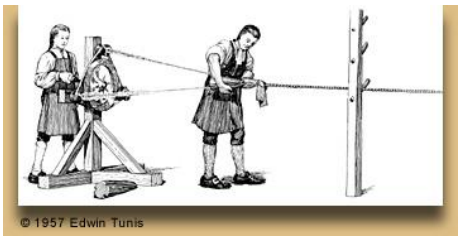


While one man cranks the spinner, the one holding the "top" walks backwards as the rope is twisted. From Edwin Tunis, *The Young United States, 1783 to 1830* (New York: World Publishing Co., 1969). Used by permission of the estate of Edwin Tunis.

Ropewalk

The Newsletter for
Shipwrights of Ohio – May 2023

Next Meeting: June 17, 2023;
"Standing Rigging & Deadeyes" – Steven Keller

Table of Contents

May

We gathered on the third Saturday of the month at the Westerville Public Library for our second hybrid meeting. John Boeck and Darrell Markijohn joined us from the Midwestern Model Ship and Boat Competition. We were back in the conference room (classroom C – they renamed it) with a smart screen TV and new furniture.


That said, the in-person turnout was low, but the zoom participants were many. We totaled 16.

While thinking about holding meetings via zoom versus hybrid, what I sense is, that with in-person meetings the participants share more of what they are doing as well as how they are personally doing. Talk seems to flow better. With Zoom meetings, to me, it seems like a collection of people who are unfamiliar with each other and the talk is labored. That is a personal opinion after doing this for a couple of years. So, 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.

For those of you that can, we will see you in June 17th, at the Westerville Public Library.

Now for the important news:

Darrell and John joined us and Darrell took us through a tour of the ship models on display at Manitowoc. Darrell has taken lots of photos and hopefully he will share those at an up-coming meeting. So, I know you are wondering how well they did:

Darrell Markijohn, took home, the "Best Novice Builder Award" and a Gold Award for his *U.S. Brig Niagara*.

John Boeck, as a novice, had three models entered and took home a Gold for his *U.S.S. Picket Boat #1*; and Silver Awards for his ship in a bottle *San Marco Di Venicia;* and for his stern wheeler *Puddle Jumper*. Congratulations.

We also connected with Kurt Van Dahm, host of the competition, and he has invited all of us to next years show. Let's plan on 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

A Look at the Shipwrecks of Ohio

It is estimated that there are over 2,000 shipwrecks in Lake Erie of which nearly 600 are believed to be in the Ohio waters of the lake. The photo above is of a lamp and clock recovered from a wreck.

From May 15th through September 25th, 2023 the National Museum of the Great Lakes will have a temporary exhibit, located in the Map Room of the Ohio Statehouse in Columbus. This new exhibit will explore some of the shipwrecks that occurred in Ohio waters. Two of which our members have or in the process of building: tug *Alva B,*& the steambarge *Margaret Olwill*.

Ohio Air Shows

On a different note, did you know that we celebrate this year the 100th anniversary of the National Museum of the U.S. Air Force at Dayton; the 120th Anniversary of the invention of flight by the Wright Brothers; the 100th Anniversary of the WACO Plane, a show is scheduled for September 15-17 at the WACO Air Museum in Troy, Ohio.

Plus, there will be three major air shows:

- June 16-18 – Rickenbacker International Airport, Columbus, OH, featuring the U.S. Navy "Blue Angles".
- July 22-23 – Dayton International Airport, Dayton, OH, featuring the U.S. Air Force Thunderbirds".
- September 2-4 – Cleveland Burke Lake Front Airport, featuring the U.S. Air Force Thunderbirds".

Nautical News

The Ohio River Sternwheel Festival in Marietta, Ohio takes place the weekend after Labor Day, September 8–10, 2023. Enjoy a weekend of family fun, fireworks and more. Admission is free.

Marietta was the first permanent settlement in the Northwest Territory after the Revolutionary War. Founded at the confluence of the Muskingum and Ohio Rivers in 1788, a few of the original pioneers were shipwrights. Between 1800 and 1808, the shipyards on the Muskingum River built 84 ocean rigged: brigs, sloops, gunboats, schooners, and ships, the largest at 400 tons. Launched at Marietta, they sailed down the Ohio & Mississippi Rivers for the Atlantic Ocean. The building of ships on the Muskingum River was stopped by Jefferson's embargo Act of 1807.

David McCullough documented the founding of Marietta in his book "The Pioneers" published in 2019. Also, in NRJ, Volume 1, #3, July 1949, there was an article "The Saga of the Ohio Cornfield Ships" by Harry E. Erskine. Both are a good read.

Lakeside Wooden Boat Society

The Lakeside Wooden Boat Society, sponsors for the 20th Annual Lakeside Wooden Boat Show, organized and held at Lakeside, Ohio. Lakeside is a summer Chautauqua on the shore of Lake Erie, opposite Kelly's Island. This year's show will be held on Sunday, July 16th, from 12 – 4 pm. Lakeside will be pairing the show with the Plein Air Art Festival, which runs from Friday–Sunday the same weekend.

Business

Charter Club Membership

We, "Shipwrights of Ohio", have renewed our Charter Club membership for 2023. It is recommended that we link our web site to the NRG Charter Club page. Also, we can announce events and topics in the NRG Secretary's newsletter.

46th Midwestern Model Ship Competition

The past weekend, both John Boeck and Darrell Markijohn entered models in the model ship and boat competition at the Wisconsin maritime Museum, Manitowoc, WI. Kurt Van Dahm encourages us to plan to join them in May 2024 at Manitowoc. Let us lock that in for next year and complete those ship models we are working on.

Modeling Tips

Free Plans Source

https://archive.org/details/ship-design-drawing?tab=collection

The above is an interesting site if you are looking to build “Steel Navy” or steel merchant ships. The site is a collection of non-copyright booklets of general plans and arrangement drawings. There are currently 1,068 plans and drawings available. All are saved in .pdf format and are free for downloading.

Presentation

The Capstans & Windlasses

We started the presentation with two definitions and a question:

Capstan: a machine developed for use on sailing ships to multiply the pulling force of the seaman when hauling ropes, cables and hawsers.

Windlass: an apparatus for moving heavy weights, consists of a cylinder, which is rotated by a turn of a crank or belt, to multiply the pulling force of the seaman when hauling ropes, cables, chains and hawsers.

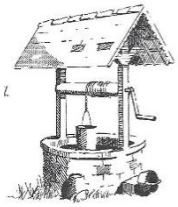
Two different devices to do the same thing? What is the difference?

Answer:

- A Capstan rotates on a vertical axis and is used to haul hawsers & anchor chains; also to assist in pulling a ship off when it has gone aground.
- A Windlass rotates on a horizontal axis and on a ship deals with sails, lifting/lowering yards, and loading and unloading cargo.

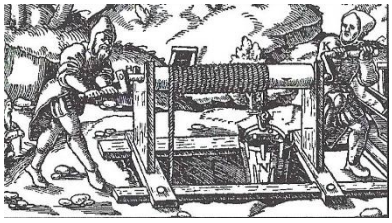
A “winch” is a generic term for both a capstan and a windlass and may more advantageously be divided into: Reel-winches; Tractor-winches

Reel-winch: are those in which a rope or wire is firmly secured to a drum or barrel and are best suited for tasks involving short repetitive actions.



The photo is of a simple reel-winch. One end of the rope is fastened to the drum. Rotate one way the bucket is lowered, rotate the other and the bucket is lifted.

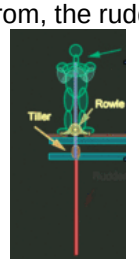
In the 16th C. German miners were first to pioneer the crank operated double ended windlass.



