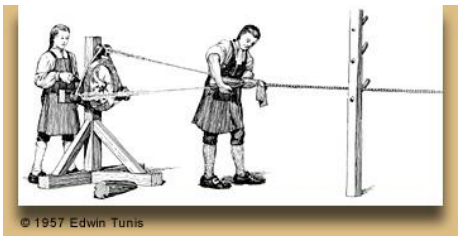


While one man cranks the spinner, the one holding the "top" walks backwards as the rope is twisted. From Edwin Tunis, *The Young United States, 1783 to 1830* (New York: World Publishing Co., 1969). Used by permission of the estate of Edwin Tunis.

Ropewalk

The Newsletter for
Shipwrights of Ohio – May 2023

Next Meeting: July 22, 2023;
"Rigging: Running, Block & Tackle, Belaying" – Bob Mains

Table of Contents

June

We gathered on the third Saturday of the month at the Westerville Public Library for our third hybrid meeting.

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.

Rick, Lee and Donna (Lee's wife) joined me in the conference room for a shorter than normal meeting. Lee, Donna and I were stopping of to spend time with George Montag and the family at the celebration of life (the passing of Georges wife, Nancy this past May). George is looking good. He lives at a assisted living facility in Marysville, OH.

Our presentation was by Steven Keller on "Standing Rigging" and he dealt with the "Why" of standing rigging on a sailing ship. For those of you who missed it, I can only say "You have to love an engineer's view of a subject on stays, shrouds".

For those of you that can, plan to join us at the Westerville Library on July 22nd. (Fourth Saturday) Hopefully, we will have a slide show on the ship models at Manitowoc as well as a presentation by Bob Mains on "Running Rigging".

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

Received a note from Jeff Northup. He and Cindy will be passing through Columbus the middle of next month. He is bringing with him 3 boxes of maritime books that he would like to pass on to anyone interested. They would be free.

Besides, he has a complete 6 volume set of Wm Romero's *HMS Warrior* practicum. Romero spent 17 years on this build, much of it appearing by segments in Model Ship World. Jeff would like $100 for the set including the complete *HMS Fubbs, 1724* practicum. Even if someone was not interested in scratch building the *Warrior*, there are many excellent building tips.

He is also an unopened *Vasa* Corel kit that he would like to sell. They retail about $750. He is asking $400 and will throw in the *Vasa* Museum book (489 pages) which also includes plans.

I am asking for a list of the books and will share that with you when received.

They Have Moved

For those of you that plan to build a case for your ship models, American Plastics Distributors has

moved from their old location south of Fifth Ave. in Grandview, to 1812 McKinley Ave., Columbus. Their new location is south of the Scioto River and just west of Grandview Ave.

Their web site is:
https://www.americanplasticusa.com/
Phone: (614)294-5100.

Ohio Air Shows

There will be two other major air shows this year in Ohio:

- 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".

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 on the Marblehead Peninsula, between Sandusky and Port Clinton. This year's show will be held on Sunday, July 16th, from 12 – 4 pm. There will be a wooden boat display, both in water and out of water.

Nautical News

The Ohio River Sternwheel Festival in Marietta, Ohio takes place the weekend after Labor Day, September 8–10, 2023.

The Ordinance of 1787 opened the vast wilderness, "Ohio Territory", west of the Ohio River for settlement. "Campus Martius Museum" contains an exhibit, based on David McCullough book "The Pioneers" and explores the lives of those who first founded Marietta and opened the Ohio Territory to settlement.

Checking the website, the "Ohio River Museum" is closed during the construction of a new museum.

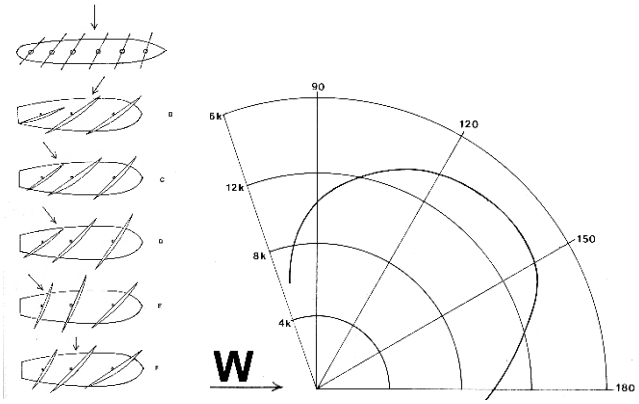
The Ohio Sternwheel Festival will still be held, so plan to attend and enjoy a weekend of family fun, fireworks and more. Admission is free.

What you may not be aware off, between 1800 and 1807, 28 wooden sailing vessels, between 70 – 320 tons were built on the banks of the Muskingum River, launched, then sailed down the Ohio and Mississippi Rivers with the help of barges to pass over the shoals, to New Orleans and then on to ocean usage. Jefferson's Embargo Act of 1807 ended shipbuilding at Marietta until 1840 with the advent of steam propulsion.

Presentation

This month's presentation was on "Standing Rigging". Standing Rigging is defined as a system of fixed ropes, cables, wire and chain employed to support a ships masts and bowsprit.

Simple statement above, but Steve provided the why for standing rigging. He started asking for us to consider the wind forces on the square sail rigged ship.



On the left is a diagram showing different bracings of fore and aft yards showing the most advantages bracing of the yards. On the right, a Polar diagram of performance of a representative sailing vessel. Its best speed is made in a quarter wind.

He then introduced us to "Tensile Breaking Strength". The area under the stress strain curve bounded by the rupture strain divided by the specimen area (length x width). The total energy absorbed by the specimen up to the point of rupture.

Summing all that up – "Rigging is all about the rope". Various vegetable materials have been used:

Fibers from the hemp plant – considered to show the best properties of flexibility and tenacity
Manilla rope made from fibers of a species of the wild banana
Rope made from green hide
Cotton – considered a poor substitute lacking strength, durability and tendency to rot
Sail twine – made of cotton or flax

Rope is sized by circumference not diameter
Man-of-War cordage ranges from 1.25" to 10"

Varieties of Ropes:

White Rope – Hemp rope, right-handed, three strands. Generally, the strongest hemp cordage
Tarred Plain-laid – more generally used than any other. Lighter Standing Rigging, Running Rigging and Purchase falls are made of this rope.
Cable-laid or Hawser-laid Rope: Three strands of right-handed yarns (9 total) laid up as left-handed or back-handed rope.
Shroud-laid Rope: Four strands are wound around a fifth strand that fills the center void to

add strength by reducing Poisson contraction. The center or Heart is one third the size of the outer strands, softer and more elastic.

