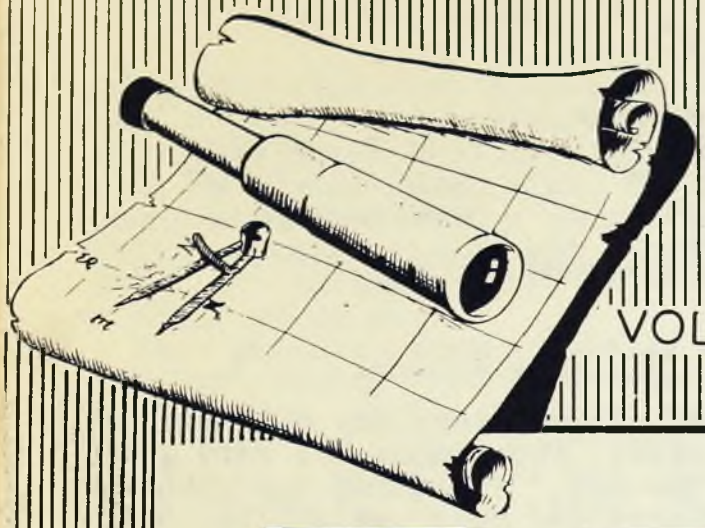

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GREAT LAKES MODEL SHIPBUILDERS' GUILD

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THE THIRD QUARTERLY MEETING.

EDITORIAL

The Third Quarterly Meeting of the Board of Directors may have marked a turning point in the affairs of the Guild. Attendance was very good and for once everyone present got into the act, including lay members who really expressed themselves. It appears now that we will go back to regular monthly meetings not later than the first of the coming year and much more emphasis will be placed on model building.

It was agreed that at future meetings one or more members will bring in the models they are working on, or models which they have completed, and explain the techniques they have used. This will be a big lift to other builders, especially those who have not been long in the game. It will help everyone, and undoubtedly will expedite projects now under way. Every model builder has devised ways of doing things and these methods can be of value to all the rest.

Leading the discussion were, among, others, Kenneth L.Fairbanks, John F.Miller, Robert H.Davison, William Hoey, Captain William J.Cowles, and President Robert L.Ruhl. While the Guild is a historical group it will tell its best stories in three dimensions, that is with its models of vessels which have made history on the Great Lakes in the past three centuries. At long last we appear to be getting off dead center and may now look forward to increased activity. With the additional plans that are coming in from the American Shipbuilding Company and other sources we should soon be seeing models of ships which have never before been attempted. The big bottleneck will be in the drafting room. James B. Jones is working at top speed to get out new plans, but good drafting is slow work at best and we prefer quality to mere quantity.

Dr. O. H. Siegmund, of Annandale, N. J. has volunteered to do detail drawings to show model-building techniques; George D.Saunders, of Great Neck Plaza, N. Y. offers to do a whole set of plans for us; and one of our Illinois members has long been struggling with problems connected with the development of a good set of plans of the"Sidney O. Neff."

Who else will lend a hand?

THE GUILD

Organized in 1952 to locate, acquire, and preserve information and objects related to the history of shipping on the Great Lakes and to make same available to the public through the Museum of Great Lakes History and the columns of Telescope. The construction of authentic scale models of Great Lakes ships is one of the prime objectives of the organization, which has brought into being the largest existing collection of models of these ships. The Museum of Great Lakes History, located at 5401 Woodward Avenue, Detroit 2, Michigan, is official headquarters for the organization and the repository of all of its holdings. The Guild is incorporated as an organization for no profit under the laws of the State of Michigan. No member receives any compensation for his services. Donations to the Guild are Deductible for tax income purposes.

EBER BROCK WARD

Among the financial giants who in the last century began their careers on the Great Lakes none is more remarkable than Eber Brock Ward. The Midas touch was his from the start but his extraordinary vision and love of a life of intense activity made him a truly great man.

His parents, Eber and Sally Ward, had left Vermont and were located at Applegath's Mills, Ontario, when on Christmas Day, 1811,Eber Brock Ward was born. From there his parents went, first to Belle River, then to Bois Blanc Island where his father was a lighthouse tender. This was in 1830 and even then the future industrial leader was making money trapping muskrats and salting and smoking fish for the market.

Belle River became Newport, (Now Marine City) and here Samuel Ward, an uncle was building and operating ships. On one of these vessels Eber Brock Ward went to work as a cabin boy. His industry and ability as a mariner carried him upward to Master and with a loan of $2000.00 from the uncle, into a partnership in the company, and later its head.

Shipping was essential to the development of the region and Eber B. had an eye for the essential. Indeed it may be said that he was better endowed in that respect than any of his contemporaries in the region. He became the biggest shipping man on the Lakes, as well as a builder of ships. There were no railroads and no real highways. The ships had the day and Ward made the most of it.

Then the railroads came, and soon he was the President of two of them and on the way out of the shipping industry except for a few which he kept to serve some of his other interests, --lumber and iron.

At Wyandotte, Michigan he built blast furnaces and there turned out the first Bessemer steel made in the United States and later in his North Chicago Rolling Mill rolled the first Bessemer steel railroad rail.