The middle of the rope is attached to the middle of the barrel with a bucket attached to either end of the rope. When rotated, one bucket goes down, while the other bucket is brought up.

Reel winches were used on sailing ships in steering and bracing the yards. Did you ever wonder why, with the rudder developed in the 15th C, that the steering wheel did not come into use until the early 18th C?

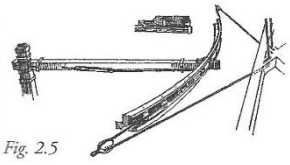
In 1638, the *Vasa* was steered by a whipstaff. In the photo below, and if you are online, the man on the whipstaff is moving. As he moves the whipstaff to and from, the rudder moves.



.

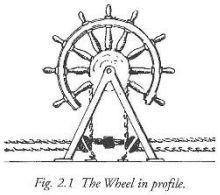
As ships became taller and broader, there came a need for a steering device which could stretch from the top deck of the stern down to the tiller, which was sometimes located more than a deck below. The whipstaff became the temporary solution. The tiller might get as much as 20° angle of turn, though angles of between 5° and 10° seem more likely.

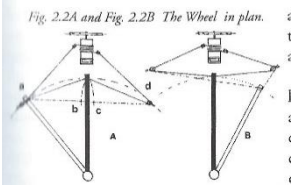
In the early 18th C. a steering windlass turned by cranks indicates a germ of an idea.



The whipstaff is on the right; Rudder and tiller on the left. As the whipstaff moved, the line attached through blocks moved the tiller.

The next step led to the steering wheel.

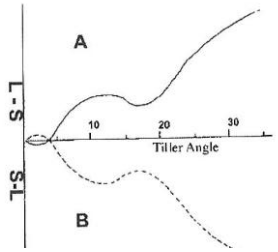




Note steering wheel barrel with rope wound around it, runs down through blocks at the base, and then back to the tiller. The diagram on the right shows the

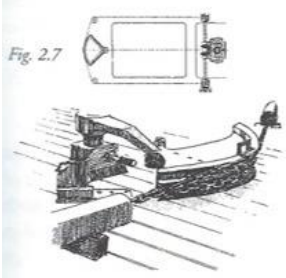
connection from above and the tiller movement. But, there was a problem of a double-acting nature with this solution – The problem arose because the rope paid out on one side did not equal the rope wound on the other side.

The graph above, shows the lengthening & shortening difference plotted against the tiller-angle.

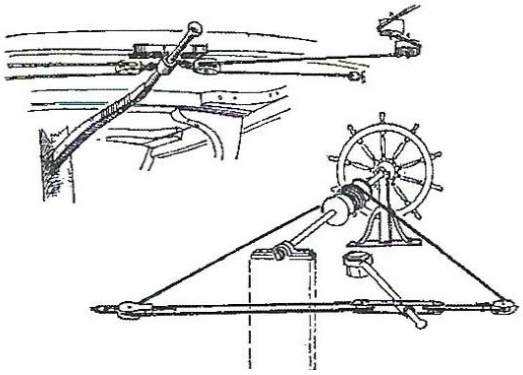


This slackness, when the tiller is near the greatest angle (steering wheel is hard over) the wheelman would be thrown from the steering wheel and the tiller may be broken. The solution was to use as little helm as possible and ship direction changes were controlled by trimming of sails.

The solution was the quadrant method. In the *HMS Victory*, 1759, Instead of ropes and blocks – chains and pulleys were used. You have to love the Industrial Revolution.



Patented in 1839 the Rapson Slide (below) can be found aboard the *USS Constitution* and the *USS Constellation*.



A single line, attached to the slide at the end of the tiller, feeds through blocks and is wrapped around the drum.

In the mid-19th C. – a steering gear featuring a push-pull double=screw design did an end-run around the problem.

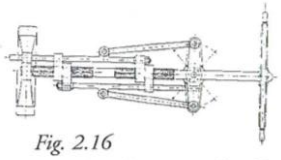
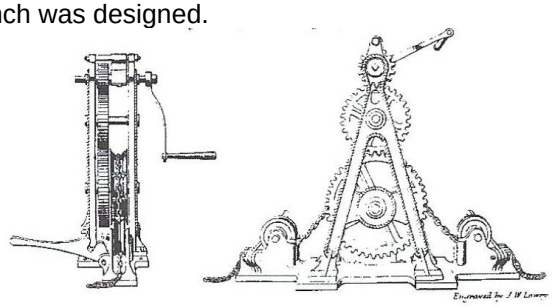


Fig. 2.16
Wheel working on push-pull double screw principle.

The second problem sailing square-rigged ships required, was control when the lee-braces were hauled in while the weather-braces needed to be paid out. This was primarily done by hand with many men required to handle the lines. To save overhead costs by reducing man power, the Brace-winch was designed.



The Brace-winch controlled both the lee-braces to be hauled in while the weather-braces are paid out and eliminated manpower and could be controlled by hand cranking or steam power.

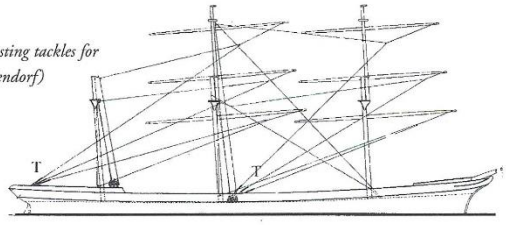
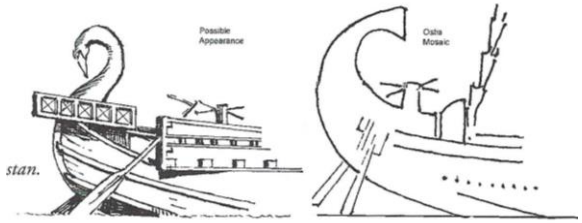


Fig. 3.9. Adjusting tackles for braces. (Middendorf)

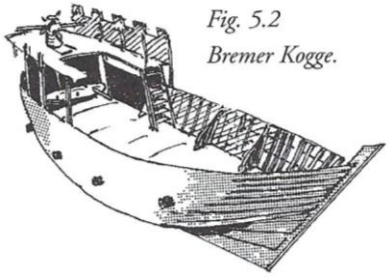
See diagram above: A tackle (T) with manila fall is provided for each brace. Sailing by the wind, the yards were not trimmed alike; Lower were braced up to 30 degrees; Lower topsail yard to 35 degrees; Upper topsail yard to 40 degrees. This reflects a difference in direction of apparent wind as one ascended.

The other winch is the traction-winch, which were preferred where great lengths of rope or chain must be handled. Two or three turns of rope are taken round the barrel and the grip is solely dependent on the friction between rope and barrel. This is a definition of a capstan.

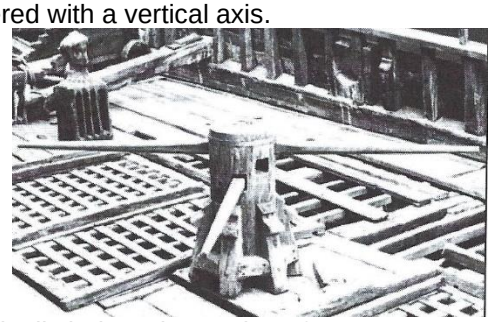
Capstans appear to have been around for at least 2000 years. The drawing below is off a Roman vessel and besides it is what appears to be a capstan from a mosaic at Ostia from 100 AD.



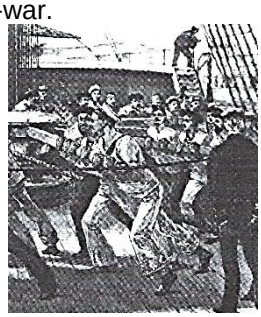
Below is a drawing of a Bremer Kogge, dated 1380. A capstan can be seen on the platform at the forward end of the vessel.



