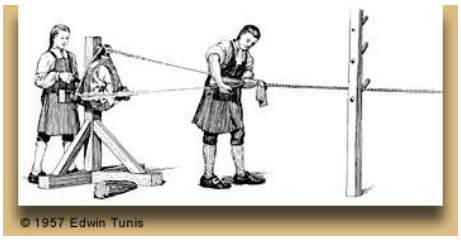


While one man cranks the spinner, the one holding the "top" walks backwards as the rope is twisted. From Edwin Tunis, *The Young United States, 1783 to 1830* (New York: World Publishing Co., 1969). Used by permission of the estate of Edwin Tunis.

Ropewalk

The Newsletter for
Shipwrights of Ohio – July 2023

Next Meeting: September 16, 2023;
"Soldering" – Alan Phelps

Table of Contents

August

We gathered on the third Saturday of the August at the Westerville Public Library for our fifth hybrid meeting. There were thirteen, in-person and zoom at the meeting. Again, the in-person conversation and comments made for a very lively meeting.

Mike Dowler, joined us from Dayton, with Steve, John and Henry joining us via zoom from Dayton and Oxford. I would encourage all of you that can, to join us in person and bring what you are working on. You may find that the drive is worth it.

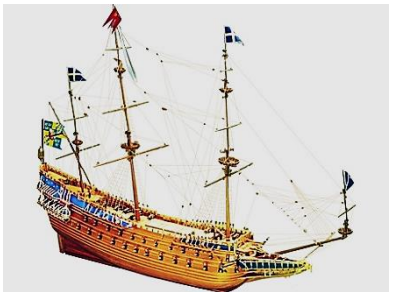
As always, take care of yourself and your families, look to those you know who may need help, are lonely and may be in need of human contact. Till next month.

Your editor.

Announcements

For Sale (Open to any readers of this newsletter)

WASA Kit from Coral.



Advertised the kit for sale on both Model Ship World and Ships of Scale on August 12, 2023. Lots of views and two comments on the excellence of the kit. Two responders: one looking for someone who would transport it to Pakistan and the other

from Texas. Getting shipping cost information and maybe we can close this out.

Soldering Station

Alan Phelps is offering a soldering station. The soldering station allows you to control the heat of the soldering iron. Lower heat for small objects to avoid burning. Full heat for larger objects and higher melting temps of solder. Makes you soldering iron more versatile. The station handles irons up to 300 watts but no soldering guns.

He is offering this unit at no cost to a good home. If anyone else wants one he will charge, just for the components, at around $25.

Alan will be sharing his skills soldering at the September meeting.

Reminders

- Air Show, Sept. 2-4, 2023; Cleveland Burke Lake Airport.
- Ohio Rover Sternwheel Festival, September 8 – 10, 2023. Riverfront Park, Marietta, OH.

Presentation Schedule

The meeting presentation schedule has been revised.

- Sep. 16th: Soldering by Alan Phelps
- Oct 14th: Finishing – Natural and paint by Cliff Mitchell; (Oct. meeting is on the second Saturday of the month.)
- Nov. 18th Displaying & Mounting Ship models by Stan Ross
- Dec. 16th Open – Any ideas

Nautical Research Guild

Steel's Tables

The Nautical Research Guild is proud to offer a reprinting of Steel's Tables compiled and arranged by Yuri Miroshnikov for Model Ship World and the Nautical Research Guild.

If you have ever tried to use Steel's Tables for your masting and rigging, you will appreciate how much work went into this compilation. This book is a must-have for anyone building a British warship of the late 18th century. This version is arranged by the size of the ship, making it easy to find any information. This downloadable version is in .pdf format, allowing you to print only the pages you need for your current project. You can also have any print shop print the pages to any size you need – pin them on the wall by your bench.

The price is only $10, $8 for members with your NRG discount. It is available in the NRG STORE

Presentation

Making Sails

Some History

Ships in the 18th C., were not issued a set of sails, instead they were supplied with a sailmaker. On a small ship, he might work alone, on large ship, he would lead a team of workers.

A 74-gun ship would need several acres of sail. Each had to be made by hand, plus there were sails for different weather conditions: small but immensely strong storm canvas, and for studding sails when winds are light.

Plus: courses and topsails could weight over a ton, and even more when wet

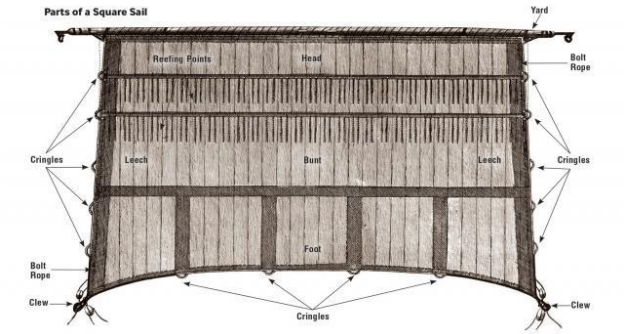
The sailmaker was issued bolts of canvas, each 38 yards long, about 2 feet wide, graded by thickness and weave.

#1 canvas – strongest

#6 lightest

Individual lengths were stitched together, edge to edge. This allowed, if sail is damaged, for the strip to be cut out and a new piece sewed in.

The sailmakers tools were: a knife, a leather seamer palm, a needle holder, a fid, a three-edged blade to make eyelet holes and a pricker to enlarge holes.



To function well, sails needed to be strong, but also light and flexible for sailors to handle when aloft. The stronger the canvas the heavier and more rigid the sail. The solution: use different grades of canvas in different parts of sail.

- lighter material in the centre
- Heavier grades towards the leech (side edges), where the most strain would be.

A square sail - complex thing. The sail is never really square.

- Its head (top), width - match the yard it is attached to, with a wider foot (bottom) in proportion with the longer yard below.
- The foot itself was not straight, but curved in a gentle arc, so as to keep the canvas free of the rigging.
- The middle of the sail, called the bunt, was cut with extra material so that it would form a belly in which to catch the wind.
- The edges of the sail the canvas were doubled over, to increase its strength, and then a bolt rope was stitched to the edge, to prevent it from splitting.
- This was always done slightly to the left of centre of the edge, so that a seaman in the dark would be able to know which way round the sail should be by touch alone.
- The sail then needed to have various cringles, clews and reefing points added.
- It has been estimated: to make a single topsail for a ship of the line would take over a thousand man-hours.

Sail material has changed

- Prior to the 19th C, linen was used.
- After the 19th C, the material was made from cotton.
- Today, sails are made using nylon.

For the ship modeler today, the materials used for sails are:

Drafting Linen

- Fine linen cloth "sized with starch"
- Hard to find

Tissue paper

- Found in shoe boxes
- Need to build a jig to hang the sail after it is cut out
- Coat with clear lacquer
- Use a fan to form the sail

Handkerchiefs – linen

- Needs to be treated similar to Tissue Paper

Silk Span

- Used as the skin on model airplanes
- Silk Span is a non-woven paper that is surprisingly robust. Seawatch Books offers a booklet on making sails by David Antscherl for $8 plus shipping.

