Lake Michigan Shipwrecks

Lesson plan prepared and provided by the Education Committee of the
Sable Points Lighthouse Keepers Association (SPLKA)

Notes:

- This lesson likely will occupy several class periods. It can be shortened by limiting the depth and/or breadth of coverage of specific topics or expanded by utilizing additional resources such as those listed at the end of the lesson plan. While the lesson specifically addresses fourth-grade content standards, it easily could be adapted for higher grade levels.
- To access the photos, drawings, and tables found in the lesson plan for projection in class, load up the separate SPLKA Shipwreck Lesson Plan Graphics file and scroll down to the desired graphic(s). Also, note that the eyewitness accounts of the discovery of each wreck are found in two separate files.
- To access the video clips included in the lesson plan, either click on the links embedded in this text or copy the links and paste them into your browser.

Content Areas:

Social Studies
Language Arts

Lesson Title:

The Sister Shipwrecks of Lake Michigan: History, Sinking and Rediscovery

Objectives:

After completing this lesson, the students will be able to:

- Investigate the sometimes disastrous consequences of shipping on Lake Michigan during inclement weather.
- Explain conditions that make Lake Michigan potentially dangerous to mariners and relate these conditions to the sinking of the *Eber Ward* and the *John V. Moran*.
- Explain key factors that affect the condition of shipwrecks and relate these factors to the condition of the *Eber Ward* and the *John V. Moran*.
- Integrate information on the *Eber Ward* and *John V. Moran* to create an overview of the purpose and complexity of exploring shipwrecks.
- Explain the circumstances leading up to the sinking of the *Eber Ward* and the *John V. Moran* and their rediscovery after lengthy submersion in Lake Michigan.
- Explain the challenge of exploring deep-water shipwrecks like the *Eber Ward* and the *John V. Moran*.
- Analyze the opportunities and complexities of shipwreck exploration.
- Discuss the rationale for their personal level of interest in exploring shipwrecks.
- Describe what it would be like to explore a shipwreck like the *Eber Ward*.

MI Content Standards:

Social Studies: 4-H3.0.1, 4-H3.0.5 (History): 4-G1.0.3 (Geography)
Reading Standards for Informational Text for Grade 4 Students (see 1, 3, 7, 9 and 10)

Writing Standards for Grade 4 Students (see 1, 2, 3, 4, 5, 6 and 10)

Standard 10: Range, Quality, Complexity of Student Reading K-5
Range of Text Types for K-5: Literary Nonfiction and Historical, Scientific, and Technical Texts

Materials:
Classroom computer with projection capability, possible display of SCUBA diving equipment and explanation from an experienced diver, student access to writing technology.

Activities:

- Provide an overview of how the condition of a shipwreck reflects the circumstances of its sinking, its path to and contact with the bottom, depth and water temperature, and surface conditions
- Relate a brief history of the sister ships *Eber Ward* and *John V. Moran* and how/where they sank
- Share historic photos of the two ships
- Describe the sinking of the *John V. Moran*, share video captures and sketch of the wreck
- Read an eyewitness account of the discovery of the *John V. Moran* shipwreck
- Describe the sinking of the *Eber Ward,* share still photos and sketch of the wreck
- Read an eyewitness account of the discovery of the *Eber Ward* shipwreck
- Discuss answers to questions about the sinking of the two ships
- Discuss shipwreck diving and the effects of water pressure on a diver's body
- Discuss deep-dive decompression and Standard Air Decompression Tables
- Discuss use of the Standard Air Decompression Tables
- Discuss diving on the *Eber Ward* and *John V. Moran* and show video clips of the two wrecks
- Discuss answers to questions about diving on the two shipwrecks
- Assign writing assignments arising from students' knowledge of shipwrecks

Assessment:

- Explain the many dangers that Lake Michigan presents to shipping vessels and how these dangers contributed to the sinking and condition of the *Eber Ward* and the *John V. Moran*.
- Discuss the purpose and complexity of exploring shipwrecks, using the *Eber Ward* and *John V. Moran* as examples.
- Employ eyewitness accounts, photographs, drawings, and video clips to summarize the circumstances leading up to the sinking of the *Eber Ward* and the *John V. Moran* and their rediscovery after lengthy submersion in Lake Michigan.
- Explain the physiological realities of SCUBA diving and relate them to the challenges of exploring deep-water shipwrecks like the *Eber Ward* and the *John V. Moran*.
- Explain your personal level of interest in shipwreck exploration.
- Describe what it would be like to explore a shipwreck like the *Eber Ward*.

Lesson Content

For over 300 years, the Great Lakes have attracted adventurers, fisherfolk, and merchants in boats and ships of various shapes, sizes, and construction. Small boats evolved into elegant wooden schooners and today's enormous freighters. These interconnected "inland seas" present mariners with all the challenges of an ocean: powerful winds, unpredictable storms, enormous waves, and great depths.

SHIPWRECK CONDITION

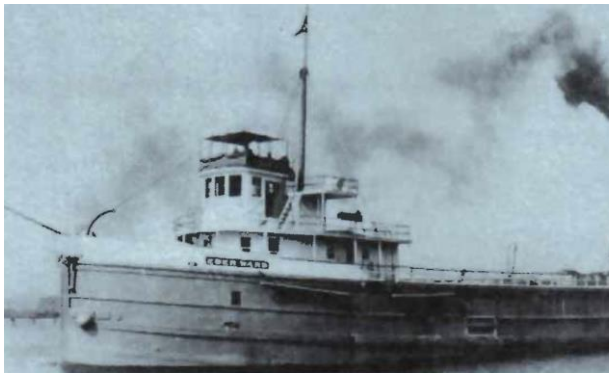
Unpredictable weather makes Lake Michigan one of the most dangerous bodies of water in the world. It is estimated that there are nearly 1,500 shipwrecks in Lake Michigan, which in its deepest spot is nearly 1,000 feet deep. While the remains of numerous ships can be found along the shoreline, only about 300 wrecks beyond the surf line have been located.

The condition of a shipwreck on the bottom of Lake Michigan depends on several things. First, ships sink into the lake for many reasons, and some sustain more damage than others on the surface before they sink. Some of the early wooden ships caught fire on the surface. Other ships have capsized during violent storms, while others were pierced by ice or other ships and sank because of resulting holes in their hulls. Still others have collided with docks or run aground in shallow water; lighthouses were built largely to direct ships to harbors or to warn them of shallow water or reefs. Ships that sink in the ocean deteriorate more quickly than those in fresh water like Lake Michigan because of the salt in ocean water.

Ships that sink rapidly in deep water can break apart while descending due to explosions or expanding air in their hulls. Air can escape more gradually from a ship that sinks slowly, causing less damage during descent. Additional damage can occur if the ship collides violently with the lake bottom. Ships that sink in shallow water can be damaged further by wave action, storms, ice movement, and other weather events on the surface or by people exploring the wreckage.

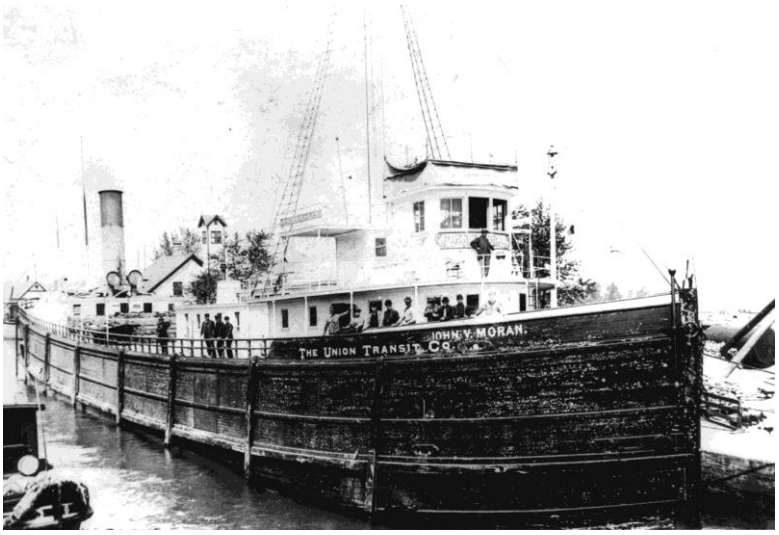
BRIEF HISTORY OF THE *EBER WARD* AND THE *JOHN V. MORAN*

The sister ships *Eber Ward* and *John V. Moran* were built in 1888 by F.W. Wheeler & Company in West Bay City, Michigan. Both ships were built at a cost of $100,000 at a time when ships' hulls were transitioning from wood to iron. These 214-foot-long wooden-hulled cargo ships were built to haul both bulk freight, such as coal and iron ore, and package freight, such as flour, on the Great Lakes. They were steam-powered, and their hulls were reinforced with iron plates to enable them to operate in the winter under icy conditions.



The *Eber Ward*

Courtesy of Dan Friedhoff, Straits of Mackinac Shipwreck Prese



The *John V. Moran*

Courtesy of Valerie van Heest, Michigan Shipwreck Research Associates

On February 9, 1899, after only 11 years of service, the *John V. Moran* was struck by ice while carrying a load of barreled flour and packaged goods from Milwaukee to Muskegon, Michigan. Fortunately, the ice was secure enough for the crew to walk across it to the nearby steamer *Naomi*. The next day, the *Naomi* attempted to tow the *John V. Moran* to Muskegon, but the *Moran* was leaking too badly to be towed. On February 11, the *John V. Moran's* crew walked back across the ice and removed everything valuable from the ship, and the *Moran* sank the following day; all 24 crew members survived the sinking. The wreck was not discovered until July 8, 2015, when the Michigan Shipwreck Research Associates (MSRA) located it 20 miles west of Muskegon in 365 feet of water. Because of the depth and the fact that the ship sank slowly, allowing air to escape gradually, the wreck has been called by MRSA "the most intact steamship wreck on the bottom of Lake Michigan, if not all of the Great Lakes."

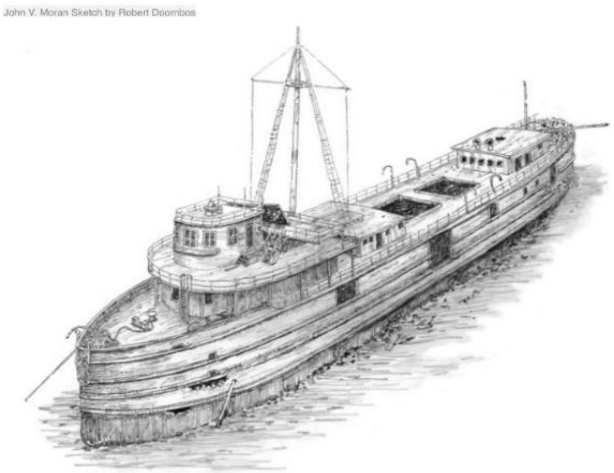
The *John V. Moran* from above

The *John V. Moran* anchors

The *John V. Moran* pilothouse

The *John V. Moran* window

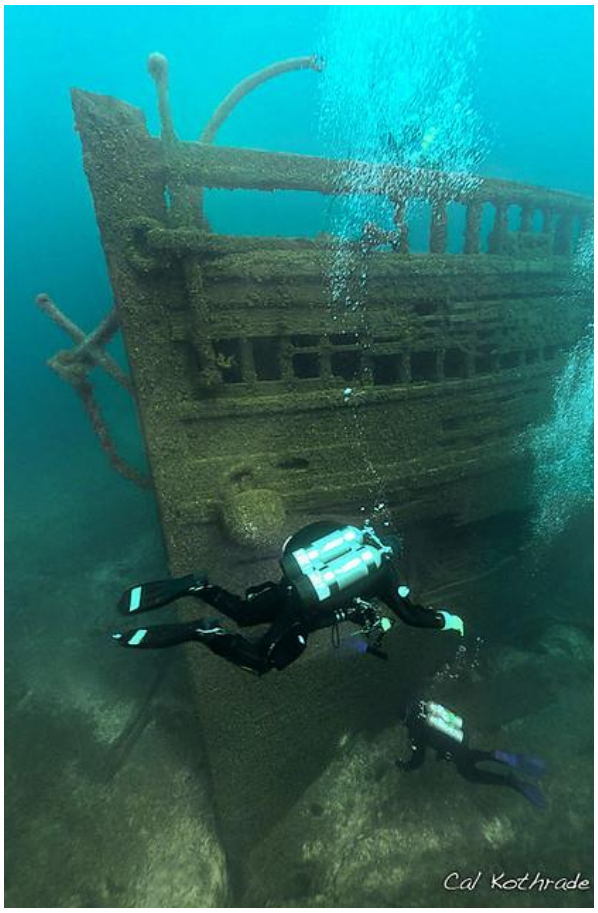
Video captures courtesy of Michigan State Police; Valerie van Heest, Michigan Shipwreck Research Associates



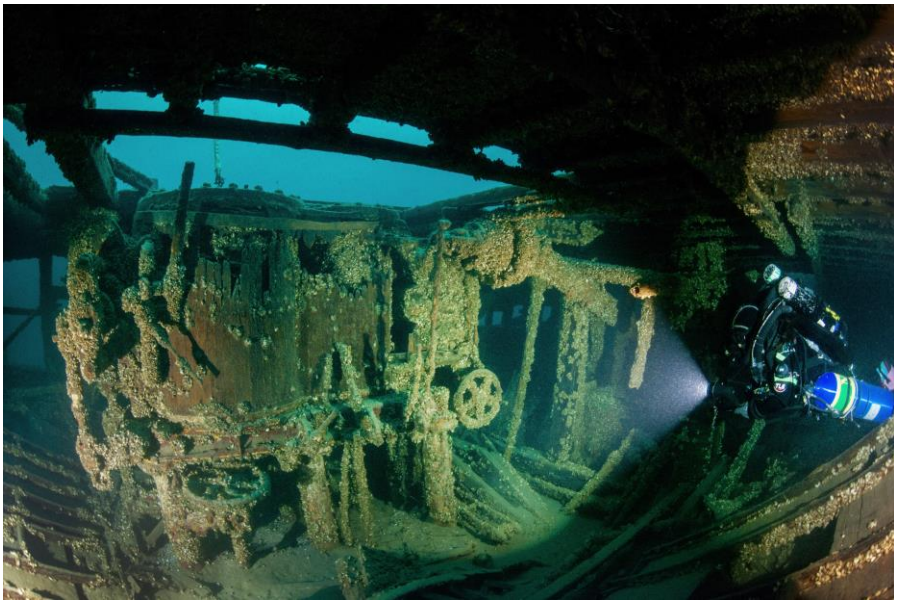
The *John V. Moran*. Sketch by Robert Doornbos courtesy of Valerie van Heest, Michigan Shipwreck Research Associates

The following eyewitness account tells the story of the discovery of the *John V. Moran* shipwreck in 2015: *FROZEN IN TIME: The Shipwreck JOHN V. MORAN* by Valerie van Heest, Director Michigan Shipwreck Research Associates (Refer to the separate PDF file of the same title.)

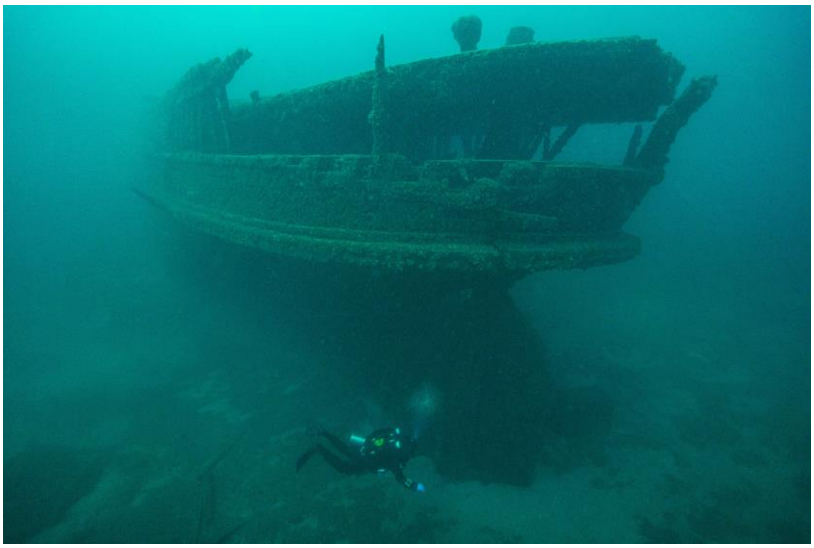
Ten years later, after 21 years of service, the *Eber Ward* also sank after being pierced by ice, but with more tragic results. On April 20, 1909, the *Ward* ran into a thick pack of ice that the captain had mistaken for "slush." The ice tore through the bow, and the ship sank in ten minutes. Five of the 14 crew members drowned as the ship sank into 140 feet of water in the Straits of Mackinac west of Mackinaw City, Michigan. The wreck was rediscovered by divers in 1980 five miles west of the Mackinac Bridge and is now one of 12 historic shipwrecks that make up the Straits of Mackinac Shipwreck Preserve.



