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Wisconsin Underwater Archeology Association

Say Seiche

by P. J. Creviere

Some years ago, as a small boy I saw the waters of Lake Michigan at Bailey's Harbor recede, exposing all of the docks. Minutes later, the water came back in covering most of those docks. Mom told me it was a tide. Someone else watching it called it a tidal wave. Years later I found the true description: a seiche. Last year, while doing some research in old newspapers I ran into this article that brought all of those wonders back to the forefront of my memory.

Monster waves on the Great lakes.

"Do you remember a tidal wave on Lake Ontario sometime in the fifties?" asked a reporter of Capt. W. S. Malcolm. "Yes, I do," he answered. "I had charge of the government work at Oswego then, and I recollect that the wave was about two or three feet high. It was 1855, and a clear, still day, the water having been perfectly quiet previously. I remember that at Whitby, Canada, Mr. McCully, a relation of mine, had 200,000 or 300,000 feet of lumber washed off his dock. The wave there, I think, was considerably higher. The same day a canal boat was thrown high and dry on the shore of Seneca Lake by a tidal wave." The disastrous wave which broke at Cleveland, O., a few days ago has raised examination of the records, and it is found that these phenomena have not been infrequent. Mr. Charles Whittlesey, a Cleveland scientist, furnishes the *Cleveland Herald* with the following record of tidal waves on the lakes: on Lake Superior in 1789, opposite Isle Royale, there was a sudden fall of four feet in the waters. When they returned they did so with a rush, the vibration continuing for several hours. In 1834 the waters above the Sault Rapids suddenly receded, and in half an hour returned with great velocity. In August, 1845, Dr. Foster states that, while in an open boat between Copper Harbor and the Eagle River, an enormous surge twenty feet in height and crested with foam rolled towards the shore, succeeded by two or three swells. Dr. Foster observed repeated flows and reflux of the waters in 1847, 1848 and 1849, which preceded or followed storms on the lake. In 1851 D. D. Brockway reported, in a perfect calm, a sudden rise of one foot and three inches, and in another two and one-half feet. The *Lake Superior News* of July 17, 1855, reports extreme fluctuations between the hours of 9 in the morning and 4 in the evening.

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Demise of the Brick Boat: The *J.H. Johnson* Shipwreck

by Dr. Richard Boyd

Wisconsin's Door County is famous for its coastal geography and colorful maritime history, some of which involves local shipwrecks. The County became a mecca for fledgling wreck divers in the early 1950's, a full decade before other regions like Thunder Bay, Isle Royale and Whitefish Bay achieved similar popularity. By the late 50's a number of prominent shipwrecks had already been found and explored, including the *R. J. Hackett* on Whaleback Shoal, the *Meridian* on Little Sister Reef, the *Gilmore* and *Riverside* in Death's Door and the *Carrington* off Hat Island. Another early wreck was the *J. H. Johnson* whose story follows a rather typical scenario which showcases how various Door County shipwrecks originally occurred, were then salvaged and forgotten, only to be found and explored many decades later by sport divers.

The *James H. Johnson*, usually referred to as the *J. H. Johnson*, registry #76340, was built in 1882 in St. Joseph (MI). A 52 gross ton vessel, she measured 98 feet in length, 17 feet in width with a depth of 6 feet. Power was provided by a 20 horsepower steam engine. Her home port was Milwaukee.

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WUAA Fall Meeting

The Fall Meeting of the Wisconsin Underwater Archeology Association will be held on Saturday, October 9, 2004. The meeting will be at the Winneconne Municipal Center's Community Room. (Winneconne is located just west of Oshkosh).

The Community Center is at 30 South First Street, which is one block south of highway 116 and close to the west side of the Wolf River.

The business meeting will begin at 10:00 am.

At 1:00 p.m. there will be a tour and talk by Dorothy Nimmer on the cabin of the steamboat believed to be the *Leander Choate*.

During the business meeting an election will be held for the position of secratary-treasurer. Any members interested in this office should contact president Russ Leitz at wuaa@mailbag.com.

