THE ANCHOR
WISCONSIN MARITIME MUSEUM | QUARTERLY
SUMMER 2021

DEEP DIVE
INTO WISCONSIN'S MARITIME HISTORY

BLACK SUBMARINERS IN WWII
LAGARTO CREWMAN HEZEKIAH JEFFERSON

ICE, ICE MAYBE?
THE FUTURE OF OUR WINTER ACTIVITIES & CLIMATE CHANGE

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AT MANITOWOC

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THE CURRENT
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WISCONSIN MARITIME MUSEUM
AT MANITOWOC

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THE PILOTHOUSE

CATHY GREEN, *EXECUTIVE DIRECTOR*

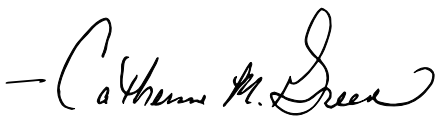
BEGINNINGS.

You know when you can feel the end of a chapter coming, or a new one beginning? There is that spine-tingly trepidation and excitement about reaching a destination and now setting a new course ahead. It's been unavoidable around here lately. Whether it's emerging from COVID (can I get a woo hoo!), facing long overdue capital improvements (not so woo hoo), the designation of the country's newest National Marine Sanctuary, or digging into the reaccreditation process with the American Alliance of Museums (AAM) and the accompanying strategic planning, we are turning the page.

We set the course ahead with extreme gratitude for the many people and projects of the past 52 years that have built this incredible institution. The last year and a half demonstrated how strong this organization is – because of the legacy of the past combined with an incredible team of people here today. We are grateful also for our members, partners, and supporters in the community and around the Great Lakes. Your patience, understanding, and oftentimes boots on the ground buoy our efforts and encourage us to keep going even amidst the most challenging situations.

Finally, we are grateful for the contributions of our Anchor Editorial Committee. Corralled by intrepid maritime historian Brendon Baillod, the Anchor team is made up of content experts and knowledgeable authors that write, vet, and cajole fellow maritime enthusiasts to contribute to the magazine and museum research. Brendon is joined by Dr. Richard Boyd, Tamara Thomsen, and Bob Jaeck along with our in-house contributors to get our museum quarterly back on a quarterly schedule (thanks COVID) and expand our scope and focus to truly represent Wisconsin maritime history.

Here we go, turn the page ■



Catherine M. Green

ON THE COVER

United States Navy Mark V Diving Helmet

Wisconsin Maritime Museum Collection

The Anchor (Volume 50, Issue No. 1)

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Comments and suggestions regarding *The Anchor* may be directed to the editor at 920-684-0218 or e-mail: editor@wisconsinmaritime.org. The submission of articles and other material for publication is welcomed. Copyright 2021 by the Wisconsin Maritime Museum. *The Anchor* is designed by Freelance Artist, Remington Cleve.

The Wisconsin Maritime Museum is a private non-profit organization located in Manitowoc, WI, founded in 1968 as the Manitowoc Submarine Memorial Association, Inc., the Museum is dedicated to the preservation and interpretation of local, state and regional maritime history. The Museum has a membership program and distributes *The Anchor* quarterly to its membership. Other membership benefits include; unlimited free admission to the Museum and USS *Cobia*, discounts for purchases in the Museum Store, research services, and special events.

Accredited by the American Alliance of Museums, the Wisconsin Maritime Museum is also a member of the Association of Midwest Museums, Wisconsin Federation of Museums, Association for Great Lakes Maritime History, Council of American Maritime Museums, International Congress of Maritime Museums, Historic Naval Ships Association, and the American Association for State and Local History.

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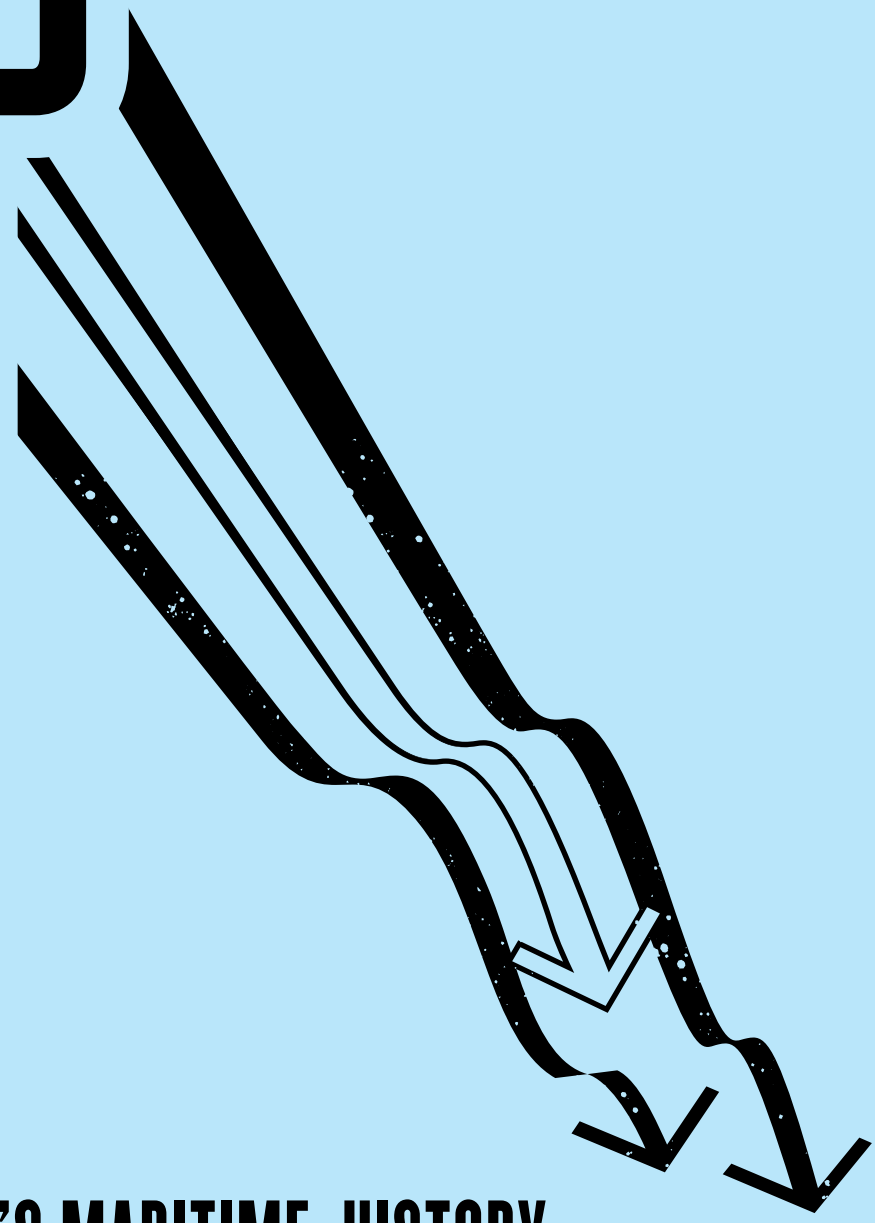
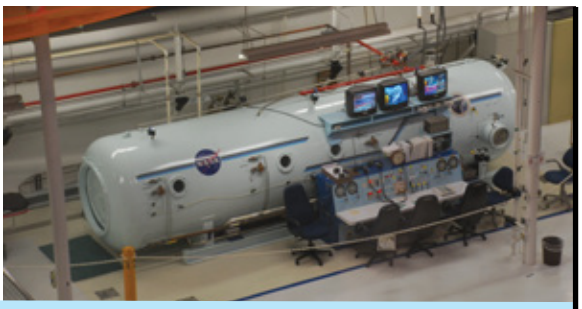


INTO WISCONSIN'S MARITIME HISTORY

by
Dr. Richard Boyd

Ask anyone, especially a scuba sport diver, where key elements for deep diving with artificial gas mixtures were first developed and demonstrated; few would answer: "In Wisconsin." However, "Wisconsin" is the correct response, strange as it might seem! Wisconsin indeed has a rich history involving commercial diving, submarine medicine, and related technologies.

