Telescope

25¢

VOL. 4 JULY 1955 NO. 7

PACKAGE FREIGHTER "HUDSON".

The "Hudson" was a sister-ship to the "Harlem" which was converted into the passenger steamer "Minnesota". TELESCOPE for June carried the lines and main deck plans of the "Minnesota". In this issue we feature the other decks. The outboard profile is still on the board and a complete set of blue prints will be available in a short time.

This makes the thirteenth set of plans which have been developed for the use of model builders through the combined efforts of the Guild and The Museum of Great Lakes History.

J.E. Johnston,
Editor:
Membership $3.00

Telescope

PUBLISHED BY
GREAT LAKES MODEL SHIPBUILDERS' GUILD
BELLE ISLE DETROIT 7, MICHIGAN

R. H. Davison,
Associate Editor
Subscription $2.50

Supported in part by the Detroit Historical Society.

E D I T O R I A L

This is our last opportunity to remind you that the ANNUAL MODEL MODEL SHOW is in the offing. August 22-23, to be exact. Up to now all of our shows have been successes. Let us all pull together in an effort to make the 1955 show better than those of the past.

Since the proceeds of the show go into our publishing fund there is every reason for all of us to be interested in this event. The greater the attendance the more we will have to put into making a better magazine of TELESCOPE and getting out some of the publications we have planned. If you wish to help just let us know.There is a job for everyone.

We are indebted to Mrs.Elizabeth Wathen,Director of the Muskegon County Museum, and Mr.Lewis Torrent, also of Muskegon, for the log marks shown on Page 10, and the story beginning on Page 6. Rafting was one form of water transportation, so it is grist for our mill. The twenty marks shown on Page 10, are selected from a great many which have been collected b y Mr.Torrent. They are reproduced on Page 10 from copies made by Gordon Bugbee, who has been instrumental in getting the magazine out on time for this month. We have,in colors, many of the log marks on exhibit in the museum where they have attracted great interest. So far no visitor to the museum at Belle Isle, has indicated any previous acquaintance with the practice of marking saw logs during the lumbering era in this region. Thus we bring to the public another interesting item of history by practicing a little cooperation.

The Muskegon County Museum has an extensive collection on loging in Michigan, well worth seeing. We suggest that you visit the Museum when ever you are in that city.

THE JULY MEETING OF THE GUILD WILL BE HELD ON THURSDAY,THE 28th,AT 8-30 P.M., ON BOARD THE SCHOONER "J.T.WING", BELLE ISLE,DETROIT.

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 ON THE SHORE OF BELLE ISLE, IN DETROIT, 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.

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ONE HUNDRED YEARS-AND MORE

BY REAR ADMIRAL LYNDON SPENCER

Today we Americans frequently take the attitude that nothing good, or big, or important, ever took place before the present generation arrived on the scene. Sometimes we look with magnanimous tolerance upon what we consider the more or less trivial accomplishments of yesterday. Yet how often, without any thought of giving credit where credit is due, we build on the sturdy foundations laid down with the brains, the brawn and the blood of our ancestors.

Despite our astonishing scientific, industrial and commercial successes of today, we must give credit to the far-sightedness and courage of such men as Charles T. Harvey, the ambitious scales salesman who was able to look ahead through the years and then to provide us with what has been and continues to be one of our greatest economic assets.

More than 100 years ago he recognized the possibilities of the fabulous mineral wealth in the upper lakes area and what it would mean if these minerals could be delivered expeditiously by ship to the newly born industrial towns on the shores of the lower lakes and rivers. He realized that to achieve this it would be necessary to build a canal and locks at Sault Ste. Marie to allow ships to bypass the St. Marys Rapids between Lakes Superior and Huron. Harvey wasn't content to be a dreamer, as had been some others who had seen the same possibilities. He acted immediately to turn his dream into reality. He might be called one of the founders of the presently popular "do-it-yourself" movement. You are probably well acquainted with the story of how he overcame almost insurmountable difficulties, how he argued down skeptics and politicians, how he battled cholera and strikes, how he met all the construction difficulties, and finally completed the project------- probably the most outstanding engineering feat of the times ---- in 22½ months at a cost just short of one million dollars.

I am not going to bore you with all the changes that have been made in the St. Marys Falls Canal in 100 years. Suffice it to say that from Harvey's rather simple beginning has come the magnificent set of locks and approaches through which, in 1953, there passed no less than 128 million tons of water-bourne commerce. No wonder, then, that the canal has become known as the billion dollar mile and is recognized as the most important facility of its kind in the world.

It probably is somewhat trite to mention the importance of the Lake vessel industry to this industrialized community. However, if citizens of this city are like those of Cleveland, they have become so accustomed to seeing the great ore carriers moving serenely up and down the waterways that they are likely to take them for granted ---- to regard them much as they would a line of new automobiles leaving one of the factories in your great city.

Certainly Great Lakes shipping means much to your city. From the standpoint of annual tonnage handled, the port of Detroit is the fourth on the Great Lakes and twelfth in the United States. This may surprise some persons who might have the impression that Detroit is only a place which the big ships pass as they ply up and down the lakes. Such persons overlook the millions of tons of coal, iron ore, limestone, petroleum products and finished steel which are unloaded here annually, the large number of new automobiles shipped out each year and the chemical cargoes that originate here.

But if the Great Lakes are important to Detroit, conversly, Detroit and its environs are of vital importance to lake shipping. From the earliest days this area has been a center of major marine activity. Some of the finest wooden sailing ships ever built on the Great Lakes took shape in yards situated on the

banks of the Detroit and Rouge Rivers. You have in your park one of the very few remaining relics of those days when the movement of water-bourne cargoes depended upon the vagaries of the wind. That art of building sound, efficient vessels has not been lost to this community. The Great Lakes Engineering Works is known all over the lakes for constructing vessels of superior craftsmanship.

