

stations on Lake Erie or Ontario to the Weather Bureau office, Buffalo.

Masters of vessels of this class, whenever at a port on the Great Lakes where there is no Weather Bureau office or storm-warning station, may themselves telegraph for this information, observing the same rule as to territory as given above.

The telegram should be address: "Weather, Chicago," or "Weather, Buffalo."

These messages and the answers thereto will be at Government expense, but it is expected that the privilege thus granted will only be exercised when the information sought is regarded as necessary for the safety of the vessels concerned.

It is also expected that vessel masters who avail themselves of this privilege will make public the information obtained for the benefit of all vessels in their vicinity.

LIST OF STATIONS AND LOCATION OF FLAGSTAFFS AND TOWERS.<sup>1</sup>

LAKE SUPERIOR.

*Ashland, Wis.*—J. G. Upthegrove.

Steel tower: Bay front, foot of Second avenue, W., near junction with Front street. Electric lights.

*Bayfield, Wis.*—William Miller.

Steel tower: Sixty-five feet from water's edge, facing First street; 120 feet from intersection with Front avenue. Electric lights.

*Deer Park, Mich., life-saving station.*—Sara E. McGaw.

Flagstaff: Deer Park Life-saving station, near mouth of Sucker River.

DULUTH, MINN.—W. H. Richardson, local forecaster.

Displays: Flags and electric lights.

Steel tower: Southwest side of Weather Bureau Building, Seventh avenue, W., and Eighth street.

Flags: Post-office Building, First street and Fifth avenue, West Duluth. Evening Telegraph Building, 1017 Tower avenue, West Superior.

*Eagle Harbor, Mich.*—Alice Nolen.

Steel tower: On light-house reservation.

*Grand Marais, Mich.*—Mrs. Lena Truedell.

Steel tower: On Life-Saving Service reservation. Electric lights.

HOUGHTON, MICH.—Abe Wiesner, observer.

Steel tower: On roof of Weather Bureau office, Sheldon Building. Electric lights.

MARQUETTE, MICH.—H. R. Patrick, observer.

Steel Tower: Marquette County Savings Bank Building, southeast corner of Washington and Third streets. Electric lights.

*Munising, Mich.*—A. C. Hortho.

Steel tower: In Beach Inn yard, just east of Beach Inn.

*Ontonagon, Mich.*—A. S. Follansbee.

Flagstaff: On Court House lawn.

*Pequaming, Mich.*—Charles Hebard & Son.

Flagstaff: Two hundred feet north of Hebard & Son's saw-mill.

*Ship Canal, Mich., life-saving station.*—Mrs. C. E. McCormick.

Steel Tower: At Lake Superior end of ship canal.

SAULT SAINTE MARIE, MICH.—Alexander G. Burns, observer.

Flagstaff: Weather Bureau Building. Electric lights.

Weather maps and storm-warning messages are placed in the canal office for masters of boats passing the canal, also with the superintendent of the Canadian Soo Canal. Barometers adjusted.

*Superior, Wis.*—E. A. Ostergren.

Steel tower: On outer end of Dock No. 2.

*Two Harbors, Minn.*—G. W. Watts.

Steel tower: At Ore Dock No. 2 and flagstaff at store of J. Schreiner & Co., corner of Poplar street and First avenue. Electric lights.

*Washburn, Wis.*—Joseph A. McI tree.

Steel tower: On bay front. Electric lights.

*Whitefish Point, Mich.*—Mrs. Annie M. Carlson.

Steel tower: On light-house reservation, 667 feet east-northeast from tower, 31 feet north-northeast from fog warning No. 1.

LAKE MICHIGAN.

*Beaver Island (St. James), Mich.*—James McCann.

Steel tower: Church Hill.

*Big Point Sable, Mich.*—Mrs. Mary Lysaght.

Steel tower: On Life-Saving Service reservation, about 8½ miles from Ludington Harbor.

*Charlevoix, Mich.*—Miss Florence M. Smith.

Steel tower: On bluff, south side of harbor entrance.

CHICAGO, ILL.—Prof. Henry J. Cox, Weather Bureau, Federal Building.

Steel tower: On South Breakwater, near life-saving station, Chicago Harbor, Ill.

Steel tower: On southwest corner of Life-Saving Service reservation, South Chicago. Electric lights.

*Church Hill, Beaver Island, Mich.*—Norbert Wilhelm.

Steel tower: On Church Hill, about 1½ miles south of St. James, Beaver Island. Oil lights.

ESCANABA, MICH.—H. S. Cole, observer.

Steel tower: On roof of office building, 813 Ludington street. Electric lights.

*Frankfort, Mich.*—Miss Amelia Morency.

Steel tower: Life-saving station. Electric lights.

*Flagstone, Mich.*—Paul B. Hammond.

Flagstaff: Top of elevator at docks, "Soo Ry." Electric lights.

*Glen Haven, Mich.*—Eva E. Day.

Steel tower: West end of Day's pier.

GRAND HAVEN, MICH.—C. H. Eshleman, observer.

Steel tower: Cutler House, corner Third and Washington streets. Electric lights.

GREEN BAY, WIS.—F. W. Conrad, observer.

Steel tower: On roof of Weather Bureau office, Parmentier Block, 324 to 328 Washington street. Electric lights.

*Harbor Springs, Mich.*—V. A. Pool.

Steel tower: Foot of Spring street, on the bluff.

*Holland, Mich.*—Mrs. Madalen A. Van Putten.

Flagstaff: Life-saving station, Macatawa Beach.

*Kenosha, Wis.*—J. C. McNally.

Steel tower: Near steamboat landing. Electric lights.

*Kewaunee, Wis.*—John Dishmaker.

Flagstaff: Near harbor, close to telegraph office.

*Ludington, Mich.*—J. O. Ellison.

Steel tower: Near Life-Saving Service station. Electric lights.

*Macatawa, Mich.*—Mrs. Jennie Van Weelden.

Flagstaff: In front of life-saving station.

*Mackinaw, Mich.*—Chas. T. Dagwell.

Steel tower: On grounds of the Lake Marine News Association. Electric lights.

*Manistee, Mich.*—F. V. Davis.

Steel tower: Corner Pine and Second streets. Electric lights. Life-saving station, north side of entrance to harbor.

Tower on west side of reservation. Oil lights.

*Manitowoc, Wis.*—T. C. Torrison.

Steel tower: On river front, two blocks from lake. Electric lights.

*Menominee, Mich.*—L. C. Collins.

Flagstaff: No. 1 engine house. Electric lights.

*Michigan City, Ind.*—Josephine R. Robb.

Steel tower: At north end of Franklin Street Bridge. Electric lights.

MILWAUKEE, WIS.—Henry B. Hersey, Inspector, Weather Bureau.

<sup>1</sup> This list has been revised to July 1, 1908.

Flagstaff: United States Post-office Building. Electric lights.  
*Milwaukee, Wis., life-saving station.*—Mrs. Mary E. Olsen.  
 Steel tower: Near life-saving station building. Electric lights.

*Muskegon, Mich.*—W. J. Miles.  
 Steel tower: On grounds of Pere Marquette Railway Company. Electric lights.

*North Manitou Island, Mich.*—Emma Smith.  
 Steel tower: On north-central part of Life-Saving Service reservation, North Manitou Island. Oil lights.

*Pentwater, Mich.*—Ida M. Ewald.  
 Steel tower: On southeast corner of Life-Saving Service reservation, Pentwater. Oil lights.

*Racine, Wis.*—J. C. Dorchester.  
 Steel tower: One block from lake on elevated ground. Electric lights.

*St. Joseph, Mich.*—Alberta E. Thomas.  
 Steel tower: On bluff near Hotel Whitcomb, in Lake Front Park. Electric lights.

*Saugatuck, Mich.*—Frank H. Wade.

Flagstaff: Post-office Building.

*Sheboygan, Wis.*—A. Leberman.  
 Steel tower: Post-office block. Electric lights.

*South Haven, Mich.*—Mrs. Anna Donahue.  
 Steel tower: On light-house reservation. Electric lights.

*South Manitou Island.*—Clara J. Pugh.  
 Steel tower: Near Weather Bureau cable station. Electrical connection with mainland.

*Sturgeon Bay, Wis.*—E. W. Long.  
 Steel tower: East side entrance to canal. Electric lights.

#### LAKE HURON.

ALPENA, MICH.—Frank Jermin, assistant observer.  
 Steel tower: Chisholm street near First. Electric light.

*Presque Isle Light.*—Miss Kate L. Garrity.  
 Steel tower: Near light-house.

