

HISTORY OF WEATHER OBSERVATIONS  
Savannah, Georgia  
1734 - 1950

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# HISTORY OF WEATHER OBSERVATIONS

Savannah, Georgia

1734 – 1950

**Gary Grice**

## INTRODUCTION

### Historical Overview

James Edward Oglethorpe founded the colony of Georgia with the original charter being granted on 8 June 1732. Oglethorpe and his colonists arrived in Georgia in February 1733. After traveling to the current location of Savannah, General Oglethorpe wrote that he had chosen a 40 foot bluff, high above the river with sandy soil and a spring. He indicated the site would be a good place for the colony and Savannah was born. Savannah is recognized as “Georgia’s first city.”

The original plan for Savannah accompanied General Oglethorpe to the colony. The plan stated the town should be laid out in a perfect grid pattern with individual lots given to the colonists and additional space provided for public buildings. Squares of vegetation were interspersed throughout the city. This plan of grid and squares was continued in the expanding city until 1856 when it was discontinued for a grid pattern of streets.

Cotton made the city of Savannah prosperous, as ships from Europe crowded the city’s harbor to take cotton back from the New World. This prosperity established Savannah as a cultural center for Georgia during the early and mid 1800s. After the Civil War, the economy of Savannah was destroyed, but prosperous times returned during the early 20<sup>th</sup> Century.

Due to its strategic location, Savannah has played an important military role throughout the history of Georgia, beginning with the Spanish in pre-colonial years, continuing during the Revolutionary War, and serving as the focus for the Union Army during the Civil War.

Over the years, Savannah has been a jewel for the southeast United States, primarily due to its rich historical and cultural heritage. During the 1930s and 1940s, when historic buildings were being demolished for the construction of parking garages, seven Georgia women formed the Historic Savannah Foundation, which was able to preserve the historic district.

The first landing field in Savannah was in 1918, located on the south side of Daffin Park (located between Victory Drive, Washington Avenue, Waters Avenue, and Bee Road; or approximately two and one-half miles southeast of the intersection of Bull and Bay Streets). However, Daffin Park was unsatisfactory as an air field, primarily

because the “runway” was oriented east-west with no provision for a north-south runway. Also, and perhaps as important, the movement of airplanes frequently conflicted with social and athletic activities at the park.

In 1928 a 730 acre tract of land off White Bluff Road, known as the Belmont Tract, was selected as the site for a new airport (approximately 5 miles southwest of the city). The field was originally 4,500 feet long with a maximum width of 3,500 feet. No runways per se existed at the early airport, but the size of the Bermuda grass field enabled planes to land into the wind, regardless of the direction--an important characteristic that did not exist at Daffin Park.

The new airport was opened on 20 September 1929, and until 1932, was referred to as “Savannah Airport.” On 30 November 1932, the Savannah City Council acquiesced to public pressure in naming the landing field “Hunter Field” with the airport continuing to be designated as “Savannah Airport.” On 19 May 1940, the airport was officially named Hunter Field after Frank O’Driscoll Hunter, a World War I ace from Savannah.

In 1940 a decision was made to construct a second Municipal Airport in response to the increased military presence in Savannah. A 600 acre tract of land approximately 7 miles northwest of the city (and approximately 8 miles northwest of Hunter Field) was acquired and construction of a new airfield started under a WPA (Works Progress Administration) program in mid 1941. The field was activated on 19 September 1943, by the U.S. Army Air Corps and named Chatham Field.

Following the end of World War II, Chatham Field was closed for three years. In December 1948, the field was turned over to the Georgia Air National Guard and the name changed to Travis Field. In 1949 the deed to Travis Field was turned over to the City of Savannah, and on 30 September 1950, the Savannah Municipal Airport moved from Hunter Field to Travis Field where it remained.

Weather observations in the Savannah area followed the general historical trend. Most weather observations from the early 1800s until 1930 were primarily taken within the historical district. A continuous record of observations involving the U.S. Signal Service and Weather Bureau were taken within an area of a few city blocks from 13 December 1870, until 1 July 1949. The Weather Bureau began taking weather observations at Hunter Field in 1930, and moved to Travis Field in 1950. .

## **Goal of the Study**

The goal of this study is to document the primary weather observational path at Savannah, GA leading to the Weather Bureau observing program in the first half of the 20<sup>th</sup> Century. Descriptions of Savannah weather observations since around 1950 are available through easily obtainable climatic records, with the challenge being to identify and define the roots of the path that began in the 1800s and continued through times of significant transition in the early 1900s. Extrinsic observations, i.e., those by

Smithsonian and Voluntary (or Cooperative) observers, are considered in relation to the beginning of the central observational stream eventually established by the Army surgeons, Signal Service, or Weather Bureau. This does not minimize the importance of these collateral observations, but rather focuses on the original events that led to the routine, formal weather observing program of modern times.

## LOCATION OF OBSERVATIONS

### Informal Weather Observations Prior to Structured Programs

#### *Informal Weather Observing in the 1700s*

According to the book entitled, *Georgia's Weather Watchers: An Historical Account of Weather, People, and Climate*, the first individual in Georgia to maintain a weather diary was Johann Martin Bolzius. Johann Bolzius was a minister to the Salzburgers who migrated to the Savannah area in 1734. Minister Bolzius and the Salzburgers migrated from Salzburg, Austria, and established a settlement named Ebenezer on the Savannah River approximately 25 miles northwest of Savannah. Minister Bolzius, and his assistant Israel Christian Gronau, conscientiously maintained a weather diary in the Savannah area from 12 March 1734, until 19 November 1765, the day Johann Bolzius died (see Bibliography).

In July 1758, the governor of the Royal Province of Georgia, Henry Ellis, wrote a letter (published in the *Savannah Morning News* in 1932) describing in detail a prolonged heat spell in the Savannah area, relating temperatures to the previous summer, indicating that informal weather observations were taken at that time. The letter contained the following:

“Yet in a thermometer hanging by me, made by Mr. Bird, and compared by the late Mr. George Graham, with an approved one of his own, the mercury stands at 102. Twice it has risen this summer to the same height, viz, on the 28<sup>th</sup> of June, and the 11<sup>th</sup> of July. Several times it has been at 100, and for many days successively at 98; and did not in the nights sink below 89.... The greatest heat we had last year was but 92, and that but once; from 84 to 90 were the usual variations; but this is reckoned an extraordinary hot summer.”

“...yet these heats, violent as they are, would be tolerable, but for the sudden changes that succeed them. On the 10<sup>th</sup> of December last the mercury was at 86; on the 11<sup>th</sup> it was so low as 38 of the same instrument. What havoc must this make with an European constitution?”

#### *Informal Weather Observing in the early 1800s*

In 1890, the U.S. Signal Service listed an index of meteorological observations made in Georgia. This index is contained in the NCDC (National Climatic Data Center) database.

Based on this index, the first record of observations at Savannah was January 1819 – October 1819, with the following coordinates: 32°05' N, 81°05' W, which would place the site on Hutchinson Island approximately one-half mile northeast of the intersection of Bay and Drayton streets (assuming accuracy of the coordinates which frequently were in error during the early to mid 1800s; see Figure 1). The elevation of

this site was listed as 71 feet. Additional subsequent stations were listed at this location (same coordinates and elevation) for June 1832 – May 1834, and August 1836 – October 1859. No confirmation (i.e., from other sources) was found for any of the sites listed in the Signal Service document from 1819 through 1859.

### **Structured Weather Observing Programs During the Early and Mid 1800s**

#### *Weather Observations by Army Surgeons*

The Georgia Historical Society in Savannah, GA possesses original meteorological observations for Savannah (listed in the Society's index under "Savannah Meteorological Tables, MS 700") not currently depicted in the NCDC electronic database. The observations were from January 1828 through December 1828 and January 1836 through December 1836. The format was consistent with that used by Army surgeons for the relevant periods. No specific location was indicated on the forms, either by street names or by latitude/longitude, other than the word, "Savannah." Most likely, these observations were made at Oglethorpe Barracks (refer to that report), although Fort Jackson is a possibility.

The 1828 observations were recorded at 7:00 a.m., 2:00 p.m., and 9:00 p.m. for temperature with one observation daily for wind and weather. Observations in 1836 were recorded at "Morning," "2 PM," and "Evening" for temperature with observations for wind and weather at "AM" and "PM." One daily rainfall amount was recorded in 1836.

A note was placed in the folder with the observations that stated:

"Typed copies of these records on file at the National Weather Records Center, Ashville, N.C. with carbon copies of this typing at Weather Bureau Airport Station, Savannah, GA."

These observations could not be found in the NCDC electronic database.

#### *Smithsonian Observations*

Smithsonian Institution records indicated two individuals in the Savannah area took weather observations as part of that program-Richard T. Gibson (1849-1861; local Weather Bureau records indicated Mr. Gibson may have took weather observations as early as 1835) and Dr. John F. Posey (1852-1860).

Smithsonian Institution records stated that R.T. Gibson took weather observations for the Smithsonian from 1849 until April 1861, just before the outbreak of the Civil War. Observing records for Mr. Gibson in the NCDC database begin in May 1849 and end in April 1861. No indication exists that he took observations for the Smithsonian after the Civil War. In 1849, the Smithsonian listed Mr. Gibson's location as Whitmarsh Island, located approximately 5 miles southeast of the intersection of Bay and Drayton streets. In 1857, the Smithsonian began listing the coordinates and



elevations for its observers, and Mr. Gibson's weather observing instruments were listed as 32°4' N, 81°5'W, with an elevation of 18 feet. These coordinates placed Mr. Gibson's station in Savannah and approximately 3 miles northwest of Whitemarsh Island. In 1859, Smithsonian records changed the coordinates of Mr. Gibson's station to 32°2' N, 81°1'W without changing the elevation. These coordinates placed the station on Whitemarsh Island. The obituary for Mr. Gibson in the 1872 *Savannah Morning News* indicated he lived in Savannah and returned to Whitemarsh Island later in his life; however, the newspaper suggests this move occurred in the late 1860s or later. The Weather Bureau station history form prepared 1 December 1954, contained the following note:

“...Mr. R.T. Gibson made observations on Whitemarsh Island, just east of Savannah. Copies of his records for most of the time 1849-61 are on the station but from printed references in ‘Oemler’s Truck Farming, Orange Judd Co. 1884,’ Gibson took observations from 1835-1861. We have been unable to locate his earlier records.”

According to Smithsonian records, Dr. John F. Posey took weather observations from 1852 through 1860; however the first observations in the NCDC database for Dr. Posey are July 1851. Latitude/longitude coordinates listed on the Smithsonian observation forms are 32°4'48"N, 81°7'15"W, with an elevation of 42 feet (note on forms stated height above half tide). These coordinates placed Dr. Posey's weather station approximately one and one-eighth miles west of the intersection of Bay and Drayton streets. The *Savannah City Directory* for 1858 and 1859 listed Dr. Posey's residence and office as 43 Bryan Street (see Figure 1) which was approximately 200 yards west of the intersection..

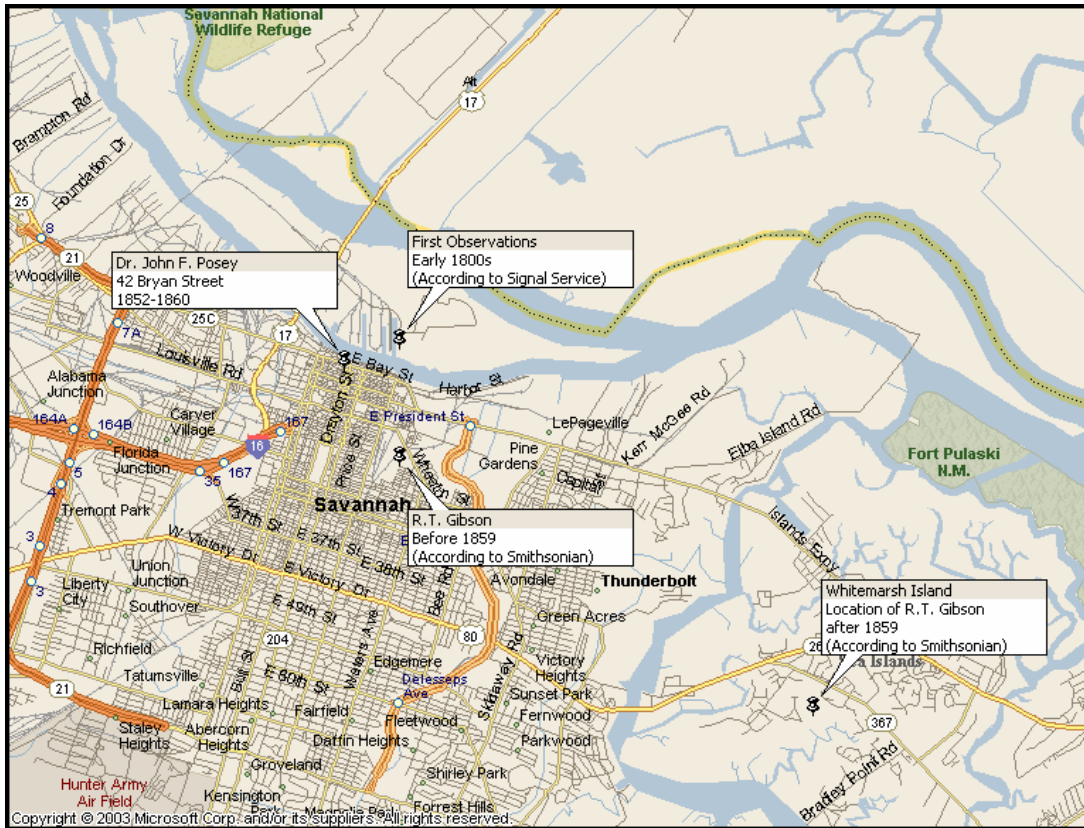
The *Savannah Evening Press* (1937) stated that a Dr. William R. Waring took weather observations in the early to mid 1800s, although no recorded observations could be found. The *Savannah Evening Press* for Friday 6 August 1937 contained the following:

“Dr. William R. Waring, president of the Georgia Medical Society, and in his time the most prominent physician in Savannah, was much interested in the science of meteorology and accustomed to making records of temperature, rainfall, direction of wind, etc., and recording the same in his journal, together with observations on the health of Savannah, and on the growth of his crops on his Skidaway Island plantation.”

Following a cold spring in 1836, Dr. Waring wrote:

“Our climate has become so much northern that our diseases have become so too, and our vegetables also. We can't of late raise orange trees, and even the fig has become precarious. Our politics is taking the same course.”

An unofficial manuscript on the life of Dr. John Posey (in the Georgia Historical Society) and a 1937 article in the *Savannah Morning News* (Sunday 24 January 1937) both mentioned that a Dr. Noble Wymberly Jones (first president of the Georgia Medical Society in the early 1800s) also took weather observations. However, no confirmation or records of his observations were found.



**Figure 1. Approximate locations of earliest weather observations in the immediate Savannah area. A specific address was found for Dr. Posey’s observations, with latitude/longitude used for remaining sources. North is top of the map. Locations plotted on current map of Savannah.**

### *Civil War Years*

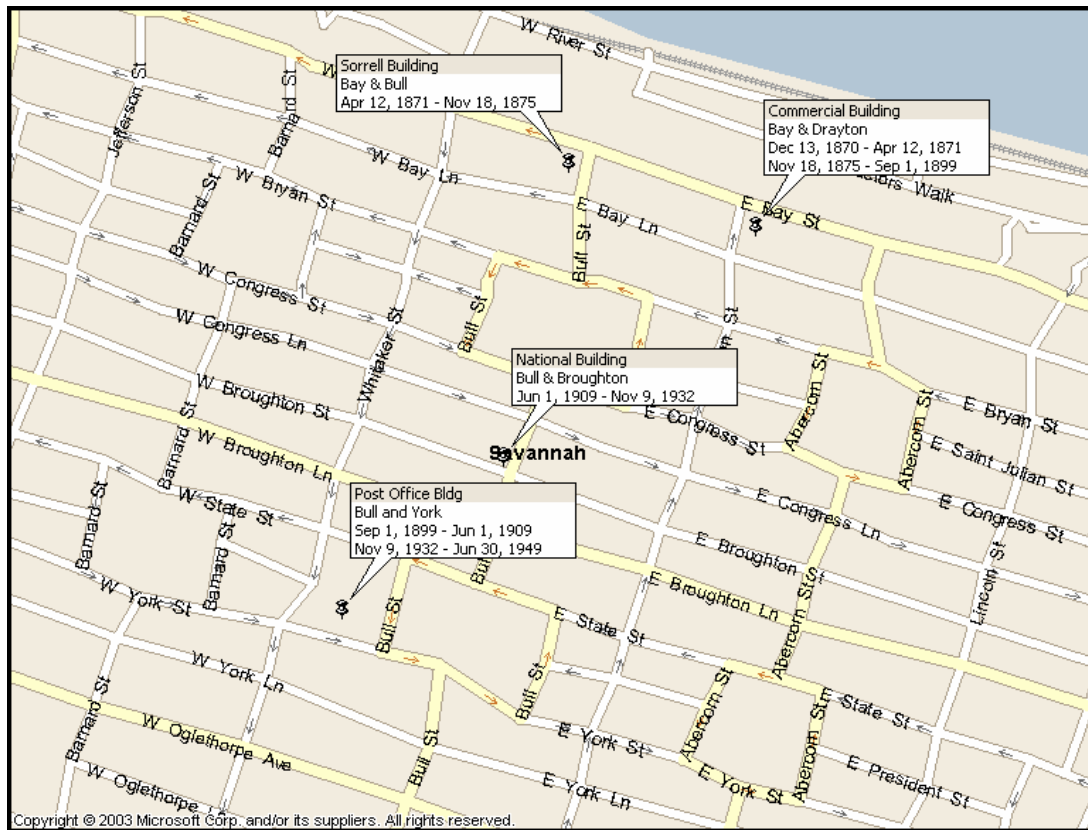
During the Civil War a number of individuals and soldiers maintained weather diaries in the Savannah area, mostly in the vicinity of Fort Pulaski and Tybee Island. In particular, some form of weather diaries were maintained by Cornelius R. Hanleiter, Edward William Drummond, and L.W. Landershine (information provided by the National Park Service at Fort Pulaski).