His stature as an industrialist is indicated in the following list of offices he held besides those mentioned above:

President, Wyandotte Rolling Mill Company; Milwaukee Iron Co., Wisconsin Iron Co., Eureka Iron Works, Eureka Mining Co. in Utah, Detroit Copper Co., Arizona, and Louisiana Central R. R. Co., in Louisiana.He was treasurer of the North Chicago Rolling Mill Co., President and Treasurer, American Plate Glass Co., in Missouri, which he founded. He was a Director of the Second National Bank of Detroit; Silver Islet Mining Co., a silver mine on an island in Lake Superior and a smelting company at the same place. In addition to these offices held he owned the Leland Iron Furnace Co., Leland, Michigan.

He held interests in the Eureka Silver Mining Co. only a short time, and a lead mine in Missouri, but got out when they did not pay off. His holdings in timber and mineral lands in the Lakes region and fine farming lands in Iowa stood at something like 50,000 acres.

A good idea of the extent and value of his holdings may be obtained from his will which filled two fine-print newspaper columns. A conservative estimate put the value at more than $5,300,000.00. Quite a bit over the original $2,000.00 borrowed from his uncle. While at the end he was said to be out of the shipping game, the following vessels were listed as his:
LELAND, JOHN A. DIX, E.B.WARD, JR., PLANET, URANUS, VENUS, MARS, MERCURY and HERSCHELL. During his real shipping days his Detroit headquarters were in what we now call the old D&C Building, recently torn down.

An interesting incident in his long and varied career has to do with his being instrumental in the foiling of a plot by one James Cooley, to blow up the STR.CITY OF BUFFALO, in 1859. Ward served as a decoy. The boat was in a competing line and Ward's clever acting brought the plotter into the hands of the law.

Eber Brock Ward died at the age of 64, on January 2, 1875. Death was caused by apoplexy, his second attack and his grave is in Elmwood Cemetery, Detroit.

EARLY GREAT LAKES STEAMBOATS
The First Propellers 1841-1845

by
H. A. Musham

The year 1840 marked the opening of a new era in steam navigation.The decade that followed was a period of experiments, trials, and errors, and especially so on the lakes. While the steamboats there had reached a relatively high level of efficiency consistent with the shipbuilding materials and propelling machinery then available, there was much room for improvement in them. They were all built of wood, and, with the exception of a few stern-wheelers used in rivers and canals, were all side-wheelers. Both high-and low-pressure engines of various types were used, the walking-beam type predominating. The boilers were generally of the fire-tube type with large flues running from end to end. These varied in size and number, some boats having as many as seven. Steam pressure seldom exceeded fifteen pounds per square inch. The engines made up to twenty-five revolutions per minute. Some boats had two engines, each turning a wheel independently of the other.Wood was the only fuel burned. While coal had been brought to the lakes, it was too high in price and not widely enough distributed as yet to make its use practicable. The speed attained seldom exceeded the limit for economical operation(1). This for the largest boats was from ten to twelve miles an hour.

The steamboats, expecially those with decks built out on guards running from stem to stern and enclosing the side wheels, were well adapted to carrying passengers. But they were not so well suited for freight. The cubic capacity of the molded form (2) was reduced from fifteen to twenty percent by the frames, planking, ceiling, posts, knees, and keelsons of the hull structure. Add to this the over-large space taken up by the engines, boilers, and woodbins amidships - the most capacious part of the hull-and the space occupied by the passenger accommodations below the main deck, that left for freight was but a small part of the form. Again the excessive weight of the wooden hulls and of the large, slow - moving engines reduced the carrying capacity by weight materially.

The engines were practically all single - crank affairs with no means provided to balance their turning. On the upstroke, the piston speed slacked somewhat, on the down it accelerated, and the boat moved forward in surges. Side wheels attain their highest efficiency when the floats are immersed to an optimum depth. The desideratum of the ship and engine builders was to place the wheels vertically so that immersion was attained when the boat was at the load draft and at such point along the side, that they did not turn in the hollow of the bow waves set up by the boat at full speed. When the boat was in light condition, the immersion of the floats was less than desired and a decrease in speed resulted. When it was over the load draft, the wheels churned the water around and another loss in speed was the result. In heavy weather,rolling caused unequal immersion from side to side and the boat yawed and wobbled along on its course. Then when going into a head sea, the immersion again varied as the waves raced along the sides. This accentuated the surging of the boat. Rolling, pitching, and the surging of the engine produced a most uncomfortable motion in the boat to the discomfort of the crew and passengers. Added to these disadvantages was the vulnerability of the side wheel when applied to the warships of the day. With a large part of their machinery above the water line and the wheels exposed to direct gunfire, they were likely to be quickly put out of action no matter what position they could take when engaging the enemy.

There was but one answer to these problems and that was propulsion by submerged wheels, smaller engines for the same power, placed lower down in the hulls, and iron hulls. The idea of propulsion by submerged wheels was not new. Two ways of using them had been set forth by inventors and engineers, by the screw propeller and the horizontal paddle wheel. The screw propeller is an an-

cient device, but its first practical application for moving vessels was not made until 1836, when a small craft, ARCHIMEDES, built and fitted with a screw propeller devised by Francis P. Smith, ran successfully in England on the Paddington Canal and in September of the following year made a trip at sea from Ramsgate to Dover, and then steamed to London.

The horizontal submerged paddle wheel was developed by Lieutenant William W. Hunter, United States Navy (3). It was the usual vertical paddle wheel though much smaller, laid down on its side and mounted in a drum on a vertical shaft within the hull and below the load water line, the center being so placed that the outer rings and radial arms carrying the floats extended outboard through an aperture in the side a distance equal to their width. Each wheel was to be turned by a horizontal engine with a crank fitted to the upper end of the vertical shaft extending through the top of the drum. A boat was to have two wheels, one to each side. The hull was to be sponsoned out above the load water line to protect them from damage when docking or when coming alongside other ships.

