

Welsh Wreck Web Research Project
(North Cardigan Bay)
On-line research into the wreck of the:
North Carolina



A similar Philadelphia steamship

Report compiled by:

Graeme Perks

Report Title:

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(North Cardigan Bay)
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*North Carolina***

Compiled by:

Graeme Perks
graperks@aol.com
Sutton Coldfield
UK

On behalf of:

Nautical Archaeology Society
Fort Cumberland
Fort Cumberland Road
Portsmouth
PO4 9LD
Tel: +44 (0)23 9281 8419
E-mail: nas@nauticalarchaeologysociety.org
Web Site: www.nauticalarchaeologysociety.org

Managed by:

Malvern Archaeological Diving Unit
17 Hornyold Road
Malvern
Worcestershire
WR14 1QQ
Tel: +44 (0)1684 574774
E-mail: MADUdiving@gmail.com
Web Site: www.madu.org.uk

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1.0 Abstract

The "www Research Project" is about, discovering by on line research details of ships, on the MADU data base of wrecks of North Wales, the circumstances of their loss, details of the owners and crew, the cargo carried and their history.

The steamship *North Carolina* was built in Philadelphia in 1854 by Vaughan & Fisher with the machinery supplied by Merrick & Sons for Alexander Heron Jr of Philadelphia, intended to carry cargo and passenger between Philadelphia and Wilmington N C. The *North Carolina* was soon found to be uneconomic for this route and sailed for Liverpool to be sold in February. The *North Carolina* was damaged in five days of gales and returned for repair.

The *North Carolina* set off again for Liverpool in March but on April 8 1855 collided with the barque *Robert* 30 miles off the Tuskar lighthouse and sank. The crew of the *North Carolina* were rescued by the *Robert* ,which returned to Liverpool for repair, and another vessel.

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2.4 Contributors

Madu

2.5 Abbreviations

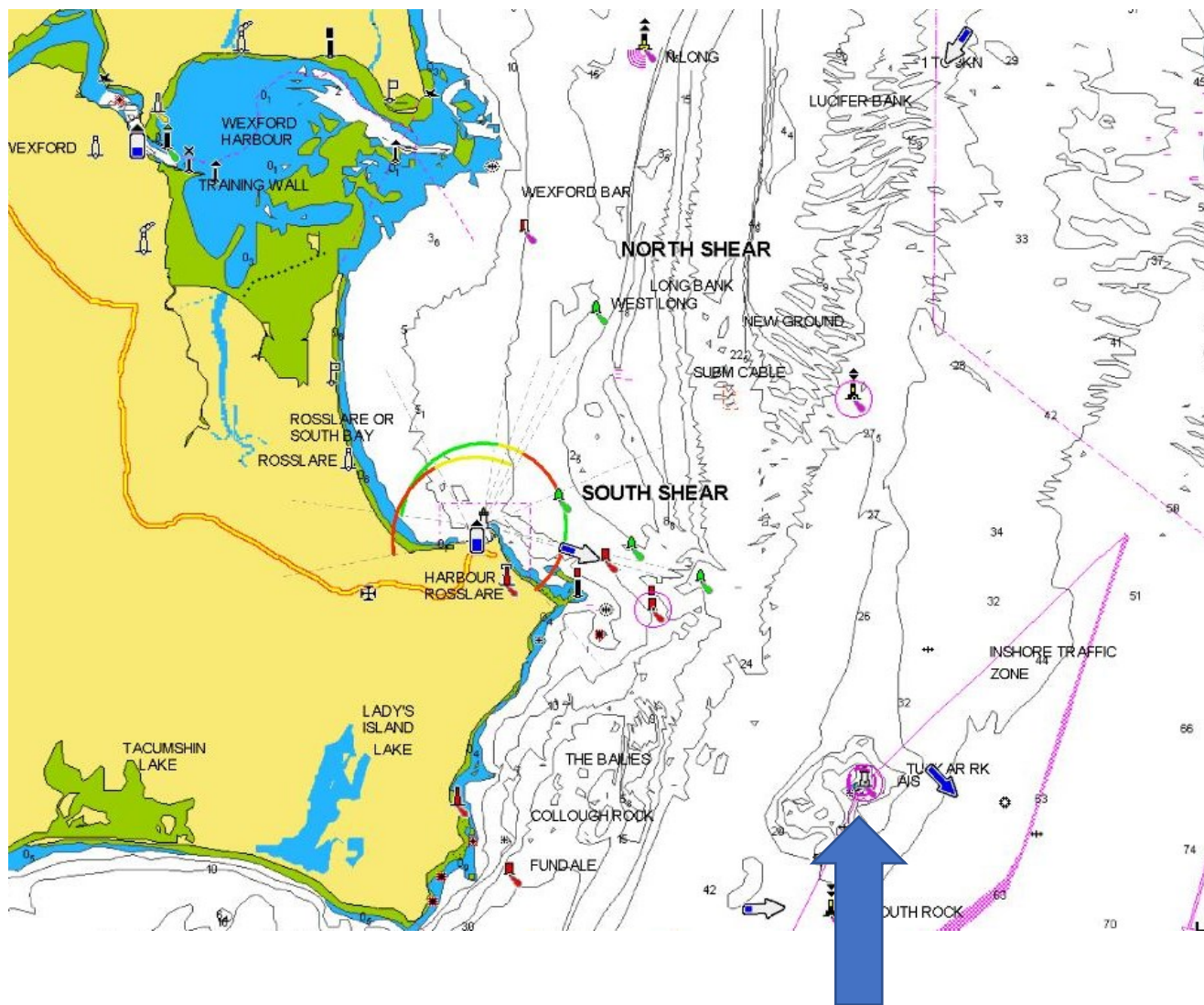
ALC	American Library of Congress
BBLs	Blue Barrels
BNA	British Newspaper Archives
Hhds	Hogs Heads
LL	Lloyds List
LR	Lloyds Register of shipping
MADU	Malvern Archaeological Diving Unit
MDZE	Merchandise
N C	North Carolina, USA
SMG	Shipping & Mercantile Gazette
NAS	Nautical Archaeology Society
NAW	National Archives of Wales
NPRN	National Primary Resource Number
WNL	Welsh Newspapers on Line
w/e	Week ending

