

# “Old Probabilities”

## Albert Myer and the The U.S. Weather Bureau

by Bob Gilbert



General Albert J. Myer  
LIBRARY OF CONGRESS PHOTOGRAPH DIVISION



Tree Station on upper Potomac.



Signal Station at Masthead,  
U.S. Steamer Richmond.



Station in front of Washington.



Operations against Richmond  
130 ft high.

Most Western New York natives mourn the end of pleasant summer weather or autumn's brilliant colors, but winter could be the most appropriate time to celebrate the life of an almost completely forgotten local hero. Modern technology makes what he pioneered seem routine today, but General Albert J. Myer (1828-1880) was eulogized for his "revolutionary application" of meteorology in the progressive decade of the 1870s. We can also claim that the first daily exchange of international weather reports "for the benefit of all," his crowning achievement, was connected to the notoriously fickle Great Lakes weather pattern and the Niagara Region's commercial prominence.

November was the worst time of the year for the growing regional fleet of almost 3,000 ships and boats of many different designs. It was imperative to move as much commerce as possible before the lakes froze, despite the risk of tropical storm strength and even hurricane force winds capable of turning calm seas into towering waves without warning. The newest, most seaworthy vessels were just as vulnerable as those reaching the end of their life cycle.

Fortunately for the industry, the *Milwaukee Sentinel* archived every accident in this part of the country from January of 1868 through the end of November of 1869. Professor Increase Allen Lapham, a self-educated master of ten sciences, noticed the 3,078 "casualties" printed in his morning newspaper and immediately mailed a copy to Congress. Lapham's petition was so complete, his reputation as Wisconsin's first scientist so stellar, and the loss of life and property so tragic, that Congressman Halbert E. Paine wasted no time drafting H.R. 602. This charter for today's National Weather Service was brought to House of Representatives nine days before Christmas and ratified by both houses of Congress without a single dissenting vote. President Ulysses S. Grant's signature created America's first storm warning network on February 9, 1870, just eight weeks after the newspaper report galvanized Increase Lapham.

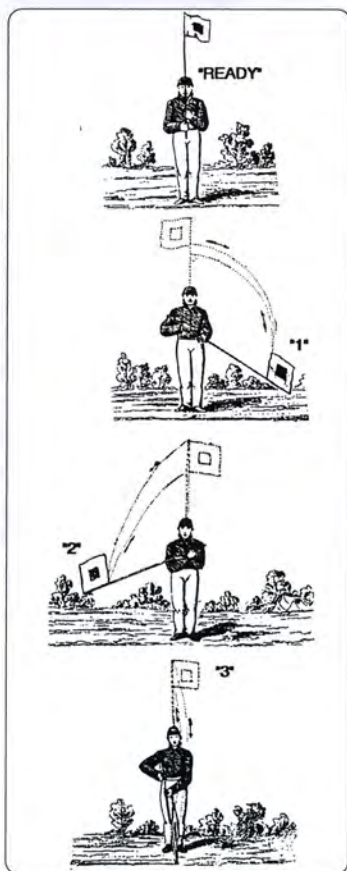
Born in Newburgh, New York but raised by an aunt in Buffalo, General Albert James Myer joined the U.S. Army as a surgeon in 1854 after his medical school thesis failed to interest anyone beyond the Buffalo Medical College faculty. Unlike the medical community, which rejected visual forms of Morse code for communicating with "deaf mutes," the military recognized its advantages over messengers, musical instruments, and telegraph wires. Myer skipped the rank of captain after his demonstration of theories rooted in ancient empires set distance records up to 13 miles. His satisfaction with swinging flags during the day and lights at night during the Navajo Campaign (1862-64) was spoiled by his best student joining the Confederacy as the Civil War began.