*Bay City, Mich.*—H. W. Perkins.  
 Flagstaff: On roof of Union Block, 716 North Water street.

*Cheboygan, Mich.*—R. E. Matt.  
 Steel tower: Near the steamboat dock. Electric lights.

*Detour, Mich.*—John F. Goetz.  
 Steel tower: On Dawson street, about 500 feet from telegraph office.

*East Tawas, Mich.*—John W. Tait.  
 Posts warnings only.

*Mackinac Island, Mich.*—Helen M. Donnelly.  
 Steel tower: On Biddles Point.

*Middle Island, Mich.*—Elizabeth A. Motley.  
 Steel tower: About 400 feet from station.

*Oscoda, Mich.*—William McFarlane.  
 Steel tower: Ninety feet from shore line, 15 feet from dock driveway.

*Ottawa Point, Mich.*—Rebecca M. Small.  
 Steel tower: Life-saving station; repeating displays from East Tawas.

*Pointe aux Barques, Mich.*—Carrie M. Frahm.  
 Steel tower: Extreme north part of Life-Saving Service reservation. Oil light.

PORT HURON, MICH.—Edward A. Brown, observer.  
 Flagstaffs: United States Custom-House. Electric lights.  
 Kendall Marine Company, foot of Sarnia street. Two 16-candlepower lights, one red and one white, displayed from veranda of reporting station, 30 feet above river.

Steel tower: Millers coal dock. Electric lights.  
*Lakeview Beach life-saving station.*—Mrs. E. J. Plough.  
 Flagstaff: Life-saving station.

*Harbor Beach, Mich.*—E. C. Reinelt.  
 Steel tower: High ground near F. and P. M. Railway depot.  
*Thunder Bay Island, Mich.*—Celia E. Persons.  
 Steel tower: Southeast side of island near watchhouse.

#### LAKE ST. CLAIR.

DETROIT, MICH.—Norman B. Conger, inspector and marine agent.

Steel tower: On roof of Majestic Building.  
 Flagstaffs: On United States mail boat. Smith's coal dock.  
 Electric lights.

#### LAKE ERIE.

*Ashtabula, Ohio.*—C. M. Foust.  
 Steel tower: At east end of drawbridge. Electric lights.  
 The steel tower is used for flag warnings only. The electric lights are displayed from a special support on the roof of Marine Block.

BUFFALO, N. Y.—D. Cuthbertson, local forecaster.  
 Steel tower: For electric lights.  
 Flagstaff: For flag displays. Both on Prudential Building, Church and Pearl streets.

*Frog Island, near Buffalo, N. Y.*—J. Snyder.  
 Flagstaff: Near southern end of Frog Island, N. Y. Oil lights.

*Buffalo life-saving station.*—Julia A. Griesser.  
 Steel tower: Southeast corner of Life-Saving Service reservation on south side of south pier at entrance to Buffalo Harbor. Electric lights.

CLEVELAND, OHIO.—James Kenealy, local forecaster.  
 Steel tower: On west Government pier.  
 Flagstaffs: Society for Savings Building. Life-saving station, Mrs. Hannah K. Hensen.

*Conneaut Harbor, Ohio.*—W. B. Risley.  
 Steel tower: On highest bluff at harbor. Electric lights.  
*Dunkirk, N. Y.*—D. F. Ganey.

Steel tower: Foot of Eagle street on triangle between Eagle street dock and Scully Lumber Company dock.

ERIE, PA.—G. R. Oberholzer, local forecaster.  
 Steel tower: At Soldiers' Home grounds.  
 Flagstaffs: Federal Building. Soft-coal docks. Electric lights.

*Fairport Harbor, Ohio.*—Melvin L. Root.  
 Steel tower: On bluff 600 feet from Grand River. Electric lights.

*Huron, Ohio.*—Jabez Wright.  
 Steel tower: At foot of Main street, between lake shore and river bank. Electric lights.

*Kelleys Island, Ohio.*—F. J. Reinheimer.  
 Steel tower: On hill near steamboat wharf, in front of post-office.

*Lorain, Ohio.*—T. H. Tristram.  
 Steel tower: West end of drawbridge between River and Broadway streets. Electric lights.

*Marblehead, Ohio, life-saving station.*—Mrs. Martha M. Griesser.  
 Steel tower: On grounds of the Kelleys Island Line and Transport Company.

Flagstaff: Eighty feet east of life-saving station.  
*Put-in Bay, Ohio.*—Henry Fox.

Steel tower: Fox & Son's dock.  
 SANDUSKY, OHIO.—E. H. Nimmo, observer.  
 Flagstaff: Post-office Building, corner of Columbus avenue and Market street. Electric lights.

*Stony Point, N. Y. (West Seneca, N. Y.).*—Capt. T. C. Jacobsen.  
 Steel tower: Three hundred feet north of the southern end of the Government break wall. Electric lights.

TOLEDO, OHIO.—W. S. Currier, local forecaster.  
 Flagstaff: Nicholas Building, northwest corner of Madison and Huron streets. Electric lights.

*Tonawanda, N. Y.*—James O'Connor.  
 Steel tower: State grounds.

#### LAKE ONTARIO.

*Cape Vincent, N. Y.*—V. M. Rice.  
 Steel tower: On United States Fish Commission wharf.  
*Charlotte, N. Y.*—Addie F. Fobes.

Steel tower: Life-saving station.  
*Fort Niagara, N. Y., life-saving station.*—Mrs. Annie Clemons.  
 Steel tower: Twenty-seven feet west of life-saving station, east side of entrance to Niagara River.  
*North Fair Haven, N. Y.*—A. M. Eldridge.  
 Steel tower: Near custom-house.  
*Ogdensburg, N. Y.*—E. J. Dinneen.  
 Steel tower: Center of Caroline street, about 200 feet from North Water street.  
 OSWEGO, N. Y.—J. G. Linsley, observer.  
 Flagstuffs: Weather Bureau office, custom-house, West Oneida street, between West First and Second streets. Oswego Yacht Club.  
*Fort Ontario life-saving station.*—Emma L. Anderson.  
 Steel tower: One hundred and twenty-five feet southeast of life-saving station. Electric lights.  
*Sacketts Harbor, N. Y.*—Clark M. Stearne.  
 Steel tower: On high bluff at end of Main street.  
*Sodus Point, N. Y.*—M. M. Farrell.  
 Steel tower: Northern Central Railroad Company's grounds.

CANADIAN GREAT LAKES STORM-WARNING STATIONS.<sup>3</sup>

LIST OF PLACES ON THE GREAT LAKES AT WHICH STORM WARNINGS ARE DISPLAYED BY THE METEOROLOGICAL SERVICE OF THE DOMINION OF CANADA, R. F. STUPART, TORONTO, ONTARIO, DIRECTOR.

*Fort William.*—Signal mast adjoins Fort William Rowing Club.  
*Port Arthur.*—Signal mast on the town end of the Government wharf.  
*Sault Sainte Marie.*—Signal mast on Government wharf.  
*Tobermory.*—Signal mast on the point between the two harbors.  
*Depot Harbor.*—On Rocky Light Point, a little to the east of elevators.  
*Parry Sound.*—Signal mast on a high ridge of land overlooking harbor.  
*Midland.*—Signal mast on ridge in east, adjoining the town.  
*Collingwood.*—Signal mast in line with piers and west of railway tracks.  
*Owen Sound.*—Signal mast on the west side of harbor opposite Canadian Pacific Railway station.  
*Sarnia.*—Signal mast on the wharf adjoining waterworks property.  
*Kinkardine.*—Signal adjoining east wharf.  
*Goderich.*—Signal mast on bluff near light-house.  
*Saugeen.*—Signal mast at the corner of High and Lake streets.  
*Bayfield.*—Signal mast overlooking harbor.  
*Pelee Island.*—Signal mast near the light-house on the north point.  
*Port Stanley.*—Warnings sent out and posted, but no signal displayed.

*Port Dover.*—Signal mast on wharf opposite Grand Trunk Railway station.  
*Port Colborne.*—Signal mast on the canal bank.  
*Port Burwell.*—Signal mast on hill overlooking harbor.  
*Amherstburg.*—Signal mast on the wharf near waterworks wharf.  
*Port Dalhousie.*—Signal mast on the canal bank.  
*Burlington.*—Signal mast at the light-house near the swing bridge.  
*Oakville.*—Signal mast on the bluff just above the wharf.  
*Port Credit.*—On the lake shore.  
*Toronto.*—Signal masts at Queen's wharf and also adjoining fog-signal house at Eastern gap.  
*Port Hope.*—Signal mast on the wharf.  
*Coburg.*—Signal mast on the town end of wharf.  
*Deseronto.*—Signal mast at the end of railway wharf.  
*Prinyer.*—Signal mast inside Prinyer Cove.  
*Kingston.*—Signal mast on the water front a little west of steamboat wharf.