Strength of Ropes:

Untarred Hemp: circumference (in.) squared x F = strength (lb.) where F = 1371.4

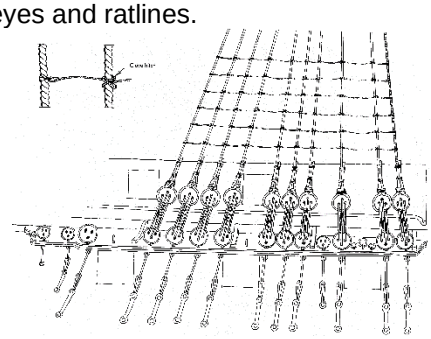
Tarred Hemp: above formula F = 1044.9

Manilla Rope: above formula F = 783.7

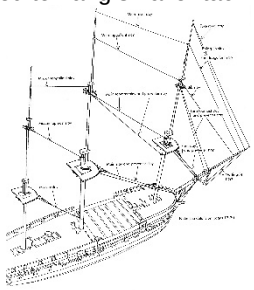
He then took us through rope design and deformation, ropemaking and the worming and serving of rope.

Fore & Aft rigged vessels and Square-rigged vessels generally follow the same standing rigging system. The terms are defined as:

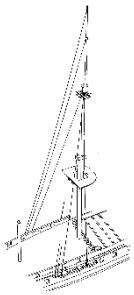
Shrouds: Used to counteract the abaft forces; maintain the vertical alignment of the masts; prevent mast failure. Shrouds include channels, deadeyes and ratlines.



Stays: Stabilize the upper masts from abaft forces of the wind; maintain the separation of the masts; prevent mast failure; used to hang smaller tackle.



Backstays: used to counteract the aft and abaft forces of the wind; Maintain the rake angle of the masts; Prevent mast failure'



Staysail Stays: Used to counteract the aft and abaft forces of the wind; Used to affix stay sails.

Bobstays: counteract the force of the forestays upon the bowsprit to the stem.

Tackles: are a system of blocks and lines for hoisting. They do not lend support or are part of the operation of the sails but are identified on several sources as part of the standing rigging – most likely since their pendants must be installed first.

If you are interested in learning more about "Standing Rigging" here are Steven's reference materials:

Biddlecombe, G. (1990) *The Art of Rigging;* Dover Publications, Inc., New York

Harland, J. and Myers, M (1984) *Seamanship in the Age od Sail,* Conway Maritime Press, London

Lees, J. (1984, *The Masting and Rigging of English Ships of War 1625 – 1860,* Conway Maritime Press, London.

Lever, D. (1819, 1998), *The Young Sea Officer's Sheet Anchor or a key to the leading of Rigging and to Practical Seamanship,* Dover Publications, inc. Mineola, New York.

Longridge, C. N., and Meyers, M. (1955) *The Anatomy of Nelson's Ships,* Naval Institute Press, Annapolis.

Longridge, C. N., and Meyers, M. (1975) *The "Cutty Sark",* Argus Books Ltd., Watford, UK.

Luce, S. B. (1891), *Text-Book of Seamanship. The Equipping and Handling of Vessels Under Sail or steam. For the use of the United States Naval Academy.* Van Nostrand Co., New York. Chap. 3.

Marquardt, K. H. (1992) *Eighteenth-century Rigs and Rigging,* Conway Maritime Press, London.

Marquardt, K. H. (2005) *Anatomy of the Ship: The 44-Gun Frigate USS Constitution "Old Ironsides"*, Naval Institute Press, Annapolis

Petersson, L. (2000), *Rigging Period Ship Models,* Chatham Publishing, Kent, UK.

Ships on Deck

Bluenose

Cliff Mitchell

Cliff has been working on the three flag halliards: The Main and Fore Flag Halliards and the Gaff Halliard. The Main and Fore Halliards are created the same way.

The lines pass through the holes in the truck at the top of the masts and they are tied off at the shear poles.

The Flag Halliard runs through a small block at the end of the main gaff. The free ends run down to the main boom, where they are tied off to a cleat on the side of the boom
Next up…make the flag

U.S.S. Cleveland C-19

Bill Schwartz

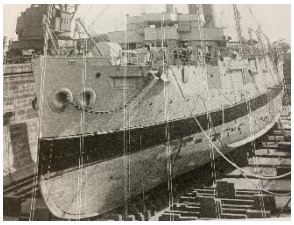
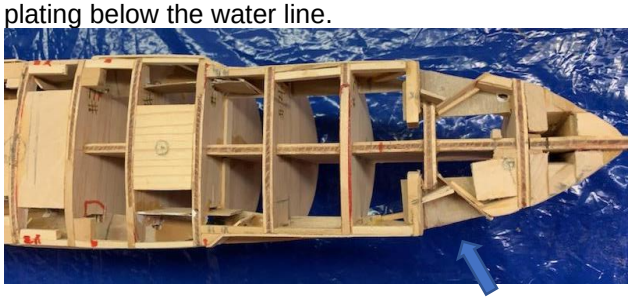
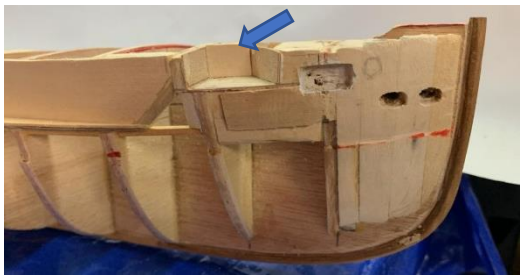


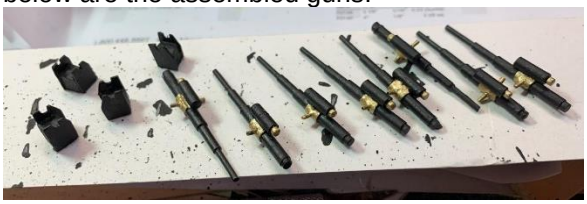
Photo above shows her in dry dock. Photo of the hull plating below the water line.

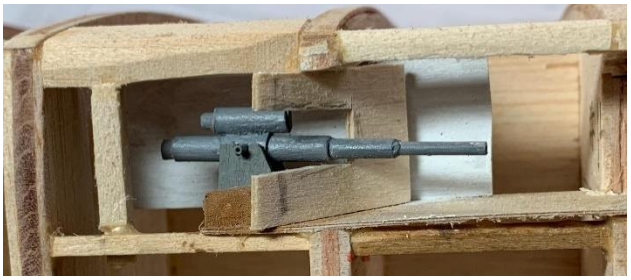




Note 5” gun placement location in the photos above.

Due to cost of guns, at $8 each, he needs 10; so Bill has made the 5 inch guns from K&S Precision Metals. Above is the material before assembly and below are the assembled guns.