## Signal Service and Weather Bureau Observations Prior to the Aviation Years

### Signal Service Observations - City Offices

NOTE – All Signal Service and Weather Bureau station elevations in this report are for office barometers unless otherwise indicated. All elevations related to barometers in this report are above sea level unless otherwise indicated.

Figure 2 shows the locations of Signal Service and Weather Bureau city offices.



**Figure 2. Locations of Signal Service and Weather Bureau stations for the Savannah city offices from 13 December 1870, through 1 July 1949. North is top of the map. Office locations are plotted on current map of Savannah.**

13 December 1870 – 12 April 1871

- Commercial Building, 3<sup>rd</sup> floor, southeast corner of Bay and Drayton Streets
- Address 103 Bay Street (address also given as 16 Drayton Street)
- Elevation 60 feet
- GPS coordinates - 32°4'50"N, 81°5'24"W

12 April 1871 – 18 November 1875

- Sorrell Building, 3<sup>rd</sup> floor, southwest corner of Bay and Bull Streets (located one block west of the previous location in the Commercial Building)
- Elevation 68 feet
- GPS coordinates - 32°4'51"N, 81°5'29"W

18 November 1875 – 1 September 1899 – (Weather Bureau assumed observing responsibility 1 July 1891).

- Commercial Building, 3<sup>rd</sup> floor, Rooms No. 13-16, southeast corner Bay and Drayton Streets (located one block east of the previous location in the Sorrell Building)
- Name of the building changed to Board of Trade Building on 9 September 1892. On same date, the Weather Bureau office moved from the 3<sup>rd</sup> floor to the 4<sup>th</sup> floor, and on 1 July 1897, the office moved back to the 3<sup>rd</sup> floor (rooms 23 and 29).
- Address 103 Bay Street (address also given as 16 Drayton Street)
- Elevation 87 Feet. Elevation of the barometer changed to 98 feet on 9 September 1892 and changed to 82 feet 1 July 1897.
- GPS coordinates - 32°4'50"N, 81°5'24"W

NOTE – An apparent conflict exists between the elevation and location of the barometer while in the Commercial Building 13 December 1870 – 12 April 1871, 18 November 1875 – 9 September 1892, and 1 July 1897 – 1 September 1899. Records indicate that during all three periods the barometer was located on the 3<sup>rd</sup> floor of the same building with significantly different elevations between 13 December 1870 – 12 April 1871 (elevation of 60 feet) and the other two periods (elevations 87 feet and 82 feet). Information for the period 13 December 1870 – 12 April 1871 was limited (contained in local Climate Record Books in the mid 20<sup>th</sup> Century) with two separate sources (Signal Service Annual Reports and Signal Service Inspection Reports) confirming office location and barometer elevation for the latter two periods.

#### *Weather Bureau Observations – City Offices*

1 September 1899 – 1 June 1909

- U.S. Customs House and Post Office Building (rooms 201 and 202), located at the intersection of State, Bull, President, Whitaker, and York Streets-just west of Wright Square (located 4 blocks southwest of the previous location in the Board of Trade Building)
- Elevation 65 feet
- GPS coordinates - GPS coordinates - 32°4'40"N, 81°5'34"W

1 June 1909 – 9 November 1932

- National Building (also called National Bank Building), Rooms 901, 902, 903, and 914, northwest corner of Bull and Broughton Streets (located 2 blocks north of the previous location in the U.S. Customs House and Post Office Building).
- Weather Bureau records indicate the National Bank Building had two name changes between 1909 and 1932. The name was changed to Oglethorpe Building on 1 January 1921 and to Liberty Bank and Trust Company on 1 January 1926.
- Address 41 Bull Street.
- Elevation 154 feet
- GPS coordinates - 32°4'50"N, 81°5'29"W

9 November 1932 – 1 July 1949

- U.S. Customs House and Post Office Building, Rooms 319, 323, and 327 on the 3<sup>rd</sup> floor, located at the intersection of State, Bull, President, Whitaker, and York Streets-just west of Wright Square (located 2 blocks south of the previous location in the National Building)
- Elevation 81 feet
- GPS coordinates - 32°4'40"N, 81°5'34"W

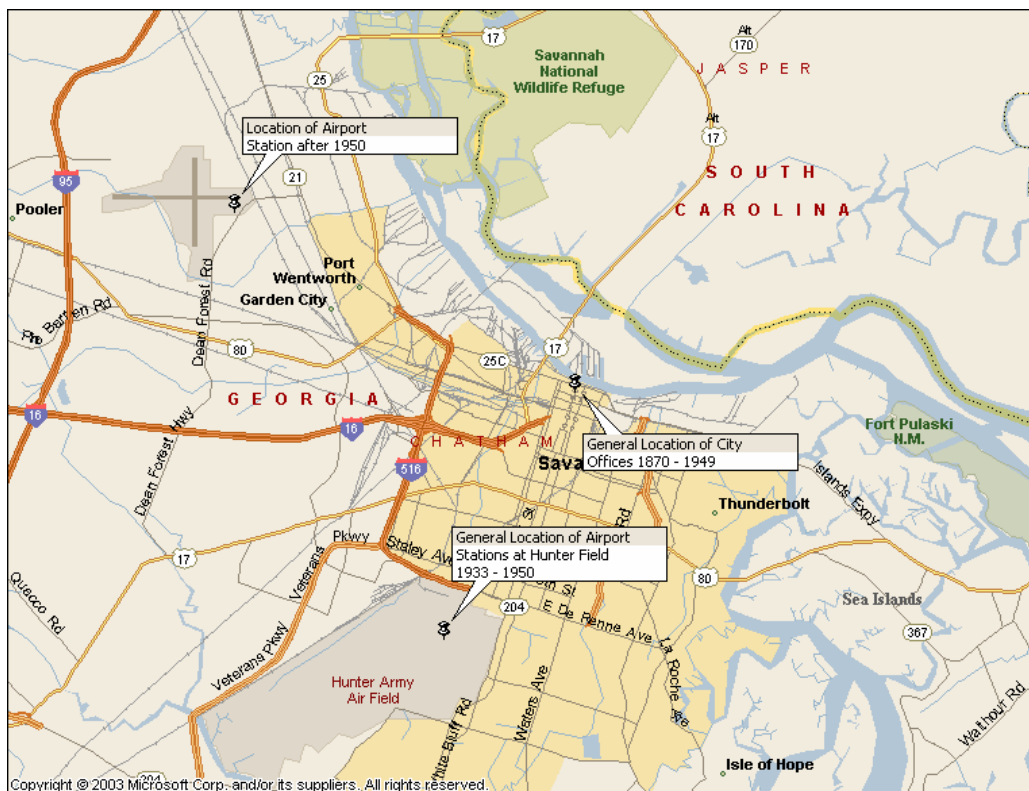
#### *Weather Bureau Observations – Airport Offices*

First airport weather observations at Savannah were taken at Hunter Field (located approximately five miles southwest of the city). Weather Bureau observations continued at Hunter Field through the 1930s, 1940s, and until 1 October 1950, when the Weather Bureau office moved to Travis Field (approximately seven miles northwest of the city). Travis Field eventually became Savannah International Airport.

NOTE – Information on location and function of airport offices from 1930 into 1933 was vague and contradictory. Station History forms in the NCDC database indicated the Weather Bureau airport office was located in the Administration Building (Building 1202) at Hunter Field from 1 July 1930 until 15 February 1944. However, the *Savannah Morning News* contained a number of articles in 1938 relating to the building of the Airport Administration Building and stated the Weather Bureau office would be located on the second floor of the building when completed in September 1938. Also, cover sheets of the Weather Bureau Original Monthly Record forms indicated the office moved into the Administration Building on 8 September 1938, and this move was supported by other forms, e.g., “Description of Meteorological Features and Instrumental Equipment and Exposures at Airport and Airways Stations.” Also, notes in Local Climatological Data in the late 1940s and early 1950s indicated Civil Aeronautical Administration (CAA) employees took the airport weather observations from 1930 into 1944, but instrument records in the NCDC database indicated that Weather Bureau officials took the weather observations at least as early as 1935, and perhaps earlier. Hourly weather

observations at Hunter Field in the NCDC database began on 1 May 1933 and were taken by Weather Bureau observers.

Figure 3 shows the relation of weather station locations at Hunter and Travis Airports to the city offices. More specific locations with respect to the weather stations at Hunter Field are shown in Figure 16 and the station at Travis Field is depicted in Figure 24.



**Figure 3. General locations of Weather Bureau airport offices after January 1933 through the period of this study. Also shown are general locations of the Signal Service/Weather Bureau city offices. North is top of the map. Locations are plotted on current map of Savannah.**

1 July 1930 – January 1933 – Station History forms in the NCDC database indicate weather observations began at Hunter Field on 1 July 1930 and were taken at the Administration Building (Building 1202), continuing at this location until 15 February 1944. However, the Administration Building was not built until 1938. No specific information could be found (other than the Station History forms) that mentioned weather observations at Hunter Field prior to January 1933, other than the date “1 July 1930” that was listed on the forms in the 1930s and 1940s as “the date for establishing the station.”

January 1933 – 8 September 1938 – Exact location of this observing site was not found. However, a map attached to a Weather Bureau instrument form (Description of Meteorological Features and Instrumental Equipment and Exposures at Airport and Airways Stations) prepared on 27 March 1934 located the station in relation to the ceiling

light and runway, which was compared to a similar map on another instrument form prepared on 12 September 1938. The results indicate this station was located approximately 200 feet southeast of the Administration Building (Building 1202) to be built in 1938. Since this station did not have a mercurial barometer, no elevation was listed; however, ground elevation was approximately 40 feet.

8 September 1938 – 16 February 1944

- Building 1202 (Administration Building) at Hunter Field (located 5 miles south southwest of the city; approximately 200 feet northwest of the previous location). Weather Bureau office was located on the second floor of the Administration Building.
- Elevation 51 feet

16 February 1944 – 25 September 1945

- Army Building 1246 at Hunter Field (one-quarter mile east southeast of Building 1202)
- Elevation 48 feet

25 September 1945 – 1 October 1950

- Building 1202 (Administration Building) at Hunter Field (one-quarter mile west northwest of Building 1246), 2<sup>nd</sup> floor.
- Elevation 53 feet

Subsequent to 1 October 1950

- Building 105 at Travis Field (8 miles northwest of Building 1202 at Hunter Field). Approximate location two miles north of highway U.S. 80 on Dean Forest Road.
- Elevation 51 feet

## INSTRUMENTATION

### Structured Weather Observing Programs During the mid 1800s

#### *Weather Observations by Army Surgeons*

See report on Oglethorpe Barracks, GA.

#### *Smithsonian Observations*

No information could be found regarding specific type of weather instruments used by Richard T. Gibson as part of the national Smithsonian Institution observing program. Smithsonian records indicated Mr. Gibson used a thermometer and rain gage, and the same information is indicated through the NCDC database, i.e., weather measurements were temperature, rainfall, and wind direction and force (subjectively determined). It is not known whether the instruments were Smithsonian types since Mr. Gibson may have begun taking weather observations before the Smithsonian Institution organized its weather observing program.

Instruments used by Dr. John F. Posey, at least in the early to mid 1850s, appeared to be the standard Smithsonian instruments made by Mr. James Green of New York. The observation form for Dr. Posey in April 1852 and subsequent forms into 1853 (when information on instruments was no longer available) listed the following instruments and numbers:

Barometer – No. 455, made by J. Green, English scale, no correction.

Thermometers

(ordinary) – No. 552, made by J. Green, Fahrenheit, no correction.

(self registering minimum) – No. 562, made by J. Green, Fahrenheit, no correction.

(self registering maximum) – No. 553, made by J. Green, Fahrenheit, no correction.

Psychrometer – No. 543, made by J. Green, Celsius, no correction.

Wind vane – Church 210 feet above the ground.

Rain gage – Located 7 feet above the ground.

On the forms, Dr. Posey indicated the instruments were in good order.

The barometer also had an attached thermometer, and based on temperatures recorded from the attached thermometer, it appears the barometer was located in a non-heated room.

#### *Signal Service Observations – City Offices*

**13 December 1870 – 12 April 1871** – Signal Service Office located on the 3<sup>rd</sup> floor in the Commercial Building on the southeast corner of Bay and Drayton Streets.



Little information was found regarding specific weather instruments at this site. The 1870 Annual Report for the Signal Service stated each office was supplied with one barometer, one thermometer, one hygrometer, one anemometer, and one rain gage. Signal Service instructions regarding the type and exposure of these instruments, including the instrument shelter, closely followed directions that had been in effect for Smithsonian observers for almost 20 years.

Barometer - Elevation of the barometer was 60 feet. Ground elevation was 42 feet above sea level.

Instrument Shelter – No solid information was found on the instrument shelter at this location. However, based on a Signal Service inspection report conducted at the subsequent location (Sorrell Building) on 10 October 1871, it is quite likely the instrument shelter here was a window type shelter. This is supported by a station history note written in 1949. The dry-bulb thermometer and psychrometer were located 20 feet above ground.

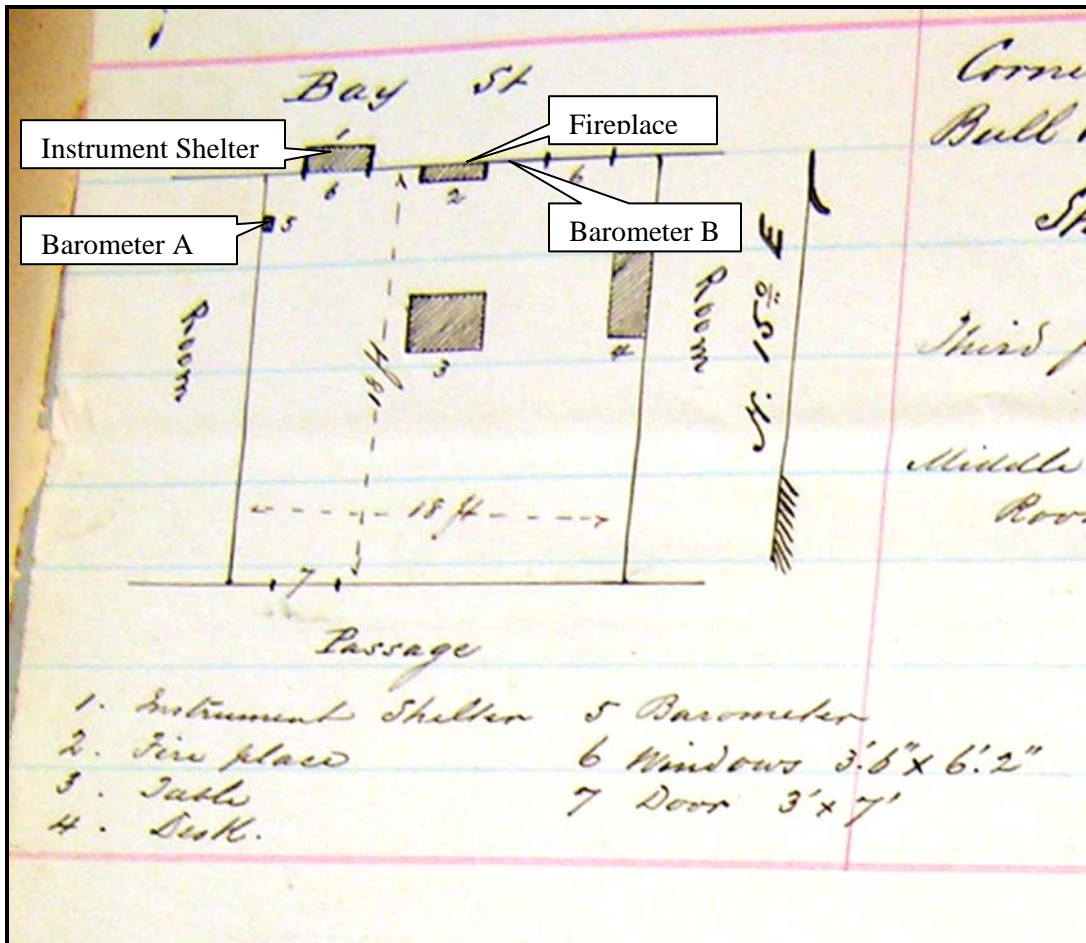
Rain Gage – A standard rain gage was located 56 feet above ground, i.e., on the roof of the building.

Wind Instruments – Wind instruments were 67 feet above ground.

**12 April 1871 – 18 November 1875** – Signal Service office located on the 3<sup>rd</sup> floor of the Sorrell Building (middle north room) on the southwest corner of Bay and Bull Streets.