Hunter succeeded in interesting Secretary of the Navy A.P. Upshur in his device. With the Secretary's cooperation he built a small craft and fitted it with his wheels at Norfolk in the spring of 1841, and named her GERM.She was 52 feet long, 11 feet wide and drew 2 feet of water. The paddles of the wheels had an area of 1 square foot and the engine, a power of 6 horses. On her trial trip on the canal near Norfolk she made 8 to 9 miles an hour. (4).

Hunter demonstrated GERM at Washington and other coast ports where her performances elicited much approval. He then took her up the Hudson to Albany and through the Erie Canal to Buffalo. There he put her through her paces on Lake Erie. The topographical engineers of the army, on duty there, took quite an interest in her. Later in the summer he took her back to salt water and down to Baltimore, after having successfully demonstrated the suitability of his device for service on sea, river, canal and lake. GERM was the first steamboat to pass from salt water to Lake Erie via the Erie Canal and return.

At this time there was no direct trade between lakes Erie and Ontario by steamers because they were side-wheelers, all too long or if short enough, then still too wide to pass the locks of the Welland Canal. There was direct steam connection between Montreal and Kingston via the Rideau Canal by small craft with stern wheels or side wheels mounted in recesses in the hull about amidship. But these boats were not suitable for service on Lake Ontario. There was therefore a need on these waters for a steamboat that could pass through these canals and safely navigate the lakes. If such a steamboat could be devised then the much desired direct trade, that between the lower St. Lawrence and Lake Ontario and between that lake and Lake Erie and the upper lakes, would become a reality. Hunter had demonstrated with his GERM, that such a steamboat was a possibility.

The traffic between lakes Ontario and Erie and the upper lakes was handled by schooners and sloops of the largest size that could fit the locks of the Welland Canal. Accordingly these craft were less than 110 feet long overall, less than 22 feet wide and drew less than 8 feet of water. But sailing craft were not entirely satisfactory for the lakes, because of the calms that frequently prevailed and the violent storms that occasionally occurred during the open season. Then they were practically helpless in the ice of the spring and late fall. The lay of the lakes further had a marked effect on their use in interlake traffic. Fair winds on lakes Ontario and Erie could be head winds on Huron and Michigan and so on. Consequently the time of passage from lakes Ontario and Erie to Chicago was often a very uncertain matter. With luck it could be made in a week or two, otherwise it could take four and more. The solution to this problem was the submerged wheel, either Hunter's or the screw propeller. But Hunter was more interested in apply-

ing his device to ships of war rather than to those of commerce.

In December 1840, Captain Van Cleve was in New York City. While there he was called upon by Josiah I. Marshall, formerly of the firm of Bronson, Marshall & Company, of Oswego. Marshall informed him that their friend Sanderson of Brockville, Canada West, who operated boats on the Rideau Canal, had requested him to examine Ericsson's propeller (5) and give him his opinion as to its application to propelling boats on the canal. Marshall said that as he had no practical experience in steam machinery, he wished him to go with him to the engine works of Messrs. Hogg and Delamater and examine the propeller hung there upon a shaft for the inspection of all parties interested and give him his opinion on it, which he would transmit to Sanderson. (6).

Van Cleve examined the propeller with great care and told Marshall that his opinion was that it would produce a revolution in the propelling of vessels and that it would bring about a complete change in the steam marine of the lakes. Marshall then introduced Van Cleve to Captain John Ericsson, the patentee who had rooms at the Astor House. After a conversation of about two hours, respecting the commerce of the lakes, Ericsson got up from his chair, walked two or three times across the room and made him the following proposition: 'Captain Van Cleve, if you will put a vessel in operation with my propeller on the Lakes within one year, I will assign to you one-half interest in my patent for all the North American Lakes.' Van Cleve accepted this proposition and the papers were drawn accordingly. He left for Oswego where he exhibited the model and the plans that he took with him. After a short time and after he had partially completed an arrangement to install a propeller in a vessel already built, he made an agreement with Sylvester Doolittle, merchant and shipwright who had a shipyard there, to build a new vessel, he taking a quarter interest, Doolittle a quarter, Bronson and Crocker, merchants and forwarders of Oswego a quarter, and Captain Rufus Hawkins a quarter. (7).

Bronson and Crocker operated a line of canalboats on the Oswego and Erie canals. The new ship, if successful, would extend this service to the upper lakes, by-passing Buffalo through the Welland Canal. A through service between New York and Chicago with transshipment at Oswego would then be a possibility. Doolittle, who recognized the value of the propeller to the upper lakes trade, went to New York and arranged with Ericsson that he and his associates should be permitted to use his device without payment of royalty, on five vessels, the construction of which was to be promptly proceeded with. (8). This was the beginning of the New York, Oswego and Chicago Line.

On 17 March 1841, the OSWEGO COUNTY WHIG carried a notice to owners of vessels on the North American Lakes, that Van Cleve (9) 'had the agency, being a joint proprietor in the right on the above waters of Ericsson's propellers, (10) a recent invention by which vessels can be propelled in the absence of favorable winds, at the rate of seven miles an hour, at a trifling expense-thus enabling vessels to make about double the trips made with canvas only. The weight of the machinery necessary for a vessel of one hundred and fifty tons, including water in boiler, is five and a half tons. In point of speed, certainty and economy, this improvement cannot but be received most favorably by all interested, and is confidently recommended to their consideration.' For further particulars they were to apply to him.