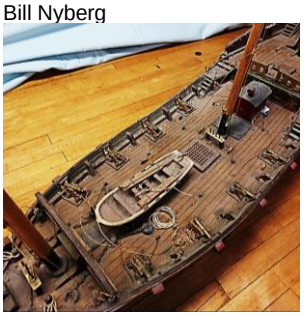




Testing gun placement

L’Indiscrete (Xebec)

Bill Nyberg



As received: dirty, with little of the rigging remaining.

First cleaning: vacuuming and water & distilled vinegar solution. Note the framing at each cannon placement.

Third cleaning with vinegar and water, then a rub down of the deck using a “Mr. Clean” sponge. Note that the cannon framing is gone. Water and 50-year-old glue do not mix.

The ten-cannon are cleaned and ready to be installed. I am using breech rope to hold the cannon in place. In my research, I found a reference that the French, in this time period, ran their breech ropes through the cannon carriage.

Other Notes: “Stuff”, Tugs & Things

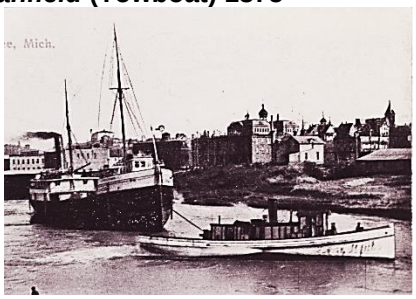
Nautical Terms

Draught: Alternative spelling of draft. The depth of a ship's keel below the waterline.
Dreadnought: A type of battleship designed with an "all-big-gun" armament layout in which the ship's primary gun power resided in a primary battery of its largest guns intended for use at long range, with other gun armament limited to small weapons intended for close-range defense against torpedo boats and other small warships. Most, but not all, dreadnoughts also had steam turbine propulsion. Predominant from 1906, dreadnoughts differed from earlier steam battleships, retroactively dubbed predreadnoughts, which had only a few large guns, relied on an intermediate secondary battery used at shorter ranges for most of their offensive power, and had triple-expansion engines.
Dredger: A vessel specialized for use in the excavation of material from a water environment and equipped with heavy machinery for this purpose.
Dressing down: 1. Treating old sails with oil or wax to renew them. 2. A verbal reprimand.
Dressing lines: Lines running from stemhead to masthead between mastheads, and then down to the taffrail, to which flags are attached when a ship is dressed overall.
Drifter: A type of fishing boat designed to catch herring in a long drift net, long used in the Netherlands and Great Britain.
Drink: Overboard and into the water (e.g. "it fell into the drink").
Driver: The large sail flown from the mizzen gaff.
driver-mast: The fifth mast of a six-masted barquentine or gaff schooner. It is preceded by the jigger mast and followed by the spanker mast. The sixth mast of the only seven-masted vessel, the gaff schooner *Thomas W. Lawson,* was normally called the pusher-mast.
Drogue: A device to slow a boat down in a storm so that it does not speed excessively down the slope of a wave and crash into the next one. It is generally constructed of heavy flexible material in the shape of a cone.
Drudging: A technique of maintaining steerageway when going downstream with neither engine nor wind to sail. The vessel uses its anchor to draw itself head-to-stream, then lifts the anchor and drifts stern-first downstream, ferry gliding to maintain position within the stream. As steerage begins to reduce, the vessel anchors again and then repeats the whole procedure as required.
Drydock: A narrow basin or vessel used for the construction, maintenance, and repair of ships, boats, and other watercraft that can be flooded to allow a load to be floated in, then drained to allow that load to come to rest
drying harbour: *Also* ***drying mooring:*** A harbour where the water wholly or partly recedes as the tide goes out, leaving any vessel moored there aground.

Nautical Terms Wikipedia

Tugs: Great Lakes

Frank Canfield **(Towboat) 1875**



Rand & Burger, Manitowoc, built a wooden towboat for the Canfield Tug Line, Manistee. Her measures were 62.6’ x 16.0’ x 7.5’; with a tonnage of 48 grt, 25 net. She was powered by a high-pressure engine, originally installed in the tug *John T Edwards* (1866), 18.5” bore, 20” stroke, 290 hp at 130 rpm, bult by Farrar & Trefts, Buffalo. She was equipped with a 6’4” x 11’, firebox

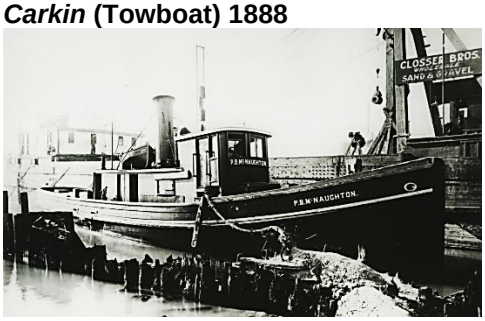
boiler generating 100 pounds steam. Her official number was 120256.

Her ownership was changed to A.O. Wheeler, Manistee, who had her rebuilt. She was later owned by Barnes & Co. Ludington. In April 1904, her steering chain parted and she was pushed onto a bar at Big Sable Point, MI, Lake Michigan. Pounded by waves, she broke up and sank.

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

,

***W. S. Carkin* (Towboat) 1888**



Carkin, Stickney & Cram, East Saginaw, MI, built for themselves a wooden tug, with measures: 73.2’ x 17.2’ x 9.2’, with a tonnage of 63.87 grt, 31.94 net. She was enrolled at Port Huron, MI in September 1888 and assigned official number 81198. She was powered by a two-cylinder engine, 18” x 20” bore x 20” stroke. Steam was generated by a firebox boiler, 9’ x 12’, generating 100 psi. For the 1888 and 1889 seasons she hauled barges for the Corps of Engineers on the St. Mary’s River.

Her ownership was changed foreign in 1899 to P.B. McNaughton, Sorel, Que. She was renamed and enrolled as *Pliny B. McNaughton* and assigned official number C134516.

Sometime after her ownership was changed to John J. Harrison, Port Dalhousie, Ont. and was homeported a Sarnia, Ont.

In December 1924, while maneuvering the 6,600-ton steamer *Midland Prince* at Port Colborne, Ont., Lake Erie, when the steamer veered out of control and crushed the *W. S. Carkin* against the reef. Declared a total loss.