NOTE - From 1871 through 1886, the U.S. Signal Service conducted six inspections of its Savannah, GA weather offices. The inspection reports, available at the National Archives and Records Administration (NARA), contained drawings and textual information regarding weather instrument placement and exposure. The quantity and quality of information varied, depending primarily on the inspector. However, these reports contained revealing information not available from other sources, especially with regard to instrument location and exposure.

Figure 4 shows a drawing of the Signal Service office in the Sorrell Building on 10 October 1871, along with the location of the barometer and instrument shelter (window shelter).



**Figure 4. Drawing of the Signal Service office on the third floor of the Sorrell Building on 10 October 1871. North is toward the top of the page. Barometer A was hung on the west wall a few feet south of the window containing the instrument shelter. Barometer B was added between 19 December 1873 and 9 May 1875. The instrument shelter was inserted in the north facing window just a few feet west of the fireplace and chimney. The room was approximately 18 feet wide and 18 feet long. From the National Archives and Records Administration.**

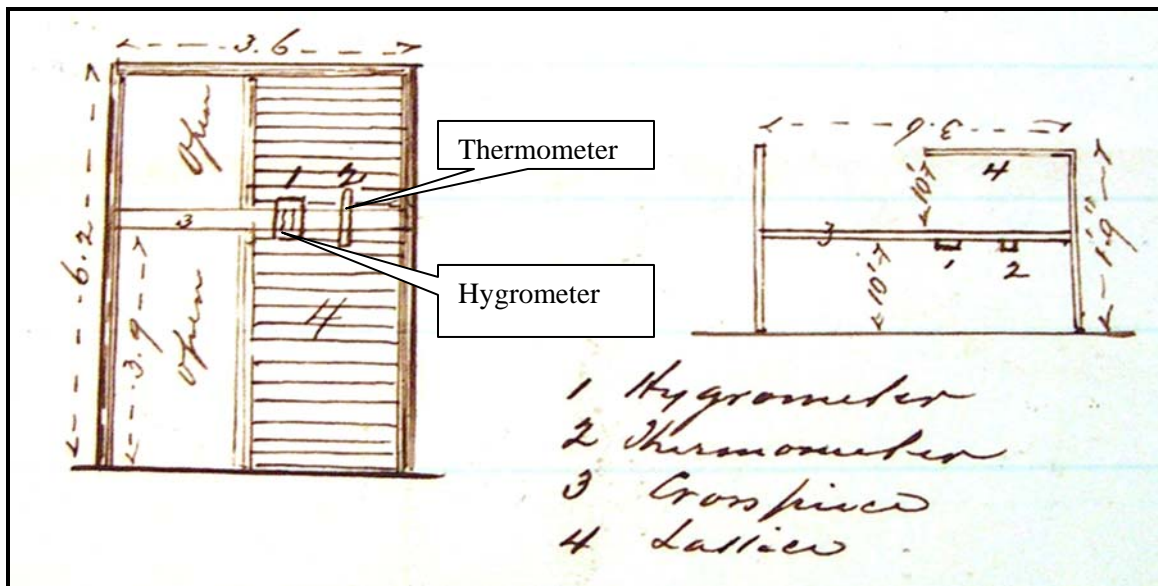
Barometer - Elevation of the barometer was 68 feet above sea level and 26 feet above ground. The barometer (Barometer A) was hung in the northwest part of the room on the west interior wall (Figure 4). The inspection report on 10 October 1871, made the following comment: "...but the Barometer was hung up out of its base." The inspection report for 9 May 1875 indicated the office had two barometers-one operational with a second extra barometer. At that time, Barometer A was the extra barometer and Barometer B the operational instrument.

Instrument Shelter – The instrument shelter was fitted to a north facing window in the northwest part of the room (Figure 4). It was located a few feet west of the fireplace and chimney.

Figure 5 is a drawing of the instrument shelter from the 10 October 1871, Signal Service inspection report. The shelter was 6 feet 2 inches tall, 3 feet 6 inches wide, and 1 foot 9 inches deep. The following description was listed in the inspection report.

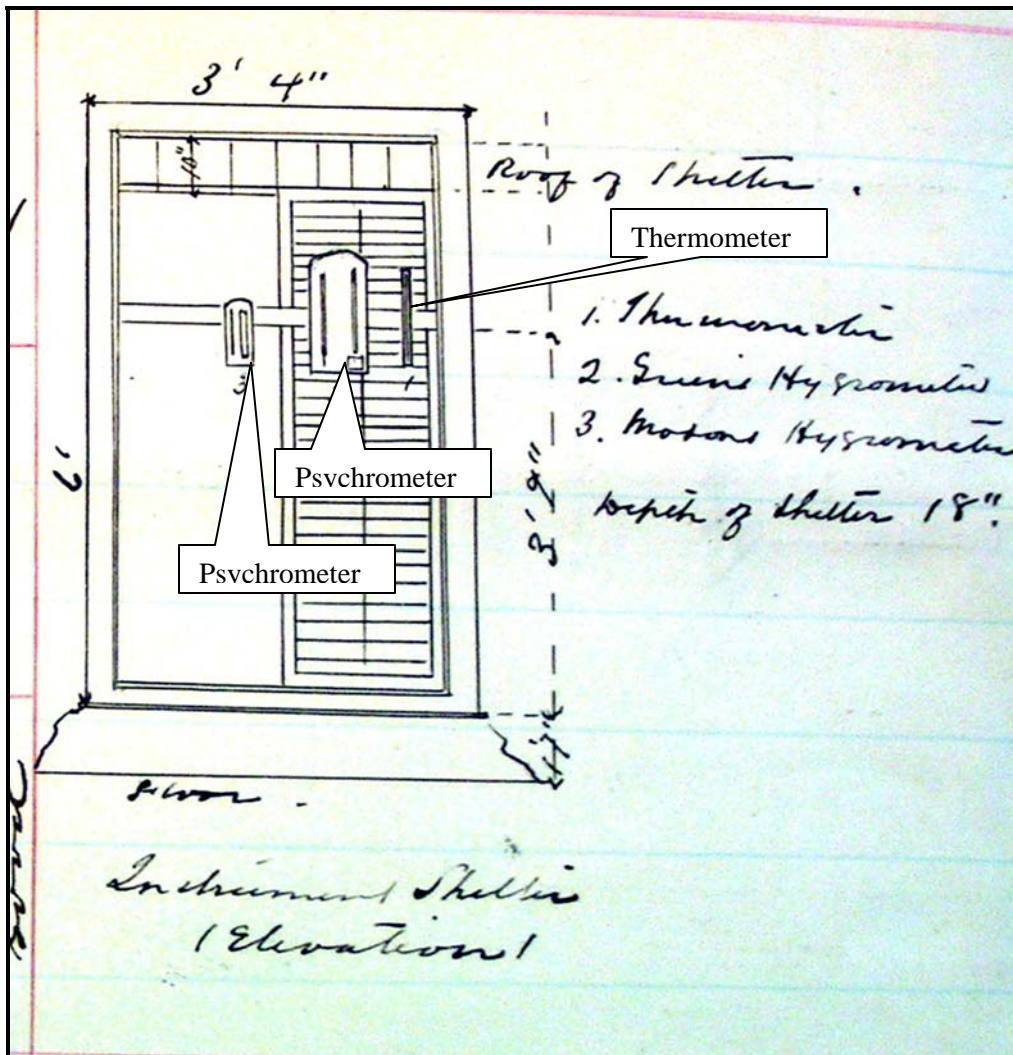
“The instrument shelter is a modification of the Smithsonian plan. It is made with solid sides, sloping roof, open bottom. Over half front latticed, the other open. The lattice is made of an old green window sill and painted green. The rear of the shelter is not painted and it faces north.”

The thermometer and psychrometer were hung in the shelter 28 feet above ground and 10 inches away from the panes of the window. (NOTE – The 1874 Signal Service Annual Report, as well as the Station History Form prepared 5 November 1951 indicated maximum and minimum thermometers were located at this site. However, none of the three inspection reports (1871, 1873, or 1875) listed maximum/minimum thermometers.) Also, none are shown in the drawing of the instrument shelter (Figure 5).



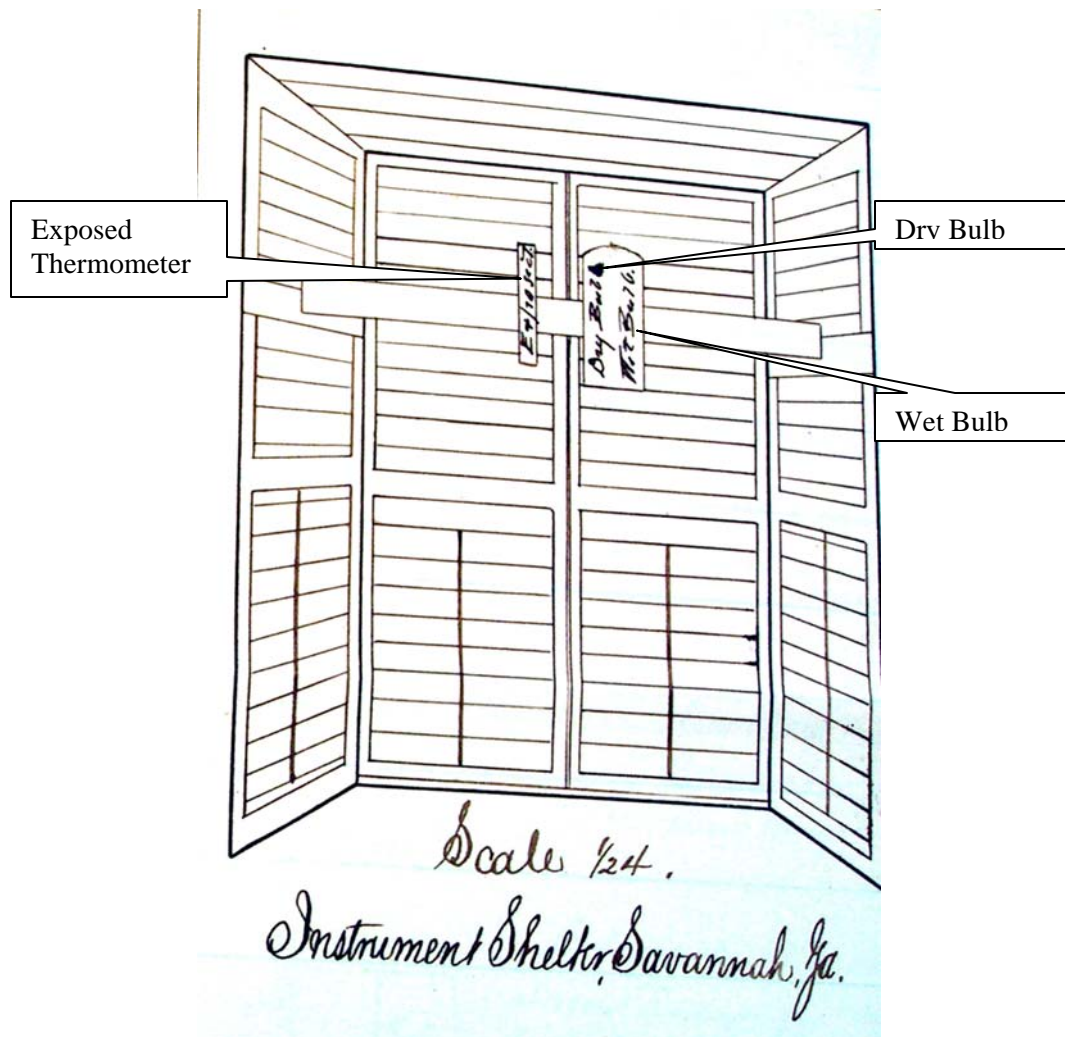
**Figure 5. Drawing of the window instrument shelter from the 10 October 1871, Signal Service inspection report. The drawing on the left is the shelter as viewed from the window. The left, or west side of the back of the shelter was left open with the east side covered by lattice. Drawing on the right is the shelter viewed from above. From the National Archives and Records Administration.**

By late 1873, a second psychrometer was added to the instrument shelter. Figure 6 shows the arrangement of the thermometer and psychrometers during the 19 December 1873, inspection. One psychrometer was located behind the lattice of the shelter and the second psychrometer on the open side of the shelter (i.e., side of the shelter that was open to the outside).



**Figure 6. Drawing of the window instrument shelter from the 19 December 1873, Signal Service inspection report. One of the psychrometers was placed behind the lattice of the shelter, i.e., on the right side, and the second placed on the open side. View of the shelter is from the window. From the National Archives and Records Administration.**

Figure 7 shows the instrument shelter in use by mid 1875. By this time, the window shelter was completely enclosed, i.e., the left side was no longer open to the outside. Also, the two psychrometers in late 1873 had been replaced by one instrument by mid 1875, and a backup (extra) thermometer was added to the station's equipment list.



**Figure 7. Drawing of the window instrument shelter from the 9 May 1875, Signal Service inspection report. View of the shelter is from the window. From the National Archives and Records Administration.**

Rain Gage – The rain gage was on the roof of the building with the top of the gage 2 feet 2 inches above the roof and approximately 57 feet above ground. The inspection report in 1871 stated the roof of the Sorrell Building was one floor higher than any of the surrounding buildings.

Wind Instruments – The anemometer and wind vane were mounted on the roof of the building. The anemometer was 6 feet above the roof of the building and 60 feet above ground. The wind vane was 25 feet above the roof and 79 feet above ground. The 1871 report indicated the office had two wind vanes, a large vane (12 foot) and a small vane (3 foot) with only the large vane installed on the roof. In the 19 December 1873, report the wind vane was listed as 28 feet above the roof and approximately 81 feet above ground. The inspection report on 9 May

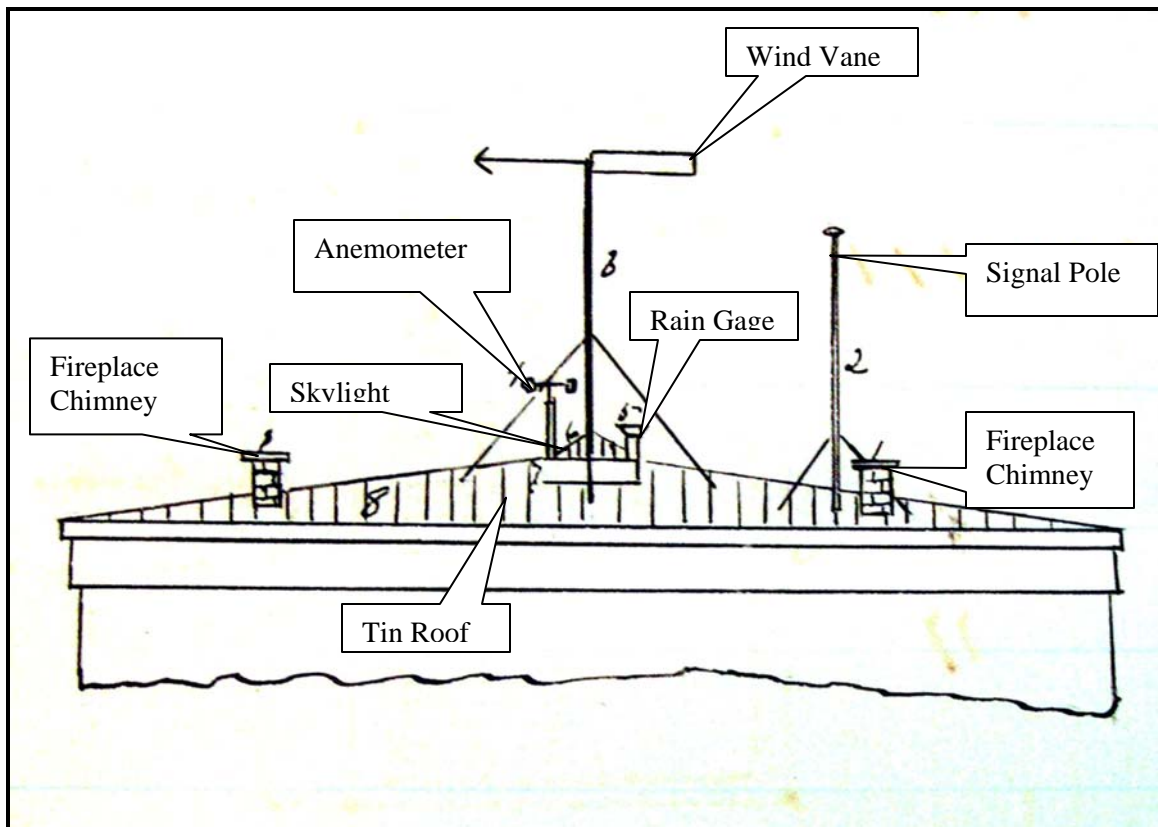
1875, listed the anemometer as 73 feet above ground and the wind vane 78 feet above ground.

Additional Equipment/Information – The 1871 inspection report contained the following description of weather instruments on the roof of the Sorrell Building:

“The anemometer, wind vane, and rain gauge are included upon a platform about 8 feet square which is located upon the highest point of the roof (the platform is 54 feet 4 inches from the ground). The rain gauge is in a strong plain frame and the anemometer is placed upon a good firm post. The wind vane does not register in the Sergeant’s office and it is impossible to make it do so...”

Inspection reports for this location indicated exposure of the roof instruments was good.

