The Great Storm of 1913: Up Close & Personal

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INTRODUCTION

Don't be misled by that "up close & personal" claim. The storm occurred several years before I came into being, but what I report here is inspired by letters written by two of my uncles describing what they went through in the storm. Although having grown up on a farm, the young men wrote with some eloquence, and were well enough bred to write faithfully to their widowed mother. (Their letters are now in the University of Michigan's Bentley Historical Library.)

The storm was brought on by a unique combination of atmospheric conditions that included a major low pressure system moving north across the Appalachians, and a Lake Superior gale moving south and east. The overall result was blinding snow with winds gusting perhaps as high as 90 mph throughout much of the Great Lakes region. The effect on shipping was catastrophic. Some 250 lives were lost as the storm sent ten ships, one barge, and a lightship to the bottom, while leaving 28 ships or barges firmly aground.

One of the uncles, Earl Rattray, was an assistant engineer on the steamer *Cornell*, a conventional ore carrier of the Pittsburgh Steamship Company (now U.S. Steel's Great Lakes Fleet). His ship was turned back by the storm while initially upbound in ballast on Lake Superior. Having barely survived, the heavily battered ship was sent down to Toledo for repairs.

Here are selected, slightly edited, passages from two letters he wrote his mother.

Toledo, Ohio
November 18, 1913

My Dear Mother,

Well it sure has been some time since I've written you or anyone else for that matter. There were sixteen ships and nearly 300 lives lost and the *Cornell* rode the whole thing out, and came to the shipyard under her own steam. She is greatly disfigured but still in the ring. They say it was the worst storm that ever swept the lakes during the sailing season, and I believe it. I know several of the boys who went down, and I tell you I've got a kid brother with all kinds of brains, as the *Hydrus* was lost with all hands. [Earl refers to a half brother, Allen McRae,

who quit that particular ship shortly before she headed out into the storm.] The Lord surely was good to us this time. The *Argus, Hydrus, Price, Regina,* and *Carruthers* were all lost with all hands . . . and I'm satisfied if I never get out in another like it. I've spent the last week trying to forget it.