Major Myer endured the use of his invention against him at Manassas, Virginia. Confederate signalers coordinated the arrival of reinforcements so effectively during the First Battle of Bull Run that the Union Army retreated in chaos. Later in the war he reveled in how many times swinging square red and white flags by day and torches or lanterns at night contributed to Union Army victories and unprecedented cooperation with the Navy. His promotion to lieutenant colonel was due to creative employment of rockets, signal flares, simple arm motions, portable, self-powered telegraph machines, and a cipher disk imprinted with letters and numbers. He remained faithful to the Union even after his unanimously recommended promotion to colonel

was revoked without warning or justification.

The war's most famous Union generals and admirals fought for Myer's reinstatement. General William T. Sherman went so far as to claim that "aerial telegraphy" saved his *March to the Sea* by allowing him to communicate with a completely encircled and heavily outnumbered supply depot in Georgia.

Accolades like this helped Myer return to his headquarters, but whatever satisfaction came from the political victory must have been tempered by how small the Signal Corps had become after the war. Myer had invested too much effort establishing a useful regiment to let it become a casualty of peacetime demobilization. An opportunity to observe and report the movement of storms, like enemy soldiers on a battlefield, promised new life for the reconstituted "U.S. Army Signal Service." General Myer

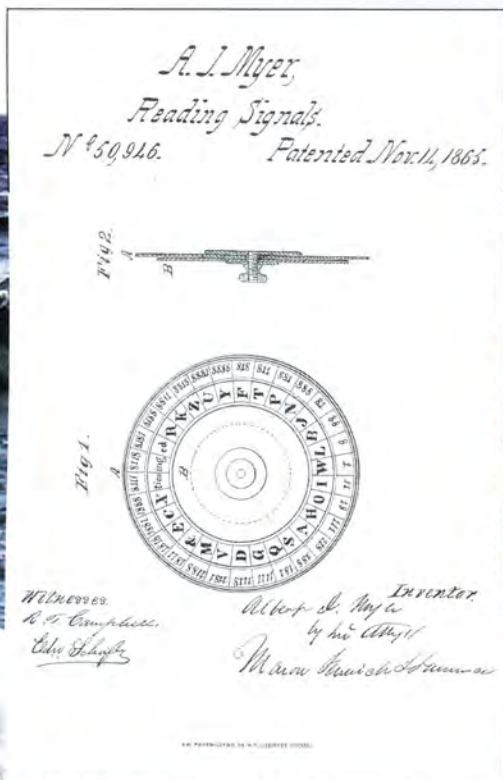


Myer's first patent showing proper signal usage.  
US ARMY SIGNAL CORPS MUSEUM,  
FORT GORDON, GEORGIA

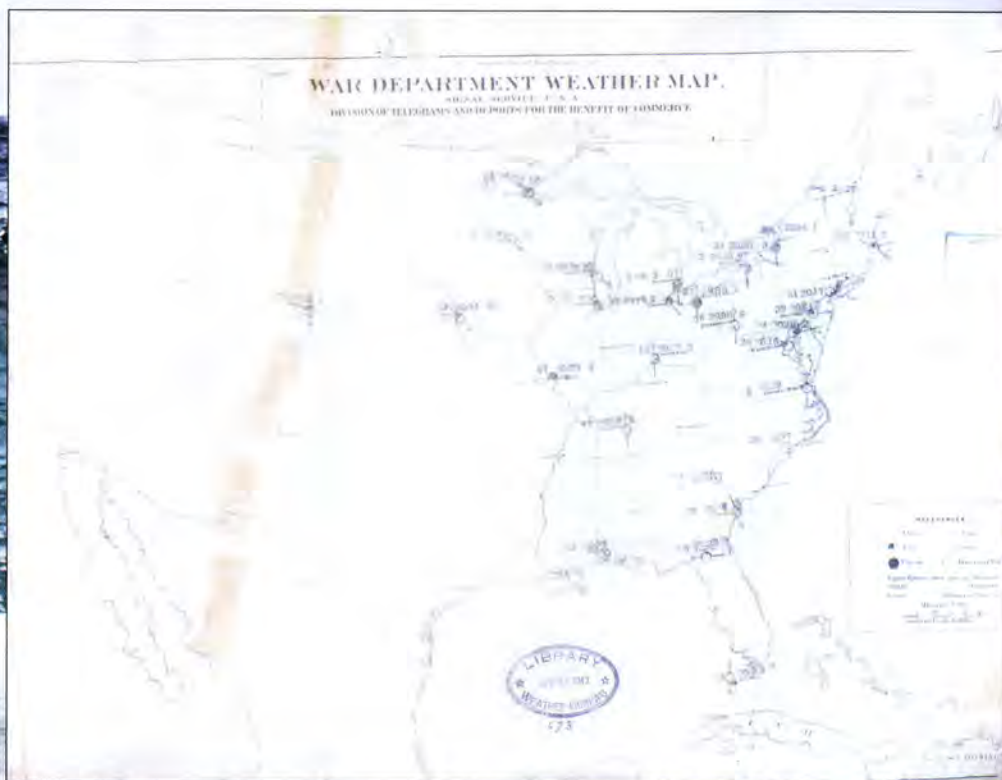
boldly sought out Representative Halbert Paine in December of 1869.