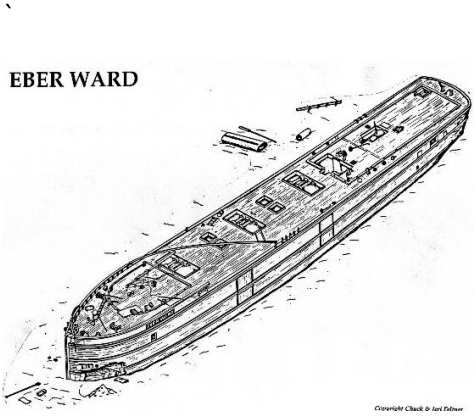
The *Eber Ward* bow
Courtesy of Cal Kothrade, Cal's World



The *Eber Ward* engine
Courtesy of Becky Kagan Schott, Liquid Productions



The *Eber Ward* stern
Courtesy of Capt. Jitka Hanakova, Shipwreck Explorers LLC



The *Eber Ward.* Drawing by Chuck & Jeri Feltner courtesy of Dan Friedhoff, Straits of Mackinac Shipwreck Preserve

Here is an eyewitness account of the discovery of the *Eber Ward* wreckage in 1980: *The Wreck of the Eber Ward*, by Dr. Charles E. Feltner (Refer to the separate PDF file of the same title.)

QUESTIONS:

- Why do you suppose the *Eber Ward* sank so quickly and the *John V. Moran* sank so slowly?
- What explains the vast difference in the condition of the two shipwrecks?
- What do photographs and sketches reveal about the type of damage sustained by the two ships?

DIVING ON SHIPWRECKS

Diving on a shipwreck is a hauntingly powerful experience. A diver visiting a shipwreck is seized by a flood of thoughts and emotions, interrupted only by the gurgling of the diver's bubbles. What caused this ship to sink? What additional damage occurred as the ship was sinking? What damage has occurred while the wreck has been on the bottom? What artifacts remain in the wreckage, and what can be learned from them? How many lives were changed forever as a result of the sinking? Did the crew and passengers escape? If so, how? Were any lives lost?

Divers have been visiting shipwrecks for hundreds of years. The earliest shipwreck explorers breathed surface air that was trapped inside diving bells. Eventually, air could be pumped down to a diver from the surface, which greatly extended the diver's time underwater. More recently, divers have been able to carry their own air supplies in compressed-air SCUBA ("self-contained underwater breathing apparatus") tanks, which enables them to move around much more freely underwater. This freedom of movement is especially helpful when diving on a shipwreck.

WATER PRESSURE'S EFFECTS ON THE DIVER'S BODY

SCUBA diving has become increasingly popular, but special training is required to correctly and safely breathe compressed air underwater. The water above a diver has weight; that weight increases as the diver descends and additional water above the diver exerts additional pressure on the diver's body. The weight of the water (called "water pressure") causes air in the lungs and other body cavities to compress as the diver descends into deeper water and expand as the diver ascends into shallower water. In order to avoid injury as this air compresses and expands, it is crucial that the diver breathe normally underwater. Divers must never hold their breath, especially when ascending, because expanding air can cause serious damage to their lungs. As the diver descends and water pressure increases, it takes more and more compressed air to fill the diver's lungs; so, a diver uses up an air supply more quickly in deeper water.

Divers must also understand that their bodies absorb nitrogen as they descend into deeper water. They must be very careful not to stay in deep water so long that their bodies absorb a dangerous amount of nitrogen. Stopping periodically as the diver ascends allows the body to gradually release expanding nitrogen gas when the diver exhales; this process of stopping to release nitrogen is called "decompression." If a diver does not stop to "decompress" as they ascend from deep water, expanding nitrogen bubbles can form in their tissues and joints, causing a painful and possibly fatal condition known as the "bends." Because pressure changes more rapidly in shallow water, decompression stops in shallow water are especially important in order to allow the body to release nitrogen.

In addition to the bends, nitrogen accumulation, particularly at depths greater than 100 feet, can cause mental confusion called "nitrogen narcosis." This confusion, if not corrected by ascending to a shallower depth, can result in divers making careless and dangerous decisions underwater. So, along with the expanding and contracting of breathing gas that results at every depth, the accumulation of nitrogen in deeper water can present divers with additional dangers.

DECOMPRESSION TABLES

The U.S. Navy and other diving organizations have developed tables that enable divers to plan their dives safely and avoid pressure-related dangers. To remain safe underwater, divers must "plan the dive and dive the plan." When deeper dives require decompression, divers must plan their decompression stops carefully before the dive and monitor their depth and time throughout the dive. Recently, dive computers have become available to help ensure that divers don't stay too long on the bottom or fail to decompress correctly when they ascend. Divers who dive deep enough to require decompression often either carry extra air tanks with them or secure extra tanks to the dive line they use for descending and ascending. For examples of divers using dive computers and carrying extra air tanks, see https://www.youtube.com/watch?v=P428VqcsB0E&t=191s (courtesy of Dusty Klifman, Blueyes Below).

Decompression stops are based on the depth of the dive and the amount of time the diver spends on the bottom (called "bottom time"). Bottom time includes not only the time spent on the bottom, but also the amount of time it takes the diver to descend to that depth. In order to allow the body enough time to adjust to changes in water pressure, the suggested rate of descent is generally considered to be about 30 feet per minute. Also, divers should ascend no faster than 30 feet per minute and should never ascend faster than their bubbles, even in shallow water.

As seen in the first table below, dives at relatively shallow depths do not require decompression stops, even if the dives are exceptionally long. For example, a diver can safely stay at a depth of 40 feet for up to 200 minutes, which would require more air than the approximately one hour that a single SCUBA tank can hold. On the other hand, to avoid decompression, a dive to 130 feet, which is generally considered the depth limit for recreational diving, would allow only 10 minutes of bottom time. (Note: the "repetitive dive group designations" are used for planning subsequent dives and account for the body's need to release nitrogen on the surface between dives.)

No-Decompression Limits and Repetitive Group Designation Tables

Depth (ft/m)	No-D Limits (min)	Group Designation A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
10 3.0		60	120	210	300											
15 4.6		35	70	110	160	225	350									
20 6.1		25	50	75	100	135	180	240	325							
25 7.6		20	35	55	75	100	125	160	195	245	315					
30 9.1		15	30	45	60	75	95	120	145	170	205	250	310			
35 10.7	310	5	15	25	40	50	60	80	100	120	140	160	190	220	270	310
40 12.2	200	5	15	25	30	40	50	70	80	100	110	130	150	170	200	
50 15.2	100		10	15	25	30	40	50	60	70	80	90	100			
60 18.2	60		10	15	20	25	30	40	50	55	60					
70 21.3	50		5	10	15	20	30	35	40	45	50					
80 24.4	40		5	10	15	20	25	30	35	40						
90 27.4	30		5	10	12	15	20	25	30							
100 30.5	25		5	7	10	15	20	22	25							
110 33.5	20			5	10	13	15	20								
120 36.6	15			5	10	12	15									
130 39.6	10			5	8	10										
140 42.7	10			5	7	10										
150 45.7	5			5												
160 48.8	5				5											
170 51.8	5				5											
180 54.8	5				5											
190 59.9	5				5											

Times Listed Are Total Bottom Times!

Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
40	200			0	*
	210			2	N
	230			7	N
	250			11	O
	270			15	O
	300			19	Z
50	100			0	*
	110			3	L
	120			5	M
	140			10	M
	160			21	N
	180			29	O
	200			35	O
	220			40	Z
	240			47	Z

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
60	60			0	*
	70			2	K
	80			7	L
	100			14	M
	120			26	N
	140			39	O
	160			48	Z
	180			56	Z
	200	1		69	Z
70	50			0	*
	60			8	K
	70			14	L
	80			18	M
	90			23	N
	100			33	N
	110	2		41	O
	120	4		47	O
	130	6		52	O
	140	8		56	Z
	150	9		61	Z
	160	13		72	Z
	170	19		79	Z

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
80	40			0	*
	50			10	K
	60			17	L
	70			23	M
	80		2	31	N
	90		7	39	N
	100		11	46	O
	110		13	53	O
	120		17	56	Z
	130		19	63	Z
	140		26	69	Z
	150		32	77	Z
90	30			0	*
	40			7	J
	50			18	L
	60			25	M
	70		7	30	N
	80		13	40	N
	90		18	48	O
	100		21	54	Z
	110		24	61	Z
	120		32	68	Z
	130	5	36	74	Z

EXCEPTIONAL EXPOSURES NOT SHOWN

Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
100	25			0	*
	30			3	I
	40			15	K
	50		2	24	L
	60		9	28	N
	70		17	39	O
	80		23	48	O
	90	3	23	57	Z
	100	7	23	66	Z
	110	10	34	72	Z
	120	12	41	78	Z
110	20			0	*
	25			3	H
	30			7	J
	40		2	21	L
	50		8	26	M
	60		18	36	N
	70	1	23	48	O
	80	7	23	57	Z
	90	12	30	64	Z
	100	15	37	72	Z

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
120	15			0	*
	20			2	H
	25			6	I
	30			14	J
	40		5	25	L
	50		15	31	N
	60	2	22	45	O
	70	9	23	55	O
	80	15	27	63	Z
	90	19	37	74	Z
	100	23	45	80	Z
130	10			0	*
	15			1	F
	20			4	H
	25			10	J
	30		3	18	M
	40		10	25	N
	50	3	21	37	O
	60	9	23	52	Z
	70	16	24	61	Z

DEPTH	TOTAL BOTTOM TIME	Decompression Stops 50	40	30	20	10	REPET GROUP
140	10					0	*
	15					2	G
	20					6	I
	25				2	14	J
	30				5	21	K
	40			2	16	26	N
	50			6	24	44	O
	60			16	23	56	Z
	70		4	19	32	68	Z
	80		10	23	41	79	Z
150	5					0	C
	10					1	E
	15					3	G
	20				2	7	H
	25				4	17	K
	30				8	24	L
	40			5	19	33	N
	50			12	23	51	O
	60		3	19	26	62	Z
	70		11	19	39	75	Z
	80	1	17	19	50	84	Z

EXCEPTIONAL EXPOSURES NOT SHOWN

Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Decompression Stops 50	40	30	20	10	REPET GROUP
160	5					0	D
	10					1	F
	15				1	4	H
	20				3	11	J
	25				7	20	K
	30			2	11	25	M
	40			7	23	39	N
	50		2	16	23	55	Z
	60		9	19	33	69	Z
170	5					0	D
	10					2	F
	15				2	5	H
	20				4	15	J
	25			2	7	23	L
	30			4	13	26	M
	40		1	10	23	45	O
	50		5	18	23	61	Z
	60	2	15	22	37	74	Z

DEPTH	TOTAL BOTTOM TIME	Decompression Stops 50	40	30	20	10	REPET GROUP
180	5					0	D
	10					3	F
	15				3	6	I
	20			1	5	17	K
	25			3	10	24	L
	30			6	17	27	N
	40		3	14	23	50	O
	50	2	9	19	30	65	Z
	60	5	16	19	44	81	Z
190	5					0	D
	10				1	3	G
	15				4	7	I
	20			2	6	20	K
	25			5	11	25	M
	30		1	8	19	32	N
	40		8	14	23	55	O

EXCEPTIONAL EXPOSURES NOT SHOWN

Tables courtesy of United States Air Force School of Aerospace Medicine Hyperbarics

The decompression stops required during deeper dives are reflected in the remaining three tables above. For example, a dive to a depth of 90 feet with 60 minutes of bottom time would require a 25-minute decompression stop at 10 feet during ascent; extending the dive to 80 minutes of bottom time would require a 13-minute stop at 20 feet and a 40-minute stop at 10 feet. Note that exploring a shipwreck in 130 feet of water for 50 minutes would require three stops totaling 61 minutes of decompression time, which would consume an entire tank of air. In order to maximize safety, depths that are not reflected exactly in the decompression tables are rounded up to the next-highest 10-foot increment; thus, dives to 112 feet or 118 feet would be planned for decompression stops reflected for 120-foot depth.

QUESTIONS:

- What is the longest a diver can remain at a depth of 80 feet to avoid decompression?
- If a diver generally consumes one hour of air from a standard SCUBA tank, what is the longest that diver can safely stay at a depth of 60 feet without running out of air?
- How much total decompression time would be necessary for a dive of 70 minutes at a depth of 100 feet?
- Why do you suppose the longest decompression stops occur at the shallowest depths, especially at a depth of 10 feet?

DIVING ON THE *EBER WARD* AND *JOHN V. MORAN* SHIPWRECKS

Because they are located at different depths, diving on the sister ships *Eber Ward* and *John V. Moran* would require very different preparations. The *Eber Ward* sank in 140 feet of water in the Straits of Mackinac. Since this exceeds the maximum depth for recreational divers, this wreck should only be visited by divers with "technical" training. The *John V. Moran*, on the other hand, rests in 365 feet of water off Muskegon, which is so deep that the few technical divers who have visited the wreck could stay on the bottom for only 15 minutes with three hours of decompression stops; entering the wreck is considered too dangerous for these divers. Dives to the *Moran* have generally been limited to "remotely-operated vehicles" (ROV's), as shown in footage below taken by a Michigan State Police ROV. Note that both wrecks are covered with invasive zebra mussels.