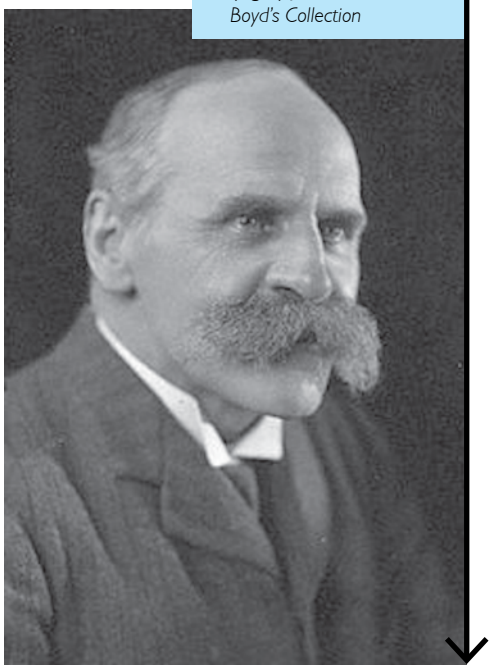
In the late 19th century, commercial and military divers were often afflicted by certain physiological maladies whenever they ventured into deep water or made lengthy stays at shallow depths. A major problem was decompression sickness, more commonly called the "bends." This disorder results from the fact that, when one breathes compressed air underwater, a fraction of that gas dissolves within the body. As one goes deeper or stays longer, increasing amounts of dissolved gas (mostly nitrogen) are distributed throughout bodily tissues. Returning to the surface requires adherence to a strict schedule that allows this excess gas to exit the body without forming bubbles. Internal bubble formation can be deadly: blood circulation becomes occluded, normal respiration impaired, and the nervous system damaged. Permanent joint crippling, blindness, paralysis or even death can occur from this disorder.



(Fig. 1) NASA's recompression/altitude simulation chamber at the Neutral Buoyancy Lab in Houston.
Courtesy of NASA

Back in the day on the Great Lakes, shipwrecks and harbor accidents were common occurrences, often requiring attention by a diver. Most divers in that era, fearful of suffering the bends, usually exercised caution about the depth attained and their dive duration, even at modest depths. While fully aware of the dangers of this disorder, they had no idea what caused it or how to treat it. For example, a popular, but worthless, remedy for a stricken diver was to consume raw cranberries until the symptoms abated. It was well into the 20th century before fairly reliable decompression tables were developed that allowed safe ascents from arduous dives. Likewise, pragmatic medical treatments for the bends became available, a therapy called recompression. These are carried out in a metal pressure vessel (recompression chamber), where the victim is pressurized to a specified depth and then degassed according to a medical treatment table, often breathing pure oxygen to expedite the out-gassing process. Early recompression chambers were essentially heavy metal cylinders equipped with an air-lock entry, some instrumentation, and a source for gas input. Today's chambers are a marvel of modern technology, some capable of pressurizing to simulate great water depths or also depressurizing for high altitude studies (Fig. 1).

About 1915, the experiments of Scottish physiologist J.S. Haldane finally offered a practical approach for safely decompressing divers. The procedure was simple: the diver simply made prescribed stops at specified depths for predetermined times. This technique incrementally dropped the excessive gas load from the diver's body, so that he could safely surface without harmful bubble formation. In 1922, the U.S. Navy accepted Haldane's tables for fleet operations. Over the years, Haldane's tables were refined, and various others were developed using advanced decompression theories. Today, numerous decompression tables for gas mixtures other than air and for special applications have been developed, made possible with algorithms and computer technology.



(Fig. 2) J.S. Haldane
Boyd's Collection

Divers armed with reliable decompression tables were now able to work at greater depths, but then another dangerous problem was encountered. At depths beyond 150 feet, divers breathing air became effectively intoxicated, exhibiting impaired reflexes and muddled mental capacities. At depths beyond 200 feet, many divers became witless, progressively dysfunctional, and unresponsive. Captain J.Y. Cousteau, the famous underwater explorer, called it "Rapture of the Deep," although today the term "Nitrogen Narcosis" is popularly applied.

The physiological nature of this problem received little attention until the 1920s. During this early era of diving, decompression tables for depths beyond 200 feet were not yet consistently reliable, so divers were not routinely going to the depths where narcosis could be a crippling problem. By the late 1930s, medical science began to understand this affliction. It was determined that the nitrogen fraction in air exerted a progressively depressive effect upon the central nervous system as depth increased. It remained a haunting dilemma.

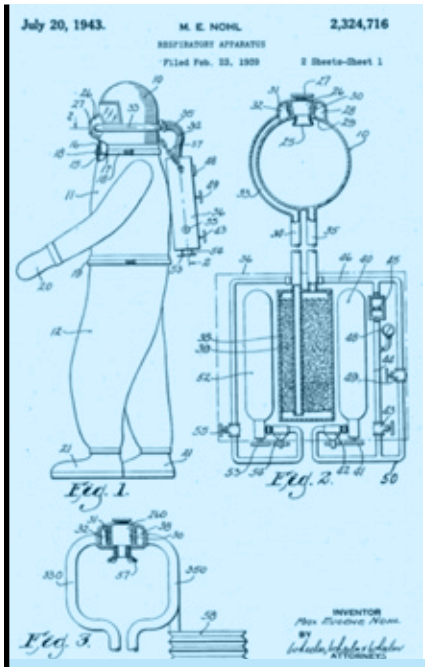
By 1935, nitrogen in respired gas had become the suspected culprit, so reducing or replacing it in the breathing medium seemed a likely approach to mitigate the problem. One substitute gas that looked promising was helium. It seemed to be

non-narcotic, plus it had a very rapid diffusion rate, and a lower solubility in bodily tissues; therefore, it might degas faster than nitrogen, yielding shortened decompression times. Its density was seven times lighter than air, which should create less far respiratory stress at depth; clearly, it would be easier to breathe. But helium also had some negatives: The light density of the gas distorted speech badly, producing a so-called "Donald Duck Effect," which interfered with diver-to-surface communications. The thermal conductivity of helium was so great that it rapidly robbed body heat, especially when breathed in cold-water environments. Furthermore, it was a rare, very expensive gas, reclaimed from the oil fields at Amarillo, Texas. Those negatives acknowledged, a mixture of helium and oxygen, called heliox, might prove to be the superior breathing medium for deep diving.

As early as 1919, prolific inventor Professor Elihu Thomson had suggested that the Navy should pursue the use of helium for diving. Among other questions, it was unclear if air decompression tables would also work for helium. However, helium was then considered a strategic industrial commodity, and complete control of the resource rested with the U.S. Bureau of Mines (USBM), not the Navy. It was subsequently decided that scientists from the USBM should undertake this research. Initial experiments showed promise, and some fledgling tables were created by 1924, although the exact nature of these formulations remains unknown today.

(Fig. 3) The 240-foot SS Lakeland sank in 1924 ca. seven miles off Door County with a small cargo of automobiles. *Boyd's Collection*

(Fig. 4) Ken Smith models the vintage deep-sea diving rig as was used on the *Lakeland*. *Bonnie Smith*



(Fig. 5) Nohl's patent application for an advanced model of his deep-sea diving suit. *Wisconsin Historical Society Nohl collection*

The USBM and the Navy joined forces to test these fledgling helium tables "at sea" in 1925. A maritime accident in Wisconsin waters provided a unique opportunity to do this. In June 1924, the freighter *Lakeland* had sunk in 210 feet of water off Sturgeon Bay under suspicious circumstances.

Litigations contended that the captain and crew had intentionally scuttled the vessel in deep water to collect the $350,000 insurance. This insurance fraud was suspected to be in collusion with the vessel owners, but proving it would be another matter, considering the water depth over the wreck. Notably, several other suspected cases of "criminal insurance fraud by shipwreck" were pending worldwide, a great concern to marine insurance companies. A consortium of insurers was formed, determined to investigate the *Lakeland* affair and prove criminality. This action would set a precedent that such felonious maritime skullduggery would not go unchallenged, even when great water depth and vexing expense were involved.

The consortium hired Oversea Salvors Company to do the job, a subsidiary of Merritt-Chapman and Scott, a large and prestigious maritime salvage firm. However, the company stipulated that Navy expertise would be needed to successfully complete this project. Those skills would come in the person of Clarence L. Tibbals, perhaps the Navy's most experienced diver with significant deep-water experience. Tibbals would supervise all diving operations. Clearly, even a company with the credentials of Overseas Salvors was hesitant to tackle a project at those forbidding depths.