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

Advertisement

Steamship Historical Society
SSHSA is the premier 501(c)3 organization for all engine-powered ships. Whether you’re a ship history buff, maritime collector or artist, a former or current ship crew member, a professional historian, a Navy veteran or maritime academy alum, or maybe even a scuba diver looking to learn more about your latest underwater discovery, **SSHSA** is the place for you. Publishes **Power Ships** magazine/Quarterly for 82 years.
Steamship Historical Society
2500 Post Road, Warwick, RI 02886
(401)463-3570
info@sshsa.org
https://www.sshsa.org/join/index.html

Scale Ship Modelers Association
The Scale Ship Modelers Association of North America, Inc., (SSMA) is a nonprofit organization founded in 1988. Our purpose is to promote the hobby of radio control and static ship modeling. SSMA works with the modeling industry to address the needs of the modeling community.
https://www.ssmana.org/index.html

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 – 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~~

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

Editor: Bill Nyberg
President and editor
Shipwrights of Ohio
Shipwright@breezelineohio.net

Shipwrights of Ohio
Officers & Staff
President – Bill Nyberg…….614-370-5895
Vice Pres. – Bob Mains……614-306-6866
Treasurer – Lee Kimmins…….614-378-9344
Editor – Bill Nyberg……..…….. 614-370-5895
Photographer – Alan Phelps .. 614-890-6164
Web Master – John Boeck……937-620-0258
Zoom Master – Bob Mains……614-306-6866
Web Site: www.shipwrightsofohio.com
Email: shipwright@breezelineohio.net

Cargo Hold

www.shipwrightsofohio.com/cargo hold/

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

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

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

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

Wooden Steamers on the Great Lakes

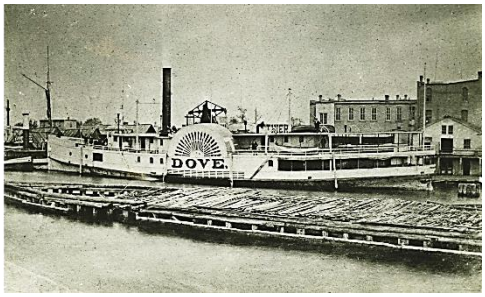
Written by William E. Nyberg

1867-b

***Dominion**:* John Bruce, Wallaceburg, Ont, with J. W. Steinhoff as master carpenter, build a wooden steambarge with a flat bottom, round ends and sidewheels for propulsion. She was built for passenger, package freight trade on the Thames River and ran between Detroit, MI and Chatham, Ont. carrying grain and lumber. Her original owner was J. W. Steinhoff, Black & Young, Wallaceburg, Ont. She was originally enrolled at Wallaceburg, Ont., June 1867 and her recorded measures were: 117.0' x 25.17' x 8.25' with a tonnage of 178 grt, 117 net. She was powered by a single cylinder engine, 24.5" x 48" stroke built at Chatham. Passenger cabin and stateroom was added during winter 67-68 layup

In January 1869, J. W. Steinhoff acquired full ownership control of the steambarge *Dominion.* In April of that year the steambarge *Dominion* was damaged in a collision with the barkentine *Sir E.W. Head* (C-1856) at Malden, Ont. on the Detroit River. In March of 1871, the *Dominion* and the Detroit River ferry *Favorite* (US 9856) collided with both receiving minor damage. In June 1872, the steamer *Dominion* assisted Chatham to Montreal steamers to pass over the bar at the entrance to the Thames River by lightering cargos. The *Dominion* transferred 1,000 barrels from Walker's distillery over the bar, reloading the cargo on to the sidewheel Steamer *Mary Ward* (*North* C-1864) for shipment to Montreal. During 1872, the steamer *Dominion,* during an inspection, had her enrollment tonnage recorded as 178 grt, 117 registered tons. On July 30, 1875, while loading 65 cords of firewood five miles below Chatham, Ont. on the Thames River, the steamer *Dominion,* caught fire in her galley and burned to the water's edge. No lives lost.

Final enrollment for the steamer *Dominion* was surrendered in 1875 and endorsed "burnt". Report to have been raised later by order of the Canadian Government and the hull reduced to a scow.



***Dove*:** Alvin A. Turner, Trenton, MI, built for investors: Captain J. Sloan; Captain Goldsmith; and Captain Montgomery; a wooden sidewheel steamer with measures 187.80' x 24.33' x 8.25'; 427.58 grt, 320.26 net. The steamer *Dove* was launched in October 1867 and was built for the passenger, package freight trade on the Detroit River between Detroit and Malden, ONT. (Amherstburg, Ont.). She was powered by a vertical beam, low-pressure, 38" bore x 10' stroke, Cowie engine, rated at 675 horsepower, built in Detroit. She was equipped with a Desotelle & Hutton boiler, 9.5' x 20'. She was assigned official number 6512 at her enrollment.

In April 1868, while attempting to land at Wyandotte, MI, Detroit River, had a hole stove in her larboard bow. In May 1869, the steamer *Dove* was struck by the propeller *Mayflower* (U16468) and sank in the Saint Clair River near Algonac. She was raised and repaired and in October of that same year, the propeller *Plymouth* (U19621) backed into the steamer *Dove* on the Saint Clair River*,* badly damaging her wheel house and forward cabin. During winter 1869/70 layup, the steamer *Dove* was re-engine with the machinery from the condemned steamer *Susan Ward* (U22402) at Clark's Dry Dock, Detroit. Cost of the work is estimated at $5,000. John Westway was chief engineer for the 1871/72 season. In September 1871, the steamer *Dove* struck a bridge on the Thames River, damaging her wheel house. Charles L. Barron was chief engineer for the 1873 – 75 seasons.

In April 1874, her ownership was changed to the Detroit River Steamboat Co. In July of 1874, the steamer *Dove* went aground on Stoney Island in the Detroit River. In September of that same year, she went aground on Grosse Island in the Detroit River. The following month, she broke a crank pin at Malden, Ont.

In 1875, her ownership was changed to Captain Cole. She ran between Bay City and Alpena. In May 1875, down bound for Sandusky, the schooner barge *William McGregor* (U80268) while in tow of the steamer *Forest City* (U9914), struck the sidewheel steamer *Dove* at Girdlestone's wharf, just

aft of the port bow causing $160 damage. In 1877, Scott Pratt was chief engineer.

Her ownership was changed in March 1878 to Luther Westover, Bay City. Joseph R. Blanchette was chief engineer for the 1878-81 seasons.

In 1879, her ownership was changed to Captain Colle, et al. Her master for the 1881 season was Captain John Stewart.

Ownership of the steamer *Dove* was changed to Captain Ira Holt in 1883. She was placed on the Duluth, Mn to Agate Bay, MN. In June 1891, the steamer *Dove* was laid up waiting a major overhaul when she caught fire at Wheeler's Dock, Bay City, Lake Huron and burned. Her damage estimate was set at $3,000. She was repaired at Wheelers Dock.