Your river front has served as a grandstand before which the century-old pageant of marine progress has unfolded. Not too many years ago a person standing on the river bank could have seen numbers of tiny tugs towing through the river long columns of sailing ships, each of only a few tons capacity. Since that day many improvements have occurred, both in the ships themselves and in the conditions under which they operate.

Wooden hulls have given way to steel; sails to steam; the magnetic compass to the gyrocompass. No longer is it necessary for the navigator to rely solely on his barometer as in the old days. Detailed weather reports for the entire lakes are now broadcast to him several times daily Great Lakes vessel owners have always been in the vanguard in adopting the latest safety devices. Upon their own initiative they developed a thoroughly complete and integrated radio-telephone system for safety, navigation and public correspondence purposes. They undertook operational research and prescribed the technical specifications for radar suitable for use on the lakes so that today nearly all the large vessels on the lakes are radar-equipped. They have agreed upon separate courses for upbound and downbound vessels so as to keep them as widely separated as possible.

Should a survivor of the days of sailing ships look out on the river today, he would probably rub his eyes in amazement ----- amazement at the sleek modern carriers he would see. Three of these vessels are more than 700 feet long and, instead of carrying a few hundred tons of cargo, haul more than 20,000 tons a trip and make the voyage from Lake Erie to Duluth and return in five days. One of these large vessels passes by Detroit on the average of every eighteen minutes, day and night, for nearly nine months of the year.

Today, when a person familiar with the Great Lakes marine operation hears Detroit mentioned, he is likely to recall the names of persons long noted for their contributions to the betterment of lake shipping. Outstanding among these names is that of William Livingstone, the Detroit civic leader who was president of the Lake Carriers' Association from 1902 to 1925. Livingstone Channel, of whose construction he was the guiding spirit, and Livingstone Lighthouse were named after him. The city of Detroit and the Lake Carriers' Association together provided the funds for building the lighthouse as a memorial to him. Also recalled is the McMillan family, whose passenger vessels plied between Detroit and Cleveland for more than half a century. Today the Ford, Browning, Nicholson, McCarthy, Huron and Wyandotte fleets, with headquarters here in Detroit, comprise an important segment of the lake shipping picture.

Over the past century, from the humble start made possible by the ingenuity and stubborn courage of Charles T. Harvey, the Great Lakes shipping industry has grown, through the stimulus of free enterprise and private ownership, into the greatest inland water transportation system in the world, a system which cannot be matched for moving huge tonnages at low cost.

The fleet today is at its peak of efficiency and carrying capacity, capable of fulfilling all foreseeable civilian and military needs, a condition which, in this troubled world, must be maintained at all costs. Almost a quarter of a billion dollars has been spent by U. S. and Canadian operators on new ship construction in the last five years in the largest shipbuilding program in the history of the Great Lakes.

The United States lakes fleet is composed of 321 vessels with a total trip capacity of 3,515,000 gross tons, and includes 256 ore carriers and 44 self-unloading vessels. Of these ships 25, with a total capacity of 428,000 tons, were built

since 1951. In addition, many other carriers have been repowered to give them more speed and greater seasonal carrying capacity.

This fine fleet, so essential to our national welfare, did not materialize overnight. It is the result of years of planning and building and improving; years of searching for new and better hulls and means of propelling them; years of seeking faster ways of loading and unloading --years of effort all along the line and all of it aimed at one goal----- that of providing the fastest, most efficient, most economic transportation of bulk commodities possible.

A great deal of progress toward this goal has been made. Naturally there have been obstacles to overcome and, as in the case of every industry, times when the going was rugged and uncertain. Great Lakes vessel operators, however, can be proud of their ability to roll with the punches; to take the lean years without crying and yet to meet requirements of the fat years. This they have done without the aid of governmental subsidies.

It is true that the federal government has spent money for the improvement of harbors and channels. But this has been done for the benefit of all the people in our country. The cost of all these improvements has been less than $400,000,000 in 130 years. That moderate sum has been returned manyfold to our citizens in the lower cost of automobiles, washing machines, refrigerators and even our daily bread, because improvements have permitted the use of larger and more efficient vessels. The cost per ton mile for shipping by lake is about 15 mills, that is 15/100 of a cent, the lowest cost bulk transportation anywhere.

The Great Lakes fleet provides American military strength with one of its strongest economic sinews. One of our greatest weapons is our steel producing capacity and this is dependent upon lake transportation for delivery of necessary basic materials. In a single year of World War II lake vessels moved 183,000,000 tons of vital commodities, including 92,000,000 tons of iron ore. In World War II lake freighters carried a total of 889,000,000 tons of freight, which was more than four times the amount carried by the ocean merchant marine. When the Korean hostilities flared up, the government once again looked to lake shipping for assistance. Vessel operators were ready. In 1953 alone, shipments of commodities for defense and civilian requirements totaled 216,000,000 tons, including a record 95,000,000 tons of iron ore.

The building of the Soo Canal 100 years ago made possible the movement of the tremendous cargoes just mentioned. In a few years more the St. Lawrence Seaway will be opened and again we shall see important changes in the traffic pattern on the Great Lakes.

I am not prepared to say that the changes resulting from the Seaway will be as sudden or as extensive as some of the claims we all have heard No doubt there will be an immediate spurt of increased traffic when the Seaway is completed but I am inclined to believe that it will be of moderate size. Thereafter the overseas trade will surely grow but will follow a steady and persistent upward pattern.

Overseas trade into and out of the Great Lakes is not a new development, it started during the late '30's. There was, however, a complete cessation of such activities during the years of World War II when foreign nations, the only ones participating in the business, withdrew their vessels. The trade resumed in 1945 and since then has shown a constant and impressive growth. In 1945 one vessel made one trip into the lakes. In 1953, the peak year so far, 119 vessels of eight nations made 268 trips.

The size of the vessels engaging in this trade has been severly limited by the small dimensions of canals and locks which presently must be traversed around the rapids of the St. Lawrence River. These limitations will be removed when the Seaway is completed. Present plans call for channels with a depth of 27 feet and a width of 80 feet. These dimensions will permit the use of vessels as large as any you have seen in the Detroit River.