Wisconsin Historical Society Scuba Diving Operations Manual

by Hank Whipple

Background:

In November of 2003, it came to my attention that the scuba diving activities of the Underwater Archeology Program of the Wisconsin Historical Society (the Society) might be subject to regulation by the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). Research initially revealed that commercial diving, including scuba diving, was under OSHA's jurisdiction except for state operations. [29 Code of Federal Regulations, sec. 1910, which became effective on 20 October 1977]. Further study showed that a state could voluntarily elect to be subject to the OSHA regulations. These regulations antedated the Society's diving program by over 10 years. The State of Wisconsin by adopting Commerce Regulation Chapter 32 [Public Employee Safety and Health] on 2 March 1999 elected to have its public employees become subject to the OSHA scuba diving regulations. The Society's program, therefore, has been subject to the OSHA diving regulations for over five years but no action had been taken to comply with these regulations.

The reasoning behind the OSHA regulation is what all of us as Great Lake divers are only too well aware. Scuba diving takes a person out of one's normal air breathing environment and places him/her in a foreign environment in which one cannot survive without an external source of air. Consequently, "in all diving operations, safety is the primary consideration." (NOAA Diving Manual, 2.0) "Human error and inadequate diver performance seem to be the major contributing factors in many fatal accidents." (Ibid, 21.0) Scuba diving has a higher than average rate of injury or death than most other outdoor activities as is shown in the 2000 report from the Divers Alert Network (DAN).

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In addition to publishing this newsletter, the Association also holds semiannual meetings and provides support to members' research and publication projects. Annual membership dues are $15. For membership information write to the postal or email address below.

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The majority of the Society's diving is conducted in Lakes Michigan and Superior which are notorious for their exceptionally cold waters necessitating the use of dry suits and specialized regulators that are designed not to freeze-up in the cold water. Dry suit diving requires special skills and entails risks not usually associated with wet suit diving. It is common for the Society's operational waters to be below 50°F. In spring, the water temperature of Lakes Michigan and Superior are even lower than in summer. These factors can create additional physical and emotional stresses on the diver, require the consumption of more air and/or result in hypothermia which is the reduction of the body's core temperature to the point that it can become life threatening or fatal. Surface winds blowing over these cold surface waters can also cause an improperly attired or equipped boater to become hyperthermic. The distance from the nearest emergency service can be substantial. In the Apostle Islands on Lake Superior, which has extremely remote areas, this can be in excess of 25 miles and more than a three hour round trip for the emergency care/rescue providers from the point in time when they are notified of an emergency. Sudden and frequent weather changes over these lakes can rapidly create a dangerous and hostile environment to boaters and divers.

Action Taken:

I brought these matters to the attention of Bob Thomasgard, the acting director of the Society, in late November, 2003. He immediately suspended all scuba diving activities by the Society's staff until the requisite diving/boat operations manual was drafted, approved by the Wisconsin Attorney General and properly implemented by management. OSHA gave the option of proceeding as a scientific diver rather that as a commercial diver where one could qualify under the former category. The Society met the scientific diving requirements which were also better and more practical for underwater archeology programs. I, therefore, drafted a proposed scientific scuba diving manual. The primary references used in preparing the draft manual were (1) the Wisconsin Administrative Code Chapter Comm. 32, " Public Employee Safety and Health", (2) the OSHA diving regulations as modified for scientific diving [29 CFR 1910 Subpart T], (3) the Standards For Scientific Diving of the American Academy of Underwater Sciences (2003) and (4) the NOAA Diving Manual 7.2.5, 9.0 and 9.12.

The proposed scuba diving and boat operations manual was submitted to the staff in February of 2004. The document consisted of 23 pages of annotated text supplemented by 15 technical attachments and forms. These materials were then vetted by staff and three independent outside diving/boating experts. It is the purpose of the manual to make the best efforts to have the safest possible environment for all Society scuba divers. Because of the exigencies of wanting to get back into diving as soon as possible, the diving portions were temporarily severed from the boating safety operations portions when the proposed manual was submitted to the Attorney General for legal review. A thumbs up legal opinion on the diving manual was issued on 16 June 2004. The diving manual was then submitted for final approval before its implementation to the Society's Diving Safety Board consisting of Dr. Richard Boyd, John H. Broihahn, State Archeologist, and Keith Meverden, State Underwater Archeologist. This Board approved the Society's Diving Operations Manual on 15 July 2004. We're back in the water again!