As ever,
Earl
S.S. Cornell

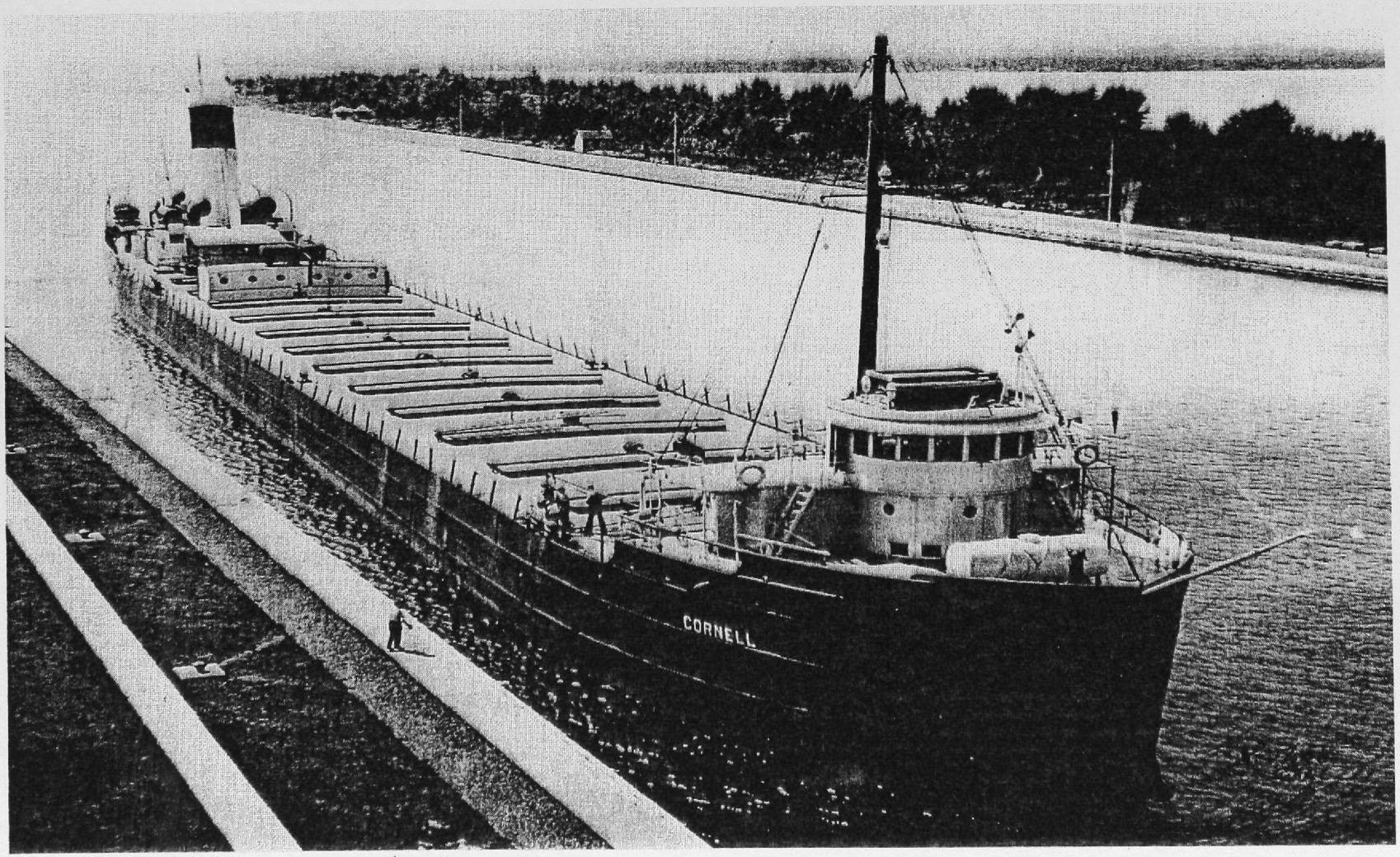
* * * *

Earl Rattray

Toledo, Ohio
Nov. 24, 1913

My dear Mother,

I don't know whether I can get a set of papers with account of the storm . . . [but] you can certainly believe most anything you hear about the wrecked condition of the *Cornell.* We've got our smoke stack yet, but that's about all there was left on deck, and there certainly was no boat any nearer gone than we are and came through. We're nearly broke in two, anchors gone, and windlass a



Steamer *Cornell*
(Photo from collection of K. E. Thro)

Built in 1902 in South Chicago; owned by Pittsburgh S. S. Co.; Length: 454 ft; Beam: 50.2 ft; Depth: 24.5 ft;
Powered by quadruple expansion steam engine.

wreck. Houses stove in, furniture wrecked and just a cripple from stem to stern, but we're all here.

We had our backs to the wall for 72 hours and expected that almost every hour would be the last. But, with one exception, every man fought gamely and along toward the last we began to feel as though we wished she would go. Seventy two hours without sleep and practically without food and always under that awful strain. Sort of makes a man feel different about going, but we fought just as hard Monday as we did Saturday. In fact harder Monday morning. The house went in and Jack Kittell, the first assistant, said "Goodbye, kiddies" – he has a boy 10 and girl 6 – and he was thinking of them. We all thought she was foundering – the Chief, the oiler and myself just looked at each other for about ten seconds, then each of us went to our work again just as though nothing had happened and I know they all of them felt just as I did about it – that it was the end.

As soon as things began to look as though we were going to get the water out of the engine room again, I went up and gathered all the dry clothes I could find and brought them into the engine room. Lawrence Kittell and I picked out what we wanted and I distributed the remainder among the firemen and deck hands while we all prepared to make a hasty exit in case she shipped another. But we fought it out and at 1 a.m. we dropped anchor in the Soo River and locked down after breakfast and lay to at the Government piers and took a 24-hour rest. The only anchor we had left was the small one that she used carry aft, and we attached it to one of our deck cables and used that. Both anchors and 180 fathoms of chain having been left off Point Crisp.