The company began the project by moving their salvage barge, *John W. Chittendon*, from the Atlantic to Lake Michigan. It was equipped with modern dive equipment and a recompression chamber borrowed from the Brooklyn Navy Yard. All dives were made with hard-hat deep-sea rigs, so called because of the spun copper helmets mated to heavy, rubberized canvas suits. All breathing media was surface-supplied via umbilical hoses. Tibbals' dive team was impressive: Several divers employed by Overseas Salvors were ex-Navy personnel, including Steve Drellishak and Hubert Groves, who had been involved in record deep dives. Others on the team were currently members of the Navy Experimental Diving Unit (NEDU). Expert personnel from the USBM tagged along, bringing a modest helium supply for experimental purposes.

The salvage began on 17 August 1925, and ended September 7. The divers penetrated into the wreck, descended

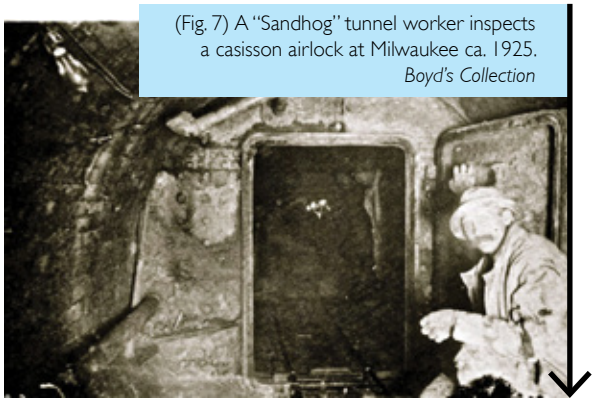
into the engine room, and discovered that the seacock valves were wide open. Indeed, the vessel had been scuttled! Despite this finding, the case was eventually settled out of court, following several trials with no official verdict as to the cause of the sinking. The legal haranguing took three years, and the details of the final settlement were never made public.

(Fig. 6) Max Gene Nohl and his dive helmet. *Wisconsin Historical Society Nohl collection*

In truth, the dives did not go smoothly and bottom times for the divers had to be reduced due to physical exhaustion and other suspicious symptoms. Some of the divers got bent and had to receive treatment in the recompression chamber. Helium was employed on several dives, but no records exist explicitly detailing how it was used. No copies of the USBM helium tables have ever been found. While experimentation with helium on the Lakeland project has long been an unappreciated historical fact, just how it was utilized has remained a mystery. Based on the volume of helium that was available for USBM experiments, a "best guess" is that it was used as an adjunct gas during decompression to hasten the outflow of nitrogen. This is known as a "wash-gas technology," a common technique still practiced today. No matter how it was employed, the first actual field application of helium in deep diving had occurred in Wisconsin waters.

Following the *Lakeland* affair, research on helium shifted from the Bureau of Mines to the Navy Experimental Diving Unit. NEDU conducted numerous tests on heliox mixtures, including simulated chamber dives to 500 feet, where the absence of any narcotic effect from the gas was noted. However, the gas also proved troublesome: Its heat-robbing and voice-distorting properties were detrimental, and it remained difficult and expensive to obtain. Originally, it had been hoped that its rapid diffusion rate would allow shorter out-gassing schedules than air. Just the opposite proved to be true. Fast diffusion of helium during ascents tended to form bubbles more readily than did nitrogen. Clearly, air decompression schedules could not be applied directly to helium, and new tables would be required. Helium diving remained experimental in the Navy well into the 1940s, and did not become "fleet operational" until the 1950s.

Long before NEDU's work, certain events in Wisconsin had taken precedence. A Milwaukee native, Max Gene Nohl, had a lifelong interest in diving and associated technologies. As a youth, he had experimented with rudimentary dive gear in Lake Michigan. As a college student in 1929 at Massachusetts Institute of Technology (MIT), he pursued a career in underwater engineering. While there, he also mastered the use of commercial deep-sea hard-hat rigs, making his first dive in none other than famous Walden Pond (with apologies to Henry David Thoreau).



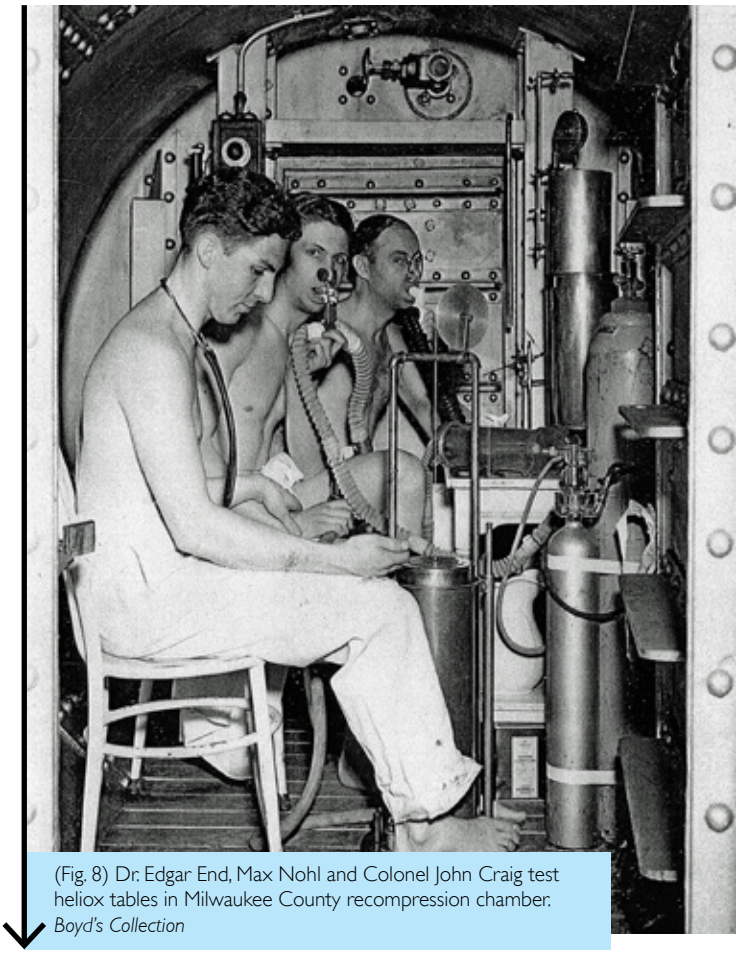
(Fig. 7) A "Sandhog" tunnel worker inspects a casisson airlock at Milwaukee ca. 1925. *Boyd's Collection*

For his MIT senior thesis, Nohl designed a revolutionary, self-contained, deep-sea suit capable of using gas mixtures (Fig. 5). A key feature of the Nohl Suit was its closed-circuit design, where the breathing medium was recirculated after being cleansed of carbon dioxide by a scrubber device. Because of this recycling feature, the gas supply would last many hours even at significant depths, and could be carried in back-mounted cylinders. This design made the unit largely independent of surface equipment, except for a calibrated lifeline and communications cable. The suit itself was constructed from a rubberized fabric that possessed modest flexibility.

The helmet was radically different from conventional units: It was made of light, spun aluminum, not heavy copper, and contained an inner, shielded glass dome, providing 360-degree visibility (Fig. 6). The helmet clamped directly to the suit, thereby eliminating the heavy, cumbersome breastplate on traditional suits. Inside were instruments to monitor the consumable gases and dive parameters. Unique gauges, based on gas density, allowed Nohl to check and manually adjust the gas mixtures, as might be needed at increased depths.

Returning to Milwaukee, Nohl invented additional underwater equipment, including a forerunner of the famous Aqualung and a diving bell. He was particularly determined to perfect his self-contained suit for use at depths then unobtainable by commercial divers. Unfortunately, neither trustworthy decompression tables nor proven breathing media suitable for use at such depths were available, obviously hindering his ambitions.

About this same time, the city of Milwaukee was facing a perplexing decompression problem of its own. The city was building a new sewage treatment system, which required special tunnel work, utilizing pressurized tubes called caissons. Caisson



(Fig. 8) Dr. Edgar End, Max Nohl and Colonel John Craig test heliox tables in Milwaukee County recompression chamber. *Boyd's Collection*

workmen, often called "Sandhogs," worked long daily shifts under air pressure, where they absorbed significant quantities of nitrogen gas. Consequently, they had to be decompressed in an air-lock before leaving the caisson (Fig. 7). The decompression schedules for such work were rather unreliable, and "operator errors" were frequent when administering them. The resulting ailment was referred to as "Caisson Disease," clearly a form of the bends.