Unlike his competitors to head the new storm warning service, Myer had no staff of certified meteorologists, weather instruments, or even the telegraph lines needed to send warnings quickly enough to arrive before the outbreak of severe weather. The general's only pertinent experience was recording daily weather conditions in west Texas as an army doctor before the Civil War. In contrast, Smithsonian Institution meteorologists boasted 20 years experience telegraphing weather reports across the United States east of the Rocky Mountains. Commodore Mathew Fontaine Maury, the world-famous *Pathfinder of the Seas*, brought so much credibility to the U.S. Naval Observatory that he felt justified being named founding director of the new weather service. Captain Joseph Brooks pioneered storm forecasting for mariners from his office in Boston during the 1850s, and Professor Cleveland Abbe pioneered public weather forecasting at his astronomical observatory in Cincinnati, Ohio in September of 1869.

Civilian experts were shocked when the Chief Signal Officer was appointed founding director of what newspaper editors called "The U.S. Weather Bureau." In just a few months, Myer selected a bigger building, the best weather instruments and textbooks in the world, and candidates for America's first educational institution geared for meteorology. The four-story building at 1719 G Street was not only spacious, but its large roof was ideal for refining the accuracy of anemometers whenever wind speeds exceeded 30 miles per hour. A Hough "self-registering," electrically powered barometer was mounted on a wall at the CSO's office not long after the general visited Professor George Washington Hough's Dudley Observatory in Albany.



Paperwork for Myers' patented cipher disk, 1865.  
NATIONAL ARCHIVES II, COLLEGE PARK, MARYLAND



The weather map for January 1st, 1871, "for the benefit of commerce."  
NOAA CENTRAL LIBRARY, SILVER SPRING, MARYLAND

Plans for similar barometers arrived from as far away as St. Petersburg, Russia. Wind recording equipment came from New York City's observatory and astronomer John Thomas Romney Robinson in Dublin, Ireland. The Father of Modern Astrophysics, Father Angelo Secchi in Rome contributed a combination weather instrument like the one that earned him a Gold Medal at a world's fair in Paris. Textbooks that influenced the syllabus at the revitalized signal school next to Arlington National Cemetery were written by the leading scientific minds of Germany, Scotland and the United States. Before the first graduating classes reported to their 25 weather stations throughout the country, General Myer boldly claimed that, "... a worldwide system of telegraphic weather reports is not nearly as chimerical as was 30 years ago the workings of the telegraph itself."

Signal Service soldiers initiated our government's coordinated system of reporting weather conditions each day at 7:35 a.m., 4:35 p.m. and 11:35 p.m. on November 1, 1870 to help Great Lakes mariners avoid their worst threat. Clocks at each army weather stations were synchronized to the one at 1719 G Street in Washington so that storms could be observed from different locations at exactly the same moment in time. Civilian telegraph companies like Western Union charged fees according to messages' length and the distances they were sent, so Myer devised a number-based substitution code for place names and weather phenomena in order to save money.