Allen sure was the lucky kid. Those poor fellows on the *Hydrus* never even got one man ashore to tell the tale.

Your loving son,
Earl

* * * *

Another uncle, Gordon Rattray, was an assistant engineer in the whaleback *Henry Cort*, which came through the storm with flying colors – in contrast to his brother's *Cornell.* During the storm the *Cort* was upbound on Lake Superior with coal for (I presume) Duluth and orders to take on iron ore for Ashtabula. After surviving the storm, plans were changed, and she carried ore to Milwaukee, and then laid up in Chicago. Here are lightly edited extracts from his letter to his mother:

Lake Huron
Nov. 20, 1913

My dear Mother,

. . . We got all that was coming to us last trip in the storm although we were in no danger at any time. We were having the time of our lives taking pictures, the only trouble was it was not half bad enough. The pig [slang for a whaleback because the stem looked like a pig's snout] sure was some iceberg, though, when she reached the harbor, but a lively little iceberg, believe me. One rail all washed overboard, our head and sidelights were carried away, and in fact every thing that could get away went, and it would have been as much as a man's life was worth to try to go across her decks; but nobody tried and she rode it out like a fish. I would just as soon start for the north pole in the *Cort*.

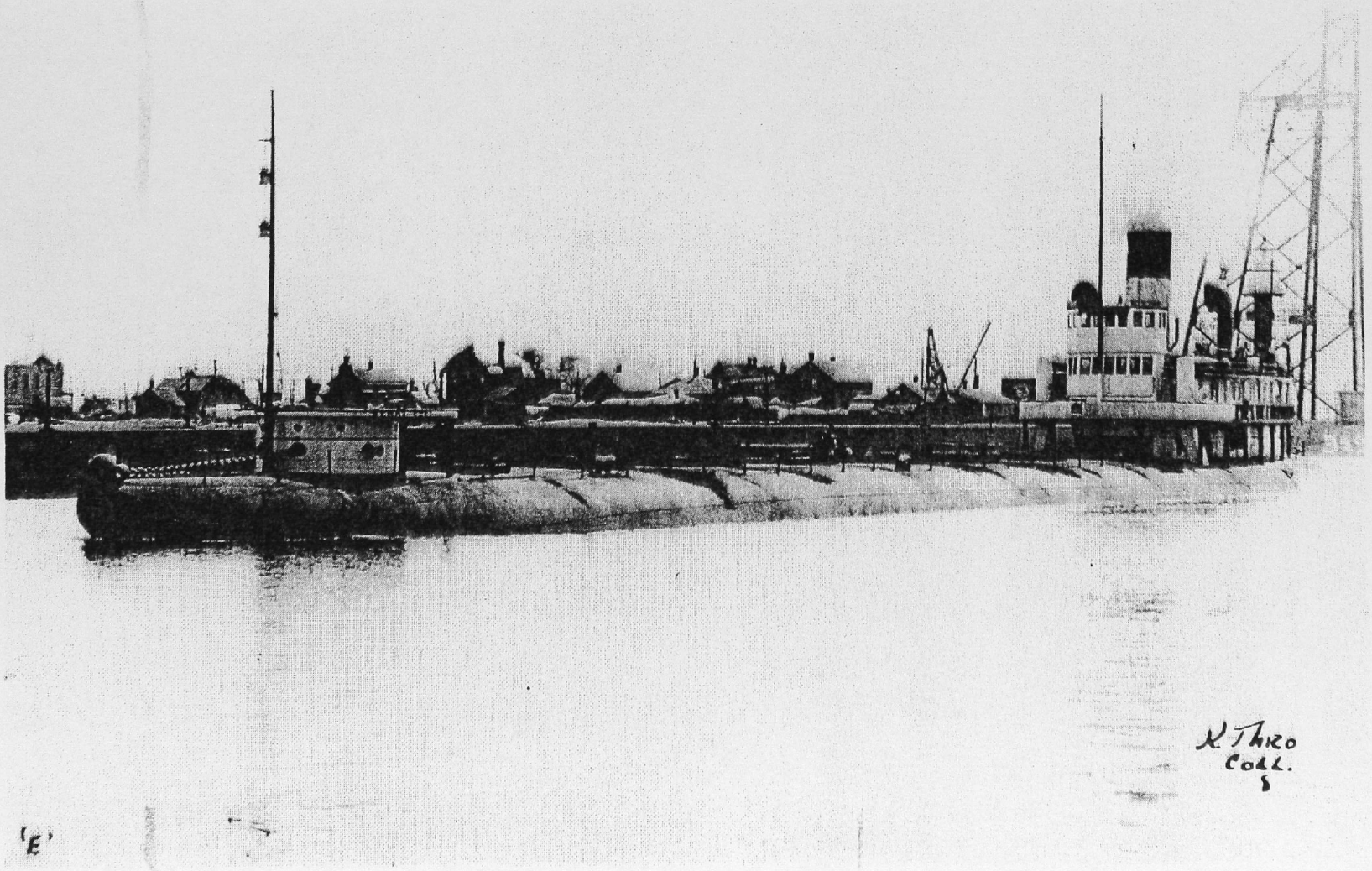
I should think Earl would be ashamed to ride on a boat that would lose her nerve after she got clear up above the Soo and turn around and go back to Lake Erie without a load. The *Cort* not only made her trip up but had unloaded a cargo of coal, loaded ore, and was coming down again when boats got there that had left Lake Erie five days ahead of us; and now she is the *last* boat of the Steel Trust fleet to make a lake run. Some headliner this "Henry Grunt"boat.