OSHA requires a diving safety board as part of meeting the scientific diving election under its regulation. The board's function is to: (1) assure compliance with the federal scientific diving standards, (2) be autonomous and have absolute authority over all Society diving programs and operations, (3) approve and monitor diving projects, (4) assure compliance with safe diving practices and equipment and (5) suspend any unsafe diving practices and/or programs.

Myths, Rumors and Realities of the Society Diving Manual on Wisconsin Underwater Archeology Association Members:

The applicability of the Society's dive manual, as adopted, to WUAA member is summarized as follows:

(1) The manual as adopted does not apply to any boating operations by any person.

(2) Any person diving under the auspices of the Society, i.e. WUAA members and/or other non-employee participants shall:

(a) Have the following certifications from a recognized training agency and shall furnish copies of the same to the on-site dive safety officer:

(i) Open water diver.

(ii) First aid / CPR / DAN approved emergency oxygen for diving accidents.

(iii) Training in such special skills as the Board may deem appropriate.

(b) Physical examinations are not required.

(c) Have training or experience in the use of any tools to be

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Say Seiche

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On April 14, 1858, the *Milwaukee Sentinel* reported a change of level in Lake Michigan of six feet. May 10, 1823, according to DeWitt Clinton, at Otter Creek, on the Canadian shore, a wave came in nine feet in height, and the same occurrence took place at Kettle Creek, twenty miles distant. In 1844 or 1845 a wave came into Euclid Creek fifteen feet in height, carrying everything before it. On November 18, 1845, the water at Cleveland suddenly fell two and eight tenths feet during a high wind from the southwest. The *Toledo Blade* records a change of ten feet on December 5, 1858. On June 15, 1872, at Charlotte, at the mouth of the Genesee River, the water rose twenty-two inches. In May, 1855, the waters of Seneca Lake exhibited a phenomenon of continued rise and fall of sixteen and a half inches to two feet through two days. The latter is the one referred to by Captain Malcolm. At Madison Dock, Lake County, in 1830, a wave swept in suddenly from the lake, bearing a crest of foam fifteen feet above the ordinary level of the water, and carrying everything before it. It receded as swiftly as it came, and was immediately followed by a second wave and then a third of diminished height. The lake then subsided to a placid, as before the phenomenon. Fifteen years later a similar wave, estimated to be fifteen feet in height suddenly flooded Euclid Creek, sweeping away everything within its reach. Mr. Whittlesey says: "In general it may be said that the disturbance is due to an unbalanced condition of the atmosphere. An abnormal pressure is created which results in some manifestation as that which has just visited us."-*Oswego Palladium*. Reprinted by *The Chicago Tribune*, pg. 10, July 5, 1882.

What the accounts described are seiches, storm surges and edge waves.

A "seiche" (pronounced "saysh") is a French word that means "to sway back and forth," first applied to the effect by Swiss scientist, Francois-Alphonse Forel, the father of modern Limnology, in the late 1800's. Like water splashing in a bathtub, seiches are waves racing back and forth within the lake basin and diminishing with each transit.

Several mechanisms can initiate the Great Lakes seiches. Most often, strong winds blowing along the lake's axis will give the initial kick, but fast-moving squall lines, with strong pressure gradients and downdraft winds can create the same effect. The surface waters are pushed toward the downwind lakeshore creating the maximum build up of water, called the "set up". The opposite end of the cycle, the lowest stage of the seiche is called the "set down." The intervals (or periods) between seiche peaks on the Great Lakes range from minutes to more than eight hours.

The wind can cause seiches at almost anytime, mostly unnoticeable, but storm surges have created seiches of sixteen feet and greater. A storm surge typically rises about as fast as the onshore wind speed rises, but with a little time delay. The surge typically lasts about as long as the strong winds are blowing onshore. A storm surge may last all day.

Seiches on Lake Michigan have reached ten feet. On June 26, 1954, an 8-foot-high seiche struck Chicago's lakefront. People fishing on the dock in Montrose Harbor, were caught unaware. Eight were killed.