See Page 15

MUSKEGON COUNTY LOG MARKS

LEWIS TORRENT

A paper delivered by Mr. Lewis Torrent at the Annual Meeting of the Michigan Academy of Science, Arts and Letters-----Ann Arbor, April 12, 1946.

A set of four books in the office of the Muskegon County Clerk carry, sometimes in scrawled writing and sometimes in beautiful penmanship, the story of Muskegon logging days. These are the books in which are preserved the records of the log marks of the companies operating on Muskegon and White lakes. The keeping of such records was inescapable as the number of log marks in use in the very limited area under discussion ran into the hundreds. Thus the log mark was to the lumber operator of Muskegon, substantially what the brand is to the cattleman of the Western Plains. Recognizing such a need the Michigan Legislature in 1842 passed a law requiring registration of marks with the clerk of the county in which the mill owner operated. The importance of the log mark was pointed out by a Mr. Winthrop of Maine when he wrote as follows, with respect to operation in the New England region:

"Far down, at some water-power, nearest the reach of tide, a boom checks the march of this formidable body. The owners step forward and claim their sticks. Dowse takes all marked with 3 crosses and a dash. Sowse selects whatever bears two crescents and a star. Rowse pokes about for his stock inscribed clip, dash, star, dash, clip."

EARLY BRANDS

It is probable that very early sawmill owners in Muskegon and vicinity entered into private agreements on log marks prior to the above mentioned legislative enactment, because the first entry on the books at the Muskegon County Clerk's office is for the year 1859, when lumbering operations had become somewhat extensive. It is possible, however, that earlier looks did exist and have been lost.

The first official record of a log mark in Muskegon County contains the following entry in five parts:

1. "T and S made by hammer on each end of the log."
2. "I K I with ax on the side of log."
3. "Thomas D. Stimson, log marks."
4. "Recorded December 21, 1859."
5. "E. W. Wylie, Clerk."

Further examination of the official record reveals a wide variety of ideas expressed in the log marks. Many identifications are merely initials, while some consist of initials in distinctive arrangements. Others are crude pictures based, no doubt, on some unremembered story behind them. There were animal heads, fish, odd geometric figures with initials inside, sailboats, crossed keys, keys connected by a bar, and human figures. One mill operator expressed his friendship for the man who supplied him with tobacco by choosing as his log mark the form of a pipe on which his friend's initials were super-imposed. Some marks are just odd designs with no apparent meaning.

Among the early brands was that of Isaac Hunting. His brand, as recorded in 1860, consisted of I H on each end of the log and a pentagon with a capital H in the middle of the log, together with two hacks near either end on the same surface with the H. In 1860, Esau Torrent, uncle of the writer, registered his brand in the form of a quarter moon in a horizontal position. Other early brands were C. D., the symbol of C. Davis and Company; a triangle in a scalloped circle and a figure within a V the mark of L.G. Mason; a K cut on the side of the log and an X stamped on the end was used by J. and W. Beidler.

Log brands, of course, went with the business and the log books contain frequent records of transfers of brands. In 1883, for example, R. D. Robinson transferred to Torrent and Ducey the brands A M, and 240.

Usually, these transfers were "forever" but some indicated assignments, possibly for the benefit of creditors. For instance, in 1864, Samuel R. Sanford "for and in consideration of one dollar" assigned all log marks for one year to Samuel A. Brown & Company.

A pen sketch, often roughly done, sometimes done with care, illustrated each record. David McLaughin while county clerk, noted the time of day the transfer of a brand became effective, which was usually at noon.

LOG SORTING

The work of scaling and marking the logs took place on the rollway near the river or near the edge of the forest throughout the winter. The owner's profits depended largely on the accuracy of both jobs and only the best men were employed for such work. Usually, the scaler and marker constituted a team, one checking the work of the other.

The marking process came after the logs were piled on the rollways which were always located on a convenient stream or river. The transfer from rollways to rivers occurred with the approach of spring.

The job of marker, or hammer man was a test of strength and skill. The rules of the river required that both ends of a log bear a mark, and frequently an owner used a sidemark. Individual logs might be sixteen feet long whereas the rollway on which they rested might be thirty feet or even longer. Marking the outside ends of the logs was a simple matter but in order to reach the inside ends a hammer man needed fortitude and patience. An ordinary marking hammer was used on the outside ends and, for the inside ends, a long bar of iron known as a punch bar with the mark on one end, came into use. Frequently, the scaler would tap the outside end of a log while the marker put the brand on the inside end.

Laboring on the frozen rollways, marking the inside logs demanded a keen eye and a steady hand to insure double marking of all logs, for where only one marking showed on a log, the owner was liable to lose it in the river. For additional protection the owner assigned a number to each of his markers and, if a log were imperfectly marked, the man responsible could be brought to account. Each hammer head, therefore, normally had the logmark on one end and the marker's number on the other. With the marking bar, the logmark was at one end of the bar and the number at the opposite end.

