HISTORY OF WEATHER OBSERVATIONS
JACKSONBURG, OHIO
1868—1912

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HISTORY OF WEATHER OBSERVATIONS
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Glen Conner
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INTRODUCTION

The history of weather observations at Jacksonburg, Ohio is most unusual. Almost all long-term stations are the work of several individuals who, each in turn, contributed to the longevity of the record. That was not the case in Jacksonburg—a single individual, Dr. Joshua B. Owsley, left the wonderful record of climate there for us. His weather records span forty-four years and represent the entire climate history of the town.

The Location

The Name

The name of the location, that now appears as Jacksonburg, was first entered by Dr. Owsley as Jacksonsburgh. In February 1873, he changed it to Jacksonborough. In April 1873, he spelled it Jacksonboro. In July 1885, it was Jacksonborough again. August and September 1886 saw the spelling Jacksonbury before returning to Jacksonborough. There were several other switches between Jacksonborough and Jacksonboro. At no time during his period of observation did he use the current name Jacksonburg.

The United States Censuses had spelling problems also and used Jacksonborough, Jacksonboro, and Jacksonburg. It appears on maps as Jacksonboro, Jacksonburgh, and Jacksonburg. For this study, the current usage of Jacksonburg will be adopted.

The Place

The history of weather observations at Jacksonburg is unusual because it never moved. Moves of weather observation sites are common. The move may accommodate an observer's change in residence or a change in the individual making the observations. Neither of those circumstances occurred here.

The Record

Truly, Dr. Owsley weather observations offer the potential for becoming a benchmark in Ohio climate history. That is because Jacksonburg had one observer, at one site, and a long unbroken record in a town that hasn't significantly changed. The Weather Bureau recorded

historically important changes in the observer, the site, its instrumentation, and exposure. The Substation History Form (Figure 1) that they used has minimal entries—but it is complete.

WB Form 530-1

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU

SUBSTATION HISTORY

Office preparing form WBO, Columbus, Ohio

Station Jacksonburg (Current name) County Butler State Ohio Index No. Date prepared 9/16/59

spelled Jacksonboro before 1903

Location	Latitude	Longitude	Sec. Twp. Rng.	Elevation msl	Direction and distance from Post Office	Prev. Location	Station known as	Description of exposure
(a)	(b)	(c)	(d)	(e)	(f)	(f)	(g)	(h)
1st	39-33	84-00	11-3N-3E	975	Jacksonburg, O.	------	-------	Fairly level land, exact exposure unknown.
2nd								
3rd								
4th								
5th								
6th								

(Con't)	Instruments used	Record: Original located ϕ	Record: Where published	Record: Dates 1st and last observations	Observers and Dates	Remarks
(a)	(i)	(j)	(k)	(l)	(m)	(n)
1st	Mx,Mn,SRG,CRS#	Columbus,O. 1894-1912	Ohio CD*	June 1868 to Mar. 1912	Dr. J. B. Owsley May 1868- March 1912	Dr. Owsley kept a practically unbroken daily record throughout this 44-year period.
2nd						
3rd						
4th						
5th						
6th						

Use of instrument shelter in early days not verifiable.
* Climatological History of Ohio by W. H. Alexander
ϕ Manuscript records in Columbus Jan. 1894 to Mar. 1912

O/C, NWRC, WRPC, File

WB Form 530-1

Figure 1. Jacksonburg Substation History, 1959
Source: National Climatic Data Center

Goal of the Study

The goal of this study is to document the weather observational history of Jacksonburg, Ohio where such an important block of knowledge of early Ohio climate was recorded. The climatic data and information from the observations made there are readily available for the entire period of record. They may be accessed through the National Climatic Data Center, the Midwestern Regional Climate Center, and the State Climatologist of Ohio. The challenge of this study was to identify Jacksonburg's role in the development of a federal weather observational program and where it fit in the route that followed from the Army surgeons, through its service for the Smithsonian Institution, to the Signal Service Observer Sergeants, the Weather Bureau meteorologists, and the National Weather Service observational network of today.

LOCATION OF OBSERVATIONS

Jacksonburg is located in Butler County, Ohio (Figure 2) about thirty miles north of Cincinnati. Note that the spelling on that 1924 map is Jacksonboro.

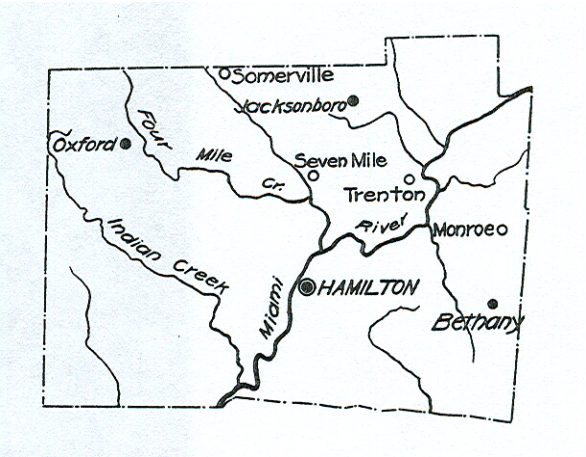
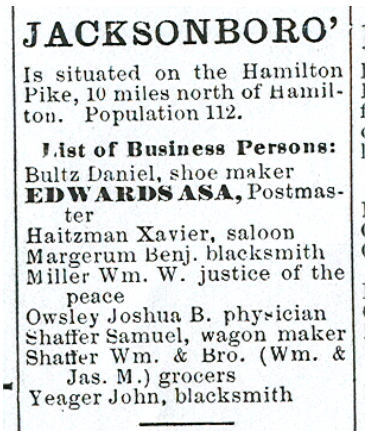


Figure 2. Butler County, Ohio
Source: Alexander, 1924

The population of Jacksonburg peaked about 1824 and it incorporated in 1835. Kolb reported that Jacksonburg was "located on the main road leading road Cincinnati to Preble and Darke Counties. At one time it had two hotels, four stores, a pork-packing establishment, four tailors, and other industries." After a bridge across the Miami at Middletown was built, Jacksonburg lost most of its importance as a trading post. By the time Dr. Owsley arrived, its layout was about as it exists now. In 1883, the City Directory listed its population as 112 and in 1900 there were 77 people living there. The number of businesses had not increased (Figure 3).