In Lake Superior, small seiches occur almost continuously. These go largely unnoticed. However, the biggest seiches can bang ships together in harbors, snap mooring lines, and damage hulls. On July 13, 1995, a big Lake Superior seiche left some boats hanging from the docks on their mooring lines when the lake water suddenly retreated. In that seiche, lake water went out and came back within fifteen to twenty minutes at Ashland, Wisconsin, Marquette and Point Iroquois, Michigan, and Rossport, Ontario. People who witnessed it were amazed. In just a few minutes, water levels changed about three feet. In 1998 a seiche occurred in Two Harbors, Minnesota, that caused several hundred thousand dollars of damage to vessels loading iron ore at the Duluth Missabe Iron Range Railway Company docks. Explained dock manager David VanBrunt,

"We've had two seiches in the past that have surged a vessel almost 12 to 15 feet, causing the ship to damage shuttles on our shiploader, and the vessel incurred some damage."

Lake Erie experiences frequent seiches due to its East-West orientation and the fact that storms most frequently come out of the west. Lake Erie is the most affected of the Great Lakes because it is the shallowest and its basin is often aligned with the forcing winds. The typical seiche on Lake Erie has a period of around 14 hours and water-level range of 6 feet.

Edge waves are a rare and dangerous form of storm rise that can occur when there is no local storm activity. On May 31, 1998, a line of large and damaging thunderstorms called a derecho (day-ray-co) formed in South Dakota and raced across Minnesota, Wisconsin and

Lake Michigan at roughly 50 miles per hour, all the way to New York. Wind speeds increased as this storm system swept through the night; reaching nearly 100 miles per hour in Michigan. This rapid squall line generated a storm surge, or wave, that traveled southeast across Lake Michigan with the squall line very early in the morning of June 1, reaching and reflecting off the shore near New Buffalo, Michigan. This squall line created an edge wave that traveled around the southern end of the lake to Illinois. About 7 a.m., hours after the storm had raced across the lake, the water level in Calumet Harbor, Illinois, rose 5 feet in less than half an hour, then dropped, followed by subsequent, but lesser, peak levels about every 90 minutes for several hours. Earlier derechos created edge waves that swept some people off piers and breakwaters.

The Euclid Creek wave and its wall of foam may actually have been a seismic induced tidal wave or tsunami. While seismic activity in this area is extremely rare, its not inconceivable that could have taken place and inspired a wave of this description. A wave sounding very much like this "foam" but a 100 feet in height, picked up the *USS Memphis* and tossed her, like a coconut, on a Santo Domingo beach in 1916. But that's a different story.

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Great Lakes Seiches
Fri Oct 03, 2003

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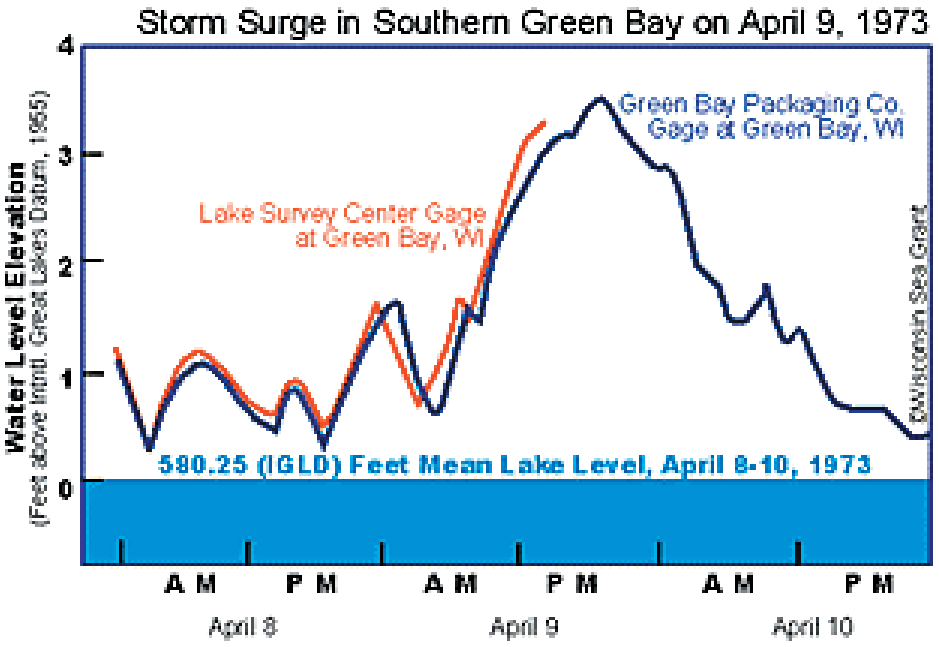
The Wreck of the Memphis
Captain Edward L. Beach, 1966
Holt, Rinehart and Winston, New York