Wind-Barometer Table for the Great Lakes.

Height of barometer (lake level).	Direction of wind.	Character of the weather and wind indicated.
29.40 to 29.60, and steady.....	West.....	Fair, slight change in the temperature, gentle to fresh winds.
29.40 to 29.60, rising.....	do.....	Fair, cooler, fresh west to northwest winds.
29.40 to 29.60, falling.....	South.....	Warmer, increasing northerly winds.
29.60, or above, falling rapidly..	East to south...	Warmer, rain or snow within 36 hours, increasing east to southeast winds.
29.60, or above, rising rapidly..	West to north...	Cool and clear, quickly followed by warmer, variable winds.
29.60, or above, steady.....	Variable.....	No immediate change, but winds will go to south inside of 36 hours.
29.40, or below, falling slowly..	South to east....	Rain or snow, increasing easterly winds.
29.40, or below, falling rapidly..	do.....	Rain or snow, high easterly winds, followed within 48 hours by clearing, cooler, west to northwest winds.
29.40, or below, rising slowly...	South to west..	(Clearing, colder, fresh to brisk west to northwest winds.
29.20, or below, falling rapidly..	South to east....	Severe storm of wind and rain, and wind shifting to northwest within 36 hours.
29.20, or below, falling rapidly..	East to north...	Severe northeaster, with heavy rain or snow, and winds backing to northwest.
29.20, or below, rising rapidly..	Going west.....	Clearing and cooler, probably cold wave in winter.

ICE ON THE GREAT LAKES.

The following table has been compiled from as many stations as reliable data could be obtained from. Some of the stations furnished data for some years that it was found necessary to discard as unreliable. The complete data from the Straits of Mackinac have not been obtainable, and I have furnished all that I have been able to obtain. Some Cleveland data was obtained from the custom-house records, but it has been discarded for the record kept by the Detroit and Cleveland Steam Navigation Company, which covers a much longer period.

<sup>3</sup>This list has not been revised.

Dates of opening and closing of navigation at the more important ports on Lake Michigan.

Year.	Duluth.		Two Harbors.		Ashland.		Ontonagon.		Eagle Harbor.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1871.....	May 4.....	Dec. 6.....									1871
1872.....	May 14.....	Nov. 24.....									1872
1873.....	May 24.....	Nov. 25.....							May 1.....		1873
1874.....	May 4.....	Dec. 9.....							May 1.....		1874
1875.....	May 15.....	Dec. 2.....							May 20.....	Dec. 3.....	1875
1876.....	May 9.....	Dec. 4.....							May 13.....	Dec. 4.....	1876
1877.....	Apr. 29.....	Dec. 7.....							Apr. 23.....	Dec. 3.....	1877
1878.....	Apr. 12.....	Nov. 14.....							Mar. 30.....		1878
1879.....	Apr. 25.....	Nov. 29.....							Apr. 21.....		1879
1880.....	May 1.....	Nov. 30.....							Apr. 22.....		1880
1881.....	May 9.....	Dec. 27.....							May 5.....	Dec. 3.....	1881
1882.....	Apr. 23.....	Dec. 4.....							Apr. 24.....		1882
1883.....	May 2.....	Dec. 4.....	May 9.....	Dec. 29.....			Apr. 15.....	Dec. 3.....	May 1.....		1883
1884.....	May 1.....	Dec. 1.....	Apr. 23.....	Nov. 8.....			May 1.....	Nov. 30.....	May 5.....		1884
1885.....	Apr. 27.....	Nov. 29.....	May 22.....	Nov. 16.....			Apr. 22.....	Nov. 30.....	May 4.....		1885

Dates of opening and closing of navigation at the more important ports on Lake Michigan—Continued.

Year.	Duluth.		Two Harbors.		Ashland.		Ontonagon.		Eagle Harbor.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1886	May 4	Nov. 30	May 8	Nov. 12			Apr. 15	Dec. 1	Apr. 23	Nov. 30	1886
1887	May 6	Nov. 26	May 2	Nov. 24			May 1	Dec. 1	May 4	Nov. 30	1887
1888	May 12	Dec. 2	Apr. 21	Jan. 24, 1889			Apr. 25	Dec. 4	May 4		1888
1889	Apr. 20	Dec. 4	May 1	Nov. 23			Apr. 15	Dec. 5	Apr. 11		1889
1890	Apr. 23	Dec. 4	Apr. 20	Dec. 5			Apr. 17	Dec. 2	Apr. 19	Dec. 1	1890
1891	Apr. 30	Dec. 7	May 1	Dec. 5			Apr. 18	Nov. 30	Apr. 13	Dec. 5	1891
1892	Apr. 22	Dec. 5	Apr. 22	Dec. 6			Apr. 9	Dec. 3	Apr. 11	Dec. 7	1892
1893	May 9	Dec. 8	May 9	Nov. 24			Apr. 22	Dec. 1	Apr. 27	Dec. 7	1893
1894	Apr. 19	Dec. 7	Apr. 21	Nov. 23	May 6	Nov. 29	Apr. 16	Dec. 1	Apr. 17	Dec. 8	1894
1895	Apr. 30	Dec. 10	May 1	Dec. 2	Apr. 16	Nov. 29	Apr. 14	Dec. 4	Apr. 22	Dec. 12	1895
1896	Apr. 23	Dec. 11	Apr. 24	Nov. 29	Apr. 26	Nov. 27	Apr. 14	Dec. 8	Apr. 18	Dec. 10	1896
1897	Apr. 23	Dec. 13	Apr. 24	Dec. 16	Apr. 27	Nov. 26	Apr. 17	Nov. 30	Dec. 17	Dec. 16	1897
1898	Apr. 16	Dec. 15	Mar. 25	Dec. 7	Apr. 18	Nov. 30	Mar. 24	Dec. 5	Dec. 7	Dec. 15	1898
1899	May 2	Dec. 15	May 3	Dec. 17	May 1	Dec. 11	Apr. 16	Dec. 12	Dec. 30	Dec. 19	1899
1900	Apr. 24	Dec. 5	Apr. 22	Dec. 14	Apr. 20	Dec. 1	Apr. 8	Dec. 12	Dec. 17	Dec. 13	1900
1901	May 2	Dec. 7	May 6	Dec. 2	Apr. 27	Dec. 6	Mar. 29	Dec. 10	Dec. 21	Dec. 12	1901
1902	Apr. 6	Dec. 8	Apr. 2	Dec. 7	Apr. 6	Dec. 8	Apr. 9	Dec. 11	Dec. 1	Dec. 17	1902
1903	Apr. 11	Dec. 9	Apr. 10	Dec. 4	Apr. 18	Dec. 4	Apr. 26	Dec. 6	Dec. 10	Dec. 12	1903
1904	May 12	Dec. 14	June 6 <sup>4</sup>	Dec. 6	May 11	Dec. 7	Apr. 9	Dec. 15	May 7	Dec. 15	1904
1905	Apr. 20	Dec. 15	Apr. 8	Dec. 7	Apr. 18	Dec. 11	Apr. 5	Dec. 9	Apr. 8	Dec. 18	1905
1906	Apr. 15	Dec. 14	Apr. 4	Dec. 8	Apr. 17	Dec. 12	Apr. 20	Dec. 12	Apr. 14	Dec. 19	1906
1907	Apr. 26	Dec. 12	Apr. 16	Dec. 2	Apr. 23	Dec. 4	Apr. 20	Dec. 11	Apr. 22	Dec. 16	1907
1908	Apr. 29		Apr. 30		Apr. 26		Apr. 25		Apr. 24		1908