JACKSONBORO'

Is situated on the Hamilton Pike, 10 miles north of Hamilton. Population 112.

List of Business Persons:

Bultz Daniel, shoe maker
EDWARDS ASA, Postmaster
Haitzman Xavier, saloon
Margerum Benj. blacksmith
Miller Wm. W. justice of the peace
Owsley Joshua B. physician
Shaffer Samuel, wagon maker
Shaffer Wm. & Bro. (Wm. & Jas. M.) grocers
Yeager John, blacksmith

Figure 3. List of Businesses Jacksonboro
Source: Butler County Directory, 1883-84

The sign (Figure 4) in Jacksonburg today declares that it is the smallest incorporated place in Ohio.

Figure 4. Welcome to Jacksonburg Sign
Source: Author, 2005

Its population has varied little since its incorporation.

Latitude and Longitude

According to Dr. Owsley's first observations in June 1868, his location was at 39˚ 32 N and 84˚ 30' W. The Weather Bureau in 1959 estimated his location at 39˚ 33 N and 84˚ 00' W but that does not seem to be correct. It seems more likely that the location was at 39˚ 32' 13"N and 84˚ 30' 08" W, very close to what he submitted.

In August 1868, he changed his latitude and longitude to 39˚ 30' N and 84˚ 17' W. Both seem to be incorrect. He reverted to his original estimate in October 1871.

Elevation

He first reported his elevation to be 975 feet above mean sea level (MSL). There is now a U.S. Geological Survey benchmark in Jacksonburg that is at 955 feet MSL. The assumed location of Dr. Owsley's house would indicate that the elevation of 975 feet that he, and later the Weather Bureau in 1959 estimated, was about right.

In August 1868, he revised his elevation to 1152 feet MSL. That seems to be an error. He reverted to 973 feet (near his original estimate) in September 1871.

Environment

The Substation History form described the terrain as being "fairly level land, exact exposure unknown." Although the exact exposure of the instruments is indeed unknown, the fact is that the layout of the town seems to be virtually unchanged from its appearance during Dr. Owsley's day. The location of his property is known and one can deduce an approximation of the observation site.

The town of Jacksonburg is located amid agricultural land as seen in 1994 (Figure 5).

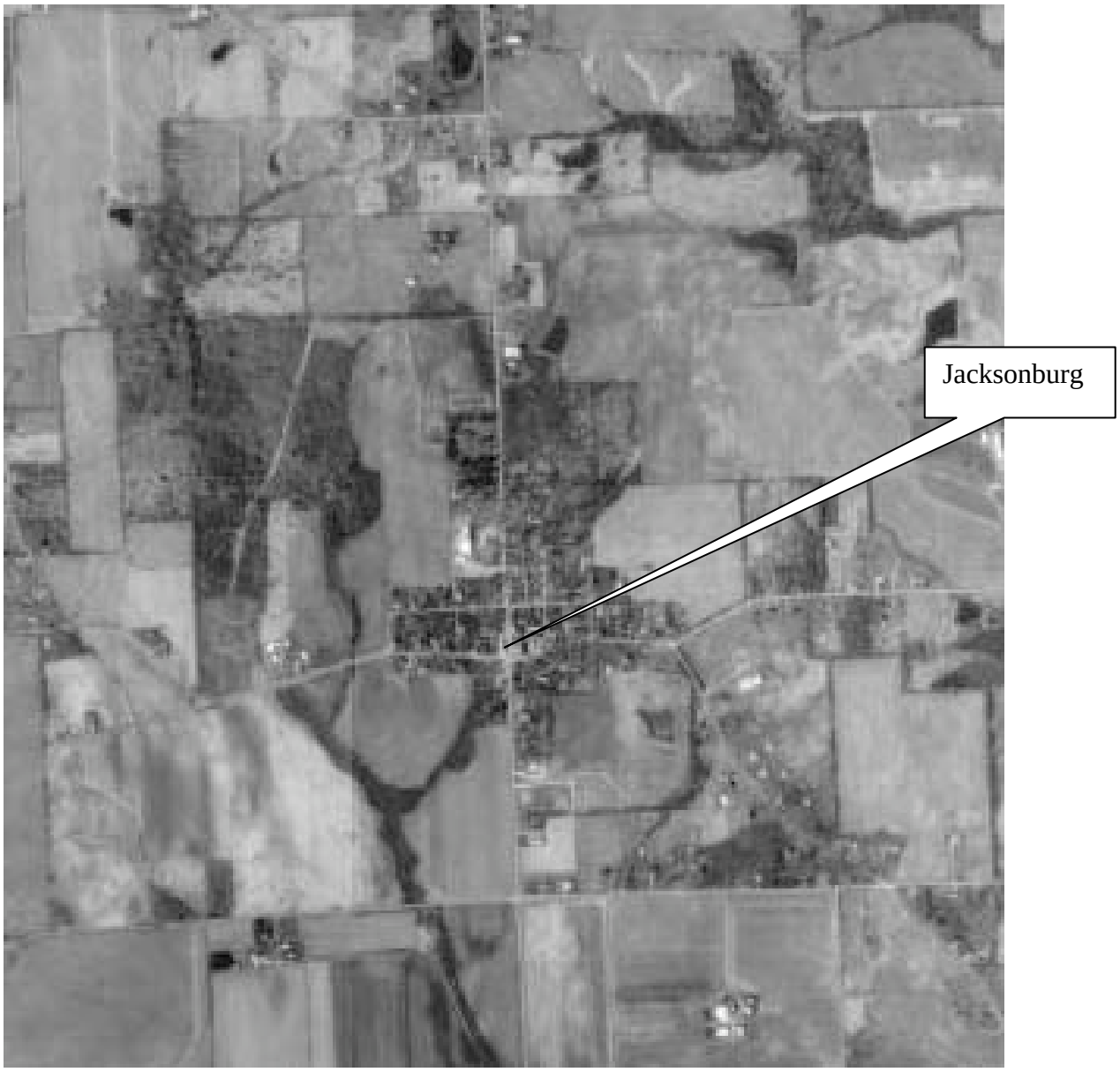


Figure 5. Jacksonburg, 1 April 1994
Source: http://terraserver-usa.com/advfind.aspx [last visited 19 May 2005]

The rectangular pattern of land being used for agriculture dominates the photograph. The fluvial features show as curvilinear pattern formed by the vegetation along the streams. The town itself occupies a very small part of the landscape.