Sail Cloth

- Almost all my sails have been made from sail cloth from Model Shipways
- Most of it out-of-scale

Steel's 1794 edition "Elements of Mastmaking, Sailmaking, and Rigging" contains 60 pages to the subject "Sails".

Sail color is never white unless made of nylon. They are a light ochre or strong red, but could be medium brown to tan.

Sail panels were 48" wide in the early middle-ages; 32 – 36" wide in late middle-ages; 28" wide from middle 16th C to the beginning of the 18th C. From the 18th C on the panels were 24" to 18" wide. I convert my sail panels 24" to the scale of the model. My skipjack panels are ¾" wide. I also draw my panel lines when working at 3/8" scale of smaller. Seams appear out of scale at or below 3/8" scale. I use a Micron 005 acid free ink pen (purchase from an art supplier) it provides a .20 mm thick line. To provide contrast, I use a black & brown pen to define the edge of the panels – reverse the line color on the opposite side of the sail cloth.

Boltropes strengthen the sail edges. All sails have boltropes sewn in their edges:

- Square sails: the boltropes are on the after side of the sail.
- Fore & aft sails, the boltropes are on the port side of the sail.

There are many references available on how to make sails. Before starting: check your plans – Do they show a sail plan? If not, you may want to consider not including sails on your model.

The following list are a set of possible steps:

- Stabilizing
  - Wash in hot water
  - Hang to dry
  - Iron it flat with a steam iron
  - Store flat or roll up loosely
  - Ready to use
    - Spray with a sizing "fabric finishing spray"
    - Iron it flat with a steam iron – again.
- Layout 1

  - Copy and cut out the sail shapes required
  - Layout your ironed fabric and align the weave so that it is perpendicular to your work surface and allows you to get the most sails from your fabric
  - Fasten the fabric to your work board
  - Determine the width of your panels
  - Mark the location of the panels at the top & bottom
  - Position your sail shapes so that the weave aligns with the sail
  - Draw or take a picture of your temporary lay-out.
- Panel Seams
  - Sew or draw your panel seams
  - I use thin Micron Pens (.05 mm) brown & black – double line
  - Draw the panel lines with the pens
  - Reverse the fabric & transfer the lines black & brown over the lines on the other side.
- Layout 2
  - Return to your drawings/pictures of your sail layout and place them on your fabric
  - Draw the outline of the sails and where the reef point will be located
  - Add an extension to the sides of the sail for a hem.
  - Cut out your sails and fold the hem over – square to the back of the sail, gaff/Jib/staysail to the port side.
- Edge Seams
  - 2 choices
    - Glue the edge seam over and then glue your bolt rope on the edge seam.
    - Or glue the bolt rope to sail then cover with the excess edge hem.
  - Sew the edge seam
    - The edge sewn last, should be the edge that can stand the most distortion. This should be the leech edge of the sail.
- Reef Points (Roband: a piece of spun yarn or marline used to fasten the head of a sail to a spar.)
  - Add your reef bands (strips of sail material to prevent tearing.)
  - Sew the reef point through the reef band. The aft length is a little longer than the front length.
- Mounting
  - Tie the sail to the yard or stay
  - Now comes the hard part – with each sail, there are up to an additional 8 lines that need to be belayed – bowlines, buntlines, clew lines, and reef lines.

<u>Silkspan</u>

Silkspan Source

Brodak Manufacturing & Distribution Co., Carmichaels, PA
www.brodak.com
Med & Lite $6.59 - 2 sheets 24" x 36"

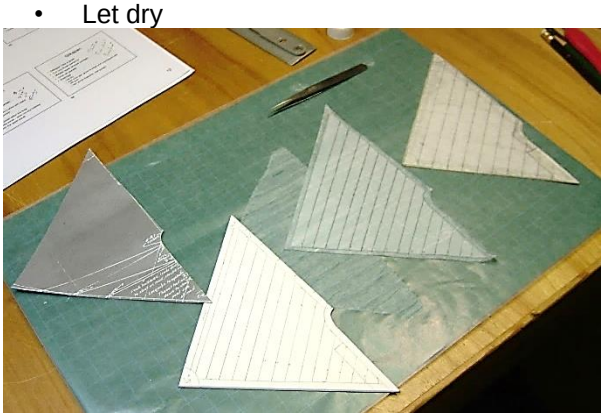
BlueJacket Ship Crafters, Searsport, ME
www.bluejacketinc.com
Silkspan fine, $6.00/sheet 18" x 24"

Silkspan rips more easily in one direction than the other. Making sails of silkspan requires three levels with the middle level grain must be 90 degrees from the outer levels.

The steps to making sails from silkspan are:

- Preparation:
  - Determine the grain pattern of your silkspan
  - Cut out the pattern for your sail from plans
  - Outline the pattern on heavy card board
  - Transfer the sail outline to the silkspan, orienting the pattern with the panel lines and lightly indicated grain direction.
- Sail pattern
  - Use pattern to cut out two panels (Lower and Upper)
  - With pattern drawn on lower panel, add overlap edges on each edge – will hold boltropes in place
    - Draw and cut out corner supports and other support pieces
    - Draw and cut out reef panel
  - Upper panel is contained inside the edges of the sail. Draw and cut out.
- Middle layer should contain:
  - Panel demarcation lines in pencil at 90-degree rotation from the panel grain of the top and bottom panels
  - Reef lines
  - Corner support lines
  - Draw and cut out middle panel.
- Glue up, using:

  - Cover your work surface with wax paper. Wax paper will not adhere to the silkspan when coated in glue
  - Glue – made from Elmer’s and water – 50-50 solution
  - Mildewcide in available where paint is sold add to the glue mixture..
  - Use paintbrush to coat silkspan
- Lower panel coat first – apply middle panel – coat with glue solution
- Middle panel next – apply top panel – coat with glue solution
- Use hand or small roller to remove air bubbles as you go from each layer
- Let dry
- Add boltrope – do leech edge last – join ends of boltrope
- Fold over edge as you work your way around.
- I use a tack at the clew, tack, peak and throat corners to make the loop for rigging
- Glue the support panels – both sides
- Add reef band
- Add reef lines
- Let dry



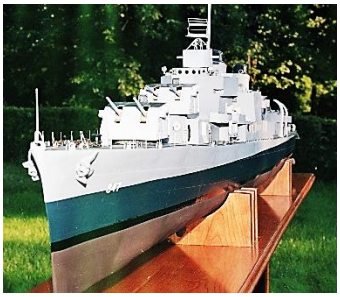
- Left to right
- Model plan pattern for sail
  - Cardboard pattern
  - Glued up sail
  - Finished product
- Start to finish – 45 minutes – including setup

Ships on Deck

DD847 USS Robert L. Wilson

Steven Keller

A restoration project started in the 1980’s. Model is at ¼” scale and is about eight feet long.