Year.	Houghton.		Marquette.		Grand Marais.		Whitefish.		Soo.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1855										Nov. 23	1855
1856									May 4	Nov. 23	1856
1857									May 9	Nov. 30	1857
1858									Apr. 18	Nov. 20	1858
1859									May 3	Nov. 23	1859
1860									May 11	Nov. 26	1860
1861									May 3	Nov. 14	1861
1862									Apr. 27	Nov. 27	1862
1863									Apr. 28	Nov. 24	1863
1864			May 8						May 2	Dec. 4	1864
1865			Apr. 28						May 1	Dec. 3	1865
1866			May 9						May 5	Dec. 3	1866
1867			May 6						May 4	Dec. 3	1867
1868			May 3						May 2	Dec. 3	1868
1869			May 7						May 4	Nov. 29	1869
1870			Apr. 30						Apr. 29	Dec. 1	1870
1871			May 9	Nov. 22					May 8	Nov. 29	1871
1872			May 13	Nov. 25					May 11	Nov. 26	1872
1873			May 21	Nov. 22					May 5	Nov. 18	1873
1874			May 13	Nov. 27			May 7	Nov. 22	May 12	Dec. 2	1874
1875			May 20	Nov. 24			May 9	Dec. 1	May 12	Dec. 2	1875
1876			May 12	Nov. 26			May 9	Nov. 28	May 8	Nov. 26	1876
1877			May 5	Nov. 28			May 4	Nov. 29	May 2	Nov. 30	1877
1878			Apr. 18	Nov. 26			Apr. 9	Nov. 29	Apr. 8	Dec. 3	1878
1879			May 8	Nov. 23			May 4	Dec. 1	May 2	Dec. 3	1879
1880			May 4	Nov. 29			Apr. 27	Nov. 14	Apr. 28	Nov. 15	1880
1881			May 11	Nov. 23				Nov. 29	May 7	Dec. 5	1881
1882			Apr. 25	Nov. 27	Apr. 23	Nov. 30	Apr. 22	Dec. 6	Apr. 21	Dec. 3	1882
1883			May 5	Nov. 28	Apr. 27	Nov. 30		Dec. 10	May 2	Dec. 11	1883
1884			Apr. 30	Dec. 5	Apr. 27	Nov. 30	Apr. 30	May 11	Apr. 23	Dec. 10	1884
1885			May 11	Dec. 2	May 10	Nov. 30	May 11	Dec. 7	May 6	Dec. 2	1885
1886			Apr. 28	Dec. 1	Apr. 27	Nov. 30	Apr. 27	Dec. 7	Apr. 25	Dec. 4	1886
1887			May 5	Dec. 1	May 3	Nov. 30	May 3	Dec. 6	May 1	Dec. 2	1887
1888			May 11	Nov. 26	May 10	Nov. 30	May 9	Dec. 3	May 7	Dec. 3	1888
1889			Apr. 21	Nov. 30	Apr. 17	Dec. 4	Apr. 16	Dec. 10	Apr. 15	Dec. 4	1889
1890			Apr. 23	Dec. 3	Apr. 21	Dec. 4	Apr. 22	Dec. 8	Apr. 20	Dec. 3	1890
1891		Nov. 30	May 1	Dec. 2	May 1	Dec. 5	Apr. 28	Dec. 10	Apr. 27	Dec. 8	1891
1892	Apr. 26	Nov. 30	Apr. 21	Dec. 6	Apr. 23	Nov. 30	Apr. 20	Dec. 9	Apr. 18	Dec. 6	1892
1893	May 9	Nov. 29	May 7	Dec. 3	May 6	Dec. 5	May 1	Dec. 6	Apr. 29	Dec. 6	1893
1894	Apr. 22	Nov. 30	Apr. 20	Dec. 4	Apr. 16	Dec. 4	Apr. 18	Dec. 6	Apr. 17	Dec. 6	1894
1895	Apr. 25	Dec. 2	Apr. 30	Dec. 8	Apr. 23	Dec. 9	Apr. 28	Dec. 12	Apr. 23	Dec. 11	1895
1896	Apr. 24	Nov. 26	Apr. 22	Dec. 7	Apr. 21	Dec. 9	Apr. 21	Dec. 9	Apr. 18	Dec. 9	1896
1897	Apr. 23	Dec. 2	Apr. 20	Dec. 6	Apr. 21	Dec. 15	Apr. 21	Dec. 11	Apr. 21	Dec. 13	1897
1898	Apr. 17	Dec. 4	Apr. 16	Dec. 1	Apr. 14	Dec. 12	Apr. 11	Dec. 15	Apr. 13	Dec. 15	1898
1899	May 1	Dec. 15	May 2	Dec. 18	May 1	Dec. 12	Apr. 29	Dec. 22	Apr. 29	Dec. 19	1899
1900	Apr. 19	Dec. 3	Apr. 24	Nov. 30	Apr. 23	Dec. 6	Apr. 22	Dec. 12	Apr. 22	Dec. 12	1900
1901	Apr. 23	Dec. 8	Apr. 30	Nov. 30	May 1	Dec. 12	Apr. 25	Dec. 12	Apr. 27	Dec. 11	1901
1902	Apr. 4	Dec. 13	Apr. 8	Dec. 15	Apr. 7	Dec. 14	Mar. 30	Dec. 16	Apr. 4	Dec. 16	1902
1903	Apr. 15	Dec. 9	Apr. 18	Dec. 11	Apr. 10	Dec. 11	Apr. 8	Dec. 12	Apr. 9	Dec. 11	1903
1904	Apr. 20	Dec. 5	June 2 <sup>4</sup>	Dec. 6	May 8	Dec. 14	May 5	Dec. 26	May 5	Dec. 14	1904
1905	Apr. 12	Dec. 11	Apr. 20	Dec. 15	Apr. 20	Dec. 16	Apr. 9	Dec. 17	Apr. 14	Dec. 17	1905
1906	Apr. 18	Dec. 10	Apr. 17	Dec. 10	Apr. 17	Dec. 15	Apr. 15	Dec. 22	Apr. 15	Dec. 19	1906
1907	Apr. 29	Dec. 9	Apr. 27	Dec. 12	Apr. 26	Dec. 13	Apr. 23	Dec. 14	Apr. 23	Dec. 14	1907
1908	Apr. 22		Apr. 30		Apr. 26		Apr. 25		Apr. 24		1908

<sup>4</sup> Opening delayed on account of "Masters' and Pilots'" strike.

<sup>5</sup> Boat stuck in ice—blockade opened on the 19th.

Dates of opening and closing of navigation at the more important ports on Lake Michigan—Continued.

Year.	Gladstone.		Escanaba.		Green Bay.		Sturgeon Bay.		Michigan City.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1867			Apr. 27	a							1867
1868			May 6	a							1868
1869			Apr. 17	a							1869
1870			Apr. 11	Nov. 26							1870
1871			Apr. 28	a							1871
1872			May 2	a							1872
1873			Apr. 30	a	Apr. 15	Nov. 28					1873
1874			Apr. 29	a	Apr. 28	Nov. 28					1874
1875			Apr. 26	Dec. 9	Apr. 17	Dec. 1					1875
1876			Apr. 21	a	Apr. 16	Jan. 23, 1878					1876
1877			Mar. 5	Dec. 29	Mar. 13	Dec. 11					1877
1878			Apr. 25	a	Apr. 15	Nov. 30					1878
1879			Apr. 3	Nov. 29 <sup>b</sup>	Apr. 1	Nov. 20					1879
1880			May 3	Dec. 5	May 6	Dec. 14					1880
1881			Apr. 7	Dec. 7	Apr. 1	Dec. 4					1881
1882			Apr. 23	Dec. 29	Apr. 16	Dec. 15					1882
1883			Apr. 19	Dec. 2	Apr. 24	Dec. 3					1883
1884			May 5	Dec. 1	Apr. 29	Dec. 6					1884
1885			Apr. 23	Dec. 25	Apr. 20	Dec. 26					1885
1886			Apr. 28	Dec. 6	Apr. 24	Dec. 27					1886
1887			May 2	Nov. 30	May 2	Dec. 12					1887
1888			Apr. 4	Dec. 6	Apr. 8	Dec. 7					1888
1889			Apr. 15	Dec. 5	Apr. 11	Dec. 4					1889
1890			Apr. 30	Dec. 3	Apr. 23	Nov. 30					1890
1891			Apr. 10	Dec. 3	Apr. 11	Dec. 1					1891
1892			Apr. 27	Dec. 14	Apr. 15	Dec. 3					1892
1893	Apr. 28	Dec. 17	Apr. 6	Dec. 6	Mar. 31	Dec. 10					1893
1894	Apr. 15	Dec. 7	Apr. 20	Dec. 3	Apr. 16	Dec. 2			Apr. 10	Dec. 9	1894
1895	Apr. 28	Dec. 7	Apr. 17	Dec. 3	Apr. 16	Dec. 6			Apr. 6	Dec. 24	1895
1896	Apr. 18	Dec. 23	Apr. 14	Dec. 23	Apr. 12	Dec. 11			Apr. 1	Dec. 14	1896
1897	Apr. 16	Dec. 26	Apr. 11	Dec. 14	Apr. 5	Dec. 7	Apr. 12	Dec. 25	Mar. 14	Dec. 16	1897
1898	Apr. 15	Dec. 19	Apr. 23	Dec. 25	Apr. 26	Dec. 12	Apr. 20	Feb. 21, 1900	Apr. 4	Dec. 18	1898
1899	Apr. 22	Jan. 1, 1900	Apr. 18	Dec. 23	Apr. 18	Dec. 8	Apr. 20	Dec. 22	Apr. 12	Dec. 14	1899
1900	Apr. 21	Jan. 3, 1901	Apr. 18	Dec. 19	Apr. 26	Dec. 5	Apr. 17	Dec. 18	Apr. 2	Dec. 11	1900
1901	Apr. 18	Dec. 17	Apr. 11	Dec. 22	Apr. 3	Dec. 8	Mar. 29	Dec. 27	Apr. 2	Dec. 13	1901
1902	Apr. 11	Dec. 14	Mar. 31	Dec. 29	Apr. 8	Dec. 9	Apr. 10	Dec. 18	Apr. 7	Dec. 14	1902
1903	Apr. 6	Dec. 8	Apr. 28	Dec. 18	May 4	Dec. 7	Apr. 23	Dec. 14	Apr. 19	Dec. 12	1903
1904	Apr. 25	Dec. 7	Apr. 18	Dec. 23	Apr. 19	Dec. 5	Apr. 12	Dec. 21	Apr. 5	Dec. 20	1904
1905	Apr. 19	Dec. 11	Apr. 15	Dec. 17	Apr. 14	Dec. 6	Apr. 11	Jan. 5, 1907	Apr. 5	Dec. 21	1905
1906	Apr. 21	Dec. 12	Apr. 10	Dec. 11	Apr. 7	Dec. 4	Mar. 30	Dec. 27	Mar. 27	Dec. 16	1906
1907	Apr. 20	Dec. 5	Apr. 19	Dec. 11	Apr. 14	Dec. 4	Mar. 14	Dec. 27	Apr. 4	Dec. 16	1907
1908	Apr. 25	Dec. 5	Apr. 19	Dec. 11	Apr. 14	Dec. 4	Mar. 14	Dec. 27	Apr. 4	Dec. 16	1908