The city became plagued with frequent cases of "Caisson Bends." Afflicted men, often suffering greatly, sought medical aid from local hospitals. Curiously, this is where the term "bends" probably originated. East Coast "Charm Schools" at that time taught etiquette and proper poise to fashionable young ladies. They were often coached in a stylish way of walking, where one leaned slightly forward or stooped, with arms extended modestly outward. This trendy posture was called the "Grecian Bend." Sandhogs afflicted with Caisson Bends often experienced crippling in the knees, elbows, and shoulder joints; stricken workmen would therefore enter the hospital walking in weird postures that mimicked the Grecian Bend. Over time, descriptions of such victims were modified to quip: "He's got the Bends" or simply, "He's bent."

As previously mentioned, the only effective treatment for bends was recompression therapy. Because the Milwaukee Sewerage Project required years to complete, the frequency of decompression sickness became untenable, so the city installed a recompression chamber in 1928 at the old County Emergency Hospital. It was the first chamber in the USA with a walk-in design and multiple air-locks. One of the technicians supervising this facility was Dr. Edgar End, a 26-year old medical intern. End, a skilled mathematician, had a fervent interest in decompression theory, related medical procedures, and underwater physiology in general. He had experimented with helium as a breathing medium and methodically developed schedules for decompression for dives using breathing mixtures of oxygen and helium (heliox). With a recompression chamber at his disposal, he was able to test these tables under simulated conditions, and they worked (Fig. 8).

End and Nohl became close friends, certainly an ideal match: End had the skill and knowledge to create and test decompression tables and experimental breathing media, whereas Nohl had the equipment and engineering background to put End's concepts to practical field use. Both men thought there would be great interest in their novel inventions.

Dr. Edgar End, (who this writer knew personally), first tried to interest the Navy in his tables. He often joked about how he went to the Navy Department in Washington DC and attempted to hand out copies of his formulations to any receptive personnel… all with zero results. After all, how could a young physician from Milwaukee have solved a problem that had perplexed the Navy for decades? Max Nohl's attempts to spark any commercial interest in his new dive suit and other inventions also met with general disregard.

In fall 1937, Nohl and End hatched a grand scheme to garner widespread attention to their inventions. They would attempt to break the coveted worldwide depth record of 304 feet, held by the U.S. Navy since 1912. What's more, they would do it in Lake Michigan! Max Nohl, ever the promoter, enlisted the local Coast Guard cutter for the official dive boat, and enticed the National Broadcasting System (NBC) to cover the event live nationwide by radio.

On a cold day in early December 1937, the expedition set forth onto a blustery Lake Michigan, and finally anchored off Port Washington in a mildly choppy sea. After a few initial problems, Nohl was hoisted over the side and began his descent, which had to be aborted due to an entanglement problem with the communications line. After a short surface interval, Nohl returned to the water; seven minutes later, he had passed the 300-foot mark (Fig. 9). Dr. End had worked out a special decompression schedule to a maximum depth of 375-feet, which would easily break the Navy record, and another claimed by the British Navy at 344-feet. But Max, who could be somewhat of a show-boater, arbitrarily descended to the bottom that had been measured at 420-feet.

(Fig. 9) Dr. Edgar End, Max Nohl and Colonel John Craig test heliox tables in Milwaukee County recompression chamber. *Boyd's Collection*

Once Nohl confirmed he had reached bottom, the decompression ascent profile had to be adjusted for this greater depth. Below decks in the rolling Coast Guard cutter, Dr. End successfully recalculated the heliox decompression profile with a slide rule, while suffering a nasty bout of sea-sickness.

Nohl surfaced without incident after 118 minutes of decompression, having trounced the Navy's record by well over 100-feet. No bends occurred, and Max had remained clear-headed even at extreme depths. The whole event had been breathlessly broadcasted coast-to-coast by NBC radio. In the next few days, diving professionals worldwide flocked to Milwaukee to see how some unknown Wisconsinites had managed to pull off this unprecedented technological feat. Their fame was instant, and another high-water mark in Wisconsin's underwater heritage had come to pass!

Dr. End continued to make more noteworthy discoveries in diving medicine and became a highly respected expert in that genre. Among his accomplishments were the first use of hyperbaric oxygen for treatment of carbon monoxide poisonings and deep-tissue bacterial infections like gas gangrene. He also significantly improved the treatment schedules for recompressing divers stricken with bends. Nohl was engaged as a nationwide speaker, later becoming a famous salvor, treasure hunter, and advertising personality. The work of End, Nohl, and their associates led to the formation of DESCO (Diving Equipment & Supply Company) in Milwaukee that built and supplied the famous Mark V Diving Suit, which became a mainstay in the U. S. Navy, and in many commercial dive firms for nearly 50 years. Their equipment was featured in the popular movie "Men of Honor."

Most people still incorrectly assume that any important advancement in underwater technology must have first been achieved by some major navy or corporation in some faraway ocean. That said, Wisconsin has unquestionably been at the forefront for several significant developments in diving technology. The first use of helium during the Lakeland investigations, the mixed gas innovations of Dr. Edgar End in Milwaukee's unique decompression chamber, and the world-record dive of Max Nohl are surely part of the fabric of Wisconsin's maritime heritage. Today, improvement in deep underwater capabilities continue to take place across the planet, but key elements of the basic technology started right here in our own maritime backyard, the waters of Lake Michigan ■

Dr. Richard J. Boyd is a director of the Wisconsin Underwater Archeology Association and author of the book, *A Pirate Roams Lake Michigan: The Dan Seavey Story*.

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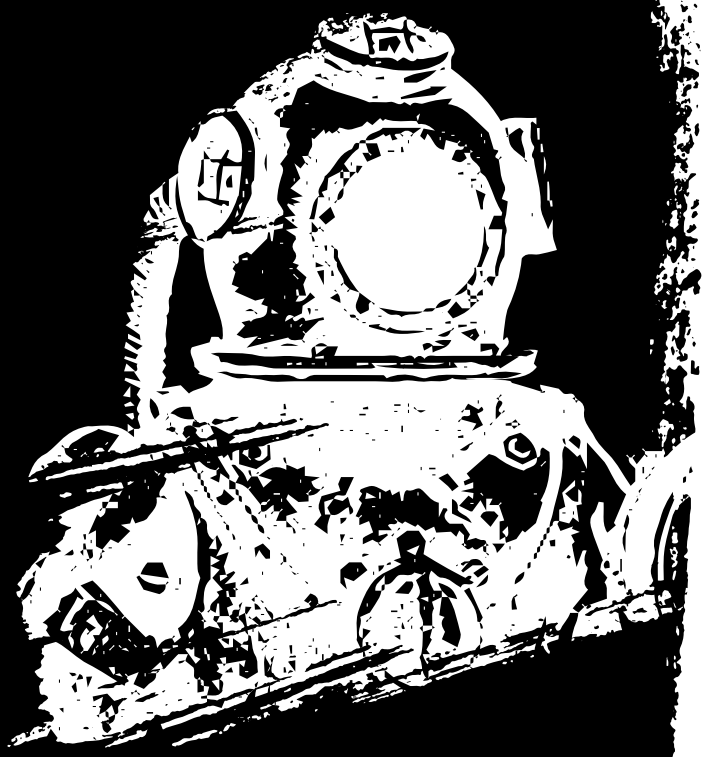
RECOGNIZING ANOTHER BLACK HUSBAND FARMER PANTRYMAN CHEF SEAMAN SUBMARINER

by CAROL GIBSON



In *Black Submariners in the United States Navy* author Glenn Knoblock listed 975 African-Americans who served on combat submarines during World War II, including 124 on Manitowoc-built boats. Research for the Wisconsin Maritime Museum has identified one more name that should be added to that number: Hezekiah Jefferson, a crewman on the Manitowoc-built USS *Lagarto*. Jefferson was overlooked because his rating was Seaman 1st Class at a time when Black Americans on combat submarines were restricted to commissary ratings like steward or cook.