### Leading the Way

Like many good leaders, General Myer was not satisfied to lead from his headquarters in Washington. His presence in Buffalo on the first day of operations and direct supervision of the first official government-issued storm warning in Chicago seven days later attested to his concern for public safety. He hired civilian assistants like Professor Lapham, and when Wisconsin's First Scientist was no longer able to support the army weather service, Myer turned to the pioneer of public forecasting to maintain credibility.

Cincinnati meatpacker Professor Cleveland Abbe was nicknamed "Old



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Probabilities," so it must have been frustrating to Abbe whenever the enthusiastic national news media referred to General Myer this way. Forecasts were entitled *The Probabilities* because what was known about the atmosphere was still limited, and the general got the nickname because his signature appeared on each prediction and weather map issued

**WEATHER REPORT.**

WAR DEPARTMENT.  
OFFICE OF THE CHIEF SIGNAL OFFICER,  
WASHINGTON, D. C., May 5—1:20 A. M.

*Synopsis for the Past Twenty-four Hours.*

The barometer is rising slowly on the Pacific coast, with cloudy weather. The lowest pressure is now in Upper Canada, with a minor depression in the Southern States. The barometer remains high, but is slowly falling on Lake Superior and in Maine.

The northeast winds and heavy rains have continued on Lake Michigan and the East and Southeast to the Atlantic. Clearing up weather is now very generally prevalent in the interior, but heavy rains still continue on the entire Atlantic coast, with brisk northeast winds in the Eastern States.

*Probabilities.*

It is probable that on Friday northwest winds, with cloudy and clearing weather will prevail from Lake Erie southward and westward. Easterly winds, followed by southwest winds and a light rain in the Middle and Eastern States.

The first weather forecast in an American newspaper, May 1871.

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PROFESSOR GEORGE TEMPLEMAN KINGSTON,  
(1816-1886).  
Director, 1855-1880.

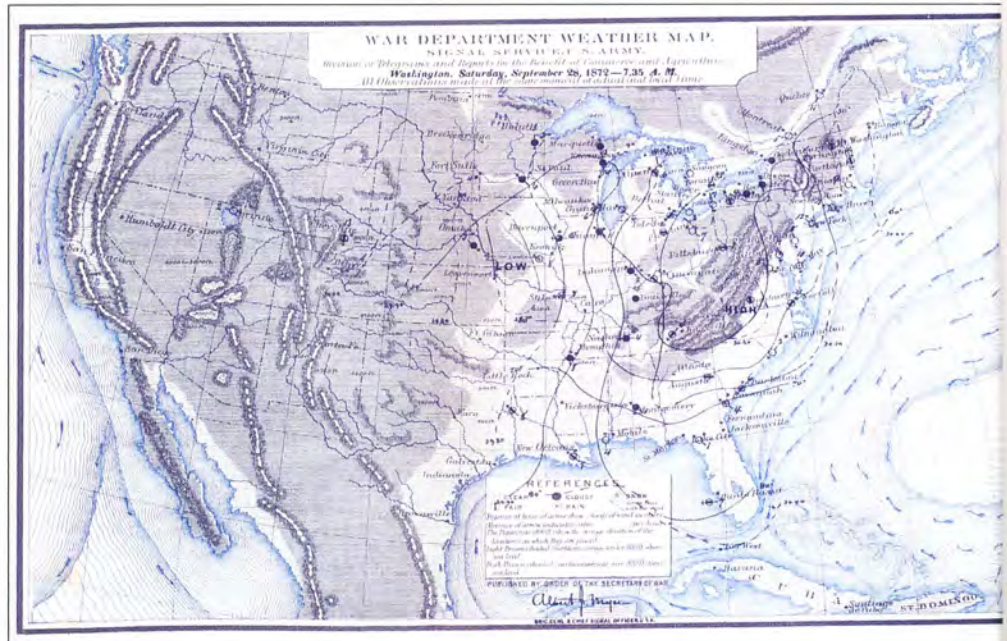
The Father of Canadian Meteorology, Professor George Templeman Kingston (1816-86). NATIONAL ARCHIVES II, COLLEGE PARK, MARYLAND

by the army. Abbe, however, was never blamed like Myer for forecasts that failed to verify, or for unfavorable weather that detracted from outdoor events like sailboat races and fairs. The moniker lasted for many years, even after forecasts were renamed *Indications*.