Demise of the Brick Boat: The *J.H. Johnson* Shipwreck

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On May 1, 1895 the vessel was headed for Manistique (MI) with a load of hay worth $550 plus a cargo of bricks. Captain George Seitz of Manitowoc was in command. The *Johnson* proceeded uneventfully northward on Green Bay until she reached the vicinity of Sister Bay on the Door Peninsula. Near here, well offshore in the Bay, are the Horseshoe reefs. Locally known as the "Frying Pan". More precisely, most boatmen familiar with the area refer to the southern portion of these reefs as the "Pan", and another somewhat isolated northern section as the "Rock". This latter pinnacle is only about 40 by 25 feet in size and usually has no more than four feet of water covering it. In most years shallow-draft vessels could clear this reef, but 1895 was a year of very low water … and, of course, the "Rock" was completely unmarked. Thus it was the *Johnson's* bad fortune to hit it at cruising speed.

The vessel was thoroughly impaled on the limestone shelf, could not free herself, and soon filled with water. Fortunately, her crew of five was promptly rescued by commercial fishermen in a pound-net boat. Within days, the stranded steamer was descended upon by salvagers who transferred most of the bricks onto the schooner *Ebenezer*. Within three weeks, the *Johnson's* hull began to disintegrate and the cargo of hay washed ashore, along with the vessel's cabin. Surprisingly, the wooden cabin was intact with its everyday artifacts still in place and unharmed. By late spring, the ship had gone to pieces and its remnants, including the remaining bricks, were scattered along the base of the reef in 20 to 25 feet of water. The craft, valued at $2500, at this point was a total, uninsured loss for owner Joseph Seitz.

The *Johnson*, like other shallow wrecks in Door County, was subjected to underwater salvage work soon after being abandoned. Captain Charles Peak used the steam barge Imperial as a diving platform while recovering the engine and boilers in late 1895. The remaining bricks, however, were left on the bottom. Peak, a well-known salvor who had been a diver since 1856, sold the machinery in 1896 for installation in the tug *Com. Jack Barry*.

The wreck site rested undisturbed for over five decades, but in the 1950's the "Pan" became a popular sport fishing site because it was one of the last refuges of the lake trout which had been largely decimated by the sea lamprey. Charter captain Mickey Hubbard, owner and operator of Hub's Motel in Sister Bay, made frequent fishing trips to the Horseshoe reefs. During one such charter, Hubbard discovered the wreck when he caught his anchor in her remains. Bricks reputedly were also brought up, occasionally snagged by anchors and grapples. Besides regular fishing charters, Hubbard began taking a few divers to the site. At that time, the writer of this article was living in Door County and chanced to go on one such dive.

The hull of the vessel had been reduced by storms and ice to its keelson members and some ribbing and planking. A few ship wares and personal items could yet be found hidden among the bottom rocks. Parts of the machinery were still present and Hubbard eventually raised the propeller and part of the shafting which he displayed in front of his motel for many years. The bottom around the reef was still littered with many bricks, so most divers began calling the wreck the "Brick Boat", a nickname which has persisted. During the 1990's the site was briefly surveyed by Wisconsin's Office of Underwater Archeology. In general, the *Johnson* has not experienced much diver traffic because of its remote offshore location. In fact, some recently published "shipwreck guides" have even overlooked this wreck. Nonetheless, it remains a very pleasant, out-of-the-way sport dive.

Selected References

Door County Advocate: 4 May 1895, 6 July 1895, 18 April 1896.

Court Affirms State Ownership Of Historic Shipwreck

The United States Court of Appeals for the 7th Circuit in Chicago on June 9 affirmed an earlier decision by the federal district court in Milwaukee, which held that the state of Wisconsin owns a historic shipwreck lying in state waters. The decision settles a case begun August 7, 2000, when an Illinois resident asserted a claim under admiralty law for title to the shipwreck *Rosinco* lying on the bottom of Lake Michigan.

