

THE ROMANCE OF THE GREAT LAKES

A FACT-STORY OF THE MEN THAT RULE THEM AND THE SHIPS THAT SAIL THEM

By J. O. CURWOOD

I. THE BUILDING OF THE SHIPS



The little daughter of B. F. Jones christening the 10,000-ton steamer named for her father

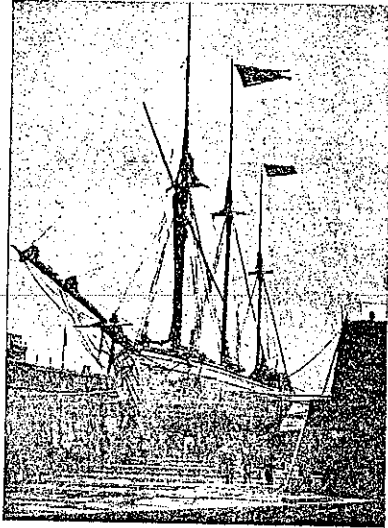
NOT long ago I was on a lake freighter pounding her way up Huron on the "thousand mile highway" that leads to Duluth. Beside me was a man who had climbed from poverty to millions. He was

riding in his own ship. His interests burned ten thousand tons of coal a year. He was one of the ore kings of the north—as rough as the iron he dug, filled to the brim with enthusiasm and animal energy of the lake breed; a man who had helped to make the lakes what they are, as scores of others like him have done. Before and behind us there trailed the smoke of a dozen of the steel leviathans of the inland seas. I had asked him a question, and there was the fire of a great pride in his eyes when he answered.

"It would make a nation by itself—this lake country!" he said. "And it would be America. It's America from Buffalo to Duluth, every inch of it, and the people who are in it are Americans. That's American smoke you see off there, and American ships are making it; they're run by a thousand or more American captains, and they're Americans fore 'n' aft, too. We've got only

eight states along the lakes, but if we'd secede to-morrow the world would find us the heart and power of the nation. That's how American we are!"

This is the patriotism one finds in the lake country, from the roaring furnaces of the east to the vast ore beds of Minnesota. It is representative of the spirit that rules the inland seas; it is this spirit that has built an empire, and is building a vaster empire to-day, along the edges of the world's greatest fresh water highways.



A SURVIVOR OF THE OLD DAYS IN DRY-DOCK

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Photo by Frank Scott Clark, Detroit

ANTONIO C. FESSANO

President of the Great Lakes Engineering Works, one of the greatest ship-builders in the world

With more than thirty-four millions of people living in the states bordering on them, possessing one-third of the total tonnage of North America, and saving to the people of the United States five hundred million dollars each year, or six dollars for every man, woman and child in the country, one of the most inexplicable mysteries of the century exists in the fact that the great lakes of to-day are as little known to the vast majority of Americans as they were a quarter of a century ago. While revolutions have been working in almost all lines of industry, while states have been made and cities born, America's great inland seas have remained unwatched and unknown except by a comparative few.

Upon them have grown the greatest industries of the nation, yet the national ignorance concerning them can hardly find a parallel in history. Were they to disappear to-morrow the industrial supremacy of the republic would receive a blow from which it could never recover. The steel industry, as a dominant commercial factor, would almost cease to exist. One-half of the total population of the country would be seriously affected, and America would fall far behind in the commercial race of the nations.

Notwithstanding these things, not one person in ten knows what the great lakes stand for to-day. While a thousand writers have sung of the greatness and romance of the watery wastes that



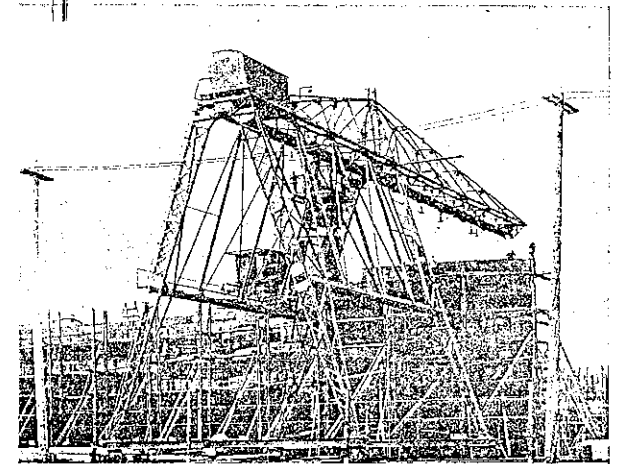
HARRY COULEBY

Probably no other water transportation company in the world owns a fleet as large as that directed by Mr. Couleby. There are one hundred and ten vessels under his control on the Great Lakes.

encircle continents, none has told of those "vast unsalted seas" which mean more to eighty-five millions of Americans than any one of the five oceans. What has been written has been for those who find their commerce upon them; for the owners of ships and the masters of men; for the kings of ore and grain—a little statistical matter here and a little there, but nothing for the millions who are not at hand to feel the pulse of traffic or to see the great commercial pageant as it passes before their eyes. Even of those who live in the states bordering the great lakes but few know that these fresh water highways of traffic possess the greatest port in the world, that upon them floats the

largest single fleet of ships in existence, that in their great construction yards shipbuilding has been reduced to a science as nowhere else on earth, and that in their life the elements of romance and tragedy play their parts even as on the big oceans that divide hemispheres.