The following video footage taken of the sister ships reveals the differences in depth, the general condition of the wrecks, and the damage that occurred before and during their sinking:

The *Eber Ward,* courtesy of Dusty Klifman, Blueyes Below:
https://www.youtube.com/watch?v=P428VqcsB0E&t=191s

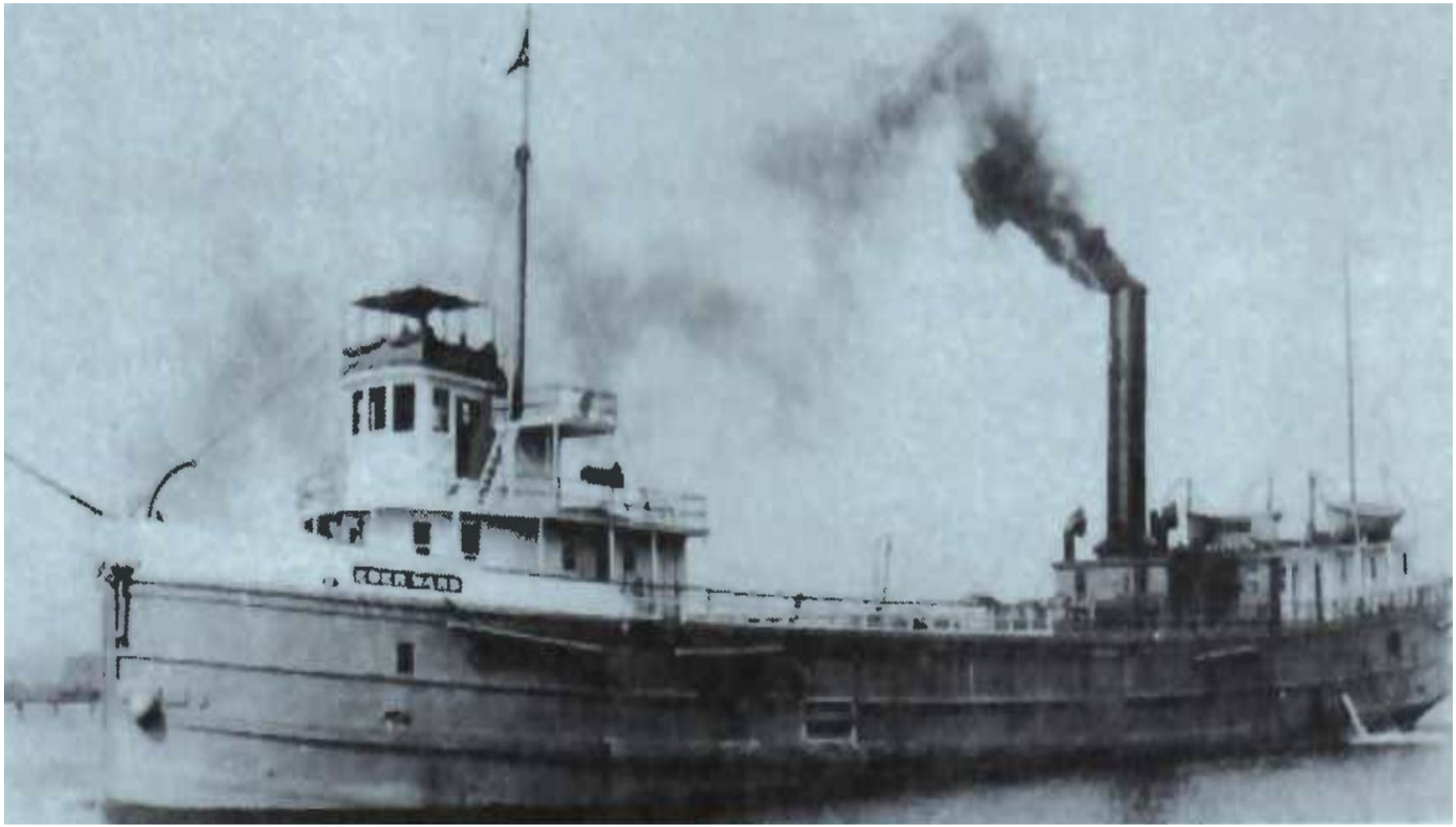
The *John V. Moran*, courtesy of Brent Ashcroft, WZZM; Valerie van Heest, Michigan Shipwreck Research Associates; and the Michigan State Police:
https://www.youtube.com/watch?v=dvqRb44dH94

QUESTIONS:

- What is the maximum bottom time for a dive on the *Eber Ward* with only two decompression stops?
- How much total decompression time would be required for a 40-minute dive on the *Eber Ward*?
- What do the video clips reveal about the amount of damage done by ice to the two sister ships?

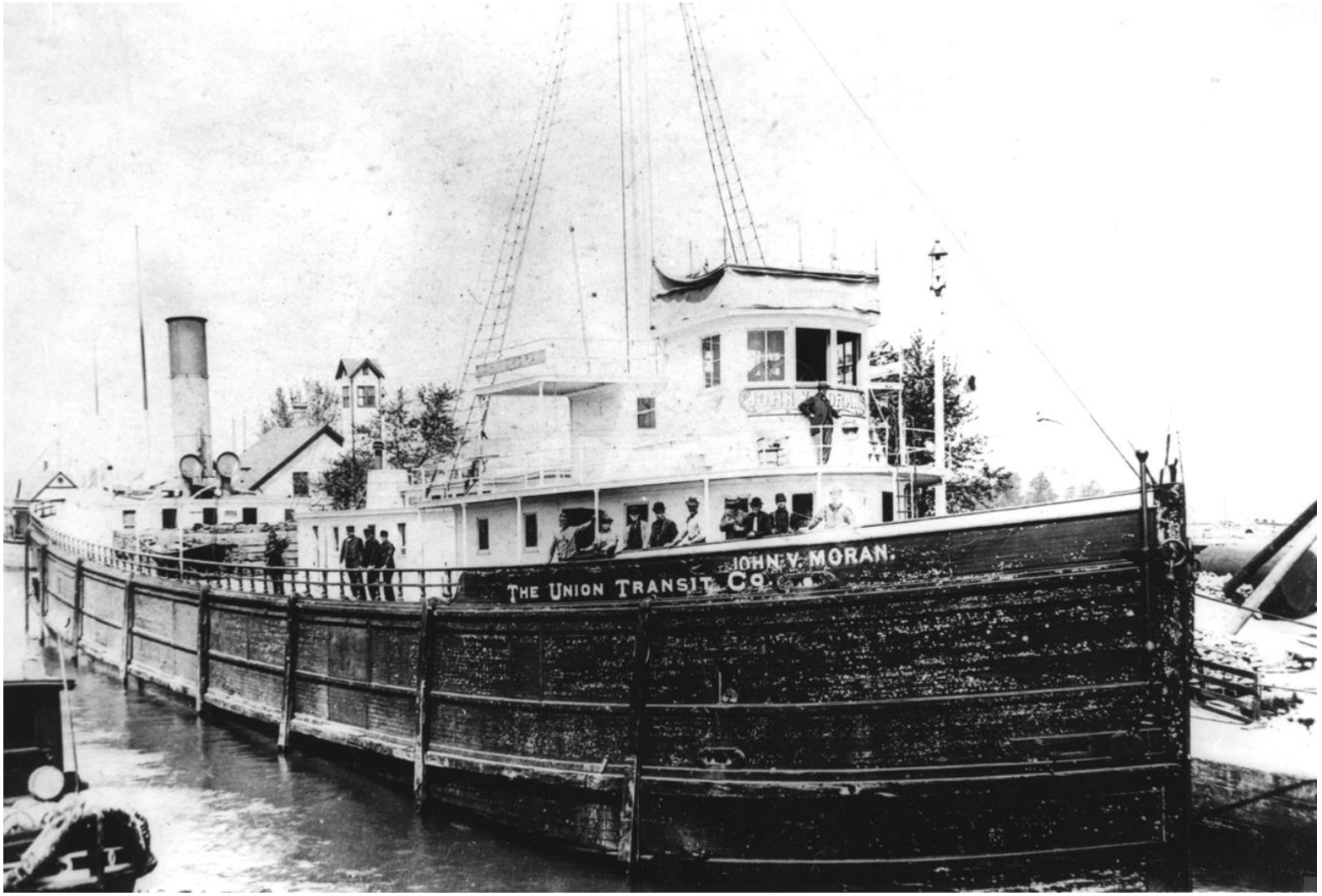
Additional Resources:
Additional information, photos, and video clips can be found by searching terms such as the following on the Internet or YouTube:
Michigan Shipwreck Research Associates
Straits of Mackinac Shipwreck Preserve
Michigan shipwreck preserves
Cal's World
Liquid Productions
Blueyes Below
Shipwreck Explorers LLC
Great Lakes shipping history
Great Lakes storms
scuba diving
air pressure in diving
diving decompression
zebra mussels
Cal Kothrade
Capt. Jitka Hanakova
Becky Kagan Schott
Valerie van Heest
Dusty Klifman
Eber Ward
John V. Moran

Note to teachers: SPLKA welcomes your feedback on this lesson plan. Please send any comments and suggestions for improvement to Cherie Hockenberger at the following address: SPLKAofficemanager@gmail.com. Thanks!