Because muster rolls did not specify race and Jefferson did not have a commissary rating, it was not immediately apparent to anyone scanning *Lagarto's* crew list that Jefferson was black. However, when Museum researchers looked beyond muster rolls, other documents readily identified Jefferson's race. As we investigated census records, Navy files, newspapers, and other sources, Hezekiah Jefferson's story emerged as one more testament to the service of Black submariners in World War II.

1

We learned that Jefferson was born in rural Powhatan County, Virginia in 1908. As a young man he migrated north, to Suffolk County on New York's Long Island, where in 1929 he married seventeen year old Frances Giles, who had grown up on a Virginia farm next to the Jeffersons. Today an affluent suburb, Suffolk County at that time was a prime location for farming with camps for seasonal workers, many of whom stayed to develop a flourishing black community. The county was also a stronghold for the Ku Klux Klan. As the Jeffersons established their home, Hezekiah worked as a farm laborer and also did contract work on road projects. Eventually, the couple moved into New York City, where Hezekiah worked as a "pantryman" at the prestigious General Theological Seminary, and then as a chef at a children's "convalescent home" in nearby Chappaqua.

2

As war loomed, Jefferson registered for the draft but continued his civilian employment until 1943, when at the age of 35 he was inducted into the Navy and sent to the Great Lakes Naval Training Station in Illinois. With a rating of Seaman 2nd Class he was transferred to a Navy "Cooks and Bakers School" in San Diego, then to Submarine Squadron 45 for six weeks of "submarine training," and another month at the Mare Island Shipyard, after which, like many black seamen, he was assigned to relief crew duty—helping service and refit vessels between war patrols. Given his work experience and Navy training, it's possible that Jefferson was intended to be assigned a commissary rating, but instead he was promoted, and on December 30, 1944 he joined the crew of the *Lagarto* in Pearl Harbor as a Seaman 1st Class. On *Lagarto* in the South Pacific, Jefferson experienced his first war patrol, during which a Japanese submarine and a small Japanese freighter were sunk. A second war patrol sent *Lagarto* into conflict again, and on the night of May 3-4, 1945 she was lost to a depth charge while in combat with a Japanese minelayer. Hezekiah Jefferson and all of the other crewmen died.

A year later, back in New York, Frances Jefferson received formal notice of Hezekiah's death, along with "gratuity pay" of $712.80 and a World War II Victory Medal. For awhile she corresponded with the Navy regarding insurance and other money issues, but nothing was ever resolved. Frances never remarried. She eventually moved to live with a sister in Washington, DC, and died at Bethesda Naval Hospital in 1981. She was buried back in Suffolk County.

In 2005 *Lagarto* was discovered in the Gulf of Thailand. Marked by a brass plaque and memorial flag, the wreck is a protected war grave for the boat's eighty-six crewmen, including Hezekiah Jefferson. Although his service was not long, as author Knoblock confirmed in a letter to Museum researchers, "Jefferson's status as a black man rated S1 aboard a submarine in war is obviously unique, the only instance known." ■

1

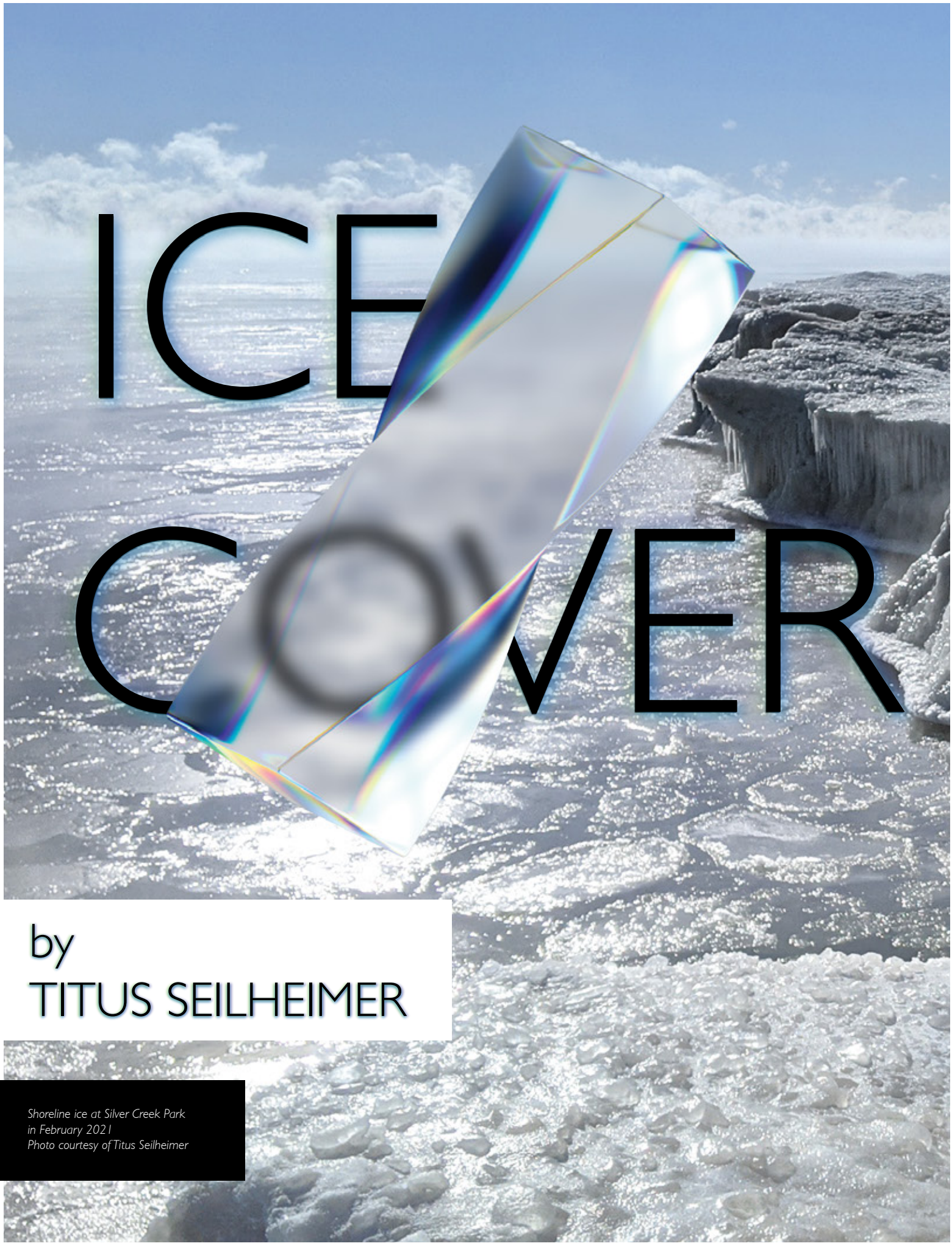
P2-01-53
Wisconsin Maritime Museum Collection
Launching splash of the Manitowoc built sub USS *Lagarto* (SS-371) at Manitowoc Shipbuilding Company on May 28, 1944

2

P98-3-19
Wisconsin Maritime Museum Collection
USS *Lagarto* (SS-371) prowling off the coast

ICE COVER

by
TITUS SEILHEIMER



Shoreline ice at Silver Creek Park in February 2021
Photo courtesy of Titus Seilheimer

Less ice makes for less winter fun.

Wisconsin is well known for embracing cold winter activities, like ice fishing and skiing, but the warming climate is changing how we are able to experience the season. Each winter, thousands of people take to the ice to catch fish, making ice fishing a great equalizer because everyone can access prime fishing locations without the need for a boat! Ice covered lakes are also a visual way to observe the cold of winter and to track the warming trends over time.