In 1895, ownership of the steamer *Dove* was changed to Mathe McQueen. In July of that year, the steamer *Dove* went ashore off Presque Isle, Lake Erie due to visibility being reduced by smoke from a forest fire. Her passengers were all taken off safely. Released. In November 1897, the steamer *Dove* caught fire and burned to a total loss at her dock at Toledo. The remains of the hull were destroyed by dynamite in June 1899.

George Dunbar: Ira Chaffee, Allegan, MI, built at Allegan, the wooden propeller *George Dunbar* for George Dunbar, Boston, MA; agent Simeon Cobb, Chicago, IL. Launched in May 1867, her measures were: 133.42’ x 25.25’ x 9.00’; tonnage: 238 grt, 190 net; original engine, unknown. The *George Dunbar*, when enrolled, was assigned official number 6496. She was built for the bulk freight "lumber" trade on Lake Michigan, between Chicago, and Muskegon, MI. In April 1868, the *George Dunbar* was refitted for employment as a wrecker and was chartered to go to the rescue of the *Anne Vought* ashore on Spectacle Reef. Her master for the 1869 – 80 seasons was Captain James Hogan with Thomas Reynolds (1874-75, 1877-80) and Thomas J. Kehoe (1876) as chief engineers. In August 1869, the *George Dunbar* damaged her upper works when she collided with the schooner *Senator* at Chicago. She was assigned to towing business in 1870, between Saginaw, Mi. Cleveland and Buffalo. In 1876, before she returned to the lumber trade, she was reengined with a high-pressure non-condensing, 18" bore X 24" stroke, 300 horsepower engine built by Robert Tarrant, Chicago. In June 1877, the *George Dunbar* had her engine disabled and required a tow to port for repairs.

March 1880, her ownership was changed Henry L. Simonds, Boston, MA; agent Simeon Cobb. In July of that year, her ownership was Simonds & Simeon Cobb. In October 1883, while coming along the south branch of the Chicago River, the *George Dunbar* collided and sank the canal boat *Bodenswarz*. In April 1887, the *George Dunbar* was dismantled and converted to a tow barge. Her machinery removed she became a tow barge acting as a consort to the *E. E. Thompson* (U135168) in the lumber trade. During winter layup 1887/88, she was rebuilt as a propeller and enrolled with 1 deck, 1 mast; 238.25 grt, 190.82 net. Due to an error in her original enrollment, the *George Dunbar* was issued a new official number, U10890, in 1896.

Ownership of the propeller *George Dunbar* was changed to W.E. Hudson, Chicago in April 1897.

In June 1899, her ownership was reported as Hutchinson, Michigan City, IN.

In February 1901, ownership of the *George Dunbar* was changed to M. L. Edwards, Chicago.

In December of that same year, C.H. Prescott, Jr. Cleveland was recorded as her owner.

Ownership of the propeller *George Dunbar* was changed to Saginaw Bay Transportation Co., Mentor, OH in 1902. In June of 1902, bound from Cleveland to Alpena, MI with a cargo of coal, the *George Dunbar* foundered in a storm and sank four miles east northeast of Kelly’s Island, OH (six miles southeast of Pelee Island, Ont.), Lake Erie. Seven lives lost. The wreck of the *George Dunbar*, classified as an obstruction to navigation, was dynamited in October 1902.

Eight Ohio: L. Luce, George Briston & James Gregg at Sandusky, OH, built a wooden sidewheel steamer for themselves, to be used in the passenger, package freight trade. She was enrolled at Sandusky, August 8, 1867 and her measures recorded as: 12.8’ x 20.2’ x 6.8’; with a tonnage of 121.7grt, 114.79 net; and issued official number 8184. The *Eight Ohio* was named after the **8th Ohio Infantry Regiment,** an infantry regiment in the Union Army during the American Civil War. It served in the Eastern Theater in a number of campaigns and battles, but perhaps is most noted for its actions

in helping repulse Pickett's Charge during the Battle of Gettysburg.

In March 1868, ownership of the steamer *Eight Ohio* was changed to Peter Fox, et al, North Bass Island, OH at a cost of $17,500 and included the steamer *Reindeer* (U21199). Enrollment at Sandusky her tonnage was updated: 144 grt, 114.79 net.

In May 1869, ownership of the steamer *Eight Ohio* was changed to the Erie & Lake Shore Steam Boat Line, Detroit. In November of that year, she was damaged in a collision on the Saginaw River at Saginaw, MI.

In April 1873, her ownership was changed to John Pridgeon, John Demass, Detroit.

Ownership of the steamer *Eight Ohio* was changed in 1874 to Magner & Co. to transport their circus show around the lakes.

In February 1875, her ownership was changed to S. Gardner, Detroit. That spring, the steamer *Eight Ohio* was cut by ice and sank in the Detroit River.

In June of 1875, ownership of the *Eight Ohio* was changed to H. L. Brown & J. B. Scott, Detroit. They had her converted to screw propeller at Ballentine & Co. Shipyard, Bay City, MI.

In 1877, the propeller *Eight Ohio* was renamed *Midland* and chartered to run in connection with the Midland Railroad of Canada. In August of that year, she was extensively damaged by fire while lying at Fox's Dock, Windsor, Ont. The cause of the fire was believed to have been started by arson. The *Midland* was declared a total loss. At the time of the fire the *Midland* was being renovated for use as a ferry at Sarnia. Her owners had failed to pay for the vessel or the renovations, so she reverted back to her previous owners and as the propeller *Eight Ohio.* She was raised from where she sank after burning in 1877 and taken to Clark's dry dock, Detroit, to be rebuilt. She had been insured for $10,000 but the underwriters believed she could be rebuilt for less. In November 1877, the *Eight Ohio* was seized by the U.S. Marshall at Detroit for failure to pay outstanding debt. In September 1878, her engines and boiler were removed, with the engine going into another boat and the boiler doing service at Baugh's steam forge. The enrollment documents for the *Eight Ohio* were surrendered June 30, 1883 and endorsed "vessel out of commission". She sank at Springwells (Ecorse, MI) on the Detroit River. Raised and rebuilt in 1884, she was re-engine from the steambarge *Henry Howard* (US-1869). The propeller *Eight Ohio* was relaunched July 31, 1886.

September 1886, ownership of the propeller *Eight Ohio* was changed to Sarah E. Hudson, Detroit, and enrolled with measures: 124' x 20.1' x 6.8'; 106.7 grt, 55.94 net. In March 1890, the *Eight Ohio* caught fire and burned at Sandwich, Ont.

Later that year she was rebuilt at Detroit, and ownership of the *Eight Ohio* was changed in August 1890 to Patrick O'Day, Buffalo. In March 1897, the *Eight Ohio* was declared out of commission and broken up.