The town's layout in 1880 (Figure 6) is virtually unchanged from the 1994 aerial photograph (Figure 5). The riparian vegetation is not shown in the property map in Figure. It does show some forested areas but most of those have subsequently been cleared.

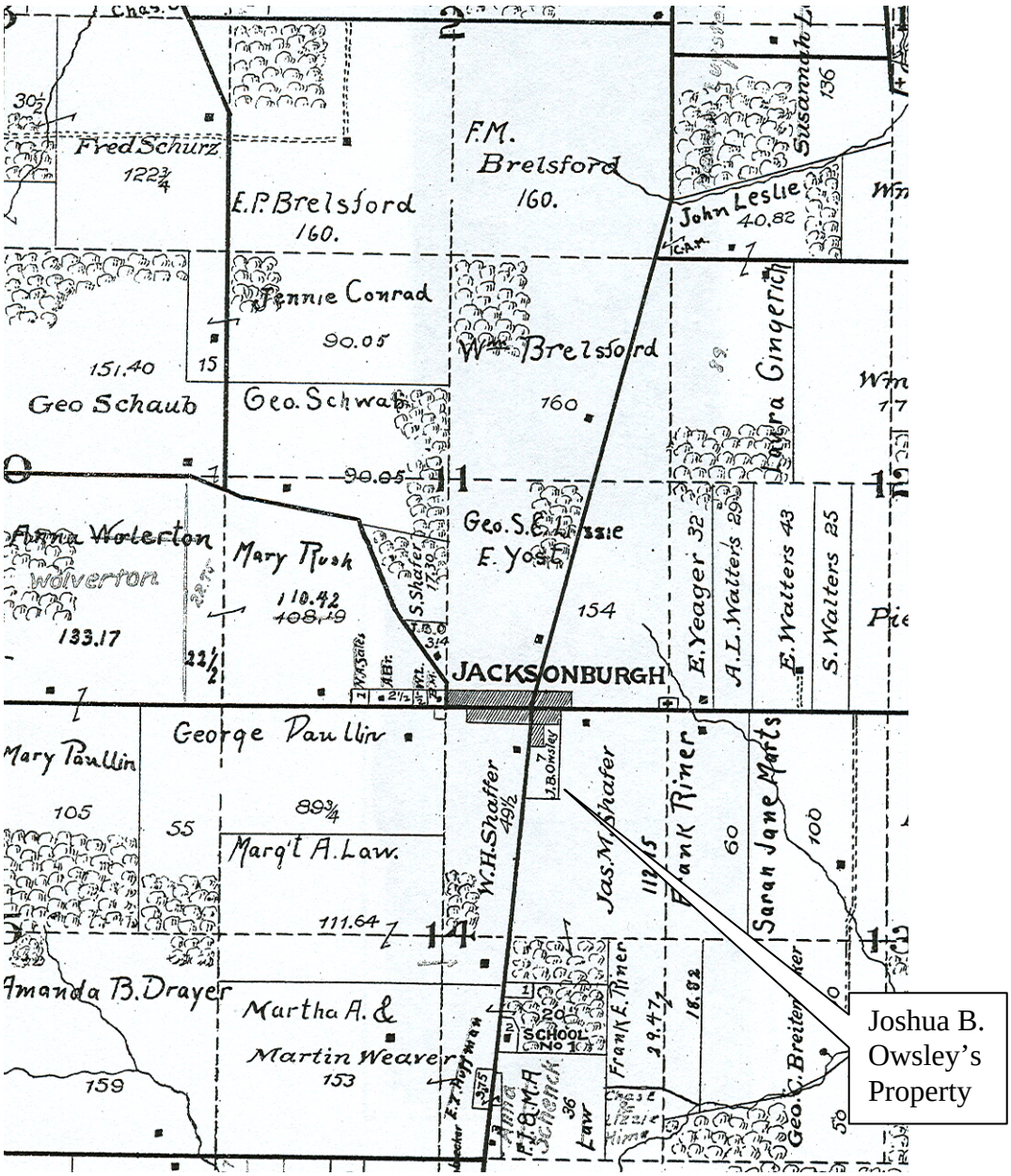


Figure 6. Jacksonburg, 1880
Source: Map of Butler County, Ohio 1880

The plat map for Jacksonburgh (sic) in Figure 7 shows Dr. Owsley's property as it was in 1880.

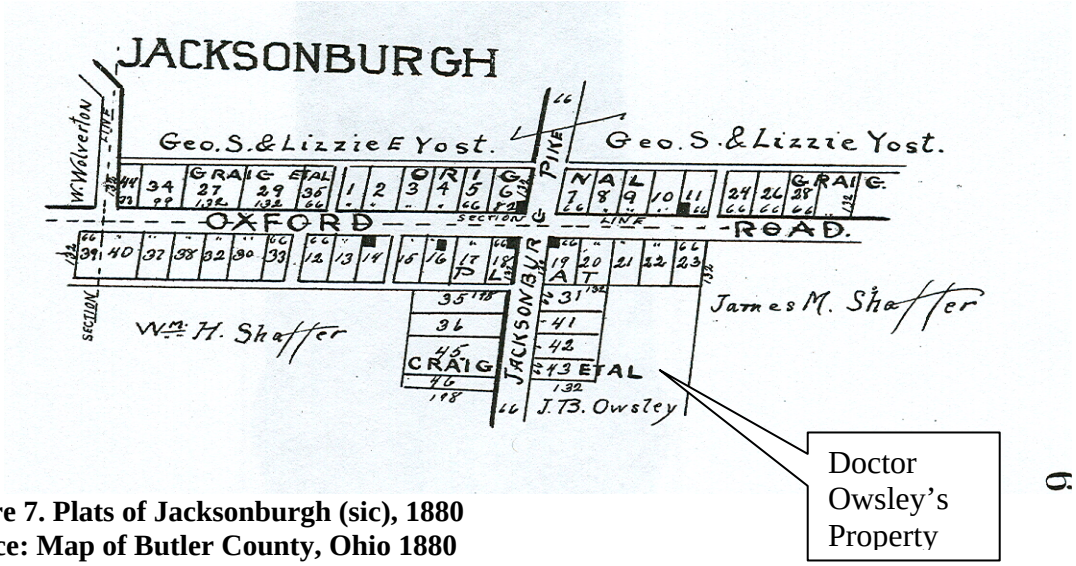


Figure 7. Plats of Jacksonburgh (sic), 1880
Source: Map of Butler County, Ohio 1880

Figure 8 shows an approximation of the boundaries of Dr. Owsley's property superimposed over the 1994 aerial photograph.