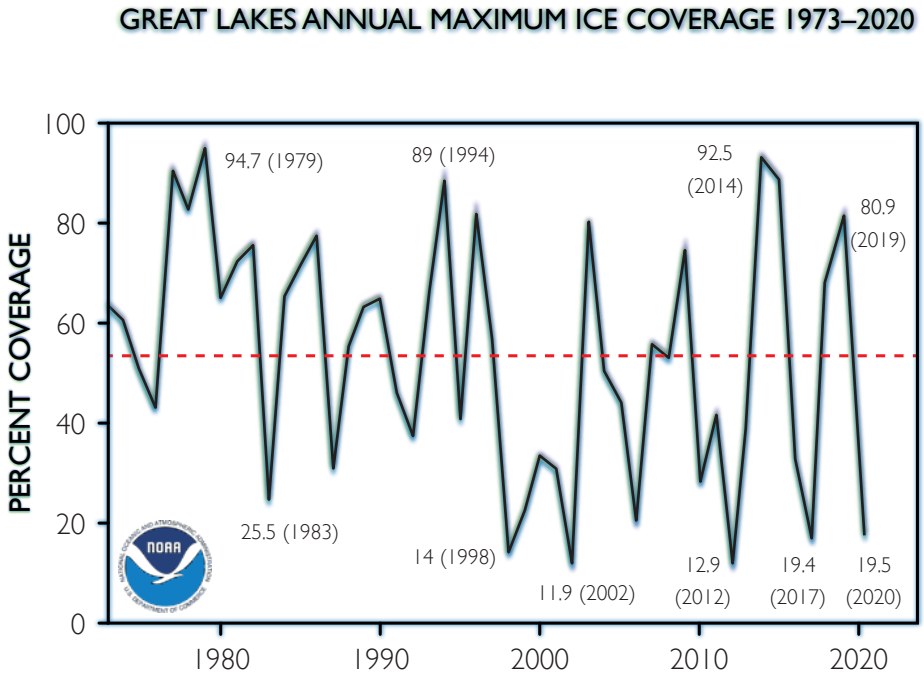
On the Great Lakes, ice cover got off to a slow start last winter with only 3% coverage on January 19th, which was reported as a record low. The early February weeks of deep freeze have helped to cover the lakes, especially bays and sheltered areas, although not before more than 60 anglers on Green Bay and 25 on Lake Superior needed to be rescued when the ice they were fishing on started to drift. An important reminder that ice is never completely safe! Total ice coverage in the Great Lakes is 44% peaked mid-February at 48%.

Typical ice coverage in the Great Lakes varies by lake, with higher average maximum ice coverage on Superior (62%), Huron (66%), and Erie (81%) and lower ice cover on Michigan (40%) and Ontario (30%). Differences between lakes can be related to depth, Erie is the shallowest and the water cools quickly, and to water temperature, Superior is the deepest lake and has the coldest water. The large bays of Lake Michigan, like Green Bay, generally freeze, but the deeper parts of the main basin (off Manitowoc) stay open. Even during the deepest of the polar vortex in 2014 when ice covered 95% of Lake Michigan, there was only a few inches thick of drifting ice a few miles from shore. So, no driving across to Ludington.

The long-term trends of ice cover throughout the northern hemisphere, including the Great Lakes, are declining. Ice records from the Great Lakes since 1973 show a trend of less maximum ice, especially since 2000. Before 2000, maximum ice cover was mostly above the average (53%), but since 2000 it has been below the average more than above. Cold temperatures make the ice freeze and thicken, but because the Great Lakes are so large and can store so much heat, they do not freeze over all the time. Warmer summers mean warmer Great Lakes water temperatures, which will take longer to cool before freezing.

UW-Madison researchers have tracked ice on and ice off dates of Lake Mendota for 150 years and found that there has been a decline in the length of the ice cover by approximately a month, on average, each winter. The longest ice seasons were near the beginning of that record and the shortest have all happened in recent times. This trend plays out for other areas throughout the northern hemisphere.

Shorter ice cover has impacts on our enjoyment of Wisconsin's winters, but ice cover is also important for the ecology of species. More ice on the Great Lakes has been linked to better years for lake whitefish reproduction. Cold weather can also reduce the populations of invasive species, while not harming native species. A warmer future Great Lakes could be a more favorable environment for invasive and nuisance species, making the lakes a poorer environment for people and other aquatic organisms. So, when you hear that winters are not like they used to be, that might actually be true ■



Great Lakes annual maximum ice coverage 1973-2020 // *Great Lakes Environmental Research Laboratory*

Titus Seilheimer is the Fisheries Specialist for Sea Grant at the University of Wisconsin. He has worked as a research ecologist for the U.S. Forest Service's Northern Research Station in St. Paul, Minnesota, Oklahoma State University and Cornell University.

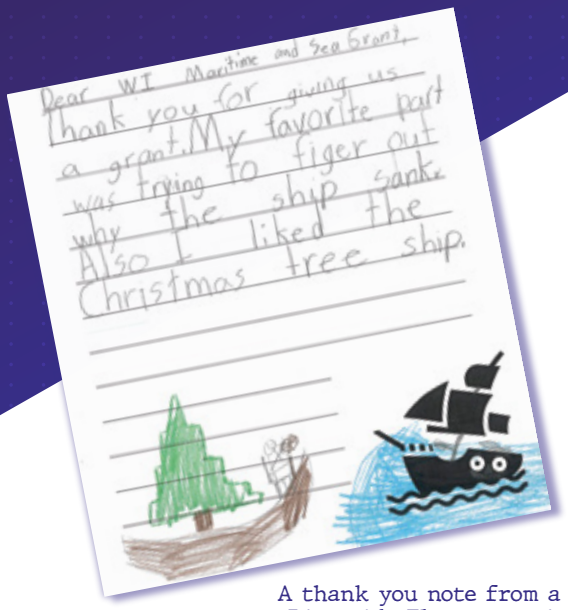
VIRTUAL SHIPWRECKS TOUR

by SHANE LEE

A slide from the virtual tour

Wisconsin Maritime Museum has developed a great new way to connect with students while staying safely apart. Thanks to Wisconsin Sea Grant, the Museum has been able to connect with students from 12 different schools in December/January. It might not seem like a lot, but I had connected with zero schools in the previous eight months. That is not a good feeling for someone whose job title is "youth engagement coordinator." The Museum's "Virtual Shipwrecks Tour" has made me, and hopefully a lot of students, much happier. I didn't realize just how much I missed field trips until I hosted one online December 9.

The Virtual Shipwrecks Tour gathers students, teachers, and museum educators in online video chats to investigate Wisconsin's shipwrecks. About 750 shipwrecks lie in Wisconsin waters, so there is no shortage of material. Underwater archaeologists discover new shipwrecks and discover new information about previously known shipwrecks every year. The tour invites students to try on the shoes, or flippers, of underwater archaeologists. Participants learn about what causes Great Lakes shipwrecks, and then they use their own powers of observation to study various wrecks and hypothesize why those ships sank. The program is highly conversational, and I love hearing the kids' theories of sharks, whales, giant squid, and other colorful creatures capable of dooming a vessel to the deep.



A thank you note from a student at Riverside Elementary in Ringle after attending a virtual tour

We start most tours by comparing saltwater to freshwater shipwrecks, because who doesn't want an excuse to talk about *Titanic*? While the majority of the audience is too young to watch the PG-13 blockbuster *Titanic* (1997), almost all of them have watched documentaries, read books and magazines, or learned about the tragedy in some form. We watch a short video of the Titanic wreck site and compare it to a video of freshwater shipwreck *M.F. Merrick* in the Thunder Bay National Marine Sanctuary. *M.F. Merrick* remains in much better condition than *Titanic* despite sitting underwater about 32 years longer. The big point that hits home with the kids is that scientists believe *Titanic* will be reduced to a pile of rust in the next 20 years. (That prediction came from Dr. Henrietta Mann and Bhavleen Kaur from Dalhousie University in Halifax, Nova Scotia, Canada in 2011, so *Titanic* may actually have less than 20 years.)

The comparison of freshwater shipwrecks to *Titanic* hopefully emphasizes the importance of leaving shipwrecks and artifacts alone when studying them. The cold freshwater of the Great Lakes preserves shipwrecks really well, allowing new generations to explore, observe, and unlock maritime mysteries of deep waters and distant pasts. Wrecks teach us how people lived, what was important to them, how they moved around, and what mistakes were made. The kids really enjoy learning about the luxury palace-steamer *Niagara*, which sank in 1856 one mile off the shore of Belgium, Wisconsin. *Niagara* was constructed with a "firewall" that was made of wood. The steamer carried a cargo of fireworks and matches. The kids piece together the clues and deduce that there were fiery explosions onboard. The students are correct. Isaac from Riverside Elementary in Ringle created a nice interpretation of the event in a thank you letter.