## Early Developments

Weather conditions around the nation had been printed by the media for many years, thanks to data provided by the Smithsonian Institution. However, it was literally yesterday's news by the time it appeared in a newspaper. The *New York Herald* made history when it printed a U.S. Army forecast for the upcoming 24 hours in its May 5, 1871 issue. Humorists like Josh Billings and Mark Twain may have joked about the loosely worded predictions, but most journalists were thrilled. One newspaper article described a futuristic society confidently planning outdoor activities a day or two in advance according to the Probabilities.

To avoid disasters due to ships sailing before the delivery of a crucial telegraph message or periodical, General Myer devised another way to warn mariners. Civil War experience proved that red square flags featuring a smaller white square centerpiece were easily seen against the sky or a large body of water,



Weather Map from 1872 & 1873 NOAA CENTRAL LIBRARY, SILVER SPRING, MD; WWW.LIB.NOAA.GOV

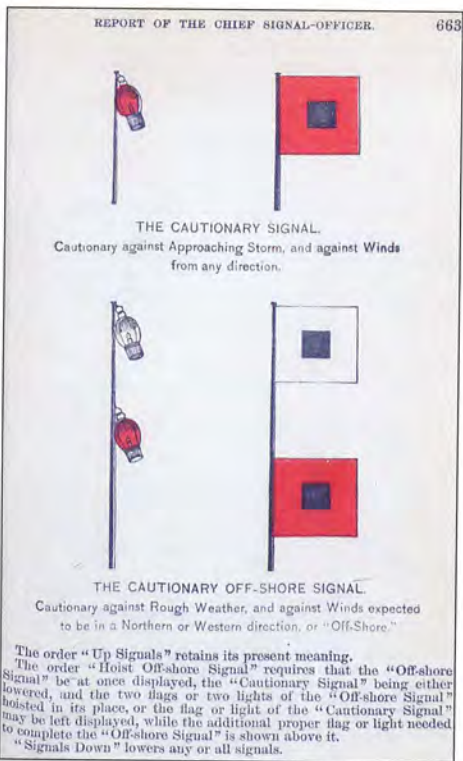
so the color of the center was changed to alter the meaning. The "Cautionary Storm Signal" with its black square center was first flown in October of 1871 at the bustling port of Oswego, New York, home to many shipyards and warehouses. Mariners were advised by this flag to seek shelter due to an approaching storm, or stay in port to wait for the storm to pass. A red light atop the flagpole served the same purpose at night. A white square flag with a smaller black square center was developed years later to advise mariners not to be deceived by clearing skies because high wind in the wake of a

storm could create dangerous waves, tides, and currents.

A mutual commercial interest in the Great Lakes and a shared concern for nautical safety made a partnership with Canada inevitable. Professor George T. Kingston's \$10,000 annual budget for the University of Toronto astronomical observatory was just enough to pay for instruments and gathering data from the provinces. Therefore, the Signal Service, endowed with \$250,000, began issuing warnings and forecasts for the Dominion in addition to the United States. Unfortunately, time-sensitive

storm warnings were frequently delayed at the border, but Kingston used this problem to establish a truly independent weather service without any supporting legislation. Great Lakes mariners grew accustomed to a new system of wicker baskets conveying storm warnings on the Canadian side of the lakes and the square red and black flag on the American side of the border.

International cooperation grew even more in 1873 when *Old Probabilities* was invited to a congress in Vienna, Austria with 31 other delegates from 20 countries. This diverse group standardized the methods of measuring and reporting weather around the world, and agreed to observe conditions around the globe at the same time once a day — 7:35 a.m. in Washington, D.C. It was General Myer who proposed this expanded, coordinated effort and his office made history a few years later by printing daily international weather bulletins and colorized weather maps of the northern hemisphere. He'd truly come a long way from his birthplace on the Hudson River in Newburgh to play a substantial role establishing today's World Meteorological Organization based in Geneva, Switzerland.



