

**THE BEGINNING OF THE NATIONAL WEATHER SERVICE:
THE SIGNAL SERVICE YEARS (1870 – 1891) AS VIEWED
BY EARLY WEATHER PIONEERS**



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Beltsville, MD 20704-1387
March 21, 2008

A National Weather Service Publication

**In Support of
The Celebration of American Weather Services
...Past, Present, and Future**

ACKNOWLEDGMENTS

This document would not have been possible without the help of Camille Dyer. Written testimonies of the Signal Service employees were voluminous, and Camille spent many hours shifting, sorting, and transposing the hundreds of pages of material. Her participation was essential. Ken Howard helped copy material in the National Archives, and his help is appreciated. Dorothy Grice reviewed the manuscript before publication; a grateful “thank you” is extended, not only to a supportive wife, but also to a good friend.

I also would like to thank Bill Proenza, Bob Manning, Dale Eubanks, Steve Rinard, and Skip Ely for their support. A special thanks is extended to Dr. Elbert W. Friday and Robert C. Landis for ensuring the publication of this document.

PREFACE

In 1870, the United States was attempting to recover from the most devastating war in the history of the country. The Civil War remained fresh in the minds of the U.S. citizens, especially in the ruins of the Confederacy, where reconstruction was drawing to a close. Ulysses S. Grant was President and most of the country's population was concentrated in the northeast from Chicago to New York.

During the 1870s, American Indians were still creating havoc in parts of the country and cowboys wore guns in the wild west. The country was beginning to expand to the west and it was becoming more united in the east.

Following the Civil War, the Army began a process of systematic reduction as the budget was slashed from about \$80 million in 1869 to \$57 million in 1870 to \$40 million in 1871. During this time, the size of the Army was reduced by discharging "indifferent soldiers," and raising the qualifying standards for recruits.

It was in this environment that a Joint Resolution was unceremoniously passed on February 2, 1870, and signed by President Grant on February 9th, authorizing "the Secretary of War to take observations at military stations and to warn of storms on the Great Lakes and on the Atlantic and Gulf coasts." With this modest beginning, an agency was born under the Signal Service which would become one of the more popular and well known federal agencies. Later names of this agency would be "Weather Bureau" and "National Weather Service."

Today, the National Weather Service is poised on a massive modernization and associated restructuring which will forever alter the way in which its employees perform their jobs. To perceive the future requires that we understand our roots. The success of the agency through the years has been the result of the dedication and motivation of its people, and this will be especially true in the modernized National Weather Service.

This document will attempt to describe life in the Signal Service from 1870 through 1890 as viewed by early employees. In 1922, a Weather Bureau employee named Henry E. Williams, recognizing that early Signal Service employees were coming to the end of their lives, asked selected weather pioneers to document their impressions of the Signal Service years. Approximately 30 people responded.

Unfortunately, it appears that the personal perspectives of the Signal Service employees were never published, and their stories eventually became lost in the mountains of material at the National Archives in Washington, D.C. Research into the history of the National Weather Service (for the Celebration of American Weather Services) uncovered this vast resource of material and, although almost 70 years late, it seemed fitting to finally publish the testimonies.

This publication is comprised of two broad sections. The first section contains basic historical information regarding the advancement of meteorology from the settling of the U.S. to the formation of the Signal Service in 1870. This historical information is provided to give the reader an understanding of the culmination of events which eventually led to the formation of the weather service within the War Department. The first section also broadly describes conditions in the Signal Service from 1870 to 1890 to "set the stage" for the weather pioneers' own stories which follow.

The photographs contained in this document were obtained from a variety of sources, including the National Archives, National Weather Service Offices, and personal collections. Some of the photographs are not the meteorological section of the Signal Service and were taken as late as the 1890s. However, they are included as examples of life during the Signal Service years.

To obtain a “feel” for governmental policies and conditions during the late 1800s, considerable reliance was placed on Annual Reports of the Secretary of War from 1870 through 1890. Personal stories of the pioneers also provide considerable insight.

Most of the material was collected from the National Archives; however, the testimonies by Cleveland Abbe and Isaac M. Cline were taken from their books (see the Bibliography). Text provided by the pioneers was not modified except in those rare instances to improve clarity. Since writing and punctuation during the late 1800s was different from current versions, several readings may be required of a few sections. The editorial philosophy was not to make significant text changes which might alter meanings. Editorial explanations are placed in brackets.

Approximately 30 percent of available material is included in this document. The question then arises as to what should be published. The basic philosophy was to include that material which would provide a historical and personal view of the beginning of the National Weather Service, as well as provide an understanding of operational meteorology of the time. The story is told through the eyes of different individuals which may result in contradictions and discrepancies. Since in many instances the “absolute” truth may not be known, discretion will be left to the reader.

It is hoped this publication will provide an insight into the personal side of the Signal Service over 120 years ago. Life as a forecaster or observer during that time was exciting and challenging. It also was dangerous as witnessed by the experiences of Isaac Cline in Abilene, Texas, during cowboy gunfights and the experiences of C.F. von Herrmann in Arizona. As the National Weather Service moves into operations of the modernized era, it is appropriate to remember the Signal Service pioneers which began the rich heritage of this great agency.

GKG

Evolution to the Signal Service Years (1600 - 1891)

The Colonial Years

The National Weather Service has its beginning in the early history of the United States. Weather always has been important to the citizenry of this country, and this was especially true during the 17th and 18th centuries. The early settlers to North America experienced the harshness of the weather of the New World. Samuel de Champlain, in the early 1600's told much about the weather of the northeast United States when he stated:

"It was difficult to know this country without having wintered there; for on arriving in summer everything is very pleasant on account of the woods, the beautiful landscapes, and the fishing for the many kinds of fish found there. There are six months of winter in that country. The cold was severe and more extreme than in France, and lasted much longer."

Samuel de Champlain's sentiments were echoed in 1600 by Governor William Bradford of Cape Cod who stated the winters to be, "...Sharp and violent, and subject to cruel and fierce storms, dangerous to travel to known places, and much more to search an unknown coast."

Weather also was important to many of the Founding Fathers. Colonial leaders who formed the path to independence of our country also were avid weather observers. Thomas Jefferson bought his first thermometer while writing the Declaration of Independence, and purchased his first barometer a few days following the signing of the document. Incidentally, he noted that the high temperature in Philadelphia, PA, on July 4, 1776 was 76 degrees. Jefferson made regular observations at Monticello from 1772-78, and participated in taking the first known simultaneous weather observations in America. George Washington also took regular observations; the last weather entry in his diary was made the day before he died.

During the early and mid 1800's, weather observation networks began to grow and expand across the United States. Although most basic meteorological instruments had existed for over 100 years, it was the telegraph that was largely responsible for the advancement of operational meteorology during the 19th century. With the advent of the telegraph, weather observations from distant points could be "rapidly" collected, plotted and analyzed at one location.

When the telegraph became operational in 1845, the visionaries saw the possibility of "forecasting" storms simply by telegraphing ahead what was coming. Joseph Henry, Secretary of the new Smithsonian Institution, envisioned opportunities of the communication system and suggested that:

...a system of observation which shall extend as far as possible over the North American continent.... The Citizens of the United States are now scattered over every part of the southern and western portions of North America, and the extended lines of the telegraph will furnish a ready means of warning the more northern and eastern observers to be on the watch from the first appearance of an advancing storm.

The plan was approved in 1848, and subsequently, a circular was distributed to the press to recruit volunteer observers. Henry also persuaded the telegraph companies to allot free time for the transmission of weather reports to the Smithsonian.

By the end of 1849, 150 volunteers throughout the United States were reporting weather observations to the Smithsonian regularly. By 1860, 500 of Henry's stations were furnishing daily telegraphic weather reports to the Washington Evening Star, and as Henry's network of volunteer observers grew, other existing systems were gradually absorbed, including several state weather services.

The ability to observe and display simultaneously observed weather data, through the use of the telegraph, quickly led to initial efforts toward the next logical advancement, the forecasting of weather. However, the ability to observe and forecast weather over much of the country, required considerable structure and organization--a government agency.

Formation and Evolution of The Division of Telegrams and Reports for the Benefit of Commerce

The catalyst for the formation of the new agency was Professor Increase A. Lapham of Milwaukee, a student of meteorology. Professor Lapham supported a storm warning service for the Great Lakes and he sent frequent clippings of maritime casualties to General Halbert E. Paine, Congressman for Milwaukee. In one letter Lapham asked if it were not "...the duty of the Government to see whether anything can be done to prevent, at least, some portion of this sad loss in the future...?"

Lapham's enthusiasm for a national weather service was supported by others, including the New York Chamber of Commerce. One of the supporters was Colonel Albert J. Myer, Chief of the Signal Service. Colonel Myer used a winter storm, traced to Washington, D.C., from the Midwest, as an example of the possibilities for such a weather service.

Congressman Paine recognized the importance and practicability of Lapham's cause and, on February 2, 1870, he introduced a Joint Congressional Resolution requiring the Secretary of War "to provide for taking meteorological observations at the military stations in the interior of the continent and at other points in the States and Territories...and for giving notice on the northern (Great) lakes and on the seacoast by magnetic telegraph and marine signals, of the approach and force of storms."

The Resolution was passed by Congress and signed into law on February 9, 1870, by President Ulysses S. Grant. Little attention was given by the press to the short, seven line resolution, but an agency had been born which would affect the daily lives of most of the citizens of the United States through its forecasts and warnings.

Since considerable structure and organization was necessary, and since the operation of the new service was dependent on a reliable communication system, the new service was placed under the Secretary of War because "military discipline would probably secure the greatest promptness, regularity, and accuracy in the required observations." Within the Department of War, it was assigned to the Signal Service Corps (which was organized in 1860) under Brevet Brigadier General Albert J. Myer. General Myer gave the National Weather Service its first name: **The Division of Telegrams and Reports for the Benefit of Commerce**.

At 7:35 AM on November 1, 1870, the first systematized and synchronous meteorological reports were taken by observer-sergeants at 24 stations in the new agency. These observations, which were transmitted by telegraph to the central office in Washington, D.C., commenced the beginning of the new division of the Signal Service.

The weather service work of the new organization demanded a large number of men familiar with observations, theoretic, and practical meteorology. The commissioned officers detailed to Signal Service work were required to acquire meteorological knowledge by studying the available literature and consulting with and receiving instruction from leading meteorologists.

For the education of weather observers (enlisted men) a school of meteorology was added to the existing school of instruction in telegraphy and military signaling located at Fort Myer (then Fort Whipple), in Virginia. Instruction for the observers consisted of courses in military tactics, signaling, telegraphy, telegraphic line construction, electricity, meteorology, and practical work in meteorological observation. In 1882, a course for commissioned officers was added to the school covering meteorology, mathematics, and electricity. The training school of meteorology at Fort Myer was abolished by order of the Secretary of War in 1886.

Although most of the weather observations were taken by the military, the Signal Service turned to civilians for meteorological knowledge. On November 8, 1870, General Myer requested Professor Lapham to assume responsibility for the Great Lakes region (with a salary of \$167 per month), and Lapham obliged by issuing the first storm warning the same day. The dispatch sent to observers on the Great Lakes, read:

"High wind all day yesterday at Cheyenne and Omaha; a very high wind this morning at Omaha; barometer falling with high winds at

Chicago and Milwaukee today; barometer falling and thermometer rising at Chicago, Detroit, Toledo, Cleveland, Buffalo and Rochester; high winds probable along the Lakes."

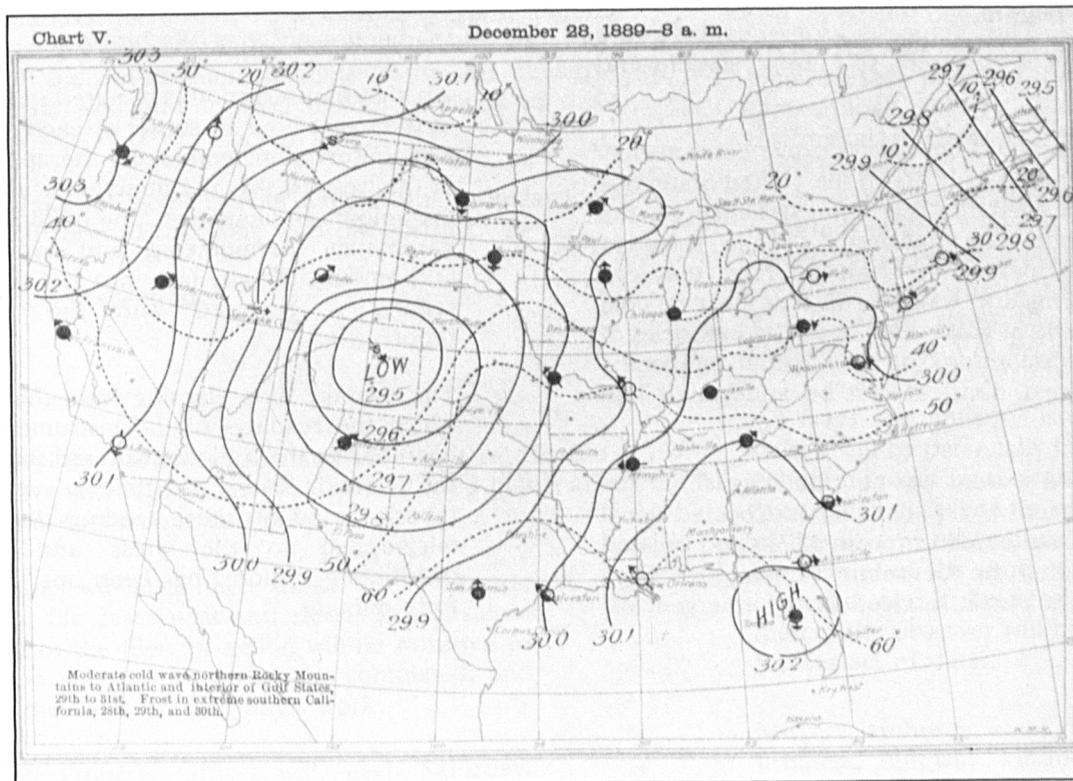
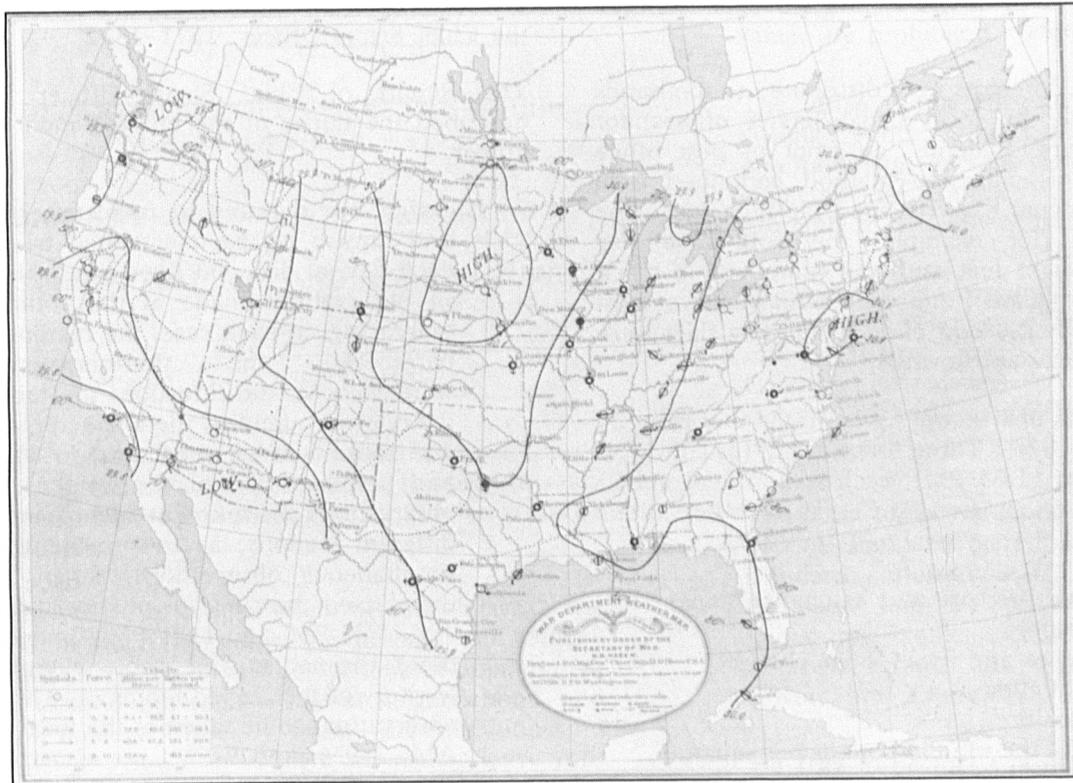
In 1871, Professor Cleveland Abbe also became part of the infant agency as Special Assistant to the Chief Signal Officer. Following a month of practice, it was decided that Abbe's forecasts, covering the next 24 hours, more than filled popular expectations. The first public issuance by Abbe was entitled "Weather Synopsis and Probabilities" and was based on observations at 7:35 AM. One of the early examples is shown below.

Synopsis for past twenty-four hours; the barometric pressure had diminished in the southern and Gulf states this morning; it has remained nearly stationary on the Lakes. A decided diminution has appeared unannounced in Missouri accompanied with a rapid rise in the thermometer which is felt as far east as Cincinnati; the barometer in Missouri is about four-tenths of an inch lower than on Erie and on the Gulf. Fresh north and west winds are prevailing in the north; southerly winds in the south. Probabilities; it is probable that the low pressure in Missouri will make itself felt decidedly tomorrow with northerly winds and clouds on the lakes, and brisk southerly winds on the Gulf.

Since the original congressional resolution covered only the Gulf and Atlantic coasts, and the Great Lakes, the early forecasts were made only for these areas. On June 10, 1872, an act of Congress extended the service throughout the United States, "for the benefit of commerce and agriculture." However, a sample forecast of 1872 reflects the lack of data west of the Mississippi River:

Partly cloudy, but pleasant weather will prevail on Wednesday for Pennsylvania and the upper lakes southward to the Gulf. Cloudy weather will extend over New England and Canada and clearing by Wednesday night.

Early forecasts were made for eight large districts (which covered the entire United States), three times daily and the duration of the forecasts, as well as forecast elements were determined by the forecaster. However, beginning in October 1872, predictions were made regularly for 24 hours in advance for 9 districts, and in 1874, forecasts were made for 11 districts and 4 elements, namely weather, wind, pressure, and temperature. No changes occurred until 1885 when predictions were made for 32 hours in advance, and in 1886, forecasts were made for



Weather maps produced by the Signal Service in 1878 (top) and 1889 (lower). Note the location of weather offices.

states, or parts of states, as opposed to being issued for large districts containing several states. In 1888, forecast durations were extended to 36 hours and in 1898 extended to 48 hours.

Beginning in 1873, forecasts were distributed to thousands of rural post offices (by local Signal Service offices) for display as "Farmers' Bulletins" in front of post office buildings. This dissemination method continued until 1881 when local signal flags replaced the bulletins. The flags were large (for example, the cold-wave flag measured six-by-eight feet and was white with a black center of two feet square), and were displayed over post office buildings. By the end of 1886, display flags were available at 290 cities and towns.

The Signal Service's field stations grew in number from 24 in 1870 to 284 in 1878. Three times a day (usually 7:35 AM, 4:35 PM, and 11:35 PM), each station telegraphed an observation to Washington, D.C. These observations consisted of:

1. Barometric pressure and its change since the last report
2. Temperature and its 24-hour change
3. Relative humidity
4. Wind velocity
5. Pressure of the wind in pounds per square foot
6. Amount of clouds
7. State of the weather

At Washington, D.C., forecasts were made from the telegraph reports. The forecasts subsequently were distributed back to the observers, to railroad stations and to available news media.

Although the forecasts did not always prove correct, they greatly aided in planning daily life in the United States. A noted scientist conveyed the increasing reliance on the weather service when he declared: "While scientists cannot tell at what hours to carry an umbrella, they can tell when great storms and waves of intense heat or cold are coming so as to be of great value to all the industries of the land...All the discomforts of the weather cannot be avoided but the great disasters can be anticipated and obviated."

Life in the early field stations was not dull. Signal Service personnel experienced a number of unexpected local events (the suppression of labor riots in 1873) and isolated Indian wars (including the Geronimo campaign). They also performed extra public services during emergencies,

including yellow fever epidemics, plagues, and fires. In particular, a detailed account of the Chicago fire is presented by one of the weather observers in the Report of the Chief Signal Officer, 1871-1872.

The Report of Chief Signal Officer in 1877-1878 described the duties of the enlisted men at the weather officer:

...they are required to take, put in cipher, and furnish, to be telegraphed tri-daily on each day, at different fixed times, the results of observations made at those times, and embracing, in each case, the readings of the barometer, the thermometer, the wind-velocity and direction, the rain-gauge, the relative humidity, the character, quantity, and movement of upper and lower clouds, and the condition of the weather. These observations are taken at such hours, at the different stations, as to provide the three simultaneous observations, taken daily at three fixed moments of physical time (7:35 AM, 4:35 PM, and 11 PM Washington mean time) throughout the whole extent of the territory of the United States.... Three other observations to be taken at the local times, 7 AM, 2 PM, and 9 PM, are also taken and recorded at each station. A seventh and especial observation is taken and recorded at noon on each day. If at this observation such instrumental changes are noted as to cause anxiety, the fact is to be telegraphed to the central office at Washington.