J. S. Estabrook: Built by David Lester, Marine City as a wooden steambarge for the bulk freight lumber trade she had a capacity for 265,000-foot lumber. She was enrolled at Port Huron, MI, May 13, 1867. Her owners were listed as David Lester & Eber W. Cottrel, Marine City, and her measures recorded as; 145.0' x 26.3' x 11.6', 280.61 grt. She was issued official number 13667. The *J. S. Estabrook* was powered by high pressure engines, 17", 17" bore x 22" stroke, double engines operating on one shaft. Her boiler was 6' 11" x 14' 5". In September 1867, the *J. S. Estabrook* broke her shaft in the Maumee River, Toledo. In September 1869, with barges in tow, the steambarge *J. S. Estabrook,* went aground at Grosse Isle on the Detroit River.

In July 1870, ownership of the *J. S. Estabrook* was changed to Toledo & Saginaw Transportation Co., Toledo.

In May 1873, ownership of the steambarge *J. S. Estabrook* was changed to Joseph B. Higgins, East Saginaw, MI. In October 1873, the *J. S. Estabrook,* laden with lumber, sheered out of control in a storm, struck a sunken pier at Fairport, OH, broke in half and sank a total loss. Final enrollment surrendered May 14, 1879.

William T. Graves*:* Built as a wooden three-mast barkentine for the bulk freight trade at a cost of $80,000, by Quayle & Martin, Cleveland. She was enrolled at Cleveland, April 1867 with measures: 207.1' x 35.42' x 14.16'; 804.51 grt. Her owner was listed as O. L. Nims, Buffalo, and she was issued official number 26172. Her master for the 1867 season was Captain S. Wood. In April 1869, the *William T. Graves* was slightly damaged in a

collision with the schooner *Metropolis* (U16414) at Chicago.

During winter layup 1869/70, the *William T. Graves* had her rig converted to a bulk freight "steambarge" at the yard of Robert Mills, Buffalo' Deck cabins were added about amidships and her enrollment measures updated to: 207' x 35.42' x 14.25'; 1001.31 grt. She had two Perry & Lay compound engines installed; 20", 36" bore x 30" stroke, 771 horsepower, builder unknown. November 1871, bound up, the steambarge *William T. Graves* arrived at Detroit with her machinery disabled. In August 1874, she sprang a leak on Lake Michigan, requiring repairs. In October 1878, the steambarge *William T. Graves,* with a southwest wind blowing the water out of the river, went aground on the bar at the foot of Jefferson Street, Toledo. The *William T. Graves* was thoroughly overhauled during the winter 1879, receiving new frames, a new deck, new keelson installed, bulwarks replaced and a full-length deck cabin was added at Toledo. Her enrollment measures were updated to: 207' x 35' x 14'; 1074.52 grt, 821.89 net.

In 1880, ownership of the steambarge *William T. Graves* was changed to the "Ohio Central Barge and Coal Co", Toledo, M.D. Carrington Managing Operator. In May 1880, the steambarge stranded near Sugar Island, Detroit River. Her master for the 1884 season was Captain F. Danger. During the 1885 season, she ran Toledo – Duluth in the coal trade. In May of 85, she broke her bowsprit in ice on Lake Superior, while bound up for Duluth. October 1885, bound down, Chicago to Buffalo, the steambarge *William T. Graves,* laden with a cargo of corn and the schooner *George W. Adams* (US-85393) in tow, was driven ashore and stranded on Dover's Point, southwest tip of North Manitou Island, Lake Michigan in a snow storm. The cargo of 43,000 bushels of corn was water soaked and the swelling of the corn sprung her decks upward. After two weeks of concerted salvage attempts the *William T. Graves* broke up and was declared a total loss. The schooner *George W. Adams* was released. No lives lost.

Final enrollment for the steambarge *William T. Graves* was surrendered at Toledo, October 31, 1885, and endorsed "vessel wrecked".

Michael Groh: At Cleveland, Quayle & Martin built a wooden propeller for Michael Groh & Thomas Manning, Cleveland to be used in the bulk freight trade. She was enrolled at Cleveland in September 1867 and her measures recorded as: 120.4' x 23.8' x 8.6'; 289.91 grt, 209.74 net. She was issued official number 17572. In July 1869, the steambarge *Michael Groh* collided with the schooner *Lewis C. Irwin* (US-1848) on Lake Michigan. Bound up from Chicago in August of that same year, the *Michael Groh,* laden with a cargo of wood, had her machinery disabled on Lake Michigan. She returned to Chicago for repairs. Her master for the 1872 season was Captain C. B. Chatterton. In April 1872, the *Michael Groh* collided with the schooner *S. H. Kimball* (U22374) on the Cuyahoga River, Cleveland. Her damage loss for the *Groh* was set at $500. (04/25/1872)

July 1872, ownership of the steambarge *Michael Groh* was changed to William H. Gifford, et al, Hudson, NY. In May 1874, the steambarge broke her wheel while on the Detroit River.

September 1876, ownership of the *Michael Groh* was changed to Thomas S. Ruddock, et al, Chicago, IL. In November 1877, the steambarge sprang a leak on Lake Michigan. Repaired.

March 1878, ownership of the steambarge was changed to James S. Wheeler, Chicago.

August 1879, ownership of the *Michael Groh* was changed to Samuel R. Martin, Chicago. In 1881, the steambarge ran between Chicago and Whitehall in the lumber trade. In May 1882, after a rebuilt by T. Notter, Muskegon, MI & reboilered; her enrollment was updated to: 141.5' x 25.7' x 10.7'; 289.91 grt. November 1883, the steambarge *Michael Groh* went ashore on the beach at Muskegon. She was released and repaired at Wolf & Davidson's Yard, Chicago. Damage loss, including wrecking, was set at $8,500. Master of the steambarge *Michael Groh* for the 1885 & 86 seasons was Captain Eduard Evans.

September 1888, ownership of the steambarge *Michael Groh* was changed to Henry W. Cook & A. D. Campbell, Michigan City, IN.

Early in 1889, ownership of the *Michael Groh* was changed to Frank Harlow, Chicago.

In March 1890, ownership of the steambarge was changed to J. T. Johnson, Sandusky.

In March 1895, her ownership was changed to L. L. Stoddard & M. W. Lockwood, Milan, OH. Master of the steambarge *Michael Groh* was Captain Vick Bonah, for the 1895 season. In November 1895, bound down from Marquette, MI for Cleveland, the steambarge *Michael Groh,* laden with lumber, lost her rudder on Lake Superior and had her fires doused. Without control, she was driven on the rocks on Miners Castle, Picture Rocks, near Munising, MI where she was pounded to pieces.

Final enrollment was surrendered at Sandusky, March 5, 1896, and endorsed "vessel wrecked & abandoned".