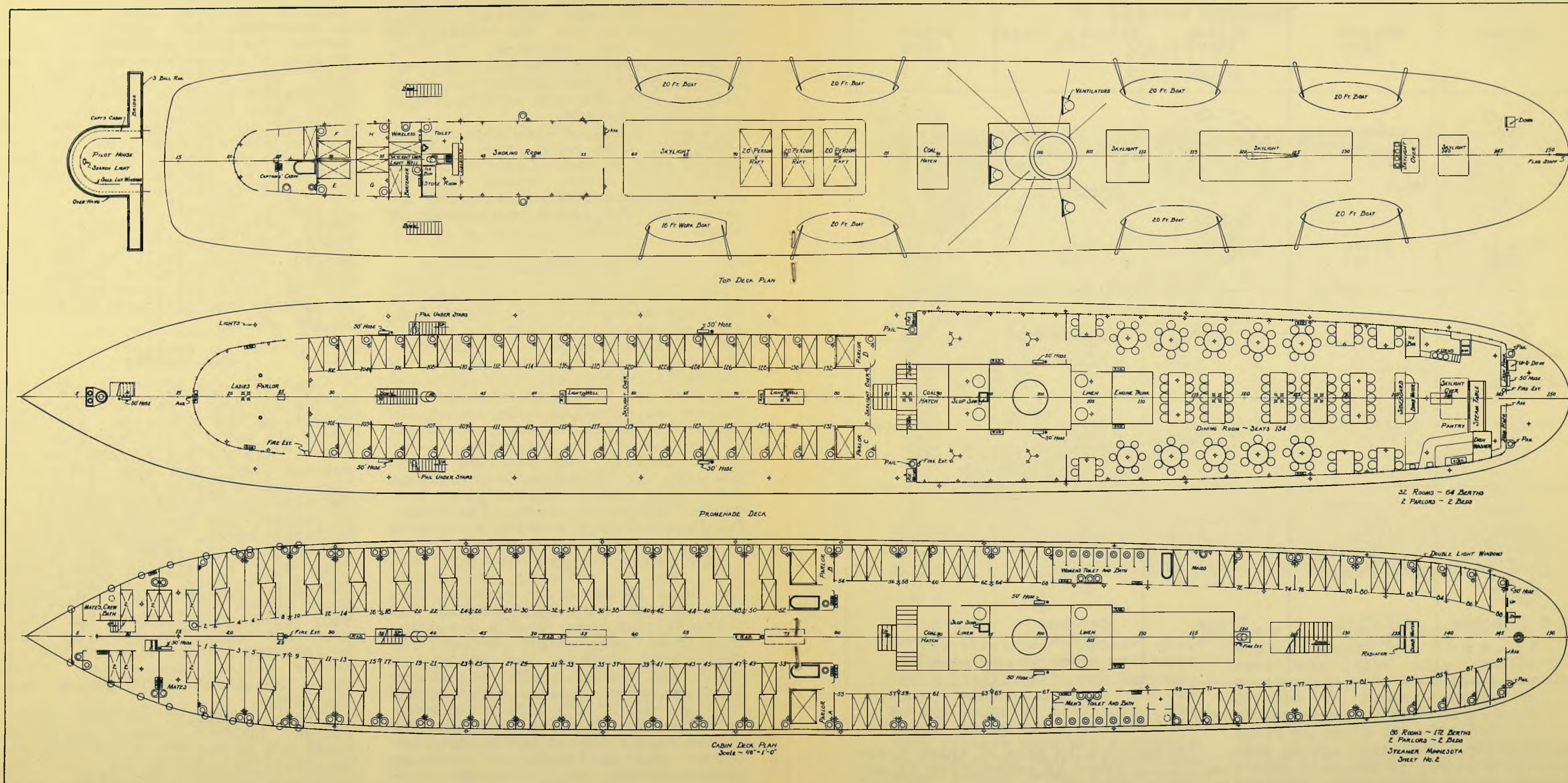
Simple designs and two-letter marks were easy for the marker to manage but three-letter marks required special skill to make sure that the mark appeared plainly on the log. These and other fine points of marking came only with experience in the woods.

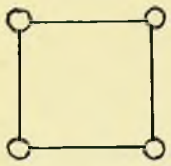
LOG THIEVES

Just as there was cattle rustling in the old West, so were there log thieves on the rivers of Michigan. These men would pull logs from the river, saw off the branded ends and rebrand them. The side brand made this theft a little more difficult. The side brand could be chopped out of course, but the operation left a tell-tale notch. Another trick of unscrupulous operators was to sell their logs at sixteen feet, then take them from the river some distance downstream, saw a foot from each end and resell them for fourteen foot logs. The operation could be repeated a third time and the operator collect for almost three times the actual timber coming down the river.

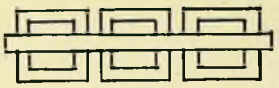
Due to activity on the watercourse, however, such operations could not be carried on for long unobserved. On reaching the lake the logs were sorted in accordance with their brands and guided into booms of the respective owners. During the period of large scale operations the Muskegon Booming Company carried on this department of lumbering.

See P.10.

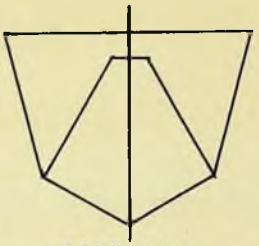

Pilot House
Search Light
Bridge
Smoking Room
Skylight
20 Ft Boat
16 Ft Work Boat
Coal Hatch
Ventilators
Flag Staff
Top Deck Plan
Ladies Parlor
Pail Under Stairs
50' Hose
Light Well
Dining Room ~ Seats 134
Pantry
Engine Trunk
Linen
32 Rooms ~ 64 Berths
2 Parlors ~ 2 Beds
Promenade Deck
Double Light Windows
Womens Toilet and Bath
Mens Toilet and Bath
Mates Crew Bath
Mates
Radiator
Cabin Deck Plan
Scale ~ 1/8" = 1'-0"
86 Rooms ~ 172 Berths
2 Parlors ~ 2 Beds
Steamer Minnesota
Sheet No. 2