The next photo, from a woodcut from 1670, shows a capstan on the upper deck of the *Vasa*. Hand powered with a vertical axis.



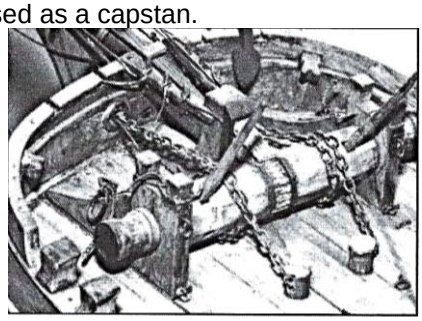
And finally below, the turning of a capstan on a French man-of-war.



I have included a table below with a comparison between the use of a capstan and a windlass.

	Capstan	Windlass
Axis	Vertical	Horizontal
Diameter of the Barrel	Up to 4 feet	Up to 2 feet
Direction of rotation	Both Ways	One way
Rotation	Continuous	Intermittent ¼ turn at a time
Expertise needed	Little	Considerable
Safety	Hazardous	Relatively Safe
Men Required	Many	few
Type Vessel used	Warships, large merchantmen	Small merchantmen
Speed	Relatively fast	Relatively slow
Cable removed when not in use	Yes	No

And so, you don't think that all of the above is fixed in concrete, the photo below is of a windlass being used as a capstan.



Shown above, is a windlass being used as a capstan hauling an anchor chain. The chain is two wraps around the barrel (friction), which is turned by hand (see the hand spikes). Direction of motion is one-way – (see cogs and stoppers to prevent turning in the opposite direction in the center of the windlass). When I built the topsail schooner *Hannah* of 1763 – 1775, she was equipped with a windlass with hand spikes, to be a windlass and a capstan.

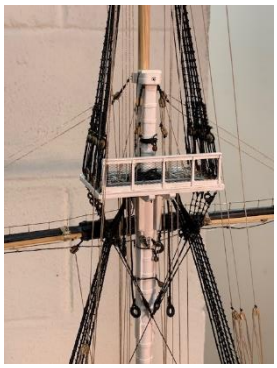
Reference source including most photos and drawings was:

Pier Books, ISBN 0-9657204-4-3;
"Capstans and Windlasses"
by John H. Harland.

Ships on Deck

U.S.S. Constitution – Cross Section

Rob Washburn

Model Shipways kit.

Bowdoin

Rob Washburn

Originally a "Laughing Whale" kit. Repackaged and released by BlueJacket Ship Crafters". The *Bowdoin* Is ¼" scale. Originally built in east Boothbay, ME, she made nearly 30 voyages to the ice-jammed waters of the Arctic. She is still sailing at the Maine Maritime Academy.

Le Coureur

Julie Holloway

Julie purchased *Le Coureur,* a paper ship model kit to work on while in France. The model is of a French lugger dated 1776.

Nice work, Julie.

Lynx

Loren Black

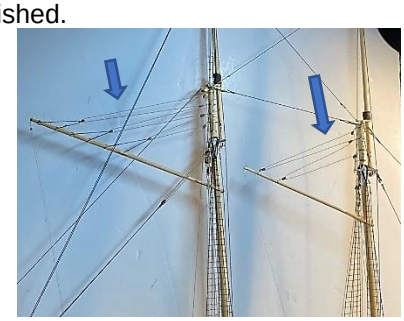
Loren is scheduled for back surgery on the 24th and since he could not do spring chores, he opted for sitting on his back porch, working on the masting for his model.

The model is of the Baltimore Clipper *Lynx,* 1812 by Panart.

Bluenose

Cliff Mitchell

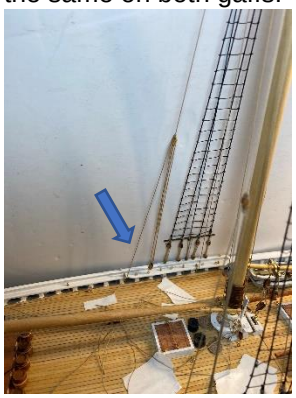
Cliff is making progress on his *Bluenose.* He provided a very good explanation on what he has accomplished.



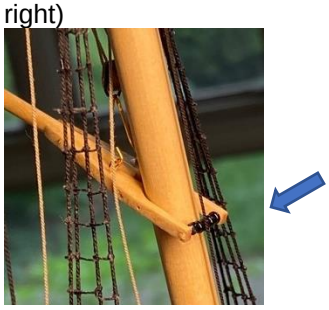
Cliff has completed the rigging of the fore and main gaffs. The rigging is very similar and it

involves a series of blocks and eyes of which there are two kinds:
Peak Halliard (above) which holds the gaff at the correct angle. The difference, the main gaff has three blocks connected to the gaff whereas the fore gaff has two.

Throat Halliards (above) hold the gaff up, and are the same on both gaffs.



(above left) In the rigging of both kinds of halliards, there are two loose ends. One end goes to a set of blocks that belay to the railings, the other passes down to a block at the bottom of the mast.(above right)



Parrel beads hold the gaffs to the mast.

New Bedford Whaleboat

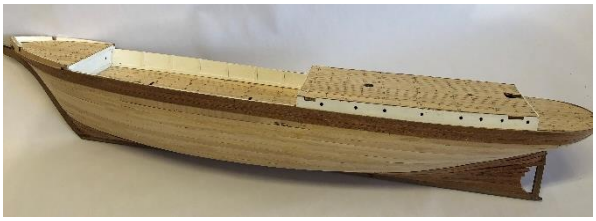
Jeff Northup

The whaleboat mounted and awaiting a cover.

Endurance

Jeff Northup

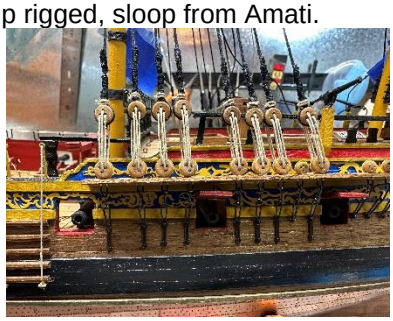
Jeffs new build is the *Endurance* by OcCre. She was launched in December 1912 and was originally rigged as a frigate. She was converted into a three-masted barquentine and in 1914 joined the famous Trans-Antarctic Imperial Expedition to cross Antarctic under Sir Ernest Shackleton's command. She was trapped in ice in the Weddell Sea. For 522 days the crew endured high winds and temperatures of 40 degrees below zero. The expedition is remembered as an epic story of endurance, heroism and survival.



HMS Pegasus

Jason Smith

Jason is rigging deadeyes on his Swan Class, ship rigged, sloop from Amati.



U.S.S. Cleveland C-19

Bill Schwartz

Bill has started work on a model of the U.S.S. Cleveland C-19, a U.S. Navy, Denver class protected cruiser, launched in 1901. Plans are from the Smithsonian and he is building her as POB.

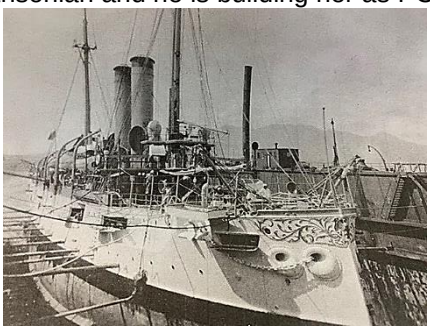
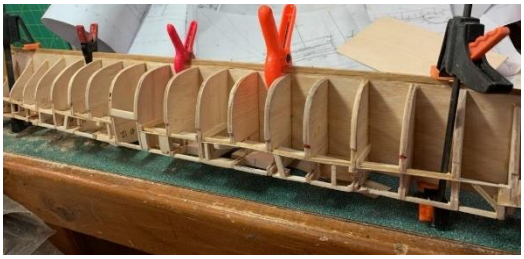


Photo above shows her in dry dock. His build is at 3/32 scale.