In a small way the general lack of knowledge of the great lakes is excusable, for their development has been so rapid and so stupendous that people have not yet grasped its significance. Within the last quarter of a century or less they have become the industrial magnets of the nation. Along their shores have sprung up our greatest cities, with populations increasing more rapidly than those of New York, Boston,



THE TRAVELING CRANE, THE WORKMAN THAT BUILDS THE SHIP

With its great steel arm it lifts tons of iron and steel, the component parts of the ship, to place them with perfect accuracy at the point where they are needed. Only two men are required to direct this huge mechanism in its wonderful work.

Philadelphia or San Francisco. In the eight states which have ports on them is more than one-third of the total population of the North American continent. Along their three thousand three hundred and eighty-five miles of United States shore line will be built this year more than one-half of the tonnage constructed in America, and over their highways will travel seven times as much freight as all the nations of the world carried through the Suez canal in 1907.

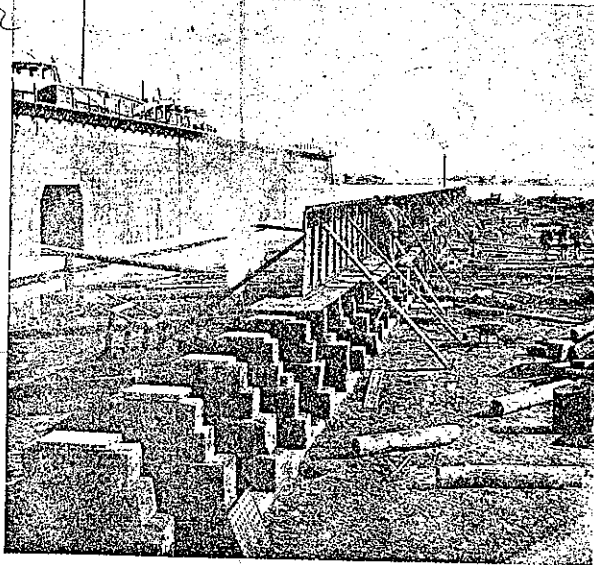
Just what this means it is hard for one to conceive when told only in figures. Perhaps in no better way can the immensity and importance of their traffic be described than by showing briefly one of the ways in which they earned a "dividend" of six dollars for every person living in the United States last year. This immense "dividend" did not go into

the coffers of corporations, but actually, though indirectly, into the pockets of the people. For instance, it costs a little over ten cents to ship a bushel of grain from Chicago to New York by rail, and only five and one-half cents by way of the lakes and the Erie canal. This saving on transportation of five cents a bushel is divided between the producing farmer and the consuming public. It is a "nickel on which no trust can place its hands"—and this nickel, when multiplied by the number of bushels of grain produced in Ohio, Illinois, Indiana, Wisconsin, Iowa and Michigan, reaches the stupendous figure of ninety-eight million dollars! In the matter of iron ore the saving is still greater. Were it not for this saving all steel necessities, from rails to common kitchen forks, would advance tremendously in price, and the United States would not be able

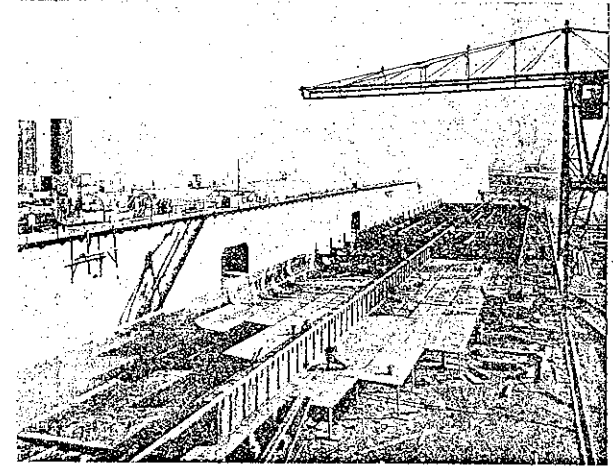
to control the steel markets of the world. To-day you can ship a ton of ore from Duluth to Ashtabula, Conneaut or Cleveland, a distance of nearly one thousand miles, for ten cents less than you can send by rail that same ton from one of these ports to Pittsburg, a distance of only one hundred and thirty miles. In other words, while it costs eighty cents to send a ton of ore from the vast ranges of the north to an Erie port by ship, the rail rate is just seven times greater, which means that the vessels of the great lakes saved last year on ore alone no less than one hundred and seventy-three million dollars!