An eighth observation is required to be taken at the exact hour of sunset at each location. This observation, embracing the appearance of the western sky, the direction of the wind, the amount of cloudiness, the readings of the barometer, thermometer, and hydrometer, and amount of rain-fall since last preceding report, is reported with the midnight report....

The average time elapsing from the time at which the readings of the instruments have been had at the stations scattered throughout the United States, to that at which the reports based on these readings have been telegraphed to the press and to the distributing-stations, has been one hour and forty minutes.

Not all reports from the Signal Service stations dealt with weather observations. For example, the following memo was concerned with another problem.

WAR DEPARTMENT, OFFICE OF THE CHIEF
SIGNAL-OFFICER,

DIVISION OF TELEGRAMS AND REPORTS FOR
THE
BENEFIT OF COMMERCE AND AGRICULTURE

Washington, D.C., May 17, 1877.

SERGEANT: Should the Rocky Mountain locust appear at or near your station at any time during the present year, you will obtain all the information possible relative to the following subjects, viz:

The date of appearance of the locusts; the direction from which they came; the direction and velocity of wind and character of weather at time of appearance; the length of time they remain in your neighborhood, and amount of damage done by them; the direction and velocity of flight; direction of flight when they leave your station; whether they fly with or against the wind; whether or not they laid eggs in great quantities in the surrounding country; what means were taken to destroy the eggs or the locusts; any other information you can obtain on this subject. Should the locusts have arrived at your station previous to the receipt of this communication, you will obtain all the information possible from the citizens residing near you and forward it without delay to this office.

Make full notes in your daily journal in regard to locusts and forward the same with the abstract.

Very respectfully,

Since Signal Service forecasters and observers were in the Army, rules and regulations were strict. Listed below are examples of regulations in 1883:

Clerks will keep their desks, their drawers, and file cases neat and clean. Papers taken out of the files for action will be returned as soon as the work in hand is completed, and at the close of each day's work.

The Property Officer will, each Saturday, have all rooms halls, stairways, closets, cellars, etc., carefully policed and arranged.

Drinking vessels will not be used in taking medicine; nor will the taking of medicine at water-coolers be permitted.

Discussions in reference to the business of the office at any time or place, not necessary to the proper discharge of the duties of the same, are prohibited.

The office rooms must neither be used as visiting rooms, nor for purposes of entertainment. Persons visiting the office are expected to transact their business as promptly and briefly as practicable.

Unnecessary conversations, writing of private letters, and reading of newspapers during office hours are strictly prohibited. Conversation necessary to the proper dispatch of business will be carried on in a low tone of voice.

The outfit of an inspecting officer will consist of one standard mercurial barometer, two standard thermometers, one standard compass, one jar of mercury; also the necessary blanks, stationary, barometer cisterns, clamps and screws, small screw drivers, and a tape-line.

He (the inspector) will inspect the observer and assistants in uniform, and examine them as to their knowledge of the various circulars and orders issued by the central office; and when they do not appear to understand any one, or part of one, proper instruction will be given. He will also examine them in the following text-books of the service: Loomis' Meteorology, Myer's Manual of Signals, Instructions to Observers, Pope's Telegraphy, and Hand-book for the Signal Corps. The result of the examination in each case will be reported under "general remarks" in the inspection report. He will test them in wand practice, and when there are facilities, in telegraphy, giving the number of words received and sent in each case.

All maps and bulletins issued and posted at station will be personally inspected, and their condition noted from actual observation, and not from the observer's statement. The date of the several maps and bulletins posted in the frames at the time of inspection will be observed, and if the latest issue is not found therein the observer will be called to account for neglect of duty.

Military authority is to be exercised with firmness, but with kindness and justice to inferiors. Punishments shall be strictly conformable to military law.

Superiors of every grade are forbidden to injure those under them by tyrannical or capricious conduct, or by abusive language.

During the early years (1870's and 1880's) of the national weather service, research studies were conducted at the central office in Washington, D.C. The early research was comprised mainly of topics dealing with the distribution of moisture in the air, a treatise on the laws of meteorology, a report on tornadoes from special observers in the Corps, and instructional material for Signal Service trainees. Colonel Myer, not overly interested in research, employed only one permanent, civilian professor (Cleveland Abbe); but Hazen added four senior and three junior professors after 1880. One man was in charge of investigations on atmospheric electricity and another on thermometry exposure.

The first 10 years under the Signal Service were tranquil internally. General Myer, the chief of the new agency from 1870 until his death in 1880, deserves much of the credit. Myer possessed the ability to organize the agency in a seemingly effective manner, resulting in minimal internal strife. Myer stressed public service and the personnel of the weather agency knew their job was service to others.

Under General Hazen, Myer's successor, the agency entered a period of turmoil. From 1880 to 1887, the weather service was rocked by allegations of fraud, scandals, and subsequent investigations. In 1881, information surfaced that Captain Henry W. Howgate (disbursing officer of the Signal Service) had embezzled up to \$237,000 from the U.S. Government through the use of fraudulent vouchers. The Howgate scandal resulted in a number of repercussions for both the weather service and the Signal Service. Critics charged that employees of the Signal Service aided Howgate, and Hazen was pressured to reduce the expenditures of the Service by the amount of the missing funds.

Also under Hazen's administration, growing strife surfaced regarding the degree of autonomy the Signal Service should have as a component of the army. General Hazen maintained that the Service should enjoy the status of a separate corps, and therefore, more freedom in controlling its own actions, as did the Army Engineers. Although the Signal Service was able to maintain a certain degree of freedom, it was becoming apparent that the Army was not happy with the Signal Service in general, and the weather service in particular. It also was becoming clear that the War Department was not enthusiastic over having the weather service. The Signal Service had been almost completely absorbed by its new mission, and should its military services ever be needed, its personnel could not be spared from their weather duties.

In 1887, General Hazen died, and General A. W. Greely was chosen as successor. The Greely administration failed to quiet the storm of protest resulting from the previous seven years of discord. Coupled with the increasing external criticism was internal disharmony. One item surfaced when Lieutenant John C. Walshe, inspector for the Signal Service, told reporters that the man in charge of the predictions at Washington D.C., was too much a

scientist and too little a weather observer, preventing the transfer of his theories into accurate forecasts.

By 1889, General Greely became convinced of the futility of attempts to reconcile opposing factions within the organization, as well as to correct admitted shortcomings within the weather service. These admissions by the top official of the military weather service solidified adverse congressional reaction. Although Greely attempted to correct the problems which had been building for over seven years, the die was already cast and in 1889, President Benjamin Harrison recommended transfer of the national weather service to the Department of Agriculture. Congress agreed, and on October 1, 1890, an act transferring the weather service to the Department of Agriculture was signed into law by President Benjamin Harrison.

According to the new law:

...the enlisted force of the Signal Service, excepting those hereinafter provided for shall be honorably discharged from the Army on June 30, 1891, and such portion of this entire force, including civilian employees of the Weather Bureau shall, if they so elect be transferred to the Department of Agriculture...

The work of the Signal Corps' meteorological division ended 20 years after it began; yet, in that brief period it succeeded in establishing the foundation for the new Weather Bureau. The United States already led the world in providing public weather information, forecasts, and warnings. Charles Patrick Daly, a famous jurist of the day, wrote:

Nothing in the nature of scientific investigation by the national government has proved so acceptable to the people, or has been productive in so short a time of such important results, as the establishment of the Signal Service (weather) bureau.

At the time of the transfer, General A. W. Greely wrote:

In parting from the civil employees the Chief Signal Officer feels assured that the new chief in another department will receive from them the same loyal, faithful, and efficient service they have rendered the Government while serving under his orders. The scientific staff have in view important additional duties looking to the extension of the Weather Service in the interests of agriculture and still further development of the science of meteorology. The Chief Signal Officer will follow with deep interest the development of the new scientific field of weather forecasting and the application of meteorology to agriculture, on which grounds this liberal reorganization of the Weather Bureau was planned and carried out.

So on July 1, 1891, the weather stations, telegraph lines, apparatus, and personnel (military people whom were honorably discharged from the War Department and were now civilians) were transferred from the Signal Corps' Division of Telegrams and Reports for the Benefit of Commerce to the Department of Agriculture's new civilian Weather Bureau.

History of Fort Myer

From 1871 to 1886 most weather training for Signal Service forecasters and observers was conducted at Fort Myer, Virginia. In fact, Fort Myer was named for General James Myer, the Army's first commander of the Signal Service.



Quarters of the Commanding Officer of Fort Whipple (Fort Myer), Virginia (1876).

Fort Myer is located in Virginia just across the Potomac River from Washington, D.C. Fort Myer originally was named Fort Whipple and had its beginning in 1863. During the early years of the Civil War, a federal defense committee recommended that a series of military forts be built on the high terrain of Virginia to protect the nation's capitol from the Confederate Army. One of the forts constructed was Fort Whipple, named to honor Brevet Major General Amiel Weeks Whipple, an 1841 graduate of the U.S. Military Academy.

Initially, Fort Whipple was comprised of earthworks, tentage, and temporary frame structures. By the late 1860s, the Signal Corps had taken over the post since its location and elevation made it ideal for visual communications.

General Myer established the Signal Corps' headquarters, the Signal Corps School, and the weather service school at Fort Myer. The weather school for forecasters and observers was continued at Fort Myer until 1887 when the fort was converted into an Army cavalry fort.

The first military test flights were made from the parade field at Fort Myer on September 3, 1908. On that date, Orville Wright succeeded in keeping his plane aloft for 1 minute and 11 seconds. Six days later, he made 57 complete circles over the same field.

On September 17, 1908, Orville was accompanied by an Army Lieutenant on a flight over the parade field when a propeller broke and the aircraft crashed. Wright was severely cut and bruised, but the Lieutenant was killed, becoming the first fatality associated with a powered aircraft.

Today, Fort Myer remains in use by the Army. It is under the jurisdiction of the commanding general, U.S. Army Military District of Washington, D.C., but has its own post commander. It also is home of the U.S. Army Information Systems Command which staff the Pentagon Telecommunications Center, as well as other signal operations in the National Capital Region.

Signal Service Office in Washington, D.C.

Because of its location, the Washington, D.C., office was the central forecast center for the entire country until 1887. The first Signal Service weather office in Washington was located in the building of the Chief Signal Officer. This building was located on G Street near the War Department. In 1871, this was the observers office.

Upon the the flat roof of the building was erected a wooden observatory, designed for the purpose of comparing thermometers and other instruments. Also on the roof was one self-registering rain gauge and one wind vane. All changes required at other Signal Service offices, as well as all new instruments, were thoroughly tested before being implemented.



Signal Service Office in Washington, D.C., located on G Street near the War Department. For over 17 years (1870–1887), this building housed the headquarters of meteorological operations for the Signal Service.

The first Signal Service weather office in Washington, D.C., also served as the central office of the country. Weather observations from across the country were compared for errors. In addition, forecasters at the office prepared maps and various weather bulletins, including forecasts, for the eastern part of the United States. In 1871, Signal Service forecasts and other weather information were posted in the Signal Service office, the post office, and at the main office of the Western Union

Telegraphy Company. Maps also were posted in the principal hotels in the nation's capitol.

The first Signal Service weather office contained a printing department to print the maps and other weather information. In addition, a separate department was available to evaluate the weather instruments, and another for checking weather observations. To support the various departments and functions of the office was a correspondence and clerical staff.

NWS People during the Signal Service Years

The early weather service had its share of characters. Since many Signal Service weather offices were occupied by one individual, *personal discretion was important*. Unfortunately, this was not always the case. One observer in the Midwest who was addicted to poker playing, frequently lost large amounts of money. The observer went to a local pawnbroker and pawned the station's instruments; consequently, the instruments were moved to the pawnbroker's place of business. When the Signal Service inspector arrived on station, he found no instruments. He found the instruments in the pawnbroker's store and the observer taking the weather observations in the pawn shop, instead of at the weather office.

Publications in the Signal Service

During the 20 year history of the Division of Telegrams and Reports for the Benefit of Commerce, considerable documents were published for the benefit of the observers and forecasters. As usual, the quality of the publications varied from insightful (considering the level of science of the day) to the ridiculous. Listed below are 12 publications, and brief summaries, to depict the state of weather observing and forecasting during the Signal Service from 1870 to 1890.

Memoir on the use of Homing Pigeons for Military Purposes

This Signal Service Note describes the use of homing pigeons by the military for carrying messages, including weather information. A brief historical sketch of the homing pigeon is presented, along with its various uses. It was discovered that the practicability of using pigeons to carry messages in time of war was not encouraging. Despite great care in training, the pigeon frequently failed during critical moments.

To Foretell Frost by Determination of the Dew-Point

This note describes the importance of measuring dew point temperature for the purpose of forecasting the formation of dew or frost. Tables are presented which relate wet-bulb and dry bulb temperatures to dew point

temperatures. It was recognized that vegetation could be protected by "kindling a small smudge fire." One interesting feature of the note was that a complete hygrometer cost \$7.00 and a minimum thermometer \$5.00.

The Use of the Spectroscope in Meteorological Observations

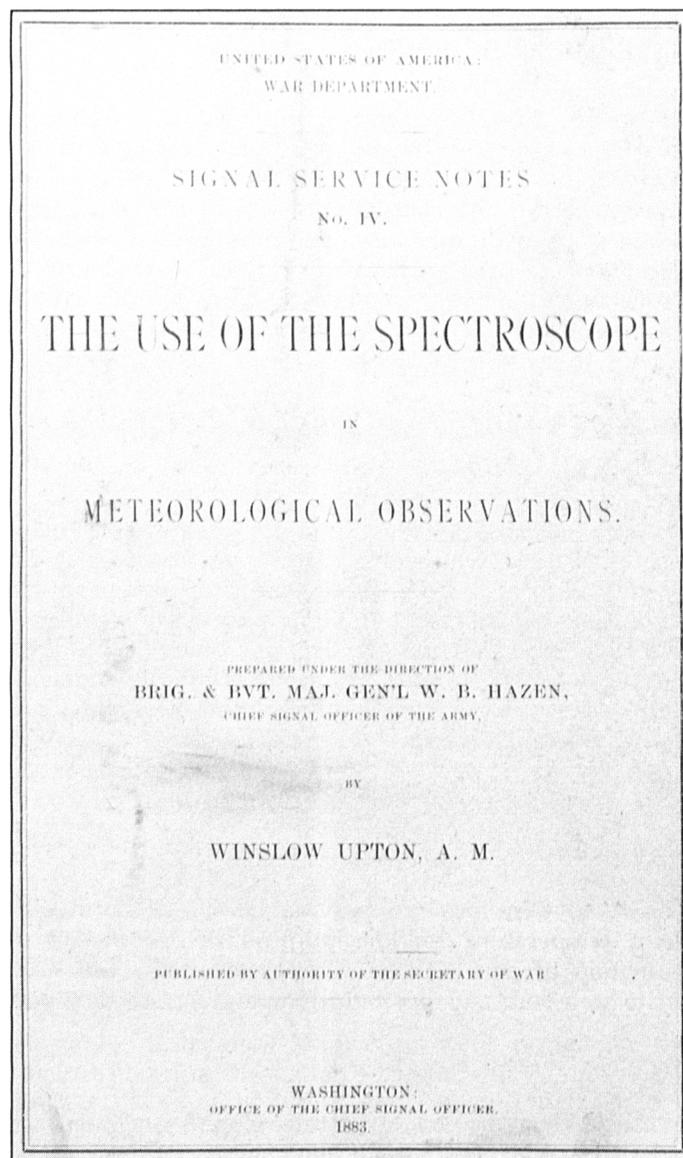
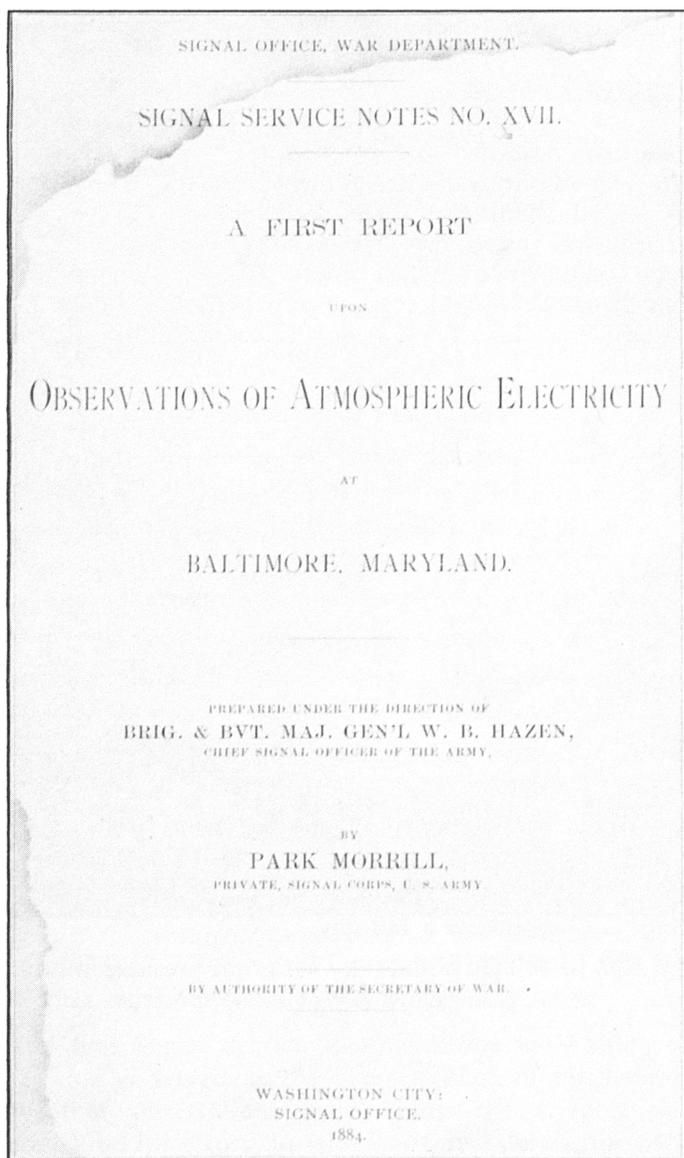
During the 1870s, Professor Piazzi Smyth, a Scottish astronomer, suggested that the absorption lines in the solar spectrum, might be used to forecast rain since the absorption spectra varied with amount of atmospheric moisture. This study presented results of a study to test Smyth's hypothesis. The study found some correlation and it was suggested that the spectroscope could represent a significant forecast tool.

Weather Proverbs

Since the science of meteorology was relatively undeveloped during the late 1800s, considerable emphasis was placed on heuristic rules and folklore. This Signal Service Note listed many rules of thumb and folklore which could be used by forecasters. The list was compiled from Signal Service forecasters and observers across the United States. Listed below are a selection of the weather proverbs:

1. A red sun has water in his eye.
2. When the walls are more than unusually damp, rain is expected.
3. Hark! I hear the asses bray, We shall have some rain today.
4. The further the sight, the nearer the rain.
5. Clear moon, Frost soon.
6. When deer are in gray coat in October, expect a severe winter.
7. Much noise made by rats and mice indicates rain.
8. Anvil-shaped clouds are very likely to be followed by a gale of wind.
9. If rain falls during an east wind, it will continue a full day.
10. A light yellow sky at sunset presages wind.
A pale yellow sky at sunset presages rain.

PUBLICATIONS OF THE SIGNAL SERVICE, 1882-1884



UNITED STATES OF AMERICA:
WAR DEPARTMENT.

SIGNAL SERVICE NOTES NO. XX.

THUNDER-STORMS OF MAY, 1884.

PREPARED UNDER THE DIRECTION OF
BRIG. & BVT. MAJ. GEN'L W. B. HAZEN,
CHIEF SIGNAL OFFICER OF THE ARMY.

BY
H. A. HAZEN,
JUNIOR PROFESSOR, OFFICE OF THE CHIEF SIGNAL OFFICER.

BY AUTHORITY OF THE SECRETARY OF WAR.

WASHINGTON CITY:
SIGNAL OFFICE.
1885.

SIGNAL OFFICE, WAR DEPARTMENT.

SIGNAL SERVICE NOTES
No. XI.