The guns have to be mounted before the hull can be planked since they are located on the sides of the hull. Bill is talking to BlueJacket to see if he can order the guns from them. Their U.S.S. Oregon is the same scale.



Attaching the keel.

U.S.S. Ohio

Richard Stratton

Rick, has finished planking the spar deck and sealed it with wipe-on polyurethane. The deck planking is Alaskan Yellow Cedar purchased from Modeler's Sawmill, New Jersey. He is adding cherry hatch coamings with gratings and mast boots. Next step is installing the 208 eyebolts for the cannons breeching rope, outhaul and inhaul tackle.

L'Indiscrete (Xebec)

Bill Nyberg

L'Indiscrete is a three-masted, 10-gun xebec. Built by a Venetian model builder in the mid-1900's and purchased by the father of the present owner. I have been asked to clean, repair as needed and rerig the model.

It has resided, un-cased, in a cottage in Northern Michigan for a number of years. It is dirty, rigging is rotted and broken and has been re-tied as seems fit. The model is of the French, mid-1700's *Indiscrete.*

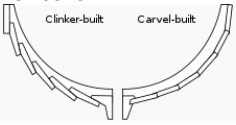
I am in the second stage of cleaning the model. The first stage included removal of all rigging and vacuuming the dirt, dust and cobwebs. The second stage is to clean the hull, decks and fixtures with a solution of white vinegar & water, using a soft tooth brush and Q-tips. In that process, I detected the faint odor of cigarette smoke as a disturbed the dirt. The third step will be getting into the nicks and cranny's with a Q-tip.

I also needed to find a set of rigging plans for a three masted Xebec. I located and purchased a set from Amati for *Sciabecco* and have permission from the owner to re-rig the vessel close to those plans.

Other Notes: "Stuff", Tugs & Things

Nautical Terms

cleat: A stationary device used to secure a rope aboard a vessel.
clew: One of the lower corners of a square sail, or, on a triangular sail, the corner at the end of the boom.
clewlines: Lines used to truss up the clews, the lower corners of square sails. Used to reduce and stow a barge's topsail.
clinker-built: A method of constructing hulls that involves overlapping planks and/or plates, much like Viking longships, resulting in speed and flexibility in small boat hulls. Contrast carvel-built.



clipper: A sailing vessel designed primarily for speed. While the square-rigged clipper ships of the middle of the 19th century are well known, others, such as Baltimore Clippers could be rigged differently, often as schooners, and a small number of 19th-century clippers were built as barques.
close aboard: Very near (the ship).
close-hauled: (of a vessel) Beating as close to the wind direction as possible.
clove hitch: A bend used to attach a rope to a post or bollard. Also used to finish tying off the foresail.
club hauling: A maneuver by which a ship drops one of its anchors at high speed in order to turn abruptly. This

was sometimes used as a means of obtaining a good firing angle on a pursuing vessel.
coaling: Loading coal for use as fuel aboard a steamship, a time-consuming, laborious, and dirty process often undertaken by the entire crew, coaling was a necessity from the early days of steam in the 19th century until the early 20th century, when oil supplanted coal as the fuel of choice for steamships.
coming: The raised edge of a hatch, cockpit, or skylight, designed to help keep out water that pools on the surface above.
coaster: A coastal trading vessel; a shallow-hulled ship used for trade between locations on the same island or continent.
coble: A type of open traditional fishing boat with a flat bottom and high bow which developed on the northeast coast of England.
cockbill: To angle a square-rigged yard away from the horizontal so that it is out of the way for loading or unloading, or so the ship may lie alongside another ship without the yards touching.
cockpit: A seating area towards the stern of a small-decked vessel that houses the rudder controls.
cofferdam: An insulating space between two watertight bulkheads or decks within a ship.
cog: A type of sailing ship, with a single mast and a single square-rigged sail first developed in the 10th century and widely used, particularly in the Baltic Sea region, in seagoing trade from the 12th through the 14th centuries. It had a distinctive hull design: the flat bottom was carvel-built and the sides were clinker-built.

Nautical Terms Wikipedia

Tugs: Great Lakes

Calumet (Towboat) 1892

Built in Milwaukee by the Milwaukie Shipbuilding Co. in 1892 for C.H. & W.A. Starke of Milwaukee. She had a wooden hull and her measures were: 73’ x 19’6” x 9’1” with a tonnage of 62 grt. She was powered by a steeple compound engine 15” + 32” x 24” and a steam scotch boiler rated at 165 psi, built by Sheriffs Mfg. Co., Milwaukee. Her official number was 126838. Her ownership was changed in 1899 to C. Niederman and in 1930 to the Great Lakes Dredge & Dock Co., Chicago. She was abandoned due to age in 1931.

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

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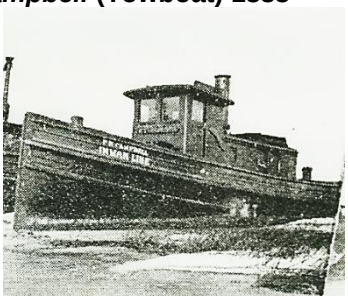
Pearl B. Campbell (Towboat) 1883



A wooden towboat, built by John B. Martel, Saugatuck, MI, her measures were: 55.2’x15.8’x6.9’ and a tonnage of 22.2 grt. Her official number was 150296.

In April 1891, her ownership was Inman fleet, Duluth, and she handled Porter Bros., dump scows. In 1892, she received a new deck, rails, house. In 1893 she was leased by Williams, Dougherty & Upham, Duluth.

On December 9, 1895, enroute to Duluth from the *Moonlight – H.A. Kent* salvage expedition, the *Pearl B. Campbell* was overwelmed by ice and sank, 20 miles off Huron Island, Keweenaw Point, Lake Superior. Nine lives lost.

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~~
Jun 17 – Standing Rigging & Deadeyes
Jul 15 – Running Rigging, Blocks, Belaying
Aug 19 – Making Sails
Sep 16 – Mast, yard & Spar Making
Oct 21 - Finishing: Natural & Paint
Nov 18 – Displaying & Mounting ship models
Dec 16 - Soldering

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~~

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

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

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

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

Cleveland Burke lake Front Airport
Cleveland, OH
September 2-4, 2023.

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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.

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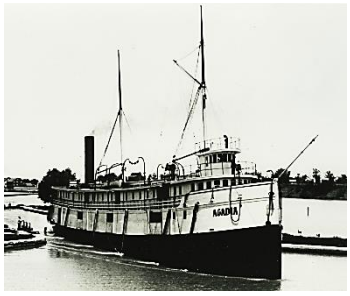
- **Small Club logo – without Motto for embroidered or digital print on the front of items. 4" round.**

Wooden Steamers on the Great Lakes

Written by William E. Nyberg

1867



Acadia: Malcolmson Brothers, Hamilton, Ont. built for themselves, a composite, propeller, that was enrolled at Hamilton, February 1867. The first composite (wood sheathing on iron frames) vessel owned by J & G.T. Malcolmson, Hamilton, and in 1874 still the only such vessel on the lakes. Her measures were: 136.0' x 25.0' x 7.0'; 612 grt, 373 net. She was powered by a low-pressure condensing engine, 32" bore x 33" stroke, 87 hp, built by F. G. Beckett & Co. of Hamilton. She was assigned official Canadian number C77697. The propeller *Acadia* was built for the passenger, package freight trade between Montreal, Que. and Duluth, MN. Her master for the 1867 – 85 seasons was Captain S. Malcolmson. For the 1868 season, the *Acadia* was chartered by the Ontario Dominion Government to deliver oil and supplies to Canadian Lake lighthouses. In July 1869, she broke her wheel in the Mississauga Strait, between the North Channel and Lake Huron. In an early freeze-up at Duluth, the propeller *Acadia* was caught in ice and had to wintered there during the 1872/73 winter layup. July 1877, the *Acadia* was remeasured and her enrollment measures updated to: 135.8' x 24.6' x 7.0'; 372.39 grt, 217 net.