3.0 Introduction

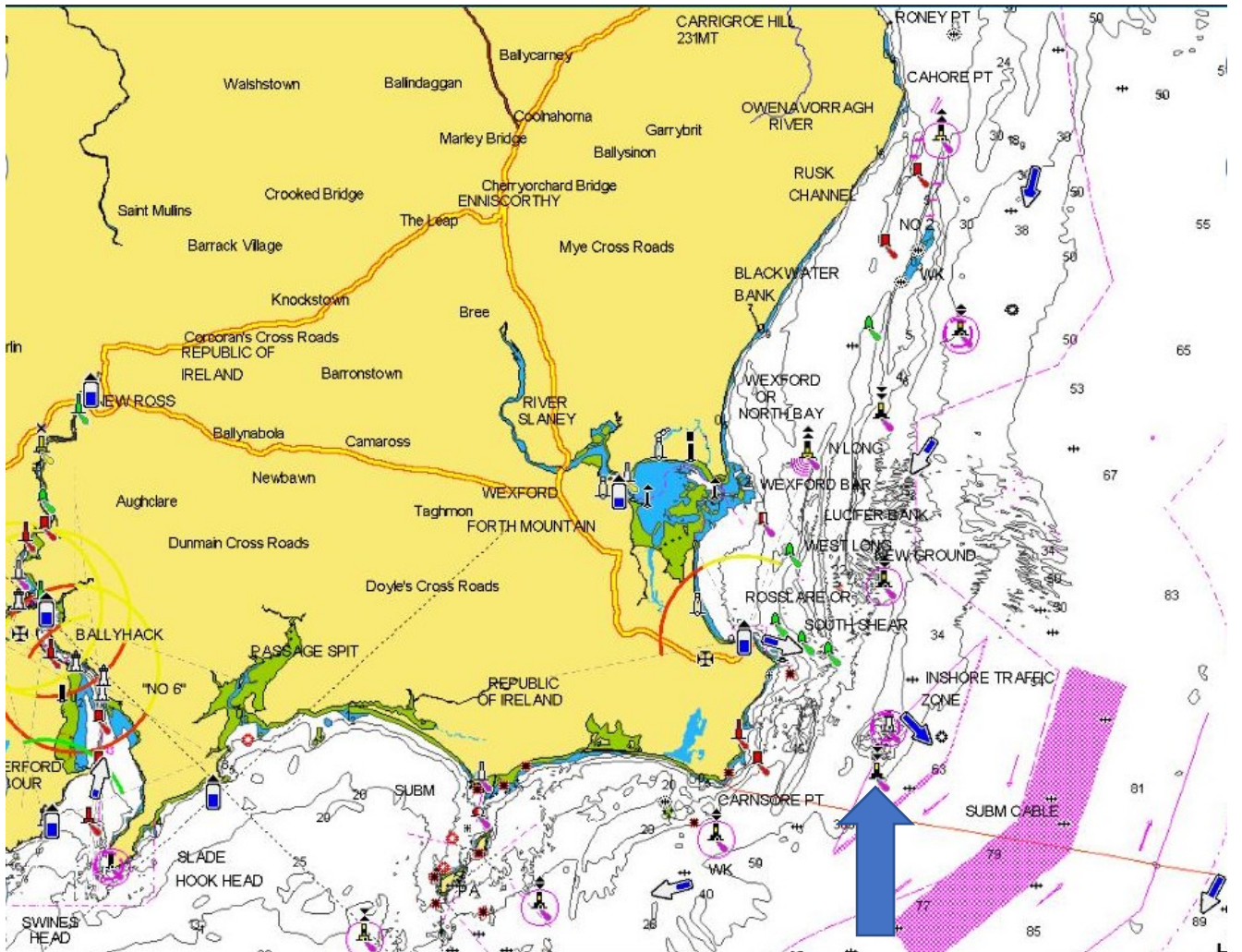
1. I selected North Carolina to research because she was an early steamship and wished to identify her and see how much information I could find about her. I also wanted to find out what happened and I wanted to discover:
2. The dimensions of the vessel, the construction material, who the builder was, when she was built, the machinery supplier and any other information available about her.
3. Information concerning the voyages, cargo's, any events affecting the vessel, details of its masters, crew and owners.
4. To find out the sequency of events leading up to the loss of the vessel, whenever that was and the event in 1855.
5. To discover the cause of the event in 1855 and if the vessel survived, the cause of its eventual loss.
6. The events that happened after the incident in 1855 and up to and after its loss if it survived.
7. If there were any previous research of the vessel for the 1855 incident and its story.
8. If there was a wreck site for North Carolina and if it had been identified, dived and recorded.
9. If any salvage of the vessel and its cargo had been carried out
10. If any previous reports had been produced for the North Carolina?.

4.0 Background

When I started this project it was reported that the Steamship North Carolina was registered in Philadelphia and sank 30 miles off Tuskar Rock, Ireland after a collision on the 8th April 1855.



Tuskar Rock



Tuskar Rock and Adjacent Coat of Ireland

5.0 Research Methodology

I used a Microsoft Pixel laptop with access to my home internet running windows 10 operating system. I also used my Apple I pad for research when I was away from the laptop. The new internet provider has now connected my home by a fibre connection so it is very much faster. The Laptop uses Bing search engine but I also use Google which produces less advertisements and less Americanised content.

I searched Lloyds Register of Shipping (LR) for "North Carolina " looking for details of her dimensions, master, builders and owners from 1854 with no match. I then searched yearly until 1855.

I searched LR ships, plans and survey reports for "North Carolina" with no match.

I searched The British Newspaper Archives (BNA) for "North Carolina", and "steamship North Carolina" looking for sailings, arrivals, owners, builders, mishaps and any details of her loss and found a number of matches.

I searched Welsh newspapers on line for "North Carolina" looking for sailings, arrivals, a launch, owners, builders and any details of her loss and found a match.

I searched Coflein site for "North Carolina" looking for any details of the wreck and a chart with no match.

I searched wreckeu site for "North Carolina" looking for any details of the wreck with no matches.

I searched the American Library of Congress, newspapers (ALC) for "steamship North Carolina" with matches. I also searched looking for any details about them and their businesses , "Merrick & Sons of Philadelphia", "Alexander Heron Jr of Philadelphia", " Vaughan & Fisher shipbuilders", "John W Griffiths" and "Captain Washington Symmes" with no matches.

I searched the internet via Google for the "steamship North Carolina" looking for any details about her, with a match in Google books with a report from the machinery manufacturers of her dimensions, equipment and performance. I also searched looking for any details about them and their businesses , "Merrick & Sons of Philadelphia", "Alexander Heron Jr of Philadelphia", " Vaughan & Fisher shipbuilders", "John W Griffiths" and "Captain Washington Symmes" with matches.

6.0 Results

Vessel	Name/s	North Carolina	
	Type	Steamship	
		Cargo	
Built	Date	1854	
	Builder	Vaughan & Fisher	
		Philadelphia	
Construction	Materials	Wood	
	Decks	one	
	Bulkheads	none	
Propulsion	Type	Screw steamer, 3 masts, foremast square rigged	
	Details	True screw of cast iron – 3 blades	
Engine	Details	Merrick & Sons of Philadelphia	
		One vertical square – cylinder 56 inches	
		stroke four feet	
		25 lbs per square inch maximum	
	Boilers	2 – return tubular	
Drive	Type	Single screw of cast iron	
	Number	One	
Dimensions	Length	177 ft	ins
	Beam	34 ft	ins
	Draught	12 ft	ins
Tonnage	Gross	700 tons	
	Net	672 tons	
Owner	First	Alexander Heron Jr	
		Philadelphia	
	Last	Alexander Heron Jr	
		Philadelphia	
	Others		
Registry	Port	Philadelphia	
	Flag	American	
	Number		
History	Routes	Philadelphia to Wilmington N C	
		Philadelphia to Liverpool	
	Cargo	Bacon, pea nuts, Turpentine, Dried fruit, Rosin, Cotton	
Final Voyage	From	Philadelphia	
	To	Liverpool	
	Captain	Washington Symmes	
	Crew	32	
	Passengers	None	
	Cargo	General cargo	
Wrecking	Date	April 8 th 1855	
	Location	30 miles east of Tusker Light	
	Cause	Collision with Barque Robert of Boston	
	Loss of life	None	
	Outcome	sank	

Wilmington journal, December 15, 1854**The Steamship North Carolina.**

This new Steamship arrived here Wednesday from Philadelphia, from which port she made an excellent run and proved herself a staunch sea-boat. Her length is 177 feet; breadth of beam, 34 feet; depth of hold, 13 feet; draught of water $9\frac{1}{2}$ feet in ballast, 12 feet loaded. Her measurement is 700 tons, but like all light draft vessels she will carry a great deal more. She is a propeller of nearly double the steam-power usually applied to vessels of that class of the same tonnage.