Storm Flags from *The 1878 Annual Report of the Chief Signal Officer to the Secretary of War*. NOAA CENTRAL LIBRARY, SILVER SPRING, MD WWW.LIB.NOAA.GOV

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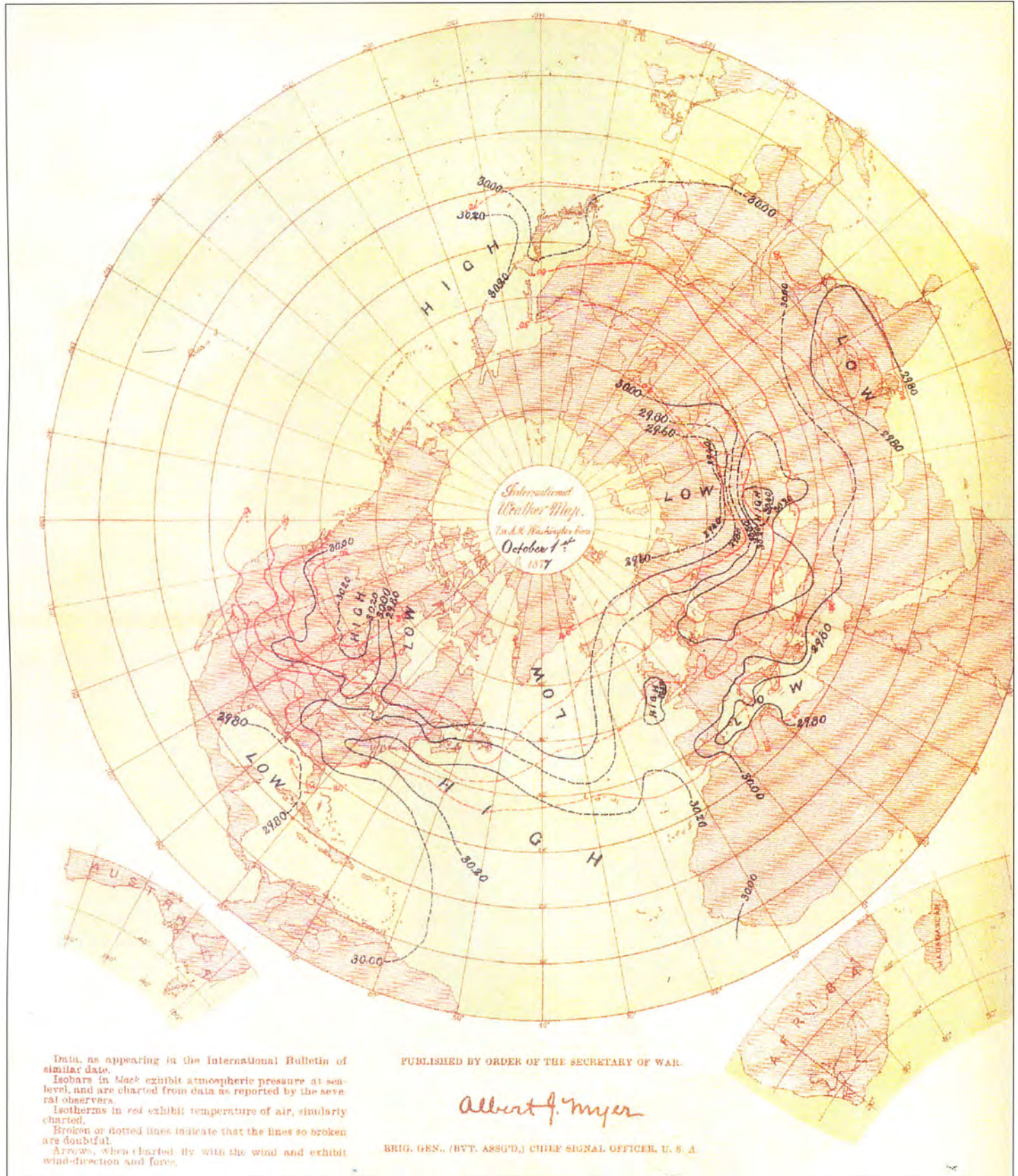
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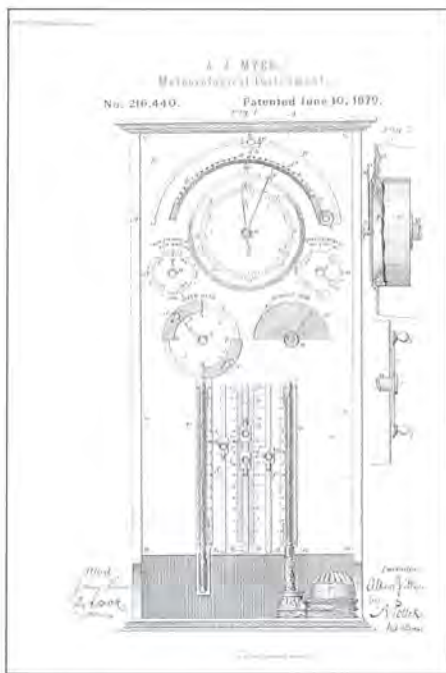
America's Weather Bureau had also dramatically developed, only at a much faster pace. There were now 100 stations, including sites at record-breaking altitudes atop Mount Washington, New