The keel of the new boat was laid early in April in the Doolittle yard at the foot of West Cayuga Street. Van Cleve contracted with the firm of Dennis, Wood and Russell of Auburn, New York, for the engines and propellers which they built at the State Prison, the plans being furnished by Ericsson. Their cost was estimated at $2,000. (11).

Oswego was a city of 2,700 people at the time and its business and professional men were fully aware of the benefits that would come to it with reliable direct steamboat connections with Lake Erie and the upper lakes. The new steamer was an experiment. Their faith in her ultimate success was strengthened by the reports made in the local papers on the successful trial and voyage of CLARION.(12). The Oswego papers followed the construction of the new type of steamboat closely and pointed out that the new steamer and others to follow in her wake would put Oswego in a position to compete successfully with Buffalo for the western trade. Stated the OSWEGO PALLADIUM of 24 March 1841:'there is no place in the Union which will derive such immediate and extensive advantages from the invention of Mr. Ericsson as Oswego. It is affirmed by one of our first forwarding merchants, that with the aid of this propeller, goods from New York by the Oswego route can be delivered at Cleveland, Ohio, at less cost than the actual charges which must be advanced upon freight in this transportation from New York to Buffalo. In the cheapness of transportation for the Western trade, the Oswego or Ontario route has always had a very great advantage over the inland or Buffalo route.A very clear admission was made of this by the general combination of forwarders last year in stating the charges by the Oswego route to be four dollars per ton less than by the inland route. The latter route however, has always had a great advantage over the Oswego in speed, and certainty in reference to time. The freight vessels from Oswego bound to the Upper lakes were all schooners. From Buffalo, a large proportion were steamers. The prevalent winds upon the lakes are Westerly. Perhaps in the season of navigation they are from that quarter more than two - thirds of the time. While therefore the descending passage from the Upper lakes to Oswego was usually as quick as was desirable, the ascending was often tedious and dilatory. This was a serious objection to Western merchants desirous of receiving their goods at early dates. They were desirous of dispatch and certainty and to obtain them submitted to heavy charges beyond those demanded on the Oswego route. But with the Ericsson propeller applied to our lake vessels, the Welland Canal becomes navigable for steam vessels and freights from New York by the Oswego route can be delivered at Cleveland as soon or sooner than they can be delivered at Buffalo.This, while the Oswego route will continue to enjoy all the advantage of its superior cheapness, it will equal the inland route and surpass it in speed.' Buffalo did not look upon these pretensions with equanimity. The press there took up the issue and in a short time the editors of the papers in both cities were slambanging one another with vitriolic editorials rich in sarcasm. The BUFFALO JOURNAL labeled the new steamer another Oswego Humbug. The OSWEGO PALLADIUM answered this slander on 21 April 1841 by confidently predicting that this valuable improvement in steam power would transfer the forwarding business from Buffalo to Oswego and freely predicted the speedy ruin of that city. The new steamer was launched in the summer. Her owners with an eye to the western trade, named her VANDALIA, after the former capital of Illinois.

VANDALIA was completed in November. She was a twin screw vessel 91 feet long, 20.17 feet wide and had a depth of hold of 8.25 feet.She measured 13819/95 tons and had the full form of the Welland Canal schooner. The engine and boiler were placed as far aft as they could go. The engine was of the high - pressure vertical type with two cylinders, each 14 inches in diameter, with a 28 - inch stroke. The cylinders rested on a base plate placed on a timber bed on top of the main keelson. The piston rods worked out of the cylinder heads on crossheads that moved in fore - and - aft guides and carried crossarms extending athwartships on each side to pins to which the upper ends of the connecting rods were attached. It was placed on the center line of the hull with the cylinders

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in a fore - and - aft position. Each crossarm carried two connecting rods, one on each end. Those of the after cylinder turned cranks on the propeller shafts, one on each shaft, while those of the forward cylinder turned gear wheels one on each shaft, an idler gear running between them to prevent undue strains on the crossheads and to steady the whole engine. The cranks and the connecting rod pin on the gear wheels were set at right angles to each other. The engine in general resembled that of John Stevens' JULIANA. It occupied a space about six feet square and worked up to about 40 turns a minute developing about 50 horsepower. Very little information is available on the boiler other than that it burned about ten cords of wood for a day's operation. It was placed abaft the engine almost in the stern overhang. The propellers were about 6.33 feet in diameter and were mounted on long wrought - iron shafts that protruded from the hull, on each side of and forward of the rudder. The outer hoop of the original Ericsson wheel was left off and the inner hoop carried six paddles. (13).

She was sloop rigged and carried an extra large mainsail and two jibs. On the main deck abaft the mast was the main cabin about 50 feet long, fitted with accommodations for about 50 passengers. Aft of it was a small cabin over the engine room for the officers. A small, short smoke pipe protruded from it. The steering wheel was out on deck a few feet forward of the taffrail. Doolittle had done well by her. She was a staunchly built and sturdy craft. Van Cleve sold his interest to him during her construction. She was completed in November, and was the first steamer on the lakes of the New York, Oswego and Chicago Line. Towards the end of the month, the customhouse official at Oswego issued her a temporary permit and she left on her first trip-a sales demonstration trip-carrying 130 tons of merchandise for Niagara, Hamilton, and Toronto, with Captain Hawkins as master and a Mr. Taylor as engineer. Van Cleve and Doolittle were also on board.