In another way than in this annual saving in cost of transportation are the

lakes fighting a great and almost unappreciated battle for the people. They are to-day the country's greatest safeguard against excessive railroad charges. They are the governors of the nation's internal commerce, and will be for all time to come. There is not a state north of the Ohio River and east of the Rocky Mountains which is not affected by their cheap transportation, and the day is not distant when hundreds of millions of bushels of grain raised in the Canadian west will go to the seaboard by way of the lake and canal route. At the present time there are two hundred thousand miles of railroad in the United States, constructed and equipped at a cost of twelve billion, five hundred thousand



I. THE FIRST STEP IN THE BUILDING OF A STEEL FREIGHTER FOR THE GREAT LAKES TRAFFIC—LAYING THE KEEL BLOCKS



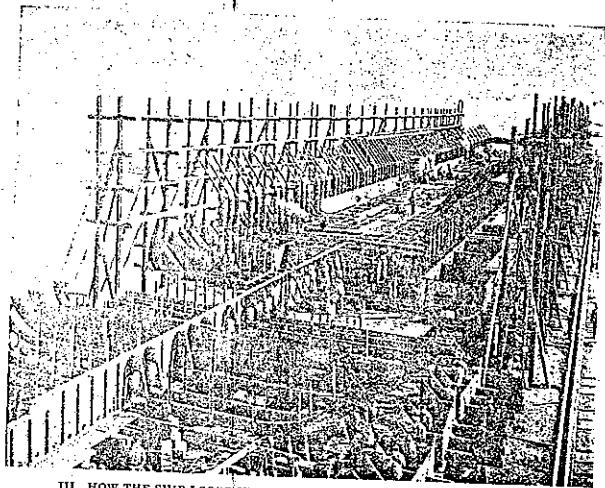
II. THE BOTTOM PLATES OF THE SHIP ARE NEXT LAID

dollars; yet, on the basis of ton miles, the traffic on the lakes will this year be one-sixth as great as on all the roads in the country.

These facts are given here to show in a small way the gigantic part the great lakes are playing to-day in the industrial progress of the nation. Yet, as paradoxical as it may seem, the nation itself has hardly recognized the truth. The "helping" hand that the government has reached out has been pathetically weak. In history to come it must be recorded that great men—men of brain and brawn and courage—have "built up" the lakes, and not the government. And these men, scores and hundreds of them, are continuing the work to-day. Since the dawn of independence to the present time the United States has expended for all harbors and waterways on the great lakes above the Niagara Falls less than ninety million dollars, yet each year this same government hands out one hun-

dred and forty million dollars to the army and navy and one hundred and twenty-seven million dollars to the postal service! In the face of this is the astonishing fact that last year the saving in freight rates on Lake Superior commerce alone exceeded by a million dollars the total sum expended by the government on the inland seas since the day the first ship was launched upon them!

In this building of the "greater empire" of the lake country there is now no rest. Wherever ships are built the stocks are filled. From the uttermost end of Erie to the shipyards of the north—in Buffalo, Lorain, Cleveland, Toledo, Detroit, Bay City, West Superior, Chicago and Manitowoc—the making of American ships is being rushed as never before. In the larger yards powerful arc-light systems allow of work by night as well as by day. The roaring of forges, the hammering of steel, the tumult of laboring men and the rumbling of giant



III. HOW THE SHIP LOOKS SIX WEEKS AFTER THE LAYING OF THE KEEL

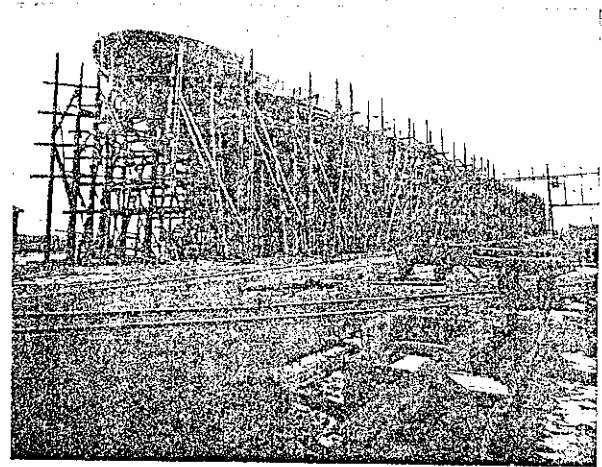
cranes are seldom stilled. With almost magical quickness a ten-thousand-ton monster of steel rises on the stocks—and is gone. Another takes its place, and even as they follow one another into the sea, racing to fill demands, there still comes the cry from a hundred quarters: "Ships—ships—we want more ships!"