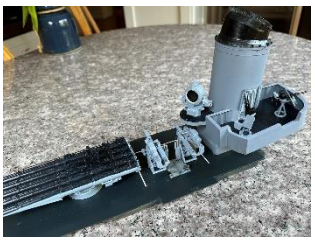


She had damaged water channels that required surface preparation.

Before.

After

Plus, upgraded doors, frames, equipment and deck accessories.



Halifax – 1768-1775

Henry Martinez

Constructo kit “Halifax – 1768-1775. 1/35 scale.


Completed most of the standing rigging and finishing the deck furniture.


Anchors and running rigging coming up.

HMS Sphinx

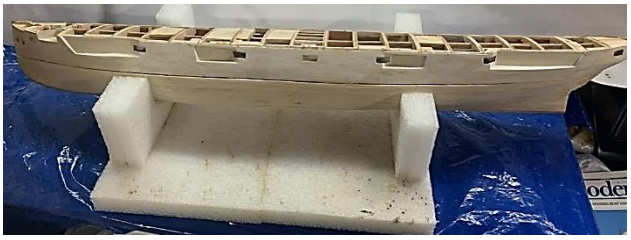
Cliff Mitchell

Completed gun deck bulkheads, installed the cabin floor and seat and fairing the sides in preparation for planking.

U.S.S. Cleveland C-19

Bill Schwartz

Hull planking complete and working on a prototype made from styrene for the propeller shafts.




Pegasus

Jason Smith

Adding sheer poles above all deadeyes


Bowdoin

Rob Washburn

Rob has completed the model of the *Bowdoin*. Originally a “Laughing Whale” kit. Repackaged and released by Bluejacket Shipcrafters. The *Bowdoin* is ¼” scale. Originally built in East Boothbay, ME, she made nearly 30 voyages to the ice-jammed waters of the Artic. She is still sailing at the Maine Maritime Academy.

L’Indiscrete (Xebec)

Bill Nyberg

Standing rigging is complete.

Sails cleaned, rigged and now dealing with how the attach the yards to the masts.

Other Notes: “Stuff”, Tugs & Things

Nautical Terms

Grog: Watered-down purser's rum consisting of half a gill with an equal part of water, issued to all seamen over twenty (CPOs and POs were issued with neat rum). The Royal Navy discontinued the practice of issuing rum in 1970.

Grommet**:** 1 - A metal or plastic ring inserted in canvas to prevent wear; 2 - A ring of rope.

Grounding: When a ship (while afloat) touches the bed of the sea, or runs aground. A moored vessel that grounds as the tide goes out is said to "take the ground".

Guineaman: Another name for a slave ship, coined after the emergence of the transatlantic slave trade from Africa in the 15th century.

Guards: 1. (on an oceangoing sidewheel steamship. Horizontal structures, usually of wood, built around the paddle boxes just above their lowest point and extending a short distance fore and aft, designed to protect them from damage and to provide additional support for the paddle shaft.

2. (on an American sidewheel steamboat) Extensions of the main deck beyond the hull to the outer extremity of the paddle boxes, and tapering to the bow and stern (thus giving the deck a characteristic oval shape), to increase the available deck space for passengers, cargo, and/or machinery.

Guard ship: 1. Any vessel that makes the rounds of a fleet at anchor to see that the watch is kept at night; 2. A warship stationed at a port or harbour to act as a guard there; 3. In former times in the British Royal Navy, a ship that received men impressed for naval service.

Gun Deck: 1. Up through the 19th century, a deck aboard a ship that was primarily used for the mounting of cannon to be fired in broadsides; 2, On marine seismic survey vessels, the lowest deck on the ship, which carries the seismic source arrays, consisting of air guns arranged in clusters.

Gunport: An opening in the side of a ship or in a turret through which a gun fires or protrudes.

Gunter Rig: *Also* ***sliding gunter*** *or* ***gunter lug****.* A fore-and-aft sail set abaft (behind) the mast, approximately triangular in shape, with the top half of the luff (front) of the sail attached to a yard which extends the sail above the top of the mast. The yard is raised and lowered with the sail. This traditional sail is popular in small boats and produces aerodynamic performance close to that of the highly developed Bermuda rig.

Gunwale: Generally, the upper edge of the hull; more specifically, in an open (undecked) boat of timber construction, the longitudinal stringer that connects the top of the ribs.

Gurdy: A mechanical crank used to set and retrieve fishing lines.

Guy: 1. A rope or stay leading to the side of the vessel. 2. A rope used to steady a boom.

Gype: *Also* ***jibe****.* To change from one tack to the other away from the wind, with the stern of the vessel turning through the wind

Gypsy winch: A type or component of an anchor winch. The "gypsy" or "gypsy wheel" engages the anchor chain.

Nautical Terms Wikipedia

Tips to Motivate Your Modeling

Your editor copied the following suggestion from the “Scuttlebutt” newsletter... My comments are below.

1. Develop your own plan in outline form so you go through the same steps with each model you begin. Do it on your computer or PDA so changes and updates are easily executed.
2. Don’t model in silence. Provide your modeling area with music, a good source is the cable TV music channel.
3. Movies, Photographs, Drawings -- What the eye takes in can be a stimulus and motivation to pick up the knife, the brush or the tweezers. In addition, they bring to life the detail you are trying to emulate. Do not get bogged down in research but knowing the history of your subject helps in its recreation
4. Talk to get motivated. I know once I tell my wife, club member, etc., about a phase of the

layout I am going to build, I feel a sense of commitment to carry it out.
5. Seeing the finished project stimulates my desire. I imagine it finished. Here again, pictures of model I am emulating provide an inducement to get to work.
6. You will get more done more quickly by breaking your modeling project into modules. When taking a small step; you’ll want another.
7. Find your niche. You will be much more motivated if what you are modeling is something in which you have a sincere interest.

Tugs: Great Lakes

Cayuga (Towboat) 1872

Built in 1872, at Buffalo, NY, by David Bell, at first enrollment her measures were 57.5’ x 112’ x 5’ with a tonnage of 27 grt. Her hull was made from iron. She was powered by a high-pressure engine 12” bore x 14” stroke. Her official number was 125149. Her initial owner was Southern Central RR, Fairhaven, NY. Between 1873 and 1913, she went through 16 owners.

In 1913, she was sold Canadian at Chatham, Ont. and renamed *Velma.* In 1918 she was sold to American Standard, renationalized at Sault Ste Marie as the *John Hatch.*

Under the ownership of T.L. Durocher in 1923, the tug *John Hatch* foundered in the St. Mary’s River. Her enrollment document surrendered and declared a total loss.

Jos. McCallum, Thessalon, Ont. recovered the wreck, had her rebuilt and registered Canadian as *SS Mac,* C171016. She was laid up in 1950 at Thessalon, Ont. and declared “abandoned” in 1962.