Ownership of the propeller *Acadia* was transferred to Eliz Malcolmson, Hamilton, Ont. in 1877.

In 1878, ownership of the *Acadia* was changed to Margaret Sutherland, Hamilton, Ont.

In 1880, ownership of the *Acadia* was changed to John W. & Donald G. Sutherland, St. Thomas. Ont.

NOTE: "The third Welland Canal took a more direct path from Port Dalhousie to Allanburg leaving behind the Twelve Mile Creek route. From Allanburg the canal continued to follow the previous path with the exception of bypassing many of the canal downtown community centers. Construction on the canal was completed in 1887. The third canal no longer depended on the feeder canal for its source of water, instead water was directly supplied from Lake Erie via the canal itself. The canal was now 4.3 meters deep and its 26 stone locks had swelled to a dimension of 13.7 meters in width with a distance of 82.3 meters between lock gates."

With the opening of the Welland Canal in 1887, the *Acadia* was lengthened 40 feet and raised 2 feet which increased her capacity to nearly 40,000 bushels. Enrollment measures were updated in 1882 to: 176.60' x 25.60' x 10.40'; 806.36 grt, 509.00 net. In May 1887, the *Acadia* ran aground near Wyandotte, MI, Detroit River. Her master for the 1896 season was Captain John Clifford with James H. Brown and John Hewson as chief engineer. In November 1896, the propeller *Acadia,* laden with grain, was driven ashore near the mouth of Michipicoten River, Ont., Lake Superior, and was broken up by the gale. No lives lost.

Final enrollment for the propeller *Acadia* was surrendered at Hamilton, Ont., December 17, 1896 and endorsed "Stranded and became a total loss".

Alpena: Thomas Arnold, built a wooden, sidewheel steamer for the passenger, package freight trade, at Marine City, MI, financed by a consortium of owners consisting of S. Gardiner; E.B. Ward; Lyman A. Zerkes; and David Gallagher, all from Detroit. Enrolled at Detroit, her recorded measures were: 197.0' x 26.66' x 12.0'; 653.0 grt. She was equipped with a vertical beam engine, 44" x 132' originally built by Macklern Iron Works, Montreal in 1845; and rebuilt by Detroit Locomotive Works in 1854. Her side-wheel was 24 feet radial. The *Alpena* was assigned official number 404. She operated out of Detroit on runs to ports & landings along the shores of Lake St. Clair, Lake Huron and Saginaw Bay, MI.

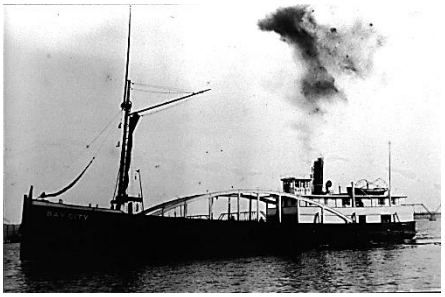
In 1868, her ownership was changed to Capt. Albert E. Goodrich, Chicago. Home ported at Chicago, she ran on the cross-lake services between Chicago and Muskegon & Grand Haven, MI. Her master for the 1869 – 71 seasons was Captain J.W. Hall. In June 1869, the *Alpena* had her wheelhouse damaged by the schooner *Pilgrim* in Chicago. In April 1871, she collided with the schooner *Two Charles* on Lake Michigan. Both vessels were repaired. In September 1874, she

collided with the schooner *Transit* (24231) off Sheboygan, MI. During winter layup 1875/76, the *Alpena* was laid up at Manitowoc ship-yard, Manitowoc, WI and underwent a complete overhaul and recondition. Her master for the 1880 season was Captain Nelson Napier. October 1880, bound from Grand Haven, MI to Chicago, with passengers, the *Alpena* was caught in a gale on Lake Michigan and foundered, twenty miles off Kenosha, WI, All, crew and passenger lives, 60 – 86, were lost. Her wreckage was scattered along 70 miles of the Lake Michigan shore.

Arizona: First enrollment for the wooden steambarge *Arizona* was filed at Detroit, May 31, 1867. Built by John A. Sanders, Mt. Clemens, MI, for T.W. Snook and Louis Charbineau, both of Mt Clemens. The steambarge recorded measures of: 107.0' x 24.1' x 7.7' and a tonnage of 145.44 grt. She was equipped with a high-pressure engine, 16" x 18", 260 horsepower. The steambarge *Arizona* was built for the bulk freight trade with a capacity for 30,000 feet of lumber. Her official number was: 1414. In 1869, the steambarge *Arizona* started regular service between Chatham, Ont, on the Thames River, and Toledo, OH.

In July 1873, ownership shares for the steambarge *Arizona* were transferred to T.W. Snook & William Dulac, Mt Clemens, MI. They had her converted into a tow barge with one mast. Her machinery was transferred to and installed in the steambarge *T. W. Snook* (US24949). The tow-barge *Arizona* hauled lumber from Saginaw & AuSable to Cleveland, OH.

In July 1880, ownership of the barge *Arizona* was changed to Charles R. Poole & Thomas F. McGann, Detroit, and H.C. Harrow, Algonac, MI. She was registered as a schooner barge: 2 masts; 147.18 grt, 139.82 net on July 10,1880. In November 1886, the schooner-barge *Arizona* was declared abandoned.



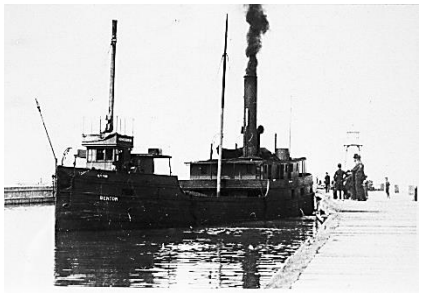
Bay City: Built as wooden propeller steambarge by George Gardner, Marine City, MI, she was first enrolled at Port Huron, May 15, 1867, with measures: 152.0' x 26.4' x 10.25'; tonnage was 262.63 grt; and was assigned official number 3451. Her original owners were: A. Rust, George Butlin, and William Kelly, all from East Saginaw, MI. She was equipped with a high-pressure engine, built by David Bell, Buffalo. She was built for the bulk lumber trade between Saginaw and Toledo, and had a capacity for 265,000 feet lumber.

In 1870, ownership of the steambarge *Bay City* was changed to Burt & Co., Marine City, MI. In December 1870, she received new arches, built by Fitzgerald & Leighton dry dock, and installed to prevent hogging. She also received a boiler from the steamer *George W. Bissell* (US10665). March 1871, while lying at Bay City, MI, she caught fire and burned to the water's edge, sinking. She was raised and repaired. May 1871, back in duty, the steambarge broke her wheel, while at Saginaw.

In 1874, ownership of the steambarge *Bay City* was changed to John F. Rust, Clark et al. In August of that year, she broke her machinery on Lake Erie. In 1877, the steambarge *Bay City* was rebuilt by Wolverine Dry Dock Co. Port Huron, and her bulkheads were heightened to increase her capacity. In April 1877, her enrollment documentation at Port Huron was updated to: 151.66' x 26.42' x 13.66'; 371.98 grt, 295.41 net. Fourteen years later, June 1891, while moored at River Rouge, MI., Detroit River, the steambarge *Bay City,* caught fire and burned. Two thirds of her 300,000 ft of white pine lumber was destroyed.