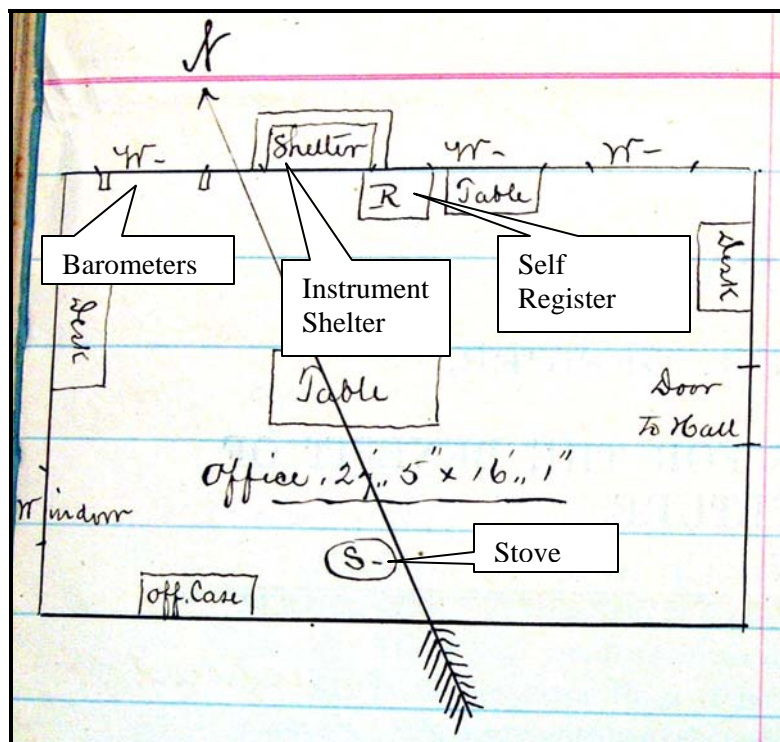
Figure 8 shows locations of the weather instruments on the roof of the Sorrell Building in late 1873.



**Figure 8. Drawing of weather instruments on top of the Sorrell Building from the 19 December 1873, Signal Service inspection report. No directions were provided for the figure in the report. From the National Archives and Records Administration.**

**18 November 1875 – 1 September 1899** – Signal Service office located on the third floor (Rooms No. 13 - 16) of the Commercial Building (name of the building changed to “Board of Trade Building” on 9 September 1892) on southeast corner of Bay and Drayton Streets (address 103 Bay Street). Weather Bureau assumed observing responsibility 1 July 1891. Weather Bureau office moved from the 3<sup>rd</sup> floor to the 4<sup>th</sup> floor on 9 September 1892, and back to the 3<sup>rd</sup> floor (rooms 23 and 29) on 1 July 1897.

Figure 9 shows a drawing of the Signal Service office in the Commercial Building on 29 March 1885, along with the location of the barometer and instrument shelter (window shelter). This same arrangement was indicated on the inspection report for 2 February 1880 (the 1885 drawing was clearer), and this arrangement continued at this location at least through mid 1886 (last Signal Service inspection available for Savannah).



**Figure 9. Drawing of the Signal Service office on the third floor of the Commercial Building from the 29 March 1885, inspection report. North is toward the upper left part of the page. The two barometers were hung on the north wall just west of the window instrument shelter. The instrument shelter was inserted in the north facing window, with a self register located just to the east of the window containing the shelter. The room was approximately 16 feet wide and 28 feet long. The stove was located across the room from the instrument shelter and barometers. From the National Archives and Records Administration.**

Barometer - Elevation of the barometers (operational and backup) was 87 feet above sea level and 40 feet above ground. The elevation changed to 98 feet on 9 September 1892 and changed back to 87 feet on 1 July 1897. On the November 1897, Original Monthly Record of Observations the following note was written:

“A new line of levels run by the Corp of Engineers, U.S.A., showed the old elevation, 87 feet, to be erroneous. New elevation established Nov 12, 1897.”

The new elevation listed was 85 feet.

The December 1897 Monthly Record of Observations contained the following note:

“Elevation changed from mean low tide (85 feet), to mean tide (82 feet), in accordance with letter from Barometry, dated Dec 9, 1897. New elevation of 82 feet has been used in reducing all barometer readings taken during the current month.”

The elevation of 82 feet was used subsequently.

Ground elevation at this site was 42 feet. The terrain around the Savannah historical district, i.e., where the Signal Service/Weather Bureau City Offices were located, was relatively flat with elevation of approximately 42 feet.

Instrument Shelter – A note in the 10 February 1880, inspection report stated the instrument shelter was made from the plans provided in the Signal Service instructions to observers. Its dimensions were 6 feet 6 inches high, 3 feet 5 inches wide and 1 foot 7 inches deep. The shelter was located in a north facing window and according to the 1880 report, contained an exposed thermometer, psychrometer, maximum thermometer, and minimum thermometer. These instruments were located 42 feet above ground.

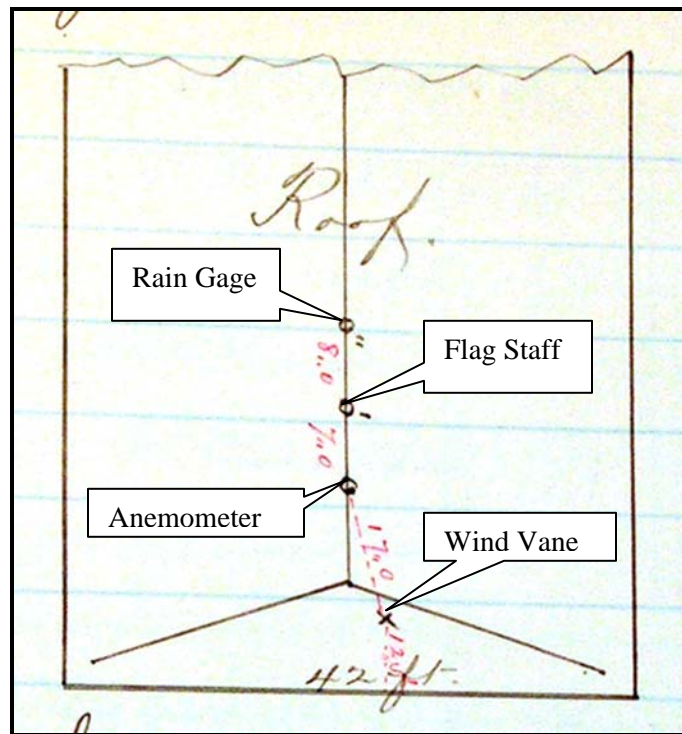
On 1 December 1886, the window instrument shelter was replaced by a shelter on the roof of the building (this shelter was classified as a standard roof shelter). At that time, the elevation of the thermometers/psychrometer changed from 42 feet to 66 feet. On 8 April 1892, the elevations changed from 66 feet to 63 feet. The thermometers were approximately 10 feet above the roof. A note contained on the 1951 Station History form stated, “Roof shelters from 1 December 1886 to 1 September 1899, not considered good exposure, but were better than window shelters used previously.” Also, a note on a Station History form stated, “Shelter above a metal roof and this believed to have caused high readings during days from 1886-1899.” A note written in 1893 had the following comments regarding the impact of the tin roof on temperature readings:



“It is believed that the present exposure, although not as perfect as might be desired owing to the peculiar construction of the roof, is as good as can be obtained under the circumstances. The roof is of tin, and there is so much of it, that it seems reasonable to suppose that the thermometer, during the hot days of summer, would read slightly higher than it should.”

The 10 February 1880, inspection report was the first indication that this station was provided maximum/minimum thermometers. Also, the report indicated the station had two thermometers on site.

Figure 10 shows the arrangement of the instruments on the roof of the Commercial Building on 16 May 1886. Based on the Signal Service Inspection Reports it appears this arrangement likely existed at least prior to 1880.



**Figure 10. Drawing showing the locations of instruments on the roof of the Commercial Building from the 16 May 1886, Signal Service inspection report. North is toward the bottom of the page. The rain gage was approximately 8 feet south of the flag staff, the anemometer 7 feet north of the flag staff, the wind vane 17 feet north of the anemometer. The wind vane was located approximately 13 feet south of the northern edge of the roof. The roof was approximately 42 feet wide. From the National Archives and Records Administration**

Rain Gage – The rain gage was located on the roof of the building 58 feet above ground. The Signal Service Inspection Report for 29 March 1885, indicated the rain gage elevation changed from 58 feet to 56 feet. A tipping bucket rain gage was installed on the roof 9 September 1892. The tops of the rain gages were

approximately three feet above the roof. The Weather Bureau Annual Report for 1897 indicated the rain gages may have been moved, i.e., the Annual Report indicated a change in elevation to 54 feet.

Wind Instruments – No definitive information was found regarding wind instruments from 18 November 1875 to 10 February 1880 (first available inspection report at this location). Based on the 1880 inspection report, it is likely the wind instruments were on top of the roof of the building, with the anemometer approximately 75 feet above ground and the wind vane 77 feet above ground. The wind vane was classified as “large,” i.e., 12 feet long in the report. The instruments were approximately 15 feet above the roof. Based on the three inspection reports (1880, 1885, and 1886), it appears the height of the wind vane remained at 77 feet at least through 1886. The anemometer was listed at 73 feet in 1885 and 60 feet in 1886. On 15 April 1892, the wind instruments were placed approximately 86 feet above ground and approximately 30 feet above the roof. The 1897 Weather Bureau Annual Report indicated an elevation change on 1 July 1897 from 86 feet to 89 feet above ground, reflecting a possible move in the instruments.

Additional Instruments/Information – The following relevant comments were indicated on the observation forms for this station:

September 1881 - “wind movements and velocities on 1st-2<sup>nd</sup> (of September) approximated. Instruments blown away by storm of 27th-28th August 1881.”

July 1883 - “Rain Gauge blown away by squall.”

November 1890 – “On the 8th Station anemometer #156 was found broken & out of order. Extra Anem. #232 was substituted therefore.”

May 1891 – “(on 17th) Station anemometer #232 removed from roof & Extra #580 substituted. Old anemometer #232 dial reading at noon 830. New anemometer #580 dial reading at 12 noon 823.”

Appendix 1 lists how the weather instruments changed at the Savannah office during the 1880s.

#### *Weather Bureau Observations – City Offices*

**1 September 1899 – 1 June 1909** – Weather Bureau office in the U.S. Customs House and Post Office Building (rooms 201 and 202). Located at the intersection of State, Bull, President, Whitaker, and York Streets (just west of Wright Square)

Barometer – Elevation of the barometer was 65 feet above sea level. Ground elevation was 42 feet.

Instrument Shelter – The instrument shelter was located on the roof of the building. The shelter was a standard type, i.e., inside measurements 3 feet 2 inches long, 2 feet 7 inches wide, and 2 feet 9 inches high.

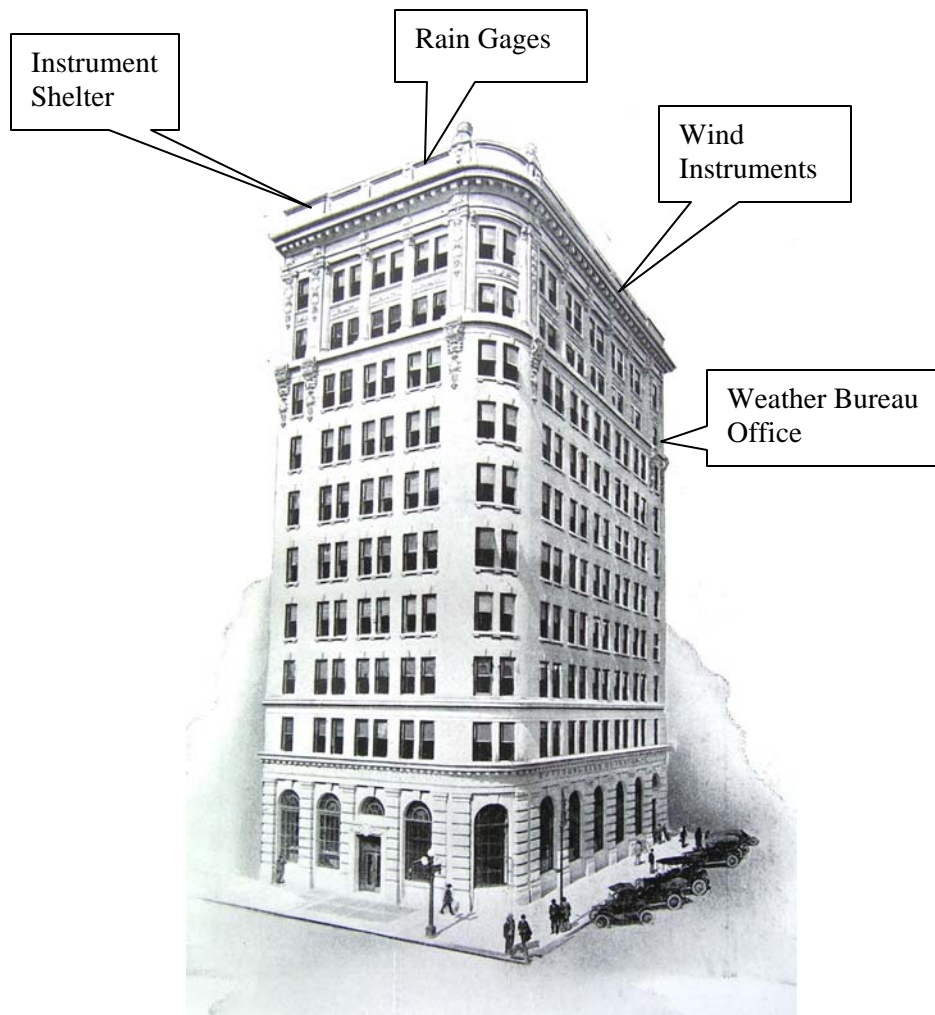
The exposed, maximum, and minimum thermometers were 81 feet above ground and the psychrometer 80 feet above ground. The thermometers and psychrometer were approximately 14 feet above the roof.

Rain Gages – The standard 8 inch rain gage and tipping bucket gage were on the roof of the building, 74 feet above ground and 6 feet above the roof. A Weather Bureau note on 1 June 1909, made the following comment regarding the exposure of the rain gage since 1 September 1899: “The gauge had a poor exposure, being near the instrument shelter, the shelter being only six feet from the gage and a rain accompanied by a northwest wind could only be imperfectly measured. The gauge was interfered by the construction of the roof also, east of the gauge the roof was a few feet higher than the gauge, to the north the comb (sic) of the roof was about even with the gauge and the other exposures were open.”

Wind Instruments – The wind instruments were on the roof of the building. The anemometer was 89 feet above ground and 21 feet above the roof. The wind vane was 90 feet above ground and 22 feet above the roof. A note on the Station History form in 1949 stated: “Influenced by tower 38.5 feet to northwest.”

**1 June 1909 – 9 November 1932** – Weather Bureau office located in the National Building (also called National Bank Building), Rooms 901, 902, 903, and 914 (on 1 January 1921, the name was changed to the Oglethorpe Building, and on 1 January 1926, the name was changed to the Liberty Bank and Trust Building), northwest corner of Bull and Broughton Streets. Address was 41 Bull Street.

The office was located in the northeast part of the building (Figure 11) with the weather instruments on the roof of the building.



**Figure 11. Photograph of National Bank Building (picture likely taken 1910 – 1915) looking northwest. Labels regarding weather instruments indicate approximate position on the roof. From the Savannah Public Library.**

Barometer – The barometer was 154 feet above sea level. Ground elevation was 42 feet.

Instrument Shelter – The instrument shelter was located on the roof of the National Building. The shelter was a standard type. The exposed, maximum, and minimum thermometers were 151 feet above ground. The psychrometer was 150 feet above ground. The thermometers and psychrometer were approximately 11 feet above the roof. The Climatological Record at the station stated: “Instrument shelter is located on southwest corner of building, 9 feet from west and 9 and one-half feet from south wall; mounted on a regulation support of angle iron 10 and one-half feet above roof level and about 148 feet above ground level. The only outside influences that may affect the temperature readings being a live (sic) chimney 53 feet to the northeast.”

Rain Gages – The standard 8 inch gage and tipping bucket gage were on the roof of the building, 143 feet above ground and 4 feet above the roof. The

Climatological Record at the station stated: “The rain gage is located on the south-oriented portion of the building, 12 feet distant from south wall, which is 9 feet high, and 13 and one-half feet distant from a small frame building 12 feet high, and 26 feet distant from the east wall 9 feet high. The exposure, while not perfect, is as good as could be secured on the roof of the building 143 feet above ground.”

Wind Instruments – The wind instruments were on the roof, approximately 15 feet south of the northern edge of the building, and equidistant between the east and west walls. The instruments were approximately 194 feet above ground and approximately 44 feet above the roof. The Climatological Record at the station stated: “The wind instruments are located on the top of a regulation 40 foot angle iron tower and 194 feet above the ground, and are not affected by any outside influences. They are located on the northeast-oriented portion of the building above all surrounding objects. New 3-cup anemometer put in use 12:01 AM Jan 1, 1928.”

The NCDC database contained a document prepared in the 1920s (Appendix 2) that listed instrument identification numbers used at the Savannah office from January 1871 into the 1920s. That information is listed in Appendix 2.