Year.	Saint Joseph.		South Haven.		Saugatuck.		Muskegon.		Harbor Springs.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1873				Jan. 14, 1874							1873.
1874				Jan. 1, 1875							1874
1875			Apr. 12								1875
1876			Mar. 27	Dec. 10							1876
1877			Mar. 8	Dec. 28							1877
1878			Mar. 7	Dec. 20							1878
1879			Mar. 6	Dec. 23							1879
1880			Mar. 1	Dec. 6							1880
1881			Mar. 21	Jan. 18, 1882							1881
1882			Feb. 26	Dec. 15							1882
1883			Apr. 4	Dec. 25							1883
1884			Mar. 22	Dec. 18						Dec. 12	1884
1885			Apr. 16	Dec. 15					May 3	Dec. 15	1885
1886			Mar. 19	Dec. 21	Mar. 18	Dec. 5			Apr. 21	Dec. 14	1886
1887			Mar. 8	Jan. 1, 1888	Mar. 22	Nov. 28			Apr. 29	Dec. 12	1887
1888	Apr. 10	Nov. 21	Mar. 20	Jan. 1, 1889					Apr. 30	Dec. 12	1888
1889	Apr. 9	Nov. 24	Mar. 15	c	Apr. 2	Dec. 12			Apr. 12	Dec. 14	1889
1890	Apr. 10	Nov. 26	Mar. 15	c	Apr. 10	Nov. 15	Apr. 4	Dec. 11	Apr. 9	Dec. 18	1890
1891	Mar. 29	Nov. 29	c	Jan. 9, 1892	Apr. 8	Nov. 23	Apr. 4	Dec. 12	Apr. 15	Dec. 22	1891
1892	Mar. 14	Nov. 26	Feb. 27	Dec. 22	Mar. 29	Dec. 2	Apr. 5	Dec. 19	Apr. 5	Dec. 17	1892
1893	Apr. 3	c	Mar. 13	Feb. 4, 1894	Apr. 10	Nov. 15	Apr. 12	Dec. 9	Apr. 14	Dec. 12	1893
1894	c	Jan. 21, 1895	Mar. 6	Jan. 1, 1895	Apr. 8	Oct. 30	Apr. 2	Feb. 28, 1895	Apr. 7	Dec. 17	1894
1895	Mar. 22	c	Mar. 24	Jan. 3, 1896	Apr. 1	Nov. 20	Apr. 1	Feb. 28, 1896	Apr. 16	Dec. 12	1895
1896	c	c	Mar. 11	Jan. 23, 1897	Apr. 5	Oct. 26	Mar. 4	Feb. 26, 1897	Apr. 14	Dec. 18	1896
1897	c	c	Mar. 7	Dec. 24, 1897	Apr. 20	Nov. 1	Mar. 1	Feb. 27, 1898	Apr. 10	Dec. 19	1897
1898	c	Dec. 17	Mar. 8	Dec. 15, 1898	Apr. 1	Oct. 26	Mar. 1	Feb. 26, 1899	Mar. 29	Dec. 15	1898
1899	Mar. 11	Jan. 1, 1900	Mar. 11	Dec. 27	Apr. 3	Oct. 21	Mar. 1	Feb. 23, 1900	Apr. 14	Dec. 24	1899
1900	Mar. 12	Jan. 1, 1901	Mar. 26	Jan. 16, 1901	Apr. 10	Oct. 25	Mar. 7	Dec. 17	Apr. 21	Dec. 14	1900
1901	Apr. 2	Dec. 28	Mar. 20	Dec. 19	Apr. 19	Oct. 30	Apr. 4	Dec. 13	Apr. 13	Dec. 17	1901
1902	Mar. 19	Dec. 16	Mar. 8	Dec. 31	Apr. 1	Oct. 15	Mar. 18	Dec. 17	Mar. 25	Dec. 14	1902
1903	Mar. 17	Dec. 9	Mar. 7	Dec. 15	Apr. 11	Oct. 18	Mar. 11	Dec. 18	Mar. 25	Dec. 13	1903
1904	Mar. 28	Dec. 22	Mar. 21	Dec. 23	Apr. 8	Oct. 20	Apr. 8	Jan. 2, 1905	Apr. 27	Dec. 11	1904
1905	Mar. 15	Dec. 17	Mar. 19	Feb. 4, 1906	Apr. 1	Oct. 24	Mar. 22	Feb. 28, 1906	Apr. 21	Dec. 19	1905
1906	Feb. 28	Dec. 25	c	Jan. 20, 1907	Apr. 9	Nov. 7	Mar. 2	Jan. 24, 1907	Apr. 9	Dec. 19	1906
1907	Mar. 10	Dec. 20	Mar. 12	Dec. 31, 1907	Apr. 7	Oct. 30	Mar. 17	Feb. 12, 1908	Apr. 5	Dec. 13	1907
1908			Mar. 10		Apr. 18		Mar. 23		Apr. 18		1908

<sup>a</sup> Date of opening or closing questioned.

<sup>b</sup> 21 vessels frozen in.

<sup>c</sup> Open all winter.

Dates of opening and closing of navigation at the more important ports on Lakes Huron and Erie.