Morgan
1877

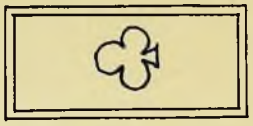


Edwards
1877

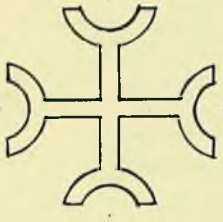


Wilson
1877

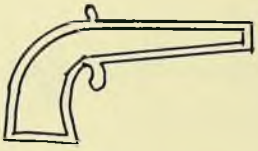
Wilcox & Morgan
1872



Webber
1878

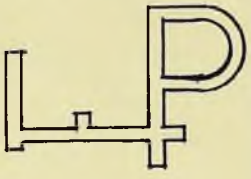


Simmons
1880



Brown
1880

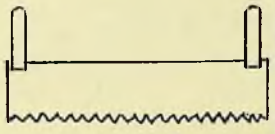
Rathburn
1880



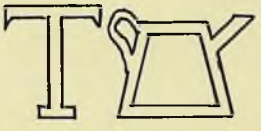
Potter
1880

Davis Whitney
1882

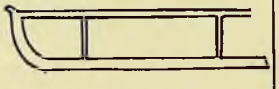
Watson
1875



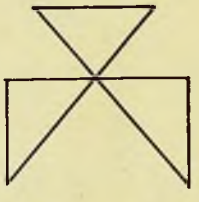
Glue & Smith



Blodgett
1875



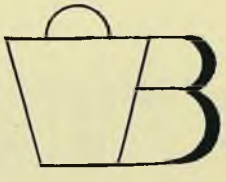
Boyce
1871



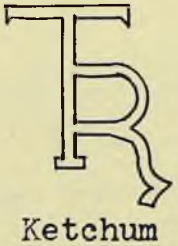
O.P.Pillsbury
1865

G & I Backus
1870

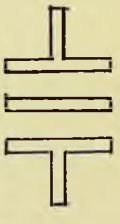
A.Eldred
1860



Byrne
1876



Ketchum
1876



Murphy &
Gerrish
1877

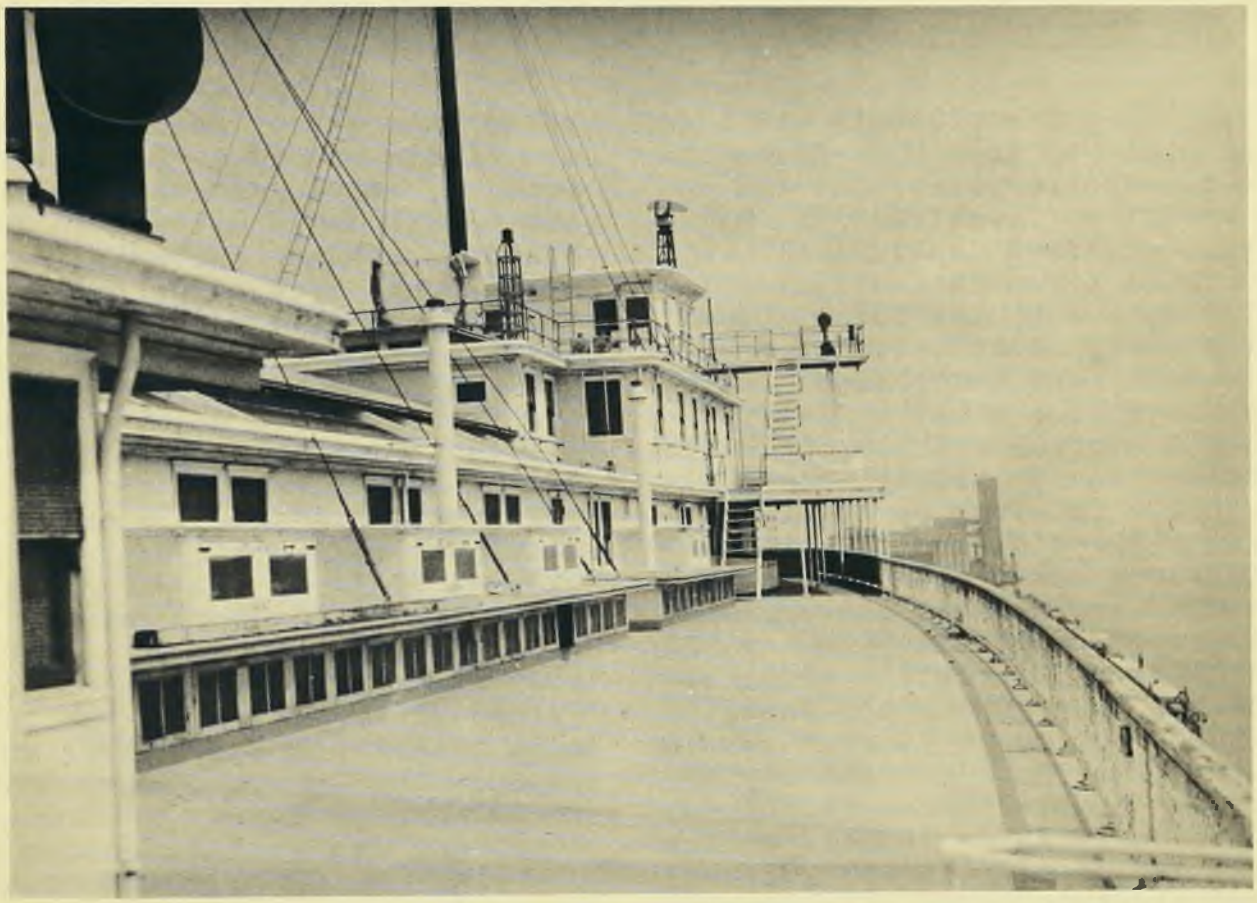
MUSKEGON COUNTY LOG MARKS

See Page 6 for the story of log marks. Connected with each of these marks there is a story, if we could only find it,--a story as interesting as any dealing with western cattle ranches and their marks and brands. We know why these marks were used, but little, if anything, is known of why these strange designs were addopted by the men who registered them. Should there come to your attention any information on the subject please pass it on to us.