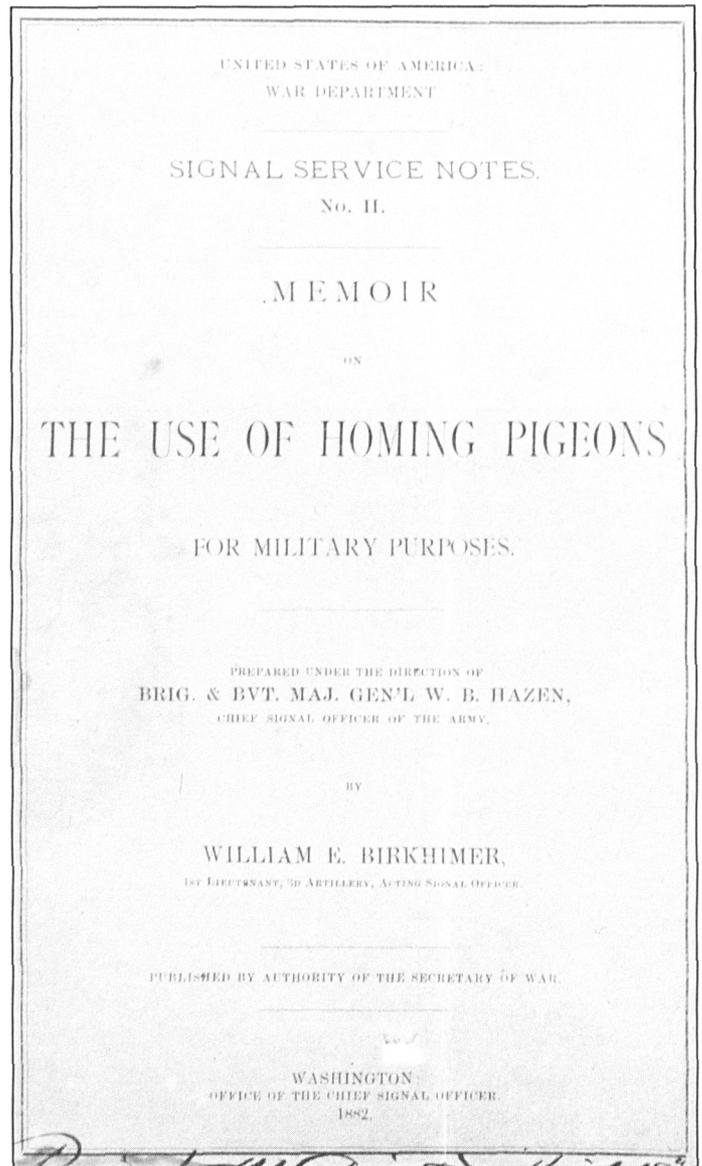
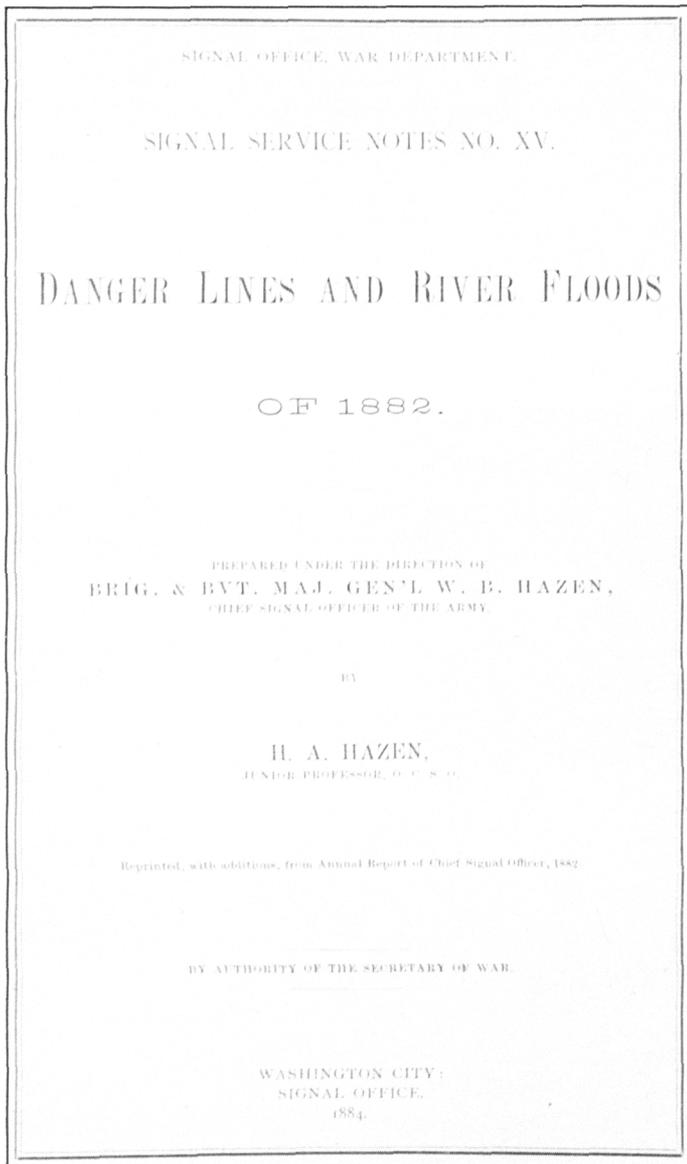
THE ELEMENTS OF THE HELIOGRAPH

PREPARED UNDER THE DIRECTION OF
BRIG. & BVT. MAJ. GEN'L W. B. HAZEN,
CHIEF SIGNAL OFFICER OF THE ARMY.

BY
FREDERICK K. WARD,
1st LIEUT. 1st U. S. CAVALRY, ACTING SIGNAL OFFICER.

BY AUTHORITY OF THE SECRETARY OF WAR.

WASHINGTON CITY:
SIGNAL OFFICE.
1883.



Also included in the document were rules of thumb for individual Signal Service stations. Listed below are a few examples:

Albany, NY – Storms set in with southerly winds, and are always preceded by falling barometer, and usually by falling temperatures, with nimbus or cumulo-stratus clouds.

Corsicana, TX – Approach of norther indicated by bank of clouds in north or northwest when the balance of sky is clear. Gentle or brisk east wind precedes rain. Southwest or west wind indicates the approach of clear, dry weather.

Indianola, TX – “Northers” are preceded by protracted southeast winds, rapid rise of barometer from four to six hours in advance of storm, high humidity, with cirrus clouds moving from the west.

North Platte, NB – All storms approach from the northwest without reference to direction in which wind may blow previously. Rain storms are preceded by north or northeast wind.

San Francisco, CA – Rain storms are preceded by falling barometer, low but rising temperature, and west wind. During the rainy season if wind veers to southeast rain follows.

Characteristics of Tornadoes

The author of this Signal Service Note, John P. Finley, described the results of his studies of tornadoes in the United States. Considerable climatological information was presented on tornado movement and times of occurrence. In addition, general weather conditions prior to tornado formation are described.

Finley described tornado appearances, and provides preparedness information on how to avoid tornadoes or to protect oneself from related injuries. The note was detailed and provided Signal Service forecasters with basic information on tornadoes.

The Aurora in its Relation to Meteorology

During the Signal Service years, meteorologists speculated on the importance of the Aurora to weather. The reasoning was that the Aurora was the result of atmospheric electricity, and like lightning, must occur with certain types of weather. This Signal Service Note attempted to evaluate the potential of Aurora occurrence to weather forecasting. Essentially no correlation was found.

Personal View
of

Professor Cleveland Abbe

Editor's Note – Cleveland Abbe was a highly respected civilian meteorologist who worked for the Signal Service, and later the Weather Bureau. Essentially, he was considered the expert on forecasting.

The Joint Resolution enacted by the Congress of the United States, February 2, 1870, and signed into law by President Grant on February 9, 1870, marks an important epoch in the history of meteorology in America. It was well known that weather systems moved from west to east, or from southwest to northeast across the United States. Previous investigators such as Redfield, Loomis, and Espy had shown the basis on which weather predictions could be safely made and Ferrel had unraveled the mechanics of the atmosphere. About this time the electromagnetic telegraph was being used to disseminate knowledge of the coming storms and weather. Professor Henry, on behalf of eminent meteorologists, had not only explained how the telegraph could be utilized for weather predictions, but had systematically done this for many years at the Smithsonian.

The Joint Resolution, provided for taking meteorological observations at the military stations in the interior of the continent, and at other points in the States and Territories of the United States, and for giving notice on the Northern Lakes and the seacoast by magnetic telegraph and marine signals of the approach and force of storms. In January 1872, and in compliance with the appropriations bill of 1871, reports relative to the stages of water in the rivers were added, and in the following spring, and again in 1873, the floods of the Lower Mississippi were pre-announced in general bulletins, so that from this time forward that branch of work became a regular part of the duties of the Signal Service.

The appropriation bill, approved June 10, 1872, provided: "For expenses of storm-signals announcing the probable approach and force of storms throughout the United States for the benefit of commerce and agriculture;" and again, in the same bill provided: "That the Secretary of War be, and hereby is, authorized and required to provide in the system of observations and reports in charge of the Chief Signal Officer for such stations, reports and signals as may be found necessary for the benefit of agriculture and commercial interests." Thus, in a few years, the Signal Office came to officially include every form of meteorological observations or prediction that could affect the interests of agriculture and of our commerce on the Great Lakes, the oceans, and the rivers.

The demands of the new agency required a trained work force familiar with observational, theoretical, and operational meteorology. To educate the officers,

meteorological experts from around the country provided training in the form of classes at local offices, as well as educational notes. Experts which were used included:

Professor Henry (Smithsonian Institute)
Dr. B.F. Craig (Army Medical Corps)
C.A. Schott (Coast Survey)
Admiral Thornton A. Jenkins (U.S. Navy)
Professor J.H.C. Coffin (Nautical Almanac)
Professor Loomis (Yale University)
Dr. Daniel Draper
Mr. T.B. Maury
Mr. Lapham

A major task for General Myer was to educate weather observers of the Signal Service. He therefore added a school of meteorology to his school for instruction in telegraphy and military signaling, located at Fort Whipple, or Arlington, near the City of Washington. This school continued during his lifetime; after his death the name was changed to Fort Myer; it was abolished as a school of the Signal Service by order of the Secretary of War in 1886. At first the instruction at this school embraced courses in military signaling, the meteorological text-books of Loomis and Buchan, the meteorological instructions relating to the special work of the Signal Office, the building and equipment of telegraph lines, and such other duties as officers and men were liable to be called upon to perform.

In the early 1880s, a more formal course of meteorological instruction was designed to supplement the more informal training started in 1870. The instruction began in 1881 when four lieutenants of the Signal Corps began a course of Deschanel's Physics and a wide range of meteorological literature; it was subsequently enlarged from time to time until, in 1885-86, a class of six officers attended an extensive course of lectures and instructions supplemented by monthly examinations on the following subjects, i.e., the theory of instruments, cartography, general meteorology, thermodynamics of the atmosphere (taught by Abbe); theoretical meteorology without mathematics (Ferrel); practical meteorology and weather predictions, topographic surveying and drawing (Dunwoody); electricity and laboratory manipulation (Mendenhall).

In 1886, the school of instruction for our observers in their duties was abolished, notwithstanding General Hazen's remonstrance, and its work was relegated to the sergeants at the respective stations, where it was consisted mainly in the study of Loomis' text-book and of the volume of meteorological instructions and the acquisitions of good habits as observers and telegraphers.

While attempting to build up a strictly military organization, General Myer had a clear appreciation of the uses that he could make of civilian employees. Having been intimately associated with Paine and Lapham, of Milwaukee, in securing the legislation that authorized the Weather Service, the Chief first secured Professor Lapham as his civilian assistant. After Professor Lapham had declined a permanent appointment, on account of his health, I was called to what I then supposed would be a

temporary engagement and in June, 1871, Professor T.B. Maury accepted a similar position; the electrician, or telegrapher, Mr. G.W. Maynard, was also a civilian appointee. It was all the more necessary to secure a few civilian employees in view of the fact that the officers of the Army, temporarily detailed to Signal Service duty, were liable at any time to be ordered back to their regiments. Up to the middle of 1872 the duty of weather predictions and storm warnings devolved upon the civilians; during the remaining years of General Myer's administration it was equally divided between them and the detailed officers, Lieutenants Craig, Dunwoody, Story, Kilbourne, and Greely. During the administration of General Hazen those who had become second lieutenants in the Army by promotion from the corps of observers in the Signal Service, and especially Lieutenants Powell and Glassford, also became "indications officers," while the special work of predicting tornadoes was assigned to Lieutenant Finley.

After the appointments of Upton, Waldo, Hazen, Russell, Sawyer, Marvin, and especially to Professor Ferrel on August 10, 1882, and Professor T.C. Mendenhall on January 1, 1885, it came to be recognized that there were multifarious fundamental labors appropriate to the civilian experts besides the making of weather predictions, which, as a purely empirical matter, had already been brought to a satisfactory degree of perfection. General Hazen's policy of introducing into both the military and the civilian ranks as high a grade of intellectual attainment as was practicable accomplished much for the scientific reputation of the Signal Service and enabled it to accomplish far more for meteorology than could otherwise have been done.

True science is never speculative; it employs hypotheses as suggesting points for inquiry, but it never adopts the hypotheses as though they were demonstrated propositions. There should be no mystery in our use of the word science; it means knowledge, not theory nor speculation, nor hypothesis, but hard facts, and the framework of laws to which they belong; the observed phenomena of meteorology and the well-established laws of physics are the two extremes of the science of meteorology between which we trace the connection of cause and effect; in so far as we can do this successfully, meteorology becomes an exact deductive science.

That relation between the Signal Service and the science of meteorology, which is of fundamental importance, consists in the character of the observations made at the stations. In reference to this branch of our subject, I need only to say that the whole time of the regular observers was given to the work of the Signal Service, and there was a multitude of duties to engross their attention. The fact that the Signal Service employed hundreds of men whose lives were concentrated upon the maintenance of a complete record of the weather demonstrates the thoroughness of its equipment for this work. It was indeed impracticable to maintain hourly observations, but for many years four simultaneous or telegraphic and three local time or climatic observations were made besides the records of the maximum and minimum thermometers and the continuous record of the wind.

With regard to the uniform character and general accuracy of these observations, there can be no doubt that the system of instructions and inspection, and especially the intercomparison of the telegraphic reports that attended the study of the tri-daily weather map, served to prevent and detect any appreciable variation from the desired standard of accuracy; very few instances are on record in which an observer's observations proved to be so unreliable that they had to be rejected. In 1891, about two-thirds of the observers had been over five years in the Service and about one-third over ten years.

With regard to the locations of the stations it must be acknowledged that they were not selected for climatic purposes, but almost wholly with a view to dynamic meteorology and the publication of storm warnings and weather predictions. The Service needed to know the pressure, temperature, and the rainfall approximately, but it needed to know the winds, and that too the strongest winds, quite accurately. The first great problem of dynamic meteorology is to know the local and the general motions of the air, and in fact, climatology may also be said to depend upon the same knowledge.

In order to bring about intimate and direct relations with the national business interests, General Myer requested the respective cities to organize committees which should feel themselves, in some sense, responsible to him as the representatives of popular interests and needs. From the chairman of each committee there was usually received an annual or semiannual report, together with many intermediate letters; the committees were kept duly apprised by our observers of the progress of the Service at Washington, and, on the other hand, it gave General Myer timely notice of the character of the work done by the local weather observer. The duties of these committees included both praise and criticism, and occasionally, some excellent suggestions were received from them; their very existence always demonstrated the desire of the Government to labor in the interests of the people.

I must stop a minute to call attention to that feature of the work of the Service which has enabled it to get up its daily weather maps with a celerity and regularity that have always been the wonder and admiration of those accustomed to ordinary commercial telegraphy. Notwithstanding the numerous telegraph wires that connect our principal cities, yet it ordinarily happens that individual dispatches must take their turn, and thereby suffer a delay that may amount to many hours. But General Myer saw plainly that this would never do for the work he had in mind; his experience during the war [Civil War] had accustomed him to attain the utmost possible dispatch, and he demanded this also in his new application of military signaling to the commercial needs of the country. It required much argument to induce the telegraph companies to accept the scheme that he proposed; they entered into it, at first, only on agreement that after a few months' trial it might be modified, and, in fact, such was the friction between the conflicting interests that on the 4th of March, 1871, all telegraphic dispatches were suddenly refused by the Western Union Telegraph Company, and for several days I made weather predictions based on such few reports as we could obtain from our stations through rival telegraph companies.

The same trouble occurred in the following year, but eventually General Myer's circuit system triumphed.

By this simple arrangement the observers deliver their short cipher dispatches to the respective telegraph observers at prearranged minutes; all the men on a specific line of wire, or "circuit," are at hand simultaneously, and any dispatch put on that circuit wire is received simultaneously by all the observers. As soon as any one dispatch of a few cipher words is telegraphed another succeeds it, and thus in a minute a number of stations have interchanged their reports so far as that circuit is concerned. The next minute another circuit, joining on to the preceding one, is opened, and its own, together with all the accumulated reports, are interchanged. In this manner it is found to require only from twenty minutes to a half hour to interchange reports between all the important telegraph centers of the United States as they converge toward Washington, so that in an hour after the observations are made the observers at all the larger cities begin the construction of weather charts similar to the standard chart that is published at Washington.

Cautionary Signals for Wind and Weather

The synopses and probabilities [forecasts] that were furnished to the daily press of the country reached the public eye after the lapse of considerable time, nor was it at all certain that they would in any way reach the mariners for whom the service was designed. It was, therefore, necessary to supplement these by a system of visible signals that could be hoisted immediately by telegraphic orders from Washington, and this system of cautionary storm-wind signals was instituted in the summer of 1871, as soon as it was demonstrated that our knowledge of the movements of the storms justified taking that step. The display of the square red flag with the black center, or the cautionary danger signal, mared a passage from the general weather probabilities to the definite special prediction of a specific velocity of wind within a specific time and a small region. The region was defined as within a radius of 100 miles, and the time limit was eight hours. Subsequently, a modification of the signal was introduced showing the general direction of the expected winds, and again, another modification showing whether the winds would be above or below a certain velocity.

A decided advance in our methods of communicating with the public was made early in General Hazen's

administration by the adoption of a special signal for the so-called "cold wave." In many localities also special signal devices began to be used by the people--flags and balls, steam whistles and bells, and in Ohio the so-called railroad weather signal had been devised. By means of a few flags, white, blue, and black, the probable local weather for the next day is indicated in every town and almost every telegraph and telephone station in the country, so that any one may know what to expect and prepare for.

River Floods and Their Predictions

Telegraphic reports of the condition of the rivers began to be received by the Signal Service January 1, 1872. This work was so natural and desirable and so easy an expansion of the work originally authorized that there could be no doubt of its propriety. At first it seemed sufficient to publish the reports of stages of water as received at the office, but soon some general indications of probable rising and falling water began to be added to the weather probabilities. The gauge readings, above which a stage of water was considered to be dangerous, as well as the times required for flood waves to descend along the channels of the rivers, as first adopted approximately by me, were revised in a report by General Greely in 1874.

Local Forecasts

One of the matters most clearly foreseen, and, in fact, often urged by me upon General Myer, was the propriety and the necessity of stationing experienced officers at such centers as Chicago, St. Louis, New Orleans, and San Francisco, for the purpose of making forecasts for those more remote sections of the country, as well as looking after the general interests of the people and the Service. A beginning of this kind was eventually made by establishing Lieutenant Woodruff at St. Paul and Lieutenants Maxfield and Finley at San Francisco. But the original argument was to the effect that at every city where the map was published daily a local forecaster ought to be able to do better or, at least, as well as the Central Office in Washington, and that on many accounts it was best for the Service to develop a large board of forecasters rather than to confine the work to a few military officers in Washington. The force of this argument was finally felt, and the preparations for the work of the local forecasters was already being made by the Signal Service when transferred [to the Department of Agriculture] in 1891.

Personal View
of
Isaac M. Cline

Editor's Note – Isaac M. Cline is most famous for his actions as Meteorologist in Charge of Galveston, Texas, during the Great Hurricane of 1900. However, Mr. Cline provided considerable information regarding his experiences in the Signal Service beginning in 1882. Excerpts from Isaac's book Storms, Floods and Sunshine are presented below.

Washington, D.C. was to me the most important place in the world. I arrived early on the morning of July 6, 1882, and got off the train at the depot where President James A. Garfield had been assassinated the previous year. The first thing I saw was the spot and marker where he had fallen and from which he was carried away to die a few days later.

Hotel accommodations were secured near the Office of the Chief Signal Office. I rested during the 6th, and as this was the first time I had ever been in a large city, I was afraid to wander out of sight of the hotel. Promptly on the morning of July 7th, I reported to the Chief Signal Officer for the physical examination. Three other young men reported at the same time, and we were accepted for instruction in the duties of weather observer. The four of us were taken in a two-horse spring wagon up through Georgetown, across the Potomac over the Georgetown bridge, and up through the ridges to Fort Myer.

Fort Myer was named for Brigadier General Albert J. Myer. He was graduated in medicine in 1851, was appointed Assistant Surgeon in the U.S. Army in 1854, and assigned to duty in Texas. His spare time was devoted to devising a system of military signalling by use of flags by day and torches at night. He was appointed to the command of the Signal Corps, U.S. Army, 1858 – 1860, and was named Chief Signal Officer in 1860. He organized the United States weather service as part of the Signal Corps. The first systematic simultaneous weather observations were collected under his direction by telegraph from 24 stations at 7:45 AM November 1, 1870.