While on this trip she put in at Port Dalhousie and proceeded up the Welland Canal to St. Catherines where she was received with enthusiasm. A public dinner was given to Van Cleve and his associates. The ST. CATHERINE'S JOURNAL reported that: (14) 'she steers as helmsmen term delightfully - the movement of the screws assisting rather than retarding the operation of the rudder. This point was satisfactorily ascertained, in the circuitous route of the canal, from Port Dalhousie to St. Catherines where we had a full opportunity of testing the merits of this ingenious and novel invention. She glided along without any perceptible motion of the water; (15) so that not the least injury to the banks of the canal need be apprehended from the swell of the water which arises from the paddles of an ordinary steamer. After passing one of the smallest locks(16) on the canal at this place at ease, and staying an hour or two for the inspection of the inhabitants generally, she returned to Port Dalhousie on her route to Oswego.' She arrived at Oswego on 26 November.

On this trip the OSWEGO PALLADIUM of 1 December reported: 'that it is with very high gratification we state, that her performance full equals the expectations of her owners, and the experiment has proved altogether successful... As we have had some of our worst November weather since the steamer left the port, her owners have been able, on this first experiment, both to test the capacity of the engine, and her qualities as a sea boat. From information obtained from them, and her master, Capt. Rufus Hawkins, there is no doubt she is a capital craft for all weather... It appears that she can make from six to seven miles an hour in ordinary weather without canvas. She had made nearly five miles per hour against the wind and sea: and on her return, ran the 150 miles between Niagara and Oswego in 18½ hours, having a light fair wind and using canvas in the first 30 miles, and making the rest of the course without canvas and the wind ahead. This is rather more than

eight miles an hour, and as she improved after firing up, it may be safely inferred that she has not yet done all that she is capable of doing. In point of safety she seems to be all that human beings permit. The Captain considers her the safest vessel he has sailed in, and that the great danger of our lake navigation-a lee shore-is effectually provided against... The successful result of this experiment, we consider the most important event in relation to the interests of this port and the trade of Lake Ontario, which has occurred since the opening of the Welland Canal. The great desideratum of a steam communication with the Upper lakes is now assured...Our citizens have waited the result of this experiment of Messrs. Bronson & Crocker, etc., with no little solicitude, for they almost felt themselves partners in the enterprize. The enterprize is as honorable as the result is gratifying, and we sincerely hope the "VANDALIA" may contribute as largely to forward the interests of her owners, as she is expected to advance the interests of the port to which she belongs. We are firmly persuaded that this enterprize marks an epoch in the progress of the Western trade.'

Again on 8 December, the same paper reported: 'this splendid craft, since our last, has made two trips to Kingston. She performs to admiration. -- Ericsson's propellers will work wonders for Oswego. They will add at least fifty percent to the value of property here.We understand there is to be a weekly line of these steamers next season between Oswego and Chicago. Five vessels will make a line. Those who first engage in this enterprize will no doubt make their fortunes.' After these two trips VANDALIA was laid up for the winter.

BIBLIOGRAPHY

1. For the most economical operation, the speed for a steamer in knots should not exceed four-fifths of the square root of the length of the load water line in feet. Beyond that limit, increase in speed becomes more and more costly as the speed increases.

2. In wooden hull, the form of the outside of the planking.

3. Hunter and Benjamin Harris of Norfolk, Virginia, were granted U.S. Letters Patent No. 2,004. Improvement in the manner of constructing and propelling steam vessels, dated 12 March 1841; antedated 2 November 1840.

4. NILES NATIONAL REGISTER, LX, 224, 240, 270.

5. Contrary to the general impression in this country. Ericsson was not the inventor of the screw propeller, nor was he the first to demonstrate its practicability for propelling vessels or put it into successful commercial use. The screw propeller is an adaptation of Archimedes' screw for lifting water and of the shipjack used in chimneys to turn spits.In 1752, Daniel Bernoulli won the prize award of L'Academie des Sciences of France for his project for impelling vessels without the aid of the wind, by the application of the screw. In 1763, he made a mathematical analysis of its theory. From that date down to 13 July 1836, the date of Ericsson's first patent,a partial list of ideas and inventions relating to the screw propeller shows that he was anticipated by about 48 other inventors, among them David Bushnell, Robert Fulton, John Stevens, Jesse Ong and John B. Emerson, all Americans. Stevens built, engined, and operated JULIANA, a small twin-screw steamboat about the size of a large launch on the Hudson between Hoboken and New York in 1804. Stevens' propellers were much closer in form to the modern type than Ericsson's . Ericsson's wheel was patented in England and the United States, was a very complicated affair, similar to that of an outboard motor, mounted abaft the rudder, on the center line of the vessel. The shaft passed through the rudder which was slotted to permit it to be turned.

Specifically it was made up of 'two thin broad hoops, or short cylinders made to revolve in contrary directions from around a common centre, each cylinder or hoop moving

with a different velocity from the other; such hoops or cylinders being also situated entirely under water at the stern of the boat, and furnished each with a series of short spiral planes or plates,-the plates of each series standing at an angle; the exact converse of the angle given to those of the other series, and kept revolving by the power of a steam engine.'

Ericsson did not claim the invention of the screw propeller, but did claim to have made the first application of the direct drive to it, that is, without the interposition of gears or other devices.