I will mail this at Milwaukee and we will have only a six-hour run after that, so no occasion to worry whatever. Love to all. Hoping to be with you in the near future. I am sincerely your loving son,

Gordon

* * * *

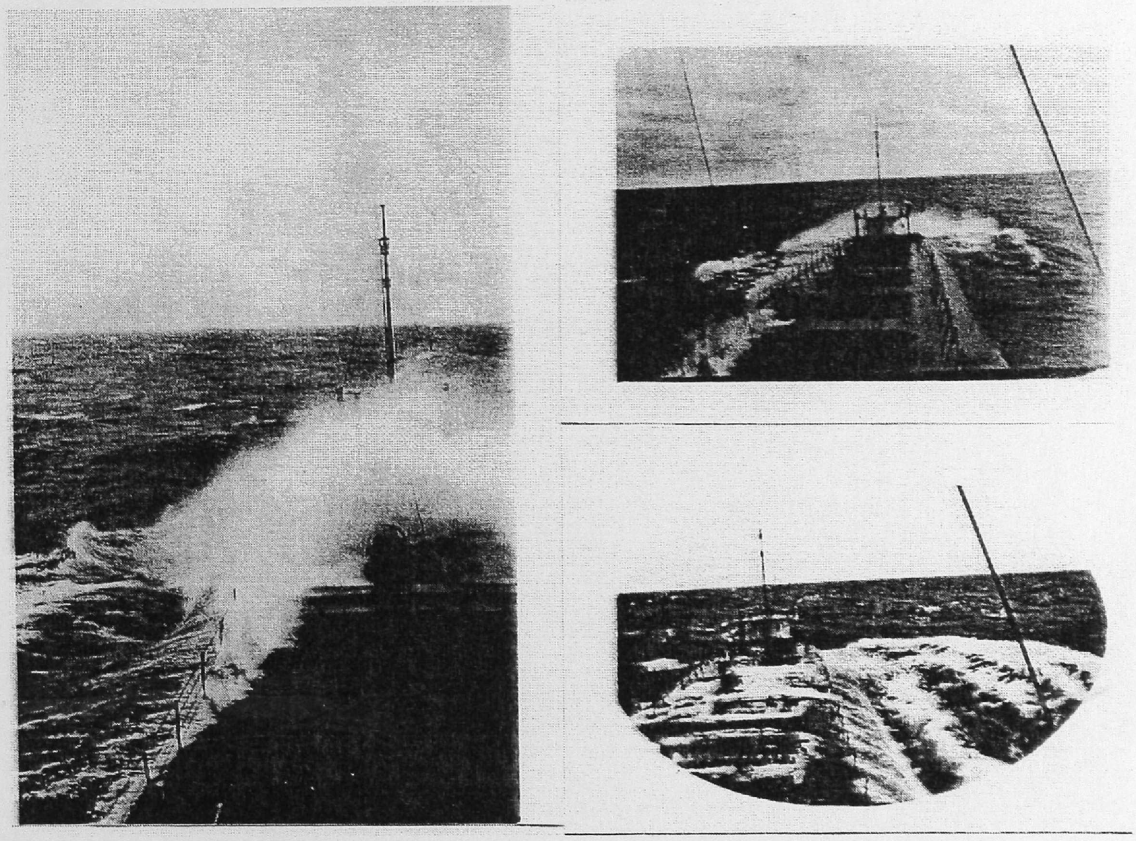
Gordon Rattray



Whaleback *Henry Cort*
(Photo from collection of K. E. Thro)

Built in 1892 in West Superior, WI; owned by Pittsburgh S. S. Co.; Length: 320 ft; Beam: 42 ft; Depth: 25 ft;
Powered by triple expansion steam engine.

Gordon Rattray on the bow of the *Henry Cort*



Three snap shots by Gordon Rattray while aboard *Henry Cort* in heavy weather.

A CAPTAIN'S PROBLEMS

Imagine yourself as the captain of a typical ore carrier, let's say the *Charles S. Price*, beset by the storm in Lake Huron while carrying coal intended for Duluth. For the better part of three days your duty puts you in charge in the wheel house under the most difficult conditions. Winds of at least 70 mph have developed 35-foot waves, and these have thrown drenching spray that burdens your ship with tons of ice, coating your wheel house windows with an opaque layer. Even if you step outside for a moment, the blinding snow prevents your seeing more than a few yards in any direction. A sandwich and cup of coffee would taste good, but the galley is several hundred feet aft (those were the days before Great Lakes ships featured internal fore-and-aft passageways) and no one dares venture along that wave-swept deck.

Like other captains of ships on Lake Huron you face the worst conditions; the prevailing winds moving southward along the length of the lake are developing the highest waves. Clearly, the way to fight the waves is to take them head-on, or to run with them, but after a day or two you will run out of lake – and you are quite unable to see the shore or any aids to navigation. The unremitting conditions have left you exhausted and somewhat confused about your location. In due time, then, prudence dictates a 