Hampshire and Pikes Peak, Colorado. The charter, "... to take weather observations and issue storm warnings for the northern lakes and seacoast..." paled in comparison to the work now being done

for the nation and large sections of the world connected by telegraph lines on land and under water. Probabilities appeared at post offices, railroad stations and telegraph offices. Myer's soldiers



Earth's weather for October 1st, 1877.



An 1879 lithograph of Myer's third patent, a meteorological instrument for farmers. NATIONAL ARCHIVES II COLLEGE PARK, MD

posted river stage reports at levees where they were needed the most, enabling riverboats around the United States to operate night and day. During the winter of 1877-78, "observer-sergeants" at Kitty Hawk, North Carolina took the same risks as lighthouse keepers and life saving station crews whenever a storm drove a ship onto the beach. The nationality of the vessels in distress never affected the quality of assistance they received in the middle of the night, with strong winds and rough surfs complicating the rescue effort.

General Myer promoted the "International Weather Service" at White House dinners attended by foreign dignitaries and in front of a much larger audience at the 1876 Centennial Exhibition in Philadelphia. Jesuit priests in Manila, Shanghai and Havana with nicknames like "Father Typhoon" and "Father Hurricane" cooperated with the U.S. Army Signal Service while pioneering the art of predicting the atmosphere's most deadly cyclones. Other prominent astronomers like Father Secchi at the Vatican, Urbain LeVerrier in Paris, Johann Schmidt in Athens and Cornelius Van Alan Van Dyck in Beirut sent daily weather reports as well. Physicist Lord Kelvin in Glasgow and C.H.D. Buys-Ballot in Utrecht, were perhaps the

most eminent, multi-faceted scientific minds among more than 150 foreign partners connected to countless observers in the field. Weather systems were tracked across continents and oceans for the first time in world history so that mariners could avoid severe weather no matter where they sailed or steamed.

"What rest would it be to me if I left my work unfinished?" epitomized the general's work ethic that taxed his health beyond recovery and the limits of 19th Century medicine. A second congress of the International Meteorological Organization (IMO) convened in Rome in April of 1879, but General Myer missed it, even though he had been invited. The U.S. Congress failed to approve *Old Probs'* travel in time, but allowed him to take his oldest son Albert and oldest daughter Catherine to Europe on a vacation that could not have been more justified.