First Sergeant Mahaney, a veteran of the War Between the States and a fine man, took charge of us on our arrival at Fort Myer. We were fitted out with uniforms and assigned to our rooms in the barracks. Each room had four single beds and thus accommodated four men. There were 30 men in our class but 5 or 6 of the preceding class were retained to help get us started.

Military training in infantry and cavalry tactics formed part of our instruction. The Signal Corps was a cavalry organization and we had lessons in horsemanship. When we went on cavalry drill, we had to groom, bridle, saddle, and care for our mounts and return them clean and nice

to their stalls. Some of the men from large cities had never ridden horseback; these men would become badly frightened when we raced around the drill grounds. Some of them would lean forward and put their arms around the necks of the horses, incurring the wrath of Sergeant Mahaney.

Military discipline was such as would impress us with our duties. Our equipment consisted of carbines and cavalry sabres, which we were required to keep in immaculate condition. Inspection was held regularly, and if our buttons were not polished and our shoes shined, including the heels, or if a speck of rust or dirt was found on our equipment, our week-end leave was cancelled.

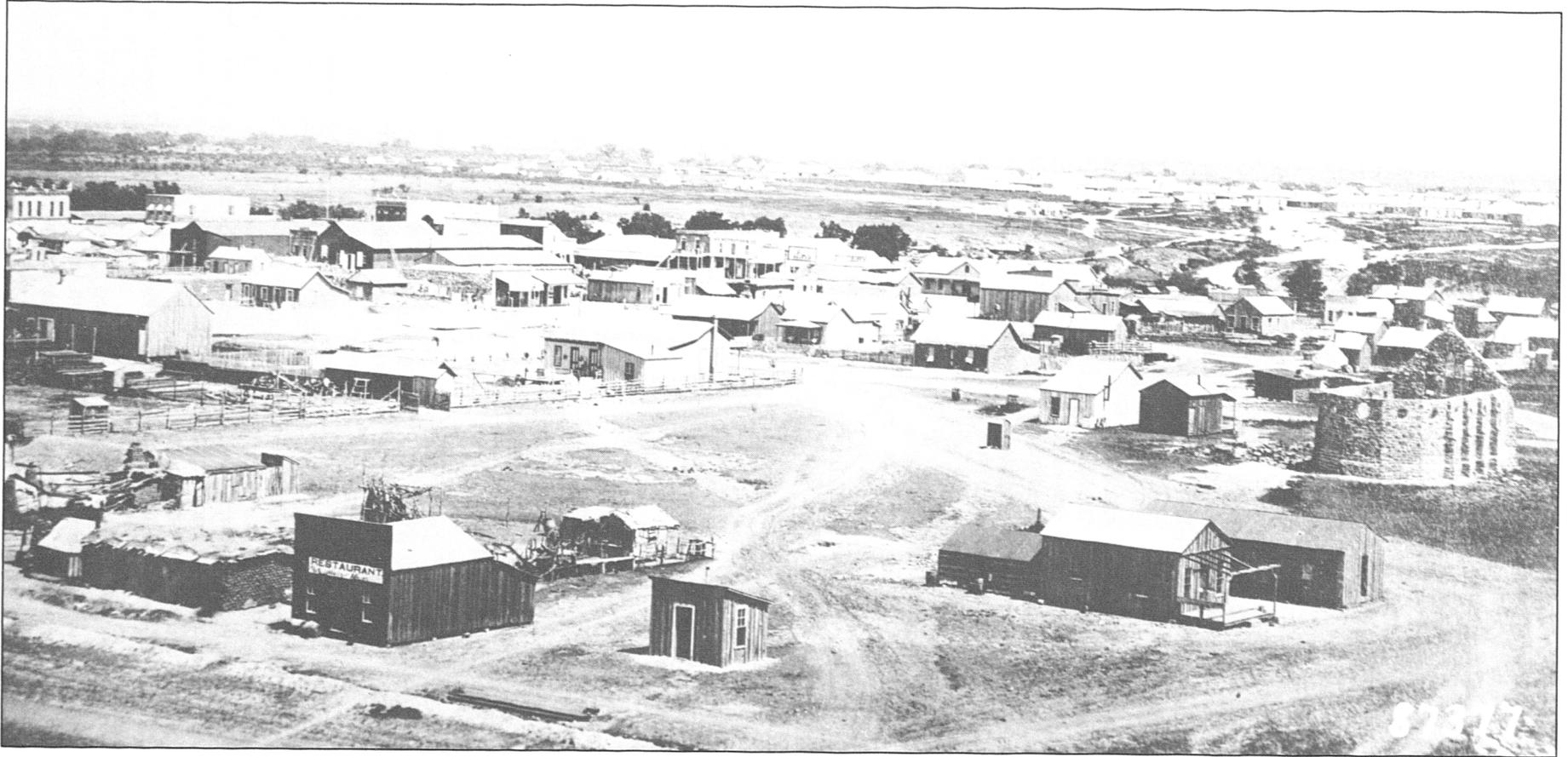
Instruction was given in military signaling with flags, torches and the heliograph, and also in the mechanism and operation of the magnetic telegraph and the telephone. We overhauled telegraph apparatus to learn what caused the "click," and strung wires over which that click would be heard thousands of miles distant.

Subjects bearing on meteorology, the taking and recording of meteorological observations and the uses to which they could be applied called for study every minute of our time. Good progress in studies meant early assignment as assistant observer on some station, and this was our immediate objective. The instruction was crammed into us so rapidly that many could not keep up and make the required grades. Such distinguished physicists and mathematics as William Ferrel, T.C. Mendenhal, and Cleveland Abbe were among our instructors.

Stations for observing the weather were being opened in different parts of the country. Assistants who had made good records on stations were selected to take charge of the new stations. To meet the demand for assistants at stations, a rigid examination was held. The 16 passing with the highest grades were to be assigned to stations and the others were to remain for further instruction. I passed 16th and was notified that I would be assigned to the Little Rock, Arkansas, weather station where I would have an opportunity to study the influence of weather conditions on the development and movements of the Rocky Mountain locust.

I was 21 years old when I was assigned to Little Rock. Orders were received, and the government furnished railroad transportation, as well as an allowance for en-route meals. I had no sleeping accommodations so an army blanket was swung between two seats to make a hammock. The salary and allowances for the assignment amounted to \$60 a month. Medical services were to be paid by the government when no Army Surgeon was available. In addition, there was an allowance for clothing, which amounted to about \$120 a year.

The weather observation station at Little Rock was in charge of Sergeant William U. Simmons. The office occupied quarters in the Logan H. Roots Bank Building. A room in the same building, near the office, was available for my use. This proved to be advantageous, as no time was lost going to and from the office. Observations were taken frequently in those days; the first at 5 AM and the latest at 11 PM. My detail opened and closed the



San Angelo, Texas, in the foreground and Fort Concho in the background (1886). Population of San Angelo in 1886 was approximately 50 to 100 people. By 1925, the population of San Angelo had increased to near 14,000.



Quarters for enlisted men at Fort Concho, Texas (1871).



Quarters for officers and operational buildings at Fort Concho, Texas (1870).

work for the day. The official in charge took the observations during the day. Special weather reports were collected during the crop growing season for agricultural interests. Railroad Station Agents telegraphed reports of temperature and rainfall at 5 PM daily. A telegraph instrument in the weather office was connected with the railroad wires and I took the reports as they came in and prepared bulletins for the commercial interests.

The Medical Department of the University of Arkansas was located at Little Rock just three blocks from the office of the weather service. It offered a three-year course and was rated as one of the best medical schools in the country at that time. In my opinion, the field of medical meteorology was a field in which there had been little research; consequently, I enrolled in the medical course and received the diploma making me an M.D. in 1885.

Subsequently, orders were received directing me to proceed to Fort Concho, Texas [near San Angelo], to take charge of the station and complete the transfer of remnants of the military telegraph lines. The assignment increased my pay to \$75 a month. Transportation was by railroad from Little Rock to Abilene, and thence by Rocky Mountain Stage Coach the 100 miles from Abilene to Fort Concho. I looked over the latest Rand McNally Railroad Map and there was no Abilene, Texas, to be found. Consultation with the railroad ticket agent revealed that Abilene was a new town which had grown up like a mushroom over night. It was the center of a large and rich cattle industry.

Trains did not run on regular schedules in those days, especially over newly built roadways. Heavy rains had fallen over western Texas, and many of the bridges over the small streams had washed out. We were frequently delayed until repair trains could come and rebuild the bridges, or replace a washed-out stretch of track. Abilene came in sight late in the afternoon, and the first thing I noticed was a large congregation of cowboys with their high boots, large spurs, big hats, and with pistols in holsters hanging from their belts. The stagecoach was not due to leave until the following morning, and the thought of remaining in Abilene all night with such a fierce looking crowd of cowboys was anything but pleasant. I could not get a room in the hotel, but the railroad agent, to whom I carried a letter of introduction, got me a room for the night over a nearby saloon. When I reached the saloon, a porter was washing blood off the sidewalk as a result of four cowboys being killed in a gun fight. My head did not rest easy that night; the tramp of cowboys and the shooting of pistols made it a night of suspense.

Morning finally came, bright with cheerful sunshine which portended a pleasant journey over the plains. The stagecoach, four in hand, pulled up at the depot. Four passengers were waiting, all bound for a through trip.

We were scheduled to reach Fort Concho [San Angelo] late that afternoon, but a stream which under ordinary conditions could be forded by the stagecoach, was swollen by a flood when we reached it, and we could not cross. The driver informed us that we would have to spend the night there, and wait for the stagecoach which would come in from San Angelo the next morning. Then we, with our luggage, would be ferried across the stream in a skiff kept for such emergencies. We had eaten supper at the stage station about 10 miles back, the nearest habitation, but there were no accommodations for passengers at the river side.

One of the four passengers was a woman, and we let her sleep in the coach. The rest of us slept on the ground. About midnight I was frightened by a rattlesnake to the point that I ran and jumped on top of the stagecoach and scared the woman into hysterics. She thought the Indians, who appeared in that neighborhood sometimes, had attacked us. I remained on the coach until morning.

Soon after daybreak, the stagecoach from San Angelo appeared on the opposite side of the stream. We were ferried across in the skiff and were soon on our way to Fort Concho.

Fort Concho, Texas, was on the fringe of a region marked on the maps of that time as the "Great American Desert." The headquarters for that section of the United States Military Telegraph, was located at Fort Concho. Telegraph lines had connected the military posts of that region and formed part of the strategy for combatting the Indians. In addition to my duties as weather observer, I had to complete the transfer of the telegraph equipment to the telephone company or to United States military posts on the Mexican border. A cottage located near the Fort Concho reservation was occupied as the weather observation station and sleeping quarters. I took my meals at the hotel in the new town of San Angelo. Weather observations which were telegraphed three times daily to Washington, D.C., were filed with the telegraph office in San Angelo.

I subsequently was transferred from Fort Concho to Abilene, and in 1889, to Galveston, Texas. On July 1, 1891, weather services of the Signal Service were transferred to the Department of Agriculture and the name of the new agency became the Weather Bureau.

Personal View

of

H. B. Boyer

Fort Myer! What a flood of memories that name brings! Memories gay and grave; painful and pleasant. But I can truthfully say my memories of the place are mostly gay and pleasant.

On a hill overlooking the Potomac River and Washington, Fort Myer was laid out in the regular military post style of a quadrangle with the officers' quarters facing the Potomac on the east side, the hospital, quartermaster's and commissary buildings on the north side, barracks and mess-hall on the west side, and guard-house and observatory on the south side and near the wall surrounding beautiful Arlington - the old Lee Estate - the Nation's "Bivouac of the dead." Fort Myer as I knew it is indelibly fixed in my memory. Many years after I embraced the opportunity to revisit the place. It was the occasion on which the Wright Brothers were to give their first airplane built for the Government its final test of a flight from Fort Myer to Alexandria and return, and it is interesting to note that the Wrights refused to make the flight and obtained an extension of time for the reason that the wind was too strong - ten miles an hour! This visit to Fort Myer greatly disappointed me, for the post had changed so much that I was wholly unable to recognize any feature of it.

[Upon first arriving in Washington, D.C] Missing the last trip of the ambulance I negotiated the distance from the end of the car line in Georgetown to the Fort on foot, crossing the Aqueduct bridge and trudging up the long road to the post carrying a heavy "grip" and a heavier heart, for as this was my first separation from home and all that word means nostalgia had already attacked me. Nor was my dark outlook on life materially brightened by the howl that greeted me from the barracks when the men caught sight of me. With hilarious yells of "Fre-s-h fish! Fr-e-s-h fish!" they surrounded and accompanied me to Top Sergeant Michael Mahaney, a product of the old military school of non-coms. to whom I reported.

I shall gloss over the "settling down" process which, in my case I am sure, was rendered less difficult by reason of my being the "kid" or youngest boy at the Fort at that time. In the adjustment that followed I was kept quite busy for several days drawing my allotment of clothing, uniforms, bedding, blankets, etc., from the quartermaster, and in drilling in the awkward squad. I shall always remember that I arrived immediately before "retreat" (sunset) and shortly thereafter the men were marched to the mess-hall in column of twos. My long walk had given me an exceptional appetite, notwithstanding my homesickness and dejection, and I viewed the coming repast with pleasurable anticipation. On a long bare table I found a cup of black coffee, a piece of bread, and a plate containing five prunes! Yes, I counted them; five - no more, no less. And on timid and anxious inquiry I learned that a second helping was not permissible. That

while I would find no mention made of such a procedure in either Upton's Manual or Army Regulations, it was taboo in polite Army circles, and that Truman, the chef, would justly feel horrified and hurt at such a display of vulgarity! The world, indeed, looked dark, dank and dismal to me.

On the death of Gen. A. J. Myer, which occurred August 24, 1880, a new policy was inaugurated under the new Chief Signal Officer, General W. B. Hazen. General Hazen, recognizing that the meteorological work of the Corps demanded men of higher educational attainments began reaching out into high schools, universities, and colleges. The glittering bait was commissions. In view of the feeling against the army in the South at that time the number of recruits obtained from southern universities and colleges was remarkable. In parentheses I will state that of the seventy-one who were at Fort Myer with me only two obtained commissions.

The parting of the ways came on June 30, 1891, and the meteorological work of the Signal Corps was taken over by the Weather Bureau, Department of Agriculture, on July 1. With comparatively few exceptions, the personnel of the Signal Corps elected to go out into civil life. The Army, of course, protested vigorously, and it is rather amusing, now, to note that the keynote of the protest was that only Army rules and regulations could hold together the far-flung stations, and make the men efficient and amenable to discipline. This was found not to be true because under civil administration, all the laxness that undoubtedly existed under military administration abruptly ceased. I cannot, and will not attempt to explain this sudden transition to a higher moral plane as regards the work of the personnel, but I am free to state that this uplift took place immediately, and the work of the Bureau carried on with greater efficiency, conscientiousness, and enthusiasm.

In my telegraph test I had a rather amusing experience with the Signal Service sergeant in charge of the telegraph division.

For some reason, which I do not recall, I failed to take the test with my class and was later ordered to appear at the Signal Office for an individual examination.

On reporting to the sergeant, he placed me at a table containing the usual telegraph instruments which he connected, locally, with a set at the far side of the room.

"I'll first test you out in receiving," he said. "And remember, I'm in Washington and you, theoretically, are in Baltimore."

Picking up a newspaper, he proceeded to his table, placed his watch before him, and began to send, gradually increasing the speed from about fifteen words per minute. Without break I smoothly followed the clicking instrument to twenty words per minute, twenty-three, twenty-five,

and then hurriedly jumping up, I called, "Hey sergeant!" Robinson continued sending, apparently not having heard me.

"Say, sergeant, you're going to fast," I called in a louder tone. Robinson sat unmoved and unhearing, the sounder clattering on with increasing speed.

Hastily running across the room I tapped Robinson on the arm and said, "Sergeant, slow down; you're going too fast for me."

Dropping the key and whirling around, Robinson gave me a long, steady look and grunted, "When did you arrive? Darned fast trip that!"

"Fast trip?" I stammered, "I don't quite understand what you mean, sergeant."

"I mean just what I said," he came back at me with a rasp in his voice. "You were supposed to be in Baltimore weren't you? If you had actually been there, under the same circumstances," and here his tone took on fine sarcasm, "you would have dropped your key, grabbed your hat and coat, and lit out for Washington, I suppose. Fine operators they're turning out up at Fort Myer! Do you understand me now? If so we'll try it again," this in a kindlier voice.

I did understand; sheepishly and in all humility I returned to my table.

Bed bugs were a problem at Fort Myer. They kept us scratching for a living throughout the summer of 1881. There was no surcease from their savage attacks until winter drove them into the innermost cracks, crevices and interstices of the barracks building where they hibernated, gained strength, and multiplied for the next season's onslaught.

Entrenched in the walls of the barracks these entomological pests resisted every effort to dislodge them, and at last we capitulated, and retreated, with our bedding, to the porch where we slept in comparative comfort.

Before surrendering, however, we put up a stiff fight. Incessant stalking, sniping, and use of gas bombs in the form of kerosene, failed to relieve the situation, and we had about given up in despair when one of the several old Army veterans suggested throwing our blankets over the cots and sleeping on them, the idea being that the insects would find great difficulty in crawling over the blankets, the fuzzy wool offering such obstacles to their activities that they would become discouraged and disgusted and abandon the siege.

The suggestion met with favor, and was adopted. But we had met with defeat so many times that our acceptance of

the scheme was not optimistically enthusiastic. Our assailants had caught us in the rear and on the flank so often that we had reached the stage of doubt as to our ability to meet the unexpected and unforeseen attacks of our enemy which gave every evidence of thorough organization and control.

But what a relief – the first night! The second night we began to twist, and squirm, and scratch, punctuating the darkness with exclamations more or less explosive and descriptive in character until finally one of the group yelled, "Boys, it's of no use. The damned things are dropping on me from the ceiling!" and grabbing his bedding he made for the porch followed by a scrambling line of boys driven to desperation.

One of my assignments was at the New Orleans Signal Service office, and I must confess that the assignment caused me no little alarm. In view of the fact that although four years had elapsed since the terrible yellow-fever epidemic of 1878 had swept the lower Mississippi Valley, it was still the topic of conversation, and there was an epidemic of the disease then at Pensacola. On the way to New Orleans our train stopped at Pensacola Junction where I saw men patrolling the station platform with shot guns on their shoulders, and was informed that it meant a "shot-gun quarantine" against Pensacola. Naturally, this incident failed to cheer my faltering and depressed spirits.

I was stationed at New Orleans about three years, including six months in charge of the station at Port Eads where I had the pleasure of meeting James B. Eads, the great engineer who constructed the St. Louis bridge and the Mississippi jetties. The port Eads station was discontinued under me, and while awaiting instructions, I received a note from a friend who informed me that orders would soon be issued for me to proceed to Key West, Florida.

I was nearly panic stricken. It should be understood that at that time Key West was commonly looked upon as being a hot-bed of yellow fever which, I was told, was endemic at that place and that to the unacclimated, death was certain.

On learning of my probable assignment, my friends gathered around me with lugubrious and sympathetic faces, and recounted the most horrifying tales of the great 1878 epidemic – stories that congealed my blood, and at night, made me spring up in bed and cry out in terror with nightmare. And they denounced in unstinted terms a Government that would heartlessly and cold-bloodedly and brutally send its servants to certain death!

In consternation I hastily composed a long telegram to my father in Washington, D.C. Through the influence of Senator Don Cameron of Pennsylvania, my orders were revoked and I remained at New Orleans.

Personal View

of

D. G. Benson

My early experiences in the Signal Service were so strongly impressed upon my mind that I can readily recall as if it were yesterday in outline of the offices on both sides of G street [Signal Service weather office in Washington, D.C.], the divisions and rooms, the faces and names of scores from General Greeley down to the recent and awkward recruit. Some of these are gone and others are among the leaders of today. It was the military

spirit that impressed one, to which one became attached, and it is this spirit of the old Signal Corps that is the backbone of the enlarged Weather Bureau service of today.

What would a young assistant observer of today think of being ordered to take charge of a station like Savannah for six months after having been on station for seven weeks? This fell to my lot and my assistant had the extended experience of three weeks less than myself. This happened as a result of the epidemic of yellow fever at Jacksonville. It was in mid-summer and no relief was sent until after freezing conditions in December. In the preceding epidemic, both men stationed at Savannah died at the post of duty.

Personal View

of

Henry Calver

During 1870, a number of men were enlisted for the weather bureau and were placed in training at Fort Whipple [Fort Myer]. These men were instructed in meteorology, telegraphy and also in the Manual of Signals of the U. S. Army. The first man thus enlisted as Observer-Sergeant was George C. Schaeffer, of Washington, D. C.