Figure 8. Dr. Owsley's Property as assumed it would look now
Source: Author

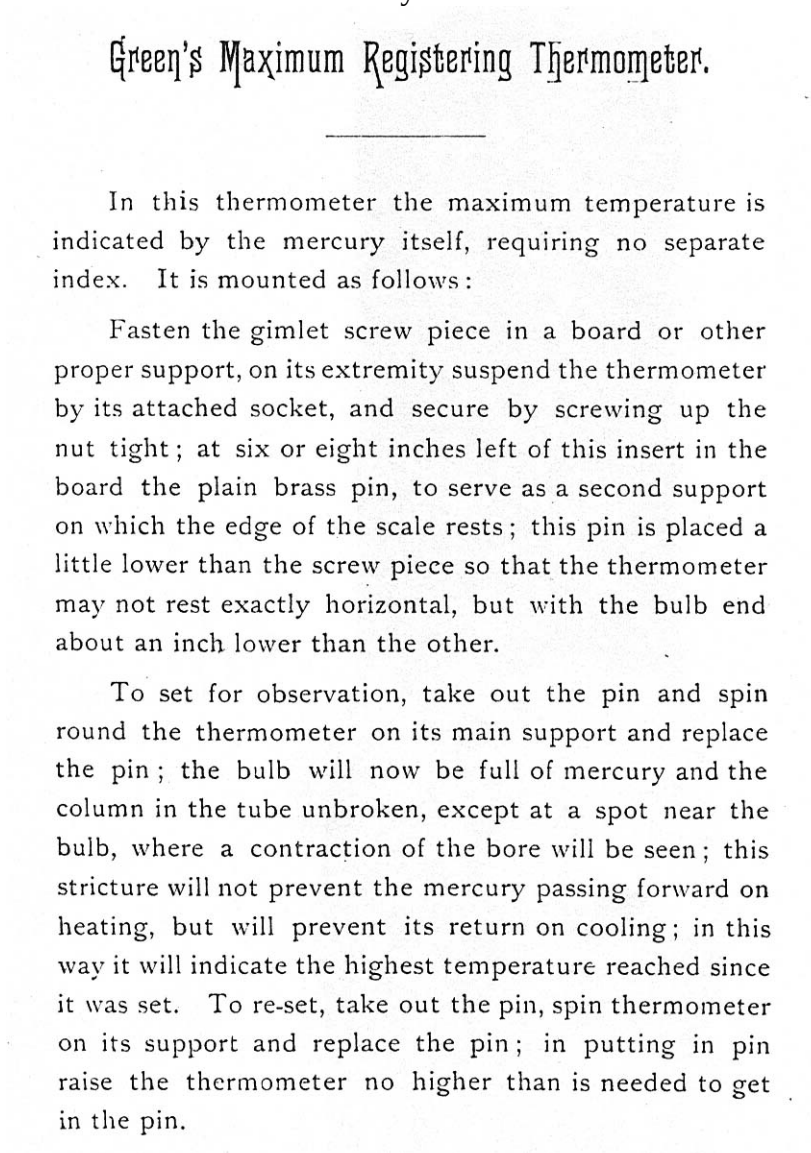
The comparison of Figures 7 and 8 lead one to conclude that the environment had good exposure during the period that Dr. Owlsley was making observations.

INSTRUMENTATION

Thermometer

He reported in June 1868 that his exposed air thermometer was 6 feet above ground level (AGL) and a wet bulb was at 10.5 feet. In October 1876, identified a thermometer as a Towers, spelling uncertain.

In December 1883, he identified his thermometer as one made by Green. In April 1890, he reported having Green Maximum (#240) and Minimum (#241) thermometers mounted at eight feet AGL. These Green thermometers were widely used.



Green's Maximum Registering Thermometer.

In this thermometer the maximum temperature is indicated by the mercury itself, requiring no separate index. It is mounted as follows:

Fasten the gimlet screw piece in a board or other proper support, on its extremity suspend the thermometer by its attached socket, and secure by screwing up the nut tight; at six or eight inches left of this insert in the board the plain brass pin, to serve as a second support on which the edge of the scale rests; this pin is placed a little lower than the screw piece so that the thermometer may not rest exactly horizontal, but with the bulb end about an inch lower than the other.

To set for observation, take out the pin and spin round the thermometer on its main support and replace the pin; the bulb will now be full of mercury and the column in the tube unbroken, except at a spot near the bulb, where a contraction of the bore will be seen; this stricture will not prevent the mercury passing forward on heating, but will prevent its return on cooling; in this way it will indicate the highest temperature reached since it was set. To re-set, take out the pin, spin thermometer on its support and replace the pin; in putting in pin raise the thermometer no higher than is needed to get in the pin.

Figure 9. Instructions for Green's Maximum Thermometer
Source: Thermometer Record Cincinnati Observatory Sep 1 1882-June 30 1884

Minimum Registering Thermometer.

This is an alcohol thermometer, and is supported by a brass spring piece, having at one end a screw pin to pass through a hole at the side of the scales on which it can turn, at the other end is a notch in which the lower part of the scale rests. The brass piece is screwed on a board so that the thermometer is nearly horizontal, the bulb end about an inch lower than the other. In the bore of the tube is a small black glass float for an index; this is set by lifting the bulb end of scale on its pin support, so that the index runs to the top of the spirit column, the scale then rested in the notch. On a fall of temperature the index is carried back with the spirit; on a rise, the index remains in place, the spirit only going forward; in this way the end of index farthest from the bulb indicates the lowest temperature since the last setting of thermometer.

Spirit thermometers are liable to derangement by the condensation of vapor of alcohol in the upper part of the tube, and from division of column in transportation; to rectify this, put through the hole at top of the scale a strong string, two or three feet long, and spin the thermometer round swiftly many times; keep clear of striking against anything, and all will come right. It may also be done by tapping the end of scale on a table. The thermometer being upright, the spinning is the better way.