The *Eber Ward*

Courtesy of Dan Friedhoff, Straits of Mackinac Shipwreck Preserve

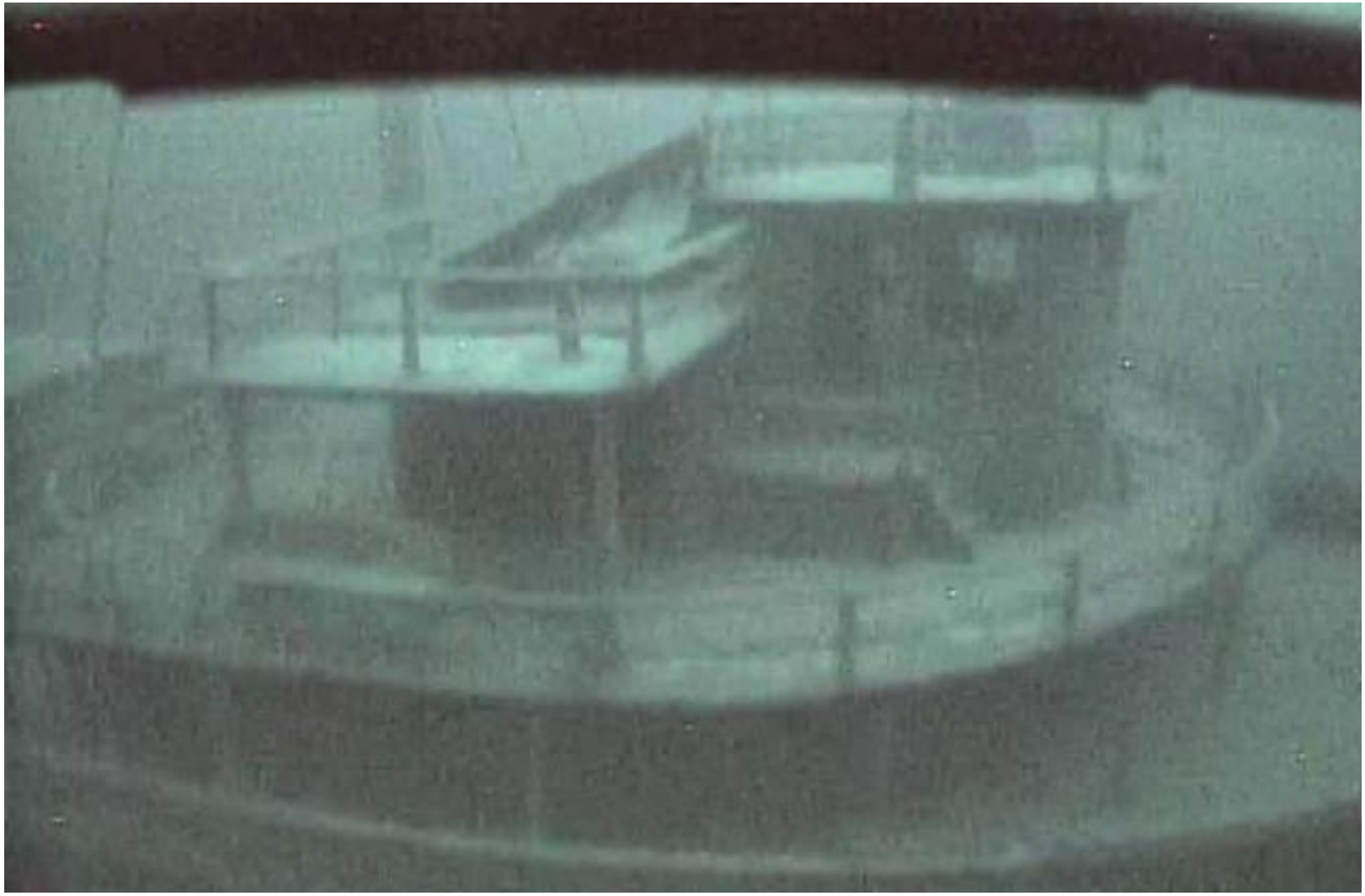


The *John V. Moran*

Courtesy of Valerie van Heest, Michigan Shipwreck Research Associates

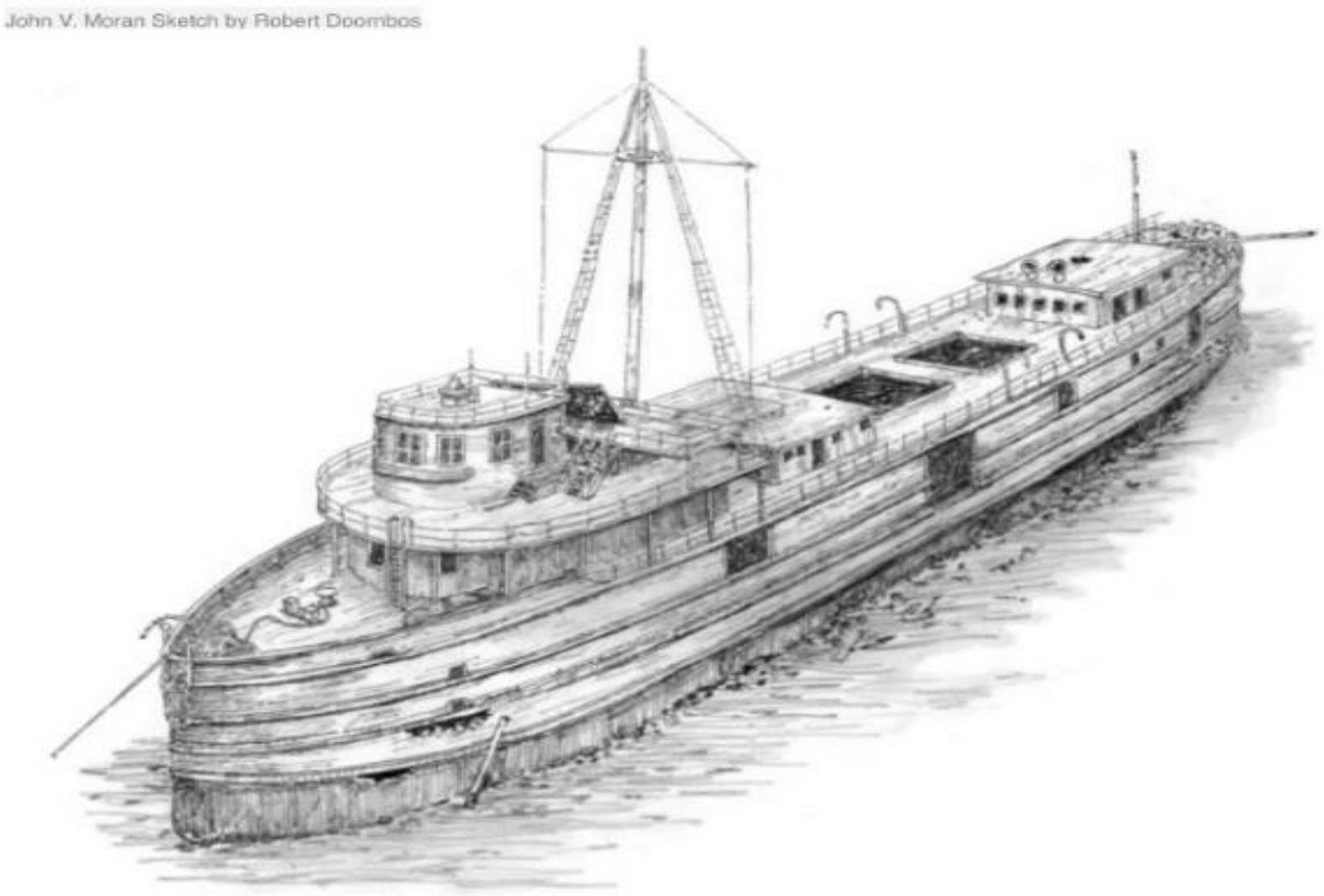
The *John V. Moran* from above

The *John V. Moran* anchors

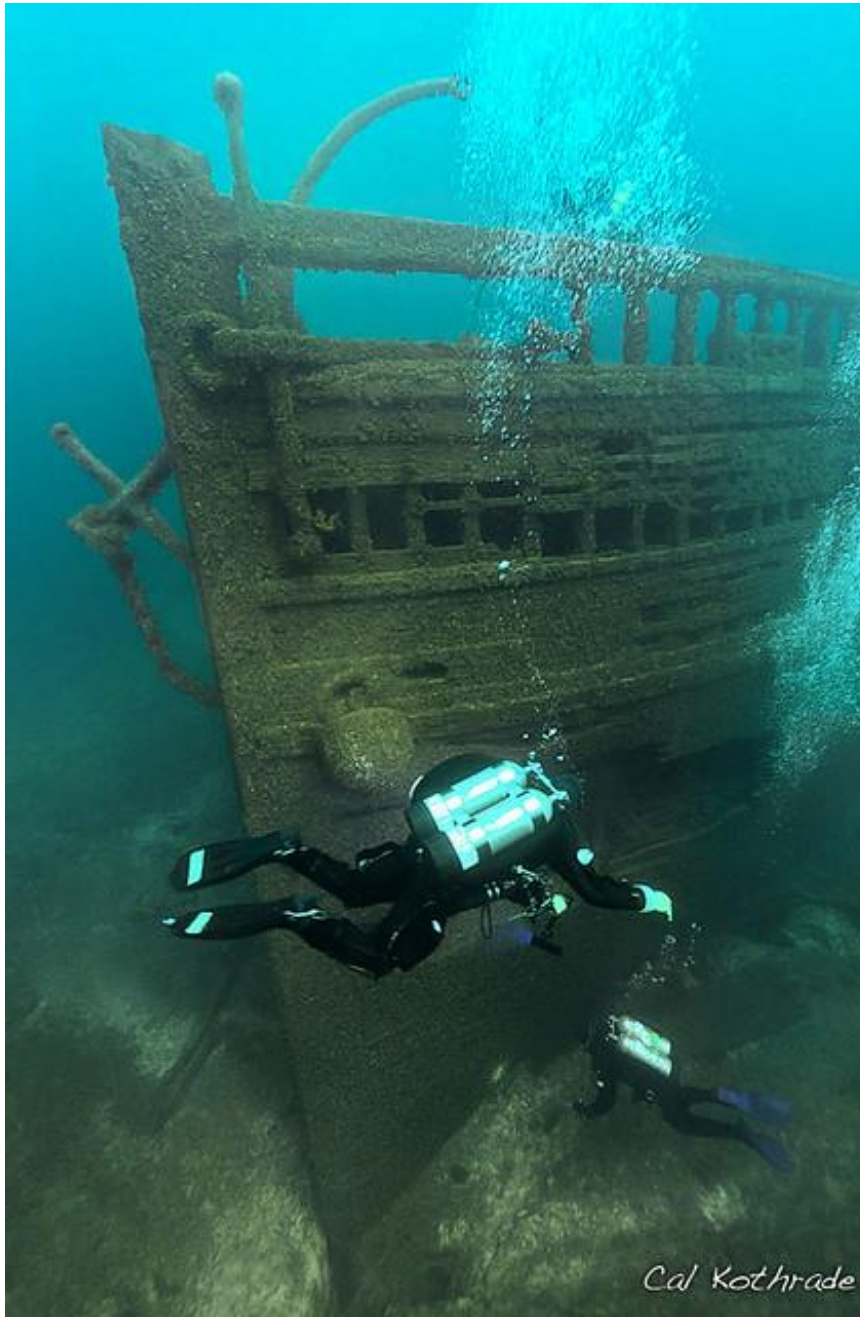


The *John V. Moran* pilothouse

The *John V. Moran* window

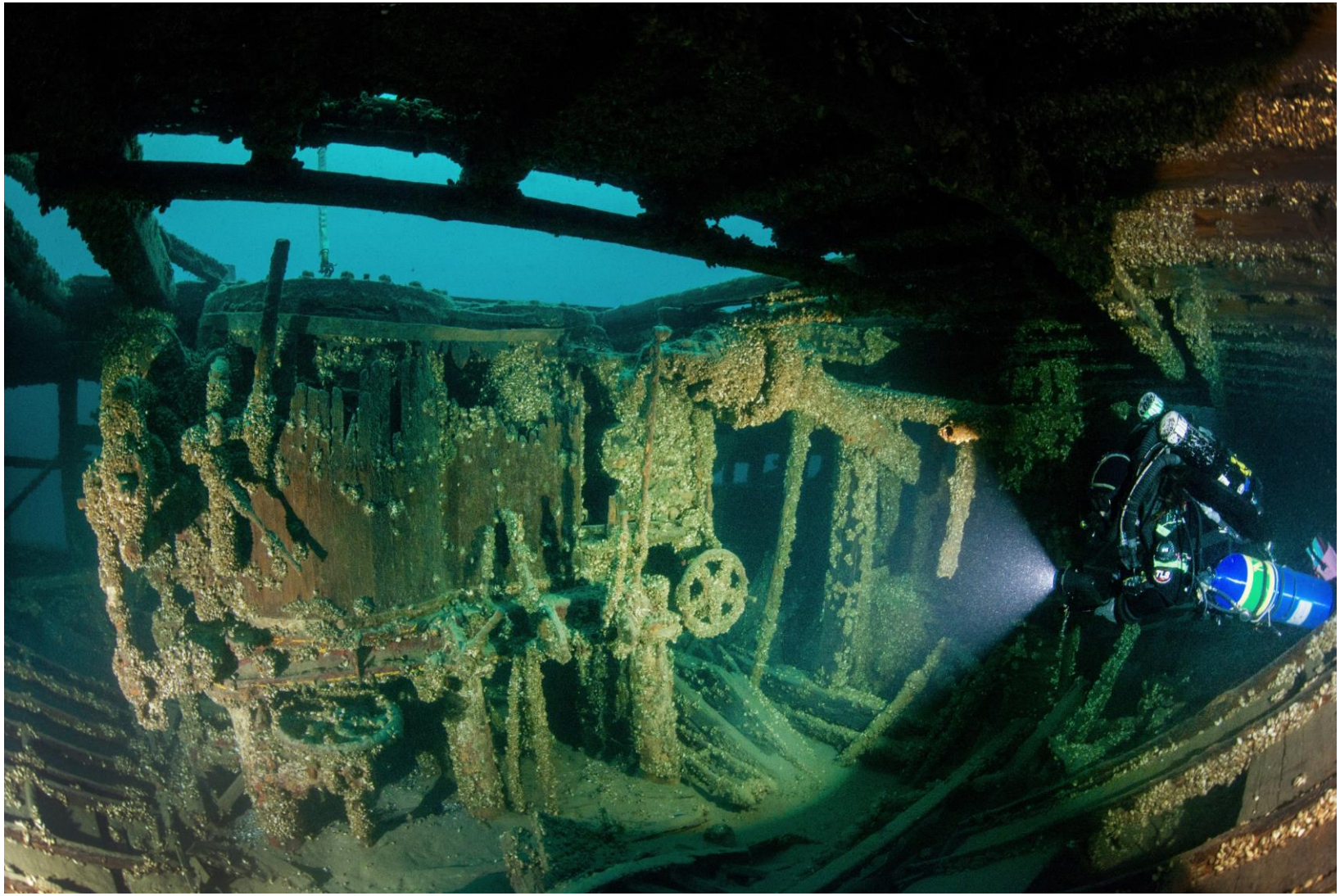


The *John V. Moran*. Sketch by Robert Doornbos courtesy of Valerie van Heest, Michigan Shipwreck Research Associates



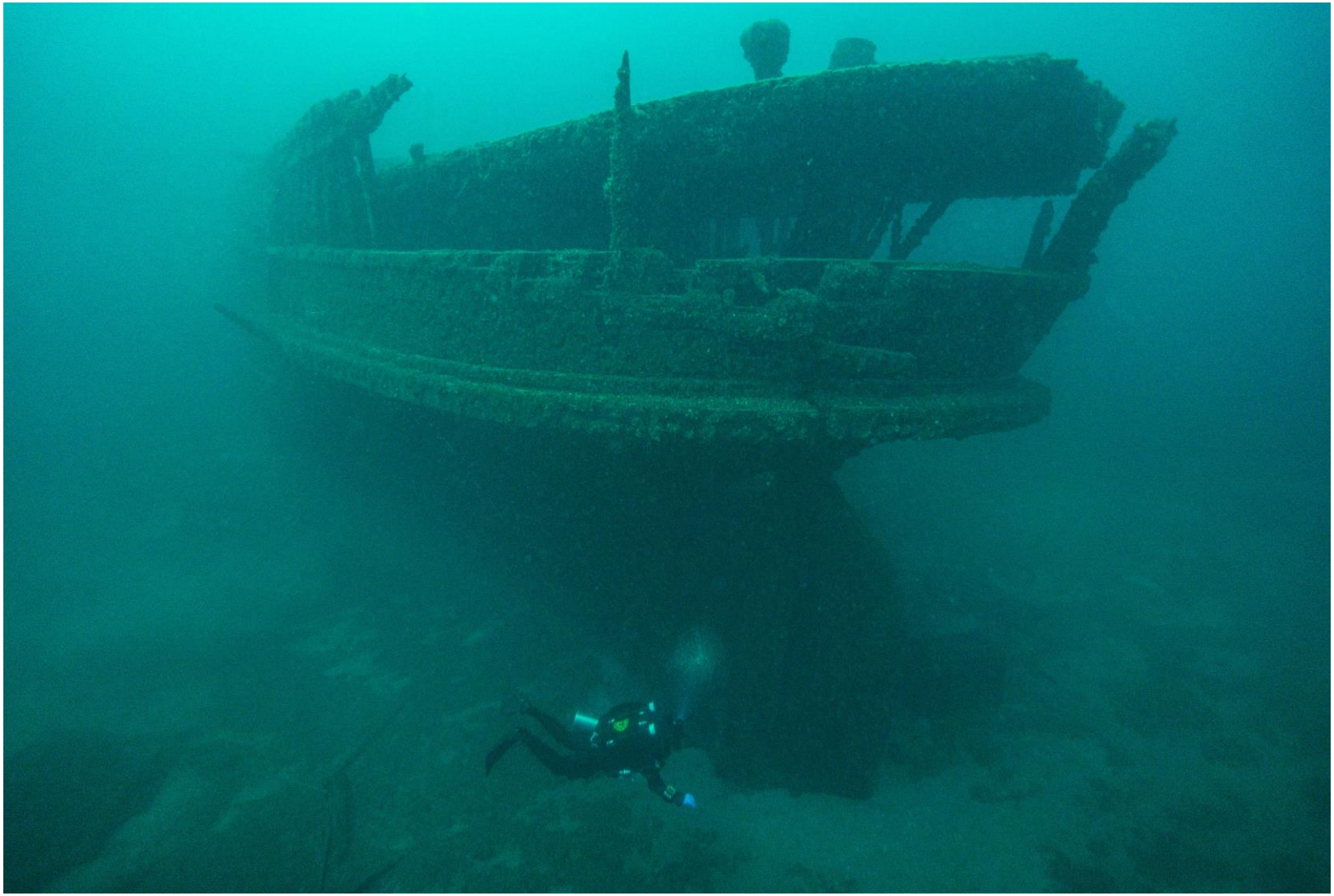
The *Eber Ward* bow

Courtesy of Cal Kothrade, Cal's World



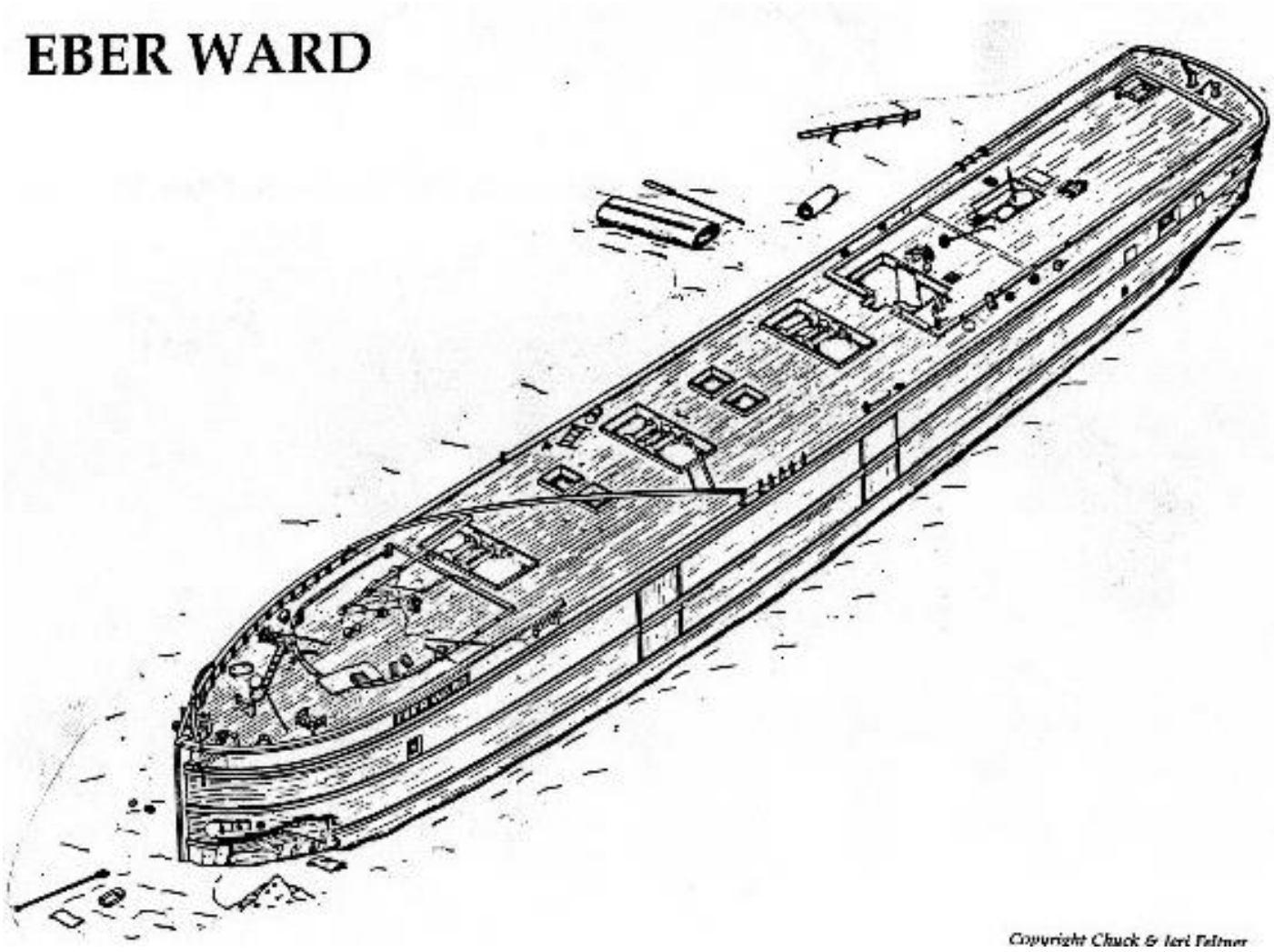
The *Eber Ward* engine

Courtesy of Becky Kagan Schott, Liquid Productions



The *Eber Ward stern*

Courtesy of Capt. Jitka Hanakova, Shipwreck Explorers LLC



The *Eber Ward.* Drawing by Chuck & Jeri Feltner
courtesy of Dan Friedhoff, Straits of Mackinac
Shipwreck Preserve

No-Decompression Limits and Repetitive Group Designation Tables

Depth (ft/m)	No-D Limits (min)	Group Designation A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
10 3.0		60	120	210	300											
15 4.6		35	70	110	160	225	350									
20 6.1		25	50	75	100	135	180	240	325							
25 7.6		20	35	55	75	100	125	160	195	245	315					
30 9.1		15	30	45	60	75	95	120	145	170	205	250	310			
35 10.7	310	5	15	25	40	50	60	80	100	120	140	160	190	220	270	310
40 12.2	200	5	15	25	30	40	50	70	80	100	110	130	150	170	200	
50 15.2	100		10	15	25	30	40	50	60	70	80	90	100			
60 18.2	60		10	15	20	25	30	40	50	55	60					
70 21.3	50		5	10	15	20	30	35	40	45	50					
80 24.4	40		5	10	15	20	25	30	35	40						
90 27.4	30		5	10	12	15	20	25	30							
100 30.5	25		5	7	10	15	20	22	25							
110 33.5	20			5	10	13	15	20								
120 36.6	15			5	10	12	15									
130 39.6	10			5	8	10										
140 42.7	10			5	7	10										
150 45.7	5			5												
160 48.8	5				5											
170 51.8	5				5											
180 54.8	5				5											
190 59.9	5				5											

Times Listed Are
Total Bottom Times!

Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
40	200			0	*
	210			2	N
	230			7	N
	250			11	O
	270			15	O
	300			19	Z
50	100			0	*
	110			3	L
	120			5	M
	140			10	M
	160			21	N
	180			29	O
	200			35	O
	220			40	Z
	240			47	Z

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
60	60			0	*
	70			2	K
	80			7	L
	100			14	M
	120			26	N
	140			39	O
	160			48	Z
	180			56	Z
	200		1	69	Z
70	50			0	*
	60			8	K
	70			14	L
	80			18	M
	90			23	N
	100			33	N
	110		2	41	O
	120		4	47	O
	130		6	52	O
	140		8	56	Z
	150		9	61	Z
	160		13	72	Z
	170		19	79	Z

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
80	40			0	*
	50			10	K
	60			17	L
	70			23	M
	80		2	31	N
	90		7	39	N
	100		11	46	O
	110		13	53	O
	120		17	56	Z
	130		19	63	Z
	140		26	69	Z
	150		32	77	Z
90	30			0	*
	40			7	J
	50			18	L
	60			25	M
	70		7	30	N
	80		13	40	N
	90		18	48	O
	100		21	54	Z
	110		24	61	Z
	120		32	68	Z
	130	5	36	74	Z

Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
100	25			0	*
	30			3	I
	40			15	K
	50		2	24	L
	60		9	28	N
	70		17	39	O
	80		23	48	O
	90	3	23	57	Z
	100	7	23	66	Z
	110	10	34	72	Z
	120	12	41	78	Z
110	20			0	*
	25			3	H
	30			7	J
	40		2	21	L
	50		8	26	M
	60		18	36	N
	70	1	23	48	O
	80	7	23	57	Z
	90	12	30	64	Z
	100	15	37	72	Z

DEPTH	TOTAL BOTTOM TIME	Deco Stops 30	20	10	REPET GROUP
120	15			0	*
	20			2	H
	25			6	I
	30			14	J
	40		5	25	L
	50		15	31	N
	60	2	22	45	O
	70	9	23	55	O
	80	15	27	63	Z
	90	19	37	74	Z
	100	23	45	80	Z
130	10			0	*
	15			1	F
	20			4	H
	25			10	J
	30		3	18	M
	40		10	25	N
	50	3	21	37	O
	60	9	23	52	Z
	70	16	24	61	Z

DEPTH	TOTAL BOTTOM TIME	Decompression Stops 50	40	30	20	10	REPET GROUP
140	10					0	*
	15					2	G
	20					6	I
	25				2	14	J
	30				5	21	K
	40			2	16	26	N
	50			6	24	44	O
	60			16	23	56	Z
	70		4	19	32	68	Z
	80		10	23	41	79	Z
150	5					0	C
	10					1	E
	15					3	G
	20				2	7	H
	25				4	17	K
	30				8	24	L
	40			5	19	33	N
	50			12	23	51	O
	60		3	19	26	62	Z
	70		11	19	39	75	Z
	80	1	17	19	50	84	Z

Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Decompression Stops 50	40	30	20	10	REPET GROUP
160	5					0	D
	10					1	F
	15				1	4	H
	20				3	11	J
	25				7	20	K
	30			2	11	25	M
	40			7	23	39	N
	50		2	16	23	55	Z
	60		9	19	33	69	Z
170	5					0	D
	10					2	F
	15				2	5	H
	20				4	15	J
	25			2	7	23	L
	30			4	13	26	M
	40		1	10	23	45	O
	50		5	18	23	61	Z
	60	2	15	22	37	74	Z

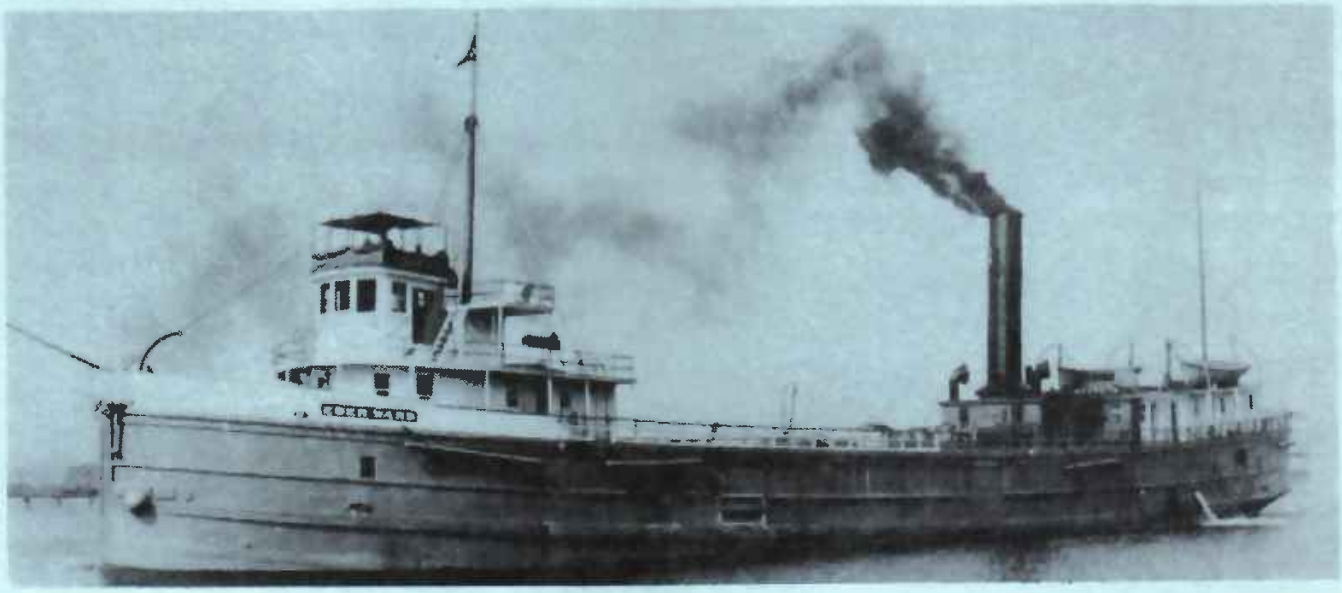
DEPTH	TOTAL BOTTOM TIME	Decompression Stops 50	40	30	20	10	REPET GROUP
180	5					0	D
	10					3	F
	15				3	6	I
	20			1	5	17	K
	25			3	10	24	L
	30			6	17	27	N
	40		3	14	23	50	O
	50	2	9	19	30	65	Z
	60	5	16	19	44	81	Z
190	5					0	D
	10				1	3	G
	15				4	7	I
	20			2	6	20	K
	25			5	11	25	M
	30		1	8	19	32	N
	40		8	14	23	55	O

EXCEPTIONAL EXPOSURES NOT SHOWN

Tables courtesy of United States Air Force School of Aerospace Medicine Hyperbarics

THE

EBER WARD



By

Dr. Charles E. Feltner

Dearborn, Mich.

The Wreck of the

EBER WARD

by

Dr. Charles E. Feltner
Dearborn, Michigan
September 1980

INTRODUCTION

Since 1963, numerous shipwreck hunters with advanced electronic gear(1)* have searched in vain for the steamer Eber Ward. Indeed her importance to divers undoubtedly has arisen from the fact that so many have searched and failed to find her as opposed to any great historical significance attained by this once proud steamer. The elusive Ward finally succumbed to the hunter on April 22, 1980, when the author, accompanied by his wife and diving buddy, Jeri, and diving friend Paul Horn, found the Ward in deep water several miles west of the Mackinac Bridge. The detailed story of how she was found, a textbook example of successful historical research and engineering methodology, will be discussed in another article. In the following sections of the present article, I would like to recount the historical background of the Ward and her sinking, along with a description of the wreck as it appears today.

HISTORICAL BACKGROUND

The Eber Ward (No. 136001) was built as hull humber 43 by F. W. Wheeler & Co.a/ of West Bay City, Michigan,(2) and was launched from their shipyards in the spring of 1888. She was built of oak and measured 213.2' x 37.0' x 22.2'. Her propulsion system consisted of a fore and aft compound steam engine with 26" and 48" bores, a 40" stroke, and at 84 RPM it produced 600 horsepower. She was built by the Samuel

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* Numbers in parentheses pertain to references listed at the end of this paper.

a/ The builder has been verified by the author from information on the capstan cover found on the wreckage of the Ward.

F. Hodge Co. of Detroit,[3] and was engine number 155[b/] in a series of engines built by them as marine propulsion systems. She had one 12'D x 12.5'L Scotch-type boiler (110 psi), which was built by the Lake Erie Boiler Works, Buffalo, N. Y. Her main steering system was a steam power assisted unit built by Pawling and Harnischfeger Co. of Milwaukee, Wisconsin.[c/] When registered at Detroit District Custom House on July 21, 1888, her tonnage was officially reported as 1343.97 gross and 1037.71 net.[4]

The Ward had been built as a package freighter for well-known Michigan maritime industrialist Captain Eber Ward, owner of Ward's Detroit and Lake Superior Line, and carried his name throughout her lifetime. Of the seven vessels in the Ward fleet of this period (see Table I), the Eber Ward survived all of her sister ships, each

TABLE I

STEAM VESSELS OF WARD'S DETROIT AND LAKE SUPERIOR LINE (Circa 1890)

Name	Official No.	Built		F.W.Wheeler Hull No.	Gross Tons	Date of Loss
		Date	At			
JAMES FISK, JR.	75387	1870	Buffalo	N.A.	1095	Nov 14, 1906
SAMUEL F. HODGE	115763	1881	Detroit	N.A.	585	Jul 5, 1896
OSCEOLA	155063	1882	W. Bay City	15	980	Dec 7, 1906
WM. H. STEVENS	81120	1886	W. Bay City	27	1332	Sep 8, 1902
EBER WARD	136001	1888	W. Bay City	43	1344	Apr 20, 1909
JOHN V. MORAN	76748	1888	W. Bay City	44	1350	Feb 14, 1899
JOHN N. NICOL	76786	1889	W. Bay City	46	2126	Dec 12, 1906

of which met disastrous endings. She was essentially a duplicate of the Wm. H. Stevens and the John V. Moran. All of the vessels in Table I, except for the James Fisk, Jr. (a purchased vessel), had been built at Ward's request. Apparently Captain Ward had a close association with Samuel F. Hodge[5] of Detroit, inasmuch as he named one of his ships after him and selected Samuel F. Hodge and Co. engines for the six vessels which were built for him. In later years, Samuel F. Hodge's son, Harry

b/ The engine number and builder have been verified by the author from information on the builder's plate found on the wreckage of the Ward.

c/ Verified by the author from information on the steer ng system builder's plate found on the wreckage of the Ward.

S. Hodge, purchased a number of the original Ward Line vessels, including the Eber Ward. Captain Ward also took a liking to the craftsmanship of shipbuilder Frank Wheeler[6] of West Bay City, Michigan, as all but two of the vessels in Table I were built in the yards of F. W. Wheeler & Co. Wheeler hulls and Hodge engines were benchmarks of excellence in the late nineteenth century Great Lakes marine world.

Over her lifetime, the Ward was owned by a number of different companies as shown by the list of her enrollments in Table II. On the back side of her last certificate of

TABLE II

EBER WARD - RECORD OF CUSTOM HOUSE ENROLLMENTS[7]

Enrollment No.	Date	Custom House District	Owner
7	Jul 21, 1888	Detroit	Ward's Detroit & Lake Superior Line
8	Jul 18, 1892	Detroit	Crescent Transportation Co.
66	May 2, 1896	Buffalo Creek	Union Transit Co.
75	May 17, 1904	Buffalo Creek	John J. Boland & Co.
76	May 18, 1904	Buffalo Creek	Columbia Transit Co.
22	Mar 26, 1907	Huron	Hecla Transportation Co.

enrollment, dated March 26, 1907, are notations by the collector of customs which read, "Where surrendered: Port Huron. When surrendered: April 23, 1909. Why surrendered: Total loss, April 19, 1909[d/], cut thru by ice in Straits of Mackinac".

The most attractive and informative photograph of this vessel located to date by the author is shown in Figure 1. The date of this photograph, although uncertain, is thought to be in 1908. It is also the best in terms of construction detail (note gangways, mushroom anchor, hurricane deck, yawl boats, etc.). Other photos showing her at Dultuh, Minn., in markings of the Crescent Transportation Co.[8] (1892-1896) and at Buffalo, N.Y., in the markings of the Union Transit Co.[9] (1896-1904) are in existence. Careful examination of these photos show few, if any, significant differences in superstructure arrangement or configuration.

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d/ We believe that this date is in error in that all other reports and sources of information show the date of loss to be April 20, 1909.

On her maiden voyage, she stopped in the port of Detroit on July 26, 1888, where a Detroit Free Press reporter wished her well by writing "It is to be hoped that she will make as gallant a voyage through life as the genial old gentleman for whom she is named",[10] Two days later, on July 28, she arrived in Buffalo where she delivered her first cargo -- a load of pig iron that had been picked up in St. Ignace, Michigan.[11]

Prior to her sinking, the casualty record of the Ward was without major incident. On April 29, 1895, she rescued the crew of the steamer A. Everett (No. 105919), which was cut through by ice and sank off Point Aux Barques, Lake Huron.[12] She suffered a minor stranding when she went ashore on April 24, 1897, during a heavy fog at Whitefish Point, Lake Superior. She was released without damage.[13]

Equally routine were her repairs. In 1891, she went into drydock at Buffalo for a new propeller[14] and minor repairs were noted in 1899 and 1904 by Inland Lloyds.[15,16] As shown in Table III, her value declined with age, but her insurance ratings were high, indicating she was kept in very good repair.

TABLE III

TYPICAL INLAND LLOYDS' INSURANCE VALUATION AND RATINGS FOR THE EBER WARD

Year	Valuation	Rating	Reference
1893	$85,000	A1*	(17)
1899	$48,000	A1-1/2*	(15)
1906	$25,000	A1-1/2*	(16)

THE SINKING

As daylight dawned on the morning of April 20, 1909, the routine and relatively non-descript life of the steamer Eber Ward was about to come to an abrupt and tragic end. Several days earlier, she had left Chicago on her maiden voyage of the year and

stopped in Milwaukee to pick up a load of 55,000 bushels of corn bound for Port Huron. This cargo, worth about 60 cents per bushel, was insured even though the vessel itself, worth slightly less than $30,000, carried no insurance.(18) Having made a Grays Reef passage with an eastward turn into the Straits of Mackinac at White Shoals, Captain Timese LeMay of Detroit(19) stood confidently on the bridge of the Ward and observed in the far distance what he thought to be a slushy mass of windrow ice dead ahead. At a distance of five to six miles west of Mackinaw City, the Ward ran directly into this ice floe and sank within five to ten minutes, carrying five crew members to their deaths. It was 9 o'clock in the morning of a bright, fair-weather day with a light wind blowing from the southeast.

In somewhat more dramatic terms, her loss was reported by the Detroit News as follows:(20)

"Captain LeMay had stood on the bridge and felt the timbers twist and crackle beneath him as the ice won its battle with the wood; he had seen the water creep toward the deck and he saw five of his men sink to death beneath the jagged crust of Lake Michigan."

Inasmuch as considerable controversy developed over the disaster, we first present the story of Captain LeMay as he told it to the Detroit News the day after the sinking.(20) "The ice got us", said the Captain. "I stood on the bridge as we neared that ice floe, never thinking it was anything but slush. From its appearance, we could have taken it at full speed. But, you know, the Ward was a wooden steamer, and I didn't want to take any chances, so I signalled for the engineer to check. As we drew nearer, I became even more cautious and stopped the machinery. Closer and closer we floated, not one of us thinking of any possible danger. The strip of ice was only 40 or 50 feet through and I thought we would be in open water again within a few minutes. Then came the crash." The Captain stopped talking for a moment. "I was totally unprepared for it and had to grab the bridge rail to keep

my feet. We were loaded and the Ward just shoved her nose right into the solid floe. Had we been running light, she might have slid up on the ice, but the grain weighted her down, and it was a test of strength between solid ice and timbers that have done service many years. It must have torn the bow to bits, because I felt her begin to settle an instant after she stopped quivering from the shock of collision. The bow went down and down, and then the water began to creep up all around the hull.

I can't describe to you how the boys worked. Every man of us fought against the water for dear life. But it was useless. The pumps couldn't begin to handle the flood that was pouring in through the shattered bow. I held out until the last minute before giving up hope that we could pump out the water at least as fast as it was coming in. But man! you couldn't stop it. It's a case of taking to the boats, I said to one of the mates, and laid plans for leaving. We quit work on the pumps and worked for life itself then, for the water line was creeping up nearer and nearer the deck every second. I sent the two mates with a part of the crew to the starboard boat and took charge of the others myself. We dropped the boats over the side and piled in. Before dropping into my place, I looked around and saw that the others were over the side already, also that it was a case of mere seconds before the Ward would take her last plunge toward the bottom.