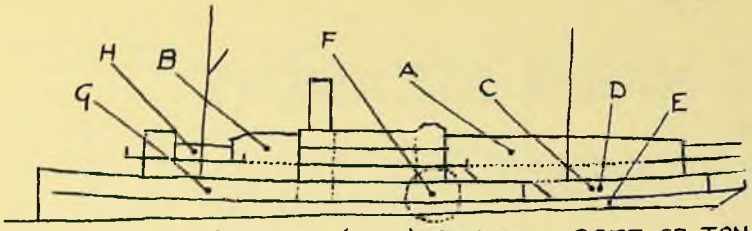
THE LAKE ERIE NIGHT STEAMERS OF FRANK E. KIRBY

BY GORDON P. BUGBEE

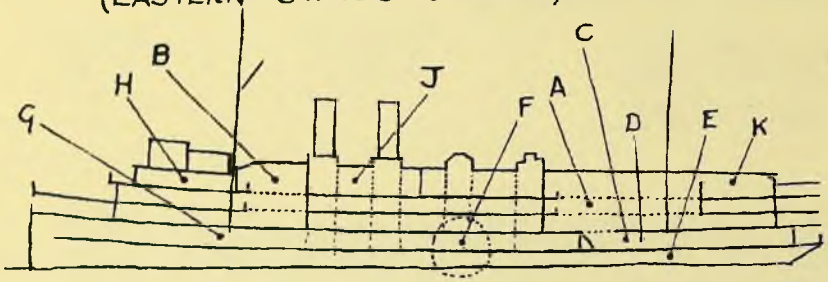
PART II.
(CONTINUED)



For thousands of years, wood and rope were suitable materials for vessels; although impermanent, they satisfied the demanded range of qualities. The small early steamers of the last century were not seriously restricted by these limitations. When larger vessels were conceived at midcentury, the weakness of a large wood structure forced designers to strengthen and eventually supercede it with iron and steel. First, a huge pair of wooden arches or trusses containing taut iron chains anchored at bow and stern was devised to avoid hogging; in some cases these arches could be built into the hull of the ship, but the shallower draft of river and coastal steamers made these arches remain exposed high above the superstructure. The hogging arches disappeared when composite steamers like CITY OF DETROIT I of 1878 appeared,



WESTERN STATES (1902) 372×80, 3077 GR. TONS
(EASTERN STATES SIMILAR)



CITY OF CLEVELAND III (1908) 402×92, 4568 GR. TONS

TWO DECADES IN LAKE ERIE STEAMER SPATIAL ALLOCATION

SCALE: 1" = 100'-0"

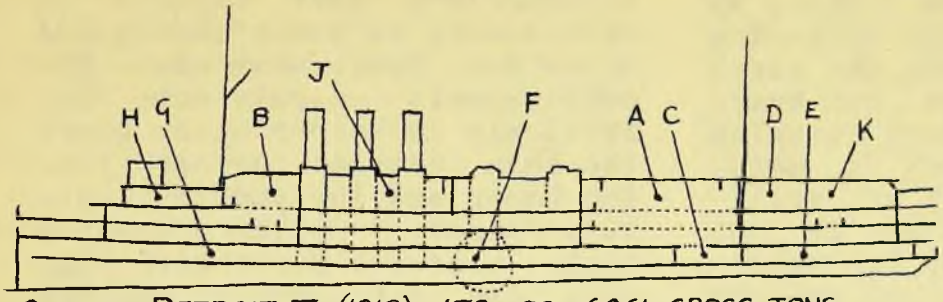
KEY:
- A. MAIN SALON
- B. FORWARD SALON
- C. LOBBY
- D. SOCIAL HALL
- E. DINING ROOM
- F. ENGINES (STARTING PLATFORM)
- G. CARGO SPACE
- H. OFFICERS
- J. SMOKING ROOM
- K. "PALM COURT"
- L. CAFETERIA

NOTE: SEEANDBEE (1913) OMITTED
6381 GROSS TONS, 500' × 98'

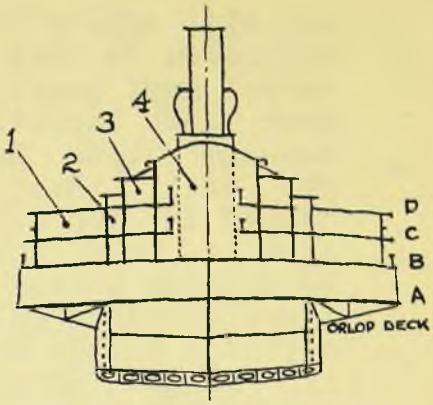
combining the strength and life span of an iron hull frame and the puncture-resistence and inexpensive construction of a wood-sheathed hull (CITY O F DETROIT I remained afloat until 1947). When the advent of refinements like cellular double bottoms and water-tight bulkheads gave a metal hull the desired safety virtues of wood, hulls could safely be guilt wholly in iron or steel. Because the sidewheel steamer required a low center of gravity --and also perhaps because wood was more appealing and more dignified than metal--steal appeared only in a minor capacity above the main deck. Even where it was necessarily exposed in passenger areas, on the surfaces of funnel casings and ventilation uptakes, it was panelled and carefully painted to resemble wood. The light steel-aluminum superstructure of more recent ships became available only after the last steamers were built.

In the CITY OF CLEVELAND III and later vessels Kirby carried a steel structure up to the ceiling of the main deck, enclosing the cargo area and main deck cabins of the crew and the public rooms. In this area, wood was used mainly for flooring to deaden the noise of cargo handling, and for decorative purposes in the public rooms in keeping with those above the main deck. Beyond the public rooms, partitions were of steel, and the ceiling was sheathed in steel and asbestos. Above the main deck steel was used principally in the funnel casings and the ventilation uptakes from the engine room and galley. A series of fire walls and doors was installed, forming compartments in the superstructure to retard and localize a fire. The purpose of steel construction was twofold. First, the steel hull and main deck formed a sort of "foundation" to the wood superstructure, which required strength merely to remain intact, and the steel uptakes gave stability to the wood superstructure. Second, designers were increasingly conscious of the fire danger of a wood structure, and were seeking means to safeguard possible sources of fire and to check the spread of fire once it was underway.