Niagara serves as a nice introduction to another part of the presentation, which is source reliability. We read an article from the September 26, 1856 issue of The New York Times. The article paints an exciting picture with charged language like "flames," "consternation," and "explosion." The sentence I emphasize most reads, "There is a rumor in the city that the fire was the work of an incendiary." As a former journalist, I can't believe that The New York Times printed an article citing rumors!

The article is a great example of why it is important to check multiple sources. I teach students that if they can find the same information at three reliable sources, it is probably true. I also steer them toward reliable websites, like those associated with museums and historical societies and sites including ".gov" like the National Archives site at archives.gov. Of course, these are all secondary sources that can help kids find primary sources like artifacts, photographs, diaries, and testimonies from the event being investigated.

The big goals of the field trip are to develop an interest in researching, exploring, and preserving shipwrecks in addition to seeking reliable information about the wrecks or any other topic. It is all possible because of a grant from Wisconsin Sea Grant. The grant provides a stipend for schools that otherwise could not afford such an experience. I am thankful to the Wisconsin Sea Grant's Anne Moser for reconnecting me with students. The sun definitely shines brighter when I get to see them, even if it is on a computer screen ■

photo courtesy of Kevin J. Podewetz

Students from Riverside Elementary in Ringle

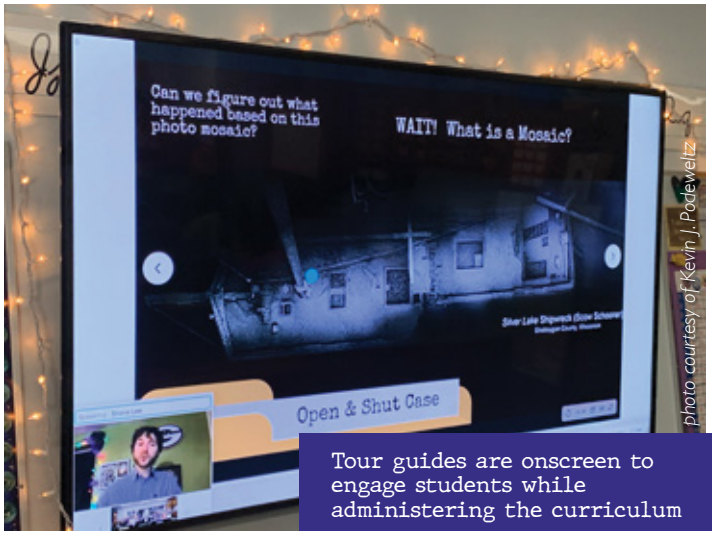
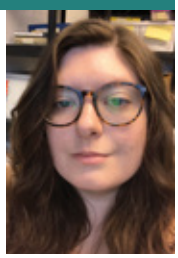


photo courtesy of Kevin J. Podewetz

Tour guides are onscreen to engage students while administering the curriculum

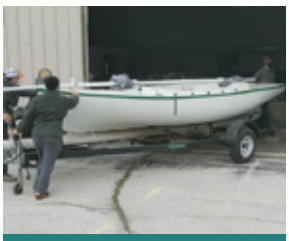
BELOW DECK

NEWS FROM THE COLLECTIONS VAULT
BY HANNAH PATTEN,
REGISTRAR



Collections Donation Spotlight: Bringing a piece of Wisconsin maritime history home

This past fall, a piece of Wisconsin maritime history came home; the 22 foot gaff rigged sloop Narcissa joined the Wisconsin Maritime Museum's collection of small watercraft. The Narcissa was built in Sheboygan Falls by William H. Richardson (III) in 1910 and named for his wife Fannie Narcissa (Hunter) Richardson. The boat was generously donated to our collection by Will Slade, William H. Richardson's great-great-grandson.



The Narcissa being brought into the museum's offsite storage facility Fall 2020

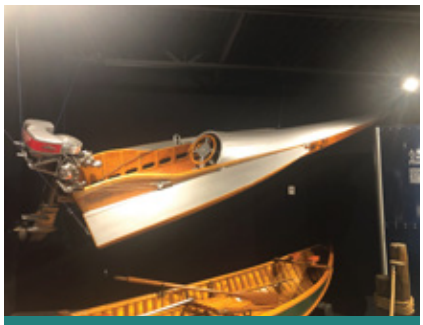
The Richardson family has deep roots in the Sheboygan Falls area. The family patriarch, Joseph Richardson, came to Sheboygan Falls in the 1840's and established a sawmill and began producing lumber and millwork as the Joseph Richardson Company. When his sons returned home after fighting in the Civil War they joined the family business and set their sights on expanding the enterprise. They continued selling lumber and millwork but also branched out into manufacturing other wood products like cheese boxes and furniture. In 1876 they changed the name of the company to Richardson Brothers, reflecting the change in leadership to the new generation.

Into the twentieth century the business continued to expand, helmed by a new generation of Richardsons. Jarius Richardson (son of Narcissa builder William H. Richardson III) began producing and selling specialized woodworking machines in 1936 as the J.S. Richardson Company. The company's manufacturing prowess was put to use during WWII. The J.S. Richardson Company produced not only the handguards for M1 rifles used during the war, but also the stocks for the Springfied '03 rifle. The company was honored with the "Army E" Award for Excellence in Production for their wartime contributions. Postwar, the company continued to expand and modernize. They began designing and producing custom machinery used to manufacture high-end furniture. The J.S. Richardson Company continued its operations until it was sold in 2001 to the Ziah Machine Company of Plymouth, Wisconsin. The Ziah Machine Company is still in operation and continues to service the machines that Jarius and his sons William H. and John S. Richardson designed and sold.

The Narcissa on Pelican Lake, 1944. Photo courtesy of Will Slade.

2009-24-14
Wisconsin Maritime Museum
Stencil used for painting the Richardson logo on boats.

William H. Richardson III was not the only boat builder in the family. For a time, the company built boats under the name Richardson Boat Company. Beginning in the 1920's the company produced high quality wooden boats. Jarius Richardson and his sons William H. and John H. built a "slipper" racing single-step hydroplane in 1932. Hydroplanes are a light and fast style of motorboat designed to skim over the surface of the water that was popular with racers in the 20's and 30's. The father-son team used the resources of the J.S. Richardson Company to fabricate the wooden parts and aircraft covering for the boat as well as the aluminum castings used for its construction. The hydroplane was purchased by amateur racer George Kuehn who went on to set the Class C-1 world speed record at the Century of Progress World's Fair in Chicago in 1933. This boat is now part of the Wisconsin Maritime Museum's Collection and is on display in the Wisconsin Built Boat Gallery.



2001-66-1a Wisconsin Maritime Museum
Richardson "slipper boat" racing single step hydroplane.

William H. Richardson Senior's son William H. Richardson Jr. continued the family boat building tradition. He gained national recognition restoring antique boats-including the Narcissa. At some unknown point in time, the Narcissa was sold by the Richardson family and fell into disrepair. In the 1990's William H. Richardson Jr. found the Narcissa and set to work restoring the boat. However, he was unable to complete the restoration before his death in 2007. The Narcissa was left to his nephew Will Slade who honored his uncle's legacy by completing the restoration in 2010. In 2020 Will Slade contacted the Wisconsin Maritime Museum with the intention of donating the Narcissa to our collection. It was only because of his tireless efforts that we were able to move the Narcissa from Atlanta, GA to Manitowoc in the midst of a pandemic. We are honored to be able to preserve this piece of Wisconsin maritime history and look forward to sharing it with the public ■

The Narcissa post restoration.

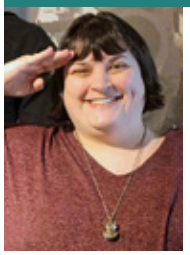
Selected References:
Pridmore, Jay. The Richardson Story: A family enterprise at 150 years. Greenwich Publishing Group. 1998.

The Sheboygan County Historical Research Center. Sheboygan Falls. Arcadia Publishing. 2005.

Hannah Patten is the Registrar at the Wisconsin Maritime Museum. She can be reached at (920) 684-0218 x111 or hpatten@wisconsinmaritime.org.