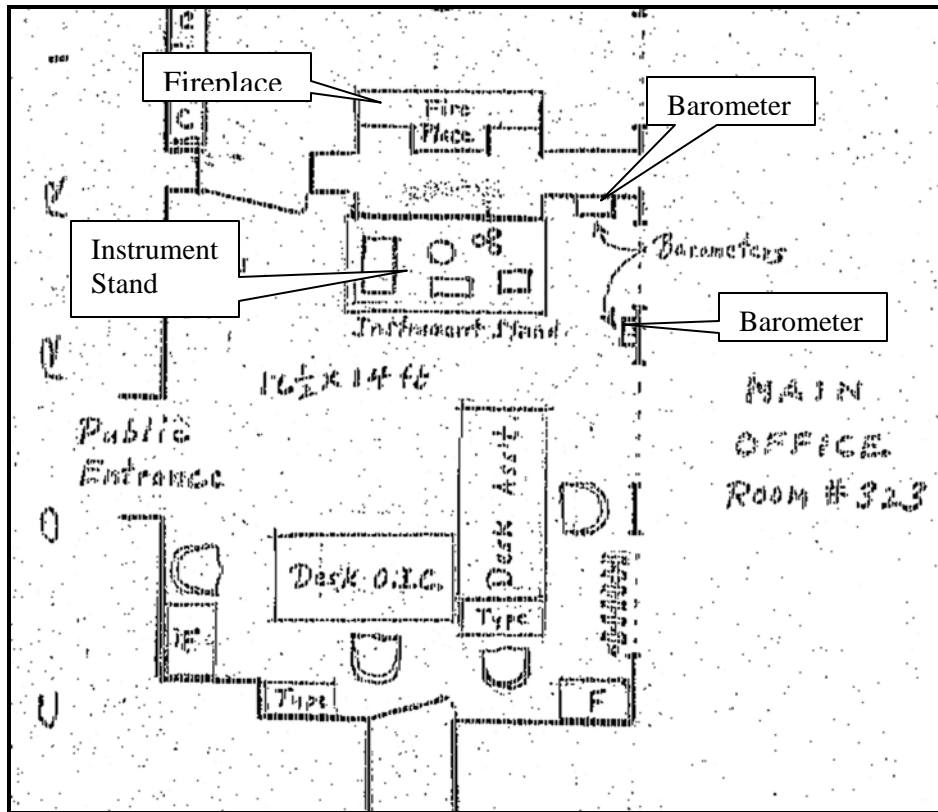
**9 November 1932 – 1 July 1949** – Weather Bureau office located in the U.S. Customs House and Post Office Building, Rooms 319, 323, and 327 on the 3<sup>rd</sup> floor, located just west of Wright Square at the intersection of State, Bull, President, Whitaker, and York Streets (located 2 blocks south of the National Building)

The following facility description was contained in a Weather Bureau form (21 November 1932):

“The office building, the new Federal Building, is a 3-story and basement building, of granite and marble, with a tower about 145 feet high near its center. The building has hip roof of red tile. The office occupies three rooms on the 3<sup>rd</sup> floor, facing north on a court.’

‘The instrument shelter, rain gauge and snow gage are on a platform on the main roof on the south side of the building, while the wind vane, anemometer and sunshine instrument are on the top of the tower. The exposure is excellent. There are no tall buildings or other obstructions nearer than 500 feet.’

Figure 12 shows the Weather Bureau main office on 20 May 1943, including location of the mercurial barometers.

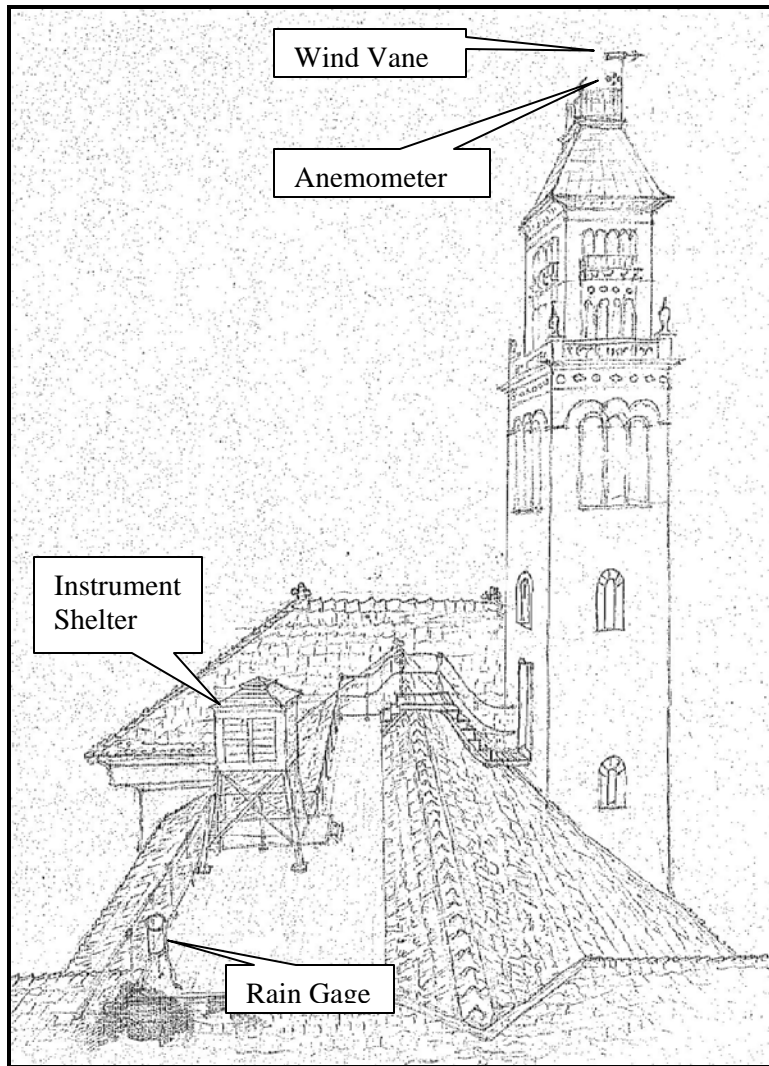


**Figure 12. Weather Bureau main office as depicted on 20 May 1943, showing location of the barometers and instrument stand. North is to the right of the page. Weather Bureau offices were located on the interior section of the building overlooking an open corridor to the north. The fireplace was located in an adjacent room . From the official station history files at the National Climatic Data Center.**

Barometer – Records indicate the station had two mercurial barometers with elevations 81 feet above sea level. The extra mercurial barometer was a marine type. An aneroid barometer and barograph (Richards 4 day) were at this site. One mercurial barometer was located in a barometer box mounted on the west wall of room 323, near the north window (records indicate the site was selected because it had good lighting). The other barometer was on the adjacent north wall. The barograph was on an instrument stand on the west side of the room about five feet from the mercurial barometers. Ground elevation was 42 feet.

Figure 13 shows an overview plan of the weather instruments on the roof of the Customs House on 20 May 1943, and Figure 14 is a drawing of the roof of the building and location of the instruments on 21 November 1932. Figure 15 is a current photograph of the part of the Customs House shown in Figures 13 and 14.





**Figure 14. Drawing of the weather instruments located on the roof of the U.S. Customs House and Post Office Building (21 November 1932). View is toward the west. Although records indicate the station had both standard and tipping bucket rain gages, only one gage (standard) is shown in the drawing. From the official station history files at the National Climatic Data Center.**





**Figure 15. Current photograph of U.S. Customs House and Post Office Building looking west from Wright Square. Tower in center of photograph is the same as the tower containing the wind instruments in Figure 14.**

Instrument Shelter – The instrument shelter was located on the roof of the building. The shelter was a standard type. The shelter was on a 5 foot steel support, bolted to a wooden platform which was another 5 feet above the roof, resulting in the shelter being approximately 10 feet above the roof. An active chimney was located approximately 100 feet to the north.

The exposed, maximum, and minimum thermometers were 74 feet above ground and the psychrometer was 73 feet above ground. The thermometers and psychrometer (sling) were 10 feet above the tile roof. A hair hygrometer also was at this location. The thermometers and psychrometer were moved to Hunter Field on 1 May 1945, and official temperatures were taken at that location subsequently. A thermograph was located at this site, but no hygrograph was included.

A Weather Bureau evaluation on 15 April 1943, made the following comments regarding the instrument shelter and its instruments:

“Shelter is too high to catch true diurnal temperature range except when wind movement is considerable. It is in downtown area of high smoke concentration. With north wind much smoke blows across roof from large

chimney 70 feet across well of building on north wing. The shelter is 40 feet southeast of building tower which is 80 feet higher than shelter. This might act as a slight heat source for thermometers during cold west to northwest winds. Frost is almost never observed on building roof although sometimes observed on roofs a few blocks away. Exposure is not believed to be representative.”

Rain Gages – The standard 8 inch rain gage and tipping bucket rain gage were on the roof of the building 71 feet above ground and 4 feet above the roof. The gages were on the eastern end of the roof platform. The roof sloped upwards to east of the gages at approximately 45 degrees to a ledge about 4 feet above the top of the gage. The roof also sloped to the north of the gage with the top of the roof about level with the instruments. A note on the 1949 Station History form stated: “Combination of roof to east and instrument shelter plus a tower 38 feet to northwest had adverse effects.” The rain gages were moved to Hunter Field on 28 September 1945.

NOTE – Drawings of weather instrument placement on the roof of the Customs Building in Figures 13 and 14 both indicate the presence of only one rain gage. Weather Bureau records for 12 November 1932 mentions only one gage (standard) with the next available record (15 April 1941) indicating both tipping bucket and standard gages. However, station history forms indicate a tipping bucket rain gage was present at the Savannah City Office as early as 1892.

Wind Instruments – The wind instruments were located on the tower of the building. The anemometer (4 cup) was 152 feet above ground and 84 feet above the roof (and 7 feet above the tower). Records for 1942 indicate the station had both 3 cup and 4 cup anemometers. The wind vane (3 foot and changed to a 4 foot vane by April 1941) was 153 feet above ground and 85 feet above the roof (and 8 feet above the tower roof). In 1942, the station had a 3 foot and a 4 foot wind vane. The wind vane was on the northeast corner post of a 5-foot railing around the top of the tower. The anemometer was on the northwest corner of the same post. A Weather Bureau evaluation form stated no obstructions existed within 500 feet of the instruments. The wind instruments were moved to Hunter Field 28 September 1945.

Additional Equipment/Information – The site also had a nephoscope (part of office equipment but was not used), triple register, telethermoscope, and sunshine recorder. The sunshine switch and triple register were moved to Hunter Field 28 September 1945.

The station had a kiosk located in Chippewa Square (on Bull Street between Hull and Perry Streets) approximately 300 yards southeast of the Customs House. The kiosk was established around 1909 for the purpose of conveying weather information to the public. It contained an aneroid barometer, thermograph, maximum/minimum thermometers, hair hydroscope, and a rain gage, as well as

various weather information and forecasts. Weather Bureau documents indicate measurements from the instruments in the kiosk were not used in the weather observing/climate program. The kiosk was discontinued on 3 August 1933.

Most of the weather instruments at the city office were moved to Hunter Field on 1 May 1945 (thermometers and psychrometer) or 28 September 1945 (rain gages and wind instruments). Following the final instrument move in September 1945, the instruments remaining at the city office were:

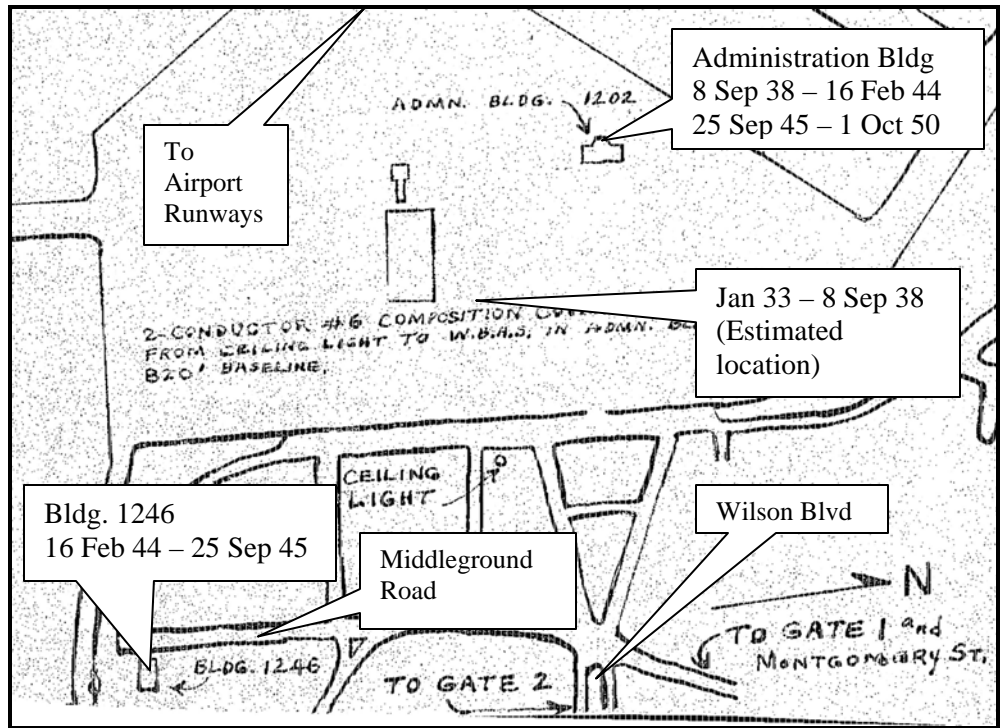
Mercurial Barometers – station and extra (marine)  
Barograph – 4 day (Removed in 1947 or early 1948)  
Instrument Shelter (Cotton Region) and Telethermoscope  
Wind Vane (4 foot)

All remaining weather instruments were removed from the city office on 1 July 1949 and the Weather Bureau office for Savannah officially transferred to Hunter Field.

#### *Weather Bureau Observations – Airport Offices*

**1 July 1930 – January 1933** – Station History forms contained little information on instrument location and exposure during this period, and no other information could be found regarding weather observations at Hunter Field for this time period. Only mention was that the barometer was located 51 feet above sea level. However, this was the approximate elevation of the barometer on the Administration Building which was not built until September 1938.

Figure 16 shows an enlarged map of Hunter Field and the immediate vicinity of the three Weather Bureau observing sites from January 1933 through 1 October 1950.



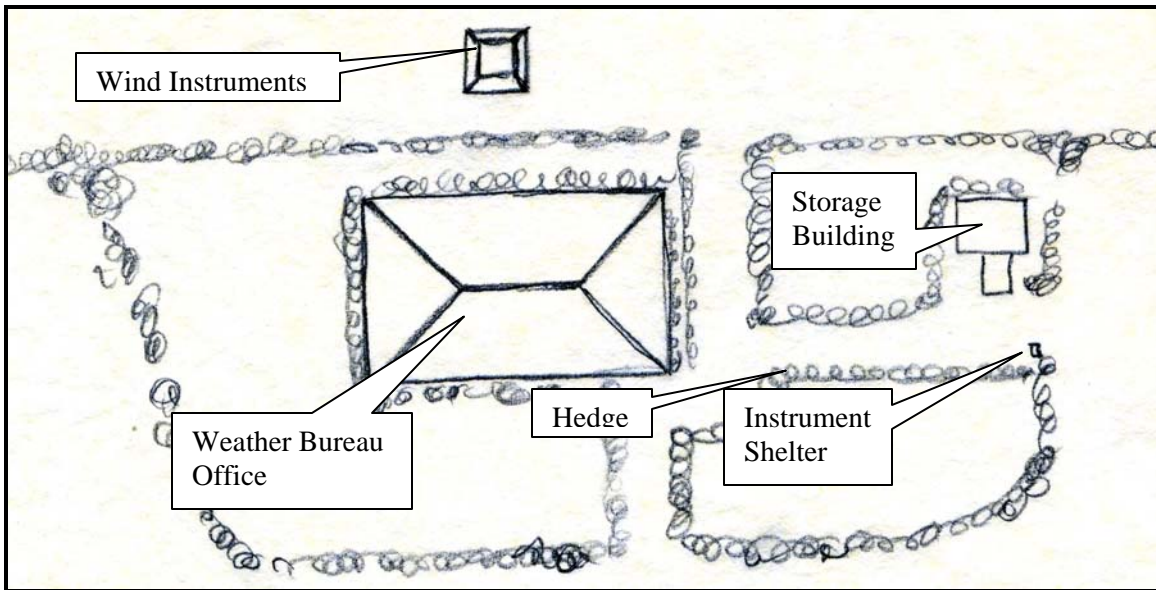
**Figure 16. Locations of the three weather observing sites at Hunter Field from January 1933 until 1 October 1950. Stations are plotted on a drawing made 9 October 1945. North is to the right of the drawing. From the official station history files at the National Climatic Data Center.**

**January 1933 – 9 September 1938** – Weather Bureau office located approximately 200 feet southeast of the Administration Building (Building 1202) that was built in 1938. Ground elevation was approximately 40 feet.

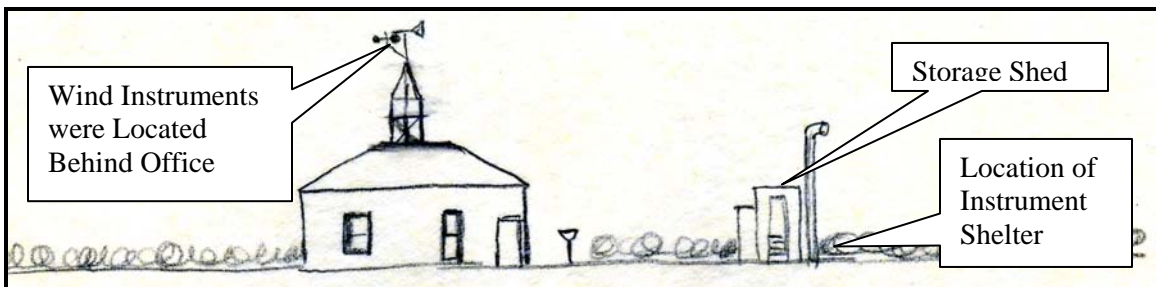
NOTE – Considering the confusion that seemed to exist in Weather Bureau forms regarding the initial location of the airport office, it is possible the Weather Bureau was at this site as early as 1 July 1930.