Figure 10. Instructions for Green's Minimum Thermometer
Source: Thermometer Record Cincinnati Observatory Sep 1 1882-June 30 1884

In December 1891, the Green Maximum and Minimum thermometers were mounted at eight feet AGL at Dr. Owsley's site.

Barometer

His barometer was 8.75 feet AGL when he made the first report in June 1868.

Rain Gauge

In June 1868, he reported the height of his rain gage to be at eight feet AGL. In October 1876 he identified the rain gauge as s Smithsonian Rain Gauge. In December 1883, he revised the height of his Smithsonian Rain Gauge to four feet AGL. In April 1890, it was at six feet. It returned to four feet in December 1891. In October 1892 it was at six feet and in December 1892 it was at eight feet once more.

THE OBSERVER

Joshua B. Owsley was the sole climate observer at Jacksonburg. He was born about 1825 in Ohio. Little is known about him as person except that he was a physician, an archaeologist, and a meteorologist,

The Physician

Joshua was a nineteen year-old farmer living with his father in the 1850 Census of Clinton County, Ohio. The census indicated that he had attended school during the year.

He was the Census Taker in the 1860 census of Martinsville in Clarke Township of Clinton County, Ohio. He listed himself as a 26 year-old son in the household of Samuel R. and Lucy Owsley who were born in Virginia. His nine siblings lived there too. His personal property was valued at $5,200. He listed his occupation as physician.

He was a member of the Society of the Alumni of the Medical College of Ohio (Figure 11). They listed his graduation as being with the Class of 1862.

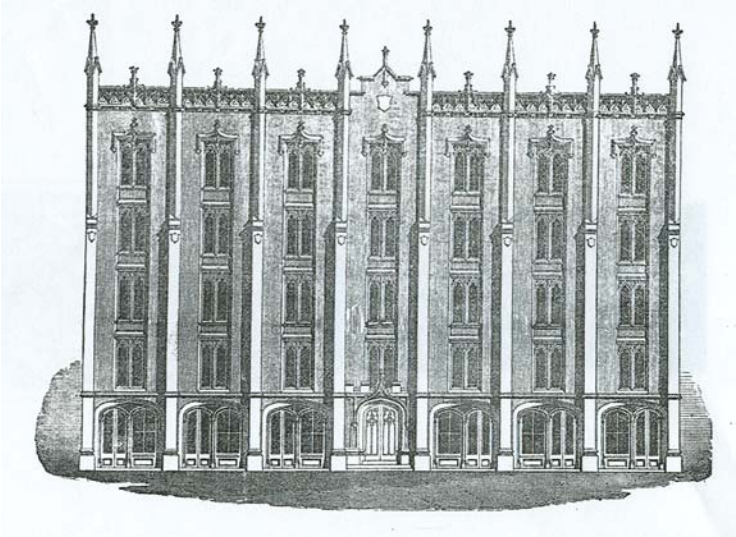


Figure 11. The Medical College of Ohio
Source: Annual Announcement of Lectures, 1865-66

The Centennial History of Butler County, Ohio recounts the physicians who practiced in Jacksonburg. Most stayed for short periods, but when Dr. Owsley arrived in Jacksonburg on 1 April 1862, that would change. He succeeded to the practice of Dr. John Corson (who was a classmate of his at the Medical College of Ohio) and "… had a successful career there ever since. Dr. Owsley is an able physician, and enjoys a most extensive practice." He joined the Butler County Medical Society in 1864.

In the 1870 census of Jacksonborough (sic) in Butler County, Ohio, he was a 45-year-old physician born in Ohio about 1836. He had $4,000 in real property and $9,345 in personal property. In the household were Catherine 27, with $3,225 in real property, and son Samuel who was six years old. Two other men were listed, one a farm laborer and the other a house painter.

1880 census of Jacksonborough (sic) in Butler County, Ohio had Joshua B. Owsley as widowed or divorced physician with a son, Samuel, aged sixteen. Two sisters lived with him; Margaret was 27 years old and Henrietta was 21.

1900 census of Jacksonboro (sic) in Butler County, Ohio listed only Dr. Owsley and his wife Sarah E. a 44 year-old who was born in Ohio. It indicated that they had been married for 27 years.

He was listed in the 1905 Ohio Physician and Dentist Directory as an active physician. The 1910 census of Jacksonboro (sic), Joshua B. Owsley was 75 living with wife Sarah age 55.

The Archaeologist

Butler County, Ohio is famous for the Mound Builds who lived there long before the European settlements. In 1879, MacLean had identified mounds that proved to be burial sites of Indians. At one site, there were depressions in addition to mounds. The depressions appeared like those made by uprooted trees and faced the mound.

> Dr. Owsley thought we might discover something in the vicinity that would unravel or make clear this problem. One hundred and forty-five feet north of this enclosure we came upon twelve hillocks, eleven of which made a complete circle two hundred and thirty feet in diameter.

He wrote of Dr. Owsley's interest in these sites that involved the Smithsonian Institution to whom he sent his climate observations.

> A portion of eight skeletons was sent to the Smithsonian Institute by Dr. Owsley. No implements have been found within the mound, but ashes and charcoal abound.

His was no passing fancy. Cone records that Dr. Owsley had a collection of about four hundred Indian relics. In November 1878, the Butler County Geological and Archaeological Society was organized "to preserve aboriginal relics as may be obtained."

The Meteorologist

The origin of Dr. Owsley's interest in weather and climate is unknown but we know that interest was intense and lasting. In the 1923 Climatological History of Ohio was a tribute to his service.

> Tribute should be paid to the memory of Dr. Owsley whose contribution to the climatology of his State and country consists of an unbroken daily record covering nearly 44 years. Few records anywhere surpass this one either in length of years or excellence.

The importance and uniqueness of his record was not overstated.

One possible influence on Dr. Owsley's interest may have come from his medical school. Dr. Daniel Drake organized the Medical School of Ohio in 1820 and was its first President. Dr. Drake was a physician who was a dedicated climatologist. He published many articles and delivered many addresses on the subject of climate. He once said that a physician must be as familiar with his barometer as with his stethoscope. He influenced many physicians to study the possible relationship between climate and disease. Perhaps Dr. Owsley had read or heard Dr. Drake's views and, like many others, were attracted to the field by his power of persuasion.