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

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Champion 1868

The wooden tug *Champion,* built in 1868 at Detroit for Campbell & Owen, for John Edwards, et al, also from Detroit. Her enrollment measurtes were 134’ x 21’ x 11.8’, with a tonnage of 263 grt and issued official number 5720. She was powered by a direct-action, high-pressure engine, 26", 26" bore x 33" stroke, 800 horse power, built by Dry Dock Engine Works, Detroit, MI in 1868. The propeller *Champion* was built as the largest steam tug on fresh water for use in towing schooner barges or large log rafts.

The tug *Champion* was made famous in the Seth Whipple, Detroit, painting of the *Champion* towing eight schooners (above): *Wells Burt, Michigan, Elizabeth A. Nicholson, James F. Joy, Francis Palms, Sweetheart, Sunnyside,* and *Emma L. Coyne.*

In September 1902, while at anchor at Put-In-Bay, South Bass Island, OH, Lake Erie, she caught fire and burned to her waterline and sank. Owned by Captain Harris W. Baker, the hull was raised in 1904 and towed to bone yard in Detroit, where the engine was removed. The loss was valued at $32,000 and insured for $5,000.

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

Presentation Schedule:

2023- Tentative
Jan 21 – ~~Principles of Rigging~~
Feb 18 – ~~Research: internet, Historical~~
Mar 18 – ~~Getting Started with RC Boats~~
Apr 15 – ~~Fixtures: Rudders~~
May 20 – ~~Capstans & Windlasses~~
June 17 – ~~Standing Rigging & Deadeyes~~
July 22 – ~~Running Rigging, Blocks, Belaying~~
Aug 19 – ~~Making Sails~~
Sep 16 – Soldering
Oct 14 - Finishing: Natural & Paint
Nov 18 – Displaying & Mounting ship models
Dec 16 - Open

Events & Dates to Note:

2023 Tentative Schedule
~~**Columbus Woodworking Show**~~
~~**Ohio Expo Center**~~
~~**January 20-23, 2023**~~

~~**IPMS Columbus**~~
~~**BLIZZCON 2023**~~
~~**Makoy Center, Hilliard, OH**~~
~~**Saturday, February 18, 2023**~~

~~**Miami Valley Woodcarving Show**~~
~~**Christ United Methodist Church**~~
~~**Middletown, OH**~~
~~**March 4 & 5, 2023**~~

~~**46th Midwestern Model & Boat Show,**~~
~~Wisconsin Maritime Museum, Manitowoc, WI~~
~~**May 19 - 21, 2023**~~

~~**U.S. Navy "Blue Angles"**~~
~~**Rickenbacker Int. Airport**~~
~~**Columbus, OH**~~
~~**June 16-18, 2023**~~

~~**Lakeside Antique & Classic Wooden Boat**~~
~~Lakeside Hotel, Lakeside, OH~~
~~**July 16, 2023**~~

~~**U.S. Air Force "Thunderbirds"**~~
~~**Dayton Int. Airport**~~
~~**Dayton, OH**~~
~~**July 22-23, 2023**~~

U.S. Air Force "Thunderbirds"
Cleveland Burke Lake Front Airport
Cleveland, OH
September 2-4, 2023.

Ohio River Sternwheel Festival
Riverfront Park, Marietta, OH
September 8 – 10, 2023

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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.

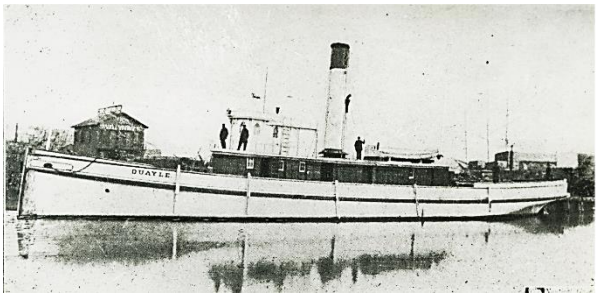
There are currently two logo styles available**:**

- **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

Written by William E. Nyberg

1867-d



Thomas Quayle: Quayle & Martin, Cleveland, built a wooden towboat for the bulk freight towing trade. The tug *Thomas Quayle* was enrolled at Detroit, May 17, 1867and her measures recorded as: 125.3' x 21.7' x 12.0'; tonnage was 202.05 grt. She was issued official number 24159. She was powered by an engine with a 26 1.2; bore x 30" stroke. Builder unknown. Her original owner was Beach & Co., Detroit. In May 1869, the tug *Thomas Quayle* had her stern damaged in a collision in Saint Clair River.

Ownership of the *Thomas Quayle* was changed to Trowbridge & Wilcox, Detroit in 1871.

In 1875, her ownership was changed to G.H. Parker, Detroit. Her chief engineer for the 1873 – 74 seasons was John Broderick. Her master for the 1879 – 83 season was Captain Henry W. Stone and in May 1881, the enrollment tonnage for the *Thomas Quayle* was changed at Detroit to: 245.39 grt, 151.80 net. In October 1885, bound for Duluth, MN, the tug *Thomas Quayle,* with the schooner barges *Zach Chandler* (U28020)*, Commodore,* and *W. L. Peck* (U62781) in tow, arrived at Ontonagon, MI and after delivering the tow of schooners discovered that a fire had broken out near the boilers. The *Thomas Quayle* burned to the water's edge and sank. No lives lost. Property loss $12,000.

In December 1887, the machinery from the tug *Thomas Quayle* was recovered and placed in a new boat, building at Algonac, MI. In September 1893, the whistle from the *Thomas Quayle* was placed in the tug *L.L. Lyon* (U14708). In August 1909, the hulk of the *Thomas Quayle* was removed by dynamiting & raising the pieces.

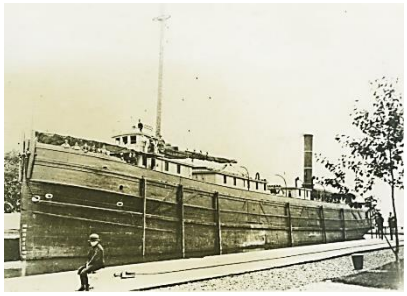
Katy Reid: The Dry Dock Company, De Pere, WI, built, in 1867, a wooden sidewheel steamer for the towing trade on the Fox River and Green Bay. Her first enrollment issued at Milwaukee, March 24, 1870 and her measures recorded as: 101.0'x 17.0' x 6.5'; with a tonnage of 103.21 grt. The *Katy Reid* was equipped with two horizontal (2) engines, 16" bore x 60" stroke, built by Fort Howard Foundry & Machine Works. She was also equipped with two boilers (2) 16' long. 16' wheels with buckets 5' 4" long, 17" wide. The sidewheel steamer tug *Katy Reid* was built for the towing trade on the Fox River and in Green Bay.

In 1868, ownership of the sidewheel steamer tug *Katy Reid* was changed to East Shore Line and she was modified for passenger service.

In March 1870, ownership of the *Katy Reid* was changed to Enos, Spring Lake, MI for use on the Grand River. In June 1871, enrollment of the sidewheel steamer tug *Katy Reid* was changed at Milwaukee to include an official number of US 14255.