Ericsson came to the United States in 1839, at the urging of Captain Robert F. Stockton, U. S. Navy, who was in London on business connected with the Delaware and Raritan Canal, in which his family was interested. His attention was called to Ericsson's work in propellers by Francis B. Ogden, U. S. Consul at Liverpool. He was much impressed with the performance of FRANCIS B. OGDEN, Ericsson's experimental boat, and ordered him to build two iron boats fitted with his engines and propellers. Only one of them materialized,ROBERT F. STOCKTON, 70 feet in length, 10 in width, with a draft of 3 feet. She was driven by two single-cylinder engines set in a vee at right angles to each other. Each cylinder had a diameter of 16 inches and an 18 - inch stroke, and each drove one of two wheels mounted on two shafts, one turning inside and independently of the other. She was launched from the yard of Messrs. Laird & Company of Birkenhead on 7 July 1838. She made between eleven and twelve miles an hour on her trial trip. Stockton sent her across the Atlantic under sail. She arrived at New York on 29 May 1839 after a passage of 40 days. Soon after arrival she was taken to the shops of the Camden and Amboy Railroad at Bordentown, N. J., where she was subjected to many tests, particularly in her engines in which changes were made. It was found that the two propellers on one shaft and abaft the rudder made her erratic in steering.The double wheels were made into singles and the rudder was placed abaft them. She was renamed NEW JERSEY by an Act of Congress in May 1840 and placed in service on the Canal in which she continued for about 30 years. She was the first screw - propelled vessel to be used successfully in commerce in the United States.The first American vessel to be fitted with Ericsson's propeller and the second to be commercially successful was the bark CLARION. She made seven and a half miles an hour on her trial trip on 4 April 1841. She successfully made a round trip from New York to Havana in May and June of that year.

6. James Van Cleve, 'Reminiscences of Early Sailing Vessels and Steamboats on Lake Ontario,' manuscript in Chicago Historical Society, p.99.

7. Ibid., p. 100.

8. John C. Churchill, LL.D., LANDMARKS OF OSWEGO COUNTY, NEW YORK (Syracuse:D. Mason & Company, 1895), p. 165.

9. Herbert R. Lyons, THE VANDALIA, THE FIRST SCREW-PROPELLED VESSEL ON THE GREAT LAKES (Oswego: Oswego Historical Society, Fifth Publication, Palladium-Times, Inc., 1941), p. 99.

10. William Conant Church states in his THE LIFE OF JOHN ERICSSON (New York: Charles Scribner's Sons,1890), I, 110, that ' on April 6, 1841, Captain James Van Cleve and Mr. Benjamin Isaacs purchased the rights to use the Ericsson propeller on the Lakes.'

11. Lyons, op. cit., p. 107; J. F. Pankhurst, Esq., DEVELOPMENT OF SHIP-BUILDING ON THE GREAT LAKES(New York: Transactions of the Society of Naval Architects and Marine Engineers, 1893), I, 255.

Continued in Nov. issue.

THIS MONTH'S COVER

EBER BROCK WARD

Through the courtesy of the Detroit Institute of Arts this photo was made available to TELESCOPE. It shows Eber Brock Ward, as painted by the famous painter of Indians, John Mix Stanley. The painting, now on loan to the Detroit Historical Museum, is the property of the Michigan Historical Commission.

Steamer John A.Dix, owned by Eber B.Ward
Built 1865. 172 Ft. long. 527 Gross tons.

MUSEUM NOTES

OUR GREATEST SINGLE ACCESSION

Through the good offices of Mr. E. B. Williams, Vice President in Charge of Engineering, American Shipbuilding Company, arrangements have been concluded with that firm whereby the Museum of Great Lakes History has been made the repository of a great number of plans of Great Lakes vessels.

Just how many will come to us can not yet be said, but in the two lots already delivered ten sets have come to our attention. All packages have not yet been opened and it will be some little while before they are. These plans will be filed under the system used at the shipyard so they may be made available to the donors at any time they may happen to need them. Such a system prevents the loss of identity of any set. Plans are identified by the yard's hull number instead of by a ship name, consequently it is essential that this hull number be used, even when names are also used.

While this gift is a reason for rejoicing, we must hasten to say the real fruits will be delayed as far as model building goes. Under our agreement, we may not lend originals from this collection. Being irreplaceable they must be guarded with the greatest care. We have lost more than one item in the past when we trusted them to the U.S. mails. The money received for insured articles lost cannot, in this case, make up for the article itself.

As rapidly as possible we will draw new tracings, from which prints will be made as needed, but this redrawing will take time. We will follow our established procedure and as each new set is perfected they will be published in Telescope so that model builders can see what they are like.

See page 13.

NOTICE OF NEXT MEETING

will be mailed to members later.

SOME INTERESTING FACTS

Mr. Chester E. Tucker, in a paper prepared for the Southeastern Museums Conference at the Charleston Museum, in South Carolina, October 22, 1953, brings to light some interesting information regarding museums in the United States. This paper was later published in booklet form by the John Price Jones Company, Inc. New York. Mr. Tucker is now Vice President in charge of Development at the University of Pennsylvania. We quote below some of Mr. Tucker's findings which he states are incomplete since only 58% of the museums replied to his inquiries.

There are between 2,500 and 3,000 museums in the U.S.

Approximately $100,000,000 was given to museums in 1952.

One out of eight persons visit the museum each year.

In some areas the figure is one out of every four.

The National Gallery, Washington, D.C. had an attendance of 5,000,000.

In 1952 2,300,000 persons visited the Metropolitan Museum of Art in New York - more than went to the Yankee Stadium.

Private generosity provided funds for collections to the extent of 87% of the total. Government, 13%.