180-degree change in course. This is not easy, but the firemen manage to stoke the fires and your ship squeezes out enough speed and polar moment of inertia to effect the turn. So now you are southbound and expect in time to seek shelter in the St Clair River, but the lightship has been blown far off position. If you hope to discern the lights of Port Huron, you are out of luck: the storm has shut down the local power house and the city is dark. You simply cannot tell where you are, so, rather than risk a grounding, you undertake to bring your clumsy craft about once more and again take the waves bow-on. Now the technical characteristics that make your ship such a highly economic instrument of transport (i.e., great deadweight and low horsepower) dictate that you may be "caught in stays" and cannot overcome the continual impact of the waves working to push your bow back into the trough. Your firemen are sliding about and find themselves unable to keep steam pressure up.

So, your ship is rolling about in the trough of the waves. One might think that rolling over would be no threat; after all, the ship's great beam-draft ratio (about three to one) suggests considerable transverse stability. But, don't forget that the ship is stable with respect to the *water's surface*, not the horizon, so the sloping surfaces of each wave induce a heel first to one side, then the other. If the frequency of encounter happens to coincide with the ship's natural period of roll, the angle of heel will keep increasing until at some point the ship becomes unmanageable; crew members cannot function properly, steam pressure drops as fires in the boilers are neglected, then perhaps at some point the cargo shifts, perhaps the scotch boilers break loose and the broken piping emits lethal volumes of steam. The ship rolls over to 90, then 180 degrees, general flooding ensues, the ship goes to the bottom with all hands, and you are the bereft captain of a capsized and foundered ship.