Barometer – The station had an aneroid barometer (Short and Mason). The barometer hung on the inside wall of the office approximately four feet above the floor. By 1 April 1938, a 4 day barograph was installed.

Figures 17 and 18 show the location of the instrument shelter and wind instruments around this station.



**Figure 17. Schematic of the Weather Bureau Airport Office (prepared 27 March 1934) depicting the instrument shelter and wind instruments. North is toward the left. The common ceiling light between this site and the Airport Administration Building that was used to locate this building, was 725 feet east of this station (top of the drawing) and 1,000 feet southeast of the Administration Building. From the official station history files at the National Climatic Data Center.**



**Figure 18. Side drawing of the Weather Bureau Airport Office (27 March 1934) depicting the instrument shelter and wind instruments in relation to nearby structures. View is toward the east. From the official station history files at the National Climatic Data Center.**

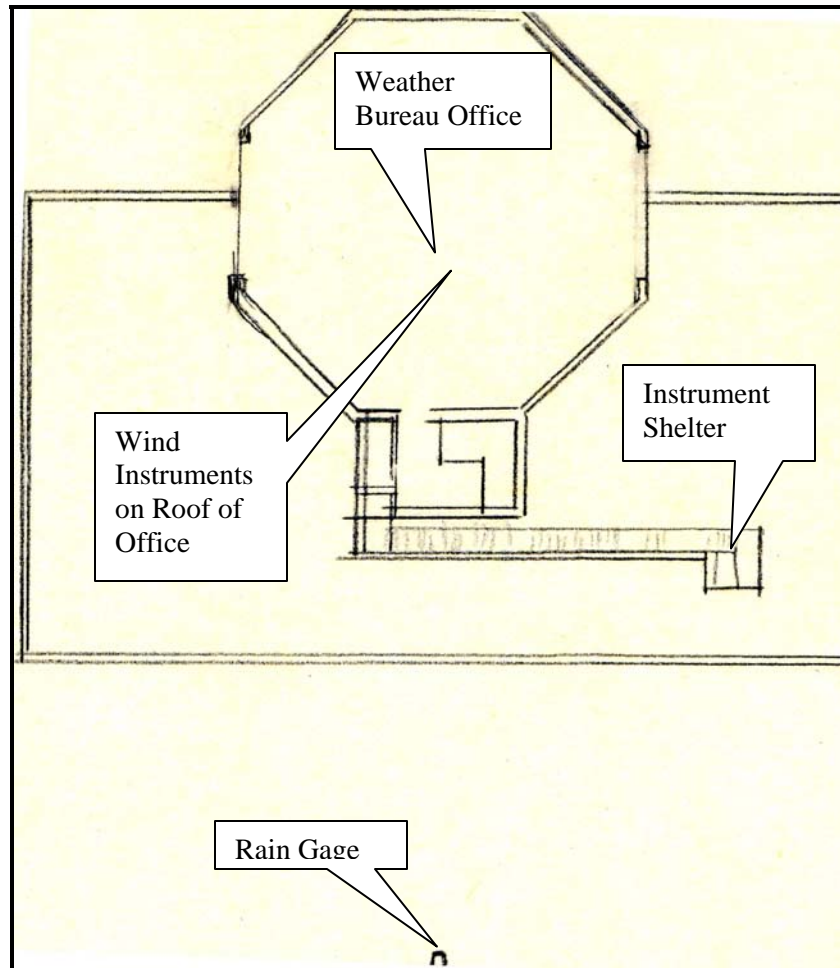
Instrument Shelter – The instrument shelter was located approximately 250 feet south of the office. The shelter was an airways type with the height of the floor five feet above the ground. The shelter contained an exposed thermometer, a sling psychrometer, and a whirling apparatus. Weather Bureau records on 28 September 1934, stated the sling psychrometer and whirling apparatus had been replaced with a fan psychrometer. The Weather Bureau indicated there were “no troublesome influences” at this location. By 1 April 1938, maximum/minimum thermometers were installed.

Rain Gage – This station had no rain gage initially. By 1 April 1938, a standard 8 inch gage was installed. No information was found regarding the location of the rain gage. NOTE – The cover sheets of the Original Monthly Record of Observations indicated the rain gage was not added until July 1939. This information was a conflict with other Weather Bureau instrument forms available.

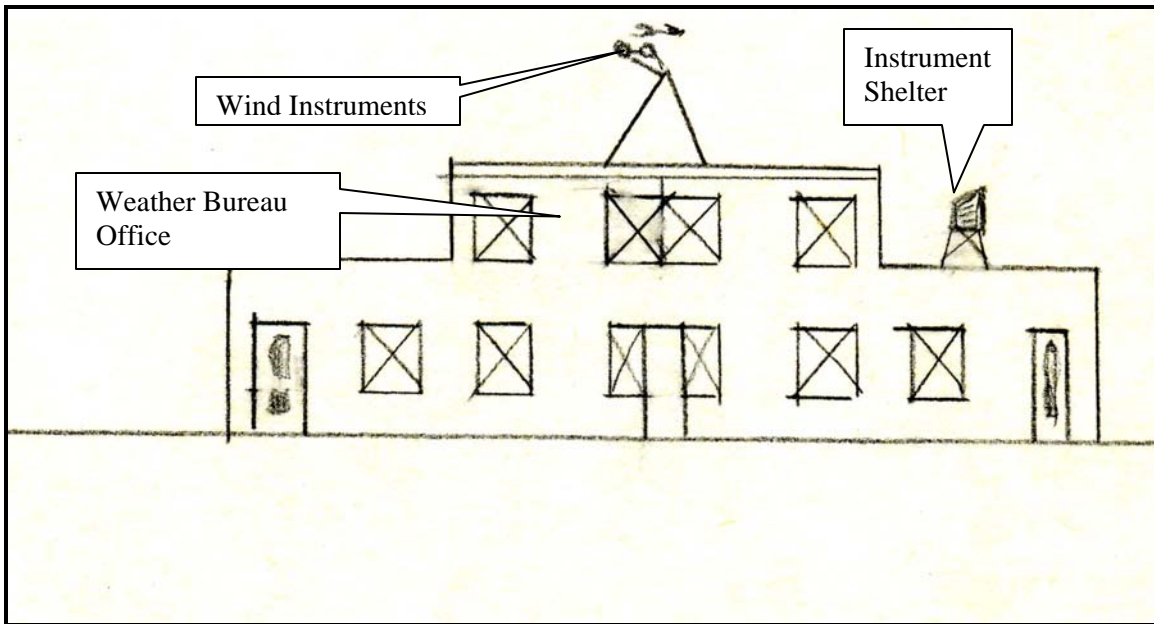
Wind Instruments – The wind instruments were located approximately 100 feet east of the office. The instruments were on a platform attached to a 22 foot steel tower. The anemometer was on a 10 foot support above the platform, or 32 feet above ground. The wind vane was on a 12 foot support above the platform, or 34 feet above ground. The anemometer was a three cup variety and the wind vane was three feet long.

**9 September 1938 – 16 February 1944** – Weather Bureau office on 2<sup>nd</sup> floor of Building 1202 (Administration Building) at Hunter Field (located 6 miles south southwest of the city). Figure 19 shows an overview of the station and instruments, and Figure 20 shows a side view.

Weather Bureau records on 14 October 1942 indicate the Weather Bureau office in the Administration Building was replaced by an office for the CAA (Civil Aeronautical Administration) and an office for the U.S. Army. No mention is made as to what happened to the Weather Bureau office. Based on the location of the instruments, it appears weather observations were taken by CAA staff, although no indications could be found in the NCDC database.



**Figure 19. Overhead of the Administration Building (Building 1202) on 12 September 1938 showing location of Weather Bureau office and instruments. North is to the right. From the official station history files at the National Climatic Data Center.**



**Figure 20. Side view (towards the west) of the Administration Building on 12 September 1938 showing location of Weather Bureau office and instruments. From the official station history files at the National Climatic Data Center.**

Barometer – This station had an aneroid barometer that was mounted on the east wall of the Weather Bureau office (exact location not specified). The office also had a four-day barograph. A mercurial barometer was installed by 1 April 1940. Elevation of this barometer was 51 feet.

Instrument Shelter – Cotton region type shelter located on a platform on the main roof of the Administration Building. The shelter was approximately 20 feet northeast of the Weather Bureau office. Height of the floor of the shelter was 5 feet above the roof and 18 feet above ground. The shelter contained an exposed thermometer, fan psychrometer, and maximum/minimum thermometers.

Rain Gage – An 8-inch rain gage was located over sod about 60 feet east of the office. The gage was four feet above the sod. In January 1942, the standard rain gage was moved to the roof of the second floor of the Administration Building, approximately 15 feet southwest of the instrument shelter (which was on the roof of the first floor). At its new location, the rain gage was 28 feet above ground and 4 feet above the roof. In February 1942, the elevation of the rain gage was changed to 30 feet, and in December 1942, the elevation changed to 33 feet. In December 1943, the rain gage was moved to the roof of the first floor (exact location unknown) with an elevation 17 feet above ground.

Wind Instruments – The wind instruments were on a support on the roof of the second story. The anemometer was 38 feet above ground and 13 feet above the roof. The wind vane was 39 feet above ground and 14 feet above the roof. The

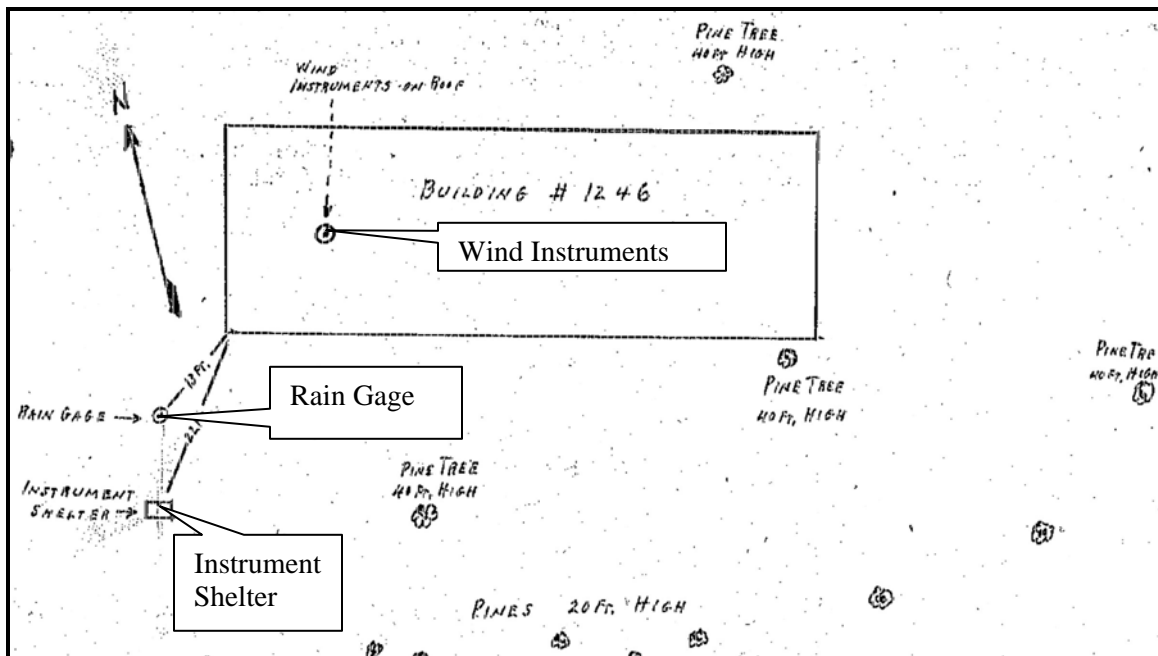


wind vane was a three foot variety and the anemometer was a three cup type. Weather Bureau records indicated the wind instruments had no obstructions and had free exposure. On 26 August 1941, an 18 foot support was installed, raising the anemometer to 44 feet and wind vane to 45 feet. Around October 1942, the wind instruments were raised to approximately 50 feet above ground

**16 February 1944 – 25 September 1945** – Weather Bureau office in Army Building 1246 at Hunter Field

Barometer – The station had a mercurial barometer and a four day barograph. Elevation of the mercurial barometer was 48 feet above sea level. Ground elevation was 44 feet.

Figure 21 shows the location of the weather instruments with respect to Building 1246 and nearby trees.



**Figure 21. Schematic of Building 1246, weather instruments, and nearby trees. Drawing was made on 24 February 1944. North is towards the top of the page. From the official station history files at the National Climatic Data Center.**

Instrument Shelter – The instrument shelter was a cotton region type and was located over sod 22 feet southwest of the southwest corner of Building 1246. The exposed thermometer, maximum/minimum thermometers, and psychrometer (fan and sling), were five feet above ground. On 1 May 1945, official temperature records, including the thermograph, were moved from the city office to the airport office.

Rain Gage – The standard 8 inch rain gage was 4 feet above ground and was located 13 feet southwest of the southwest corner of Building 1246.

Wind Instruments – Wind instruments were on the roof near the west end of the building. The anemometer was 12 feet above the roof and 27 feet above ground. The wind vane was 13 feet above the roof and 28 feet above ground. The anemometer was a three cup variety and the wind vane a three foot type. A Weather Bureau evaluation on 24 February 1944, rated exposure of the wind instruments as “...only fair due to tall pine trees from northwest through east to south, some east and south about 40 feet high and about 50 feet to 60 feet from instruments.” A note on a 15 April 1945 form stated: “Exposure POOR (sic) due to surrounding buildings and more so due to large pine trees from NW through E to S.” Although official temperature records were moved from the city office to the airport on 1 May 1945, due to an unfavorable exposure with the wind instruments, the official wind-rain-sunshine records remained at the city office.

**25 September 1945 – 1 October 1950** – Weather Bureau office in Airport Administration Building (Building 1202) at Hunter Field, 2<sup>nd</sup> floor.

Figures 22 and 23 show the location of the Weather Bureau office and instruments on the Administration Building (Building 1202).

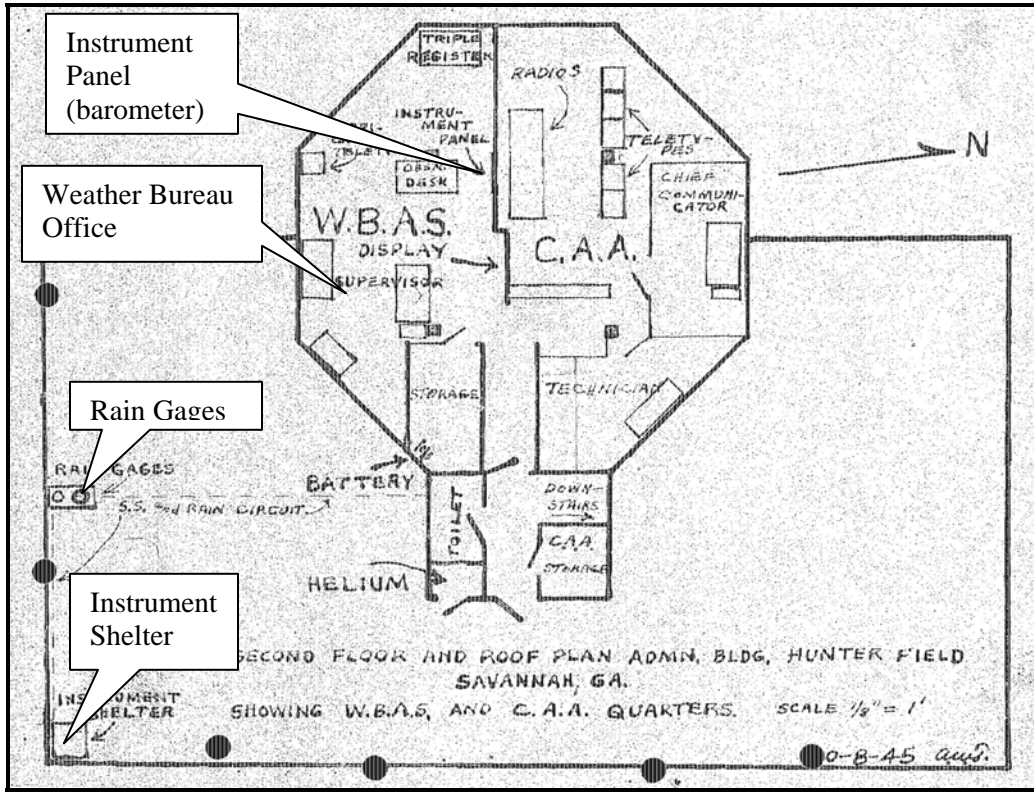
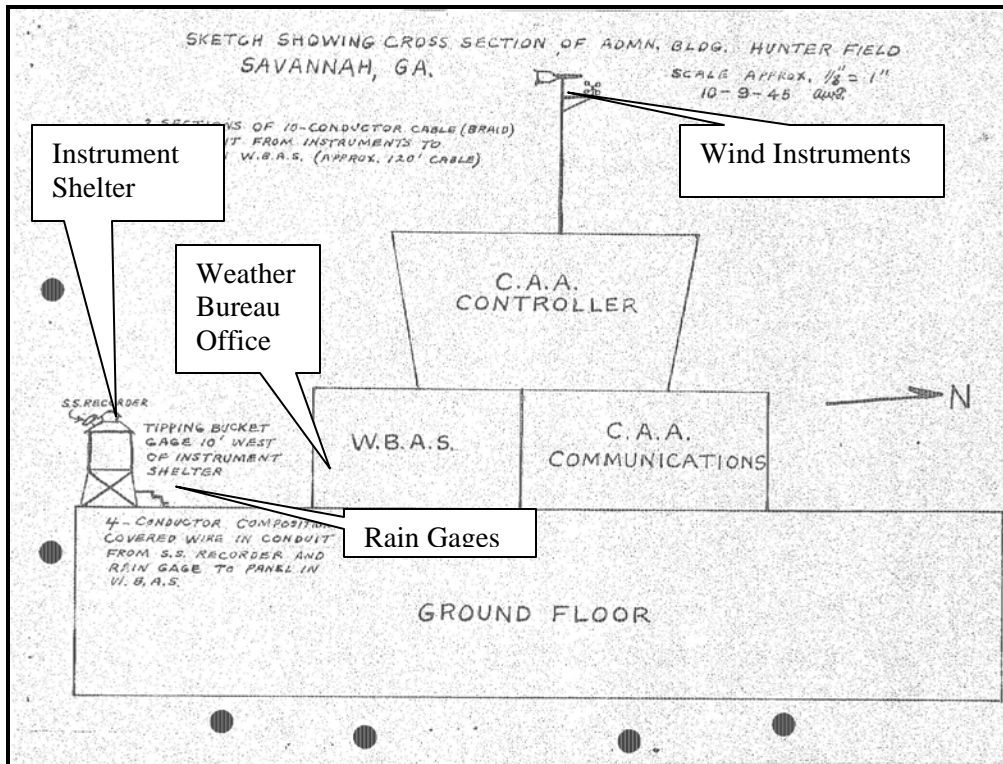


Figure 22. Overhead view of the Weather Bureau office and location of weather instruments on the roof of the Administration Building. North is to the right. Drawing was made 8 October, 1945. From the official station history files at the National Climatic Data Center.