It is estimated, on good authority that the value of our museums is $7,000,000,000. For comparison, it is of interest to note that the total assets of our institutions of higher learning have been estimated at almost $8,000,000,000.

Total operating income of group replying to inquiry, $22,000,000, of which 56% came from private sources and 44% from government sources.

Memberships provided 15% of income to the extent of $1,900,000.

Of the estimated $4,000,000,000 given away in 1952, 10% came from corporations, 12% from individuals with a gross income of $25,000 and up, and 71% from individuals with incomes of less than $25,000.

Only about 1% of our population hold memberships in museum groups.

SAMUEL WARD STANTON DRAWINGS OF GREAT LAKES VESSELS

—CONTINUED—

MATOA.

Built 1890, at Toledo, Ohio, by the Globe Iron Works Company. Hull, of steel. Length of keel 292 feet; overall 308 feet; Breadth of beam 40 feet, depth of hold 24 feet 6 inches. Draft of water light, 8 feet; loaded 14 to 16 feet.
Engine, triple expansion. Diameter of cylinders 24, 38, and 61 inches by 42 inches stroke.
Boilers, two, of steel, Scotch type. Total grate surface 135 square feet; total heating surface 2710 square feet. Consumption of fuel per hour 2630 pounds, on a speed of 14 miles per hour.
Wheel, four blades; fourteen feet in diameter, seventeen feet six inches pitch. Tonnage, 2311 Gross. 1836 Net.
A large modern steel-hull freight carrier of the Great Lakes. Owned by the Minnesota Steamship Company and used in the ore carrying trade. Strongly built and of large carrying capacity. Cost $208,750.

FRANK E. KIRBY.

Designed by Frank E. Kirby. Built 1890 at Wyandotte, Michigan. Hull, of steel, built by the Detroit Dry Dock Company. Length of keel 195 feet 6 inches; overall 203 feet. Breadth of beam 30 feet, over guards 55 feet; depth of hold 11 feet 3 inches.
Engines, vertical beam, formerly used in the steamboat ALASKA and revenue steamer JOHN SHERMAN. Diameter of cylinder 48 inches by 9 feet stroke. Indicated horsepower 1350.
Boilers, two, of steel, each 24 feet in length by 9 feet in diameter.
Wheels, of iron, feathering. Steel concave buckets. Tonnage 552 Gross; 374 Net.
The fastest steamboat built on the Lakes in recent years (1895). A handsome, well-equipped passenger boat built for the Detroit and Sandusky route. All modern improvements and capacity for 1000 excursionists. Speed 21 miles per hour.

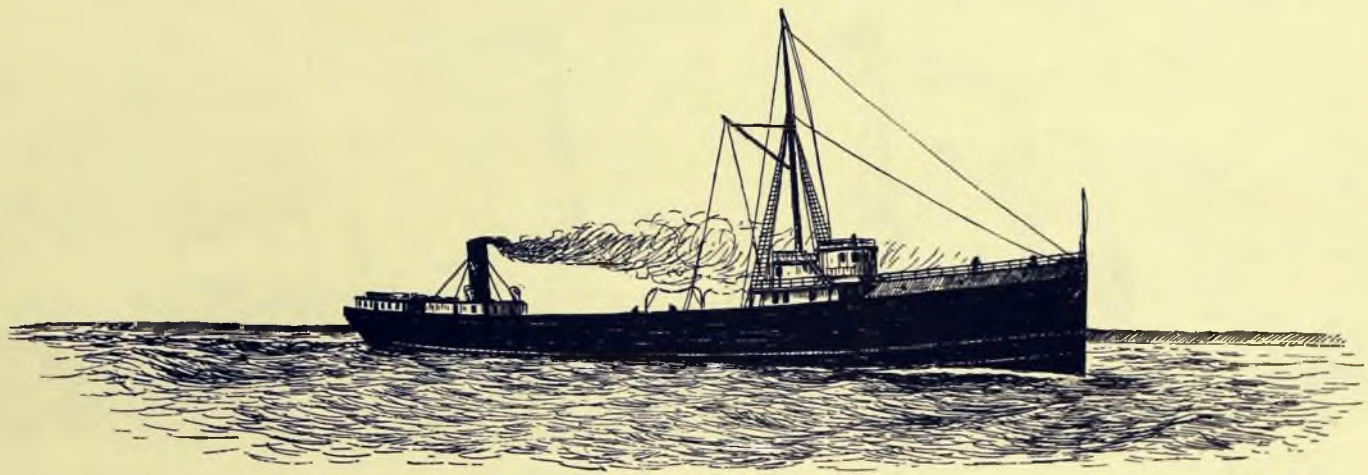
W. H. GILCHER.

Built 1891, at Cleveland, Ohio, by the Cleveland Shipbuilding Company.
Hull, of steel. Length of keel 301½ feet; overall 320 feet; breadth of beam 41 feet; depth of hold 24 feet 4 inches.
Engine, triple expansion. Diameter of cylinders, 20, 33, and 54 by 40 inches stroke. Tonnage, 2414 Gross. 1986 Net.
The W. H. GILCHER was a large cargo carrying steamer of the Great Lakes, owned by J. C. Gilchrist. She held the record for sometime of having carried the largest cargo of wheat, -- 113,885 bushels--that had ever been carried by a single vessel between Chicago and Buffalo. She foundered during a gale on Lake Michigan on the night of October 28, 1892, all on board perishing. Valued, when lost, at $200,000.