Then we cleared. For an instant I felt thankful thinking we were all safe. I saw smoke off to the southwest and knew we could get ashore without much trouble. I turned around and saw the water swish up over the Ward's deck. Then she plunged. It was that plunge that cost five lives. The crew of the starboard boat had neglected or forgotton to throw their boat crane inboard, and the curved arm of steel caught the gunwhale of their craft, literally jerking it from under them, and leaving the men floundering in the icy waters." The Captain was visibly affected and was silent for a moment.

"We got around as quickly as possible and began picking them up. Some had grabbed the wreckage and others were hanging on to pieces of ice. We were handicapped by the floating pieces of ice, for the Ward went down right through it, you know. But we pulled six of them into our boat before it was too late. Then I looked around for the others and there was only a bit of wreckage and some dirty ice and water and a few bubbles.

It was mighty hard, I tell you -- knowing that those men went down, with us within a few feet of them. But we did our best. Every man worked like sin, and there is more than one little story of heroism that could be told of incidents that transpired in those few fearful minutes. One of the Rutland boats got us. It was one we had sighted while fighting for our lives. I don't remember her name, but the captain was mighty good to all of us. I don't think there is much chance of getting the bodies of my men who were drowned. You see, it's mighty deep there; one of the deepest places in the lake, I guess."

Immediately, a former owner and master of the Eber Ward, Captain Arthur Slyfield (Columbia Transit Co., 1904-1907), challenged Captain LeMay and gave his view of the cause of the sinking to the Detroit News.(20) "In my opinion, ice did not cause the steamer Eber Ward to sink. The boat was built to break ice. I know this, for I was captain of her for three years. There was a bulkhead of 12 inches of solid oak in the bow, which would have withstood any ice. Even had she struck a heavy ice floe and her bow been badly damaged she would have floated for at least one hour. I believe that the boat struck a rock which ripped a hole in her bottom. During the last year I was her master, I put her through 20 miles of ice 11 inches thick."

As soon as the first impact with the ice was felt aboard the Ward, First Mate A. P. Gallino of St. Clair, Michigan, ran to the bow and climbed down into the windlass

room through a port side hatch to survey the damage through a manhole in the lower forepeak. According to the Detroit Free Press,[21] "He sought to descend by means of a small iron ladder that had always been there. Finding the ladder gone, he first pushed his foot and then his hand through the opening until he encountered a great mass of ice in the bow of the craft."

In his interview with the Detroit Free Press, First Mate Gallino refuted Captain LeMay's story that he had checked the engines as well as Captain Slyfield's assertion that the Ward had struck a rock by stating[21] "We were going pretty fast when we struck the ice. The force of the blow completely stove in the bow of the boat. The hole it must have ripped in her bow, judging from the crush of ice I found in her hold, must have been a fright. No, it was no rock that struck us, it was ice -- good solid ice -- and not a field of slush. I do not wonder at the fact that the Ward sank so quickly. That ice would have sunk almost any boat in just as brief a space of time as it took the old craft to go down. I don't want to go through any more experiences of that kind, thank you."

The bow of the Ward had been sheathed with iron to protect her from being cut by ice and had one watertight bulkhead in the bow area.[22] With this construction, Great Lakes seamen were surprised that the ice had sunk her. Indeed, the Marine Review called her sinking "extraordinary" and further noted "that she sank as the result of a collision with a heavy ice floe, though it is probably the first instance on record of a lake steamer having been sunk in a collision of that sort."[23]

Captain H. C. Westcott, United States supervising inspector-general of the Steamboat Inspection Service, ordered the board of inspectors of the local district of Grand Haven, Michigan, to conduct an immediate and thorough investigation of the wreck of the Ward. In a terse statement in the 1910 Annual Report, their findings were,[24]

"April 20, 1909 - while en route from Milwaukee to Port Huron, the steamer Eber Ward collided with heavy ice in the Straits of Mackinac, and sank. Loss, $40,000. Five of the crew were drowned. Case was investigated, and Timese LeMay, master, was found guilty of misconduct, negligence, and inattention to his duties, and his license was revoked." Thus ended the controversy over the Ward's sinking as well as the career of Captain Timese LeMay.e/

Captain LeMay's misfortune, however, was insignificant compared to that of the five crewmen who lost their lives in the wreck of the Ward. The dead sailors were Second Mate John Hern, Watchman James Perry, Firemen John Leubrath and Kenny McKay, and an unidentified deckhand. Hern, Perry and Leubrath were all from Bay City, Michigan. Captain LeMay's daughter, Mrs. William H. Lehman of 124 Pitcher St., Detroit, had spent 11 weeks on the Ward in the summer of 1908 and knew Watchman Perry and Fireman John Leubrath well.(25)

As fate would have it, Second Mate John Hern was serving in the place of his son Lester Hern. He mistook a telegram sent to his son as intended for him and left Bay City and went immediately to Chicago to accept the crew position offered in the message. Upon boarding the Ward, he discovered his mistake, but agreed to sail from Chicago to Port Huron and then turn the job over to his son.(20) Hern had survived the wreck of the schooner Wend-the-Wave (No. 26836) when she sank in a collision on Lake Erie, October 6, 1889. Several people died in this disaster, including Hern's sister-in-law.

Mrs. James Perry, wife of the dead watchman, was informed of the wreck while doing some shopping in a Bay City store. She appeared to go stark mad and ran through the streets crying that her husband was dead.(20) As evidence of Perry's presence,

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e/ Captain LeMay was not unfamiliar with shipwrecks. He was master of the steamer Anna Smith (No. 105276) when she sank in the Straits of Mackinac on November 27, 1889.

we found a stylish drinking cup below deck in the stern area while diving on the wreckage of the Ward. In gold, Old English letters, it bears the inscription, "James Perry".

The steamer Bennington (No. 204994), of the Rutland Transit Co., had picked up the survivors of the Ward and brought them to Mackinaw City. About two hours after their arrival, George V. Coffman, a member of a pioneer Mackinaw City family,(26) took a picture of the survivors. It is reproduced in Figure 2, where the crewmembers left to right are First Mate A. P. Gallino, Captain Timese LeMay, Chief Engineer Frank Baldwin, 2nd Engineer S. R. Shipman, Deckhand Augustus Palmer, Wheelsman Charles Lester, Steward John Winterhaler and Wheelsman Frank Gutch. Not present when the photo was taken was Mrs. John Winterhaler, the steward's wife and ship's cook.

Inasmuch as the Eber Ward had sunk in broad daylight and good weather with the steamer Bennington nearby, her approximate position was reasonably well known. Additionally, her cargo of corn was fair game to salvors who, if they found the wreck, could sell the corn to a starch works. And thus it was that Worden G. Smith, of the American Wrecking and Salvage Co. of Milwaukee, located the wreck of the Ward in early June of 1909 in 138 feet of water.(27) Plans were laid to use hard hat divers to rig suction pipes in the holds of the Ward for the purpose of pumping out the corn cargo. Somewhat earlier (circa 1898), Smith had lost two divers on the wreck of the steamer Pewabic while trying to salvage her copper cargo.(28) This time, operations went well and, with the aid of the 143-foot steam barge Albert Soper (No. 105997), 14,000 bushels of corn were recovered and delivered to Milwaukee by Captain John Claussen, master of the Soper. The salvage operation set a depth record for the recovery of grain from a sunken vessel.(29) A photograph of the Soper anchored on the Ward while engaged in the pumping operations, is in existence.(8)

THE WRECK TODAY

My wife Jeri, myself, and diving friend Paul Horn, began our search for the Eber Ward on April 20, 1980, 71 years to the day after it sank. We found it three days later after searching only about 18 hours. It was in exactly 138 feet of water just as W. G. Smith had said. The wreck sits on a narrow ledge part way down the bank of the south edge of the deep channel in the middle of the Straits (See Figure 3). Using normal sonar searching techniques, it would be very difficult to "see" the wreck because of its location on the ledge. This explains in part why many wreck searchers were never able to locate the wreck.

By September 1, 1980, we had made about 85 dives on the wreck, most of which were spent either filming the wreck or conducting underwater archaeological survey work. Part of the results of this effort are shown in Figure 4, which is a three-dimensional scale drawing of the wreck as she lies today.f/ Note that all of the cabin structure is missing which was probably blown off by trapped air during sinking. The wreck sits almost perfectly upright with the bow pointing a few degrees west of south. The hull is virtually intact with the exception of two large gashes in the bow where she was punctured by the ice, and the transom which was blown out by air pressure when she sank bow first. Captain LeMay reported that he saw the stern blow out and it was accompanied by the sound of an explosion.(21) The punctures in the hull start a few feet aft of the bow on both the port and starboard sides and extend rearward about fifteen feet with an average height of four feet. The longitudinal character of these punctures and their vertical location in the hull leave no doubt that ice, and not a rock, sunk the Ward. (Additionally, the minimum water depth within a half mile around the wreck is about 100 feet and there are no reefs or underwater obstructions in the area.)

As might be expected, considerable debris is scattered all around the hull on the

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f/ Additional results of our underwater archaeological efforts include a 35 minute underwater film of the wreckage which is available for public showings.

bottom. Note for example, in Figure 4, a 20-foot section of the smokestack lies on the bottom adjacent to the boiler room about 35 feet off the starboard side of the wreck. An oar from the ill-fated starboard lifeboat was found lying next to the smokestack. Another oar and one of the treacherous davits which dragged the lifeboat under were located aft of the stack near the stern within a few feet of the hull. The sight pole or "steering stick" lies on the bottom about 20 feet directly in front of the stem. Most of the deck railing is gone with the exception of that at the bow and a large section connected near the starboard bow which stretches across the middle of the wreck almost to the port side midships. We presume the railings were broken away by the grapnel from the Albert Soper as she dragged for the wreck during the salvage operations. The walls around the engine room,and bulkheads in the below deck crew quarters to the rear of the steam engine, have all been blown down and broken apart resulting in appreciable debris in this area. The Ward was well equipped to handle the personal hygiene of the crew as we have noted two bathtubs, three toilets, five sinks and at least one "thunder bucket" in the wreckage. Both the capstan cover and engine builder's plate carried the vessel name on them, thus making identification of the wreck certain. We have found no trace of the dead crewmen.

Of the 21 shipwrecks I have dived on in the Straits area, the Eber Ward is by far the finest available for scuba diving. At 138 feet, she is also the deepest and care should be exercised when visiting her, especially if your dive plan includes penetration of the wreck. To find the Ward, start out at the south tower of the Mackinac Bridge on a course of 275° magnetic. After travelling 4.35 statute miles, you should be at the wreck site. We hope you enjoy our find!

ACKNOWLEDGMENT

I wish to thank Jeri Baron Feltner and Paul Horn for their dedicated efforts in vessel research and their unremitting loyalty and faith in the Captain of the GEMINI II. I am deeply indebted to Dr. Walter Hirthe of the Wisconsin Marine Historical Society for his encouragement and his help in directing me to several sources of information. Special thanks go to Mr. David Donovan for his technical support and especially for his outstanding drawing of the wreck of the Eber Ward. The assistance of Messrs. Michael Knes and Mark Coir of the Burton Historical Collection, Detroit Public Library, Mr. Gregory Gregory of the Marine Collection, Milwauke Public Library, and Dr. Richard Wright and Dr. Donald VanLare of the Great Lakes Archival Center, Bowling Green State University, is gratefully acknowledged. Various discussions with C. Patrick Labadie, Curator, Canal Park Museum, Duluth, were also helpful. Mr. Kenneth Hall of the National Archives, Washington, D.C., provided valuable input to the manuscript.

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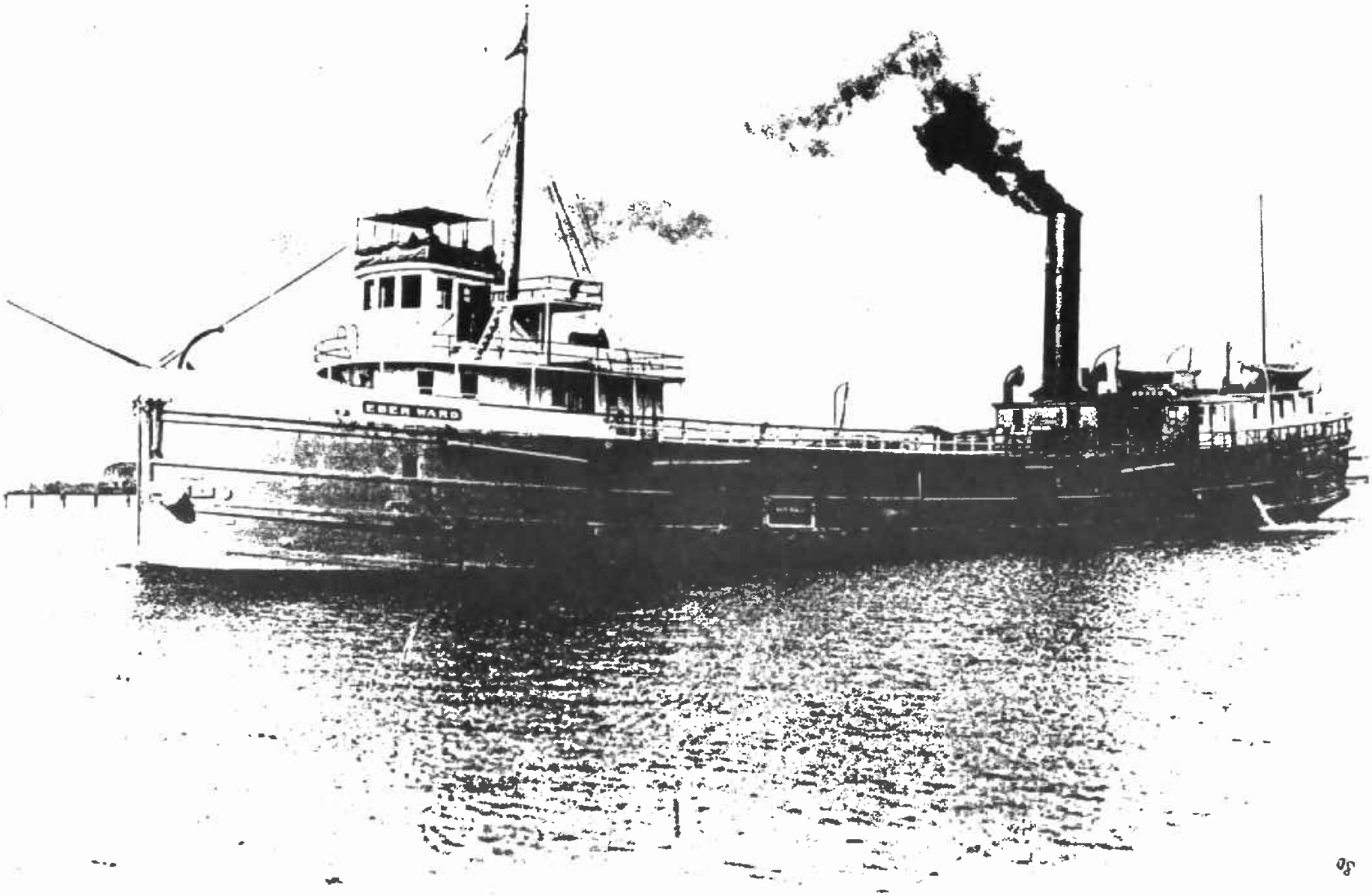

FIGURE 1: The Eber Ward in 1908. Courtesy Marine Collection, Milwaukee Public Library