Some forty odd observation stations were established in the principal cities of the country during the latter part of 1870, each station being in charge of an Observer-Sergeant, and the organization was sufficiently complete so that on the 1st of January, 1871, regular reports of weather observations taken synchronously at 7.35 A.M., 4.35 P.M. and 11.35 P.M. (Washington time) were telegraphically reported, in code, to the Washington office. These coded telegrams contained words indicating

the readings of the barometer, indicating air pressure, the reading of wet and dry bulb thermometers, indicating temperature and humidity of the atmosphere, the condition of the weather, as fair, cloudy, rainy, etc., the direction and velocity of the wind, and the amount of rainfall during the preceding twenty-four hours. These code telegrams, received at the Signal Office, were translated and plotted on blank maps of the United States, and from the data thus furnished the weather reports and predictions were prepared.

I enlisted in the Signal Service on the 1st of December 1870, without taking the course of study at Fort Whipple, and immediately was assigned to duty in the Office of the Chief Signal Officer, as an assistant to a Lieutenant who had then taken up the study of meteorology, and later I worked as assistant to Professors Abbe and Maury. After I had worked for some months on the weather maps, it occurred to me that, in addition to the daily reports to the press, weekly and monthly summaries of the weather would be of interest, and I submitted a proposition of this sort to General Myer. In reply to my suggestions to Gen. Myer I received a letter as follows:

WAR DEPARTMENT
Office of the Chief Signal Officer
DIVISION OF TELEGRAMS AND REPORTS FOR
THE BENEFIT OF COMMERCE

Washington, D. C., Aug. 21st, 1872

Sergt. Henry Calver,
Observer Signal Service, U.S.A.
Office of the Chief Signal Officer,
Washington, D. C.

Sergeant:

I am directed to acknowledge the receipt of your communication of this date, and to convey to you the thanks of the Chief Signal Officer for this evidence of your zeal in the Service.

He approved the form of summary you suggest, and desires that you will prepare one for the current week for publication in the weekly papers, within easy reach of this City by mail, provided this labor will not interfere with your regular duties.

All papers must be submitted to the Chief Signal Officer for approval before leaving the Office.

Very Respectfully,

H. W. Howgate,
2d Lt. and Bvt. Capt. U.S.A.
A.S.O. and Asst.

In compliance with the order thus given I immediately began to write, under the title of "The Weekly Weather Chronicle", weekly summaries of the weather, copies of which were forwarded to the Sergeants in charge of the principal observation stations to be distributed to the press, and I continued the preparation of these weekly summaries for several years, with some interruptions for tornado work.

Also about this time I assisted Professor Maury in preparing monthly summaries, and these monthly summaries are, I believe, still published by the Weather Bureau under the title of "The Monthly Weather Review", first used by Professor Maury.

In connection with the general weather reports, some attention was given to special reports on tornadoes. In 1873 a very destructive tornado passed through portions of Iowa and Sergeant James McIntosh was detailed to make a special investigation and report on the same, which he did, his report having been published in the Report of the Chief Signal Officer for that year.

On March 20, 1875, remarkable tornadoes, originating in the eastern border of Alabama, passed over the States of Georgia and South Carolina, and I was ordered to visit the scenes of these tornadoes and make an investigation and report, which I did; my illustrated report having been published in the Report of the Chief Signal Officer for 1875.

Also in June, 1877, a very destructive tornado wiped out a larger part of the town of Mount Carmel, Illinois., and I was directed to make a special investigation and report of this tornado, which I did; my report having been published in the Report of the Chief Signal Officer for the year 1877.

This Mount Carmel tornado report was the last work which I did in the Signal Office, as about the time I had completed my report I received an appointment in the Patent Office, and in view of which I obtained my discharge from the Signal Service. My meteorological work, above outlined, had been very interesting and I was reluctant to drop it, but the pay was insufficient and the prospect for the future rather unpromising, while the Patent Office appointment, together with a regular law course which I took while serving as Assistant Examiner, enabled me to fit myself for the profession of a patent lawyer when I resigned from the Patent Office, which I did in 1883, and in which profession I have been fairly successful. My interest in the weather reports has, however, always continued, and I read the daily weather maps with regularity when they are accessible.

Personal View
of
Ford A. Carpenter

The military service of today [1922] and that of 30 years ago bear no resemblance to each other in the matter of distinction between officers and men. A generation ago, the Prussian dictum "The officers do the thinking, the enlisted men do the work" was in full force. Bearing this in mind one can readily see the logical working out of a unique institution such as the army weather service [Signal Service] with scattered enlisted individuals throughout the country officered by a handful of second lieutenants.

Signal Service Inspectors

At a seacoast telegraph office Private Gower, a college man, was entertaining a summer visitor in his office one afternoon. The office was tastefully decorated with the usual equipment and a calendar or two hung on the walls. The later violated the Sacred Instructions which permitted no unframed pictures. Without warning a young man [Signal Service inspector] bustled in; glaring about the little room, utterly oblivious to the fair visitor, this officer (as he proved to be) strode up to the walls and began tearing down the calendars and stamping on them. The girl fled to the weather man for protection. "That's alright, don't be worried" soothingly said Private Gower "he's harmless, - you see he's just escaped from the post hospital for the insane!"

A particularly inconsiderate inspector was checking over the property for which a Private was responsible; a pair of scissors was missing. He had seven pairs, but he could only dig up six. The Inspector was insistent; the man searched drawer after drawer. His wife had accidentally dropped a pair of manicure scissors in the drawer and a thought flashed across the distressed man's brain. Seizing the curved blades with thick blotting paper, he turned his back on the inspector and straightened them out. Handing them to the inspector he blandly inquired "Now what do you suppose such a pair of scissors could ever be used for?" Appealing to the superhuman intelligence he immediately rose to the occasion by replying "Them were once used in repairing barometer cisterns; they held the linen threads while the buckskin bag was being replaced, but they are out of date now, - I'll destroy them."

One particular inspector was thrown in jail in his desire to humiliate Private Burton. On the Pacific Coast, the morning observation had to be taken at 4 AM. This inspector hurried over to the weather office before the hour, stealthily climbed on to the roof and there Private Burton found him. The inspector was in clothing. It was

dark; there was no previous knowledge that an inspection was to take place. Private Burton had always suspected that sooner or later he was going to find a robber on the roof, so he collared the fellow notwithstanding his protestations dragged him down stairs and turned him over to the town marshall. He filed his telegram, leisurely ate his breakfast, and at 10 AM called on his friend the marshall to appear against this suspicious character. Needless to say, the inspector never again tried to "surprise" a weather man early in the morning.

Importance of Signal Service Offices to the news media

Owing to the isolated character of the weather man's work it often happened that undue publicity attached to him. In some places he was as important as the postmaster. Always good material for "copy" the newspaper boys always worked the weather office for stories.

It was during the great storm of '88; all wires were down, there was a dearth for news and the ambitious 8 page paper of a western town had to be filled. Frantically the editor dispatched two of his men to the weather office. "the old man wants you to give him an interview - all you can give." The opportunity of a lifetime thus appeared, the weather man could not believe his ears, "do you mean to say that I can have all the space I want?" "Sure - fire away, - we'll give you the whole front page of the Patagonian." The next morning the staid and sleepy residents of Harborland were astounded, for the entire front page was devoted to weather; weather of past years, weather on Mount Washington, weather forecasting, weather here and hereafter.

The Rain-Maker's Revenge

On the treeless levels in Wyoming - then a territory - a rainmaker appeared. He "contracted" with the ranchers to "make" so many inches of rain for so many thousand dollars an inch. He erected mysterious funnels projecting out of dilapidated tents. All this aroused the righteous indignation of the old Signal Sergeant. He rushed into print, filled the little cattle county paper with outbursts against the rainmaker and his promise. The rainmaker said nothing but waited for the long promised rain. The sergeant became as abusive as the paper would print. This was too much for the straight-shooting cowboys. They practiced gunplay on the sacred Signal Service's whirling anemometer cups, shooting them up as fast as new instruments were replaced by the frightened sergeant. They shot his rain gauge full of holes, and as a last indignity, they caught the sergeant one night and hung him to a big brass hook in his own office by the slack of his trousers. And then, against all official forecasts, the first rain in six months came down in torrents!

Personal View
of
Norman B. Conger

Do you know that one of the first things that came to my mind was the different settings of the weather office of the days of 1878 and of those of the present time [1922].

The furniture consisted of four chairs, a small desk with a cubbyhole side piece big enough to keep in the daily journal, the book of letters sent and letters received, it was only a single desk; then there was a small table on which the single register stood.

There was matting on the floor. There was a partition half way up the height of the room dividing the main room into a narrow room in which was placed the printing press and type cases. Then off the main room was a little closet in which was a wash stand and pail of water, and in this closet was piled the coal for use in the base burner in the office. We climbed up a steep ladder through a small scuttle hole to the roof where there was an instrument shelter big enough to allow a man to walk into and take his observation; the anemometer on a solid standard, and the wind vane with the shaft extending into the office room below where a tell-tale vane was located to know what the wind direction was. That is a description of the first office I stepped into as a regular observer, (Private Signal Corps, U.S.A.) and began my work.

When you look at the six fine rooms I have now [1922] with fine office furniture, rugs on the floor and all things neat and tidy, you just stop and wonder what the boys of those days would think of us with such luxuries as we have now.

There was the observer in charge, and one assistant, and the printer on the station. I was expected to take the 6:36 a.m. observation and stay on until after the sunset observation. On Saturday nights, I remained until after "Goodnight" after the 10:36 p.m. observation was taken and filed. Then we had about 40 substations for storm warning display, and when we got an order, we made forty copies of it and filed them at the telegraph office. When replies were received from the 40 substations, we telegraphed the Central Office [Washington, D.C.] with a message something like this, "Storm warnings up received at 1:10 a.m." After the Central Office was notified, we could go to bed, but it was mostly about 4:30 a.m. when

the last reply got in and you had to be on the job again at 6:00 a.m.

This was quite the regular thing during the season of navigation, and we just went along and did the work required, because we were soldiers, and to obey orders was the first to consider and sleep came later. How would our men of today like such conditions?

After taking the 6:36 a.m. observation you came back and took the 7 a.m., then got your breakfast, and went over to the telegraph office, and got the [telegraph] sheets and began to make the tissue bulletins, the words then were arbitrary, and no translation at sight. I made 18 of those blooming things and then acted as messenger boy and carried them along the docks and to the produce and commission men, and to some of the more important places in the business portion of the town. Things have changed greatly, and a great deal more work is accomplished now, with comparatively less assistance.

How would the younger man of today consider such daily work, and get away with it. Maybe just as we did, and maybe not.

This reminds me of our dear old Hobbs, of Northwest fame who was ordered from Fort Custer to Williston to open the station there. Under contract was a small office building with two small rooms in it. It was not finished when Hobbs arrived and he was so anxious to get to work, that he receipted for the building without knowing much about what it was. It was in the late fall or early winter as I remember it; and all that he had with him were some blankets. He was married and had a family; and they were not with him, so he intended to occupy the building as sleeping quarters.

He got his instruments installed and then made up his bunk in the little back room. There was a base burner in the front room, with poor coal to burn it. It was a bitter cold night and snowing, and the poor lad was covered with snow that blew through the windows and cracks in the building. Did you ever hear him doing any kicking to the Central Office. Not a bit, he took his little medicine, and did the best he could with it, but never a whimper came from him, That was the pure grit of the boys of the early days. I am mighty proud of the fact that I was associated with such men in those days that took what was given them and made their way to the posts assigned to them and got there. Some mighty good reading would be the many ways they used to get through and still live and have something to eat.

Personal View

of

Henry J. Cox

After graduating from Harvard College in June, 1884, I enlisted in the Signal Service at Washington the first of the following August. I was rather surprised in having to under go a critical physical examination, even to the noting of a little mole on my back. I found this precaution was taken so ththat I could be more readily identified should I desert from the Corps.

I successfully passed the ordeal and was routed for Ft. Myer in the afternoon of that day in a government ambulance, drawn by two mules, the first government mules to come under my observation. The Fort in those days was not imposing and its mediocrity in strong contrast with the pretentious post of the present day.

Upon arrival at headquarters, and just before disembarking, I heard a faint call from a distance, and this call, unintelligible to me, was repeated two or three times. I asked the driver what it was and he replied that the boys over on the barracks veranda were calling "Fresh Fish".

"And what does that mean", I asked.

He replied, "That means you. You are the fresh fish. So are termed all recruits who come here."

Such was my introduction to Fort Myer, often called by connoiseurs who have passed through its portals, making both debut and exit, "The Signal Service Training School".

My experience at the Fort, with its rigid discipline and fixed hours for everything from reveille until taps, was in strong contrast with my easy-going life at Harvard during the previous four years.

My experiences at the Fort were much the same, doubtless, as those of others of the boys in the old Signal Corps. The chief burden of the fellows in my class was the super abundance of second Lieutenants present at the time who were taking the course prescribed for officers. We had to help them out with their military signalling, in addition to doing our own, and this help was not always confined to merely waving flags and swinging torches, but sometimes included reading the messages from the opposing stations.

Two of my experiences in signalling with officers come strongly to mind.

In one of these Kimball and I were the poor privates accompanying the 2nd Loot (Lieutenant). We drove off one morning late in the fall of 1884 in an ambulance to the designated point, Munsons, Va. We were to be absent merely for the day and were to signal to another party located at the Soldiers Home in Washington. The ambulance did not remain after taking us to Munsons, but

returned to the Fort, with the understanding that it would come back at 10 p.m. However, after we got through signalling, the ambulance was not at hand and it did not show up finally until 2 or 3 o'clock the following morning. It seems that the sergeant in charge of the stables had forgotten about the signalling party being out, and it was not until after the wife of the Loot in charge of our party, missing her husband, stirred things up, that the ambulance was sent on its way to out rescue.

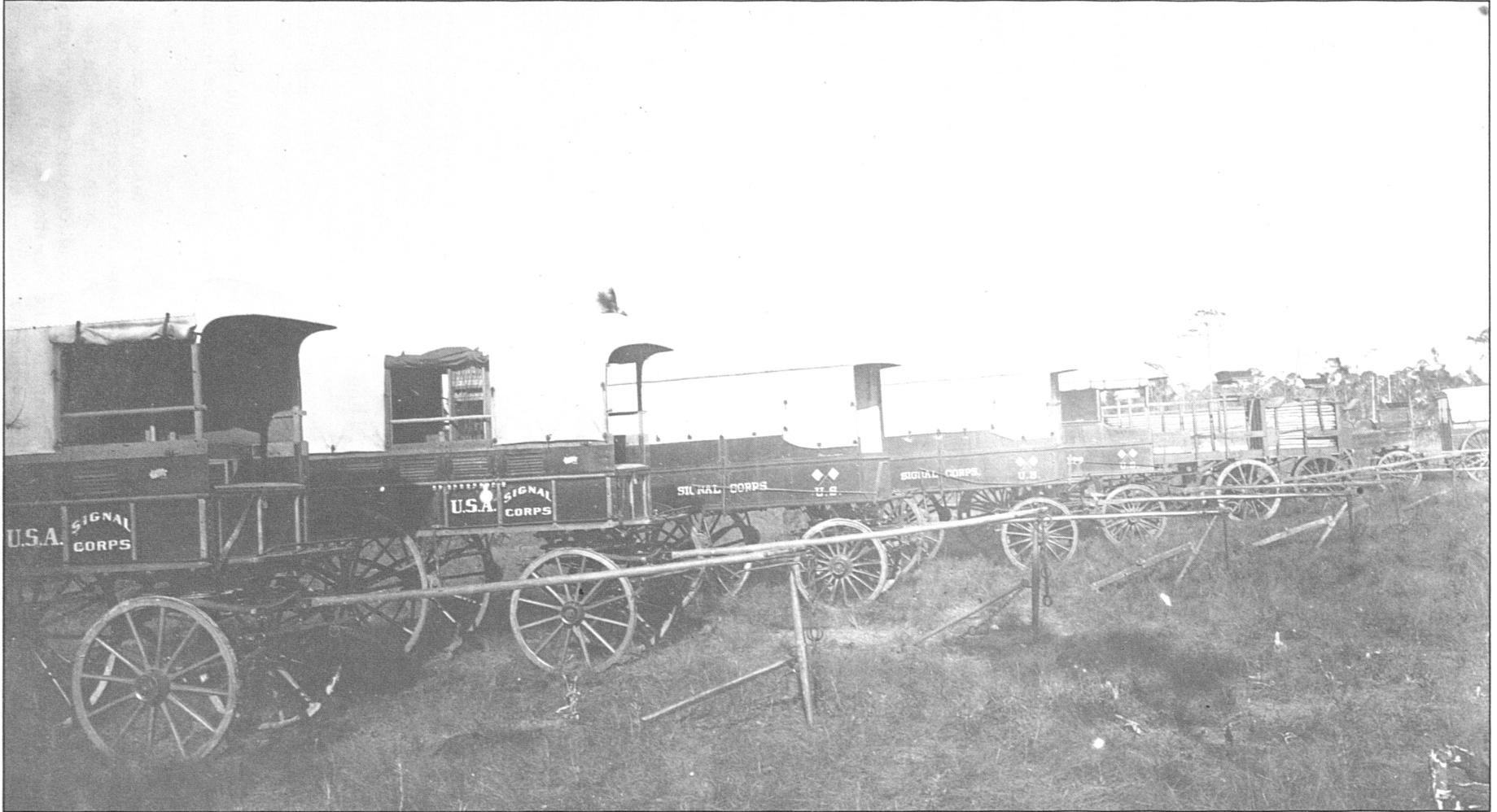
Our return journey, however, was not without mishap. In crossing a wooden bridge over a small stream, one of the mules partly broke through, and the more we tried to extricate him, the farther down he went. We finally found the easiest way was to let the mule slide down all the way into the water in the stream below, having first removed the harness and while we were attempting to extricate the first mule, the second one broke through the bridge. Our experience with him was much the same as with the first one. We were forced to let him down into the water also. We then drove the both out onto the road and re-harnessed them to the ambulance and went on our way, reaching the Fort just as the bugler was sounding reveille.

As my class was organized in midsummer of the year 1884, the course naturally closed in the following midwinter. Examinations were held soon after New Years and it was understood that there would be a period of some three weeks thereafter before the papers were marked and the assignments to stations made. Word came early, however, that three of the fellows would be ordered immediately to thẽ Central Office for clerical duty, pending transfer to stations; and when the orders came my name was included. How we were envied by the rest of the class as we left the Fort, bound for Washington! Our classmates had, previous to the examinations, been relieved from guard duty, etc. their places having been taken by regular Army guards, but now that the examinations were ended out fellows had to go back and take their turn walking post, doing police duty, and all the other beautiful and desirable things that befall to buck privates; and this too in midwinter.

How enjoyable were those three weeks at the Central Office! How we fellows enjoyed ourselves in not having to be routed out by a bugle call in the cold of the January morning! I can remember even now the big room on the top floor of 2020 G. St., which we occupied. In Washington we were in absolute comfort, and when we awoke in the morning we could turn over and take another snooze until 8 o'clock.

We often acted as hosts for out envious companions left at the Fort when they made the journey to Washington on pass.

Finally the orders of assignment came to the entire bunch, including those on temporary duty in Washington--about 22 in all. And on the last night in January we were shipped out to all corners of the country, to the Atlantic and Pacific, on the Great Plains and the Great Lakes, and in the South--never to meet again. My assignment happened to be Chicago.



Signal Service transportation at Jacksonville, Florida (1898).

Personal View

of

John P. Finley

Editor's Note -

John P. Finley is well known for the many contributions he made to the field of severe weather forecasting. He was a meticulous researcher, prolific writer, and a focussed individual. He was convinced that tornadoes, like other weather phenomena, could be forecast. He set precedents in weather forecasting which are valid today.

His perfectionist attitude is best depicted in the manner in which he contributed the following material in 1922. John Finley made four separate contributions with the last three opening with the similar phrase-- "I am not satisfied with the information provided previously."

I reported for duty at the Signal Service School of Instruction at Fort Myer, Va., on March 8th, 1877. There were several officers of Infantry, Cavalry and Artillery at the School, taking the regular course in Signal Corps work. Line officers who developed a liking for weather work might be given a detail on that duty at the Office of the Chief Signal Officer of the Army in Washington, after completing the course at Fort Myer. Such a detail might involve office work in Washington or field work in various parts of the country. The former duty comprised the following:

1. Weather forecasting.
2. Testing meteorological instruments and cleaning them editing and compiling the Monthly Weather Review.
3. Editing and compiling the Summary and Review of International Meteorological Observations.
4. Charting weather data.
5. Conducting special studies in meteorology and climatology.
6. The writing of Notes and Professional Papers for publication as public documents.
7. Serving as officer in charge of the printing and lithographing division.
8. Servant as officer in charge of the meteorological records division.
9. Serving as executive officer.
10. Serving as property and disbursing officer.

11. Serving as officer in charge of telegraph lines and cables.

12. Serving as officer in charge of Signal Service stations.

Field work embraced the inspection of Signal Service stations, the establishment and inspection of river stations for recording and reporting the rise and fall of the principal rivers of the country, the operation and maintenance of the military telegraph lines and cables for military and commercial purposes. These lines and cables were sold to the public as fast as they became converted to commercial use only.