An amazingly-light wood superstructure prevails above the ceiling of the main deck, a "balloon frame" construction which is inexpensive, compact and surprisingly sturdy. The deck-supporting joists run athwarth-ships, largely supported by a multitude of longitudinal thin wood partitions and at the extremities by stanchions extending down to the main deck, resting on brackets from the

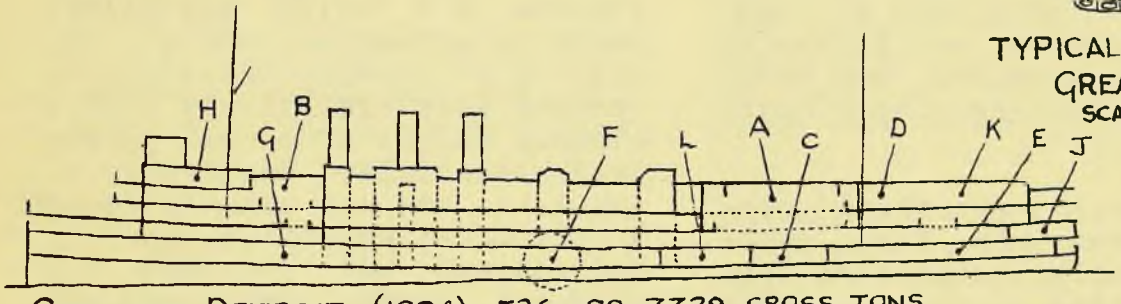


CITY OF DETROIT III (1912) 472 x 93, 6061 GROSS TONS



TYPICAL MIDSHIP SECTION
GREATER DETROIT
SCALE: 1" = 50'-0"

KEY:
1. OUTSIDE TIER OF STATEROOMS
2. CORRIDOR
3. INBOARD TIER OF STATEROOMS
4. GRAND SALON



GREATER DETROIT, (1924), 536 x 98, 7739 GROSS TONS
(GREATER BUFFALO SIMILAR)

hull. In the broad sheltered deck areas forward and astern, and in the wide lounges at the extremes of the Grand Salon, longitudinal steel "I" beams on posts support the decks above. The salon ceiling is spanned by arched wood members buttressed by side members terminating in the lateral walls of the flanking cabins, so that the salon itself is unobstructed by columns. The cellular nature of the cabins flanking the Grand Salon, and the diagonal sheathing of the lateral partitions reinforces the structure against wracking. While white pine was principally used for structural purposes, the public rooms and "parlor" staterooms were finished in fine woods like mahogany. The frail appearance of the superstructure is deceptive; although maintaining shape by virtue of the steel structure below, the wood structure has remained intact in collisions where supporting members have been knocked away below.

Safety is an important consideration in design. In some cases its enforcement lies beyond the realm of the designer, dependent upon the wisdom and watchfulness of the ship's officers and personnel. But the designer must provide them with effective instruments and aids to avoid danger or maintain order when trouble exists. Fire safety was maintained principally by detection and extinguishing devices, in addition to the structural precautions already mentioned. Sprinkler systems were introduced in all later ships, along with hydrant-hose systems and implements. Heat-sensitive alarms as in CITY OF DETROIT III located a fire according to established zones (with eight staterooms per zone) and sounded an alarm automatically to aid detection and to warn passengers in time to find safety. The successful fire safety record shows that none of the Kirby sidewheelers perished by fire when in service; some were destroyed only when laid up with inactive fire prevention systems. For the danger of collision, grounding or shipwreck the first defense was good seamanship, reinforced by proper aids to navigation as they became available in time. The sidewheeler is also parti-

cularly secure from sinking by collision in that the offending vessel must penetrate the steel main deck structure and overhanging guards before reaching the hull. Buoyancy is maintained in the event of collision or hull puncture by the localizing action of the watertight bulkhead chambers and the cellular double bottom. Finally, if the ship must be abandoned, lifeboats and liferafts are amply provided, and wireless and radio-telephone units can summon aid.

A frequently-recurring question concerns why Kirby chose an apparently antiquated form of propulsion -- the paddle wheel--in preference to the propeller which had come into general use. One cannot summarily answer that Kirby was an old man when he designed his greatest ships,and that in his attachment to familiar forms he resisted new ones; for throughout his career Kirby was receptive to new ideas, like the early "cruiser" sterns he applied to WASHINGTON IRVING in 1913 and GREATER DETROIT in 1924, long before they had come into general use. We know of several times when he considered them for this service, accepting them only in the two vessels he built for Long Island Sound service in 1913. Traditional influence cannot be discounted altogether, however, for the paddle wheel maintained an unbroken tradition in the fleets of the century - old Detroit and Cleveland Navigation Company. The paddle wheel was peculiarly adaptable to the Lake Erie service. It provided excellent maneuvrability in harbors and rivers at both ends of the run, cutting time off the schedule. Maneuvrability was sufficiently important to demand installation of bow rudders on the CITY OF CLEVELAND III and later ships. In regard to speed, all of the large sidewheelers were capable of maintaining at least twenty-one miles per hour when new. The paddlewheels operate more effectively in deeper water where the ship settles further into the water and the paddle floats bite deeper. Unlike a general cargo vessel a passenger-cargo ship can effectively operate within the draft variation limists at which the paddle wheel is effective, and the ship is usually designed to operate most effectively with a certain amount of cargo. Heavy seas potentially dangerous to sponsons are not usually found on the Lakes during the operating season, but although the steamers appear top-heavy and land-lubberly to seamen, they are capable of running through heavy seas to maintain a schedule when other ships have sought shelter. The paddle wheels provide stability when in action, and together with the rolling tanks they lessen the effect of rolling. The primary virtue of the paddle wheels--the added space they permit on their broad guards--has already been mentioned.

Many have compared these grand steamers to hotels, but the comparison is deficient. Few hotels have so many inside diversions, and none have a constant change of scenery outside. None have a built-in apparatus that can lull the traveller asleep in his berth so effectively as the steady beat of the paddle wheels. And no hotel is so ideally located that one may register in the evening, have a good dinner and a good night's sleep, and check out the following morning in the heart of town two hundred miles away.

There is no finer way to travel.