If it were possible to have one hundred new ships placed suddenly on the market to-morrow, there would be a rush of vesselmen from every big port on the lakes, and even at that, in the words of one shipbuilder, "Only a small part of the present demand would be filled, and the shipyards would still be rushed beyond their capacity."

This year very nearly three-fifths of the total ship tonnage built in the United States will be constructed in these busy yards of the great lakes. As early as January they were choked with orders for 1907 delivery, and even that early a number of them had orders running well

into 1908. The 1907 schedule was made up of a total of seventy-four vessels, including forty-eight bulk freighters, four passenger steamers, four package freighters, five tugs, two dredges, two car ferries, five scows, three hopper barges and one quarantine steamer. Taking the forty-eight bulk freighters alone, one gets a fair idea of the immensity of lake traffic. They are but a drop in the bucket—a single year's contribution to the great argosies of the inland seas, yet these forty-eight ships have a carrying capacity of three hundred and fifty thousand tons. In other words, within four days after loading at Duluth they could be discharging this mountain of ore at Erie ports. To carry this same "cargo" by rail would require over three hundred trains of thirty cars each, or a single train seventy miles in length!

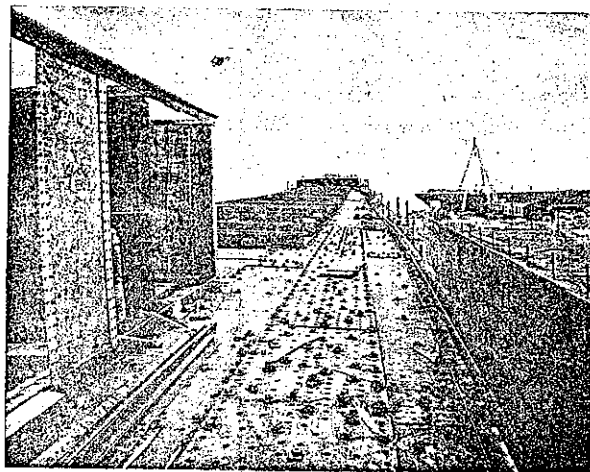
But this is not particularly astonishing when one is studying the commerce



IV. THE SHIP IN HER "STOCKS," READY TO BE "CLEARED" FOR LAUNCHING

of the great lakes. True, it represents considerably over a half of the tonnage built in the United States during 1907, but even at that it "isn't much to shout about," as one builder of ships said to me. These men of the lakes never express surprise at the wonders of the inland seas. They are used to them. They meet with them every day of their lives. On either coast these same "wonders" would be made much of. But the lake breed is not the breed that boasts—unless you drag opinions from them. Why, over in Cleveland there is one man who directs the destinies of twice as many ships as the forty-eight mentioned above—a single commercial navy that can move six hundred and forty-eight thousand tons of ore in one trip, or enough to "make up" a train of sixteen thousand two hundred cars, which train would be one hundred and twenty miles in length! This man's name is Coulby—Harry Coulby, president and general manager

of the Pittsburgh Steamship Company, lake arm of the United States Steel Corporation. There was a time when Coulby was a poor mechanic, working his ten hours a day. Then he developed "talent" and went into a shipyard draughting yard. Now he is undeniably the king of lake shipping. His word is law in the directing of one hundred and ten vessels, the greatest fleet in the world; and it is law in other ways, for it is common talk in marine circles that he (with the trust behind him) is responsible for nearly every important move on the great lakes. He is the eye and the ear and the mouth of the trust, and it is the trust that practically fixes the ore rates for each season, and does other things of interest. If these ships of Coulby's were placed end to end they would reach a distance of eight miles! During the eight months of lake navigation they can transport as much freight over the "thousand-mile highway" as the combined fleets of all



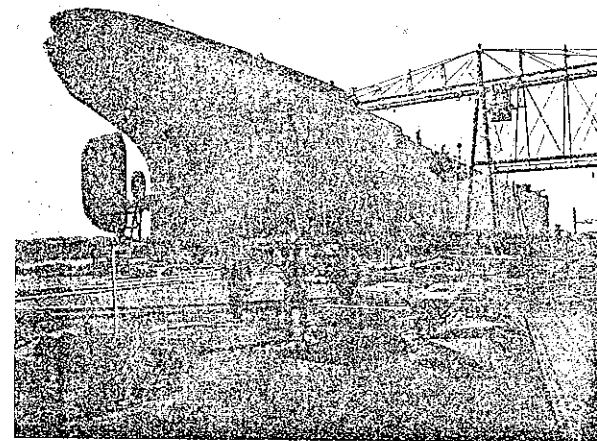
V. NO, NOT THE BOARD-WALK AT ATLANTIC CITY

Only a few of the 800,000 rivets and 1,600,000 rivet holes which go into the making of a ten-thousand-ton Leviathan

nations take through the Suez canal in twelve! Yet who has heard of Coulby? How many know of the gigantic fleet he controls? A few thousand lake people, and that is all. A magnificent illustration is this of the national ignorance concerning the great lakes.