The old Signal Corps was provided with two classes of officers; those detailed from the regiments of the Line of the Army, and those promoted by selection and examination from the non-commissioned officers of the Signal Corps. The latter when fully trained for the duties of the Signal Corps were detailed so as to release line officers for duty with their regiments, a course of action very much desired by the War Department. The promotion of non-commissioned officers to commissioned grade was also an incentive to better work in the Corps where there was opportunity for distinguished service in signalling and in weather work.

Over three hundred individuals passed through the Signal Service School of Instruction. There were some punishments for derelictions of duty that were peculiar to the Signal Corps organization, such as, digging post holes for telegraph lines on the Carolina coasts and repairing cables in exposed situations from Florida to Massachusetts. According to the strict interpretation of the Regulations, legitimate duty could not be imposed as a punishment, but an occasional dose of the laborer's job was good medicine for the recalcitrant Observer.

The military instruction at Fort Myer was of varied character, embracing some features of all branches of the Line of the Army (Infantry, Cavalry and Artillery) in addition to that feature of the Staff of the Army, which included military telegraph lines and cables, and military signalling. It made a good foundation for the arduous, exacting and never-ceasing duties of the meteorological observer on station. Many of these stations were isolated, exposed, lonesome and not free from danger. Observations must be made at precise moments of time and on all days of the year, and with unfailing accuracy. Then came the process of enciphering certain data that had been carefully computed, and finally the telegraphing of the perfect message to the Central Office in Washington. Therefore the course of instruction at Fort Myer involved both military and scientific training, and the weeding out of those men who were unfitted for the exacting duties on station. Some men when tried out on station would never qualify for higher duty than an assistant to the Observer in Charge.

Military signalling at Fort Myer embraced both day and night work at the School, and at distances varying from one to forty miles or more. The drill in telegraph line building and cable work was carried on at the School. Lines of a mile or more had to be constructed with lance poles and suspending insulators, a message or more put

through, after which the entire construction was dismantled, wire reeled up, poles lowered, and the whole equipment placed on the accompanying trucks, horse drawn, and returned to the storehouses at the School. The men were marched back to quarters and barracks.

After some time on station I was ordered to duty at the "Chief Office" in Washington and came under the supervision of Prof. Abbe. While working with him, my attention was called to a book by Prof. William Blasius, entitled, "Storms, Their Nature, Classification and Laws," published at Philadelphia, May 10th, 1875. In this volume, special consideration is given the Tornado of August 22nd, 1851, at West Cambridge, Mass. His analytical map of the storm track is one of the best ever prepared and published of this class of storms. Prof. Blasius spent five weeks in making the survey of the path over a distance of two and one half miles.

My attention was later attracted to an incomplete list of sixteen tornadoes collected and published by Prof. Elias Loomis of Yale, the author of our well-known treatise on meteorology and the famous text book of the Signal Corps on that subject. I discussed the Blasius book and the Loomis list with Prof. Abbe on various occasions and he urged me to make a special study of Tornadoes and improve on the work of these earlier investigators. This was the inception of my work on Local Storms, and from Jan. 1st, 1880 to July 1st, 1891 I had prepared and published a list of 57 papers and articles. Since that date, the list of titles has been increased by numerous other papers and articles.

Among the most important occurrences during my tour of duty with the Weather Service, under the Signal Corps administration, I may mention, First my investigation of the Tornadoes of May 29th and 30th, 1879 in the States of Kansas, Nebraska, Missouri and Iowa. This investigation involved extensive travel in these States and the survey of many storm tracks.

In April 1876, I was assigned the task of inspecting the Mountain Meteorological Station on Pikes Peak and the Base Station at Colorado Springs. This was the first full inspection since opening of the station with new buildings in 1876. No reports from the Observer in Charge at the Summit had been received for several months since telegraph lines and trails had been destroyed by fierce storms and heavy snow slides.

There was much excitement throughout the country by press reports that the entire station force of six men had perished from cold and starvation. The Observer at the Base Station had continually reported that it was impossible to reach the Summit. None of the hardy mountaineers could be hired to make the attempt.

I was stopping at the Antlers Hotel in Colorado Springs and it was so located that from the porch of this famous hostelry an excellent view of the upper portion of the Peak could be obtained, in fair weather, but then the Summit was enshrouded in swirling masses of snow. The men who stood with me viewing the impressive scene said that this condition had prevailed for weeks, and in their opinion the men on duty at the summit station had perished. In clear weather the station building could be easily distinguished from the Antlers Hotel and that was considered an attractive feature for guests. Notwithstanding all of the arguments presented by the mountaineers I firmly informed them that, as an Army Officer I was under positive military orders to make an inspection of the station at the Peak and ascertain the condition of the Observer in Charge and his assistants, Also I was to take important meteorological observations at the Summit and test out the station instruments. It was plainly to be seen that the Observer at the Base Station, Colorado Springs, was anxiously hoping that I could be induced not to venture the trip to the Summit, as I had informed him that he must accompany me.

My first work was to complete the inspection at the Base, where there was a large amount of Government property to be examined and disposed of. I recall the destruction by fire, on a vacant lot, of a huge pile of unserviceable property that had been accumulating at the Base for years. As fast as inspected I had it removed from storage and piled there. Then the mass was soaked with kerosene and the match applied. The property was guarded until the destruction was complete.

Having cleaned up the Base, I made ready for the trip to the Summit. The mountaineers pointed out the several dangers to be encountered, in the way of mountain lions, hidden trails, difficult stream crossings, narrow ledges, deep snow of a hundred feet or more, the crossing of "Windy Point" where the most destructive snow-slides occurred that swept away all obstacles, even the rocks and trees; the scarcity of oxygen above the 12,000-foot level that made walking next to impossible, the blinding storms at the Summit that would impede progress and hasten exhaustion, and might so hide the trail as to carry the weary wayfarer over a precipice to instant death. When it was found that I was deaf to all of these entreaties the mountaineers gave every assistance to preparing myself and the Observer for the perilous journey.

We were completely sewed up in several layers of gunny sacks, provided with alpine pikes, hunting knives and small revolvers, as well as the instruments I was to use for comparison work at the Summit. The mercurial barometer was fastened to my back, after being covered in its wooden case with gunny sacking; the thermometers, likewise protected, were carried by the Observer.

We were then helped upon the two white government mules, which had been saddled and equipped for the journey. These animals were thoroughly trained and knew the trails after years of service over them. It was advisable to give them their head at all perilous passages, whether on ledges or at stream crossings. I learned to deeply appreciate the wonderful knowledge of these faithful animals when narrow passages were taken. The mules would test the security of the pathway by the pressure of one foot at a time, and gradually settling the weight upon it. If found firm and unyielding the mule carefully put forward the other foot, and in like manner over all narrow passages. On the broader trail increased speed was taken up without any urging by the rider, and perfectly free reins were given.

The first night was spent at the "Half-Way House" occupied by a mountaineer who lived there with his train of burros. During the open season, the mountaineer supplied the Summit station with fire wood at \$50.00 a cord. The whole season was required to make the delivery. During the winter the wood was collected at the shack for summer delivery. The load for a burro was usually two four-foot sticks, slung to the back.

Our night at the "Half-Way House" was made hideous by the wild antics of huge flying rats, searching for food. They threw down from the shelves and overturned again and again every article of kitchen equipment, and racket of the tins and kettles was deafening, if not altogether terrifying. The Observer and myself occupied a bed together which was covered with buffalo robes and other skins. We were cautioned to cover our heads and hands for protection against the flying rats. Sleep was out of the question while these devils were performing. Between 1 and 2 A.M. they left the shack, having ransacked every quarter in a vain search for more food, after having devoured the waste from the kitchen and table that was placed where they could easily obtain it.

We obtained a little rest, had a fair breakfast and a chance to examine two dead rats, killed by the mountaineer. After an arrangement of our equipment we resumed. Near "Windy Point" the mules were reluctantly abandoned and turned over to our guide, who took them back to the shack to care for until our return trip. We now entered deep snow in which we sank to our arm pits, extending the arms to prevent further descent, and treading the snow to rise sufficiently to advance. We were on the alert constantly for signs of a snow-slide, by pressure against the body from the up-hill side, in which direction we anxiously scanned the seemingly endless sweep of 3000 feet. In the direction of the Summit, the area was covered with a smooth layer of snow estimated at a depth of 125 feet.

We were completely exhausted on crossing the slide area, and there rested on open ground swept of snow by the fierce winds. The remainder of the ascent was made with great exertions and very slow pace because of the lack of oxygen. When necessary to rest, we had to lean on our sharply-shod alpine pikes and avoid sitting down because of too much exertion to rise, and we were too exhausted

to help one another. The winds grew fiercer and the air was filled with pellets of snow, bits of ice and hail that cut our faces and covered them with blood that froze and blinded our sight. The Observer led the way and his last words to me as we neared the crest in a snow swirl of huge flakes; "for God's sake keep on your feet. If you fall, you will be quickly covered with snow and cannot be distinguished from the rocks. You will be lost and freeze to death." I did fall at the crest and the Observer staggered on a few yards to the station, and fell against the door more dead than alive.

The men within rushed to the door to respond to the knock that seemed to come from another world. They had given up all hope of rescue. The Observer barely had sufficient strength to explain about me and that I must have fallen at the crest. All hands rushed out and finally found me in the blinding snow by the upright position of my alpine pike. I was completely covered with snow and looked like the rocks all about me. I was carried to the station and when I regained consciousness, found myself on a big office table, prostrate with men working over me to restore circulation.

We both suffered awhile from mountain sickness, due to rarified air and finally became adjusted to our surroundings and recovered our appetites. In spite of all accidents my instruments were found intact and the necessary observations taken for station use. These observations eventually were used by Prof. Ferrel who was engaged on special work at the Office of the Chief Signal Officer of the Army, in connection with the Weather Service.

The station force was found in good health with plenty of food and sufficient firewood to carry them through the winter season. They were greatly surprised to hear of the big excitement of the country as to their alleged desperate situation, and wondered most of all at the successful venture we had made to reach them. The trip was looked upon as quite impossible at that season of the year, April being the stormiest month of the period. The return trip was performed under better conditions and in quicker time, but we exercised different body muscles in holding back on the steep down grade and were very sore for several days after reaching the Base.

During the ascent, from the trail entrance at Mineral Springs upward to the "half-Way House," (elevation, A.S.L., about 10,000 feet) we passed a succession of severe storms, in the order named, of rain, hail, sleet and snow accompanied with very heavy thunder and terrific flashes of lightning. From "Half-Way House" to the Summit there were frequent alternations of snow, sleet and hail, invariably accompanied with thunder and lightning.

On the return trip to the Base Station at Colorado Springs similar storm conditions were encountered. Difference in elevation, A.S.L. between the Base and Summit stations, 8,100 feet. Distance, about on the same level, between Colorado Springs and Mineral Springs, about three miles.

All storms occurring on Pikes Peak, whether at the Summit or on the mountain sides, were accompanied with

electrical displays of more or less violence. Between 1873 and 1882, station records at the Summit show that no month of the year is entirely free from violent electrical storms. All station instruments have been damaged by electrical discharges, even including the mercurial barometer. The members of the station force have suffered severely from electric shock and all telegraph instruments were cut out on the approach of a storm, however light in intensity, to reduce liability to injury.

New Quarters for the Weather Service

Circumstances connected with the occupation of privately owned buildings, that were "insecure, unsafe and in every way unsuited for public offices," by the U.S. Signal Corps and the U.S. Weather Service on "F" Street, and on Penn. Avenue, west of 17th Street, N.W., Washington, D.C., and the fact that this important Bureau was denied quarters in the New War Department building, gave rise to the conduct of a very active campaign, by the Chief Signal Officer of the Army, General William B. Hazen, to properly house the Bureau in Government owned buildings, and at a new location.

The General had submitted plans and recommendations in his Annual Report to the Secretary of War in 1885, for the erection of a fireproof building for the use of the Bureau. These recommendations were renewed in 1886 and contained in Senate Executive Document, No. 152, Forty-eighth Congress, 1st Session. Reference was made to the alternative of purchasing the property of the Fergusson brothers at the corner of 24th and "M" Streets, Washington. This property was improved as one of the "show places" of the Capital City, by the erection of a singular appearing residence, that with its surrounding grounds, occupied a large portion of the square on which it was located. It was built after the Spanish-American or Mexican style of architecture, with a patio, or open inner court, around which the many rooms were built, each opening upon the court on the first story, and upon a balcony overlooking the court on the second story.

The large residence was completed for occupancy and then the Fergusson family decided to return to California and the property was offered for sale. The Fergussons had been residents of Mexico for sometime, engaged in mining, and had acquired considerable wealth. On our acquisition of the Philippines, the Fergusson brothers turned up in Manila, as did many other venturesome American civilians, and the elder brother, on account of his education and thorough knowledge of the Spanish language, became the Spanish Official Interpreter for Civil Governor Taft, and finally the Executive Secretary of the Insular Government, remaining on duty in that position until his death in Manila in 1908.

I accompanied General Hazen, on several occasions, to inspect the Fergusson residence, with a view to its acquisition by the Government for the use of the Signal Corps and U.S. Weather Service, for which it was finally purchased and ultimately became the permanent headquarters of the reorganized U.S. Weather Bureau.

The last inspection was made in December 1886, and at a time when the weather was very inclement. The building was not heated when we made these inspections, and especially the last one, and I protested with the General that our visit was a very dangerous exposure for him, in fact for both of us, but nevertheless we finished the inspection, in a very thorough manner, including the basement of the structure, as was customary with the General in the performance of all of his duties. As a result both of us acquired severe colds.

Death of General Hazen

The General was suffering from incipient Brights disease but not to the extent of incapacitating him for active duty. This cold, however, aggravated the symptoms and he was confined to his quarters for a few days, which consisted of rooms over a business shop in the north side of "F" Street between 13th and 14th Streets, N.W.

When the General's family went to Europe (Mrs. Hazen and her young son) in the autumn of 1886, he finally removed to these rooms from the family residence at the northwest corner of 16th and "K" Streets. This new and beautiful residence was the personal property of Mrs. Hazen, specially constructed for and made as a gift to her by her father, the late Washington McLean when the General and his family came to Washington, upon his appointment as the Chief Signal Officer of the Army, to succeed the late General Albert J. Myer. Before her marriage Mrs. Hazen was a Miss McLean of Cincinnati, a member of the family of the millionaire publishers of that City and Washington. As a widow, she became the wife of our famous Admiral Dewey, the hero of the Naval Battle of Manila Bay, May 1st, 1898.

During holiday week in January 1887 I accompanied General Hazen to an evening reception at the White House. It was a cold day and the evening set in with snow and high winds. The General was in full uniform with only the protection of a military cape. He was not feeling well. I urged that I should go to his quarters for his overcoat, that he might be well protected on leaving the overheated White House. He overruled my desire, and later, near the close of the reception, when some of his lady friends were leaving on account of the storm, he gallantly helped them to their carriage, even without his cape. When I discovered the situation I rushed to get his cape and flung it over his shoulders, but the swirling wind took it off, or nearly so and he was much exposed on the White House portico.

Two days after this reception the General became quite ill and was confined to his rooms, and later on to his bed, from which he never arose, death ending his great sufferings on January 16th, 1887. I was with the General daily during this illness (at times his pains were so violent that he had to be held down in bed, and his death was agonizing in the extreme) as was also his body attendant (also a messenger at the Signal Office and the Weather Bureau) who accompanied the General during the latter part of the Civil War, especially on Sherman's March to the Sea, at the close of which Gen. Hazen made the

celebrated attack on the Confederate position at Fort McAllister, as Sherman entered Savannah.

Reminiscences of the Signal Service Years

I entered the Signal Corps of the Army and the U.S. Weather Service at Washington, D.C. on March 7th, 1877. When I presented my application for admission to the Executive Officer at the Office of the Chief Signal Officer of the Army, then on "F" Street, near 17th Street, N.W., I was informed that the waiting list numbered more than one thousand; that if I had letters of recommendation they would be considered in connection with my application. I was well supplied with letters from public men and with certificates from the leading educational institutions of Michigan, my native State,

having been born at Ann Arbor the University town on April 11th, 1854. I finally received notification to appear for physical examination and having successfully passed that, I was later advised to appear for a mental examination. During my four years course at the Michigan State Agricultural and Mechanical College I had given special attention to the subjects of meteorology and climatology in relation to agriculture.

This bent in my college work directed my attention to the U.S. Weather Service, then in control of the Signal Corps of the Army. After completing a postgraduate course at the University of Michigan, admission to the Signal Corps was sought. Immediately following entry into the Corps came a tour of duty at the Signal Service School of Instruction at Fort Myer, Virginia.

Personal View

of

H. C. Frankenfield

History was in the making on that damp and gloomy afternoon in Washington in January, 1882, when at the seat of the throne at 1719 'G' St., N.W., a number of callow youths, each hugging to his breast the visible and tangible evidence of his collegiate experience, embarked in the mule-motor express, with the black-bearded, blackhaired, pessimistic McQueen as chauffeur. The objective was Fort Myer, Va., the land of mystery, also only some three miles distant on the Virginia hills that afford such a magnificent view of our city of magnificent distances.

The little party, of which the writer was one, arrived at Fort Myer shortly before nightfall, and was at once shown to quarters, small oblong rooms along a long covered porch, each room with a single window, running water, an army bunk in each corner, two double desks, shelves and clothes chests. All shone with characteristic neatness, and the first impressions were very favorable and encouraging. Soon the staccato notes of a bugle rang out, and for the benefit of the unsophisticated and uninitiated these tones were translated into the supper call. It is almost needless to add that thereafter we never failed to recognize the first notes.

Our appearance in the mess hall was the signal for loud cries of "fish, fish", the colloquial appellation for newcomers. Well can I remember the shout of derision that arose from the hardened reprobates assembled when poor old McRae, big, burly and lovable, and who has but lately passed over, said in his gentle voice "No, I thank you. I do not take coffee. I would like a glass of milk". It didn't take any of us long to discover that any milk we might wish must be paid for out of our little salary.

We were soon outfitted in the regulation 'blues', and settled down to the routine of study and military life. The menu was very limited as to variety and poor as to quality with the exception of the bread, potatoes and coffee. The bread was the finest I have ever eaten.

We came from every quarter of the country; from Maine and Louisiana, from Oregon and Georgia, each more or less stamped with the peculiarities of his native heath. There was the lumberjack from Maine in the person of the stolid Fickett, the Frenchman, Martin from Louisiana with his pleasant voice and gentlemanly manners, Glass, the webfoot from Oregon, and several cotton planters from Georgia and Alabama.

College experiences had rendered us easy of assimilation, and we were soon welded into a compact and harmonious unit. We lived and moved as one in a monotony that was unbroken save for Saturday and Sunday trips to Washington for a square meal, (thirty-five cents at the Temple Cafe on 9th. St., when we had the price), for the

seven-up game in the "extra duty" quarters, (tobacco money), and for the little observatory game after taps.

We were a happy, carefree set of youngsters, and our greatest trials were the constant longing for a good, square meal and the Sunday morning inspections, especially the latter when the Chief Signal Officer came up from Washington to witness the same. This gentleman was very fond of military display, and his presence always meant additional labor and trouble, both at the time and thereafter, for our days were full to overflowing.