The *Bay City* was declared total loss on June 07, 1891.

Bay City



Benton: Built for the passenger, package freight trade by Hitchcock & Gibson, Buffalo, she would initial run between Chicago, St. Joseph & Benton, Harbor, MI. She was owned by John T. Edwards, St. Joseph, and was initially enrolled at Buffalo on April 20, 1867. Her measures were: 146.6' x 28.1' x 8.58', with a tonnage at 418.75 grt. She was assigned official number 2145 at enrollment.

In April 1868, ownership of the propeller *Benton* was changed to the Lake Michigan Transportation Co., St. Joseph, MI.

In May of the following year, her ownership was changed to Jonah Richards, Manitowoc, WI. She ran in the passenger, package freight trade between Chicago and Marquette, MI. In June 1869, the propeller *Benton* collided with the schooner *Trader* on Lake Michigan damaging the *Benton's* upper works. In October of that same year, the *Benton* was damaged by heavy weather on Lake Michigan.

Ownership of the propeller *Benton* was changed to Benton Harbor and St. Joseph Navigation Co., Benton Harbor, in April 1870. Her master for the 1870 season was Captain John Morrison. In May 1870, the *Benton* was engaged for a forty days' cruise of the Don Costello Circus Troupe on Lake Michigan calling at Racine, Green Bay and then to ports on Lake Superior.

In October 1870, ownership of the propeller *Benton* was changed to the "River and Lake Shore Steam Boat Line", Detroit, who placed her on a run between Detroit and Saginaw, MI. In April 1871, she broke her wheel at Saginaw and had to be repaired. In June, of the same year, her rudder was disabled. In July she experienced a broken crank, requiring repair. In October of the following year, she went ashore at Tawas City, MI. Her master for the 1874 to 75 season was Captain J. McArthur; for the 1875 – 77 season, Captain Francis M. Stenton; with Captain William F. Macgregor for part of 1876. Her chief engineers were Charles H. Phillips in 1874 and James Harrow for 1878 to 1896.

In July 1877. ownership of the propeller *Benton* was changed to Jephthah C. Wade, Detroit, and the following month her ownership was changed to the "Cleveland & Saginaw Transportation Co.", Cleveland. On Friday evening, November 15, 1878, the propeller *Benton* went aground on Harsens Island, Lake Ste. Clair. Part of her cargo was lightered to the steam barge *Victoria* (C61161) before she could be pulled off by the tug *Balize* (US2714). In May 1879, she broke her wheel off Tawas, MI and was towed into Port Huron for repairs.

In April 1880, ownership of the propeller *Benton* was changed to Joseph C. & A. Gilchrist, Vermilion, OH.

March 1881, ownership of the propeller *Benton* was changed to E. J. Vance et al., Bay City, MI. During the winter of 1882/83 they had the propeller *Benton* rebuilt as bulk freight steambarge and her enrollment measures updated in April 1883 to: 152' x 28.1' x 9.1': 304.78 grt, 159.42 net. In 1886, she received a new boiler 9'2" x 14', 110 psi, built by Variety Iron Works, Cleveland. She also received steel arches to prevent hogging.

In February 1891, ownership of the steambarge *Benton* was changed to William E. Pierce et al, Bay City. In 1893, she received a new, steeple compound engine, 19", 38" bore x 30" stroke, 350 horsepower, built by Marine Iron Works, Bay City. Her master for the 1899 – 1903 seasons was Captain William E. Pierce, with Aaron P. Hagadon as chief engineer during the same period.

In April 1904, ownership of the steambarge *Benton* was changed to C. C. Baumhart, Vermilion, OH. Her master for the 1904 season was Captain John Lester.

September 1904, ownership of the *Benton* was changed to W. L. Willoughby & Richard Baker, Vermilion. Her masters for the 1905-06 season was Captain Charles Willows and for the 1906-07 seasons, Captain W. J. Willoughby with C. O. King in 1905 and Richard Baxter 1905–06, as chief engineers.

In December 1907, ownership of the steambarge *Benton* was changed to Adelaide M. Jex, Toledo, and three months later the vessel ownership was transferred to H. N. Jex, Toledo.

In April of that same year, ownership of the steambarge *Benton* was changed to Elmer E. Calvert & Reinhart F. Kunze, Detroit. Her master for the 1908 season was Captain W. H. Ellery with Donald Price as chief engineer. In August 1909, the steambarge *Benton* caught fire and burned at old Michigan Central dock, River Rouge, MI, Ford Rouge plant, while off-loading partially finished wood auto parts. No lives lost. Financial loss was set at $5,000.

Final enrollment surrendered at Detroit, March 10, 1910.

Jacob Bertschy: In 1867 Stokes & Lochlin, Sheboygan, WI, built a wooden propeller for John Bertschy, also from Sheboygan, to be used in the bulk freight trade between Muskegon and Sheboygan. Her measures at enrollment were: 139.8' x 27.4' x 9.3', tonnage 467.32 grt, and she was assigned official number 75124. Her engine was rated at 300 horsepower.

In March 1868, ownership of the propeller *Jacob Bertschy* was changed to N. Englemann, of Englemann Transportation Company. In August of that year, while lying in the Muskegon River, at Muskegon, the *Jacob Bertschy* was struck by the schooner *Caleb Harrison* (US4569) and the brig *City of Erie* (originally the brigantine *City of Toronto,* built in 1859). The propeller loss part of her starboard bow, rail and bulwarks and a small portion of her hurricane deck. Both sailing vessels lost their jib booms and head gear. For the 1869 season, the *Jacob Bertschy* ran between Milwaukee and Manistee, tri-weekly. In November 1869, she broke her wheel at Pentwater, MI.

In April 1870, her ownership was changed to Andrew Reed and the *Jacob Bertschy* ran iron ore between Chicago, Escanaba, and Green Bay.

In October 1870, the *Jacob Bertschy* was sold to Blanchard & Arnold, Milwaukee. In August 1872, she caught fire and burned at De Pere, WI. Damage loss was set at $10,000. In November of that year, loaded with ore, the propeller *Jacob Bertschy,* went ashore at Escanaba. In July 1874, she broke her crosshead off Manistee, MI.

In April 1875, ownership of the *Jacob Bertschy* was changed to Northwestern Transportation Co., Detroit. During the winter layup of 1875/76, the *Jacob Bertschy* was rebuilt and her enrollment tonnage changed to 433.25 grt, 318 net. In April of 1876, bound from Detroit for Alpena and Bay City, MI, the *Jacob Bertschy* went aground at the southwest bend of the St. Clair River, near St. Clair. Released. For the 1876 season, the *Jacob Bertschy* ran between Detroit and Alpena and all Lake Huron ports.

In May 1877, ownership of the propeller *Jacob Bertschy* was changed to C. A. McIntosh, et al., Detroit. September 1879, bound down, Saginaw for Cleveland, during a gale, the *Jacob Bertschy,* laden with wheat and shingles, took shelter in Port Austin harbor. While there, she sprang a leak off Grind Stone City, MI, filling rapidly, the water putting out her fires and rending her helpless so that the waves put her on the rocks. The Point Aux Braque's Lifesaving crew took the passengers and crew off by lifeboat. The propeller was totally destroyed. No lives lost.