And Coulby is only one of many. The fleet he controls is only one of many. The lakes breed great men—and they breed great fleets. How many of our millions have heard of J. C. Gilchrist and the Gilchrist fleet?—a man in one way unique in the marine history of the world, and a fleet which, if plying between New York and Liverpool, would be one of the present-day sensations. Gilchrist, like Coulby, worked up from the "depths," and to-day, as the head of the Gilchrist Transportation Company, he holds down seventy-five distinct jobs! Seventy-five owners have placed seventy-five ships under his generalship, and

from each he receives a salary of one thousand dollars a season, or a total of seventy-five thousand dollars. He is one of the Napoleons of the lakes. He handles ships and men like a magician; his holds are never empty; his dividends are always large. There was a day when one thousand dollars looked like a fortune to Gilchrist, and when eight dollars a week was an income of which he was mightily proud. That was when, from away down in Michigan, he turned his face northward toward the lakes, filled with big ambition and a desire for adventure, but with little more than what he carried on his back. He got work as a sailor before the mast at forty dollars a month and board. From there he graduated to "bell hop" on a passenger steamer, and continued to graduate until the owners of great ships began to see in him those things which they themselves did not possess, and so handed over to



VI. A MONSTER OF STEEL AND IRON, ITS DEAD WEIGHT 9,500,000 POUNDS READY FOR LAUNCHING

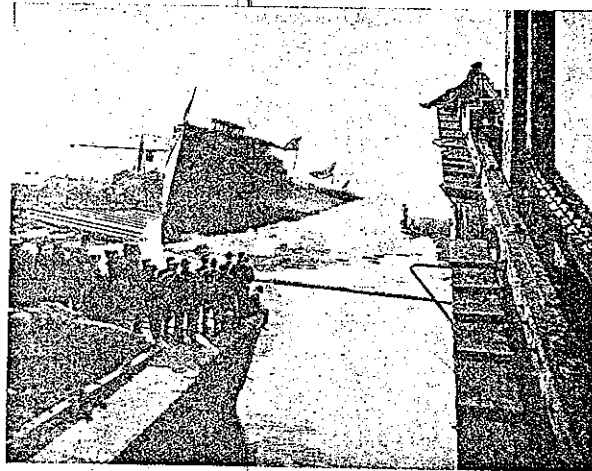
him the destiny of the second greatest fleet of freight carriers in the world.

Such men as Coulby and Gilchrist and the ships they have would make the fame of any nation on the high seas. They, and men like Captain John Mitchell, who is the head of a fleet of twenty ships, J. H. Sheadle and G. L. Douglas, are of the kind that are choking the great lakes-shipyards with orders, while along the ocean-seaboards stocks are rotting and builders of ocean marine are starving. Cleveland claims the headquarters of both of these immense fleets—and Cleveland is fortunate in many other things. She counts her strong men of the lakes by the score. She is a great owner of ships, a great buyer of ships, and a great builder.

But when it comes to the production of "bottoms" Cleveland and all other lake cities must give way to Detroit. There was a day when Detroit was one

of the important ports of the lakes, but that day is long past. Now she is the center of shipbuilding. Last year there was built at Detroit more tonnage than in any other city in the United States. Of the seventy-four vessels scheduled for launchings in 1907, twenty-one of the largest took their first dip in or very near Detroit. The tonnage of these vessels aggregated nearly one-half of the total tonnage of the forty-eight freighters constructed for the season's delivery.

It has been said that Detroit is a great shipbuilding city by accident, and there is a good deal of truth in the assertion. Five years ago the American Shipbuilding Company, the greatest trust of its kind in the world, held undisputed sway over the lakes. It knew no competition. No combination of capital had dared to grapple with it. With eleven huge construction yards strung along the lakes between Buffalo, Duluth and Chicago, it