June 1872, ownership of the tug *Katy Reid* was changed to John D. McKinnon, Bay City, MI and enrolled at Port Huron, MI.

In 1873, ownership of the *Katy Reid* was changed to George Campbell, Bay City, MI and was engaged in transferring logs from the shore to mills on the Saginaw River. October of 1873, while lying at Staudacher's dock at Salzburg, MI, Saginaw River, the sidewheel steamer tug *Katy Reid* caught fire at night and burned to the water's edge. No lives lost.



Roanoke: In 1867, the Lafrinier Brothers, Cleveland; Ira Lafrinier, master carpenter, built a wooden propeller for N.C. & H.J. Winslow. Her first enrollment was issued at Cleveland, June 6, 1867, and her measures were: 217.42' x 31.16' x 12.42'; with tonnage, 1069.92 grt, 956.68 net. She was issued official number 21145.She was equipped with a compound engine, type and builder are unknow. The propeller *Roanoke* was built for the package freight trade. In September of 1867, the package freighter *Roanoke* and the sidewheel steamer *City of Sandusky* (US-5062) collided at Clay Banks, Lake Erie. In March 1868, she was chartered to the Ensign Commercial Line and was managed by Charles Ensign. In October 1869, the package

freighter *Roanoke* went aground on Elk Island, St. Clair River. She was lightered to be released

In May 1871, ownership of the package freighter *Roanoke* was changed to Charles Ensign, Buffalo. In July 1874, the *Roanoke* had her machinery disabled on Lake Erie. Two months later, in September, the *Roanoke* collided with the schooner *Bay State* (1855) at Chicago. In September of the following year, she collided with the schooner *M. F. Merrick* (U16342) near Pigeon Bay, Lake Erie. Her chief engineer for the 1876 season was John Smith. The package freighter *Roanoke* was laid up in 1884, when the Commercial Line, owned by Charles Ensign, went into receivership.

In May 1885, ownership of the package freighter *Roanoke* was changed to W.F. Botsford & Company, Port Huron, MI. Her chief engineer for the 1884 & 85 seasons was James V. Burke. Her masters of the *Roanoke* for the 1886 & 87 seasons was Captain James B. Symes; for the 1889 season her master was Captain A. F. Pitman, and for the 1890 season, Captain James Martin. In May 1890, while loading general merchandise at the foot of Evans and Commercial Streets, Buffalo, the *Roanoke* caught fire and had her upper works and machinery badly damaged. She was towed to Toledo for repair whiles. The package freighter *Roanoke* had two masters during the 1893 season, Captain James Martin and Captain George L. Thompson, with Captain Alonzo Cox as master for the 1894 season. In August 1894, bound up, from Port Huron for Duluth, laden with 4,000 barrels of salt, the package freighter *Roanoke* caught fire, burned and sank in 200 fathoms of water, twenty miles off Fourteen Mile Point, Lake Superior. No lives lost.

Final enrollment for the package freighter *Roanoke* was surrendered at Port Huron, September 30, 1894.

Sanilac: The first enrollment was issued at Port Huron for the steambarge *Sanilac* on June 04, 1867. Built by Charles Hinman, at Algonac, MI, she was a wooden propeller for the Lake Huron lumber trade She was owned by J.L. Woods, Lexington, MI, & Henry Fish, China, MI. Her measures were: 151.0’ x 26.75’ x 10.5’; with a tonnage of 263.37 grt. She was powered by high pressure engine, 20” bore x 22" stroke, 225 horse power, built by Detroit Locomotive Works, Detroit in 1867. Her official number was 23108. Master of the steambarge *Sanilac* for the 1867 season was Captain Fish with Stephen H. Miller as chief engineer. During winter 1870/71 layup at Black River, MI, the steambarge *Sanilac* was provided with cabins to accommodate passengers.

In April 1871, ownership shares in the steambarge *Sanilac* was transferred to Woods & Fish, et.al., Lexington, MI. In October 1872, the steambarge *Sanilac* went aground on Kelly’s Island, Lake Erie. In March 1874, the steambarge *Ballentine* broke adrift on the St. Clair River and collided with both the *Sanilac* and the tug *Uncle Sam* (U25131) inflicting $200 damage on the *Sanilac.* The following month the steambarge *Sanilac* went ashore on Harsens Island, Saint Clair River. In 1876, the steambarge received a new firebox boiler, 6'8" x 16', 70 pounds steam. During winter layup of 1879/80, the *Sanilac* was rebuilt as a propeller at Wolverine Drydock, Port Huron. Her measures were updated to: 161.42’ x 27.42’ x 10’, 310.31 grt, 209.77 net, in May 1880.

June 1881, ownership of the steambarge *Sanilac* was changed to W.V. & W.C. Penoyer, Oscoda, MI. Master of the *Sanilac* for the 1881 season was Captain Angus E. Keith with William Harling as chief engineer for the 1879 to 85 seasons.

March 30, 1882, the Saginaw Transportation Co., Saginaw, MI, was listed as new owners of the steambarge *Sanilac.* Her master for the 1882 & 83 seasons was Captain William Roach. In September 1883, the steambarge *Sanilac,* bound down in a heavy rain squall, ran aground on the Middle Ground, near Point Edward, MI., Saint Clair River.

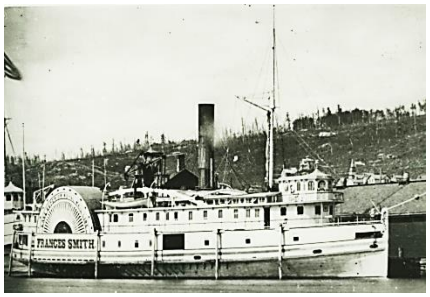
Ownership of the steambarge *Sanilac* was changed in April 1886, to F.C. Stone, et.al., Saginaw, MI. Master of the steambarge *Sanilac* for the 1890 – 91 & 1893 seasons was Captain Michael Maher with Anthony Ward as chief engineer for the 1889 – 1892 seasons.

Ownership of the steambarge *Sanilac* was changed multiple times, starting with William A. O'Donnell, Michael Maher & James Scallen, Saginaw in 1891; Charles H. Davis, Saginaw in November 1894; Robert J. Hanson, Bay City, in June 1896; James & James E. Davidson, Bay City in April 1897; Helena Flood, Chicago in May 1897, who placed her in the Lake Michigan lumber trade.

In June 1899, ownership of the steambarge *Sanilac* was changed to Francis B. Higgie, Chicago; April 1900 to

George H. Flood, Chicago; January 1905, to Mary H. Flood, Chicago; and in May 1911, ownership of the
Sanilac was changed to William Disher, Chicago.

In February 1912, the Lake Independent Lumber Company, Big Bay, MI, took ownership of the steambarge *Sanilac.* In November 1912, her final enrollment was surrendered at Marquette, MI and endorsed "unfit for service – condemned".