The ruling bolsters the state's efforts to protect historic shipwrecks from looting by treasure and artifact hunters, as well as from commercial salvors. The Wisconsin Department of Justice and the Wisconsin Historical Society argued that these wrecks are publicly owned and neither the wrecks nor the artifacts associated with them can be privately held.

"Fresh water shipwrecks are underwater museums. These extremely well preserved time capsules can tell us much about the lives of the men and woman who lived, worked and, in some cases, died on the Great Lakes," says Keith Meverden, underwater archeologist with the Wisconsin Historical Society. "With advances in diving technology, video imaging and the Internet, the mystery and beauty of these museums are now available to an ever-increasing public audience."

Scuba diving is a multi-million-dollar-a-year sport and the cold, clear waters of the Great Lakes are a popular destination for divers wanting to visit some of the best preserved shipwrecks in the world. Preservation of these underwater museums is critical if this component of Wisconsin's Heritage Tourism industry is to continue expanding.

The Wisconsin Historical Society recognizes the importance of these shipwrecks, in both telling the Wisconsin story and in bolstering the Heritage Tourism industry, and has developed the Maritime Trails Program to bring attention to these non-renewable cultural resources.

For further information contact: Keith Meverden at (608) 221-5909 or at knmeverden@whs.wisc.edu

For more information on the preservation of historic sites, visit Wisconsin's Maritime Trails Web site at www.maritimetrails.org or Wisconsin's Great Lakes Shipwrecks Web site at www.wisconsinshipwrecks.org.

Diving Operation Manual

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employed, techniques of the assigned diving mode and diving operations and emergency procedures.

(d) Be qualified to do the assigned task and/or certified for the type of diving to be undertaken, i.e. nitrox, stage decompression diving and mixed-gas diving.

(e) Sign a Society medical statement and liability waiver and release forms.

(f) Have personal medical insurance to cover diving accidents.

(g) Comply with the directions of the on site diving safety officer.

(h) Follow the:

(i) Pre-dive procedures.

(ii) Diving procedures and dive plan.

(iii) Post-dive procedures.

(i) Maintain a personal dive log for all Society dives.

(j) All equipment used must be first approved by the on-site dive safety officer.

(3) First aid and oxygen administration kits shall be at all dive sites.

(4) International code flag "Alpha" and "divers down" flags shall be flown during all diving operations.

(5) A copy of the manual shall be at all Society dive locations.

Conclusion:

As of 15 July 2004 with adoption of its Diving Operation Manual, the Wisconsin Historical Society was in compliance with the OSHA scientific diving regulations with respect to its underwater archeology program. The manual is designed to enhance the diving safety of all persons diving under the Society's banner with emphasis on the practical without being unduly burdensome. Each of us engaged in the diving operation is a member of a team which must be able to support and assist one another in making the dive as pleasant, educational and safe as possible. One never knows what he/she might be called upon to render emergency assistance to or get such assistance from a fellow team member. Like the U.S. Coast Guard's motto: semper paratus, we too should be always ready.

It is my intent and hope that this report brings you up to date as to where the Society's diving program is at this time and as to how you as a WUAA member can qualify for and participate in that wonderful activity we call underwater archeology.

Coming Events

Sept. 10-12, 2004	**Lakeshore Maritime Heritage Festival & Lighthouse Walk.** In Manitowoc. For information contact the Wisconsin Maritime Museum toll free at 866-724-2356.
Sept. 16-18, 2004	**Annual Meeting of the Association for Great Lakes Maritime History.** In Manitowoc. For information check their web site at www.aglmh.org or contact Bob O'Donnell at 866-724-2356.
Oct. 9, 2004	**Fall Meeting of the Wisconsin Underwater Archeology Association**. At Winneconne. For information contact Russ Leitz at 715-258-2935 or rleitz@vbe.com.
Nov. 6, 2004	**Gales of November**. In Duluth. For information contact the Lake Superior Maritime Museum Association at info@lsmma.com.

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For those interested in the study and preservation of Wisconsin's underwater history and cultural resources.