(In the case of the *Price*, the air trapped in the ship's bow kept her afloat, for some days and then, escaping through over-stressed rivet holes, allowed the ship to sink.)

Some Floridian readers may have recently survived hurricane winds at least half again higher than those described here. But, there is no reason to disparage the battles fought by Great Lakes

crews during the Great Storm of 1913. Just remember, captains caught out in an Atlantic hurricane are harassed by neither blinding snow nor threat of a looming shore close by.

A CATALOG OF PROBLEMS

In addition to the above-mentioned challenges, in the aftermath of the storm, naval architects were told of the following harrowing problems brought on by the conflict between natural forces and man-made ships:

* Some cabins were so encrusted with ice that men caught inside could not open the doors.

* In those days hatch openings were covered with small wooden boards. These were covered with canvas tarpaulins, which were secured by peripheral steel flat bars tightly wedged against the canvas. In some cases the wind was simply too strong for such arrangements, allowing green water to pour into the holds as tarps and boards went flying over the side.

* Some parts of deck houses failed as wind loads brought on buckling and sometimes complete structural failure. Smoke stacks, life boats, and light deck extensions went overboard, as did more than one pilot house.

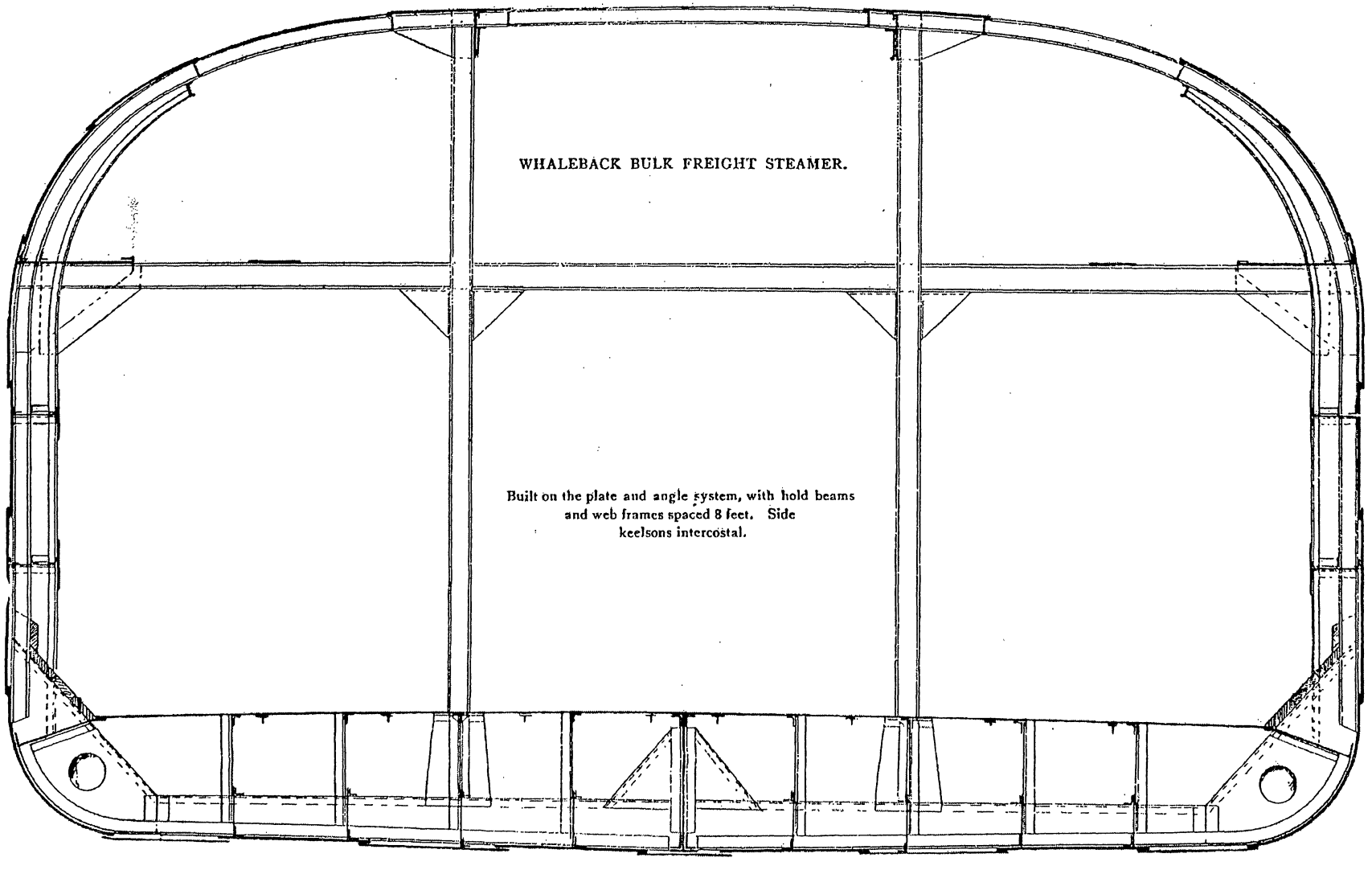
* Excessive hogging and sagging often induced slack in the cables connecting steering wheel to steering engine. As a result the rudder response became problematical.