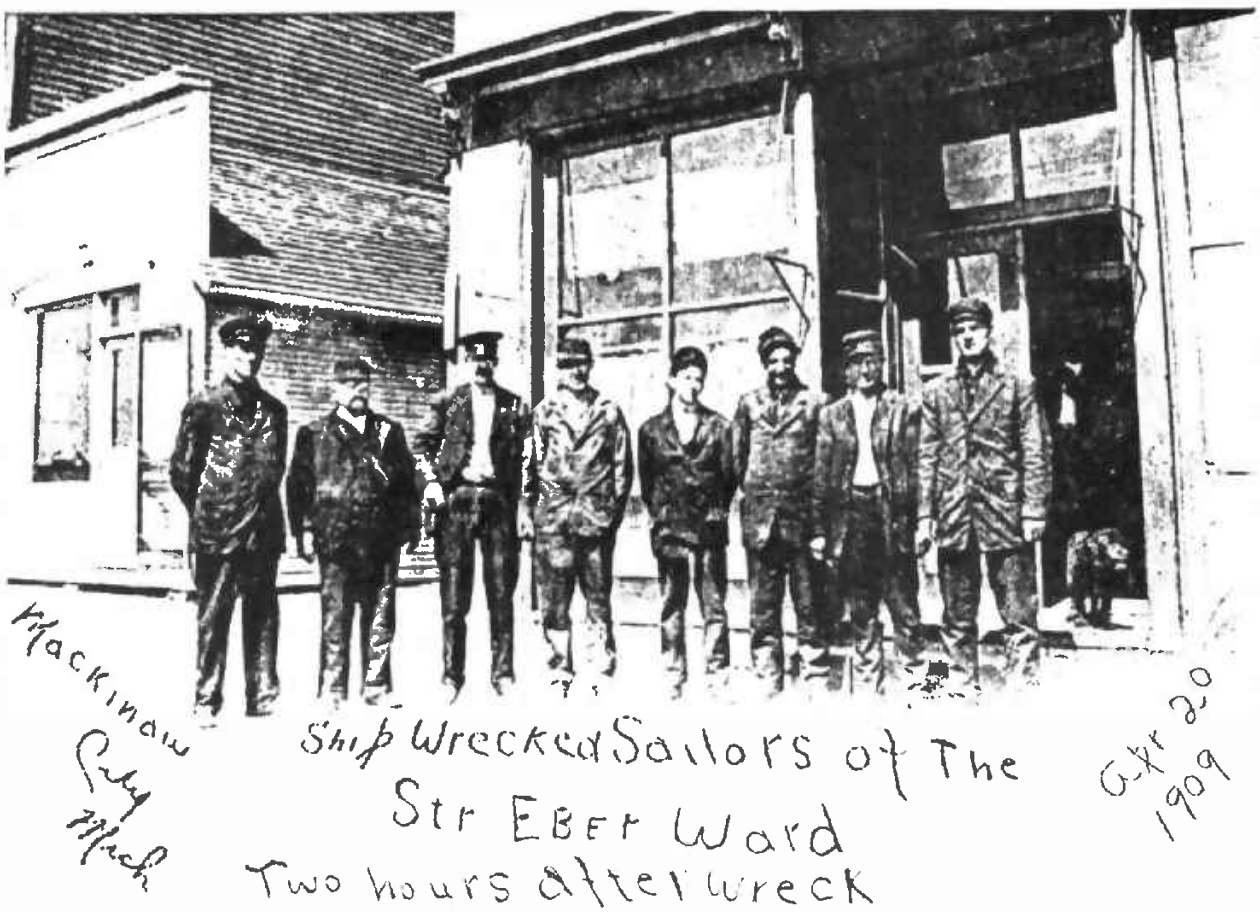

FIGURE 2

Surviving Crewmembers of the Eber Ward

Photo by George V. Coffman

Courtesy of Mrs. Edna M. Coffman

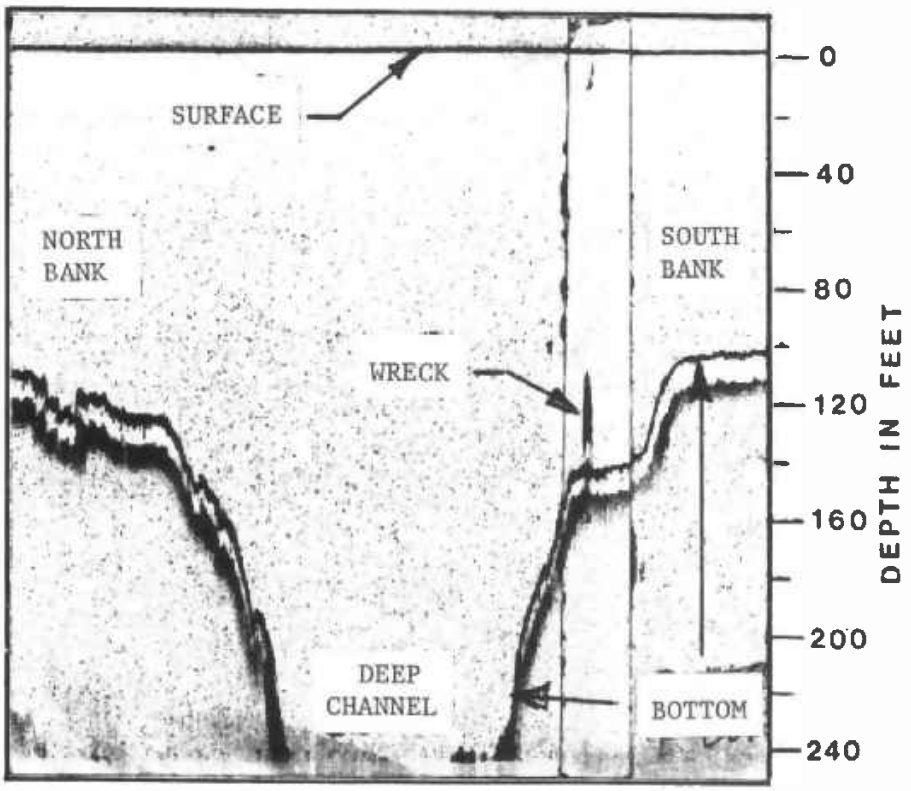

FIGURE 3

Chart Recording Showing the Wreck of the Eber Ward

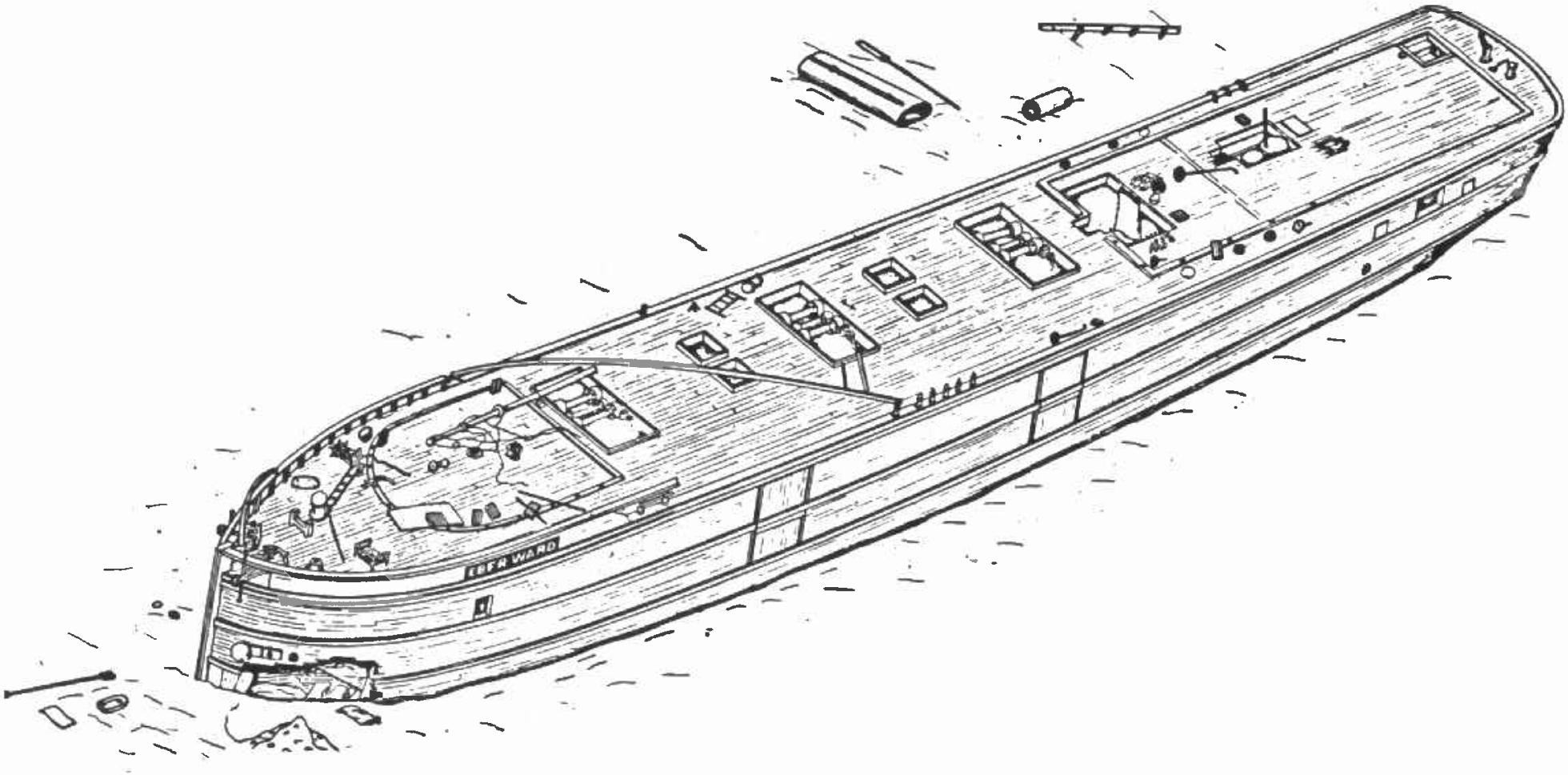

FIGURE 4

Scale Drawing Showing Wreck of the Eber Ward
Drawing by David Donovan, Chelsea, Michigan

FROZEN IN TIME: The Shipwreck *JOHN V. MORAN*
by Valerie van Heest, Director Michigan Shipwreck Research Associates

TO BE AMONG THE FIRST PEOPLE to view a ship lost for more than a century is one of the most exciting moments in the life of a shipwreck hunter. To finally see the actual ship, after years of researching its career and loss, feels akin to time travel. The ship is real, the people who sailed on it are real, and the details of its loss can finally be understood. That feeling is even more satisfying when the shipwreck is in pristine condition, appearing as if it were still en route to port, no worse for the time it has spent on the bottom. That is the case of the *John V. Moran*, a 214-foot-long steamship lost in 1899 off Muskegon, Michigan, after being trapped in the ice for several days. It holds rank as the most intact steamship wreck in all of the Great Lakes.

Our team first experienced the elation of discovery in 2001 when we located the wreck of the *H.C. Akeley*, a steamer lost in an 1883 storm off Saugatuck, Michigan. Only one historic photograph of the *Akeley* existed, and it depicted the ship under construction, so in finding the wreck in good condition, we could better understand the appearance of the completed ship. But in the case of the steamer *Joseph P. Farnan*, which was never photographed, there is little remaining to indicate how the ship looked before the fire that sank it in 1889. Historic records suggested the former carferry-turned-barge *Ann Arbor Number 5* had been scrapped, but our discovery revealed that one half of it sank under tow on its way to a scrap yard.

The most elusive shipwrecks are those that went down with everyone on board, like the steamship *Chicora,* lost in 1895 while en route from Wisconsin to Michigan; Northwest Airlines Flight 2501*,* a DC-4 that crashed in southern Lake Michigan in 1950; and the *Andaste*, lost in 1929 somewhere between Grand Haven, Michigan, and Chicago. With no survivors, newspaper accounts could only speculate about what happened in these tragedies, and where they occurred.

By the mid-2010s, after a myriad of expeditions since 1998, the Michigan Shipwreck Research Association had searched more than 600 square miles and found 18 shipwrecks, but not the three that went down with all hands. The lack of eyewitness accounts has made the hunt more difficult. We have been successful finding shipwrecks with survivors, like the *SS Michigan,* sunk by the ice in 1885. However, we've found that survivor accounts printed in newspapers aren't usually very accurate. It took us three expeditions over three years to find the *Michigan*. We realized that accounts passed from survivors to reporters in one city, then rewritten by reporters in other cities, then reinterpreted 100 years later confuse the information like that old-fashioned game of "telephone."

But realizing that secondhand information was better than no information at all, we set out in 2013 to find the last remaining shipwreck off West Michigan that had survivors: the *John V. Moran*, holed by ice in 1899.

IN 1888 THE DETROIT & LAKE SUPERIOR LINE OF STEAMSHIPS commissioned the building of two similar 214-foot steamers to add to its fleet, one named in honor of the line's founder, Eber Brock Ward, and the other for board member, John Vallee Moran. Eber Ward was born in Canada in 1811 to humble beginnings. He came to Detroit when he was just twelve and began sailing as a cabin boy on schooners. In 1833, he joined his uncle in his shipbuilding business in Marine City, Michigan. To grow their business, they decided to operate their ships in addition to building them. Eber Ward had witnessed the rise of the railroad industry as tracks reached the Midwest, and he realized this development could adversely affect his shipping business. Rather than compete with the railroads, he decided to partner with them. Ward established a steamship line that would carry passengers and freight west via water from Buffalo, where the railroad ended.

As railroads reached Michigan in the 1840s, Ward began running his steamships west across Lake Michigan. Diversifying into lumber, steel, and railroads, Ward, who came from nothing, became Detroit's first millionaire and the richest man in the Midwest. Conversely, John V. Moran was born into an affluent family in 1846. He would spend his entire life within just a few blocks of his family's first home on Jefferson Street in

Detroit, which happened to be near Eber Ward's shipping office on Griswold Street. Moran received his primary education at St. Anne's Church, the oldest structure in Detroit, built in 1701. He attended Detroit's first high school on Bates Street. Then he studied at a prestigious private school for Detroit's most promising young men and graduated from the Board of Trade Business College.

At twenty years old, Moran entered the grocery business, a leading industry in Detroit that supplied all food and sundries to retail stores throughout the Midwest. He interned at several firms, serving as a clerk, bookkeeper, and most significantly, a shipping agent before becoming a partner in a firm that would carry his name: Moran, Fitzsimons & Company. Considering that his home, church, schools, and offices were all located in what has become Detroit's financial district, it is no wonder John Moran grew to be a successful businessman.

Moran often shipped his grocery products on Eber Ward's steamers, and in the early 1870s, Ward asked Moran to serve on his board of directors. Coincidently, the two men shared Canadian heritage. They were both life-long Detroit residents, successful entrepreneurs, and were both born on Christmas Day, though 35 years apart. In 1888, long after Ward's death, their relationship would be celebrated in the naming of sister ships.

The *John V. Moran* and the *Eber Ward* were built by Frank Wheeler of West Bay City, Michigan. Wheeler had a respectable business, and 1888 marked a year of tremendous growth for his shipyard. That year he had contracts to build eleven ships, up from his typical commissions of three ships. Both steamers cost $100,000 and were constructed of wood, built at a pivotal period when hull materials were transitioning from wood to iron. Since the 1862 launch of the Lakes' first iron ship, the *Merchant*, some shipbuilders began working with iron. But wood remained the material of choice well into the 1880s. It was plentiful, inexpensive, easy to work with, and insurance rates at the time were actually lower for wooden ships. The two new steamers began operating for the Detroit & Lake Superior Line.

In 1892, the company changed its name to the Crescent Transportation Company. But in just a few years, Crescent lost its relationship with the railroads and consequently went out of business and was forced to sell all its ships. In 1895, the Union Transit Company purchased Ward's wooden steamers, but within a few years it began modernizing its fleet with steel ships, by then considered better for winter travel. The company put its wooden steamers on the market.

Edward Gifford Crosby of Milwaukee purchased the *John V. Moran* in 1898. Crosby had recently started a shipping line to provide a cross-lake service from Grand Haven and Muskegon, Michigan, to ports in Wisconsin, a new business for the fifty-year-old. Born in New York, Crosby came to Michigan in 1856. When Civil War broke out, he joined the First Michigan Cavalry and saw action at Bull Run, Gettysburg, and the Wilderness Campaign, serving under General Custer. After the war, he married, moved to Muskegon, and began working in the lucrative lumbering industry. He purchased a tugboat to haul lumber schooners and named it after himself. When the lumbering business petered out, he started a marine construction business. He built the channels at Muskegon and Milwaukee; with his new steamship service, he was able to admire his work as he ran through those two channels.