**Figure 23. Location of the weather instruments on the roof of the Administration Building. North is to the right. Drawing was made 9 October 1945. From the official station history files at the National Climatic Data Center.**

Barometer – Elevation of the mercurial barometer was 53 feet above sea level. Ground elevation was 38 feet. A 4 day barograph (Friez) was located at the station (elevation 54 feet above sea level). On 28 March 1949, the marine barometer (extra) was transferred from the city office to this station. The instrument equipment log for 1 July 1949, indicated the station had two mercurial barometers plus the extra marine barometer.

Instrument Shelter – The instrument shelter was a large type and was located on the roof of the building, 25 feet southeast from the office window and near the edge of the roof. Exposed, maximum, and minimum thermometers, as well as the psychrometer (whirling type), were 6 feet above the roof and 19 feet above ground. A thermograph (7 day Friez) was added 25 September 1945. The Weather Bureau evaluation (25 September 1945) stated: “Heat from roof may affect temperatures on days with little wind, but exposure considered good.” Nearest obstruction was 30 feet northwest and north of the shelter and was 8 feet above the shelter.

Rain Gages – Tipping bucket rain gage was transferred from the city office 28 September 1945. The gages were mounted on a wooden platform on the roof of the first story of the building. The top of the gages were 5 feet above the roof and 19 feet above ground. The rain gages were 6 feet from the edge of the roof and

20 feet from the wall of the second story of the building. Nearest obstruction was 20 feet north of the gages and was 11 feet above the gages. The exposure was rated as good.

Wind Instruments – Wind instruments were on a 12 foot support on the roof of the control tower. The anemometer was 12 feet above the roof and 51 feet above ground. The wind vane was 13 feet above the roof and 52 feet above ground. A Weather Bureau evaluation (25 September 1945) stated: “No nearby objects to affect free movement of the wind. Exposure excellent.” On 4 August 1948, the anemometer was raised to 20 feet above the roof and 59 feet above ground and the wind vane raised to 21 feet above the roof and 60 feet above ground. The anemometer was a four cup Marvin Experimental.

Additional Equipment/Information – The sunshine switch and triple register were moved from the city office to the airport office on 28 September 1945. The sunshine recorder was mounted on the roof of the instrument shelter (south side).

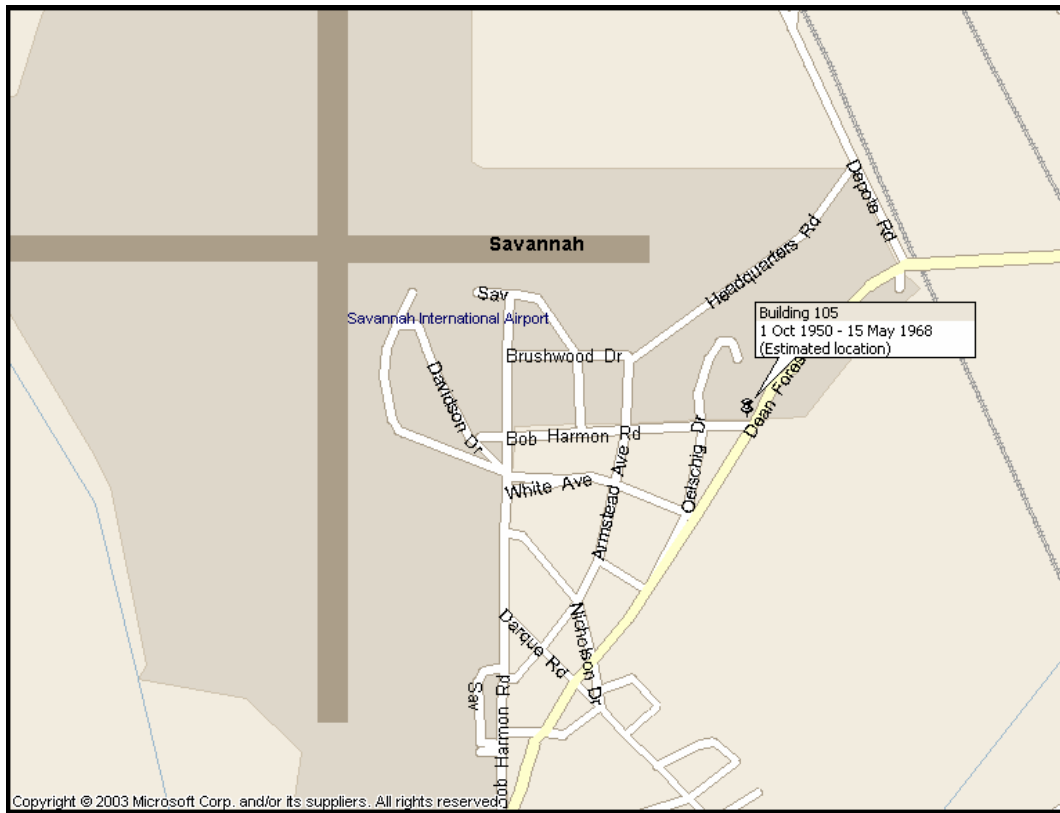
The following description of the site was given by the Weather Bureau in July 1948:

“Station is located in flat, generally wooded, country with no nearby hills or other marked topographical influences on the wind... There are no surrounding buildings higher than the instruments, except the second floor of the Administration Building, which is 30 feet to the north and northwest of the instrument shelter and 18 feet north of the rain gage. The top of this section of the building is 11 feet above the top of the rain gage and 8 feet above the thermometers. The wind instruments are atop the CAA Control Tower and above any nearby obstructions. The building is surrounded by a concrete apron extending approximately 1,000 feet to the north, 900 feet to the east, 1500 feet to the south, and 100 feet to the west. Concrete double runways 150 feet wide and 300 feet apart are to the west and southwest with the nearest runway 250 feet from the building.”

On 25 September 1945, all Weather Bureau observing programs were officially at the airport office.

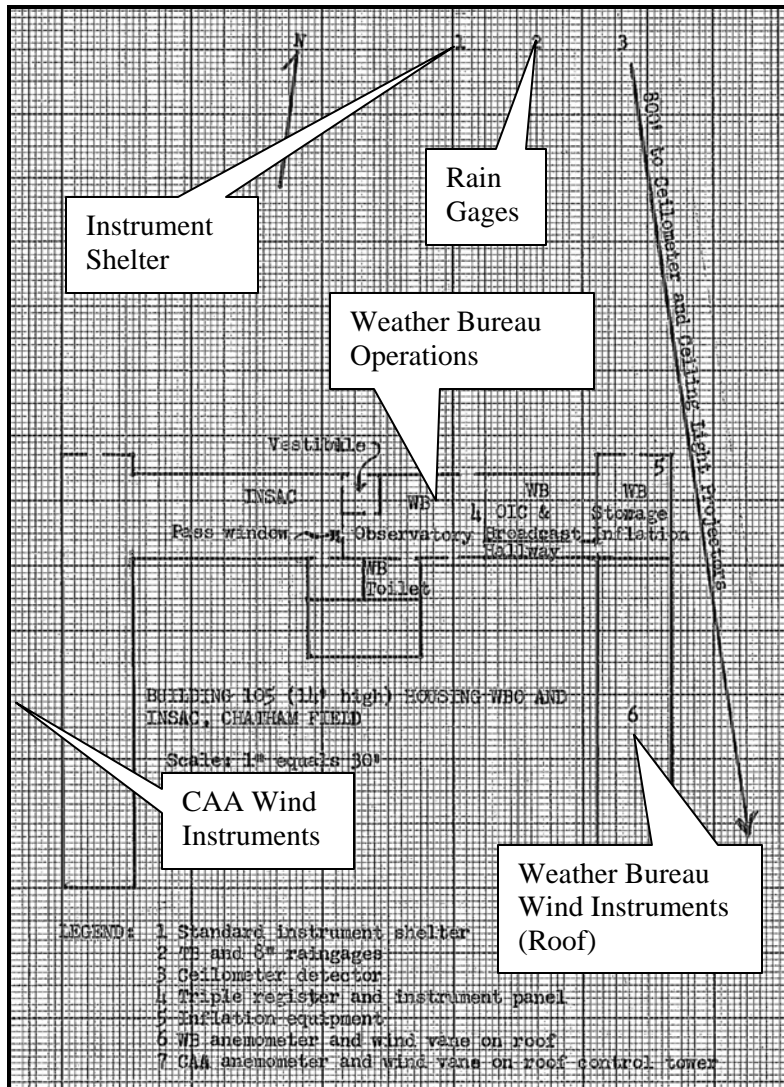
A Weather Bureau note on 4 August 1948 stated the following regarding the roof of the building: “Roof not flat...; building roof has 3 step-ups consisting of main roof; 2<sup>nd</sup> floor roof and tower roof.” A Weather Bureau note in July 1948 contained the following: “There are no surrounding buildings higher than the instruments, except the second floor of the Administration Building which is 30 feet to the north and northwest of the instrument shelter and 18 feet north of the rain gage. The top of this section of the building is 11 feet above the top of the rain gage and 8 feet above the thermometers. The wind instruments are atop the CAA Control Tower and above any nearby obstructions.”

**Subsequent to 1 October 1950** – Weather Bureau office in Building 105 at Travis Field (8 miles northwest of Building 1202 at Hunter Field). Approximate location two miles north of highway U.S. 80 on Dean Forest Road (Figure 24).



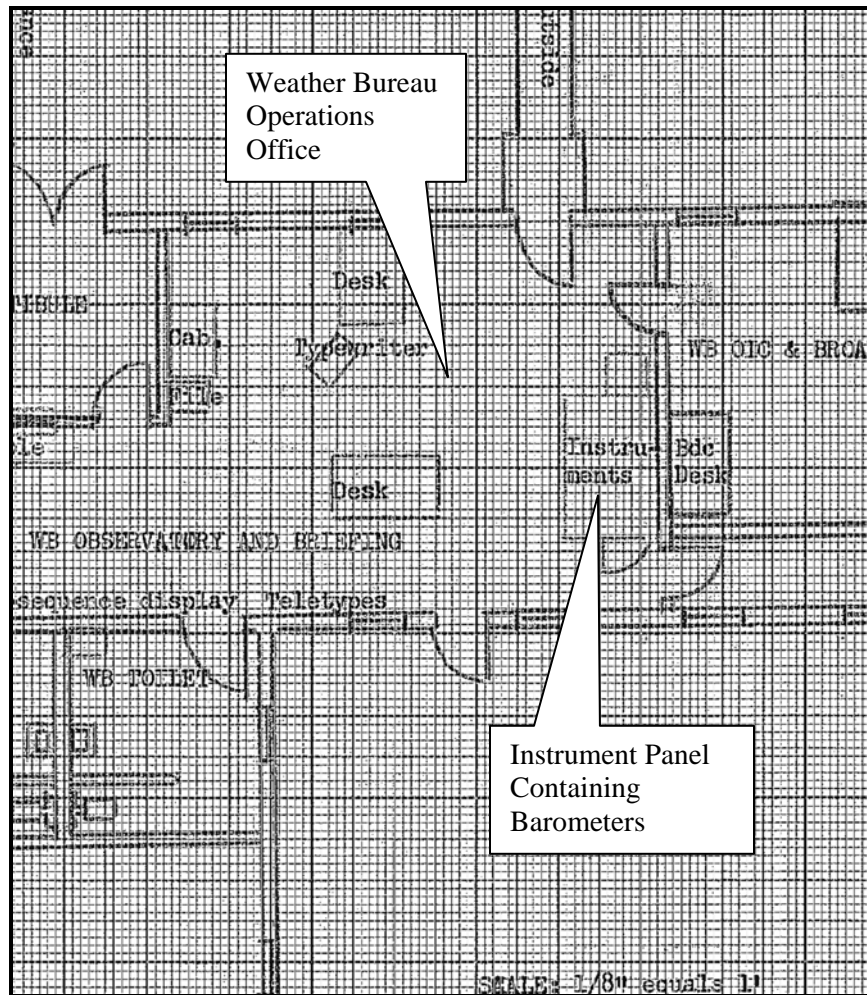
**Figure 24. Approximate location of Weather Bureau office at Travis Field (Savannah International Airport). North is top of the map. Plotted on a current map of Savannah.**

Figure 25 depicts location of the weather instruments with respect to Building 105 at Travis Field.



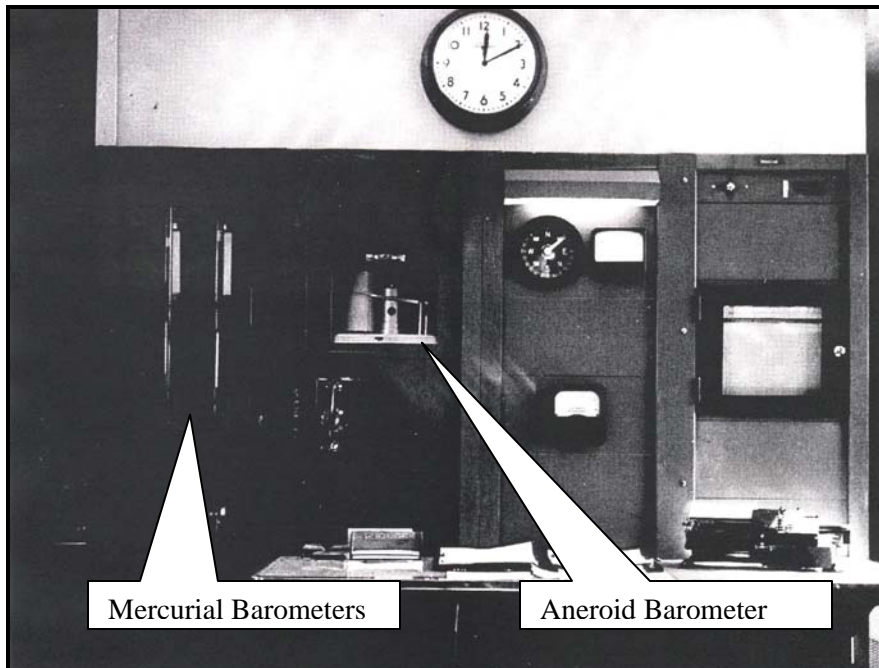
**Figure 25. Schematic of Building 105 at Travis Field and location of Weather Bureau instruments. The CAA anemometer and wind vane were located west of Building 105. North is toward the top of the page. Drawing was made 1 October 1950. From the official station history files at the National Climatic Data Center.**

Barometer – The station had two mercurial barometers (Green) and a four day Barograph (Friez). The barometers were mounted on the instrument panel on the east wall of the Weather Bureau Office (Figure 26). Elevation of the barometer was 51 feet above sea level. Ground elevation was 48 feet. The Weather Bureau rated the exposure as excellent. Figure 27 is a picture of the instrument panel and barometers.



**Figure 26. Drawing of Weather Bureau operations office at Travis Field (1 October 1950). North is toward the top of the page. From the official station history files at the National Climatic Data Center.**





**Figure 27. Picture of the instrument panel in the Weather Bureau office (October 1950). Mercurial barometers and barograph are located to the left side of the instrument shelter. View is looking east. From the official station history files at the National Climatic Data Center.**

Instrument Shelter – The instrument shelter was located over sod 100 feet north of Building 105. Weather Bureau evaluation rated the exposure as very good. The two exposed thermometers, maximum/minimum thermometers, and psychrometer (whirling type) were located five feet above ground. Also, a telethermometer was located at this site. Figures 28 and 29 show the instrument shelter and rain gages.