It was not:

Eight hours for work;
Eight hours for play;
Eight hours for sleep;
Eight dollars a day,

but eight hours for work, six hours for more work, two hours for recreation, and eight hours for sleep, the latter not guaranteed. The program was about as follows:

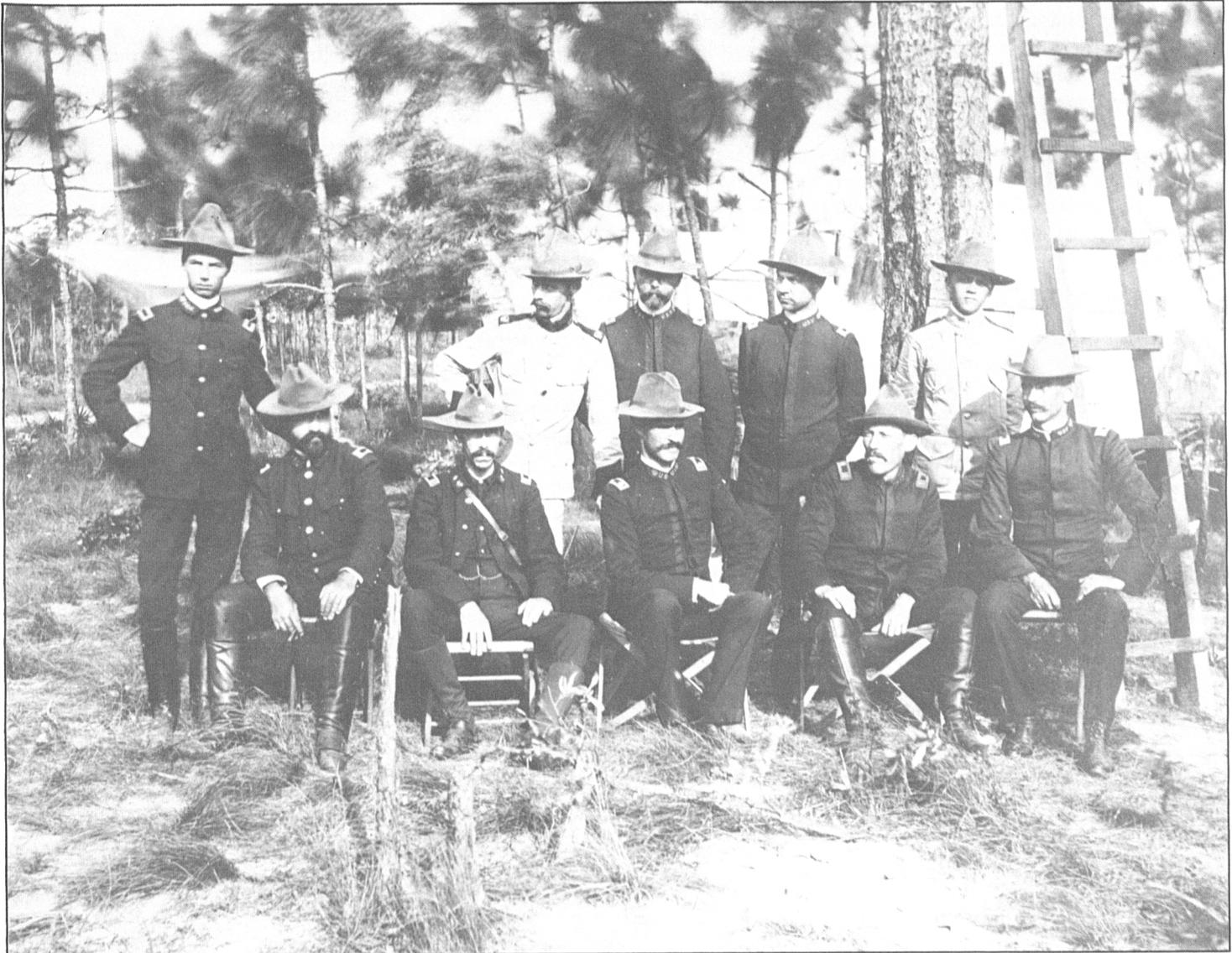
| | |
|---------------------|--|
| 5:30 A.M. | Reveille. |
| 5:35 A.M. | Assembly. |
| 5:40 to 6:00 A.M., | Police duty in rooms. |
| 6:00 A.M. | Mess. |
| 6:30 A.M. | Sick call. |
| 7:45 A.M. | Guard Mount. |
| 8:00 to 9:00 A.M., | Study and general work such as cleaning uniforms and equipment. |
| 9:00 A.M. | Military drill. |
| 10:00 A.M. to Noon. | Recitations. Noon Mess. |
| 1:00 to 2:00 P.M. | Study. |
| 2:00 to 4:00 P.M. | Recitations. |
| 4:00 to 5:00 P.M. | Drill. |
| 5:00 to 6:00 P.M. | Recreation. Sunset. Retreat. |
| 6:00 P.M. | Mess |
| 7:00 to 9:30 P.M. | Study, (supposedly). |
| 9:30 P.M. | Taps. |

Later on came the field signalling, both by day and by night, the latter frequently calling for midnight travel in the rain, over muddy road in black darkness, the horses choosing the proper route, as we could not.

And thus some six months passed. We had become a rugged, healthy and active band of thirty-two youngsters. At the end of the fourth month we were well pleased when old Mike Mahany, the terrible, efficient, sarcastic, friendly, gruff first Sergeant, announced that he could teach us no more of the manual of arms and company drill, and that we had become a virtually perfect military machine. We had mastered the military details, mounted and dismounted, and kept guard. We also had studied meteorology, physics, telegraphy, mathematics and military signalling by wand, flag and torch. We had

constructed telegraph and telephone lines, spliced marine cables and learned how to ride a horse, wait at table, clean a carbine, act as valets de chambre and wield a

saber. We were more than ripe for the final course before leaving for our future field of broad endeavor.



Signal Service officers at Jacksonville, Florida (1890).

This course was our observatory course which consisted of instruction in observational and instrumental work. With bag and baggage we wended our way to the observatory which covered the second floor of post headquarters building for a stay of some weeks. The observatory was in charge of Sergeant Williams. Sergeant Williams in uniform arrived mysteriously each morning shortly after guard mount, that is, each morning except Sunday, and as mysteriously disappeared each evening. He had some hiding place in the vicinity of the Old Aqueduct Bridge for both mule and uniform, but its exact location was never revealed to us.

Under Sergeant William's supervision we soon became sufficiently versed in the theory and care of meteorological instruments and in the taking and reduction of

observations to qualify us as assistant observers. It also made us worthy to be promoted from the grade of second class to that of first class private, the same carrying with it an advance of pay of about \$4.00 a month.

The writer in company with Lamar and Ellis was assigned to the Central Office at Washington, on temporary duty, and he remained on temporary duty for five years and five months, taking charge in December, 1887, of the station at Chicago, Ill. On June 1, 1894 he proceeded from Chicago to St. Louis, and on September 15, 1898, he returned to Washington as Forecast Official.

The professional staff was then in the height of its glory. Abbe, Ferrell, Mendenhall, Hazen, Upton, Waldo, and Marvin, and for a time McAdie and Hammon joined us. They did yeoman service and their fame is international.

Well do we remember that early summer day in 1884 when the telegraph announced the rescue of Greely and his little party by Admiral, then Commander, Schley, and the excitement that attended his return. After a rest Greely took his place among us, and in time it became my good fortune to assist him somewhat in the preparation of his official report. I gratefully acknowledge my obligation to Greely for the first real opportunity that came to me in the Signal Corps. He was thorough and square and just,

to commissioned and enlisted men alike, and his administration as Chief Signal Officer was eminently successful.

After the transfer of the meteorological branch of the Signal Corps to the new Department of Agriculture on July 1, 1891, troublesome times followed for a few years, but the troubles were finally smoothed out and the Weather Bureau made giant strides upward in efficiency and accomplishment.

Personal View
of
Glynn Gardner

In looking back over the years that have elapsed since the old Signal Services days, it is a hard matter to say what experience has been the most profitable; I do believe, though, that the training gotten at old Fort Myer, though most distasteful at the time, wrought to the good of the men concerned.

In July, 1885, the famous, because last, class of "rookies" started the routine of training for six to eight months at the old Fort. My! My! how dissatisfied were the boys at first, many of whom tried for discharges, but to no avail. Drill, drill, drill; study; study, study, was the order for a long, long eight months. This historymaking class was the last regular one at the Fort.

One day, when the class was being drilled by Lt. Frank Greene, it balled one of his orders so badly, that little Frank Greene went all to the bad in his language and cursed the men to his heart's content, not individually, but collectively. After the company was dismissed, the boys started a language-fest all their own about Greene's cursing, and one of the boys drew up a letter of protest to be sent to the Secretary of War. They were afraid that, if the letter went through regular military channels, it would never leave the Fort; hence, it was concluded to send a

copy direct to the Chief Signal Officer (General W. B. Hazen); and, being afraid that he too might pigeon-hole the protest, a third copy was sent direct to the Secretary of War (Robert Lincoln). A court martial of the entire class was a result.

Those were expectant days when the court martial was in process in the old Fort. The boys were so worked up over it, that they induced a prominent Washington attorney (Henry Wise Garnett) to take hold and fight their cause. One of the boys also got in touch with Ben Butterworth, representative in Congress from Ohio, to take an interest in the court. Butterworth was up to the Fort every day the court was in session, attended its sessions, and made himself heard so often that finally the president of the court ordered him not to again address the court, anything he had to say was to be in writing.

The findings of the court were against the boys, of course; but the penalties were minor – loss of a month's salary in some cases, reprimands in others. Ben Butterworth became so stirred up over the whole case that he raised the question in Congress. The next class sent up was intended to remain for three years and to attend more to the strictly military phase of the training; but Congress investigated the whole Signal Service, concluded to turn Ft. Myer over to the regular army and to make a civilian body of the Signal Service; at least, the meteorological portion of it. Our class was kept several months after the final examinations, and we thought that Gen. Hazen did it as an additional punishment for the boys' insubordination.

Personal View

of

John S. Hazen

I took the examination for the service in June immediately after my graduation from the Kansas State Agricultural College, was appointed the last of August, and was assigned to Pittsburgh temporarily thence to Savannah, GA., then to Hatteras, N.C., Nashville, Tenn., Ft. Apache, Ariz., Santa Fe, N.M., San Francisco, Calif., Des Moines, Ia., Springfield, Mo., Tampa, Fla., and Canton, N.Y.

Hardships and heroic deeds have been scarce articles with me. Perhaps the most outstanding incident in my career was at Ft. Apache when I was ordered out to make an inspection of the telegraph line south from the fort with a detachment of three troopers as escort. This was during the time when the Apache Indians were not especially tractable.

We had made the trip of about fifty miles during the day without incident but on making camp, I cut in on the line with a pocket telegraph outfit and immediately got a frantic call for me to return at once to the post. We were all tired enough to quit but there appeared nothing else to do but return so after feeding and giving a rub down to the horses, getting our supper, and taking an hours rest we started on the fifty mile trip back. It was a weird trip of mountains and trees plains and cacti, passing at one point the charred remains of a wagon train, which had been destroyed a short time before.

The only untoward incident attending the night trip occurred about three a.m. when one of the horses was noticed to be without a rider but on returning a short distance the trooper was found sitting in the road somewhat dazed but not hurt. He said he had been asleep but didn't know how long.

We reached home just as the sun was coming up the next morning and found the man from Cooleys, who had been

sent down to take my place, had proceeded to get gloriously drunk soon after his arrival and had continued so in spite of the guard. On entering the office he was seated at the key, and alternating between swearing a steady stream, copying a portion of a message and tearing up same when he failed to get it. I don't remember how long he had been thus occupied but the office looked as if there were literally hundreds of partially copied messages torn up and scattered throughout the room.

The message which I finally got was from the War Dept. ordering out a troop of cavalry to subdue a small Moqui uprising. After watching the troop depart, I turned in and slept until night.

There comes to mind now the one told on Hayden when he first went in to the service of how he was found locked in a closet and down on his knees praying for support after having broken every thermometer but one on the station. It seems he had started to whirl the maximum and the psychrometer at the same time with the result that every thermometer in the shelter was broken. He rushed to the office and while making his selection from the remainder managed to step on three more.

Likewise, the following on the man from Texas who could not get a leave to go fishing but went any way. He made an artistic series of six observations coded same and filed in Western Union, first carefully explaining to the clerk that he was to send them in serial order one each morning at seven a.m. The man then starts on his fishing trip unconscious of the workings of fate.

The clerk carrying with him the careful explanation of how to send these messages was called away the next day. A new clerk finding the bunch on his desk the following morning fired the whole lot in. Result; an Inspector with a lieutenants uniform and proper credentials waiting at the door for him when he returned. A trying hour for Mr. Texas and a shift in scenery.

Personal View

of

C. F. von Herrmann

For a brief period of time I served as clerk in the Chief Office then on "G" street, copying from original records into large volumes intended for publication, comparing data etc. General Hazen, of course, was Chief Signal Officer at that time. While at work there the surviving members of the Greely expedition returned and I was thrown into contact with one of the members of that expedition who was assigned to my room for duty, Sergeant Brainard.

While at Fort Myer, we inherited...rather dubious tricks by which we endeavored to make everything as easy for ourselves as possible. This refers chiefly to the military training, the signal practice by flags in the day time and by torches at night. The latter form of signalling was especially laborious, and often practice messages were arranged beforehand between the two parties, the one at home and the other in the field, so that we knew beforehand just what words were being sent, and I am afraid that unless an officer was present we did not take much care in sending or receiving, and probably learned about as much.

But signaling by the heliograph was much more interesting and several men in my class made good records which resulted in their being selected afterwards for duty in Arizona. We were supposed to learn telegraphy also, but excepting Lt. Swift, who was an expert operator, the other instructors were quite poor. At the closing examinations L. Walshe, a rough Irishman but with a good heart who used to pound his desk with rulers until it broke to pieces, examined us in telegraphy. I remembered that I passed by the skin of my teeth, for Walshe opened the telegraph key about an inch wide and pounded on it with his fist making a racket loud enough to wake the dead. He gave several trials with different paragraphs all of which I missed but finally kindly returned to the first one tried which I remember and so got through, but I certainly was not a finished telegraph operator.

The meteorological work was comparatively simple, mostly the routine work of taking observations. What meteorology I know I learned afterward. Even here there was trickery so simple that authorities must have known and cared not. We were required to prepare monthly reports on the order of the present Forms 1001. These were to be completed by the students, were examined by the clerks at Washington and the men rated on them by the number of errors made. But all of the original records which had long been corrected were lying on the tables before the men and it is not surprising that the practice forms sent in were mostly merely copied.

The fact that I was fresh from school and used to passing examinations is the only reason that I can assign for passing the final examinations at the head of the class. The man who passed at the head of the class was paid the

compliment of being sent in charge of a station, and so I happen never to have been an assistant at any station. My first assignment was in charge of the office in San Antonio, Texas.

Arriving at San Antonio I found a telegram revoking my orders and requesting me to wait for further instructions by mail. I found myself entirely without funds in a strange city with no expectations of getting any for about two weeks or so, but I preferred not to write home but to manage in some way for myself. So I selected the best hotel in San Antonio at that time for my experiment, and going up to the clerk, I explained to him that I was a government official stranded and in want of board and lodging for about two weeks, but no money to pay as yet. He looked me over from head to foot and seeing that I looked free from guile, simply said "Register". I paid the bill when my salary check arrived.

When my orders finally arrived I found that I was to proceed to Fort Concho, Texas, a station about 100 miles from the railroad at Abilene and near a small town called on the maps San Angelo, but nicknamed by its inhabitants "Hell on wheels". This was in the fall of 1885. Here I relieved Dr. I. M. Cline a gentleman well known to us all up to the present day.

The Concho station consisted of a two small roomed house located on the flat prairie about three miles from San Angelo, and not far from the military post of Ft. Concho in the hottest and driest part of Texas. I do not remember whether it ever rained there but I do remember that the temperature rose on some occasions as high at 110 in the shade. I had to sprint to get my telegrams off in time as they had to be filed at the W.U. [Western Union] Office in town. Concho was discontinued however very soon, and I turned over the house and everything to the commanding officer at the Fort. Again I was ordered in charge of San Antonio.

Here I found myself immediately in hot water, for this was a telegraph station. I certainly had not made any reputation while at Ft. Myer in the operating line, except by Heliograph, and wondered that I had been selected for this post. The office was located at the military post, about three miles from the center of town and connected with the Western Union, and there was considerable work for the military people.

I relieved Mr. Dorman and the Commanding Office was General Ruggles. As soon as the change of observers had been accomplished, the Manager of the W.U. called me up by wire and proceeded to send me a message at the rate of about 1000 words a minute as it seemed to me. Although I broke the operator a few hundred times I never did get the message straight, and finally told the manager I would take it by telephone which I did. I did not see why the telephone could not have been used all the time, but as there was a telegraph office of course the messages had to come that way. The Manager of the Western Union immediately wrote to the commanding office, Gen. Ruggles, a strongly worded letter in which he could not be responsible for the correctness of messages sent by telegraph to the post as the new man was absolutely incompetent. Gen. Ruggles sent for me, read

me the letter and asked what I had to say. Probably much to his astonishment I replied that the Manager of the W.U. was perfectly correct and that I was by no means an expert telegraph operator. The General then asked how long it would take me to learn, and I told him that I thought I could manage the office in about a month, whereupon he kindly pigeonholed the letter and told me to try.

I immediately went to the City, saw the manager of W.U. and when he learned that I knew about his letter to Gen. Ruggles and did not resent it, but was anxious to learn, he advised me to buy a repeating sounder and promised to place it on a busy wire so that business not intended for me would be continually passing over my wire. This was done and I spent every moment of my time in learning to take down the messages that I heard. Meanwhile the other operators at San Antonio, when there was business for the Fort, very kindly sent the messages very slowly so that I got along fairly well. In about a month the Manager tried me again, and as he really could send a telegram most beautifully, though fast, I managed to take it this time without a break. When through I asked him, "How about it?" He replied, "You'll do," and that was the end of my troubles in this line.

San Antonio was a pleasant station and I hoped to remain there some years, until Lt. Sebree arrived in charge of the telegraph division embracing Texas and adjoining States, Lt. Sebree at once ordered me to move my office quite a distance away to the vicinity of his, and when I mentioned that the barometer could not be moved without instructions from the Chief Signal Officer, he replied that his orders were just as good.

I had a somewhat narrow escape here, for I should most certainly have refused to move the barometers without instructions from the Chief Office. I think that Lt. Sebree saw that I would probably give him some trouble for he spoke of it to other officers at the post, and I heard of it through other channels. Fortunately for me, Lt. Sebree about two days after his arrival went off on a hunting trip for a few days, and while he was gone I received telegraphic instructions to report at once for duty to General Miles at Fort Huachuca, Ariz. for duty against the Apache Indians which had gone on the war path in southern Arizona and northern Mexico. This was Geronimo and his band.

My orders came in April 1886. It happen that another man of the Signal Corps was at the moment in San Antonio for reenlistment and he received orders at the same time to remain and take charge of San Antonio. I remember his disgust when he learned that he would have to move his office next to Lt. Sebree's and be practically an assistant, rather than be in charge of the station.

I received transportation requests from the army quartermaster, and did not stop to get a ticket. Conductors in those days did not hesitate to accept government transportation requests. The train was crowded with soldiers, and I noticed frequently a gentleman in civilian dress walking along the car who

glanced at me as if he wondered what I was doing on the train. I did not know that his was General Miles, or I should have presented to him there the letter of introduction that General Ruggles had kindly given me.

An amusing incident occurred on this occasion. After I had surrendered the transportation request, which the conductor did not refuse but kept looking at as if there were something wrong about it, he went on about his duties, but when they were finished he came back and sat down with me and we had some general conversation. After a time he again took out my transportation request, looked at it, and then remarked, "You have a very peculiar name." "Yes," I said, "It is distinctly a German name, but I nevertheless am an American citizen having been born in the United States." "Yes," he replied, "I recognized that part of it is German, but how do you come to have Pat for your first name?" For a moment I was quite puzzled until the conductor showed me the transportation request where the clerk had abbreviated my title Private to Pvt. but had written it so carelessly that it looked like Pat von Herrmann. Upon my explanation the conductor laughed heartily.

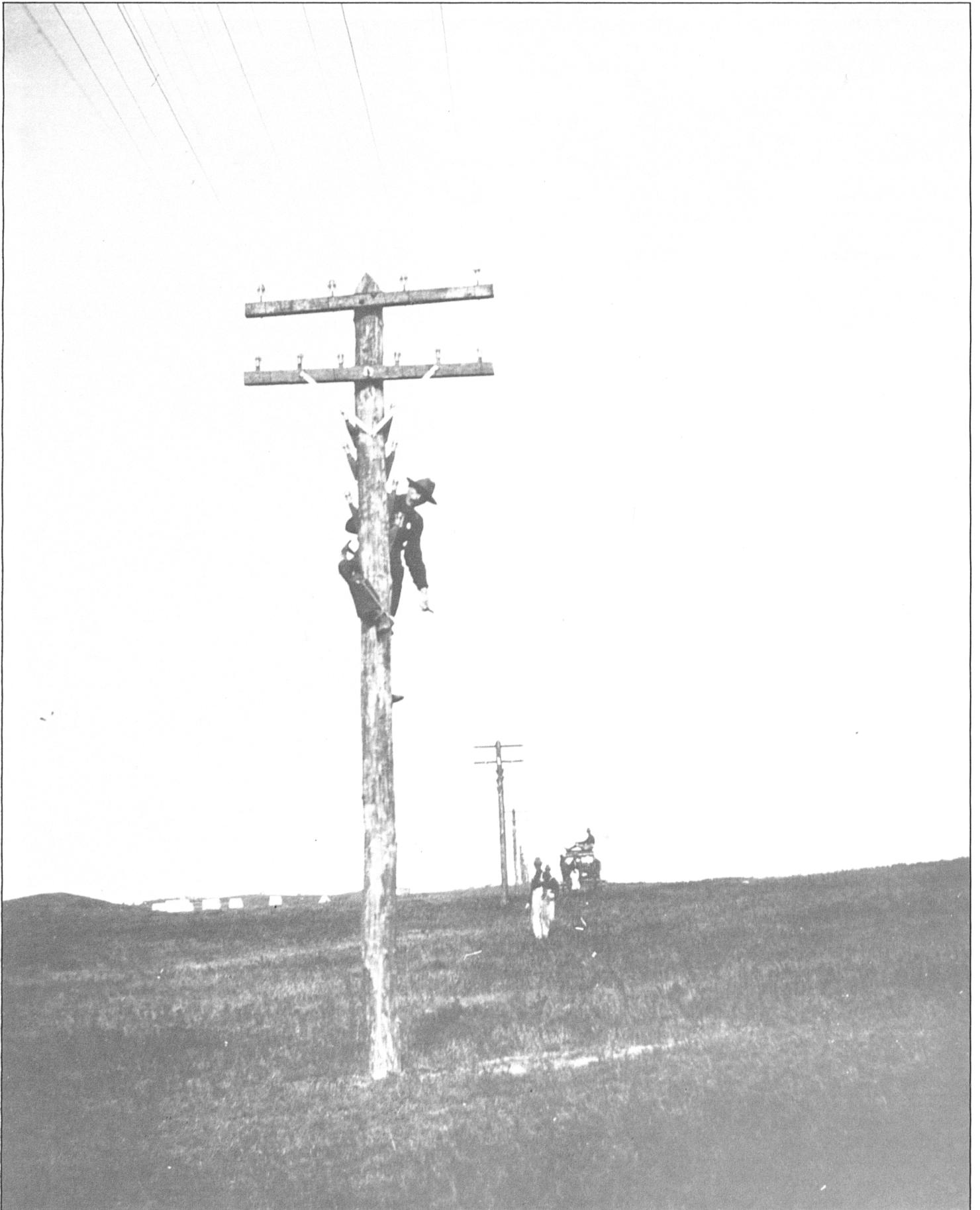
When I arrived at Fort Huachuca my previous military experience was again serviceable. For on reporting to the adjutant he started to say I will assign you to troop so-and-so, but I spoke up quickly and said that the men of the Signal Corps on duty outside of Washington did participate with the troupes but would take care of themselves, as he could judge by the fact that I wore no uniform. "All right," he said, "there is a hotel," and promptly forgot all about it. So I took quarters at the hotel and there I found also all the young unmarried lieutenants and other officers, and as they did not know me I was not disturbed, and remained at the hotel for some time until I found more reasonably priced lodging and board with a married commissary sergeant.