Year.	Straits of Mackinac.		Detour.		Cheboygan.		Alpena.		Oscoda.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1854.	Apr. 25.										1854
1855.	May 1.										1855
1856.	May 2.										1856
1857.	May 1.										1857
1858.	Apr. 5.										1858
1859.	Apr. 3.										1859
1860.	Apr. 18.										1860
1861.	Apr. 25.										1861
1862.	Apr. 18.										1862
1863.	Apr. 17.										1863
1864.	Apr. 23.										1864
1865.	Apr. 21.										1865
1866.	Apr. 23.										1866
1867.	Apr. 23.										1867
1868.	Apr. 19.										1868
1869.	Apr. 23.										1869
1870.	Apr. 18.										1870
1871.	Apr. 2.										1871
1872.	Apr. 23.										1872
1873.	May 1.						Apr. 3.				1873
1874.	Apr. 29.						"				1874
1875.	Apr. 23.						Apr. 19.	Dec. 14.			1875
1876.	Apr. 23.						Apr. 19.	Dec. 3.			1876
1877.	Apr. 18.						Apr. 20.	"			1877
1878.	Mar. 15.						Mar. 10.	"			1878
1879.	Apr. 22.						Apr. 5.	Dec. 10.			1879
1880.	Apr. 4.						Mar. 6.	Dec. 12.			1880
1881.	May 3.						Apr. 22.	Dec. 12.			1881
1882.	Apr. 3.						Mar. 6.	Dec. 9.			1882
1883.	Apr. 26.						Apr. 16.	Dec. 19.			1883
1884.	Apr. 25.						Apr. 11.	Dec. 17.			1884
1885.	May 5.						Apr. 26.	Dec. 6.			1885
1886.	Apr. 21.						Mar. 23 <sup>b</sup> .	Dec. 16.			1886
1887.	Apr. 24.						Apr. 13.	Dec. 11.			1887
1888.	May 4.						Apr. 29.	Dec. 20.			1888
1889.	Apr. 6.						Mar. 27 <sup>b</sup> .	Dec. 2 <sup>c</sup> .			1889
1890.	Apr. 8.						Feb. 23.	Nov. 29.			1890
1891.	Apr. 17.						Apr. 19.	Dec. 24.			1891
1892.	Apr. 9.						Apr. 6.	Dec. 9.			1892
1893.	Apr. 17.						Apr. 10.	Dec. 8.			1893
1894.	Mar. 29.						Mar. 13.	Dec. 4 <sup>c</sup> .			1894
1895.	Apr. 1.						Apr. 11.	Dec. 6.			1895
1896.	Apr. 16.	Dec. 14.					Apr. 9.	Dec. 5 <sup>c</sup> .			1896
1897.	Apr. 7.	Dec. 14.					Mar. 25.	Dec. 13 <sup>c</sup> .			1897
1898.	Mar. 28.	Dec. 13.					Mar. 24.	Dec. 12 <sup>c</sup> .	Apr. 1.	Dec. 7.	1898
1899.	Apr. 26.	Dec. 9.					Apr. 21.	Dec. 17 <sup>c</sup> .	Apr. 22.	Dec. 30.	1899
1900.	Apr. 18.	Dec. 11 <sup>c</sup> .	May 3.	Dec. 2.			Apr. 13.	Dec. 16.	Apr. 20.	Dec. 13.	1900
1901.	Apr. 14.	Dec. 14 <sup>f</sup> .	Apr. 20.	Dec. 14.	Apr. 1.	Dec. 24.	Apr. 16.	Dec. 15.	May 1.	Dec. 5.	1901
1902.	Apr. 2.	Dec. 12 <sup>g</sup> .	Mar. 30.	Dec. 17.	Mar. 26.	Dec. 24.	Mar. 21.	Dec. 18.	Apr. 4.	Dec. 10.	1902
1903.	Mar. 23.	Dec. 10 <sup>h</sup> .	Apr. 19.	Dec. 15.	Apr. 1.	Dec. 12.	Mar. 9.	Dec. 21.	Apr. 7.	Dec. 4.	1903
1904.	Apr. 29.	Jan. 10, 1905.	Apr. 15.	Dec. 24.	Apr. 26.	Dec. 22.	Apr. 24.	Dec. 16.	May 12.	Nov. 30.	1904
1905.	Apr. 18.	Dec. 14.	Apr. 4.	Dec. 16.	Apr. 22.	Dec. 22.	Apr. 6.	Dec. 28.	Apr. 10.	Dec. 4.	1905
1906.	Apr. 10.	Jan. 24, 1907.	Apr. 10.	Dec. 18.	Apr. 16.	Dec. 22.	Apr. 7.	Dec. 15.	Apr. 10.	Dec. 1.	1906
1907.	Apr. 1.	Dec. 14.	Apr. 3.	Dec. 19.	Apr. 20.	Dec. 23.	Mar. 29.	Dec. 13.	Apr. 16.	Dec. 2.	1907
1908.	Apr. 19.		Apr. 18.		Apr. 19.		Apr. 10.		Apr. 14.		1908

<sup>a</sup> Date of opening or closing questioned. <sup>b</sup> First boat entered on records of U. S. Customs Service. <sup>c</sup> Last boat entered on records of U. S. Customs Service. <sup>d</sup> Dates of closing of lights. <sup>e</sup> Last passage steamer *Geo. Gray*, with coal for Milwaukee, December 18. <sup>f</sup> Last passage steamer *Christopher*, December 22. <sup>g</sup> Last passage steamer *Jas. Watts*, December 20, 1901. <sup>h</sup> Last passage P. M. steamers numbers 16 and 20 on December 24, 1903.

Year.	Bay City.		Port Huron.		Detroit.		Toledo.		Put-in-Bay.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1863.					Mar. 28.						1863
1864.					Mar. 28.						1864
1865.					Mar. 28.						1865
1866.					Apr. 10.						1866
1867.					Apr. 8.						1867
1868.					Mar. 24.						1868
1869.					Apr. 6.						1869
1870.					Apr. 8.						1870
1871.					Mar. 21.		Mar. 16.	Dec. 4.			1871
1872.					Apr. 8.		Apr. 9.	Nov. 29.			1872
1873.					Apr. 10.		Mar. 28.	Dec. 5.			1873
1874.				Dec. 9.	Mar. 21.	Dec. 18.	Mar. 19.	Dec. 9.			1874
1875.			Apr. 10.	Dec. 11.	Apr. 12.	Dec. 18.	Apr. 13.	Dec. 10.			1875
1876.			Apr. 9.	Dec. 16.	Apr. 4.	Dec. 10.	Apr. 3.	Dec. 5.			1876
1877.			May 3.	Dec. 10.	Apr. 10.	Dec. 18.	Apr. 17.	Dec. 10.			1877
1878.			Mar. 24.	Dec. 15.	Mar. 21.	Dec. 15.	Mar. 18.	Dec. 18.			1878
1879.			Mar. 20.	Dec. 14.	Apr. 1.	Dec. 25.	Apr. 7.	Dec. 15.			1879
1880.			Mar. 22.	Dec. 10.	Mar. 8.	Dec. 15.	Mar. 3.	Dec. 5.			1880
1881.			May 3.	Jan. 3, 1882.	Apr. 19.	Dec. 7.	Apr. 7.	Dec. 27.			1881
1882.			Mar. 7.	Dec. 10.	Mar. 14.	Dec. 9.	Feb. 25.	Dec. 9.			1882
1883.			Apr. 17.	Dec. 24.	Apr. 7.	Dec. 10.	Apr. 9.	Dec. 18.			1883
1884.			Apr. 9.	Dec. 17.	Apr. 2.	Dec. 10.	Mar. 30.	Dec. 15.			1884
1885.			Apr. 23.	Dec. 18.	Apr. 17.	Dec. 8.	Apr. 13.	Dec. 26.			1885
1886.			Mar. 27.	Dec. 12.	Mar. 25.	Dec. 15.	Mar. 23.	Dec. 1.			1886
1887.			Apr. 12.	Dec. 10.	Mar. 8.	Dec. 13.	Apr. 4.	Dec. 11.			1887

Dates of opening and closing of navigation at the more important ports on Lakes Huron and Erie—Continued.

