



The Blue Hill Observatory

Great Blue Hill

Milton and Canton Massachusetts

1885-to date

Their motto: Observe, Measure, Postulate, Explore!

The Blue Hill Observatory was conceived and constructed by Abbott Lawrence Rotch when he was a 25 year old MIT graduate, Class of 1884, with a degree in mechanical engineering. As beneficiary of a substantial family trust fund Rotch had an interest in a career in meteorology that would utilize a well equipped weather observatory and he had the funds to design and build it on Great Blue Hill near the Rotch summer home in Milton. This privately funded weather observatory would be created for the scientific study of weather and the atmosphere. Construction began in 1884 and the observatory was completed and officially opened on January 31, 1885 and recorded its' first weather observation on February 1, 1885. From that date through today an unbroken record of climate observations has been maintained. This remarkable information resource, which is the most homogeneous climate record in North America and a unique benchmark for world climatology and meteorological research, has barely been tapped.

Abbott Lawrence Rotch was Director of the Observatory from 1885 to his sudden death from an undiagnosed ruptured appendix on April 7, 1912. Rotch had been a founding member of the Boston Aeronautical Society in 1895 and was President of the Aero Club of New England when it was incorporated in 1907. Rotch was a prolific writer on atmospheric research using kites and balloons. Rotch had written two books that were popular in 1909-1910: Conquest of the Air , sub titled- the Advent of Aerial Navigation; published in 1909; a well written profile of the state of contemporary aviation. It has chapters on: The Ocean of Air, The History of Aerostation (ballooning), The Dirigible Balloon, The Flying Machine and the Future of Aerial Navigation. His second book on aeronautics and the atmosphere: Sounding The Ocean of Air is a detailed written history of the use of balloons and kites in scientific and meteorological research where Rotch had considerable experience from his work at the observatory.

Blue Hill Observatory Directors and Staff 1885-1958:

Abbott Lawrence Rotch, Director- 1885-1912

Willard P. Gerrish, Observer- 1885

Henry Helm Clayton, Observer- 1886

Sterling P. Fergusson, mechanic-1887

Alexander George McAdie, Director-1912-1930

Dr. Charles Franklin Brooks, Director- 1931-1957

John H. Conover, Acting Director-1957-1958

Richard M Goody, Director-1958-1971

Metropolitan District Commission- 1972-1980

Dr. William E. Minsinger, Blue Hill Observatory Club, 1981-1997

Charles Talcott Orloff, Executive Director- 1998 to date

Kites Experiments at the Blue Hill Observatory:

Harvard Professor Alexander McAdie in May and June 1885 had flown his unique paper kites covered with cloth and tin foil for observations of atmospheric electricity. On May 7, 1885 a height of 500 feet was attained on a test flight in Cambridge. On June 17, 1885 McAdie and his assistant S. A. Potter were pleased to be invited by Professor Rotch to move their kite experimentation program from Cambridge to the Blue Hill Observatory.

In July and August 1894 William Eddy, a New York journalist, was also at Blue Hill to demonstrate how his unique kites could lift instruments into the sky above Great Blue Hill to measure temperature, humidity, pressure and at certain times wind speed. These experiments at Blue Hill Observatory marked the beginning of world wide sounding of the atmosphere. On August 4, 1894, a series of five Malay kites made by Eddy lifted a special lightweight thermograph constructed by Sterling P. Fergusson to a height of 1,400 feet above the ground at Blue Hill. As a result of these initial kite soundings this innovative program was accelerated reaching a peak of activity in 1896 when 86 soundings were made. A maximum height of 15,793 feet above sea level was reached by these kites in 1900. Some flights were made by alternating reeling the kites and instrument packages in and out to sound vertically for periods of 24 or 36 hours, thus sampling upper air changes with time. Other kite/instrument flights were made near thunderstorms, and in rain and snowstorms. In the summer of 1894 Professor McAdie continued his experiments in kite flying launching a large number of Malay kites at Mr. Potter's estate.

In August and September 1895 Blue Hill Observatory saw the first use of the Hargrave kite. This unique box kite design invented by Lawrence Hargrave of Sydney, Australia in 1893; came to the attention of American and European experimenters with Hargrave's correspondence with Octave Chanute in Chicago, and James Means and Abbott Rotch of Boston. The Blue Hill Observatory was an early user of this innovative kite design, constructing and flying this box kite for the first time on August 18, 1895. Up to this time kites of the Eddy and Malay type had been used almost exclusively. The evident superiority of the Hargrave type in power and stability in flight, led Mr. S.A. Potter shortly thereafter to devise the modified form of the cellular kite known as the Potter diamond kite, which had the advantage of lightness and simplicity of construction. In September 1895 a kite of the Hargrave cellular type, made by Mr. Potter, was successfully flown by him.

Further unique kite experiments included on August 22, 1901, the first kite soundings over water with trial flights over Massachusetts Bay. The first soundings over open ocean were made on August 28, 1901 to a height of 2,300 feet from an east bound trans-Atlantic steamer by Abbott L. Rotch and F. O. Sweetland.

Balloon Experiments at the Blue Hill Observatory

Abbott Rotch and his associates at Blue Hill were well aware of European experiments in which recording equipment were lifted to heights exceeding 10km. by hydrogen-filled balloons. Rotch could not duplicate these flights at Blue Hill because instruments would most likely fall into the sea to the East of Boston. However in 1904 he seized the opportunity to make balloon flights from St. Louis in the center of the United States at the Louisiana Purchase Exposition. His good friend Leon Teisserenc de Bort supplied instruments for the project at cost. On 15 September 1904, Fergusson released the first balloon and meteorograph, which in one hour and 26 minutes ascended to 10,568 feet and returned to the ground. A perfect record of temperature and pressure was obtained. Other balloon soundings followed, some from Pittsfield, MA, and the general characteristics were determined and compared with those of Europe observers and climatologists. At the beginning of the Twentieth Century the balloon was in its ascendancy over the kite for sounding the atmosphere and as these data collection techniques continued to evolve throughout the history of the Blue Hill Observatory atop Blue Hill, the weather data is still recorded every day as it has been since 1885 and the institution continues to share the weather sciences and its technology with young people in their classrooms and at the Observatory which is open to all.

Sources: Harvard University Hand Book 1935;

Monthly Weather Review, December 1904 U.S. Weather Bureau, p.567-568;

John H. Conover, Highlights of the History of the Blue Hill Observatory and the early days of the American Meteorological Society; Bulletin - American Meteorological Society; Vol.66 No.1, January 1985

Website: <http://bluehill.org/history/history.html>