COBIA CORNER

USS *COBIA* NEWS
BY KAREN DUVALLE,
SUBMARINE CURATOR



Meals and Morale aboard Submarines During WWII

Can you imagine making a meal for 80 men in a kitchen the size of a walk-in closet? That's what the cooks aboard a World War II submarine dealt with on a daily basis for two months. The quality of food aboard a submarine was top-notch. They ate steak, chicken, ham, fresh baked bread every day, and ice cream, lots of ice cream! "As far as the comforts of submarines, the greatest asset we had on a submarine was the ice cream machine. The air conditioning we accepted, but the ice cream machine was really one of the treats to have on submarines," recalled Cobia crewman Dan Pelton.

Submarine life in WWII was hard-living, so the men were all volunteers, but there were perks to encourage them to join. They had a very casual environment onboard, received more pay, and had the best food in the military. Each sub had a cook or two and a baker. The baker worked at night baking 20-25 loaves of bread each night and whatever else was needed for the next day's menu such as buns, rolls, pastries, maybe even a birthday cake! On Cobia, the crew took turns baking to pass the time. Even Captain Albert Becker would take a turn at baking something for his crew. He once said, "the pride of the submarine force was that it was an informal force and that you were treated as an individual and a human being regardless of what your station was...you had to depend on the other man."

Becker was loved by his crew because he treated them all fairly, even the black submariners on board. Navy policy generally placed black sailors as stewards serving the officers or assistant galley attendants. In reality, many of them helped out beyond the galley. One Cobia crewman, Russell Donan, was a Ships Cook, but during battle stations, he helped out in the forward torpedo room and even manned a deck gun during a surface battle. In a battle, sailors dod what eeded to be done, regardless of their official roles.

The Cook (head cook) and Ships Cooks (assistants) were always busy. They had to know where all the supplies were on the boat to provide family-style meals for the crew - 80 men, three meals a day for 60-70 days. Perishables were crammed into a walk-in cooler and freezer and non-perishables were stored in any available space. Potatoes in the hatches and showers, cans under equipment, and even along the floor in their bunk room. At the beginning of the patrol, they walked across their food.

Unfortunately, after about two weeks the fresh food supply began to run out, and they had to switch over to powdered milk and eggs and canned fruits and vegetables. By the end of the war patrol, the men were craving fresh food. When they'd get back to port they wanted three things, fresh lettuce and milk, beer, and mail. A barge would usually come out to greet the sub and toss them fresh heads of lettuce. According to Dan Pelton, "nothing ever tastes so good in your life as that fresh milk and that crisp green lettuce, man oh man it was great." Once they reached shore then they sought out the beer!

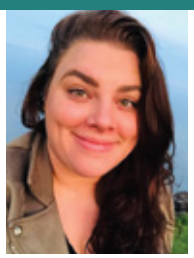
In addition to the good food provided, the crew would also steal whatever they could get their hands on before leaving for a patrol. Onions and cans of tuna were common in a lot of lockers. Dan Pelton stashed a whole case of tuna in his locker so that he could make himself a tuna sandwich with fresh bread every night after his watch station. The crew could also make themselves a snack if they wanted. Russel Donan decided to fry an egg for himself while in the middle of a hurricane. He secured himself in the galley, cracked an egg in the pan and suddenly the boat lurched and the egg flew out of the pan and past his head!

Despite the small galleys, canned food, and rough seas it didn't deter them from serving in the submarine service. Food boosted the morale on board. It kept them well-fed and happy...as long as there was an ice cream maker on board! ■

Karen Duvalle is the USS *Cobia* Submarine Curator at the Wisconsin Maritime Museum. She can be reached at (920) 684-0218 x105 or kduvalle@wisconsinmaritime.org.

THE CURRENT

EXCITING EVENTS & EXPERIENCES
BY ABIGAIL DIAZ,
DIRECTOR OF EDUCATION



Staff Updates

This summer, we're thrilled to welcome new faces to the Wisconsin Maritime Museum. The Engagement Team continues to grow with the permanent addition of Bree Boettner, our new Interpretation Coordinator. We also welcomed five new seasonal Engagement Assistants and a Collections Intern. They come to us from as far away as Florida! Our Youth Engagement Coordinator, Shane Lee, remains a vital part of our team, handling field trips and programs for our youngest visitors.

Next time you're in the museum, please join us in making our growing team feel welcome! ■

Bree Boettner
(she/her)

Title
Interpretation Coordinator

Alma Mater
John Hopkins University

Most recently worked for the Detroit Historical Society. Museum nerd and connoisseur of random trivia facts.

Greg Lutz
(he/him)

Title
Visitor Engagement Assistant

Alma Mater
University of Wisconsin - Milwaukee

"I am excited to be back at the Museum to give our visitors a great experience!"

Lindsey Beck
(she/her)

Title
Visitor Engagement Assistant

Alma Mater
University of West Florida

Florida transplant ready to experience history in action this summer!

Lainey Binnix
(she/her)

Title
Interpretation Assistant

Alma Mater
University of West Florida

MA in Public/Applied History. Sales, communication, research and writing pro.

Sydnee Hammond
(she/her)

Title
Visitor Engagement Assistant

Alma Mater
University of West Florida

"I love connecting folks with Wisconsin's waterways!"

Katy Dano
(she/her)

Title
Visitor Engagement Assistant

Alma Mater
Ripon College

"Excited to start as a Social Media Intern at the amazing WMM."

Lily Kelley
(she/her)

Title
Collections Intern

Alma Mater
East Carolina University

Graduate student studying Maritime History and Archaeology

Kelsey Zdziarski
(she/her)

Title
Visitor Engagement Assistant

Alma Mater
University of Wisconsin Stevens Point

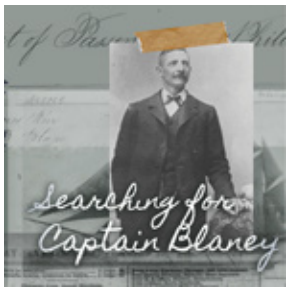
"History major excited to be here pursuing my passions."

Online Resources

Maritime Alphabet

Using photographs from the Museum's collection and archive, *Maritime Alphabet* introduces maritime heritage to readers, one letter at a time.

All photos courtesy of the Wisconsin Maritime Museum's collection.



Searching for Captain Blaney

For my whole life, I heard that there was a Great Lakes ship captain somewhere in the family tree, so I did some digging into the Museum's archive. Watch this video to see what was discovered.

Lost and Found: The Final Voyage of the schooner *LaSalle*

BY EMILY SHEDAL, COMMUNICATION MANAGER

Photo by Tamara Thomsen

The area just off the coast of Point Beach State Forest is home to a number of shipwrecks. A total of six confirmed shipwrecks have been found off the coast of Point Beach and another three wrecks are suspected in the area. One of the confirmed shipwrecks in the area is the wreck of the canal schooner *LaSalle*.

On April 11th, 1874, the *LaSalle* was launched into the Niagara River in Tonawanda, New York. At the time of its launching the *LaSalle* was valued at $27,000 and was co-owned by Samuel Parsons and John Humble.

The schooner *LaSalle* was built with reinforcements that were designed to give her greater strength than typical vessels like her, allowing her to hold more cargo.

The *LaSalle's* last voyage started on a late October day in 1875, just over 18 months since it was built. *LaSalle* left Chicago after being loaded with 22,000 bushels of wheat. It's destination was Buffalo, New York. Just north of Two Rivers, off the coast of Point Beach State Forest, a gale developed and caught the *LaSalle*.

The captain of the *LaSalle* tried to anchor the boat with no luck. In the process of trying to anchor, the schooner hit the bottom and was heading toward shore. Another problem developed in that the *LaSalle* was now caught up in quicksand and the schooner started to be overcome by water.

The next morning the ship's crew was rescued by local fishermen. Luckily, none of her crew were lost in the wreckage of the *LaSalle*.

Tugs were sent to help free the vessel with no success. The ship was then determined to be in terrible condition and deemed a total loss.

The schooner *LaSalle* was stripped of her usable parts. An update in the Chicago newspaper Chicago Inter Ocean from August 31, 1878 said that another schooner, *Rounds*, had come by the *LaSalle* wreck to take "on board the spars, anchors and rigging saved from the schooner *LaSalle*." The ship and its cargo were insured by its holding company, so the company decided to abandon the ship.

In the spring of 2015, Suzze Johnson, a powered-parachute pilot, discovered the schooner. Currently the schooner lies in about twelve feet of water. This is a great wreck for kayakers, boaters and snorkelers to explore since it is in shallower water ■

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AT MANITOWOC

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