Her main object is freight, although her accommodations for passengers are very good, to the extent of sixteen, with easy facilities for increasing them to any required amount. Her first trip is made at a period of very general depression and of unusual scarcity of freight here, on account of the continued lowness of the streams. A portion of her is owned, we believe in this State, and as the pioneer of steam communication between North Carolina and the North we wish her the utmost success, which we trust every effort will be made to secure. Her establishment as a regular trader will be a great advantage both to this port and Philadelphia. She comes to George Harriss, Esq.

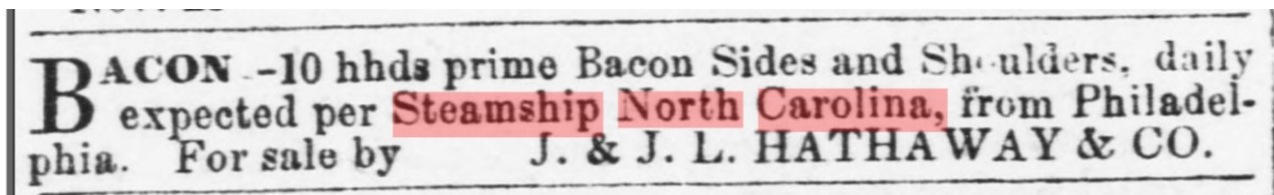
Wilmington journal, December 15, 1854,

Marine Intelligence

Port of Wilmington, North-Carolina – December 1855

Arrived

Dec 13. - Steamship North Carolina, Symmes from Philadelphia to Geo. Harriss
Mdze



BACON -10 hhds prime Bacon Sides and Shoulders, daily
expected per **Steamship North Carolina**, from Philadel-
phia. For sale by J. & J. L. HATHAWAY & CO.

Alexandria gazette, December 21, 1854,

Steam communication has been established between Wilmington N C and Philadelphia. The steamship North Carolina has made one trip. She is to make three trips a month.

Wilmington journal, December 22, 1854

Marine Intelligence

Port of Wilmington, North-Carolina

Cleared

Dec. 18. Steamship North Carolina, Symmes for Philadelphia by Geo. Harriss:
with naval stores, cotton &c.

Wilmington journal, January 05, 1855

Marine Intelligence

Port of Wilmington, North-Carolina – January 1855

Arrived

2.- Steamship North Carolina, Symmes from Philadelphia (46 hours from the Capes to the Bar) to Geo. Harriss Mdze

Wilmington journal, January 12, 1855

Marine Intelligence

Port of Wilmington, North-Carolina – January 1855

Cleared

Jan. 6 - Steamship North Carolina, Symmes for Philadelphia by Geo. Harriss: with 38 bags, 36 boxes, 18 bbls, and 5 hhds. dried fruit, 6 hhds wax, 26 bales yarn, 17 do sheeting, 214 do cotton, 1208 bushels pea nuts, 543 bbls spirits turpentine, 1845 do rosin

The New York herald, February 05, 1855, MORNING EDITION, Page 278,

FOR LIVERPOOL FROM PHILADELPHIA.—THE NEW and splendid Philadelphia built **steamship NORTH CAROLINA**, 1,800 tons, Capt. Washington Symmes, will be ready to receive freight at Second Wharf, above Vine street, on Wednesday, 31st inst., and sail on Saturday, February 3, at 10 o'clock. Rates of passage—Saloon berths, \$90, including steward's fees. Third class passengers—A limited number of third class passengers will be taken from Philadelphia to Liverpool, and found in provisions, at \$25. Drafts on agents for £1 and upwards. For freight or passage apply to THOMAS RICHARDSON & CO., 15 Broadway, New York, and 9 Walnut street, Philadelphia.

Washington sentinel, February 17, 1855

Marine News

Philadelphia February 16 - The steamship *North Carolina* hence for Liverpool, returned to the breakwater last night supposed in a leaking condition since she came in under steam.

The New York herald, February 19, 1855, MORNING EDITION, Page 392

Herald Marine Correspondence

Philadelphia February 17 & 18 Returned Steamship *North Carolina*, Symmes hence 4th inst. for Liverpool, having encountered a succession of gales for five days, during which she broke the blades of her propeller, shipped several heavy seas and sustained other damage, together with having sprung a leak, which occasioned her having to put back for repairs. She will resume her voyage in a week to ten days at the farthest.

Daily American organ, February 21, 1855

The Steamship *North Carolina* which returned to Philadelphia Saturday in consequence of having met a severe gale, which broke her propeller blades and causing leaks will have to all her cargo discharged before she can be repaired, after which she will sail for Liverpool.

Lloyd's List - Monday 09 April 1855

The *ROBERT*, for New Orleans, has put back damaged, having been in contact last evening off Holyhead, with the *NORTH CAROLINA* (s.s.), from Philadelphia, which sank; -part passengers and crew saved. [per E.T, at 10.56]

Yesterday morning about 30 miles W. of Tuskar the *NORTH CAROLINA*. (s. s.) sank ; master and 21 of the crew saved by the *Robert* ; the remainder were seen in boats alongside another ship at daylight.

Shipping and Mercantile Gazette - Monday 09 April 1855

LIVERPOOL —April 9 (By Magnetic Telegraph, This Day): screw. steamer North Carolina, from Philadelphia for Liverpool), in collision with the Robert, from Liverpool for New Orleans, and sank, off Bardsey, yesterday morning; the Robert put back to-day with the captain and crew on board, and the remainder of passengers and crew of the North Carolina were saved by another ship.

LIVERPOOL—April 9 (By Telegraph, This Day, received at 11.20 a.m.): The Robert, for New Orleans has put back damaged, having been in contact last evening, off Holyhead, with the North Carolina (s s) from Philadelphia, which sank; part of the passengers and crew saved.

Liverpool Albion - Monday 09 April 1855

LOSS OF THE SCREW-STEAMSHIP NORTH CAROLINA. THE barque Robert, which left the Mersey on the 5th instant, for New Orleans, put back this morning. She reported that, at half-past one o'clock yesterday morning, she came in contact with the new American screw-steamer North Carolina, about thirty miles west of Tuskar, and in about ten minutes after the collision the steamer sank. The captain and twenty-one of the crew were saved by the Robert, and the remainder, eleven men, were seen at daylight in the boats alongside another ship. As there were no passengers on board, there is reason to believe that no one perished. The North Carolina was struck on the port side, forward of the fore rigging. She sailed from Philadelphia on the 21st ult., under the command of Captain Symmes, and, being a large and powerful vessel, it was expected that she would have been taken up by Government for the transport service. The Robert appears to have received but trifling damage.