VII. THE LAUNCHING OF A NEW LAKE-STEAMER

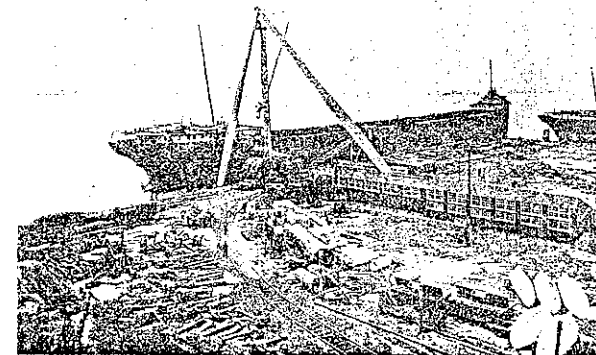
held a monopoly of the shipbuilding industry. It was at this time that one of the country's great industrial generals sprang up in Detroit. Then he was practically unknown; now, as a leader and master of men, he is known in every city of this country where iron and steel are used. His name is Antonio C. Pessano. Detroit must always be proud of this man. He must count in the history of her future greatness, and always her citizens should be thankful that he and his indomitable courage did not first appear in Buffalo, Cleveland or some other lake city. Mr. Pessano's ambition was to build at Detroit the most modern shipbuilding plant in the world. Some people laughed at him. Others pitied him. The trust twiddled its fingers, so to speak, and smiled. In the face of it all Mr. Pessano won the confidence of such Gibraltors of industrial finance as George H. Russel, Colonel Frank J. Hecker, Joseph Boyer, William G. Ma-

ther, Henry B. Ledyard and others—won it to the extent of raising one million five hundred thousand dollars, with which he built the greatest shipbuilding yards on the lakes, and which have developed since then into the greatest in America, employing more than three thousand men.

Mr. Pessano's shipbuilding rival is the president of the trust. His name is Wallace, "son-of-Bob Wallace, the elder," lake men will tell you, for Robert Wallace, the father, was a shipbuilder himself for a great many years. He is very proud of his boy.

"I had three boys," said he. "Two of 'em went to college, but Jim *he* wanted an education, so he didn't take much stock in books, but got out among men. That was what made Jim!"

To-day it is "Jim," or James C. Wallace, of Cleveland, as he is better known, who is the champion shipbuilder of the world. He is president of the American



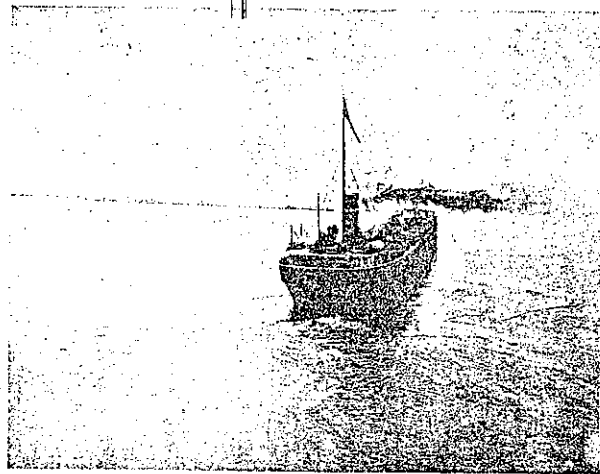
VIII. AFTER BEING LAUNCHED, THE SHIP IS FITTED WITH ENGINES AND BOILERS. THESE ARE LIFTED IN BY A HUGE CRANE AND BLOCK

The photograph is of the steamer *Thomas F. Cole*, the largest ship on the Lakes—605 feet long, 11,200 tons displacement

Shipbuilding Company. Probably in no other part of the world is the romantic more largely associated with modern progress than on the great lakes, and in these two men—Wallace and Pessano—it is revealed in a singular way. Together they govern shipbuilding on the inland seas. Last year only two ships were built outside of their yards on the American side. Both of these great men began in the dinner-pail brigade. They worked in overalls and grease, not for "experience," but because they had to; they pulled and heaved with common laborers; they rose, step by step, from the lowest ranks—and to-day, monuments to courage and ambition, they are the earth's two greatest builders of ships. In a novel such characters would be declared almost impossible. But the lakes breed such as these. There are others whose careers have been even more remarkable, and I will tell of these later—

men whose rise from poverty to wealth and power rivals in romance and adventure the most glowing stories of the Goulds and Astors.

Mr. Pessano, "the independent," does not entirely monopolize Detroit shipbuilding, for Wallace was there ahead of him with one of the trust's big yards, which is known under the name of the Detroit Shipbuilding Company. It materially assists in the city's greatness, and will continue to do so more and more each year. During 1907 it launched six big freighters in Detroit, and that city, together with eight other lake cities, heaps blessings on the trust. For the trust is most generous and unprejudiced in its distribution of yards. It builds ships in one huge yard at Superior, in two at Chicago, two at Cleveland, and in one at Lorain, Buffalo, Wyandotte, Detroit, Bay City and Milwaukee. Among these cities it has distributed over fifteen