Year.	Bay City.		Port Huron.		Detroit.		Toledo.		Put-in-Bay.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1888			Apr. 7	Dec. 11	Mar. 28	Dec. 7	Apr. 7	Dec. 3			1888
1889			Apr. 1	Dec. 11	Mar. 21	Dec. 10	Apr. 10	Dec. 3			1889
1890			Mar. 28	Dec. 25	Mar. 1	Dec. 12	Mar. 24	Dec. 11			1890
1891			Apr. 19	Dec. 23	Mar. 18	Dec. 10	Apr. 5	Dec. 9	Jan. 13, 1892		1891
1892			Apr. 6	Dec. 15	Mar. 27	Dec. 18	Mar. 24	Dec. 9	Feb. 10	Jan. 4, 1893	1892
1893			Apr. 3	Dec. 13	Mar. 29	Dec. 12	Mar. 21	Dec. 7	Mar. 9	Jan. 28, 1894	1893
1894			Apr. 11	Dec. 19	Mar. 19	Dec. 20	Mar. 22	Dec. 27	Feb. 21	Jan. 6, 1895	1894
1895	Apr. 1	Dec. 2	Apr. 7	Dec. 28	Apr. 4	Dec. 20	Apr. 13	Dec. 28	Mar. 6	Jan. 9, 1896	1895
1896	Mar. 31	Dec. 8	Apr. 8	Dec. 21	Mar. 30	Dec. 23	Apr. 4	Dec. 26	Feb. 5	Jan. 11, 1897	1896
1897	Apr. 5	Dec. 10	Mar. 27	Dec. 25	Mar. 13	Dec. 24 <sup>b</sup>	Mar. 22	Dec. 23	Mar. 7	Jan. 31, 1898	1897
1898	Mar. 15	Dec. 7	Mar. 23	Dec. 23	Mar. 28	Dec. 18	Mar. 17	Dec. 9	Mar. 7	Jan. 3, 1899	1898
1899	Apr. 7	Dec. 25	Apr. 18	Dec. 28	Mar. 27	Dec. 26	Apr. 12	Dec. 22	Mar. 8	Jan. 7, 1900	1899
1900	Apr. 7	Dec. 3	Apr. 17	Dec. 18	Apr. 9	Dec. 19	Apr. 4	Dec. 22	Mar. 25	Jan. 6, 1901	1900
1901	Apr. 10	Dec. 15	May 8	Dec. 19	Apr. 1	Dec. 18	Mar. 25	Dec. 15	Mar. 15	Jan. 2, 1902	1901
1902	Mar. 18	Dec. 13	Mar. 22	Dec. 22	Mar. 13	Dec. 13 <sup>c</sup>	Mar. 19	Dec. 20	Mar. 6	Jan. 11, 1903	1902
1903	Mar. 23	Dec. 4	Mar. 25	Dec. 13	Mar. 18	Dec. 2 <sup>d</sup>	Mar. 30	Dec. 15	Mar. 3	Dec. 29	1903
1904	Mar. 30	Dec. 10	Apr. 28	Dec. 17	Apr. 5	Dec. 12	Apr. 15	Dec. 15	Mar. 5	Jan. 1, 1905	1904
1905	Mar. 28	Dec. 16	Apr. 1	Dec. 23	Apr. 8	Dec. 27	Apr. 8	Dec. 16	Mar. 11	Jan. 9, 1906	1905
1906	Mar. 28	Dec. 13	Apr. 3	Dec. 18	Mar. 5	Dec. 11	Apr. 3	Dec. 14	Feb. 26	Jan. 8, 1907	1906
1907	Mar. 27	Dec. 10	Apr. 28	Dec. 16	Mar. 28	Dec. 6	Apr. 1	Dec. 23	Mar. 11	Jan. 5, 1908	1907
1908			Apr. 5		Apr. 1		Mar. 14		Mar. 9		1908

<sup>b</sup> Closing of navigation taken from Detroit and Cleveland line up to this date. After this date the date of last thru passage is given. The opening shown is date of first departure of Detroit and Cleveland line steamers. <sup>c</sup> Detroit and Cleveland line closed December 13. Steamer Hopkins put down for Toledo on December 23. <sup>d</sup> Steamer John T. Hutchinson put down on December 17.

Dates of opening and closing of navigation at the more important ports on Lakes Erie and Ontario.

Year.	Sandusky.		Huron.		Cleveland.		Erie.		Buffalo.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1815							Apr. 6	Jan. 5, 1816			1815
1816							Apr. 27	Dec. 16			1816
1817							Apr. 21	Dec. 12			1817
1818							Apr. 29	Dec. 7			1818
1819							Apr. 30	Dec. 5			1819
1820							May 11	Nov. 29			1820
1821							May 13	Dec. 7			1821
1822							Apr. 29	Dec. 4			1822
1823							May 4	Dec. 9			1823
1824							Apr. 22	Dec. 2			1824
1825							Mar. 17	Dec. 13			1825
1826							Apr. 2	Dec. 8			1826
1827											1827
1828											1828
1829							Jan. 29 <sup>b</sup>	Dec. 1			1829
1830							Apr. 5	Dec. 10			1830
1831							Mar. 29	Dec. 5			1831
1832							Apr. 11	Dec. 9			1832
1833							Apr. 9	Dec. 12			1833
1834							Mar. 22	Dec. 17			1834
1835	Mar. 27	Dec. 5					Apr. 4	Dec. 3			1835
1836	Apr. 11	Dec. 11									1836
1837	Mar. 23	Dec. 15					Apr. 17	Jan. 24, 1838			1837
1838	Mar. 24	Dec. 4					Mar. 29	Dec. 5			1838
1839	Mar. 18	Dec. 9					Apr. 7	Dec. 19			1839
1840	Mar. 3	Dec. 6					Mar. 17	"			1840
1841	Mar. 24	Dec. 13					"	"			1841
1842	Mar. 4	Nov. 26					"	"			1842
1843	Apr. 19	Dec. 6					"	"			1843
1844	Feb. 29	Dec. 12					"	"			1844
1845	Mar. 3	"					"	"			1845
1846	"	"					"	"			1846
1847	"	"					"	"			1847
1848	Mar. 20	Dec. 20					"	"			1848
1849	Mar. 20	Dec. 25					"	"			1849
1850	Mar. 2	Dec. 20					"	"			1850
1851	Feb. 23	Dec. 15					"	"			1851
1852	Mar. 12	Jan. 6, 1853					"	"			1852
1853	Mar. 8	Dec. 21					May 9	Nov. 25			1853
1854	Apr. 12	Dec. 3					Apr. 7	Nov. 25			1854
1855	Apr. 5	Dec. 19					May 7	Nov. 30			1855
1856	Apr. 16	Dec. 13					May 6	Dec. 15			1856
1857	Mar. 31	Dec. 16					Apr. 10	Dec. 15			1857
1858	Mar. 23	Dec. 13					Mar. 27	Dec. 31			1858
1859	Mar. 4	Dec. 6					Apr. 2 <sup>b</sup>	Dec. 20			1859
1860	Mar. 9	Nov. 30					Mar. 30	Dec. 3			1860
1861	Feb. 21	Dec. 11					Apr. 8	Dec. 7			1861
1862	Mar. 17	Dec. 24					Mar. 31	Dec. 12			1862
1863	Mar. 30	Dec. 12			Mar. 28		Apr. 10	Dec. 22			1863
1864	Mar. 7	Dec. 17			Mar. 28		Apr. 13	Dec. 2			1864
1865	Mar. 16	Dec. 13			Mar. 28		Apr. 22	"			1865
1866	Apr. 5	Dec. 7			Apr. 10		Apr. 17	Dec. 7			1866
1867	Apr. 1	Dec. 7			Apr. 8		Apr. 22	Dec. 5			1867
1868	Mar. 19	"			Mar. 24		Apr. 13	Dec. 2			1868
1869	"	"			Apr. 6		May 4	Dec. 7			1869

Dates of opening and closing of navigation at the more important ports on Lakes Erie and Ontario—Continued.