Frances Smith*:* Melancthon Simpson, Owen Sound, Ont. built a wooden sidewheel steamer for Captain W. H. Smith, Owen Sound, who would run her in the passenger, package freight trade, from Owen Sound to Cape Rich to Meaford and then to Collingwood where the Northern Railroad from Toronto terminated. Her initial enrollment at Collingwood in June 22, 1888, listed her measures as: 181.8' x 27.9' x 11.75'; 1313.77 grt, 833.97 net. Her official Canadian number was 92310. She was powered by a vertical beam, low pressure engine, 40" bore x 144" stroke, 53 horsepower, built by Oliver Machlem, Chippawa, Ont. in 1853. Her master for the 1867 – 71 seasons was Captain W. H. Smith.

In July 1868, the sidewheel steamer *Frances Smith* struck the schooner *Clyde* near her bow while she was rounding Griffith's Island, Georgian Bay. The schooner was towed into port by the *Frances Smith* for repairs. In November of the same year, bound between Owen Sound and Bying Inlet, during a gale, the sidewheel steamer *Frances Smith* ran aground on a shoal at Key Harbour. She became ice bound. After six months on the shoal, the sidewheel steamer *Frances Smith* was freed and towed to Campbell & Owens Dry Dock, Detroit for repairs. In July of that year, the steamer *Frances Smith* broke her shaft near Collingwood. In the same month, she broke her safety valve between Owen Sound and Collingwood.

In 1872, ownership of the steamer *Frances Smith* was changed to Francis Smith, Owen Sound. Her master for the 1872 – 75 season was Captain W. Tate Robertson with Isaiah Davis in 1872, John Lee in 1873, and Alex McLoed in 1875 as chief engineer. She was placed on the Collingwood and Lake Superior line in 1872. In October 1875. caught in a storm on Lake Superior, the steamer *Frances Smith* escaped foundering, by throwing fifty-six head of cattle overboard and many sheep and swine were drowned. The cook-house was demolished, supplies destroyed, and the rudder became unmanageable. No lives were lost.

In 1877, ownership of the steamer *Frances Smith* was changed to Mrs. F. Smith, Owen Sound. In September of the following year, the *Frances Smith* went aground on Topsail Island, Sault River, during smoky weather

In 1884, ownership of the steamer *Frances Smith* was changed to W. T. Robertson et al, Owen Sound.

In 1888, her ownership was changed to the Great Northern Transit Co., Collingwood, and renamed *Baltic.* Her master for the 1888 season was Captain Bond. Bound up from Collingwood for the Sault in September 1888, the steamer *Baltic* went off course during a gale and went on the rocks off Clapperton Island, North Channel, Georgian Bay. The steamer *Baltic* went aground in the Soo River in September 1890. The steamer was laid up at Collingwood in 1893. In September 1896, while laid up at the Huronland Street slip, Collingwood, the steamer caught fire in the early morning hours and burned to a total loss.

St. Clair: James Bushnell, Algonac, MI, built a wooden propeller steambarge for William R. Owen et al, St. Clair, MI to be used for the passenger, package freight trade. Her measures when registered in 1867 were: 127.4' x 25.8' x 10.0'; 236.48 grt. She was issued official number 23109. In October she went aground on Fighting Island, Detroit River.

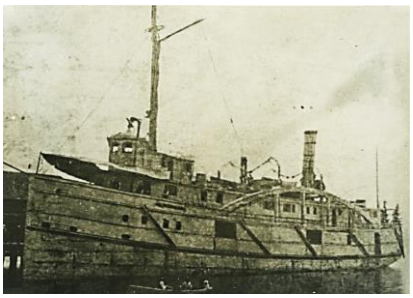
In March 1871, ownership of the steambarge *St. Clair* was changed to Ira H. Owen; Escanaba & Lake Michigan Transportation Co., Algonac. In September of that same year, the steambarge *St. Clair* struck an unknown obstacle while entering Sheboygan Harbor, WI, and sank in eleven feet of water.

Ownership of the steambarge *St. Clair* was changed to Eben R. Ayres et al, Sandusky in March 1872.

In March of the following year, ownership of the steambarge *St. Clair* was changed to Charles H. Westcott, Detroit.

In April 1874, ownership of the steambarge *St. Clair* was changed to J. M. Nicol; Ward's Central & Pacific Lake Co., Detroit. Master of the

steambarge *St. Clair* was Captain Rhyness in 1876, with Daniel J. Stunger as first engineer.
She was rebuilt at Detroit in June 1876 where she received an upper deck and extended cabin and her enrollment tonnage updated to: 326.78 GRT. In July 1876, bound from Ontonagon to Houghton, MI, the steambarge *St. Clair,* laden with cattle, merchandise and 18 passengers and 14 crew, caught fire off Fourteen Mile Point, Lake Superior and burned to a total loss. The lives of 17 passengers and 10 crewmen were lost.



St. Joseph: Hitchcock & Gibson, Buffalo, built a wooden propeller for the John T. Edwards & Company, St. Joseph, MI to be used in the passenger, package freight trade. She was powered by a steeple compound engine, 18", 33" bore x 28 stroke, builder unknown. Her initial enrollment was issued at Buffalo, NY, July 10, 1867, when she was issued official number 23354. Her recorded measures were: 155.6' x 28.0' x 9.25'; 473.93 grt.

In June 1869, ownership of the package freighter *St. Joseph* was changed to Goodrich Transportation Company, Manitowoc, WI. In July of that year, she went ashore on Bailey's reef, Green Bay, Lake Michigan. In November of that same year she went ashore on Bailey's harbor reef, Green Bay, Lake Michigan and sprang a leak. In 1871, she sank due to a collision near Fighting Island, Detroit River. In April 1872, the package freighter *St. Joseph* caught fire while in drydock at Wolfe & Davidson's shipyard, Milwaukee, and narrowly escaped destruction. (04/09/1872)

Ownership of the package freighter *St. Joseph* was changed to Charles A. Chamberlain, Detroit in May 1873.In October of 1875, the *St. Joseph,* bound down, collided with the up bound schooner *Cornelia Amsden*, near Sand Beach, Lake Huron.

In April 1877, ownership of the package freighter *St. Joseph* was changed to Frederick G. McDowell, Cleveland.

In July of that year, her ownership was changed to F.W. Gilchrist, Alpena, MI.

In 1878, ownership of the freighter *St. Joseph* was changed to Campbell S. Fisher, Detroit. During winter layup 1880/81, the *St. Joseph* was rebuilt as a steambarge at Detroit: new tonnage 263.24 grt, 169.39 net. In October 1881, the steambarge *St. Joseph* and the schooner *J. B. Wilbur,* in tow of a tug, collided on the Chicago River. Her master for the 1883 season was Captain Alexander Elton.

In April 1884, ownership of the steambarge *St. Joseph* was changed to T.W. Harvey Lumber Co. and her master for the 1885 season Captain William Meldrum. She was rebuilt at Manitowoc and her enrollment update in July 1887: 146.75' x 28.75' x 12.75'; 520.41 grt, 260.21 net.

