, NY to Port Dover and Port Stanley, Ont. August 1851, the steamer *Wave* ran onto Gulf Island Reef, near the outlet of the Grand River in Ontario. The steamer was released with her property loss set at \$900. In November of 1851, the steamer *Wave*, laden with general merchandise, broke her shaft and became unmanageable, going ashore near Port Maitland at the Grand River in Ontario. She was declared a total loss.

Some Notes:

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.

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 $1533\frac{7}{94}$ 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, that can be packed and moved by manpower from dock to hold and reverse.

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.)