As Remembered

Ms. Smith wrote, "Another man, long remembered and revered by many was Dr. J. B. Owsley. He was a man with a remarkable memory. He lived to be quite old…."

After forty-four years of recording the weather, he submitted his last observations for March 1912. Dr. Owsley died about a month later on 3 May 1912.

THE OBSERVATIONS

The Smithsonian Years

The Smithsonian Institution Climate Network

The Smithsonian institution, headed by Joseph Henry, was created in 1846 and began establishing a climate observation network. Henry envisioned three types of observers; those without instruments who would observe the sky, extent of clouds, wind, and beginning and ending time precipitation. A second group would do that too but would also be equipped with thermometers. The third group would be equipped with a complete set of instruments to observe all of those and would also observe pressure, humidity, wind direction and wind speed — among others.

In 1847, the Smithsonian became the weather data collection agency for the U.S. Department of Agriculture. By 1854, the Smithsonian had observers reporting from thirty-one states and was receiving real time observations by telegraph from some of them. The Smithsonian received as many as half-a-million separate weather observations each year. It required up to fifteen people to make the necessary arithmetic calculations — human computers so to speak. In 1861, the Smithsonian published the first of a two-volume compilation of climatic data and storm observations for the years 1854 through 1859.

Dr. Owsley's Observations

The front side of the Smithsonian Institution form was filled with data. But, on the back was a full blank page for Casual Phenomena, as it was titled. They encouraged their observers to comment about a wide variety of things. Dr. Owsley made frequent comments in that space. In his report for February 1870, he entered the temperature on the 21st as "below 4" indicating a subzero reading. The following month, Dr. Owsley commented "This past month [February] is claimed to have been the coldest March since 1843 by our oldest citizen."

In April 1872 Dr. Owsley entered temperature with a superscript indicating thirds of degree. He continued that practice until March 1882.

His December 1872 comments included this note for the 22nd.

> Coldest day since Janry 1 1864
> 19˚ below zero

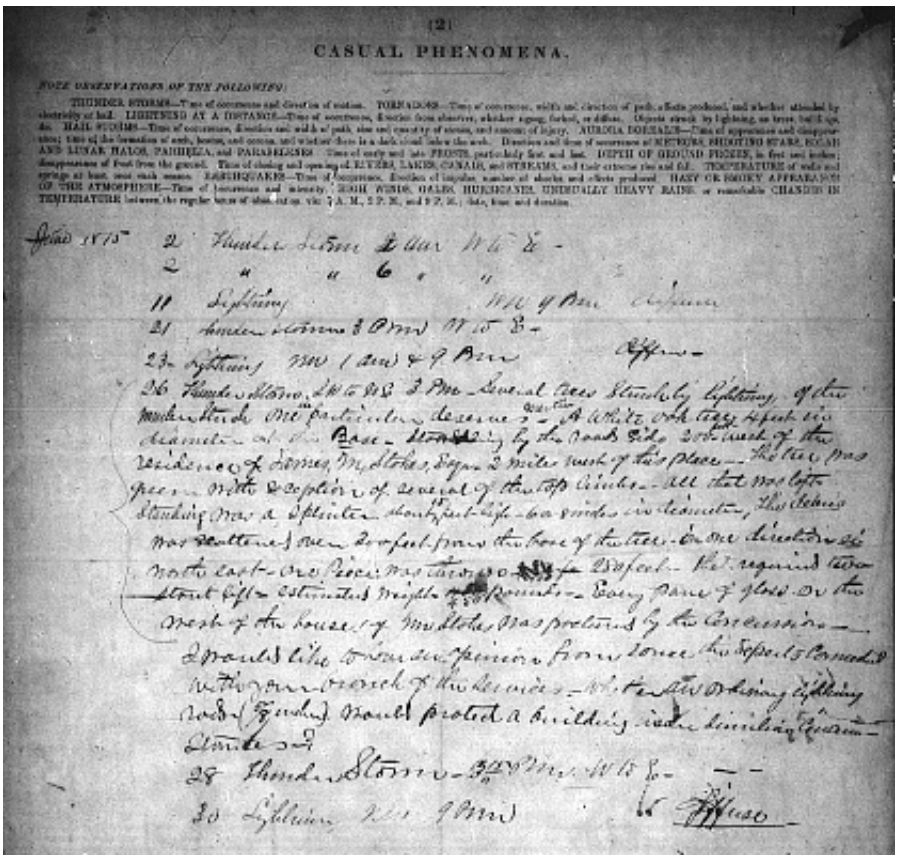
He did not identify the source of that information but it could mean that he began observations before he became affiliated with the Smithsonian Institution in 1868. The Smithsonian sought observers who had thermometers and who already were recording the weather from personal interest.

The Signal Service Years

On 9 February 1870, Congress directed the War Department to form a weather network and to make meteorological observations at the Army Posts in the United States. The Signal Service was formed for that effort because of their capability using their telegraph network. At 7:35 a.m. on November 1, 1870, its observers reported from twenty-four stations. Those observations were transmitted by telegraph to the central office in Washington, D.C. just eleven months after Congress authorized the network. The data were used to produce national weather maps.

The Signal Service soon took over the weather observation role from the Smithsonian Institution. On 10 February 1874, the Chief Signal Officer, General Myer, sent a letter to all the ex-Smithsonian observers announcing that the Smithsonian observation network was no more. He invited them to become voluntary observers in the Signal Service network and told them that he would provide stamped envelopes in which to submit their monthly reports.

In February 1875, Dr. Owsley began forwarding his observations to the Signal Service at the end of each month. The forms used were the War Department Form H. That form had space for comments and he used it to describe special weather events (Figure 12).


(2)

CASUAL PHENOMENA.