Northern Daily Times - Tuesday 10 April 1855

LOSS OF THE SCREW-STEAMER NORTH CAROLINA. On Sunday morning, between one and two o'clock, a collision took place between Holyhead and Bardsey, between the screw-steamer North Carolina, from Philadelphia for this port, and the ship Robert, bound hence for New Orleans. The steamer sustained such severe damage that she sunk in deep water in about ten minutes. The captain and twenty-one of the crew of the ill-fated vessel succeeded in getting on board the Robert, which put back to this port, and arrived in the Mersey early yesterday morning. There were eleven other men on board the steamer at the time of the collision, and they were observed at daybreak on Sunday morning in

the boats alongside another ship, and no doubt is entertained that they were taken on board, and their lives thus providentially saved. The *North Carolina* was an American steamer, and was, we believe, consigned to Messrs. Richardson Brothers and Co. She is understood to have been despatched here for the purpose of obtaining a charter for service in the Crimea, but she appears to have been singularly unfortunate in her attempt to cross the Atlantic. She left Philadelphia, originally, about the middle of February, and after having been some days at sea; she returned to that port disabled, on the 18th of February, when it was reported that the blades of her propeller were broken; that she had sprung a leak, and had received other damage, during a heavy gale of wind which lasted five days.

Newcastle Guardian and Tyne Mercury - Saturday 14 April 1855

COLLISION IN THE IRISH CHANNEL. On Sunday morning, collision took place in the channel between the barque *Robert*, outward bound, and the screw steamer *North Carolina*, from Philadelphia to Liverpool, resulting in the loss of the latter vessel. The *Robert*, commanded by Captain Archibald Stagg, is an American vessel, and it appears that she left the Mersey on Thursday morning last, five a.m., bound for New Orleans, with a cargo of railroad iron. The weather up to Sunday morning continued hazy, with a moderate breeze, the wind being about west. During the whole of the time Capt. Stagg states that there was a good lookout kept from the deck and fore-castle of the barque. At ten minutes past one o'clock on Sunday morning, Capt. Stagg, who had been on the topsail yard looking out for the Tusker light, observed a steamer ahead, and had just time to get upon deck when a violent collision took place between the two vessels, the steamer, which proved to be the *North Carolina*, striking the *Robert* starboard bow, carrying away her cutwater, bowsprit, and head rigging, besides springing her stem and opening her wood ends. Unfortunately the damage sustained the steamer was of such a nature that she sunk less than ten minutes after the collision took place, the captain of the *North Carolina*, the mate, the engineers, and portion of the crew, amounting all to about 22 persons succeeded with difficulty, in getting on board barque, without, however, saving any of their effects. steamer's papers, together with mail bag which she carried, were lost. The remainder of the crew, amounting to about 10 men, took to the boats and were afterwards seen pulling to the shore, which they doubtless reached in safety; it may be that they have been picked some vessel. Having ascertained the extent of his ship's damage, Captain Stagg promptly squared away, for Liverpool, and arrived in the Mersey at seven o'clock on Monday morning, the barque being in a very leaky condition. In the afternoon the *Robert* entered the Waterloo half-tide Dock, and will be placed in the graving dock to undergo

repairs. The *North Carolina* was wooden steamer of upwards of 1000 tons burthen, and had made two or three voyages from the northern to the southern states of North America. She had on board a general cargo, but no passengers ; and we understand she was coming to Liverpool for the purpose of being sold. The steamer, it appears, was unfortunate upon her first leaving Philadelphia, for Lloyd's List has the following notice -.—The *North Carolina* (s s.) from Philadelphia to Liverpool, put back on the 18th February, with the blades her propeller broken, and other damage and having sprung a leak. She had encountered heavy gales for five days, and shipped several heavy seas.

Bristol Mercury - Saturday 21 April 1855

COLLISION IN THE CHANNEL.-Loss of a large American Screw-steamer.-The news reached Liverpool on Monday of the total loss of the new screw-steamship *North Carolina*, from Philadelphia, by a collision in the Channel. She was of 1300 tons burthen, and had been recently completed at Philadelphia. She left that port for Liverpool on the 4th of February last, but put back on the 18th, with the blades of her propeller broken, and having sprung a leak. She had encountered very severe gales and shipped heavy seas. Having undergone the necessary repairs, she re-sailed under the command of Captain Washington Symmes on the 21st ult., and had progressed favourably until her arrival in the channel, when, on Sunday morning, at half-past one o'clock, she was run into by the ship *Robert* (Captain Stagg), which left Liverpool for New Orleans on the 5th inst., about 30 miles west of Tushar Light. The ship struck her on the ,port side, forward of the fore rigging, causing her to fill immediately, and she sank in about ten minutes. The captain and twenty-one of the crew were taken on board the *Robert*, and brought back to Liverpool on Monday morning. The remainder (eleven men) were seen in the boats alongside another ship, at daylight. Beyond the loss of her cutwater, the *Robert* sustained little or no damage.

Shipping and Mercantile Gazette - Tuesday 24 April 1855

THE COLLISION OF THE *NORTH CAROLINA* SCREW STEAMER AND THE SHIP *ROBERT*, OF BOSTON. The annexed is a copy of the correspondence that has taken place between the Receiver of Droits at Liverpool, and the American Consul at that port, respecting the recent collision between the *North Carolina* (s s), from Philadelphia, and the American ship *Robert*, of Boston, off Holyhead, and the liability American captains to comply with the "Wreck and salvage Act".

TO CAPTAIN HALSTEAD RN, SECRETARY AT LLOYDS

Sir,—In forwarding copy of the deposition of the Master of the *Robert* (which is a very important one and should have been made long ago), I enclose a copy of correspondence which has taken place relative to it with the American Consul, Captain Staigg who has expressed his regret at not having appeared promptly—his demurring to so arising from his ignorance of the object to be obtained: it was in fact what he was desirous of doing, as he wished represent the facts to the underwriters both in England and America.

I remain, Sir, your obedient servant,

HENRY C CHAMPMAN, Receiver of Droits Liverpool.

April 20.1855.

(Copy of enclosed letters.)

TO N HAWTHORNE ESQ., UNITED STATES CONSUL, LIVERPOOL

Sir, I beg to bring to your official notice a copy a letter to the master of the American Ship *Robert*, who it appears demurred to conform to the 16th section of the 9th and 10th Vic., cap.99, commonly called the Wreck and Salvage Act, on the grounds that it does not apply to foreign ships. Should this view of the law be correct it will deprive foreign ships of the benefit and protection lawless plunder of wreckage, which was the very object in view when the act was passed. But inasmuch a common law is presumed to be founded on common sense. I apprehend no magistrate would put such a construction on it, or foreign ships might claim exemption from dock rates light dues &c. As the underwriters are calling upon me to know the reason of my not having taken the required deposition, I take the liberty of bringing the case before you to know if the Master of the *Robert* is acting under your advice as United States' Consul. Many American Captains, to whom the working of the act been explained, wish such a law existed in the United States.

I remain, Sir Your obedient servant

Liverpool, April 19,1855.

HENRY C CHAMPMAN,

TO CAPTAIN STAIGG, THE SHIP *ROBERT*.