***Guiding Star**:* At Detroit, on September 17, 1867, the wooden propeller *Guiding Star* was enrolled. Built by Philander Lester at Marine City Michigan, for C. C. Blodgett et al, Detroit, the steambarge had measures of: 163.9' x 26.9' x 11.8' and a tonnage of 362.75 grt. She was issued official number 85079. Her engine is unknown with the exception that it came from the propeller Kentucky (US 14044). The steambarge *Guiding Star* was built for the bulk freight trade and connected with the New York Central Line. She was readmeasured in 1868 and her tonnage recorded as 619.17 grt. In 1870, she ran buffalo to Detroit. In July of that year, while docked at Port Maitland, Ont. her boiler blew up, sinking the vessel. Four to seven lives were lost.

Ownership of the steambarge *Guiding Star* was changed to Joseph Nicholson, Detroit in 1871. She was raised and rebuilt as a two-mast schooner barge for the iron ore trade. Her enrollment measures, in April 1871 were: 163.9' x 26.9' x 11.8'.

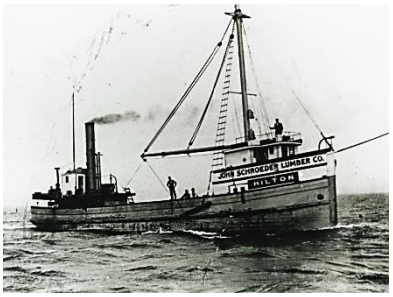
In April 1872, ownership of the schooner barge *Guiding Star* was changed to John Pridgeon, Detroit. She ran in the Grand Trunk Line, Chicago – Milwaukee - Sarnia, Ont; towed by the *City of Detroit* (US-4378) until she foundered in Saginaw Bay, December 4, 1873. The tug *Prindiville* (U12771) picked up the *Guiding Star* and towed her into port. Master of the schooner barge *Guiding Star* for the 1880 – 88 seasons was Captain L. Cole.

In April 1881, ownership of the schooner barge *Guiding Star* was changed to Luis V. Spencer, et al, Waukegan, IL. In October 1884, the *Guiding Star* was damaged in a gale on Lake Michigan. In that same month, the schooner barge *Guiding Star,* laden with lumber, struck on the Manitou Islands, Lake Huron, damaging her hull, and both the foremast and her main mast. She was towed into Milwaukee, WI leaking badly. In April 1885, she was chartered to take 26,000 bushels of corn to Buffalo.

Ownership of the schooner barge *Guiding Star* was changed in 1886, to Lake Michigan & Lake Superior Transportation Co., Chicago.

January 1888, ownership of the schooner barge *Guiding Star* was changed to Charles H. Week, Bay City, MI.

August 1892, under tow by the steamer *Toledo,* the schooner barge *Guiding Star,* broke her tow, stranding near Big Bay Point, Lake Superior. She was declared a total loss. No lives lost.



***Hilton**:* Chesley Wheeler, E. Saginaw, MI, built a wooden propeller for J. M. Hilton et al, Chicago. She was enrolled at Chicago on July 1, 1867 and was issued official number 11767. Her measures recorded were: 110.25' x 26.33' x 7.33'; with tonnage of 110.25 grt, 141.66 net. She was powered by a high-pressure engine, built by Pound Manufacturing Co., Lockport, NY. Her boiler was built by Thomas Steele, E. Saginaw, MI. The steambarge was built for the bulk freight, Lake Michigan lumber trade. Her master for the 1867 season was Captain Willis Abell with John W. Waterman as engineer.

In March 1869, her ownership was changed Horatio Hill, et al, Chicago, IL. In September of that year, she was damaged during a gale on Lake Michigan. Her master for the 1870 season was Captain A, J. Brown. Captain John W. Cochrane was her master for 1871-72. The propeller *Hilton* broke her machinery on Lake Michigan and was towed to Chicago for repairs. Her master in 1872 was Captain David Cochrane.

Ownership of the propeller *Hilton* was changed on March 6 1873, to John N. Staples, Chicago. Her owner on March 12th was Charles H. Shepard, Chicago.

In August 1873, ownership of the *Hilton* was changed to Edward Buckley, Manistee, MI.

In March 1875, her ownership changed to John J. Bush, Lansing, MI. In September 1876, the propeller *Hilton* sank off Manistee, MI, Lake Michigan. She was raised and rebuilt during winter layup, 1876/77.

In May 1880, ownership of the propeller *Hilton* was changed to Mary E. Richardson, Milwaukee. Her master for the 1880 – 93 seasons was Captain Thomas Richardson with Joseph J. Krach as chief engineer in 1886.In October of 1880, the propeller *Hilton* arrived at Milwaukee in a sinking condition after a steam pipe burst. She was repaired. In April 1881. Bound from Pentwater, MI for Milwaukee in April 1881, the *Hilton* sprang a leak and became waterlogged, sinking off the Muskegon River in Lake Michigan. Her crew abandoned her in the lifeboats. She was raised and towed to Milwaukee for repairs. In August 1883, the propeller

Hilton received a new engine, 18" bore x 18" stroke. October 1884, while in the middle of Lake Michigan, the propeller *Hilton's* deck load of hay caught fire. A strong wind was blowing and the crew had great difficulty extinguished the flames. The vessel was slightly damaged.

In April 1889, ownership of the propeller *Hilton* was changed to Thomas Richardson, Milwaukee.

In May 1891, ownership shares in the *Hilton* were transferred to Thomas Richardson, et al, Milwaukee.

March 1894, ownership of the propeller *Hilton* was changed to C. H. Ellis, et al, Milwaukee. The *Hilton's* master were: Captain Charles H. Ellis from 1894-1900, Captain Manning Kilton from 1901-03, Captain S. Tessan in 1904, and Captain Manning Kilton 1905 – 1908. Her chief engineers were Sherman Mann from 1900-02, and John Sanville from 1906 to 1908.

In March 1907, her ownership was changed to the John Schroeder Lumber Company, Milwaukee. Her masters were Captain Rudolf Reibildt in 1909, Captain Harry F. Brewer 1910, Captain Manning Kilton 1911, Captain Charles R. Eide 1912 with Matt Flagstad in 1909 and John R. McArthur from 1910-12 as chief engineers.

September 1913, ownership of the propeller *Hilton* was changed to Douglass Transportation Co., Saint Clair, MI. .