NOTE OBSERVATIONS OF THE FOLLOWING:

THUNDER STORMS—Time of occurrence and direction of motion. TORNADOES—Time of occurrence, width and direction of path, effects produced, and whether attended by electricity or hail. LIGHTNING AT A DISTANCE—Time of occurrence, direction from observer, whether spring, forked, or diffuse. Objects struck by lightning on trees, buildings, &c. HAIL STORMS—Time of occurrence, direction and width of path, size and quantity of stones, and amount of injury. AURORA BOREALIS—Time of appearance and disappearance; time of the formation of arch, beams, and corona, and whether there is a dark cloud below the arch. Direction and time of occurrence of METEORS, SHOOTING STARS, SOLAR AND LUNAR HALOS, PARHELIA, and PARASELENES. Time of early and late FROSTS, particularly first and last. DEPTH OF GROUND FROZEN, in feet and inches; disappearance of frost from the ground. Time of closing and opening of RIVERS, LAKES, CANALS, and STREAMS, and their extreme rise and fall. TEMPERATURE of wells and springs at least once each season. EARTHQUAKES—Time of occurrence, direction of impulse, number of shocks and effects produced. HAZY OR SMOKY APPEARANCE OF THE ATMOSPHERE—Time of occurrence and intensity. SOUTH WINDS, GALES, HURRICANES, UNUSUALLY HEAVY RAINS, or remarkable CHANGES IN TEMPERATURE between the regular hours of observation, viz: 7 A. M., 2 P. M., and 9 P. M.; date, hour and duration.

Year 1875
2 Thunder Storm 2 Mar W to E -
2 " " 6 " "
11 Lightning NW & Mar Effects
21 Thunder storm 3 PM W to E -
23 Lightning NW (Mar) & 9 Mar Effects -
26 Thunder Storm, SW to NE 3 PM - Several trees Shockly lightning, of the mulberry tree in particular deserves - A White Oak tree 4 feet in diameter at the Base - standing by the road side 200 west of the residence of James M. Stokes, Esqr 2 miles west of this place - the tree was green with exception of several of the top limbs - all that was left standing was a splinter about 15 feet high - 6 or 8 inches in diameter, the balance was scattered over 200 feet from the base of the tree - in one direction it was north east - one piece was thrown 250 feet - the required time about half a minute estimated weight 400 Pounds - every pane of glass on the west of the house of Mr Stokes was protected by the Concession - I would like to have an opinion from some one who experienced a storm with some record of the damage - Water ways ordinary lightning rods (Spinding) would protect a building under similar circumstances
28 Thunder Storm - 3½ PM NW to E -
30 Lightning NW 9 PM Effects

Figure 12. Dr. Owsley's Comments from June 1875
Source: Original Record, National Climatic Data Center

His comments were sometimes lengthy but they provided a real feel for the event being reported. The comments for the 26th in Figure 12 read as follows.

> Thunderstorm, SW to NE 3 PM. Several trees struck by lightning. Of the number struck one in particular deserves mention. A white oak tree 4 feet in diameter at the base, standing by the roadside, 200 feet west of the residence of James M. Stokes, Esqr., two miles west of this place. The tree was green with exception of several of the top limbs. All that was left standing was a splinter about 15 feet high - 6 or 8 inches in diameter. The debris was scattered over 300 feet from the base of the tree in one direction to north east - one piece was thrown for 280 feet that required two stout lift – estimated weight 450 pounds. Every pane of glass on the west side of the house of Mr. Stokes was broken by the concussion. I would like to have an opinion from some of the experts connected with your branch of the services. What an ordinary lightning rod (5/8 inches) would protect a building under similar circum-stances ?

He made short comments every month about auroras, halos, thunderstorms, and other routine events. About more severe events like the tornado on 2 July 1880, he wrote more extensively. For example, these from the dates indicated.

> 2 July 1880
> At 4 p.m. a water spout passed two miles south of this village NE to SW, 60 rods in width. From the appearance of the ground at least four (4) inches of rain fell in a few minutes. An eye witness described the noise similar to steam escaping when the pressure was over 150 lbs. Sheaves of wheat were drawn up hundreds of feet high and could be seen here. Not a drop of rain fell here. There were two inverted cones – had the appearance of steam.
>
> 25 March 1884
> The little village of Scipio on the State line was almost destroyed with the loss of life.
>
> Hail 1½ long by ¾ of inch in thickness. The discs are different to any seen before.

In June 1886, he wrote a letter in the space provided for remarks on the observation form. It was to General Hazen who was the Chief Signal Office of the Signal Service at that time. He made a request.

> … Please explain why ice houses have suffered so much from lightning in this neighborhood. The damage has been greater to ice

> houses than to barns. Hundreds of tons of ice is stored along the Miami Canal for shipment to Cin ti' [Cincinnati] …

That letter is evidence the curiosity of a scientist and his attempt to find answers. He was not just interested in weather as a hobby.

Ohio Meteorological Bureau

On 4 November 1883, the Ohio Meteorological Bureau made its first report.

January 1892 saw the first report to the Ohio Meteorological Bureau that had been created by an Act passed by the Ohio Legislature on 17 April 1882. It published observational data from Ohio observers. The Ohio Meteorological Bureau's last issue was March 1892 and Dr. Owsley's data were there for the first time (Figure 10).

STATION No. 83.

J. B. OWSLEY, OBSERVER.

Jacksonborough, Butler County, Ohio.

Latitude, 39° 32′; Longitude, 84° 30′; Elevation, 975 ft.