Sir, —Your ship having put back with damage, after having been reported in collision with a steamer, you an required, by the 16th motion of the 9th and 10th Vic., cap.99, to appear before me and make your deposition, on oath, touching the circumstances. You ship being under the American flag does not exempt you

from the obligations of the law, the object of which is twofold :—1st for the purpose of affording correct information to the underwriters; 2nd, for the satisfaction of government, that lights, buoys beacons and pilots are not wanting. In the United States, at southern ports you are aware that the State laws override international laws, and a British subject, if he is a coloured man, is imprisoned during the ship's stay in port. The repeal of the Navigation Laws even to the opening the coasting trade, places all foreign ships on the same footing as British ships, and the crews subject to the laws of the country. I venture to trouble you this explanation before enforcing the penalty, as you may be ignorant of the law as a stranger.—I remain, your obedient servant

Liverpool, April 17, 1855.

HENRY C CHAMPMAN,.

HENRY C CHAMPMAN, RECEIVER OF DROITS

Sir,-I beg to acknowledge receipt of your letter of this day, with copy of letter addressed to the Captain of the barque *Robert*, annexed. The Captain the *Robert*, in demurring to conform to the act in question, on the ground that it does not apply to foreign vessels, is not acting on the advice received at the Consulate, my opinion being that the act does apply equally to foreign and British vessels. The Captain applied here with a letter from you some days ago, and was advised that, if his vessel had been in distress, he was required by the act to appear before you and make the deposition, and pay the fee prescribed therefor; that if he had not been in distress it was not so required. He stated that he had not been in distress. I shall Inform the Captain of his error in supposing himself exempt from the operations of the act because his vessel being an American. There is such a difference of opinion to when vessel may be said to be in distress, it seems a pity that some authoritative construction is not obtained.

Very respectfully your obedient servant,

Consulate of the United States,
Liverpool, April 18, 1855.

NICH. HAWTHORNE.

TO N HAWTHORNE ESQ., UNITED STATES CONSUL, LIVERPOOL

Sir,—I beg to acknowledge the receipt of your letter of 19th instant, with thanks for poor prompt attention to the subject therein referred to. With respect to the opinion as to when a vessel is said to in distress, my instructions from the Receiver General instruct only to enforce the 18th section.

1st. The vessel must have put back.

2ndly. She must have sustained damage. If, the Captain of a ship endorse on the letter of summons that they have merely put back through stress of weather,

and not sustained any damage that falls on the underwriters, I consider such an endorsement sufficient.

The case of the *Robert* is, however, very serious one to the underwriters, both in England and the United States.

I might add, that several lawsuits have been prevented by parties in America settling on the facts elicited by the deposition taken before me. In one instance a collision between two American ships, it was discovered that both were insured in the same office, in New York, to a large amount; and, with copies of the depositions, they drew their own conclusions, and saved law expenses.

—I remain, your obedient servant,

Liverpool, April 20, 1855. HENRY C CHAMPMAN,.

The following is a copy of the deposition alluded to in the above—

"Deposition of Captain Archibald Staigg, of barque *Robert*, of Boston, from Liverpool for New Orleans. Captain Staigg states on oath before me that the *Robert* is 777 tons burthen, and sailed from Liverpool on the 5th instant, with cargo of 800 tons of railway Iron. Discharged pilot off Point Lynas at 7 p.m. of the next day. Wind W. to W N W stood over to the Isle of Man on port tack, close hauled, continued beating down the channel all Saturday and Sunday morning, wind still from the W.N.W., fresh breeze, with hazy weather. At midnight of the 7th was standing to S.W. on the starboard tack. Had light burning, on the forestay; weather hazy. At 12 46 A.M. on the 8th went a loft on the foretopsail yard to look out for the Tuskar Light; could sometimes see a mile, at others half mile, and occasionally 8 or 10 miles. Came down on deck about ten minutes past 1. Shortly afterwards the man on the look-out sang out "A light". He looked over the rail and saw a light loom, coming out of fog, and in less than minute the stranger ran into the *Robert*, striking her the starboard bow, carrying away bowsprit, cutwater, and all the head gear, splitting the stem and wood-ends, causing the ship to make a good deal of water, keeping both pumps constantly going day and night. The other vessel, which proved to be the screw steamer *South Carolina*, of Philadelphia, went down in about eight minutes after the collision. *South Carolina* crushed up like a basket; 22 of her people came board of *Robert*, and were all saved; the remainder got into their boat, and landed in Ireland. Finding that he could keep his ship (*Robert*) afloat, bore up for Liverpool, and arrived on 9th to repair. The *South Carolina* was under full sail, and steam, with young flood, and was going at a tremendous speed. At the time of the collision the weather was dark and hazy, and he might see a light from three quarters of mile."

Lloyd's List - Monday 21 May 1855

NEW YORK, 3rd May. Several large icebergs were passed in lat. 45 N. lon. 48 W., by the *Manhattan*, Dixon, arrived here, which vessel also picked up boat and three of the crew of the *NORTH CAROLINA* (s) from Philadelphia to Liverpool, which sank off Holyhead, 8th Apl.

Journal of the Franklin Institute - Page 411 1854

For the Journal of the Franklin Institute.

Particulars and Performance of the Steamer North Carolina. By J. VAUGHAN MERRICK.

Philadelphia.—Hull built by Vaughn & Fisher; Machinery by Merrick & Sons; Owner, Alexander Heron, Jr. Intended Service, Philadelphia to Wilmington, North Carolina.

HULL.—Single decked, with poop cabin.

Length for tonnage,	172 feet.
Length on deck,	176 "
" deep load water line,	170 "
Greatest breadth at deep load line,	33 " 4 inches.
" " main wales,	32 " 2 "
Depth of hold,	12 " 4 "
Length of engine and boiler space,	34 "
Draft of water at deep load line,	10 "
Tonnage, custom house,	672
Area of immersed section at 9 ft. 3 ins. mean draft,	249 square feet.
Contents of bunkers in tons of coal,	90
Masts and rig—Three masts; foremast square rigged; heavily sparred and canvassed.	

ENGINE.—One—Vertical square.

Diameter of cylinder,	56 inches.
Length of stroke,	4 feet.
Maximum pressure of steam in pounds,	25
Cut-off,	Variable from $\frac{1}{2}$ to $\frac{3}{4}$.
Maximum revolutions per minute,	29 to 30 of engine.
Gearing,	1 to $2\frac{3}{4}$, giving $77\frac{1}{2}$ to 80 of propeller.

BOILERS.—Two—Return tubular.

Length of boilers,	13 feet 3 inches.
* Breadth " "	9 " 7 "
Height " exclusive of steam drum,	10 "
Height " inclusive " "	19 "
Number of furnaces, in all,	8
Breadth of furnaces,	1 " 9 "
Length of grate bars,	7 " 3 "
Number of flues or tubes, in all,	324

Internal diameter of flues or tubes,	.	.	3 "
Length of flues or tubes,	.	.	8 " 3 "
Heating surface, in all,	3010 square feet.		
Diameter of smoke pipe,	.	.	4 " 11 "
Height, " "	54 feet above grate.		
Description of coal,	Anthracite.		
Draft,	Natural.		
Consumption of coal per hour,	1500 lbs., estimated.		
PROPELLER.—True screw, of cast iron.			
Diameter,	.	.	9 feet 3 inches.
Length,	.	.	2 " 9 "
Pitch,	.	.	16 " 6 "
Number of blades,	.	3	

Remarks.—This ship possesses the largest freighting capacity of any steamship of her tonnage in the U. S. Marine. She was modelled by Mr.