In March 1889, ownership of the *St. Joseph* was changed to Samuel Neff, Milwaukee. He had her rebuilt and her registered tonnage changed at Milwaukee in May 1889: 146' x 29.3' x 11.2'; 304.03 grt, 171.14 net. Chief engineer for the steambarge *St. Joseph* for the 1890 & 91 seasons was Joseph J. Krach

In August 1895, ownership of the steambarge *St. Joseph* was changed to F.W. Wheeler & Company, West Bay City, MI.

In May 1896, ownership of the steambarge *St. Joseph* was changed to William C. Blodgett et al, Oswego, NY. Her masters were: Captain Fred A. Bradley, 1897 season; Captain George E. Talbot, 1899 season; Captain Frank Conlin, 1900-02 seasons; and Captain James Morgan for the 1903 season; with her chief engineers: Henry Johnson. 1898 season; J. A. Braman for the 1899 & 1902 season; C. Johnson for the 1900 season; Louis Plant for the 1901 season; W. H. Beale for the 1903 season; and Joseph Paya for the 1904 season.

In April 1905, ownership of the steambarge *St. Joseph* was transferred to New York, Ontario & Western Railway Company, Oswego, NY. Her master was Captain Fred J. Eber for the 1904-05, & 08 seasons, with James McNally for the 1905 & 1908 seasons as chief engineers. In 1909, the *St. Joseph* received a new scotch boiler, 9'10" x 11'4"; 106 pounds steam, built by Kingsford Machine Works.

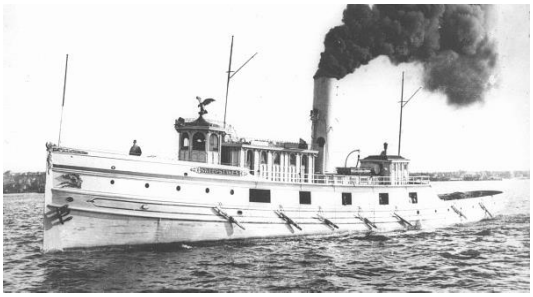
In April 1913, ownership of the steambarge *St. Joseph* was changed to Standard Navigation Company, Buffalo.

In April 1914, ownership of the steambarge *St. Joseph* was changed to Frank J. Peterson, et.al., Oswego. Her master of the steambarge *St. Joseph* for the 1915 & 16 seasons was Captain James Birmingham with John Grimly as chief engineer in 1915.

Ownership of the steambarge *St. Joseph* was changed to American Box Company, Cleveland

in June 1916. Her master for the 1916 season was Captain James Cunningham.

The steambarge *St. Joseph* was sold Canadian in 1916. to American Transit Co., Sarnia, Ont., and registered as *Frank B. Stevens,* C134517: 146’ x 29.25’ x 11’; 516 grt, 269 net. Her final U.S. enrollment for the steambarge *St. Joseph* was surrendered at Cleveland, September 21, 1916 and endorsed “sold alien”. In May 1919, the steambarge *Frank B. Stevens* sank in the harbor at Ashtabula, OH and was declared a constructive total loss due to her age. The steambarge *Frank B. Stevens* was listed as scrapped in 1922, and dropped from Canadian registry 1925.



Sweepstakes: In 1867, Quayle & Martin, Cleveland, built a wooden towboat for H.N. Strong, Detroit. Initially enrolled at Detroit, May 11, 1867, her measures were: 130.58’ x 21.66’ x 11.66’; 205.88 grt. She was issued official number 22383. She was powered by a high-pressure engine, 30" bore x 30" stroke, built by Samuel F. Hodge, Detroit. Steam was generated by a scotch boiler, 14' x 12', 150 pounds steam. She was intended for towing log rafts. In 1869, she joined the
Detroit Tug Association & St. Clair Tug Association. In August of that year, she broke her cylinder head on the St. Clair River. July 1871, the tug *Sweepstakes* had her machinery disabled and repaired at Detroit. In September of that year, she was in a collision on Lake Erie with the bark *Monarch* (U17776), losing her smokestack. During winter layup 1872/73, she was rebuilt and her recorded enrollment tonnage change at Detroit: 130.7’ x 21.8’ x 12.5’; 227.89 grt, 139.83 net. She also had her engine was compounded as a steeple compound, 20", 40" bore x 32" stroke, 300 horsepower, built by S.F. Hodge, Detroit. Her master for the 1873 season was Captain Frank Welcome. In September 1883, the tug *Sweepstakes* went aground on Point Edward, St. Clair River while aiding the steambarge *Sanilac* (U23108). She was seized by Canadian authorities for serving in Canadian waters.

In 1884, ownership of the tug *Sweepstakes* was changed to Thomas Pitts, Detroit.

In 1887, ownership of the tug *Sweepstakes* was changed to John Pridgeon Jr., Detroit. He had her rebuilt and outfitted as a wrecker. In November 1890, the tug *Sweepstakes* lost her stern post & shoe off East Tawas, MI, Lake Huron.

In April 1892, ownership of the tug *Sweepstakes* was changed to Benjamin Boutell, Bay City, MI; Saginaw Bay Towing Co. Her master for the 1893 season was Captain John L. Bartlett. In 1894, her boiler was replaced by a scotch boiler, 13' x 13', 110 pounds steam, built by Wickes Bros, Saginaw, MI. In 1897, the tug *Sweepstakes* was rebuilt to handle passengers with staterooms, electric lights, steam heat and toilets added. Her master for the 1897 season was Captain Abel Voisine.

In 1898, the tug *Sweepstakes* was transferred to the east coast and her ownership changed to Boutell Barge Line and she was used for towing coal barges. Boutell Barge Line was organized as Boutell Transportation & Towing Co., Bay City, MI, in May 1899, which included the tug *Sweepstakes.*

In 1904, ownership of the tug *Sweepstakes* was changed to Davis Coal & Coke Company, Baltimore, MD. Her enrollment register was transferred from Cleveland to Baltimore, MD. In 1908, her enrollment was changed to list the tug *Sweepstakes* with a fore & aft compound, 15”, 30” bore x 24” stroke, 500 horsepower, built by Richards Iron Works, Manitowoc, WI with one scotch boiler, 8 1/3' x 14'. In 1912, she was rebuilt and her enrollment measures changed: 130.58’ x 21.66’ x 12.42’; 289 grt, 170 net.

In December 1913, ownership of the tug *Sweepstakes* was changed to Western Maryland Railroad Company and she was renamed *Sea King*, (U22383): 298 grt, 169 net.
In 1920, her ownership was changed to Eastern Transportation Co., Wilmington, DE. In 1923, the tug *Sea King* was reported abandoned and sank.