The Myers enjoyed the view of Paris from the basket of a tethered hot air balloon and a steamship ride on a lake in Italy, but duty called when King Umberto I asked for help improving the Italian weather service. Myer obliged, even though his health suffered to the point of mandatory bed rest. Meanwhile, milestones were reached in the United States as the *New York Daily Graphic* printed the first weather map in a daily newspaper and Private John Park Finley's tornado research unlocked more secrets of these dangerous hydrometeors. A combination weather instrument Myer designed for farmers living in remote locations was also approved by the Government Patent Office in Washington, D.C.

### Long Lasting Legacy

As his lungs, heart and kidneys began to fail, the full rank and pay of brigadier general were granted just two months before Myer died. Everything he had accomplished for his native state, his country and the world was in exchange for a colonel's pay while wearing a general's star according to the brevet system that preceded the medals of today's army. Foreign recognition, however, was constant. Honorary memberships in the Austrian Meteorological Society, the

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Italian Geographical Society, the Natural Philosophical Society of Emden and the Quebec Geographical Society were bestowed throughout the last decade of his life. *Frank Leslie's Illustrated Newspaper* printed General Myer's portrait on its front page in August 1873 and ran two lengthy stories of the army weather service during his tenure as Chief Signal Officer. The 1879 edition of *Appleton's Cyclopedia* devoted 23 pages and a dozen illustrations to the miraculous operation as well.

The Myer family of eight was together in a room at the Palace Hotel, Buffalo, on August 24, 1880, when *Old Probabilities* died of nephritis. It was exactly 23 years after Ebenezer Walden, the "Pioneer Patriarch of Buffalo," gave away his daughter Catherine to the then-Lieutenant Myer, who had just returned from his tour of duty in Texas. She remained faithful through many separations, from their engagement through the Civil War to both of his journeys to Europe. She used parties in Washington to find support for her husband's reinstatement.



Catherine "Kate" Walden Myer (1828-93) married Albert Myer on August 24th, 1857. COMMAND HISTORIAN, FORT MONMOUTH, NEW JERSEY

But Catherine Walden Myer wasn't the only woman responsible for General Myer's success. His mother, Eleanor Pope McClanahan, could not have chosen a better substitute before being put to eternal rest with five of her six children at the Old Town Cemetery in Newburgh in 1835. Serena McClanahan, who never married, paid for young nephew Albert's education at Geneva College on Seneca Lake by mortgaging her house without any income of her own. Her house no longer stands at 105 Delaware St. in Buffalo, but what she instilled in her nephew can still be seen more than a century later in his remarkable legacy.

The U.S. Army Signal Corps and the International Meteorological Organization continued to grow long after Fort Porter's soldiers escorted the general's funeral procession along Pearl Street to St. Paul's Episcopal Church. The U.S. Air Force and the National Security Agency owe their existence to the Signal Corps, and the Weather Bureau became a civilian organization renamed the National Weather Service. Fifty territories and countries joined the IMO by 1880, while the World Meteorological Organization claims about 200 partners in the 21st Century. Despite all of the

advances in satellite communications, the square black and red flag still warns the public of danger every year during hurricane season.

*Old Probabilities* lies at rest with his father-in-law, wife and four of the six Myer children inside the Walden-Myer Mausoleum at Forest Lawn Cemetery. The other two children, Walden and Gertrude, chose to be interred at the National Cathedral in Washington, D.C., near both the first signal school established on Red Hill in 1861, and Fort Myer, Virginia, where America's first weather school was organized by their father. The stone globe above the Walden-Myer Mausoleum allegedly represents God's vigil over the Earth, but it could also be interpreted as the worldwide benefit derived from General Albert J. Myer's career. ■



Bob Gilbert was born in Buffalo, New York and lived in Virginia before joining the U.S. Air Force and later, the U.S. Army. His 23-year military career encompassed Morse code, non-Morse communications, Russian language training, meteorology, and personnel while stationed around the U.S., the Far East, Europe, the Middle East and Africa. He received a B.A. in History with honors from the University of Maryland in 1994 and has devoted the last four years to researching and promoting General Myer's multi-faceted military career.



The Walden-Myer Mausoleum at Forest Lawn Cemetery, Buffalo. BOB GILBERT PHOTO

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