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412 *Mechanics, Physics, and Chemistry.*

John W. Griffiths, Marine Architect, and was intended for a freight ship with very light draft. With 350 tons dead weight, in addition to her coal for six days' steaming, she will draw but 10 feet on an even keel.

The fore body rises from midship section, so that her real draft from base line, measured on the forward, perpendicular, is three feet less than by marks. She has full after-water lines and amidship section aft of the centre of length.

The engine is a vertical square condensing engine, having its cross-head overhead, and two side rods attached to crank pins in the driving spur wheels, the crank shaft being beneath the cylinder bottom. On the opposite side of the propeller shaft is a tubular condenser; the main and fresh water air pumps and other pumps, are outside of it, worked by boiler plate side levers attached by links to the cylinder cross-head. The valves are equilibrium poppets, with Allen & Wells' adjustable cut-off on steam side. The gearing is of iron, with shrouding to the pitch line; wheels, 6 ft. 4 ins. diameter, and 2 ft. 8½ inches diameter of pinion; 10 ins. face of teeth on each set.

On the trial trip, the propeller was not nearly submerged, being 1 ft. 7 inches out of water; draft aft, 8 ft. 2 ins.; draft forward, 7 ft. 7 ins. Bunkers filled, but no freight in. The boilers made abundance of steam for 29 revolutions of the engine, while indicator cards showed an initial pressure in the cylinder of 25 to 26 lbs., cut-off at three feet, or ¾ stroke.

On the first trip of the ship, her performance down the river, as far as Newcastle, was noted, and is given below; owing to the floating ice in the river, the ship was not driven, a pressure of 21 pounds only being maintained in the boilers, cut-off at 18 inches, or ⅔ths of the stroke only. From the speed then attained, (10 miles per hour,) it is probable that at least 11½ miles per hour may be obtained with full steam pressure, in still water.

Performance on First Trip.—Draft of water aft, 10 feet; forward, 8 feet 6 inches; with 150 tons freight, beside 90 tons of coal in the bunks.

Passed	Time.		Whole distance.		Registered revolutions.		Revs. per mile.		Steam.	Vacuum.	Cut-off in Ins.
	H's.	Run-ning.	Appa-ment.	Actual.	Whole.	Nett	Engine	Pro-peller.			
Navy Yard,	10-20				477				14		18
Chester,	12-	1-40	16-50	17-00	2870	2393	140-8	375-4	20	26½	18
Marcus Hook,	12-55				3853				21		18
Newcastle,	2-45	1-50	14-50	18-50	6600	2747	152-5	406-7	21	26½	18
Means,							146-6	391-5			

The actual distance is known by applying a correction for tide, which was adverse except for about four miles.

The particulars from Chester to Marcus Hook are not noted, owing to time, &c., lost in landing a passenger.

The average revolutions per mile run by the ship, were $391\frac{1}{2}$ of the propeller, equal to its advance through $391\frac{1}{2} \times 16\frac{1}{2} = 6459$ feet.

The slip was, therefore, $6459 - 5280 = 1179$ feet = $18\frac{1}{4}$ per cent. The average revolutions per minute, with 19 pounds steam, cutting off

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at $\frac{1}{2}$ -ths stroke, from Navy Yard to Chester, were 23-93, and with 21 lbs. at $\frac{3}{4}$ -ths stroke, from Marcus Hook to Newcastle, were 24-88.

The propeller shaft has a slip clutch, by which the propeller may be disengaged when the ship is under sail.

The engineer's department of this ship is provided with every convenience. A Worthington steam pump is attached for putting out fires, washing decks, pumping bilge, or feeding boilers; it has an auxiliary steam boiler on deck by which it may be worked in port. The thrust bearing of the shaft has Parry's anti-friction conical rollers, which worked well so far as heard from.

Worthington Steam Pumps

Invented by Henry R. Worthington, the pumps were reciprocating systems that automatically sent water to the boilers that delivered power to a ship. Prior to the invention, boiler feed water pumps were operated manually, with onboard crews using hand pumps and buckets to keep boilers filled.

Simple in design yet efficient, Worthington's duplex steam pumps featured no rotating mechanical parts, consisting only of dual steam cylinders providing power to two pumping cylinders, with each power and pump piston mounted on a common piston rod.

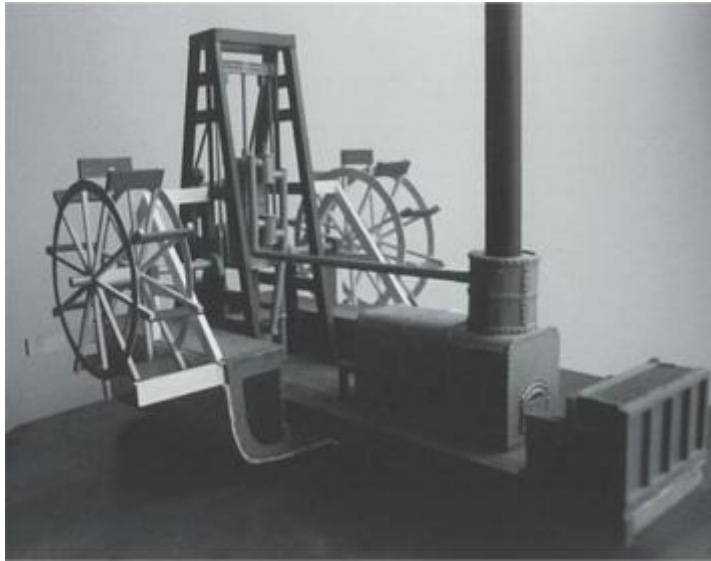


Fig. 1 Model of a crosshead or "square" engine

Model of a crosshead or "square" engine, showing location of engine cylinder above the crankshaft; also piston rod, crosshead, connecting rods and paddlewheels

Vaughan & Fisher Shipbuilders

Vaughan & Fisher of Philadelphia succumbed to the depression in ship building following the American civil war when numbers of Navy vessels were sold off for low prices.

Merrick & Sons

In 1836, Samuel Vaughan Merrick and John Henry Towne established the Southwark Iron Foundry in Philadelphia. The works were operated by the partnership of Merrick & Towne. By 1848 they had acquired the rights to manufacture James Nasmyth's patent steam hammers—royalties were a stupendous \$1,800 each—and were manufacturing them. The following year Towne left the business and the name became Merrick & Son with the involvement of John Vaughan Merrick; it would soon become Merrick & Sons when second son, William Henry Merrick, joined the firm as well.

The senior Merrick had founded the Franklin Institute, an important philosophical society in Philadelphia that advanced the causes of science and technology. As

his sons became able to handle the business of Merrick & Sons, the father increasingly devoted himself to his outside pursuits. Besides the Franklin Institute, he served on various boards of directors and was active in developing and promoting the use of fire engines and also gas lighting. He served on City Council, travelled to Europe to learn about advances in gas lighting,

The Southwark Foundry & Machine Co. was established in 1863 and was operated by Merrick & Sons, consisting of Samuel Merrick, J. Vaughan Merrick, and William H. Merrick. During the early history of Philadelphia a southern section of the city was known as the District of "Southwark". This is where the name for the company was derived.