Boscobel: S. V. D. Philbrook, Peshtigo, WI, built a wooden, propeller for the Peshtigo Co., Thomas H. Beebe, president, to carry lumber from Green Bay to Chicago. She was launched in December 1866 with her first enrollment issued at Chicago, April 19, 1867. Her enrollment measures were: 204.2' x 31.6' x 12.69'; tonnage: 957.1 grt and a lumber capacity for 650,000 feet. She was issued official number 2147. She was powered by a high pressure, non-condensing engine, 48" bore x 36" stroke. She received her machinery from *Iowa* (U44157), and it was originally installed in *New Orleans, ex Vermillion*, built by Shepard Iron Works, Buffalo. Masters of the propeller for the 1868 season was Captain Finefield, with Captain Hodges as master for the 1869 season.

In April 1869, the propeller *Boscobel* was chartered to the New York Central Line as a passenger, package freighter. In April, while at Milwaukee, her machinery was disabled. In May of that year, she was chartered by the Union Steamboat Company. In July 1869, the *Boscobel* went aground on St. Clair flats, Lake St. Clair and was lightered to free her. Also, that month the *Boscobel* went aground on Spectacle Reef, Lake Huron. She was released without damage. In September, bound for Chicago with crew & ten passengers, the propeller *Boscobel* caught fire three miles below St. Clair, MI. and ran aground in the St. Clair River, on the Canadian shore, burning to waterline. Three lives lost.

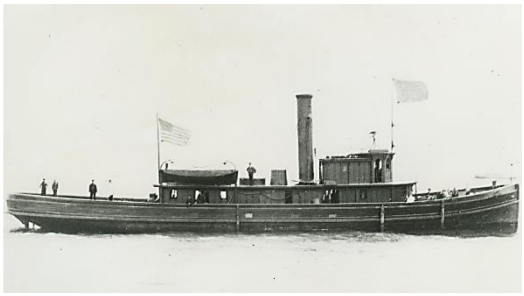
Ownership of the remains of the *Boscobel* was changed to Thomas Craig and he raised the burnt hull of the bulk freighter *Boscobel* from her resting place on the Canadian side of the St. Clair River. He had her rebuilt as a tow barge by Abram Smith, at Algonac, MI, and she was re-enrolled as *Boscobel,* US31430 with measurements: 166.66' x 32' x 10.66'; 503.89 grt, 478.7 net. At her enrollment, July 24, 1876, the owners were listed as Come Allen & John K. Harrow, Algonac, MI. In October of that year, while in tow of the tug *Bay State* (US3480), the tow barge *Boscobel* broke loose and went ashore on Rondeau Point, Lake Erie. Released.

Rebuilt, in 1883, her ownership of the tow barge *Boscobel* was changed to L. B. Parker, Marine City, MI. Her rig was changed to schooner at Port Huron and registered as a three-mast schooner in 1886: 168.5' x 30.6' x 17.3'; 570 grt. November 1890, during a late severe fall storm on Lake Huron and under tow of *D. F. Rose* (US35149), the schooner barge *Boscobel* was brought into Buffalo waterlogged with her cabin and part of the deck load lost. March 1891, her enrollment at Port Huron was updated to: 2 masts, 503 grt. In December 1895, the schooner *Boscobel* was sunk by ice near Turtle Light, Maumee Bay, Lake Erie, after stranding on the bar.

Ownership of the schooner *Boscobel* was changed to Captain C.W. Blodger, Bay City in 1898. In September 1900, laden with coal for the Soo, the schooner *Boscobel* sprang a leak during a storm, reaching the harbor at Alpena, MI, Lake Huron, she sank at the dock.

In February 1903, ownership of the schooner *Boscobel* was changed to L. B. Parker et al, Marine City, MI. In May of that year the schooner *Boscobel* was "Sold Foreign" and her final enrollment was surrendered at Port Huron.

In 1904, the schooner barge *Boscobel* was reported sunk.



George E. Brockway: F. L. Leighton, Port Huron, built a wooden tugboat for towing lumber rafts on Lake Huron. Enrolled at Port Huron, her owners were listed as James Meffat & John Botsford, Port Huron. Her measures were: 112.3' x 20.7' x 10.2'; tonnage 164 grt, 82 net. She was powered by a high pressure non=condensing engine, 27" bore x 30" stroke, 85 rpm, 440 horsepower, built by Cuyahoga Furnace Co., Cleveland in 1867. She was assigned official number 10666. Her master for the 1868 to 72 seasons was Captain Moffat with C. Blauvelt as engineer. In 1868 she was outfitted for wrecking operations out of Port Huron. In June 1869, down bound on Lake Huron, with a log raft in tow, the tug *George E. Brockway* broke her cylinder and piston rod. In November 1870, down bound, the *George E. Brockway*, with the grain loaded schooner *Champion* in tow, went aground on the Canada shore, three miles north of the Port Frank light, Lake Huron. July 1871, while picking up a tow, the tugs *George E. Brockway* and *John Martin* (US12793) collided at Point Au Pelee, Lake Erie, both sustained damage.

Ownership of the towboat *George E. Brockway* was changed in 1873 to G. E. Brockway, Port Huron. She was repaired and rebuilt in 1874. Her master for the 1877-78 season was Captain C. F. Moore.

In 1879, her ownership was changed to Moore et al, Detroit. Captain C. F. Moore continued as master through 1880 with E. C. Miller as engineer in 1881. The tug *George E. Brockway* towed three lumber barges from 1881 to 1883. The three barges were built by T. M. Lyon, Ludington, MI. The barges, "Arks", were manned by a crew of two and were unstable in heavy seas due to their heavy weight and clumsy construction. In July 1887, the tug *George E. Brockway* ran aground at Fighting Island, Detroit River and was rammed by her consort. She was released with light damage. Engineers on the tug *George E. Brockway* were Robert Craig in 1892 and T. Canton in 1894. In 1908, master of the tug *George E. Brockway* was Captain William Allen.

In 1911, the certificate of enrollment for the *George E. Brockway* was surrender and the vessel dismantled.

Ira Chaffee: Aurelias McMillan, Allegan, MI, built a wooden propeller for Ira Chaffee, et al, Allegan, MI. Enrolled at Grand haven, MI in May 28, 1867, her measures were: 127.5' x 25.5' x 24'; tonnage (old style) 369.14. She was powered by (2) 24" bore x 24" stroke engines. Her official number was 12131. She had been built for the package fruit trade and ran between Chicago and Allegan, MI.

Ownership of the propeller was changed, March 1868, to William H. Bush and enrolled at Chicago. In May 1869, the propeller *Ira Chaffee* collided with the schooner *Ralph Campbell* (US21179) off Chicago. In June 1869 she broke her wheel at Chicago. She repeated the incident in July and September. In November of 1869, she went ashore at Saugatuck, MI. In the same month she

broke her rudder and received other damage while on Lake Michigan.

Her ownership of the *Ira Chaffee* was listed in 1871 as Chaffee et. al., Kalamazoo. In October of 1871, the propeller *Ira Chaffee* burst a steam pipe and went ashore at Kalamazoo, MI. A portion of her cargo was lightered to release her. During the Great Chicago fire of October 8 – 10, 1871, the propellers *Ira Chaffee, Skylark* and the side wheel steamer *Manitowoc* were towed into Lake Michigan by Captain Gibson of the tug *Magnolia,* loaded with men, women and children who were escaping the Great Chicago Fire. The masters of these three vessels had steam up but could not move because the wind locked them to the wharf.