(Concluded in August issue)

How many of the large vessels will come into the lakes and how frequent the sailings will depend entirely upon the zeal and activity of various trade organizations and representatives. The business, if it is to be of any magnitude, must be drummed up by persistent effort. If goods are to be diverted from long established routes to a new all-water route, someone must acquaint the prospective shipper with the advantages of the new route. It can be assumed, too, that the operators of other means of transportation will do everything in their power to meet the competition of the St. Lawrence Seaway.

Detroit is in an enviable position to get a good share of the traffic that may use the waterway. For the past several years this city has been handling about one-third of the trade between the lakes and the oceans. The diversity and volume of goods manufactured in this area and shipped overseas augurs well for your future. But again I say, that not much will be accomplished simply by the provision of adequate facilities, important as they are, unless the traffic for which the facilities are designed is chased down and brought through this port.

Those few suggestions or admonitions about trade through the Seaway are offered from general observations, for I make no claim of being an expert on overseas trade. My main concern is the preservation of the present Great Lakes traffic in bulk commodities carried in United States vessels. The celebration of a century of lake shipping this year does not mean that all the problems of the industry have been settled. As the years roll by the problems may change but they are always with us and, like other facets of our economy, they seem to grow more complex.

One of our immediate problems arises from the changing sources of iron ore. During the last 100 years this nation has depended almost entirely upon ore from the Great Lakes region, but today things are different. New sources have been developed in the Quebec-Labrador region, in Africa and in South America. Last year some 15,000,000 tons of ore were imported into the United States and these imports will increase as the foreign sources are fully developed. Just a few years ago 85% of the ore used in this country came down the lakes. In 1954 that figure had been reduced to 80%.

The change in the supply pattern is not entirely the result of the depletion of resources from the Lake Superior region, in spite of all the talk we hear on that subject. This area has produced about 3,000,000,000 tons of ore since the first mines were opened and it has been reliably estimated that reserves of more than a billion tons of rich, minable ore still remain there.

And that is not all the available supply in the area. In the last few years steel companies have spent the better part of a billion dollars in developing taconite and jasper, the low-grade iron bearing rocks which previously were cast aside in the mining process. Today these rocks are beneficiated into concentrates containing more than 60% pure iron. Geologists estimate that there are in Minnesota alone reserves of crude ore sufficient to provide no less than 12 billion tons of rich concentrates and more millions will be added from Michigan.

So you can see that the Lake Superior reserves are ample. There is little doubt that these taconite and jasper concentrates will be produced and shipped in competition with foreign ores provided Michigan and Minnesota are realistic about the taxation of mining ventures.

In spite of the ample reserves in the Lake Superior region, however, Great Lakes vessel operators cannot find fault with the foresight of the steel companies in seeking and developing foreign sources of ore. Every ton of foreign ore used now means much more remaining in reserve in this country for times of great emergency.

However, we must not lose sight of the fact that the foreign ores, other than those from Canada, most probably will not be available in times of greatest need; that is, in times of war. Then we must depend upon ores which can be shipped over

protected waters in vessels immune to the activities of submarines and enemy raiders. This brings into focus perhaps the most difficult problem Great Lakes vessel owners will face in the years immediately ahead ---- that of keeping the fleet strong enough to move the enormous quantities of critical materials needed to support military action if, God forbid, another war should be necessary.

Opening of the St. Lawrence Seaway means larger vessels will come into the lakes from the ocean. Naturally, their owners will be looking for cargoes to keep them busy. There is very considerable water-bourne traffic between Canada and the United States which right now amounts to nearly 30,000,000 tons annually and, in the next few years, will increase to double that amount. This is international trade and as such is open to vessels of all nations. Just how U. S. ships can compete with foreign vessels, which can be built for 1/4 and operated for 1/3 the cost of our vessels, is far from clear at this time. In times of war when transportation of domestic and Canadian ores becomes so important, the question will be where to find the ships necessary for the trade. Great Lakes vessel operators can hardly be expected to keep in operation, or even to hold in reserve, vessels for which there are no profitable cargoes. Nor can new vessels be built in a hurry when the need arises because shipyards on the lakes undoubtedly will have lost their trained personnel, if, indeed, they have been able to continue in business. And yet, survival of this nation may depend upon the ability of the Great Lakes shipping industry to meet, perhaps without warning, a sudden and tremendous need for more and more bottoms to carry vital commodities.

I frankly admit that I do not have the answer to this problem, but I can assure you that it is receiving very serious consideration by shipping people. I am confident, too, that with an aroused public interest a satisfactory procedure can be worked out. It is well, though, that you people who are concerned with shipping and hold dear the continued welfare of our country should be acquainted with this matter.

It is a subject of such far-reaching importance that it merits the attention of every thoughtful American citizen. We must not permit our Great Lakes merchant marine to deteriorate. The vitality of the navigation artery through which the very lifeblood of our economy flows in peace and in war must be maintained--ready for any emergency.

I, for one, will not believe that in this day and age we do not have the counterparts of Harvey, Livingstone and the other famous persons of the past. Just as they met problems of their days, so shall we find the means of maintaining a strong, progressive merchant marine on the Great Lakes and continue to provide safe and economical transportation over the wonderful "Inland Seas." The national economy needs such transportation; the national defense demands it. If we all pull together such transportation will be available for the next 100 years and longer.

MUSEUM NOTES

Motive Power and Marine Equipment.

One of the principal attractions at the Museum of Great Lakes History during this summer is an exhibit on marine engines, auxilliaries, vessel structural details, and other items involving the application of engineering know-how.

Much of this material has been in the Department of Naval Architecture and Marine Engineering at U. of M.at Ann Arbor, where it was used for the purpose of demonstrating the principals. Some of the items are the result of painstaking work on the part of students. Others are the work of master craftsmen from elswhere. They are all interesting and instructive, and some of them even beautiful.

We are indebted to Professor L.A. Baier and Mr.Harry Benford for these objects which will remain on exhibit in the museum until after Labor Day.

Other items will be added to this exhibit as they become available.