* In one case the boiler room ventilator cowls, frozen in position, produced such negative pressure in the fire hold that fumes were drawn out of the boilers. The firemen were forced to drop their shovels and escape.

* Think of the oilers working on those up-and-down engines. Their tasks involved worming their way between the flashing piston rods and connecting rods to check for over-heated bearings. That was risky work under the best of conditions, but imagine it with the ship rolling to excessive degree.

* Psychological stresses must have been excessive. Survivors spoke of the deafening roar of the winds, and frightening aspects of the towering seas. Sheer exhaustion, lack of sleep, and lack of nourishment were also there in intense degree to multiply the strains.

Note: Of the ships that sank, not a single survivor came ashore to tell what happened. Thus we could not learn what design features proved critical in the catastrophes. We naval architects feel depressed when we hear of a ship disaster; but when we learn nothing from that sad event, depression makes room for frustration.



Whaleback midship section

WHAT ABOUT WHALEBACKS?

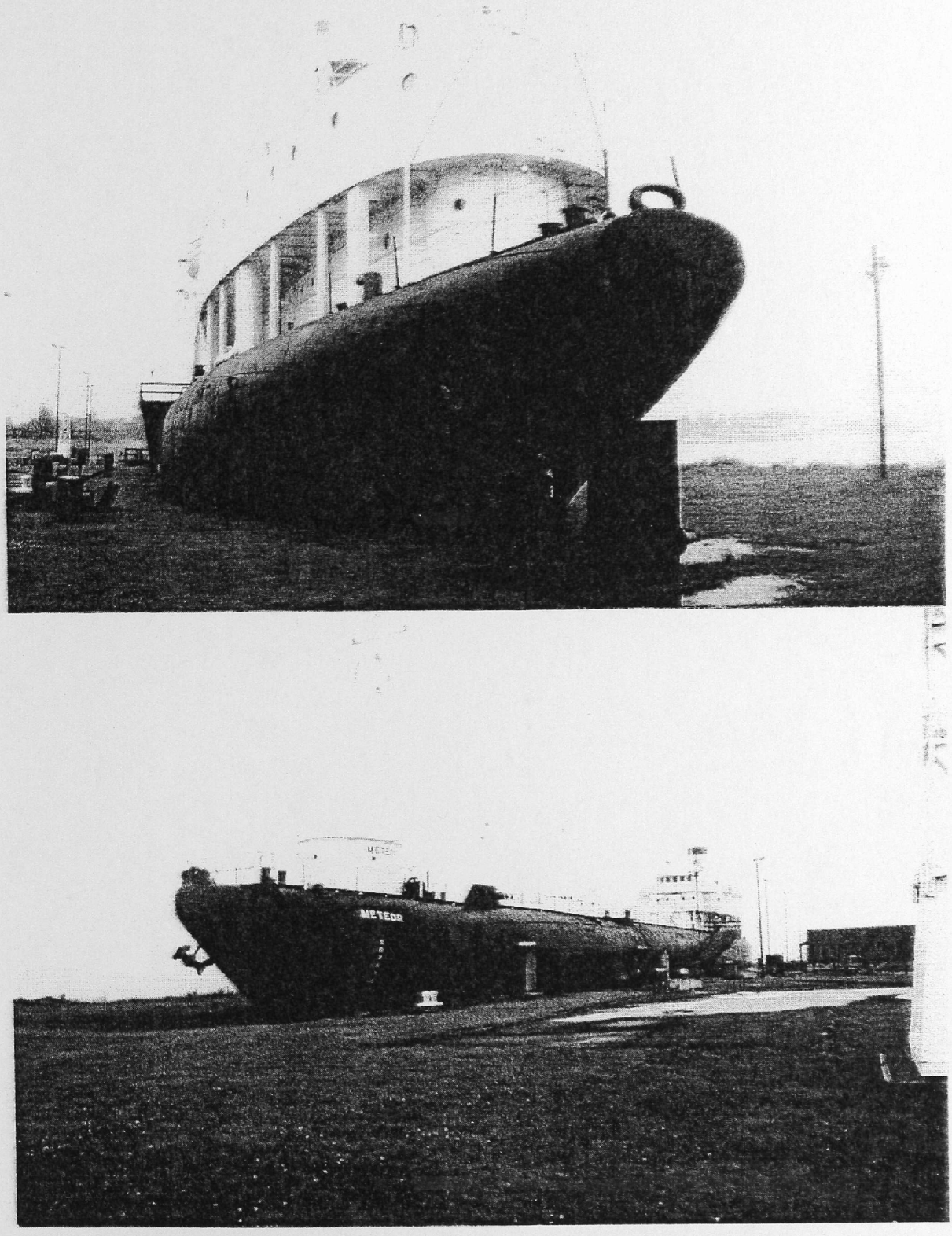
The whaleback design was conceived by a ship's captain, Alexander McDougall (1845 – 1923). In total, 17 of his steamers and 25 barges were built between 1888 and 1896, the majority of them in Superior WI. McDougall's apparent intent seems to have been that his ships not fight waves, but rather plunge through them. The cut-away forefoot eliminated the inclination of the bow to rise with each oncoming wave, so the ship drove straight ahead, allowing green water to rush over the largely-clear deck and wash harmlessly over the side.