On June 25, 1880 the Southwark Foundry & Machine Co. was combined with Porter-Allen Engine Co. after more than 5 years of inactivity. At this time the firms were merged and incorporated as the Southwark Foundry & Machine Co., still located in Philadelphia. Officers of the company were William H. Merrick, president, Charles T. Porter, vice-president, C.B. Richards, superintendent. The company manufactured the Porter-Allen high-speed engine in sizes from 100-2000 horsepower

In 1930, the company was acquired by the Baldwin Locomotive Works at which time it became the Baldwin Southwark Corporation, a subsidiary of the Works. The De La Vergne Engine Company of New York was acquired by Baldwin Southwark in 1931. There were a manufacturer of refrigeration machinery, engines, and other machinery. Porter-Allen and Southwark steam engines were built into the 20th Century. Some of the companies records are held by the Smithsonian Institute.

Richardson Brothers & Company

Upon leaving school William Inman served as a clerk to Nathan Cairns, then moved on to Cater & Company and, finally, to one of the leading Liverpool ship-broking firms, Richardson Brothers & Company. Richardson Brothers(Liverpool) were joint owners with Richardson Watson & Company of Philadelphia and New York, of a regular line of sailing packets trading between Philadelphia and Liverpool. At Richardson Brothers, Liverpool, young Inman found his place and rose to become a partner in the firm at the age of 24, in January 1849. Under the patronage of Thomas Richardson, Inman had proven adept at managing the Richardson Brothers' fleet of American sailing packets. In association with Thomas Richardson, it was said that Inman was one of the earliest ship managers to have a keen appreciation of the immigrant trade in steamships and the profits to be derived from it.

The line created by Thomas Richardson and William Inman was the Liverpool & Philadelphia Steam Ship Company. The new line took title to the *City of Glasgow* and announced that a sistership, the "*City of Philadelphia*," was building. The *City of Glasgow* left Liverpool on her first voyage for her new owners on 11 December 1850. The liner was under the command of the famous Captain B. R. Matthews who had been master of the *Great Western*. According to Inman tradition Mr. and Mrs. William Inman were passengers on the first crossing to Philadelphia, although whether the reason was solicitousness for the new immigrant passengers may be questioned. Because of foul weather the crossing time was much slower than expected and twenty-two days elapsed before the ship docked in Philadelphia. The homeward crossing was a much more acceptable thirteen days and sixteen hours, which compared very favourably with the best run of the Cunarder's on the shorter route to Boston.

The outbreak of the Crimean War in the spring of 1854 saw the British and French governments seeking to charter every vessel they could find to transport troops and supplies to the Black Sea. Tempting offers were made by the French government for the *City of Manchester* but William Inman's two partners, the Richardson brothers, were Quaker and would not consent. In the end the problem was solved by buying out the brothers who created a new firm, Richardson, Spence & Company.

The removal of the Richardson brothers from the ownership of the Liverpool and Philadelphia Steam Ship Company permitted William Inman to accept the French charter offer. He also acquired another vessel, *Kangaroo* (1854, 1874 tons), to replace losses but she was chartered to the British government at a satisfactory figure. While this provided regular employment for some time, it interrupted the regular service of the line. The *Kangaroo's* interesting name came from the fact that she was one of a quintet of vessels ordered by the Australasian Pacific Mail Steam Packet Company to run between Panama and Australia. The service was still borne and the ships, bearing distinctive names, were available for alternative employment. William Inman made plans to generate wartime profits and, in anticipation of future peacetime service, commissioned two new steamers in 1855. These were the *City of Baltimore* (2368 tons), and the *City of Washington*, (2381 tons). Both liners were chartered straight from Tod & McGregor's Yard to the French transport service and sailed for the Mediterranean. They operated from France to the Eastern Mediterranean and the Black Sea for approximately a year. When the hostilities finally concluded in the Crimea the chartered Inman liners slowly made their way home to the Mersey early in 1856. All these liners required post-trooping reconditioning before taking their places in a renewed trans-Atlantic service. The maiden voyage of the *City of Baltimore* on 23 April 1856, marked the return of Inman Line to the North Atlantic after an absence of sixteen months. In the interval the American-flag Collins Line had held sway, but

this situation would not endure.

Alexander Heron Jr.

Alexander Heron Jr. (c. 1818 - April 8, 1865) was a businessman involved in shipping in Philadelphia, Pennsylvania during the mid-19th century.

Heron was born in Gosten, County Londonderry, Ireland around 1818. Sometime during his late teens or early 20s, he emigrated from Ireland, and arrived in Philadelphia, Pennsylvania around 1835.

In 1851, he entered into a partnership with William J. Martin, forming Heron & Martin. They ran a line of vessels between Philadelphia and Mobile, Alabama, Charleston, South Carolina, and Savannah, Georgia, establishing the first line of steamships to the latter two cities. After his company failed, he later became agent of the Ocean Steam Navigation Company, owning several company ships. During the American Civil War (1861-1865), Heron sold three of his ships to the United States Navy, the most prominent of which was the *Keystone State*

Keystone State was chartered to search for the Confederate States Navy raider CSS Sumter, *Keystone State* shared in the capture of *Hiawatha* at Hampton Roads on 10 May 1861. When her charter expired on 23 May, she returned to Philadelphia, where she was purchased for \$125,000 from Alexander Heron Jr., fitted out, and commissioned.