Year.	Sandusky.		Huron.		Cleveland.		Erie.		Buffalo.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1870					Apr. 8		Apr. 15	Dec. 7			1870
1871					Mar. 21		Mar. 25	Dec. 7	Apr. 1	Dec. 27	1871
1872		Nov. 30			Apr. 8		Apr. 12	Dec. 9	May 5	Dec. 18	1872
1873	Mar. 18	Dec. 32			Apr. 10		Apr. 17	Dec. 6	Apr. 29	Nov. 28	1873
1874	Mar. 7	Dec. 12			Mar. 21		Mar. 28	Dec. 9	Apr. 18	Dec. 5	1874
1875	Apr. 1	Jan. 18, 1876			Apr. 12		Apr. 15	Dec. 10	May 12	Dec. 11	1875
1876	Apr. 1	Dec. 5			Apr. 4		Apr. 7	Dec. 6	May 10	Dec. 17	1876
1877	Mar. 5	Dec. 29			Apr. 10		Apr. 13	Dec. 10	Apr. 26	Dec. 13	1877
1878	Mar. 7	Dec. 18			Mar. 21	Dec. 15	Apr. 6	Dec. 16	Mar. 16	Dec. 7	1878
1879	Mar. 11	Dec. 22			Apr. 1	Dec. 9	Apr. 24	Dec. 13	Apr. 24	Dec. 14	1879
1880	Mar. 6	Dec. 7			Mar. 8	Dec. 13	Apr. 16	Dec. 8	Mar. 19	Dec. 8	1880
1881	Mar. 22	Dec. 15			Apr. 19	Dec. 15	Apr. 27	Dec. 1	Apr. 1	Dec. 30	1881
1882	Feb. 18	Dec. 7			Mar. 14	Dec. 15	Mar. 6	Dec. 4	Mar. 26	Dec. 1	1882
1883	Mar. 29	Dec. 15			Apr. 7	Dec. 1	Apr. 13	Dec. 1	Apr. 25	Dec. 7	1883
1884	Mar. 18	Dec. 16			Apr. 2	Dec. 1	Apr. 5	Dec. 1	Apr. 22	Dec. 6	1884
1885	Mar. 31	Dec. 7			Apr. 17	Dec. 26	May 3	Dec. 5	May 2	Dec. 25	1885
1886	Mar. 21	Dec. 2			Mar. 25	Dec. 26	Mar. 30	Dec. 13	Apr. 15	Dec. 15	1886
1887	Apr. 1	Dec. 20			Mar. 8	Dec. 15	Apr. 11	Dec. 1	Apr. 17	Dec. 14	1887
1888	Apr. 9	Dec. 8			Mar. 28	Dec. 8	Apr. 17	Dec. 3	Apr. 28	Dec. 15	1888
1889	Apr. 8	Dec. 6			Mar. 21	Dec. 11	Apr. 12	Dec. 10	Apr. 12	Dec. 14	1889
1890	Mar. 17	Dec. 2			Mar. 1	Dec. 9	Mar. 26	Dec. 30	Mar. 31	Dec. 8	1890
1891	Apr. 7	Dec. 6	Apr. 17	Dec. 27	Mar. 13	Dec. 31	Apr. 6	Jan. 5, 1892	Apr. 16	Dec. 14	1891
1892	Apr. 11	Dec. 8	Apr. 16	Nov. 15	Mar. 27	Dec. 10	Mar. 30	Dec. 7	Apr. 7	Dec. 9	1892
1893	Apr. 10	Dec. 4	Apr. 24	Dec. 24	Mar. 29	Dec. 14	Apr. 1	Dec. 28	Apr. 15	Dec. 16	1893
1894	Apr. 1	Dec. 16	Apr. 6	Nov. 24	Mar. 19	Dec. 31	Mar. 13	Dec. 21	Apr. 1	Dec. 25	1894
1895	Apr. 10	Dec. 16	Apr. 16	Nov. 23	Apr. 4	Jan. 1, 1896	Apr. 6	Dec. 28	Apr. 16	Dec. 1	1895
1896	Apr. 11	Dec. 19	Apr. 22	Dec. 14	Mar. 30	Dec. 12	Apr. 7	Jan. 11, 1897	Apr. 19	Jan. 2, 1897	1896
1897	Mar. 7	Dec. 19	Apr. 7	Dec. 8	Mar. 13	Dec. 19	Mar. 9	Jan. 4, 1898	Apr. 7	Dec. 22	1897
1898	Mar. 6	Dec. 9	Apr. 1	Dec. 2	Mar. 28	Dec. 13	Mar. 9	Dec. 30	Apr. 1	Dec. 21	1898
1899	Mar. 8	Dec. 11	May 10	Dec. 5	Mar. 27	Dec. 13	Mar. 4	Dec. 27	Apr. 27	Dec. 18	1899
1900	Mar. 25	Dec. 15	Apr. 23	Dec. 3	Apr. 9	Dec. 23	Apr. 18	Jan. 4, 1901	Apr. 21	Dec. 20	1900
1901	Mar. 15	Dec. 29	Apr. 11	Dec. 3	Apr. 1	Dec. 14	Apr. 18	Dec. 17	Apr. 18	Jan. 2, 1902	1901
1902	Mar. 6	Dec. 26	Mar. 29	Dec. 8	Mar. 18	Dec. 11	Mar. 28	Dec. 30	Apr. 9	Dec. 31	1902
1903	Mar. 3	Dec. 13	May 16	Dec. 7	Mar. 18	Dec. 2	Mar. 17	Dec. 30	Apr. 1	Dec. 22	1903
1904	Mar. 5	Dec. 13	May 4	Dec. 5	Apr. 5	Dec. 11	Apr. 2	Dec. 23	Apr. 25	Dec. 19	1904
1905	Mar. 11	Dec. 12	Apr. 12	Dec. 5	Apr. 3	Dec. 9	Apr. 1	Dec. 19	Apr. 8	Dec. 19	1905
1906	Feb. 26	Dec. 24	Apr. 4	Dec. 10	Mar. 5	Dec. 16	Mar. 6	Jan. 22, 1907	Mar. 31	Dec. 24	1906
1907	Mar. 11	Dec. 15	Apr. 5	Dec. 6	Mar. 28	Dec. 6	Apr. 1	Jan. 21, 1908	Apr. 6	Dec. 22	1907
1908	Mar. 9		Apr. 1		Apr. 1		Apr. 4		Apr. 25		1908

a Date of opening or closing questioned. b Doubtful. c Fish tug or small boat.

Year.	Fort Niagara.		Charlotte.		North Fair Haven.		Sodus Point.		Oswego.		Year.
	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	Opening.	Closing.	
1875								Dec. 15	Apr. 29		1875
1876								Apr. 1	Apr. 6		1876
1877								Apr. 5	Jan. 1, 1878	Apr. 23	1877
1878								Mar. 30	Dec. 19	Mar. 9	1878
1879								Apr. 9	Dec. 21	Apr. 9	1879
1880								Mar. 23		Mar. 21	1880
1881								Apr. 2	Dec. 16	Mar. 30	1881
1882								Mar. 24	Dec. 15	Mar. 21	1882
1883					Apr. 30	Dec. 3	Apr. 4	Dec. 21	Apr. 5	Dec. 11	1883
1884					May 6	Dec. 2	Mar. 28	Dec. 20	Apr. 5	Dec. 13	1884
1885					May 7	Dec. 1	Apr. 23	Dec. 19	May 6	Dec. 16	1885
1886					May 5	Nov. 30	Mar. 30	Dec. 16	Apr. 1	Dec. 9	1886
1887					Apr. 19	Nov. 8	Apr. 7	Dec. 18	Apr. 10	Dec. 16	1887
1888					May 7	Nov. 30	Apr. 10	Dec. 15	Apr. 14	Dec. 10	1888
1889					May 4	Nov. 25	Mar. 26	Dec. 27	Apr. 4	Dec. 18	1889
1890					May 3	Nov. 28	Mar. 16	Dec. 12	Mar. 24	Dec. 13	1890
1891					Apr. 23	Nov. 28	Mar. 28	Dec. 17	Apr. 4	Dec. 28	1891
1892					Apr. 13	Nov. 26	Apr. 1	Dec. 20	Apr. 5	Dec. 17	1892
1893	Apr. 10	Dec. 12			May 4	Nov. 30	Mar. 29	Dec. 12	Apr. 5	Dec. 11	1893
1894	Apr. 1	Dec. 15			Apr. 10	Nov. 24	Apr. 1	Dec. 24	Mar. 30	Dec. 11	1894
1895	Apr. 16	Dec. 18			Apr. 23	Dec. 4	Apr. 12	Dec. 13	Apr. 18	Dec. 10	1895
1896	Apr. 16	Dec. 12			Apr. 17	Nov. 22	Apr. 8	Dec. 20	Apr. 14	Dec. 6	1896
1897	Apr. 5	Dec. 11			Mar. 29	Dec. 22	Mar. 28	Dec. 21	Apr. 5	Dec. 9	1897
1898	Apr. 1	Dec. 12			Apr. 8	Dec. 5	Mar. 16	Dec. 15	Mar. 21	Dec. 13	1898
1899	Apr. 20	Dec. 15			Apr. 24	Dec. 13	Mar. 28	Dec. 25	Apr. 2	Dec. 16	1899
1900	Apr. 20	Dec. 10	Apr. 11	Dec. 12	Apr. 18	Dec. 3	Apr. 5	Dec. 14	Apr. 1	Dec. 12	1900
1901	Apr. 15	Dec. 8	Apr. 10	Dec. 7	Apr. 23	Nov. 30	Apr. 1	Dec. 8	Mar. 31	Dec. 5	1901
1902	Apr. 5	Dec. 15	Apr. 4	Dec. 11	Apr. 4	Nov. 18	Mar. 25	Dec. 18	Mar. 30	Dec. 24	1902
1903	Apr. 1	Dec. 8	Mar. 30	Dec. 7	Apr. 3	Nov. 28	Mar. 21	Dec. 13	Mar. 28	Dec. 4	1903
1904	Apr. 25	Dec. 10	Apr. 12	Dec. 6	Apr. 21	Nov. 24	Apr. 10	Dec. 10	Apr. 20	Dec. 4	1904
1905	Apr. 15	Dec. 8	Apr. 13	Dec. 5	Apr. 14	Nov. 29	Apr. 7	Dec. 15	Apr. 13	Dec. 7	1905
1906	Apr. 12	Dec. 10	Apr. 9	Dec. 15	Apr. 16	Nov. 30	Apr. 9	Dec. 8	Apr. 5	Dec. 8	1906
1907	Apr. 10	Dec. 8	Mar. 31	Dec. 2	Apr. 9	Nov. 29	Mar. 30	Dec. 15	Apr. 5	Dec. 3	1907
1908	Apr. 12		Apr. 11		Apr. 18		Apr. 5		Apr. 9		1908