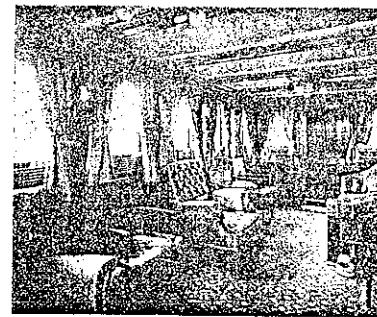
IX. HER FIRST TRIP—OFF FOR THE ORE REGIONS OF THE NORTH

million dollars in capital, and it is estimated that it affords a livelihood for between fifty and sixty thousand people. In 1907 the different yards planned for the building of thirty-six freighters, with a tonnage capacity of three hundred thousand, more than twice that of the next two largest shipbuilding concerns in the world combined—those of Doxford and Sons, of Sunderland, and Harland and Wolff, of Belfast, whose aggregate tonnage was not over one hundred and fifty thousand. The astonishing rate at which lake shipbuilding is increasing is shown in the fact that the trust's production for 1907 was twice that of 1905, which was 117,482 tons, divided among twenty vessels. A new factor has come into lake shipbuilding which will count considerably in the future. This is the Toledo Shipbuilding Company, which purchased the Craig yards in 1906, and which has expended a great deal of money since that time in

perfecting its plant, until now it has one of the most modern construction yards on the lakes.

But even at the present tremendous rate of production many vessel owners are asking, "What are we going to do? We can't get ships—and the ore and grain trade is crowding us now," which is manifestly true. There are a large number of men with money in their pockets who would willingly pay a bonus if ships could be delivered to them tomorrow—but many of them will have to wait a year, and perhaps two, before the vessels they want are off the stocks. In fact, so pressing is the demand for ships that some owners are now beginning to look abroad for them. At the present time two big freighters are being built for Canadian owners on the Clyde, five steamers are being built by MacMillan and Son of Dumbarton, and four others by a Glasgow firm.

It would seem that this activity in



THE HEAVILY UPHOLSTERED OBSERVATION ROOM ON THE LAKE STEAMER WILLIAM G. MATHER

both lake and foreign shipyards must soon supply demands, but such will not be the case for many years to come. Lake men can't see the end of their prosperity. They are in the midst of fortune-making days on the inland seas. To-day one of the steel ships of the lakes is as good as a gold mine, and will continue to be so for a quarter of a century to come. The shipyards are growing each year, but the increase of tonnage is outstripping them, and until cargo and ships are more evenly balanced the owners of vessels on the great lakes must be counted among the most fortunate men in the world.

It is only natural that these conditions should have developed shipbuilding on the lakes to a science unparalleled in any other part of the earth. I once had the good fortune to talk with a shipbuilder from the Clyde. He had heard much of the lakes. He had built ships for them. He had heard of the wonders of shipbuilding in their cities. So he had come across to see for himself.

"I had thought that your ships would not compare with ours," he said. "You

build them so quickly that I thought they would surely be inferior to those of the Clyde. But they are the best in the world; I will say that—the best in the world, and you build them like magicians! You lay their keels to-day—to-morrow they are gone!"

This is almost true. A ten-thousand-ton leviathan of the lakes can now be built almost as quickly as carpenters can put up an eight-room house. Any one of several shipyards can get out one of these monsters of marine commerce within ninety days, and the record stands with a ten-thousand-ton vessel that was launched fifty-three days after her keel

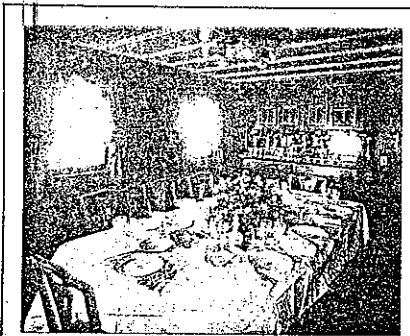
was laid! One hardly realizes what this means until he knows of a few of the things that go into the construction of such a vessel. Take the steamer *Thomas F. Cole*, for instance, launched early in 1907 by the Great Lakes Engineering Works. This vessel is the giant of the lakes, and is six hundred and five feet and five inches long. She is fifty-eight feet beam and thirty-two feet deep, and in a single trip can carry as great a load as three hundred freight cars, or twelve thousand tons. In her are nine million five hundred thousand pounds of iron and steel! What does this mean? It means that if every man, woman and child in Indiana, Michigan, Wisconsin and Minnesota were to join in carrying this material to a certain place, each person would have to transport one pound. In the mass would be eight hundred thousand rivets, ranging in size from five-eighths to one and one-eighth inches in diameter.

One who is investigating lake shipbuilding for the first time will be astonished to discover that the modern freighter is in many ways a huge private

yacht. They are almost without exception owned by men of wealth, and their cabins are fitted out even more luxuriously than those of passenger boats, for while these latter are intended for the use of the public, the passenger accommodations of freighters are planned for the friends and families of the owners. So above the deck which conceals ten thousand tons of ore the vessel may be a floating palace. The keenest rivalry exists between owners as to who shall possess the finest ships, and fortunes are expended in the fittings of cabins alone. Nothing that money can secure is omitted.