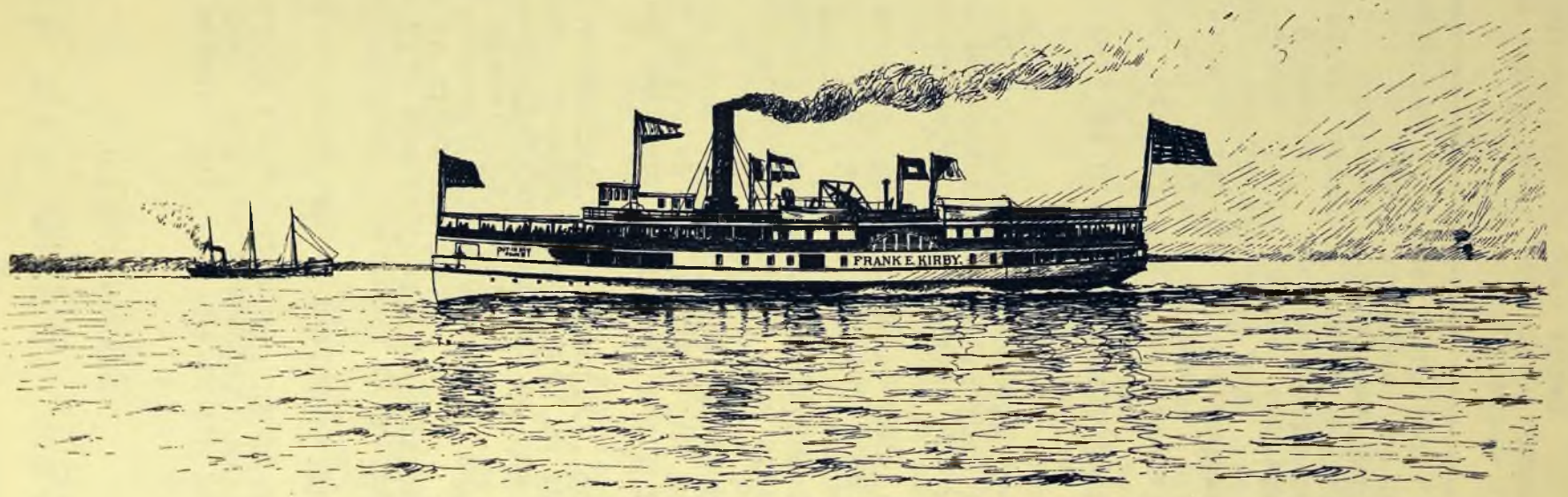
MUSEUM NOTES

Among the yards from which these old plans came are the following:
F.H. Wheeler, Bay City
Globe Iron Works
Detroit Dry Dock Company
and yards in Buffalo and Toledo.

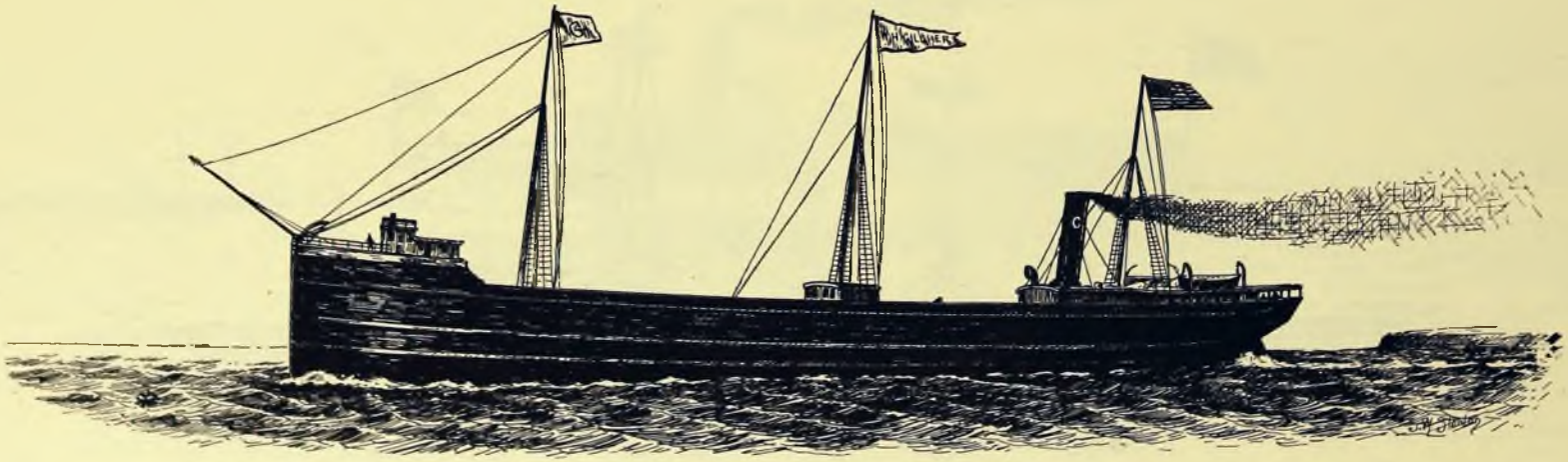
Now that American Shipbuilding Co. has shown its interest in the preservation of these priceless records let us hope that others will do the same.



GREAT LAKES FREIGHT STEAMSHIP MATOA, 1890.



GREAT LAKES EXCURSION STEAMBOAT FRANK E. KIRBY, 1890.



GREAT LAKES STEAMSHIP W. H. GILCHER, 1892.