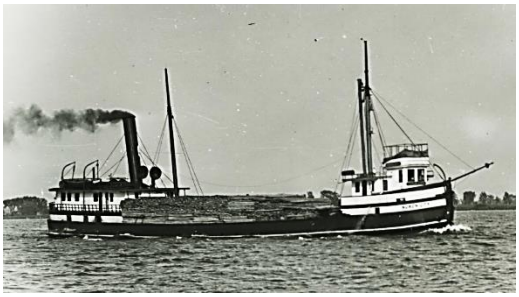
Masters of the propeller *Hilton* were Captain W. Hamilton in 1914. In October 1915, the propeller *Hilton* rammed the steambarge *Maud* (U92937), in thick fog, sinking her in 16 feet of water at Schlinkert's dock, St. Clair River. Her masters were Captain H. R. Hale 1916-17, Captain Herbert R. Lively 1917-20 and Captain George Skinner 1923. George Robertson in 1914 to 1919 and Robert Smith in 1923 served as chief engineers.

In November 1926, ownership of the propeller *Hilton* was changed to Nicholson Transit Co., Detroit.

Final enrollment for the propeller *Hilton* was surrendered at Detroit, December 27, 1929 and endorsed "vessel dismantled & abandoned".

Hippocampus (Sea Horse): George Hanson, Saint Joseph, MI, on the eastern shore of Lake Michigan, built a wooden propeller for a consortium of investors led by Morrison, et al., all from Saint Joseph. She was built for the passenger and green fruit trade, when in season, between Benton Harbor & St. Joseph, MI and Milwaukee. She was enrolled at Grand Haven, MI, September 16, 1867 and her measures were: 100.0' x 20.0' x 7.0': tonnage – 152.91 grt. She was issued official number 11819. She was powered by a 22" stroke, 150 nominal horsepower, built by Vulcan Iron Works, Chicago. Her master for the 1868 season was Captain H. M. Brown with Richard Eustis as chief engineer. In September 1868, bound from Benton Harbor for Chicago, the propeller *Hippocampus*, laden with 8,000 baskets of peaches, located mostly on her upper decks, and 41 passengers and crew, capsized at 3 AM in a heavy squall off St. Joseph on Lake Michigan. Twenty-six lives were lost. The survivors were rescued by the scow schooner *Trio* (U 24644)

In 1877, the wreck of the propeller *Hippocampus* was snagged by a fisherman off St. Joseph, lying in 100 feet of water.



Huron City*:* On June 14, 1867, at Sandusky, the wooden propeller (steambarge) built by George Fordham, Sandusky was enrolled. Her owner was listed as R. B. & Langdon Hubbard of Sandusky. She had measures of: 167.80' x 29.0' x 10.0' and a tonnage of 368.81 grt, 277.33 net. Her official number assigned was 11579. The steambarge *Huron City* was powered by a high-pressure engine, 26" bore x 28" stroke, 291 horsepower, built by Klotz & Kramer. She was built as a steambarge for the bulk freight trade

In November 1867, the steambarge *Huron City* sank at Sandusky. In May 1869, her machinery was disabled at Willow Creek, MI, on Lake Huron. In March 1871, the steambarge *Huron City* received general repairs, including new arches and caulking at Clark's Dry Dock, Detroit at a cost of $3,000. In August of that year, she broke her wheel while in Lake Erie. In September of that year, her machinery disabled and repaired at Detroit.

Ownership of the steambarge *Huron City* was transferred to Watson & R. B. Hubbard in April 1880.

In April of the following year, her ownership was changed to William W. Tyler et al, Buffalo. In September 1881, caught in a squall on Lake Erie, the *Huron City* was forced to let go her tow, consisting of the barge *Sam Flint* and schooner barge *J. F. Joy.* September 25, 1882, the

steambarge *Huron City,* laden with coal and powder, went ashore, and was holed, on Eagle Harbor reef, Lake Superior. She was released two days later. Her master for the 1883 season was Captain R. F. Parsons. In 1883, the *Huron City* ran between Buffalo and Duluth, towing the schooner barge *Wenona* (26169) *& Sam Flint* (23660)*,* all loaded with coal upbound and iron ore downbound.

Ownership of the steambarge *Huron City* was changed on May 1, 1884, to Wilfred Campbell, E. Saginaw, MI. He had her rebuilt with steel arches. For the 1885 season, the steambarge *Huron City* towed the *Yankee* (27564) *& Charles Davis* (34107) in the lumber trade.

In March 1886, ownership of the steambarge *Huron City* was changed to Angus McDougall et al, Buffalo. Her master for the 1886 season was Captain James Bennet.

In March 1887, ownership of the steambarge *Huron City* was changed to Charles H. Cook & William C. Wilson, Michigan City, IN. She was rebuilt in 1888 by J. Mathews, receiving a firebox boiler, 9’ x 15’ at 100 # steam.

Ownership of the steambarge *Huron City* was transferred to Indiana Transit Co., William C. Wilson, President, in May 1890. She often towed barges *Bay City* (2135)*, Wand, & Lily May.*

In April 1892, ownership of the steambarge *Huron City* was changed to E. C. Recor et al, St. Clair, MI.

In June 1892, ownership of the steambarge *Huron City* was changed to Albert Meswald, Marine City, MI, et al. July 1892, bound down for Michigan City, IN, the steambarge *Huron City,* laden with lumber, had her machinery disabled off Whitefish Point, MI, Lake Superior. Repaired.

April 1893, ownership of the steambarge *Huron City* was changed to J. E. Strachan, Detroit. In October of that year the *Huron City* went ashore on rocks at the Portage entry, Lake Superior.

Ownership of the steambarge *Huron City* was changed to Charles A. Chamberlin, Detroit in April 1894.Her master for the 1895 – 1901 seasons was Captain Fred W. Manual. He had her engine rebuilt by Samuel F. Hodge, Detroit. In 1896 she received a new engine: steeple compound, 18”, 38” bore x 28” stroke, 325 horsepower. During winter layup of 1896/97, the steambarge *Huron City* received new deck frames, part of a new deck, new bulwarks and some generic repairing at the cost of $500. Her master for the 1902 season was Captain Robert E. Cory.

In September 1905, ownership of the steambarge *Huron City* was changed to Harris W. Baker, Detroit. He had her rebuilt as a wrecking steamer.

Ownership of the steambarge *Huron City* was changed to the Mud Lumber Co. Raber, MI in February 1907.The steambarge *Huron City* sank after a collision with the steamer *James S. Dunham* (U76960) on the St. Clair River below Port Huron, MI. Her master for the 1908 season was Captain Paul Rivard

Ownership of the steambarge *Huron City* was changed to J. E. Reynolds, Port Huron, MI & Daniel McCarron in March 1914. Master of the *Huron City* for the 1916 & 17 seasons was Captain J. E. Reynolds. In September 1917, the steambarge *Huron City* caught fire and foundered at Sandwich, Ont., Detroit River. No lives lost. Vessel was classified as a total loss.

Final enrollment surrendered May 24, 1918 and endorsed “stripped and abandoned”.

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.)