In the words of a builder: "The modern freighter is like a modern hotel—only much more luxuriously furnished." There is an electric light system throughout the ship; the cabins are equipped with telephones; there is steam heat; there are machines for the making of artificial ice, kitchens with the latest electrical cooking devices, elegantly appointed dining-rooms; there are state-rooms which are like the apartments in a palace, and other things which one would not expect to see beyond the black and forbidding steel walls of these fortune-makers of the lakes.

With the first peep into modern methods one realizes that the romantic shipbuilding days of old are gone. No longer does the shape, beauty and speed of a vessel depend upon the eyes and hands of the men who are actually putting it together. For the ship of to-day is built in the engineering offices. In the draughting-room skilled men lay out the plans and make the models for a ship just as an architect does for a house, and when these plans are done they go to a great building which reminds one of a



THE CAPTAIN'S DINING ROOM IN THE TEN-THOUSAND-TON STEAMER J. H. SHEADLE ON THE OCCASION OF A VISIT FROM THE OWNER

vast dance hall, and which is known as the "mold loft." Seemingly the place is not used. Yet at the very moment you are looking about, wondering what this vacancy has to do with shipbuilding, you are walking on the decks of a ship. All about upon the floor, if you notice carefully, you will see hundreds and thousands of lines, and every one of these lines represents a line of the freighter which within three or four months will be taking her trial trip. Here upon the floor is drawn the "line ship" in exactly the same size as the vessel which is to be built. Over certain sections of this "line ship" men place very thin pieces of bass wood, which they frame together in the identical size and shape of the ship's plates. By the use of these molds, or templates, the workman can see just where the rivet holes should be, and wherever a rivet is to go he puts a little spot of paint. These model plates are then numbered and sent to the "plate department," where the real sheets of steel are made to conform with them and where the one million five hundred thousand or more rivet holes are punched.

With the plates ready the real ship quickly takes size and form.

Some morning a little army of men begins work where to the ordinary observer there is nothing but piles of steel and big timbers. From a distance the scene reminds one of a partly depleted lumber yard. On one side of this, and within a few yards of the water of a slip, are first set up with mathematical accuracy a number of square timbers called "keel blocks." Upon these blocks will rest the bottom of the ship, and from them to the water's edge run long shelving timbers, or "ways," down which she will slide when ready for launching.

Children frequently play with blocks which, when placed together according to the numbers on them, form a map of the United States. This is modern shipbuilding—in a way. It is on the same idea. There is a proper place for every steel plate in the yards, and the numbers on them are what locate them in the ship. A giant crane runs overhead, reaches down, seizes a certain plate, rumbles back, to hover for a moment over the growing "floor," lowers its burden—and the iron workers do the rest. Within a few days work has reached a point where you begin to wonder, and for the first time, perhaps, you realize what an intricate affair a great ship really is, and what precautions are taken to keep it from sinking in collision or storm. You begin to see that a lake freighter is what might be described as two ships, one built within the other. As the vessel increases in size, as the sides of it, as well as the bottom, are put together, there are two little armies of men at work—one on the outer ship and one on the inner. From the bottom and sides of the first steel shell of the ship there extend upward and inward heavy steel supports, upon which are laid the plates of the "inner ship." In the space between these two walls will be carried water ballast.

The chambers into which it is divided are the life-preservers of the vessel. A dozen holes may be punched into her, but just as long as only this outer and protecting ship suffers, and the inner ship is not perforated, the carrier and her ten-thousand-ton cargo will keep afloat.

When the construction of the vessel has reached a point where men can work on the inner as well as the outer hull, it is not uncommon for six hundred to eight hundred workmen to be engaged on her at one time. Frequently as high as one hundred gangs of riveters, of four men each, are at work simultaneously, and at such times the pounding of the automatic riveting machines sounds at the distance of half a mile like a battery of gattling guns in action. So the work continues until every plate is in place and the vessel is ready for launching, which is the most exciting moment in the career of the ship—unless at some future day she meets a tragic end at sea. One by one the blocks which have been placed under her bottom are removed, until only two remain, one at each end. Then, at the last moment, these two are pulled away simultaneously, and the steel monster slides sidewise down the greased ways until, with a thunderous crash of water, she plunges into her native element.

Thus ends the building of the ship, with the exception of what is known as her "deck work," the fitting of her luxurious cabins, the placing of her engines, and a score of other things which are done after she is afloat. She is now a "carrier" of the lakes. A little longer and captain and crew take possession of her, clouds of bituminous smoke rise from her funnels, and with flying pennants and screaming whistles she turns her nose into the great highway that leads a thousand miles into the North—to the land of the ore kings.

[Mr. Curwood's next article will be entitled "What the Ships Carry"]