**Figure 28. Instrument shelter, standard rain gage, and tipping bucket rain gage (October 1950). View is north. From the official station history files at the National Climatic Data Center.**



**Figure 29. Instrument shelter, standard rain gage, and tipping bucket rain gage (October 1950). View is east. From the official station history files at the National Climatic Data Center.**

The following description was given by the Weather Bureau regarding objects nearby to the instrument shelter:

“Asphalt taxi-way 50 feet north; asphalt drive-way 30 feet south; concrete transformer house 25 feet west; single story concrete block building (Building 105) 100 feet south. None of these materially affect the thermometers, though the asphalt may have a slight effect. Exposure believed to compare favorably with suburban street level locations in Savannah.”

Rain Gages – The standard 8-inch rain gage and 10-inch tipping bucket gage were located 100 feet north of Building 105. Elevation was three feet above ground. The Weather Bureau rated exposure as excellent.

Wind Instruments – The wind instruments were located on the roof of the building. The anemometer was 18 feet above the roof and 33 feet above ground. The wind vane was 20 feet above the roof and 35 feet above ground. The Weather Bureau rated the exposure as excellent.

A separate anemometer and wind vane were located at the control tower (CAA), 10 feet above the roof and 65 feet above ground. Weather Bureau records indicate the control tower instruments were used for the observations.

Additional Equipment/Information – The station had a triple register. A sunshine switch was installed 1 December 1953.

## THE OBSERVERS

### Richard T. Gibson

The edition of the *Savannah Morning News* on 12 October 1872 contained a relatively detailed obituary for Richard Turner Gibson. Mr. Gibson was born on Whitemarsh Island in 1809, one of three children. His sister married William A. Caruthers of Savannah who authored a number of books, e.g., *The Kentuckian in New York* and *The Knights of the Golden Horse Shoe*.

Richard Gibson obtained his early education in Savannah area schools and went on to attend Franklin and Lexington Colleges. He studied law, but after inheriting an estate on Whitemarsh Island in 1832, he devoted himself to running his plantation.

He was Commissioner of Roads for many years, and in 1840 was a candidate for the Georgia legislature but was not elected. In 1848 he was elected a Justice of the Inferior Court and served two terms. It appears he moved from Whitemarsh Island to Savannah in the mid to late 1840s where he began taking weather observations for the Smithsonian Institution. In 1862 he was elected as a representative in the General Assembly.

The newspaper states Mr. Gibson married a young lady in the early 1860s but she died a few years later. He was elected City Treasurer but resigned in 1867. The newspaper stated, "He resided in Savannah until he returned to his desolated home where he died," indicating the move was after 1867. It is possible his weather observations were transferred from Savannah to Whitemarsh Island (i.e., taken by another observer) while he remained in Savannah to accomplish his many other duties.

The *Savannah Morning News* characterized Mr. Gibson as follows: "He was a careful student, his mind stored with extensive information, his genial manners, cordial laugh, quaint humor, and strange wit individualized this man.... A good, upright citizen spotless, loved, honored, and lamented."

### Dr. John F. Posey

When Dr. John Frederick Posey (Figure 30) died on 15 January 1860, at age 67, he was the oldest medical doctor in Savannah. He had practiced medicine for over 40 years, and during the last 7 years of his life, was president of the Georgia Medical Society.



**Figure 30. Dr. John Frederick Posey (date unknown but likely in the mid to late 1850s). From the Georgia Historical Society.**

Dr. Posey moved to Savannah when he was about 20 years old. Upon arriving in Savannah he joined the local volunteers to protect Savannah from the British during the War of 1812. Years later he volunteered to serve on a naval vessel during the Mexican War.

Medical training by the young Posey was achieved by serving as an apprentice to well established and qualified physicians early in his life (which was common training for doctors at that time). His medical work in Savannah began in 1820 by treating citizens with yellow fever. He was active in medical research, presenting papers at local, state, and national medical societies. He also participated in the professional societies and was active in civic organizations.

Dr. Posey's medical work led to his interest in taking weather observations as general knowledge increased linking diseases to weather and climate conditions. Other doctors at that time were interested in the impact of weather and climate on diseases. The *Savannah Morning News* indicated Dr. Noble Wymberley Jones, the first president of the Georgia Medical Society, and Dr. William R. Waring also were active in observing the weather. However, their observations could not be located.

## OTHER OBSERVATIONS

Several locations near Savannah took weather observations over the years. The Signal Service document published in 1890 indicated that weather observations at Oglethorpe Barracks (located in the city proper) were taken as early as 1832, and it is possible the original observations found in the Georgia Historical Society for 1828 and 1836 were taken at Oglethorpe Barracks, although no clear indication was indicated on the forms. The *Meteorological Register* published in 1851 by the U.S. Army Surgeon General's Office indicated weather observations were taken at Oglethorpe Barracks at least as early as 1841. The NCDC database contains weather observations for Oglethorpe Barracks for the period September 1866 through November 1877. See the report on weather observing at Oglethorpe Barracks for more information.

Although construction of Fort Pulaski (approximately 13 miles east of Savannah) dates back into the 1820s, the only record of weather observations found for this site was in the NCDC database from June 1873 through October 1873. No mention was made of weather observations at Fort Pulaski in the 1890 Signal Service document.

According to the NCDC database and the Signal Service document, weather observations were taken at Tybee Island (15 miles east of Savannah) during the mid to late 1870s. According to the NCDC database, the observational period for this station was from June 1874 through February 1879.

No information was found regarding weather observations at Fort Jackson (located three miles east of downtown Savannah), nor at Fort Wayne (northeast Savannah).

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## APPENDICES

### Appendix 1

#### **Change of On-Site Weather Instruments at Savannah During the Early 1880s**

During the six years of Signal Service Inspection Reports from 10 February 1880 to 16 May 1886, the number and extent of weather instruments changed significantly. Below are the lists of weather instruments at the Savannah Signal Service Office in 1880 and in 1886. This increased emphasis on weather observing by the Signal Service likely improved the quality and consistency of weather observations taken by staff at the Savannah office. Titles of the instruments are listed exactly as shown on the station lists.

#### Weather Instruments at the Savannah Signal Service Office 10 February 1880

- Anemometers – 2 (one operational and one extra)
- Anemoscope – 1
- Barometers – 2 (one operational and one extra)
- Hygrometer – 1
- Maximum Thermometer – 1
- Minimum Thermometer – 1
- Rain Gauge – 1
- Self Register for the Anemometers - 1
- Thermometers – 2 (one operational and one extra)
- Wind Vane – 1 (12 foot vane)

#### Weather Instruments at the Savannah Signal Service Office May 16, 1886

- Anemometers – 3 (one operational and two extra)
- Anemoscope – 1
- Barometer, Mercurial, (Station) – 1
- Barometer, Mercurial, (Extra) – 1
- Rain Gauge – 1
- Self-Registers for Anemometers – 2 (one operational and one extra)
- Thermometer, Standard (Station) – 1
- Thermometer, Standard (Extra) – 1
- Thermometer, Maximum (Station) – 1
- Thermometer, Maximum (Extra) – 1
- Thermometer, Minimum (Station) – 1
- Thermometer, Minimum (Extra) – 1
- Thermometer, Water, and Case – 1
- Thermometer Tester, Tin – 1
- Wind Vane – 1 (12 foot vane)
- Thermometer, (Wet Bulb) – 2 (one operational and one extra)

## Appendix 2

Weather instrument numbers and dates used at the Savannah City Offices during the Signal Service and early Weather Bureau years. (From the official station history files at the National Climatic Data Center.)

Savannah, Ga. Record of	
STATION INSTRUMENTS	
SAVANNAH, GA.	
BAROMETERS	
1774	Jan. 1, 1871---- Dec. 31, 1876
163	Jan. 1, 1877---- Feb. 8, 1888
11857	Feb. 9, 1888---- June 30, 1890
507	July 1, 1890---- June 30, 1891
398	July 1, 1891----
THERMOMETERS	
DRY	
198	Apr. 30, 1875---- May, 1876
2962	May 1, 1878---- May 1, 1881
198	May 1, 1881---- Dec. 17, 1885
1585	Dec. 17, 1885---- July 30, 1887
1996	July 30, 1887---- Dec. 10, 1887
2361	Dec. 10, 1887---- Aug. 24, 1888
1331	Aug. 24, 1888---- Sep. 30, 1888
1564	Sept. 30, 1888---- Dec. 14, 1888
2510	Dec. 14, 1888---- July 3, 1896
3079	July 3, 1896---- July 31, 1899
2081	July 31, 1899---- Jan. 19, 1903
4372	Jan. 19, 1903---- Nov. 28, 1903
4314	Nov. 28, 1903---- May 25, 1919
3453	May 25, 1919---- Sep. 9, 1926
8622	Sep. 9, 1926----
WET	
39	Apr. 30, 1875---- Feb., 1881
1105	Feb., 1881---- Dec. 17, 1885
1564	Dec. 17, 1885---- July 30, 1887
2131	July 30, 1887---- Dec. 10, 1887
2378	Dec. 10, 1887---- Oct. 11, 1898
2791	Oct. 11, 1898---- Dec. 17, 1907
4733	Dec. 17, 1907---- Aug. 13, 1909
3543	Aug. 13, 1909----
MAXIMUM	
97	1876---- Apr., 1883
239	Apr., 1883---- Mar. 1, 1885
36	Mar. 1, 1885---- Dec. 1886
1161	Dec., 1886---- Dec. 13, 1888
1331	Dec. 13, 1888---- May 1, 1889
1900	May 1, 1889---- ?
2002	?-----?
6953	?----- July 1, 1905
6338	July 1, 1905---- Oct. 9, 1905
10597	Oct. 9, 1905---- Jan. 1906
10895	Jan. 10, 1906---- Mar. 29, 1909
12010	Mar. 29, 1909---- May 17, 1911
11620	May 17, 1911---- Feb. 1, 1914
15329	Feb. 1, 1914---- 1917
11620	1917---- Dec. 10, 1919
21007	Dec. 10, 1919---- Nov. 7, 1924
22471	Nov. 7, 1924----
MINIMUM	
154	1876---- Sep. 7, 1883
647	Sep. 7, 1883---- Dec. 17, 1885
1001	Dec. 17, 1885---- Dec. 26, 1885
985	Dec. 26, 1885---- Dec. 1886
995	Dec. 1886---- Jan. 1888
1554	Jan. 1888---- Dec. 13, 1888
685	Dec. 13, 1888---- May 11, 1889
1735	May 11, 1889---- ?
3444	?----- July 31, 1899
2926	July 31, 1899---- Aug. 4, 1899
4753	Aug. 4, 1899---- Mar. 20, 1905
7787	Mar. 20, 1905---- Dec. 1, 1911
7784	Dec. 1, 1911---- June 15, 1921
14935	June 15, 1921----
ANEMOMETERS	
34	?----- Nov. 28, 1874
128	Nov. 28, 1874---- Apr. 1883
453	Apr. 1883---- Dec., 1885
156	Dec. 1885---- July 4, 1888
238	July 4, 1888---- May 17, 1891
580	May 17, 1891---- ?
346	?----- Apr. 21, 1908
674	Apr. 21, 1908---- June 11, 1918
545	June 11, 1918----

Appendix 3

List of "Officials in Charge" of the Savannah Weather Office from 1870 through 1944

(From the official station history files at the National Climatic Data Center)

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 Officials in Charge, Savannah, Ga.  
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C. W. Held.....	Dec. , 70	to Jan. 20, 72
J. O. Hanson.....	Jan. 20, 72	to Mar. , 74
W. S. Poppie.....	Mar. , 74	to Mar. 30, 76
H. H. Stockman.....	Mar. 30, 76	to July 13, 76
J. H. Garrard.....	July 13, 76	to Nov. , 76
W. S. Poppie.....	Nov. 21, 76	to Dec. 5, 76?
G. E. Rohe.....	Dec. 6, 76	to Feb. 14, 77
J. C. Downes.....	Feb. 14, 77	to Apr. 15, 78
W. S. Poppie.....	Apr. 23, 78	to Jan. 30, 79
P. C. Guthrie.....	Jan. 30, 79	to Nov. 15, 80
H. W. Ford.....	Nov. 15, 80	to Oct. 6, 84
S. C. Deery.....	Oct. 6, 84	to June 25, 86
R. Graham.....	June 25, 86	to Sept. 29, 86
G. H. Salisbury....	Oct. 9, 86	to Dec. 11, 88
H. J. Wright.....	Dec. 11, 88	to Apr. 30, 89
C. F. VonHerman...	Apr. 30, 89	to Aug. 20, 89
L. A. Denson.....	Aug. 20, 89	to Sep. 2, 89
E. R. Demain.....	Sep. 2, 89	to Oct. , 89
L. A. Denson.....	Oct. , 89	to Dec. , 89
W. A. Whitney.....	Dec. , 89	to June 25, 90
J. H. Fitzgerald...	June 25, 90	to July , 90
L. A. Denson.....	July , 90	to July 23, 90
C. S. Gorgus.....	July 23, 90	to Oct. , 91
P. H. Smith.....	Oct. , 91	to Jan. 29, 96
W. H. Dudley.....	Jan. 29, 96	to July 11, 96
J. H. Sherrier.....	July 11, 96	to Apr. 17, 98
H. B. Boyer.....	Apr. 17, 98	to Sep. 3, 11
C. J. Doherty.....	Sep. 14, 11	to Apr. 15, 12
C. H. Strong.....	Apr. 15, 12	to Sep. 10, 12
J. P. Slaughter....	Sep. 30, 12	to July 15, 13
C. H. Strong.....	July 15, 13	to <del>June</del> 30, 32.
W. A. Mitchell.....	July 1, 1932	to Oct. 20, 1941
L. J. Guthrie.....	Oct. 20, 1941	to JAN. 13, 1944
R. A. SMITH	JAN. 14, 1944	to MAY 30, 1944
A. L. LORENZ	JUN. 1, 1944	to SEP. 8, 1944
A. W. TAYLOR	SEP. 8, 1944	to

## Appendix 4

### Methodology

Station history files at the National Climate Data Center (NCDC) provided descriptions of weather station locations beginning in 1851, i.e., during the Smithsonian years, and continued through the Signal Service years, and into the early part of the 20<sup>th</sup> Century under the U.S. Weather Bureau.

Entries from local Climate Record Books at the National Climate Data Center provided the backbone for locations and general exposures for instrument shelters (especially thermometers), rain gages, and anemometers/wind vanes for the Savannah stations (city office locations) from December 1870 through the 1940s.

Also helpful were cover sheets of the Original Monthly Record of Observations, especially during the 1930s when the Savannah airport office was in the process of moving. These forms provided a near continuous record of elevations for station thermometer, rain gage, and wind instruments from July 1892 through 1948. Numerous Station History reports prepared in the 1940s and early 1950s were instrumental in defining specific instrument elevation heights at both the Weather Bureau City Offices and Airport Stations.

Specific building names and street addresses from different sources confirmed the locations of the Signal Service and Weather Bureau city offices from 1871 through 1950. During the latter time period of this study, Weather Bureau officials routinely documented station history and instrument status through forms entitled, Description of Topography and Exposure of Instruments, Report of Elevation and Position of Instruments, and Surface Weather Observations. Information on these forms provided significant detail regarding Savannah city offices, as well as stations at Hunter and Travis air fields.

Tracking office location and instrument exposure on a yearly basis was important to ensure no information gaps existed. This yearly information was obtained from the Annual Reports of the Chief Signal Officer for the 1870s and 1880s, and from the Annual Reports of the Weather Bureau from 1892 through 1943. Information consistency for the mid to late 1940s was maintained from the wealth of historical records during the 1950s. Weather Bureau Annual Reports were more complete for this project than Signal Service versions.

Considerable information regarding the early Signal Service observing stations in Savannah was available from station inspection reports located at the National Archives and Records Administration (NARA). These inspections provided drawings and detailed textual information on the placement and exposure of weather instruments at several of the Signal Service stations in Savannah.

Information regarding duration of observations by Smithsonian Institution weather observers in the Savannah area was obtained from yearly Smithsonian Institution reports, as well as from the NCDC data base. The street address for Dr. Posey was obtained from the Savannah City Directory. Local newspaper archives (microfilm) also provided information on the Smithsonian observers.

General historic information for the Savannah area was found on various web sites. Information regarding timeline and location of airports in Savannah was obtained from the book entitled, *The History of Aviation in Savannah, Georgia*, by Rich Wittish. Information regarding the Salzburgers was from Gayther Plummer's book on early weather observers in Georgia.

Archives at the Savannah Public Library from the *Savannah Morning News* and *Savannah Evening News* were helpful in answering specific questions regarding station location and station moves, especially for the airport offices at Hunter Field.

The Georgia Historical Society and Savannah Public Library were primary local sources of relevant information, maps, archives, and photographs regarding weather observing in the Savannah area. The U.S. Park Service at Fort Pulaski provided material regarding weather diaries in the general Savannah area during the Civil War.

Other information and data sources checked (by person, telephone, or through the Internet) during this study were: the NOAA Library, Signal Corps Museum (Augusta, GA), Hargrett Rare Book and Manuscript Library at the University of Georgia, Savannah State University Library Archives, Georgia State Climatologist, the Digital Library of Georgia, State of Georgia Archives, State of Georgia Library, Georgia Southern University Library, and the Savannah/Hilton Head International Airport. Also, relevant information regarding the Weather Bureau, Signal Service, and Army Medical Department was obtained from the Dallas, TX Public Library, Oklahoma State University Library, National Library of Medicine at Bethesda, MD, and the NOAA Library.