A.C. Van Raalte: Hitchcock & Gibson, Buffalo, built a wooden propeller for John T. Edwards et al, St. Joseph, MI, to be used in the passenger, package freight trade. She was intended to operate between Chicago, Holland and St. Joseph MI.
Her initial enrollment was issued at Buffalo, November 16, 1867, and her measures were:96.33’ x 23.0’ x 8.5’; 176.63 grt, 130.98 net. She was equipped with a high-pressure engine, 20” bore x 24" stroke, built by Farrar, Traffts & Knight, Buffalo, in 1867, She was issued official number 1496.

In March 1869, her ownership was changed to Lucy M. Green, New York, and A. B. Green, Chicago. She was operated by the Lake Michigan Transportation Co. In April 1869, the passenger steamer *A. C. Van Raalte* struck on St. Joseph’s Bar, Lake Michigan and broke her rudder. The following month, she lost her smokestack overboard in a collision with the schooner barge *Wood,* at Chicago, and again broke her rudder. In August on the same year, she broke her wheel at Chicago.

In 1870, ownership of the passenger steamer *A. C. Van Raalte* was changed to Woltman and Kraai, Holland, MI.

In April 1871, ownership of the passenger steamer *A. C. Van Raalte* was changed to F.M. Knapp and J.I. Case, Racine, WI for $10,500. In September 1871, the *A. C. Van Raalte* collided with the schooner *Yankee Blade* (US27516) at Chicago, damaging both vessels.

May 1872, ownership of the steamer *A. C. Van Raalte* was changed to J.M. Jones, Detroit.

April 1876, ownership of the *A. C. Van Raalte* was changed to Fox & Ross, Petoskey, MI. The passenger steamer collided with the schooner *E. M. Portch* (US8300) in Grand Traverse Bay, Lake Michigan in October 1876.

In October 1880, ownership of the *A. C. Van Raalte* was changed to Smith Brothers, William & Charles, Cheboygan, MI, She ran Saginaw, MI to Cleveland with lumber. She was rebuilt in 1883, with a housed-in lower deck and enlarged passenger cabins and was re-engine with a steeple compound, 15", 30" bore x 20" stroke, built by Sheriff's Mfg., Co., Milwaukee. Her chief engineer for the 1884-86 seasons was Cassius M. Williams.

In May 1885, ownership of the *A. C. Van Raalte* was changed to Charles H. Caskey & J.M. Burbeck, Harbor Springs, MI. They had her rebuilt and her enrollment measures updated to: 96.4’ x 23’ x 8.6’; 176.63 grt, 130.98 net,

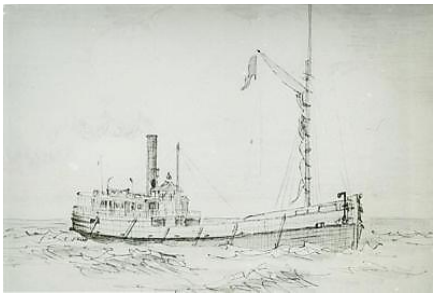
Her ownership was changed to May 1888, to A. C. Majo et al, Muskegon, MI. Her master for the 1888-89 seasons
were Captain Albert Carrier Majo and Captain James T. Borland. In June 1888, the steamer *A. C. Van Raalte* sank in a collision with the propeller *Favorite* (US9201) at Muskegon, MI. She was raised by Dunham Wrecking and Towing Co. and repaired. During winter layup, the steamer *A. C. Van Raalte* was condemned for passenger use and her ownership was changed to Garden City Sand Co., Chicago. She was rebuilt as a tug and used for dock contracting work around Chicago. Her enrollment registration transferred to Chicago in May 1890 and her measures recorded as: 92’ x 23’ x 7.42’; 103.82 grt, 63.39 net. In December 1890, the tug *A. C. Van Raalte* went ashore near Kenosha, WI in a snow squall.

In 1891, ownership of the tug *A. C. Van Raalte* was changed to Andrew Ondudonk, Chicago. In May of that year, the tug *A. C. Van Raalte* sank in the Chicago River. Later raised.

In 1895, ownership of the tug *A. C. Van Raalte* was changed to John and William Ross, Chicago. She carried supplies for the firm. February 1897, she was caught in ice and damaged.

In May 1898, ownership of the tug *A. C. Van Raalte* was changed to C.R. Leihy, Bayfield, WI and rebuilt as a single-decked tug for rafting work. Her enrollment was transferred to Marquette, MI: 87.33’ x 19.5’ x 6.66’, 97 grt, 57 net. Her engine was listed as a steeple compound, 15”, 30” bore x 24” stroke, 300 horsepower, built by Sherriff’s Manufacturing Co. Milwaukee; firebox boiler, 7’ 6” x 12’, 150 pounds steam, built by Kingsford Foundry Co., Oswego.

In April 1901, ownership of the tug *A. C. Van Raalte* was changed to John Schroeder Lumber Co., Ashland, WI and used for rafting in western Lake Superior. In July 1903, she was renamed *Ashland,* (U1496).
Her masters of the tug *Ashland* for the seasons between 1906 to 1935 were Captain Eli Jacques (1906-08), Captain Manning Kilton (1909-14, 1917-25, 1927-29, 1931-35). Her chief engineers during that period were: John Sanville (1909-10), Sherman A. Boole’s (1911-15), D. A. Fredericks (1917), George Russell (1918-20, 1926, 1929, 1931-34), William Durand (1921-22), Norris Kilton (1924) and Louis Lewandowski (1927-28) as chief engineers. In 1908, she was rebuilt and received an iron lined boiler house and a sheathed bow. In 1918 she was reengined. In 1935, after 68 years’ service, the tug *Ashland* was laid up following the depression, when the lumber business had all but disappeared. In 1937 the 70 year old hull was dismantled on the Ashland, WI waterfront and abandoned.



Yosemite: George Fordham, at Sandusky, OH, built a wooden steambarge for Captain John Estes, and Ryan, Johnson & Co., both of Sandusky. She was enrolled at Sandusky, April 26, 1867 and her recorded measures were: 152.25’ x 28.66’ x 9.50’; 310.07 grt. She was powered by a high-pressure engine, 26” bore x 28" stroke. Her boiler, 7'8" x 14', 85 pounds steam, built by Detroit Locomotive Works, Detroit. Her official number was 27541. The steambarge *Yosemite* was built as a steambarge for the bulk lumber trade and could carry 375,000 feet of lumber. Her masters for the 1869 season were Captain Estes with C. L. Scoville. Captain Scoville continued as master of the steambarge through 1874. In September 1874, the *Yosemite* went ashore at Sandusky. Her master for the 1877 season was Captain Robert T. Walker. In May 1887, the steambarge *Yosemite* went aground on Fighting Island in the Detroit River. Her chief engineer for the 1888 season was Charles O. King. In June 1890, the steambarge *Yosemite* broke her shaft and was repaired at Port Huron. April 1892, while towing two barges in Whitefish Bay, Lake Superior, the steambarge *Yosemite* caught fire and burned to a total loss off Emerson, MI.

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.

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 x 3/5)) x Beam x 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 forecastle 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.

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.)