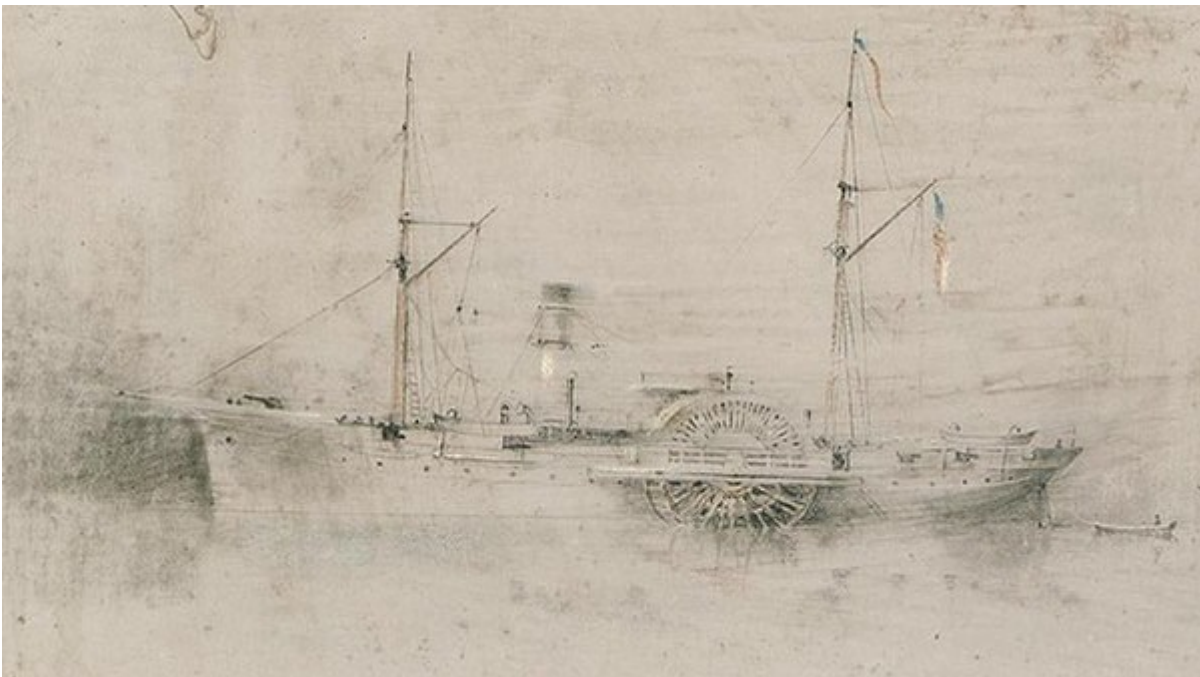


Fig. 2 USS Keystone State

Captain Washington Symmes

Captain Washington Symmes was the master of the schooner *Cumberland* in 1859 and recovered an abandoned Barque *J J Cobb* to Havana. He subsequently followed the Spanish requirements to claim the proceeds from the sale of the vessel and cargo. The Spanish authorities sought to prove that the vessel had previously landed a cargo of slaves on Cuba and under Spanish law should be broken up.

John Willis Griffiths (October 6, 1809 – March 30, 1882) was an American naval architect who was influential in his design of clipper ships and his books on ship design and construction. He also designed steamships and war vessels and patented many inventions. Maritime historian William H. Thiesen wrote, "Of all the nineteenth-century American shipbuilders, John W. Griffiths did more than any other builder to champion American shipbuilding methods. An experimenter, an advocate for formal ship-design education, and a working intellectual, Griffiths proved to be most remarkable of America's nineteenth-century shipbuilders."

In 1845 Griffiths was employed for the shipbuilding firm of Smith & Dimon in lower Manhattan and designed the clipper ship *Rainbow*. Historian Dr. Larrie Ferreiro considered the *Rainbow* "the first of a line of 'extreme' clippers, with a fine, raked bow, high deadrise, and hollow waterlines." The ship was known for fast passages but reportedly went "missing with all hands" in 1848.

Griffiths' second clipper ship, *Sea Witch*, was referred to by Smithsonian curator Howard Irving Chapelle as his "masterpiece." It was launched on December 8, 1846, and "described as the most beautiful ship of her time." Griffiths received considerable praise for his clipper designs.

7.0 Analysis

The *North Carolina* was a wooden screw steamer built in Philadelphia in 1854 by Vaughan & Fisher, with machinery from Merrick & Sons. It was described as having a square vertical engine which had been used to power paddle steamers, particularly on inland waterways as they made vessels top heavy. This type of steam engine was inefficient as the steam was used only once before being condensed back into water, later engine developments used the steam several times. The propulsion from the engine must have been modified for this vessel from the arrangement for a paddle steamer. American ship yards were a decade behind British ship yards in the adoption of iron hulls.

The *North Carolina* was built to provide a service between Philadelphia and Wilmington N C, at a time of depression in the American shipping industry and after less than two months was being advertised as sailing to Liverpool apparently for sale. The ship brokers reported as the consignees Richardson Brothers, were at this time providing vessels to the French & British Governments for the Crimea war. The passage across the Atlantic started with her return for repairs after experiencing gales for five days resulting in her leaking and having damage to the propeller. This necessitated unloading the cargo for repairs. She then reached 30 miles off the Tusker Rock when the collision occurred and she sank.

The first reports of the collision between the *North Carolina* and the barque *Robert*, blame the *Robert* for colliding with her but the deposition of the master of the *Robert* gives a different view. He describes patchy visibility and the *North Caroliana* (South Carolina) in the deposition, "striking her (*Robert*) on the starboard bow, carrying away bowsprit, cutwater, and all the head gear, splitting the stem and wood-ends, causing the ship to make a good deal of water". The *North Carolina* was described as "crushed up like a basket" which describes the effects of a collision with another object. The result of any litigation or decision by the underwriters is not available on line.

The ALC provided all the details of the vessels and sailings before the collision. The BNA provided all the reports of and after the collision. There was one report on WNL of the collision which was the same text as some newspapers in BNA. Google searches provided all the background information and the particulars of the *North Carolina*.

8.0 Conclusions & Recommendations

I have spent approximately 30 hours on this project including copying newspaper and other reports with 90% spent on line.

I was surprised at the amount of information available for this vessel including a report by the engine builders on her performance. I have answered all by original questions except for the master about who I found little information and the crew who are unknown.

There is no known wreck site for the *North Carolina* and the vague area she sank in is beyond the limits of recreational diving, in a modern day traffic separation zone for shipping.

The story of the *North Carolina* is a short one, having been commissioned and sunk within about six months. There is insufficient information or events to produce any further publication.

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Appendices:

Appendix A – The Timeline for the *North Carolina*

1854

December 13 1854 Wilmington arrived North Carolina (s), Symmes from
· Philadelphia

December 18 1854 Wilmington cleared North Carolina (s), Symmes for
· Philadelphia

1855

January 2 1855 Wilmington arrived North Carolina (s), Symmes from
· Philadelphia

January 6 1855 Wilmington cleared North Carolina (s), Symmes for
· Philadelphia

February 4 1855 Philadelphia sailed North Carolina (s), Symmes for Liverpool

February 18 1855 Philadelphia put back North Carolina (s), Symmes for Liverpool
· - Damaged

March 19 1855 Philadelphia cleared North Carolina (s) for Liverpool

March 21 1855 Philadelphia sailed North Carolina (s), Symmes for Liverpool

April 8 1855 30 miles off Tuskar Rock collision North Carolina (s), Symmes with
· Barque Robert and sank

Appendix B Ports and Other Locations

Wilmington is a port city and the county seat of New Hanover County in coastal south eastern North Carolina, United States. Towards the end of the 19th century, Wilmington was a majority-black, racially integrated prosperous city, and the largest city in North Carolina. In the Wilmington massacre of 1898, white supremacists launched a coup that overthrew the legitimately elected local Fusionist government. They expelled opposition black and white leaders from the city, destroyed the property and businesses of black citizens built up since the Civil War, including the only black newspaper in the city, and killed an estimated 60 to more than 300 people. This coincided with broader efforts of disenfranchisement at the state level. Whereas North Carolina had 125,000 registered black voters in 1896, it had 6,000 by 1902

Tuskar Rock is a group of rocks topped by a lighthouse 11 kilometres off the southeast coast of County Wexford, Ireland.



Fig. 3 Tuskar Lighthouse

Appendix C Cargo explanations

Rosin also called colophony or Greek pitch is a solid form of resin obtained from pines and some other plants, mostly conifers, produced by heating fresh liquid resin to vaporize the volatile liquid terpene components. Rosin is an ingredient in printing inks, photocopying and laser printing paper, varnishes, adhesives (glues), soap, paper sizing, soda, soldering fluxes, and sealing wax.

American Barrels

The use of a blue barrel, abbreviated "bbl," guaranteed a buyer that this was a 42-gallon barrel and not one of the many other sizes.