Ownership of the *Ira Chaffee* was changed in 1874 to Jason McGregor, et. al., Marquette. Her master for the 1874 season was Captain Frink. December 1876, down bound, with a cargo of iron ore, the propeller *Ira Chaffee* was driven ashore near Chocolay Charter Twp., Marquette, MI. and broke in half. Her cargo was lightered and the vessel recovered in May 1877. She was rebuilt as a steambarge at Detroit. Her owners, Jessie H. Farwell, et al., Detroit and on May 28, 1878, updated her enrollment with measures: 127.6' x 25.6' x 8.1', 193.6 grt, 116.1 net. The steambarge *Ira Chaffee* assisted in the construction of the Stannard Rock Light, Lake Superior in 1877.

In September 1879, ownership of the steambarge *Ira Chaffee* was changed to George E. Wasey, et al., Detroit. In 1880 & 81, she towed barge *Agnes* in the lumber trade.

In 1882, the Oscoda Salt & Lumber Co. Detroit, took ownership of the steambarge *Ira Chaffee*

In 1886 the vessel was sold to John P. Sullivan, Detroit. In 1890 she towed barges *Fillmore* (16395) and *Monitor* in the lumber trade. For the 1891 season, her engineer was Fred E. Wheeler. In July 1891, the steam barge *Ira* Chaffee, after discharging her cargo of coal at Sault Ste. Marie, MI, was discovered on fire around smoke stack. Efforts were made to scuttle her were unsuccessful and she was burned to a total loss; no lives lost. Owned by J. P. Sullivan, Detroit, MI and valued by Lloyds' at $7,500 and insured for $5,000.

Final enrollment was surrendered on September 13, 1892. In August 1894, the hull remains were towed to Sturgeon Bay and abandoned.

***City of Port Huron*:** Joseph P. Arnold, Port Huron, built a wooden steambarge for Captain M.M. Drake, et al, Port Huron. Her measures were: 169.0' x 30.42' x 10.16', with a tonnage of 411.02 grt. She was powered by a high- pressure engine built by Phoenix Iron Works. Her official number was 5392. She was built for the bulk freight trade and cost $40,000. Her master for the 1869-75 seasons was Captain Albert B. Drake with C. L. Scoville as chief engineer in 1868. In August 1869, the *City of Port Huron* went aground on St. Clair Flats, Lake St. Clair. She was lightered off to be released.

In April 1873, ownership of the *City of Port Huron* was changed to A. B. Drake, Dunkirk, NY. In July of that year, the *City of Port Huron,* while towing the barge *Dictator,* both ladened with cargos of coal, went aground at the Neebish Rapids, Saint Mary's River. They were released. In January 1874, the *City of Port Huron* was damaged by a freshet at Buffalo. Her master for the 1876 season was Captain George Davis. In June 1876, the *City of Port Huron* collided with the scow *St. Charles* at St. Clair, MI. The first enrollment of the *City of Port Huron* was issued at Port Huron, July 08, 1876. September 1876, the steambarge *City of Port Huron,* with the barge *Dictator* in tow, both down bound with cargos of iron ore from Marquette, MI for Buffalo, sprang a leak in heavy seas, broached and sank about four miles off Lexington, MI, Lake Huron in 36 feet of water. The barge *Dictator* had been cast off about an hour before the vessel sank. The *City of Port Huron* had consumed all her coal aft and was low in the water at her head. No lives were lost.

The boiler and about 200 tons of ore were salvaged from the *City of Port Huron* in August 1877. The U.S. Marshal sold the boiler and machinery from the *City of Port Huron* to Darius Cole for $1,000 on December 1877.

***Colorado*:** Bidwell & Mason, Buffalo, built a wooden propeller to be used in the passenger, package freight trade, for Ensign & Co., Buffalo. Enrolled at Buffalo, May 21, 1867, her measures were: 254.4' x 35.0' x 13.0', with tonnage at 1470.55 grt, 1321.78 net. Her official number was 4267. Her master for the 1867 – 71 seasons was Captain Julius Brett with Adam Haig as chief engineer in 1868. November 1867, during a heavy southeast gale, the propeller

Colorado, while attempting to enter Milwaukee harbor, went ashore after hitting the pier and breaking a steam pipe. She was laden with flour and grain. May 1869, up bound with a cargo of merchandise, the propeller *Colorado* collided with the down bound bark *H.P. Bridge* (11202) laden with oats and bricks in heavy fog, opposite Saginaw Bay. The *Colorado* was slightly damaged and repaired. The barkentine *H. P. Bridge* of 553 tons (new style), built in Detroit by J. M. Jones in 1864, owned by E. W. Hudson, was a total loss. In August 1869, the *Colorado* struck a bridge on Chicago River. November 1873, the *Colorado* went ashore on the quicksand at Sleeping Bear Point, Lake Michigan. The *Colorado* was disabled with a broken wheel on Lake Erie in May and Lake Michigan in June. Up bound in May 1874, from Buffalo for Milwaukee and Chicago, laden with 400 tons of railroad iron and general merchandise, the *Colorado* went aground on Sturgeon Point, Lake Erie. Cargo was lightered to release the vessel. In that same month, the *Colorado* collided with the schooner *Gulnare* (71157) at Chicago. In September 1874, the *Colorado* collided with the schooner *Empire State* at Cleveland. August 1876, bound for Buffalo, the *Colorado,* laden with 48,672 bushels of corn and 300 barrels of flour ran ashore on Round Island, Straits of Mackinaw, Lake Huron in dense fog. May 1877, bound down from Chicago, the propeller *Colorado* collided and sank the up bound schooner *R.J. Gibbs* (21195) at South East Bend, Saint Clair River.

Master of the *Colorado* for the 1878-82 seasons was Captain Frederick L. R. Pope. August 1878, bound down, the *Colorado* went aground in thick weather at Lighthouse Point, Lake Huron.

Master of the propeller *Colorado* for the 1883 season was Captain C. M. Fellows. September 1883, bound out of Buffalo harbor, the *Colorado,* laden with merchandise for Chicago and a crew of 22, when her boiler exploded killing 3 and injuring 8..

The wrecked hull of the propeller *Colorado* was sold at a U.S. Marshals sale on May 10, 1884, to Donaldson Brothers and R. Mills & Co. for $11,050. The *Colorado* entered drydock for repairs and new engines & boilers; she was altered to carry bulk as well as package freight. She was equipped with 2 steeple engines (2): 20”, 36” bore x 36" stroke; Firebox boilers (2): 8' x 14", built by Stearns Manufacturing Co., Erie, PA.

September 1884, ownership of the *Colorado* was changed to Peter Miller. In October of 1884, the *Colorado* ran for Ward’s Detroit line in the flour trade. In October of that year, the *Colorado* was damaged during a gale on Lake Michigan. Hull loss $700. Her master for the 1886 season was Captain Angus J. McDonald with Lawrence G. Gebhart as chief engineer.

April 1887, ownership of the propeller *Colorado* was changed to W.F. Botsford & Co., Port Huron. Her master for the 1887 season was Captain John Ivers. In June 1887, the *Colorado* went aground in heavy fog on the rocks on the south shore of Lake Superior. She was lightered to release her. May 1888, the *Colorado* struck ice and stove a hole in her bow. In the fall 1889, the *Colorado* went ashore at Grand Haven, MI, striking the shore hard enough to break both arches. Her masters for the 1890-93 seasons were Captain J. A. Dority, with Captain George L. Thompson as master for the 1893 season. In May 1892, the *Colorado* lost her wheel on Lake Huron and was towed to Port Huron for repairs. The following month, bound up, light, the *Colorado* went aground in fog on Thunder Bay Island Reef, North Point, Lake Huron.

Her master for the 1894 season was Captain Robert McLoed. September 1898, laden with flour and blinded by forest fire smoke, the propeller *Colorado* struck and stranded on Saw Tooth Reef, near Eagle River, MI, Keweenaw Point, Lake Superior. She went to pieces in a storm. No lives lost.

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.)