I was the only man apparently who had so far been ordered to Huachuca for heliograph duty, and of course I did not then know that many others would also be ordered there, otherwise I might have saved several members of the class sent direct from Fort Myer a great deal of trouble. Unfortunately they arrived at Fort Huachuca and reported to the post adjutant before I knew it. They were assigned to troops, as they were in the uniform of a private, and the adjutant had forgotten what I told him. Soon afterward when I heard they had arrived I hastened to tell them not to accept assignment to troops but was too late.

By the time the new men arrived, I had already completed a permanent heliograph station on a pretty high hill close to Huachuca. This station used a large round heliograph mirror which tipped backward and forward slightly by means of a key at the back, making a click just like a telegraph sounder. No screen was required as the flash of light was simply lifted far above and dropped down to the station to make the dots and dashes. I had had a very firm stand or table made with heavy posts let into the ground, and the outfit worked wonderfully well.



Heliograph home station at Camp Meade, Pennsylvania, sending messages eight miles down the Susquehanna River (1898).



Constructing telegraph and telephone lines near Camp Wikoff, New York (1898).



Signal Service telegraph and telephone exchange near Jacksonville, Florida (1898).

Here there occurred an illustration of the effect of the clearness of the atmosphere in the west, which was well known to me. The young fellows from Ft. Myer had none of them ever been west. When they first visited my heliograph station I pointed out to them a town in which the houses could be very clearly seen. I asked the boys how far away they thought it was. One spoke up and said, "You can't fool us on that proposition. We have heard all about the deceptiveness of distances in this country, and so although that place looks to me to be about 2 miles distant, I'll say it 5 miles. With this the others mostly agreed, and were astonished when they found the place was 25 miles away.

When I reported to General Miles the morning after my arrival, he informed me that the plan was to establish signal stations on prominent peaks for the purpose of watching the country thoroughly by telescopes and transmitting intelligence of the movements of troops and of hostile Indians by the heliograph which would be the instrument chiefly used. I was able to inform General Miles that I had had considerable success in the use of the heliograph while at the school of instruction at Fort Myer, Va. and that I could instruct men in the use of the instrument. Classes for instruction were at once assigned to me. We practiced across the parade ground and the officers, I could see, had but little belief that the instrument could be of any service.

As the altitude of Huachuca is very considerable, the sun was very powerful, and being obliged to be in bright sunlight practically from sunrise to sun set, my face burned terribly and the skin peeled off not once but continually, as I unfortunately do not burn brown but rather burn up. Finally the adjutant of the post took compassion on me, and gave me an oddly made shade. It had a strong wire frame which was secured around the body, and above it an umbrella like structure covered with white canvas, which could be folded over the back when not in use. I wore this all the time and it was certainly a comfort, but it was conspicuous and I became a notorious character.

During May, 1886 before there were any other heliograph stations established excepting the one at Huachuca, I made my big flash move continually around the country trying to stir up something, and especially I directed it on every little collection of houses that I could see through the telescope, so that the natives were generally more or less wonderstruck. At last one day I got an answering flash very faint from a party in the field, and after careful adjustment took a message to the commanding office requesting the immediate dispatch of forage and other supplies to a place some fifty miles away. When I delivered this telegram to the Commanding office, the fact became known shortly and a crowd of officers came up to the heliograph station to see it work. The supplies were sent at once. I have seen the heliograph flash as far away as Ft. Bowie, 90 miles distant.

Huachuca was station No. 7, and communicated west with Mt. Baldy, about 40 miles, on which my friend Neifert was in charge. The heliograph line ultimately attained a length of over 200 miles from Mt. Baldy, to stations in New Mexico, and undoubtedly aided the troops in capturing Geronimo and his men who were frightened by the flashes of light which appeared everywhere. But this story has no doubt been fully told in public reports.

The time I spent at Ft. Huachuca was very pleasant. The work was interesting, the climate was fine, and the skies so clear at night, that having an excellent book on astronomy with me with some good charts of the constellations, I spent a good part of every night in studying the heavens and learned much about the "friendly stars."

The heliograph stations were discontinued in September, 1886, and I was ordered to take charge of the station at La Crosse, Wis. I got on the train at Huachuca station with a straw hat and linen duster, and as the country was uninteresting and besides familiar to me, I hardly left the car, reading novels most of the time until I reached Omaha. Here I got off the train and for a moment was surprised to have everybody at the depot staring at me, until I began to feel that it was very cold, and presently saw a cold wave flag flying and found that the temperature was 3 degrees below zero. I bought an overcoat, quick.

At La Crosse I found the station in bad shape. I relieved a man whose name I have forgotten, as he soon left the service. But he had an office the main entrance to which led past some toilets which appeared to be continually out of order so that a decent person could not get to the office. The first thing I did before even taking charge was to telegraph to Washington for authority to immediately move the station. I selected two rooms in the large MacMillan Building, furnished them nicely, and soon had all the girls in the large department store on the ground floor running up to find out about the weather at their lunch hours, and Lt. Walshe who inspected me there flattered me by the remark, when I found him quite unexpected in my office (he having found the key where I usually hid it) "von Herrmann, this is the neatest little office I ever entered". At this place I delivered a lecture on meteorology to an audience of Y.M.C.A. men.

At La Crosse the temperature once fell to 43 degrees below zero, a temperature I had twice experienced before in Wyoming. On this occasion the circumstances were somewhat peculiar. At night when I went to bed I did not care for a fire, but I liked to get up in a warm room, so I always had a fire laid in my room in the afternoon, which I would light in the morning, and then remain in bed until the room was comfortably warm. But on this particular morning when I got up it did not seem to me to be cold enough even for a fire in my room, and I got up and dressed without the least discomfort; wore my overcoat

down town wide open, and no gloves and yet experienced no inkling that it was very cold, and was supremely astonished to find all the mercurial thermometers frozen and the alcohol minimum registering 43 below zero. Fog prevailed at the time, and I wondered why the fog

particles did not freeze; they did not appear to be frozen, though settling on objects in the form of thick frost work. I have never been able to explain why on this occasion I did not experience a sensation of cold, but was perfectly warm and comfortable, until I had read the thermometer.



Signal Service soldier with typhoid fever in transit to hospital at Camp Meade, Pennsylvania (1890).

I was transferred to Fort Custer, Montana. On one occasion there was a tremendously severe hail storm at Fort Custer, a description of which would probably be found in the records from that station. What I recall particularly in connection with it was the evidence of good sense shown by a quartermasters team of six mules that happened to have been loosely hitched to the porch of my office at the beginning of the storm. At the first touch of hail these six mules deliberately climbed up on the porch and sheltered themselves. Horses would have fled in wild fear. This storm was so severe that cattle were killed, and large hailstones fell through shingle roofs into the rooms

where people were sitting.

I left Fort Custer in consequence of the death of my father, and after a brief period of duty in the instrument room [Central Office in Washington, D.C.] under Prof. Marvin, I was offered either Mount Desert Island, Maine, or Savannah, GA. I selected the latter station but was there only about three or four months when I received orders to take charge of the Section Center at Raleigh, N.C. Here I was introduced to climatological work, and remained at Raleigh until the meteorological work of the Signal Corps was transferred to the Department of Agriculture.

Personal View

of

J. W. Smith

While "on station" there were some amusing experiences and a few very unusual ones. One of the former was experienced by my predecessor at a small southwestern station at Corsicana, Texas. He told me that soon after establishing his station he was waited on by a committee, appointed by dissatisfied citizens on account of the very unsatisfactory weather conditions caused by the meteorological instruments as there had been no such weather before "them things were set on the roof". All the explanations that could be made proving unsatisfactory, the official suggested they adjourn to the cafe over the way for further discussion, where it cost our man about \$25 for sufficient refreshments to convince the committee that the weather instruments were not at fault.

Even in the early days of the service, visitors often came to see how the weather was made, particularly at stations in large towns and cities. More than a few times I have heard surprise expressed at the small size of the

instruments, their insignificance. Not a few expected to see quite massive machinery laboring, groaning and belching, for as they thought devices that could record great gales, hurricanes, and storms must be large and complex. Visitors have so stated to me, and expressed disappointment at the quiet, silent method in which the instruments do their work. Few after seeing and having the instruments explained would fully comprehend them.

Many years ago we carefully explained the equipment to quite a distinguished looking party, several persons, and on finishing the story of the wind register, anemometer, etc., the head of the party, as I remember a minister, in commenting said "well its wonderful how the winds come down those wires and make the records," to which we readily agreed, as more talk was useless.

Weather cranks have been met in all parts where we have served, mostly those who could make much better forecasts than those of the Bureau. One in particular, with considerable local reputation, whose forecasts were often printed by the local papers came to the office for a chat, during which I inquired as to his theories, methods, instruments, etc., if any to which he replied, "Oh, I have none, don't need any; my grandmother could tell the weather, and in the same way I can tell it."

Personal View
of
Richard H. Sullivan

Editor's Note - The following was written
 in 1922.

So, the man, one known for probity and straightforwardness in the years gone by, that drops by the wayside, carries with his demise a feeling that the old days of self-reliance, promptitude and praiseworthy effort to make a service comparatively little known of some real and tangible benefit to future generations, can never come again. I think it was Solomon, the wise, who once said: "Say not that the former day were better than these"; but such a feeling rests in the hearts of our "old men", as the Indians say.

I can not just now set aside specific instances to support this statement, but somehow, I am constrained to believe that the men inherited by the Weather Bureau from the old Signal Service, together with the men that came into the service in the early days of the amplification of Weather Bureau work, were of sterner, more practical and more initiatory stuff than the men entering, say 10 or 15 years later, or even 20 years. True, many of the old men--many now dead, some still active and progressive, and some still traveling the journey as a sort of memory of the old days--had their faults and their failings. None could be called perfect in any manner, shape or form; but they did the work for the work's sake, and herein lies a cover for a multitude of sins in any man. We all agree that they were ill-paid for time spent as professional men among the most representative interests of the country,

and that changes were often made through grave personal sacrifice. But they did the work with a minimum of complaint, and the work was done well. In short, it was their chosen life work, and they played the game always like a true sportsman.

Comparisons are not always acceptable, or wise, but I shall proceed.

The new men coming into the service--well, I may be putting it strongly, but will say, a large portion of the newer men--came with a bludgeon in one hand and a bag in the other. The prevailing idea seemed to be to get all one can for as little work as one can do (and get away with it). Of course, in order to make room for an element of this sort, it was tantamount to knocking all the old codgers in the head or to throwing them all overboard as antegrated Mathusalehs. I claim that these men, now old and gray in service, were the backbone and sinew of the Weather Bureau when it needed stamina, and are yet the backbone and sinew of the service in managing to perform the necessary work for the work's sake, withal in the face of accumulating complaints from untimely and often unjust demands of many newer men.

In a general way, the atmosphere just mentioned was of great benefit to the service in the long run, and yet was outside the range of the radical element that desired to advance too rapidly and at the cost of the older men. It simply developed what might be termed the dormant capabilities, or, better, the reserve power, of the old men in order that all work go in on time, whether the subordinate force was capable or not. I think this is one of the main reasons why so many of the gray-haired men are "sticking" to-day--simply because they can and do deliver the goods, and the element of which I write could not do so, did not do so or left the service entirely.

Personal View
of
Wilford M. Wilson

I was enlisted in the Signal Corps, U. S. A. with rank of Second Class Private on September 25, 1885.

During the four years previous I had attended Allegheny College at Meadville, Pa. at intervals between teaching school, working on a farm, working in a mill, cutting timber, blacksmithing, painting and a few other things in order to obtain the necessary funds.

But in the summer of 1885, having despaired of obtaining my degree at the slow rate I was progressing, I decided to turn to teaching, in which I had been fairly successful, as offering the best opportunity within reach. Accordingly, I made application for the position of principal of the village schools of Hydetown, Pa., and, having been assured by each member of the board, for I saw them all, that he would support my application, I felt that matters were settled for the year at least.

But in early September, much to my surprise and chagrin, I received formal notice from the secretary of the board that another had been chosen for the place. This was a hard blow. By this time all the schools were engaged and about to open. Besides, I was without money or prospect of employment.

It will be recalled that in the spring of 1885, General Hazen, then Chief Signal Officer, circularized the colleges of the country, setting forth the advantages of the Signal Corps as a career. As a result, some 30 or 40 young men from different colleges enlisted. Thus, knowing that the Signal Corps was employing men, I wrote for information and advice with a view to enlisting.

Seventy-six dollars a month! Why, that was a fortune! – a munificent salary! I could hardly believe my eyes, but there it was in black and white. That anyone could earn \$76 per month – earn it honestly I mean – was outside the range of my experience. (I had taught school for \$18 per month and “boarded around”) I hesitated no longer. I was resolved.

Immediately I made my application. I spent the whole day on it. I neglected nothing. It was not too long, not too short, every word in its place, every punctuation just as set down by Quackinbush in his rhetoric. And the spelling; I was and am yet a notoriously bad speller. Any unprejudiced person may confirm this statement by consulting the official files of the Central Office. But I maintain that if there is a misspelled word in that letter, the mistake was in Noah Webster's, not mine. I verified every word. And the writing of it: Here I was at home.

On receipt of my letter at the Chief Office, examination papers were promptly forwarded – a list of questions for me to answer and then to make oath before a notary public that I had not “cribbed” the answers. The

examination papers were sent in and in due time I was directed to report to the Chief Signal Officer, Washington, D. C. on September 25 for a final examination – mental and physical – pending enlistment.

In the Signal Service, I was assigned to the Fact Room of the Review Division under Sergeant James Berry. It was a small dingy room in the G Street Annex, with one dusty window. The sides of the room, from floor to ceiling, were lined with books in which were pasted the monthly meteorological records of all the stations in the world, on land, and of all the ships, keeping records, that sailed the seas. I was soon to make their acquaintance.

My job, the purpose of which I knew nothing, was simple but of deadly monotony. I was given books, containing 30 or 31 pages, according to the number of the days in the month. The pages were about 30 inches long and 12 inches wide, fastened together at the top and ruled lengthwise in columns. The columns were headed: latitude, longitude; time of observation; barometer, temperature, wind direction; force of wind; state of weather. The appropriate data to fill these columns were taken from the records that lined the room.

The procedure was as follows: The first name at the top of each page was Alpena, and on the line opposite was entered the data appropriate to the several headings for the first day of the month. Then the page was turned and similar entries made on the second page for the second day of the month, and so on, turning a page after each day's entry until the month was completed. The same process was followed for each station and for each ship.

It will be seen that in this way all observations made on the first day of the month appeared on the first page of the book, and that those made on the second day of the month appeared on the second page, and so on throughout the book, thus bringing the observations made each day, both on land and on sea, together on a single page.

When I had finished one book, I immediately began on another. At first I was able to do one book a month, but later on I was able to do two. We were then about five years behind, and I figured that, barring accidents and delays, we would catch up in about ten years.

Early in March orders were received to go to Fort Myer, but a few days before the date specified, I was taken ill with tonsillitis which laid me up for about three weeks. I was glad to go to the fort, and I presume that that frame of mind was reflected in my experiences while there. For I may as well say here and now that I look back upon the months spent at the Fort as among the most profitable and pleasant of my life. There were a few disagreeable experiences of course but there were many pleasant ones; and there were friendships formed which the years have not dimmed.

At that time there were two classes or sections at the Fort, the Meteorological section of which I was a member, consisting of 14 men, and the Military Signal Corps section in which there were some 30 or 35 men.

I arrived at the Fort one late afternoon in March, 1886, and was assigned quarters. The barracks at that time consisted of a two story building, the gable end fronting the parade ground, and two wings extending outward perhaps seventy-five feet on either side. The wings were fronted with wide porches their entire length. The right hand wing, facing the parade ground, was partitioned into rooms, each accommodating four men. The Meteorological section occupied this wing, while the other wing, which was not partitioned, was occupied by the Military Signal section.

The room was furnished with four iron cots, one in each corner, each cot with blankets, a straw tick, and pillow. A study table stood in the center of the room, and there were shelves for books on one side. There was also a small mirror that hung from a nail in the wall.

There was work aplenty. For the Meteorological section it consisted of drill, guard duty, signal practice with flags and heliograph, telegraph practice, observation work and recitations. But there was also time for pranks, base-ball, and for leave of an evening in Washington. The Military Signal section was exempt from observation work and recitations, but it enjoyed the distinction of cultivating the "post garden". It was a brave sight indeed to see it march to its work, armed with pick, shovel, rake, and hoe.

Fort Myer was regarded as a regular station, telegraphing, at least for the purpose of instruction, three observations daily at 7 a. m., 3 p.m. and 9 p. m. In addition, if my memory serves me, there were two "local" observations made at 11 a. m. and 7 p. m. The routine was intended to be the same in every detail as that of the field stations. In the interval between taking observations and working them up, we studied the Bible— Instructions to Observers—the ultimate authority of the Signal Corps, which no one, be he officer or private, might question with impunity.

Congress having failed to provide the necessary funds for the maintenance of the school of instruction at Fort Myer [the meteorology section at Fort Myer was closed in 1886], the members of both sections were distributed among the various stations. My original assignment was to Milwaukee, but later it was changed to Cleveland. However, I was retained for a time at the Chief Office.

My work was to copy letter "briefs" into books provided for that purpose. It was only a degree less monotonous than the work I had done in the Fact Room.

At that time there were few typewriters at the Chief Office and none on station. Letters were not duplicated as at

present, nor letterpress copied as was done a few years ago. When a letter was written on station it was folded in three folds. At the top of the first fold was placed its number. (Letters for each year were numbered consecutively, beginning with January.) Following the number was the name of the station, the date, name and rank of writer, and a brief statement of the contents. This was called the "brief", and was copied in the "Letters Sent" book. No copy of the letter was kept – only the brief. Letters received were also briefed, and the briefs were copied in the "Letters Received" book. Later on someone made the discovery that it was unnecessary to copy the briefs of letters received, since the letters themselves were placed on file.

The observation work at the Fort was exceedingly interesting to me, but the copying of briefs was no part of the future I had planned. Besides, there was about this room the same, ancient, musty odor that had sent me from the Fact Room to the Fort. I had been there about two weeks, when one day Zappone came to my desk and said, that he was in need of a man permanently, and, if I so desired, he would recommend me for the place. At that time my salary at the Chief Office was \$18 per month more than I would receive on station. But, since I had been at the Fort on \$12.50 per month, and had not suffered, the \$58 per month on station appeared to be ample for my needs. I, therefore, replied, that, while I appreciated his offer, I thought I would prefer a station assignment. He appeared to be surprised, but made no comment. Of course, on account of the difference in pay, a Chief Office assignment at that time was regarded as very desirable, and, when it became noised about the room that there was one of their number who actually preferred to go on station, it was looked upon as indicating a mental twist of some kind. I think that some even doubted my sanity. I am not sure that they were wrong, for, in this instance also, I exercised neither foresight nor judgment, but simply followed an inclination. I was assigned to Cleveland, Ohio.

I arrived at Cleveland in August, 1886, and reported to Sergeant William Line, and there began a station service which, for better or for worse, has continued unbroken to the present time. My service at Cleveland was the beginning of my meteorological education. For the first time I began to find out something of what it was all about. I had served at the Chief Office and at Fort Myer; had seen the forecasts and the weather maps, but upon what the forecasts were based, or what was the significance of the lines and figures on the weather map, I had no knowledge whatever.

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