In addition to the *Moran*, Crosby purchased several boats, including a tug he named *O.M. Fields* after his partner; the old wooden steamer *Nyack;* and the iron-hulled *Wisconsin*, which he refurbished and re-named *Naomi*. He bought the 10-year-old *John V. Moran* for a bargain price of $35,000, significantly less than the original $100,000 construction cost, and had the hull clad in iron for winter service. But even that iron reinforcement would be no match for the record cold winter that hit Lake Michigan two months later, in February 1899.

THE ICE ON LAKE MICHIGAN IN the winter of 1899 was particularly bad. Nevertheless, with few trains running around the southern end of Lake Michigan, the frozen lake was still a viable maritime highway, especially for vessels built for service in the ice. Crosby operated out of two Michigan ports, Grand Haven and Muskegon,

carrying freight and passengers across to several ports in Wisconsin. He assigned the *John V. Moran* exclusively on runs to and from Milwaukee

At the turn of the century, the lakes were a busy place in winter, and many other shipping lines offered cross-lake service. Crosby's steamers often encountered a wide variety of other boats on their crossings, but the *Moran* always passed the carferry named *Muskegon* that ran from the city of Muskegon to Milwaukee.

The weather became so frigid and the lake ice so thick in early February 1899 that grain shipments were brought to a standstill. Soon wheat and flour became stockpiled in warehouses in Milwaukee and Manitowoc and were desperately needed in Michigan and states farther east. Crosby refused to transport wheat on his ships because it was a heavy cargo, too heavy to risk for winter passage. But he agreed to transport flour because it was a lighter cargo and did not become waterlogged and heavier if it got wet.

On Thursday, February 6, Crosby's steamer *Naomi* took on a cargo of flour at Manitowoc, bound for Grand Haven with Captain William Nicholson in charge. The next day, the *Moran* also took on a load of flour, but records are unclear as to whether that flour was bound for Grand Haven or Muskegon. Forty-two-year-old Captain John C. McLeod was in charge of the *Moran*.

McCloud was a Scottish immigrant who grew up on the water as the son of a fisherman. He began sailing at 14 and came up through the ranks to second mate by the time he was 25. He had experience on all types of boats: tugs, as well as schooners, and steamers working exclusively on Lake Michigan where he averaged 60 crossings per year. In 1898, Edward Crosby hired him as captain and gave him *the John V. Moran* as his first command. That would turn out to be unfortunate for him because the vessel had gained a reputation as being difficult to handle and had already had more than her share of ill luck.

The *Moran* left Milwaukee on Thursday, February 9, 1899, at noon en route to Michigan holding the largest cargo the ship had yet carried: 9,550 barrels of flour, 126 tons of feed, 57 tons of peas, 89 tons of oil cake and 48 tons of miscellaneous freight. The flour was of a select brand and destined for Amsterdam, Netherlands.

The going was difficult, breaking through the thick pack ice. As the engine drove the steamship forward, the iron bow would slice through the ice. When it encountered particularly heavy ice, the ship would actually ride up upon the ice; its weight would crush the ice below it and reveal a patch of clear water. By early evening, the *Moran* had made it to within 15 miles of Lake Michigan's east shore when a crewman from below dashed into the pilothouse to report a steady stream of water coming in at the bow. Apparently the ice had torn a small gash in the steel hull plating and wooden substructure.

While the crew assembled the pumps to try to keep up with the flow of water, Capt. McLeod brought the ship to a full stop and in a cool, collected way ordered preparations to leave the vessel. The lifeboats were put on the ice and clothing and other articles put in them preparatory to a journey over the ice if the worst should come. He began signaling distress on the steam whistle, knowing that the company's vessel *Naomi* was not far north of them. Soon, he spotted the lights of the *Naomi* about four miles distant and sent crewmembers John Kamhout, of Grand Haven, and Al Halstead, of Milwaukee, out on the ice carrying lanterns to meet that ship and explain their plight. The walk was very dangerous, and they had to avoid some patches of open water; nevertheless, they met the *Naomi* some three miles from the *Moran*, were taken aboard and apprised Captain Nicholson of the *Moran's* situation. The *Naomi* continued to steam toward the lights of the *Moran*, finally coming alongside it to render aid if need be.

Despite all pumps in operation, more water came into the *Moran* than could be pumped out, and it began to slowly settle into the water. Well into the evening, Captain McCloud decided to send out another walking party, this one headed toward shore to send word to company officials that the *Moran* was in danger of sinking. At only ten years old, the *Moran* was still a valuable ship, and McCloud hoped that it would stay afloat long enough for the company to send out tug boats to tow it to shore. At the crewmen's speed of travel, McCloud calculated they would reach shore by dawn.

In case the worst happened, McCloud put his crew to work overnight stripping the *Moran* of its valuable equipment and transferring those items to the *Naomi*, which stood by.

As the glow of dawn arose over the distant shoreline, the *Moran* was still afloat. While they hoped to soon see a powerful tug headed their way, Captain Nicholson of the *Naomi* rigged up a tow line to the Moran and attempted to tow the ship toward shore. Everyone soon realized the effort was hopeless since the engine was not powerful enough to move both ships, one growing ever heavier as it slowly filled with water.

With no help on the horizon, the two captains decided to abandon the *Moran* and head for Grand Haven aboard the *Naomi*. They made it only a few miles southwest of the trapped and sinking *Moran* before the ice closed in and made headway almost impossible.

Meanwhile that early Saturday morning, the walking party of *Moran* crewmembers neared shore, but were halted by a patch of open water. In time, the company tug *O.M. Field* spotted them, came alongside, picked them up, and returned them to shore to pass on the news of the *Moran*. When he learned of the *Moran*'s condition, its owner Edward Crosby was not too worried. He felt confident that the buoyant flour would keep the ship afloat for several more days. Indeed, that same afternoon, Captain Thompson of the carferry *Muskegon*, on his regular run plowing through the ice from Milwaukee to Muskegon, spotted a ship trapped in the ice. The *Muskegon* passed near enough to recognize the *Moran* and see its plight. The crewmen's shouts across the icy lake failed to hail anyone on board, and they realized the ship had been abandoned. When they reached Muskegon, they reported their sighting, but by then the walking party had already reached shore and Crosby had begun coordinating a salvage effort.

Although the *Naomi* eventually made it to Grand Haven on Saturday under its own power, with its full crew as well as those from the *Moran*, the captain reported the ice too thick on the eastern shore to send out any vessels to tow in the *Moran*. He telephoned his office in Milwaukee to prepare his steamers *Nyack* and *Boyce* to forgo a full load of cargo, leave by midnight Saturday for Muskegon, and locate and tow in the *Moran* along the way. However, an unfortunate mishap on the *Nyack* caused a delay. The steering chains that controlled the rudder broke near the Grand Trunk dock, and it became necessary to order new chains from Chicago; furthermore, it would be unsafe to send out the *Boyce* alone. Forty-eight hours would pass before the *Nyack* was repaired and could set off from Milwaukee. With no further way to communicate with their ships, company officials in Muskegon could only wait for them to come into port.

Tensions grew for the safety of the *Nyack* and *Boyce* as day after day passed and neither ship arrived. Watchers gazed out onto the lake looking for any signs of their presence on the horizon. Several walking parties went out hoping to spot the ships, but to no avail. Eight days would pass before word arrived. Two crewmen from the *Nyack* arrived on shore having skated across the frozen lake several miles to deliver news. After struggling for over a week breaking through the pack ice while searching for the *Moran*, the *Nyack* and *Boyce* were safe and on their way in. However, in all that time, they never spotted the abandoned ship. Edward Crosby had to accept that his new *John V. Moran* had gone down.

SEARCHING FOR A SUNKEN SHIP always begins with research. Our team pored over eyewitness accounts of the *Moran*'s ordeal looking for clues to help determine where the ship sank. But those accounts varied greatly. One account confused things. It specified the *Moran* was heading to Grand Haven, but it also noted that the carferry *Muskegon* had passed closely by it on its run from Milwaukee to Muskegon, and it indicated the *Moran* was either 20 or 30 miles offshore. One report noted that the *Naomi* had managed *to* tow the *Moran* six miles toward shore, but another article indicated it was towed only three miles before giving up. One article noted that the *Moran* had drifted 30 miles north and been spotted off Point Sable, another that it sank off Muskegon, and still another suggested it sank off Grand Haven. The most credible last sighting came from the carferry *Muskegon*, but it was not clear whether the *Moran* was spotted right on the course line or some distance away.

We wrestled over which reports to believe, using what we had learned from our other shipwreck discoveries. We finally concluded that the *Moran* had sunk along the Milwaukee to Muskegon course line and so we developed a search grid between 10 and 20 miles off Muskegon, hoping we had interpreted those conflicting reports correctly. We scheduled a ten-day expedition in May of 2013 in partnership with side scan sonar operator David Trotter. If the weather cooperated, we might be able to cover the entire search grid in ten days.

We launched our boat out of Port Sheldon, nearest our home base, and motored north to Muskegon then set the sonar in the water and began running lanes. We lost several days to bad weather and only covered half the search area by the last day of our expedition. We decided to keep the sonar in the water as we motored slowly back to Port Sheldon, and it's a good thing we did. The side scan detected a telltale target in 350 feet of water, but it was small and too indistinct to tell if it might represent the 214-foot steamer. We motored the boat around to run a lane across the target again to get a better look at it and immediately realized we had indeed discovered a shipwreck. However, the vessel scaled to only about 100 feet long and clearly appeared to be a schooner, not a steamer.

Later that summer, our technical divers Todd White and Jeff Vos set out to dive the newly discovered schooner. At 350 feet, this was the deepest wreck we had found and would be the deepest dive they had yet made. Their video survey indicated that we had, indeed, located a schooner about 100 feet long. However, despite our best research efforts, we have not yet been able to positively identify it.

We resumed our search for the *John V. Moran* in May 2015. For that expedition, we worked out of a marina in Muskegon to be closer to the search area. The weather was calm during the first few days of our expedition, but we did not find the *Moran*. Forecasts indicated a storm would soon descend upon the lake, so we decided to maximize our time on the water by working through the night. And it's a good thing we did!

At about 3:30 am, a target appeared on the plotter. It was not a clear image, so we had to come around and make a different pass to obtain a clearer image from the other direction. The new image revealed a promising target in 370 feet of water that scaled the length of the *Moran*. However, until we laid eyes on the wreck, we could not be sure it was actually the *Moran*. Even deeper than the schooner we had found on the previous expedition, a dive to this wreck would require technical divers to spend four hours in the water, and it was too cold in the spring to risk such a dive. Instead, we contacted the Michigan State Police Underwater Recovery Team to survey the shipwreck with its remote operated vehicle, otherwise known as an ROV, so that we could learn whether we had, in fact, found the *Moran*.

On a calm day in June 2015, our team, with our 24-foot boat, met three members of the Michigan State Police ROV team with their boat at the Muskegon public launch ramp. We motored out toward the newly discovered wreck, passing the auto and passenger ferry *Lake Express*, which runs the same course line that the *Moran* once did. Our hopes were high that we had found the *Moran*.

When we reached the site, the bottom finders on both boats detected the mass of a large ship lying below. The police crew dropped an anchor near one side of the wreck, and we rafted off to their boat and came aboard as they launched the ROV. The small device, about two cubic feet in size and connected to a computer and monitor on board the boat, has its own power and camera. The operator controls its movements while watching the live feed from the camera. As the ROV descended, we kept eyes on the monitor in anticipation. Ambient light filtered down through the depths, which was surprising because darkness typically envelopes divers past 250 feet even on a bright, sunny day. It took about three minutes for the ROV to descend to 300 feet, and as it neared the bottom, the operator swiveled the unit until the forward end of the shipwreck came into view. Visibility was extraordinary, and the operator did not even have to power on the unit's lights to clearly see the vessel some fifty feet away. We immediately realized we had found the *John V. Moran,* as it looked identical to the historic photographs we had on hand. Most significantly,

we saw that the ship was completely intact. Rising up from the bow was a two-story forward cabin topped by the pilothouse, with the forward mast standing tall overhead with all its steel rigging in place.

The operator began carefully surveying the bow area and pilothouse. While divers would only be able to stay 15 minutes on the bottom, the ROV's battery would allow it to stay for as much as three hours. Both anchors were still in place at the bow, to be expected as they would not have been useful in the ice. The running lights were gone, undoubtedly among the valuable items salvaged from the ship before it was abandoned. Although the glass panes in the pilot house window were gone, the mullions dividing them were intact, evidence of a slow, gentle sinking. Only the door to the pilothouse showed evidence of mishap. It lay fallen off its hinges. Otherwise, the forward structures appeared as they did when the ship last sailed.

The operator maneuvered the ROV aft along the starboard rail. We saw all the cabin structures intact along the deck, unusual because these buoyant structures are usually forced off a ship as water fills them during a sinking. Poking the ROV inside an open cabin door, we noted there was no furniture inside, indicating the crew had also salvaged those items. Moving the ROV over the deck rail and down the side of the hull, we noted that all the cargo hatches along the starboard side are missing; inside one hatch we saw a pile of a bright white substance, which was undoubtedly some of the flour cargo. It became apparent that the crew had tried dumping as much of that cargo as they could to lighten the ship, a fact that did not get reported in the newspapers.

As the ROV neared the stern, we saw the first evidence of structural damage. Hull planks were flayed outward, suggesting that as the incoming water weighted down the ship, it went down stern first, hitting the bottom hard and damaging the hull.

The operator carefully maneuvered around the stern and began a survey of the port hull, running the ROV all the way back toward the bow. Once there, he carefully surveyed the hull and located, not surprisingly, the gash where the water had begun flowing in. It only measured some three feet long and six inches high, but enough of an opening to have doomed the ship.

After a two-hour full survey around the ship, the operator guided the ROV safely back to the surface. All of us who were familiar with the myriad of steamship shipwrecks found in the Great Lakes recognized the fact that the *John V. Moran* was the most intact among them all.

IN STUDYING THE CAREER AND LOSS OF THE *JOHN V. MORAN,* we saw that the companies, people, and ships that it encountered all faced some interesting, and sometimes tragic, twists of fate. Captain William Nicholson of the *Naomi* was fired for not making a better effort to tow the *Moran* to shore. But he bounced back quite well, starting his own freight business: the Nicholson Transit Company.

The tug *O.M. Field* that picked up the crew from the *Moran* was later crushed by ice and sank at the dock in Grand Haven. The *Naomi,* which saved the rest of the *Moran*'s crew, was nearly destroyed by a fire in 1907 that killed five people. After a complete rebuild, the *Naomi* returned to service, renamed the *E. G. Crosby*. It was later sold and renamed several more times, eventually being given back its original name, *Wisconsin*. Considering the superstition that changing a ship's name is bad luck, it is no wonder that the *Wisconsin* foundered in an October storm in 1929 off Kenosha, Wisconsin, killing 16 crewmen.

The steamship *Eber Ward* followed its sister ship *John Moran* to the bottom in similar circumstances. Ice crushed its hull at the Straits of Mackinac, killing five men. The *Eber Ward* sank quickly and is not nearly as intact as the *Moran*.

The *Moran*'s Captain, John McLeod, lost his life in 1909 when the carferry *Marquette & Bessemer No. 2* sank in Lake Erie. Ice would also cause the death of the *Moran*'s last owner, Edward Crosby. After spending the spring of 1912 in Europe, Crosby booked return passage on a new ocean liner. Although his wife and daughter survived, Crosby died when the *Titanic* went down. His body was later recovered and returned to Milwaukee. His funeral was held aboard his steamer *Nyack*, the flagship of his fleet. Then three years later, the

Nyack burned at the dock in Muskegon. The carferry *Muskegon* that spotted the *Moran* in the ice was sold, converted to a barge, renamed *Harriet B,* and also eventually sank in Lake Superior.

Over the years, John Vallee Moran took note of all the twists and turns surrounding his namesake ship from the comfort of his home in Detroit. He died in 1920 at the age of 74 after fathering ten children.
And the steamer *John V. Moran,* the most intact steamship in all of the Great Lakes, rests comfortably on the bottom, 12 miles off Muskegon, awaiting further exploration by anyone who wants to venture down to 370 feet.