Gordon Rattray's letter offers strong evidence that whalebacks were sea-kindly in the extreme. The overall arrangement, with the wheelhouse being located aft, offered several advantages over the then-standard arrangement with wheelhouse (and some accommodations) being stacked up in the extreme bow.

The accompanying midship section of a typical whaleback, shows another inherent advantage of the design. When moving grain, the restricted surface of the cargo reduced the threat of its shifting.

Nevertheless, although the whaleback concept flared up briefly it never caught on. Why not? To begin with, today's international load line regulations would have required extra freeboard because the absence of sheer, and those rounded top sides, would have severely limited the reserve buoyancy required in case of flooding. Moreover, the assigning authorities would have been put off by the difficulty of locating the freeboard deck line. I imagine today's OSHA officials would be alarmed by the combination of narrow sloping deck, low hatch coamings (if any) and the propensity of seamen to come aboard tipsy after a few hours in port.

McDougall's first designs were for escort (towed) barges, where the cut-away forefoot would have greatly reduced the tendency to yaw. In powered vessels it would also lend itself to excellent ice-breaking capabilities. On the other hand, it would lessen the waterline length, so reducing displacement and cargo capacity, while increasing wave-making resistance. Elementary economic analysis shows the most profitable Great Lakes bulk carrier is one whose length and beam approximate the internal dimensions of the Poe Lock, and whose hull form comes dismayingly close to doing the same. Clearly, the whaleback fails to meet that last specification.



Two views of whaleback *Meteor* (museum exhibit in Superior, WI).

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