Date.	Mean barometer—In inches.	Temperature—Degrees Fahrenheit.					Mean humidity.	Precipitation—In inches.			Direction of wind.	State of weather.
		Mean.	Normal, — years.	Maximum.	Minimum.	Range.		Rain and melted snow.	Normal, — years.	Unmelted snow.		
1	.....	29	...	32	28	4	...	.10	....	.....	N.E.	Cl.
2	.....	31	...	45	22	23	...	.....	....	.....	.....	Cl.
3	.....	35	...	45	25	20	...	.....	....	.....	S.E.	Cl.
4	.....	50	...	55	35	20	...	.....	....	.....	S.E.	Cr.
5	.....	37	...	48	32	16	...	.10	....	.....	S.W.	Cl.
6	.....	34	...	40	29	11	...	.....	....	.....	E.	Cr.
7	.....	45	...	55	30	25	...	.....	....	.....	N.	Cr.
8	.....	40	...	44	34	10	...	.10	....	.....	N.W.	Cl.
9	.....	36	...	55	30	25	...	.05	....	.....	S.W.	Cl.
10	.....	16	...	17	14	3	...	.05	....	.....	N.W.	Cl.
11	.....	25	...	32	14	18	...	.....	....	.....	N.W.	Cl.
12	.....	41	...	57	24	23	...	.....	....	.....	S.W.	Cr.
13	.....	30	...	32	28	4	...	.....	....	.....	N.E.	Cl.
14	.....	24	...	32	16	16	...	.....	....	.....	N.E.	Cr.
15	.....	27	...	34	18	16	...	.....	....	.....	N.E.	Cl.
16	.....	30	...	42	20	22	...	.....	....	.....	N.E.	Cr.
17	.....	21	...	29	19	10	...	.10	....	.....	N.E.	Cl.
18	.....	22	...	30	17	13	...	T	....	.....	W.	Cl.
19	.....	27	..	33	17	16	...	T	....	.....	S.W.	Cr.
20	.....	30	...	41	19	22	...	.....	....	.....	N.	Cr.
21	.....	34	...	41	25	16	...	.10	....	.....	W.	Cl.
22	.....	45	...	54	32	22	...	.50	....	.....	.....	Cl.
23	.....	32	...	38	30	8	...	.....	....	.....	N.	Cl.
24	.....	37	...	52	25	27	...	.....	....	.....	S.E.	Cr.
25	.....	47	...	62	32	30	...	.....	....	.....	.....	Cr.
26	.....	51	...	65	44	21	...	.25	....	.....	S.E.	Cr.
27	.....	42	...	48	40	8	...	.10	....	.....	N.	Cl.
28	.....	44	...	58	35	23	...	.....	....	.....	N.	Cr.
29	.....	47	...	61	33	28	...	.....	....	.....	S.E.	Cr.
30	.....	50	...	60	40	20	...	.40	....	.....	S.E.	Cl.
31	.....	55	...	70	43	27	...	.....	....	.....	.....	.....
Total	.....	...	...	...	...	...	...	1.85	....	.....	.....	.....
Mean	.....	36	...	46	27	18	...	.06	....	.....	N.E.	Cl.
Highest	.....	55	...	70	44	33	...	.50	....	.....	.....	.....
Lowest	.....	16	...	17	14	3	...	T	....	.....	.....	.....
Range	.....	39	...	53	30	30	...	.50	....	.....	.....	.....

T.—Trace. F.—Fair. Cl.—Cloudy. Cr.—Clear.

Figure 12. Jacksonborough (sic) Data March 1892
Source: Ohio Meteorological Bureau

The Weather Bureau Years

On 1 October 1890, Congress passed an act that transferred the weather service from the Signal Service to the Department of Agriculture. The number of weather stations included in that publication increased over subsequent months as the Weather Bureau increased the number of Cooperative Weather Observers. By 1891, the network of voluntary weather observers across the country had grown to 2,000 stations. Dr. Owsley became one of those observers in Ohio.

In February 1892, he submitted his observations to the Weather Bureau on Form 1005. The data from Dr. Owsley were published monthly by the Weather Bureau in their climatological data publications. The Weather Bureau published the Report of the Ohio Weather and Crop

Service in June 1892. This was the first of the documents that evolved into the Climatological Data for Ohio. The April 1893 issue had his data listed as Jacksonboro (sic).

The April 1912 edition of the Climatological Data for Ohio still listed Jacksonburg but its data were missing for that month. For the first time in forty-four years, Dr. Owsley did not observe the weather. He died the following month.

APPENDIX 1

Jacksonburg Mean Monthly Temperature

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1868	.....	.....	.....	.....	57.6	67.7	79.8	72.8	62.0	52.0	42.2	26.7	.....
1869	34.8	34.4	34.8	49.7	59.8	68.6	73.8	76.6	66.6	45.8	37.4	32.7	51.3
1870	31.9	31.4	36.3	53.8	66.4	72.2	77.5	74.4	70.8	57.7	44.2	29.7	53.9
1871	32.2	34.8	49.5	57.3	61.6	71.5	73.0	74.8	63.6	58.1	40.0	28.5	54.0
1872	25.6	29.5	35.5	55.2	63.2	72.2	77.2	75.4	67.2	54.4	35.1	23.2	51.1
1873	24.8	30.0	35.5	49.9	62.8	74.8	73.6	74.9	65.2	50.8	36.6	35.8	51.2
1874	32.0	34.0	41.6	44.0	66.4	77.8	78.7	77.1	73.6	57.1	42.6	34.7	55.0
1875	22.0	22.0	36.3	48.0	63.2	69.6	74.9	67.7	64.5	51.2	40.6	40.6	50.0
1876	39.0	37.0	37.2	48.0	65.0	72.3	77.3	75.1	66.6	46.9	47.7	22.2	52.9
1877	27.0	39.6	36.1	54.0	61.8	72.0	75.5	73.9	68.7	60.2	42.4	44.7	54.6
1878	32.0	36.0	48.8	60.0	62.0	65.6	80.6	77.1	67.9	54.5	44.6	24.8	54.5
1879	25.0	29.0	42.2	52.0	66.1	71.0	76.3	72.0	62.2	64.6	44.8	36.1	53.4
1880	43.0	37.0	40,2	51.0	67.2	76.1	72.9	75.2	64.9	53.5	31.0	21.5	52.8
1881	21.8	27.8	35.0	46.0	69.7	71.7	80.2	81.2	75.9	60.5	42.1	38.5	54.2
1882	29.6	40.9	43.7	51.3	58.9	70.4	72.9	70.8	67.0	66.2	42.6	28.8	53.6
1883	23.9	31.6	33.1	52.1	59.4	74.6	75.9	71.3	64.7	56.0	42.6	30.9	51.3
1884	19.9	38.0	39.9	49.8	59.9	75.0	74.3	73.7	70.9	57.8	40.3	28.4	52.3
1885	21.1	15.4	30.2	50.4	61.8	70.7	79.7	71.4	64.0	50.7	41.1	31.1	49.0
1886	23.0	26.8	38.8	53.3	63.3	67.4	73.6	72.5	66.5	53.1	38.2	24.6	50.1
1887	24.6	35.1	36.5	52.1	67.4	73.1	80.2	73.9	63.0	52.5	40.0	30.0	52.4
1888	23.6	28.8	33.9	51.8	59.8	72.7	75.3	72.3	62.3	48.9	42.5	33.4	50.4
1889	33.2	26.8	42.6	50.8	63.4	68.6	76.1	73.0	64.0	48.0	39.7	44.8	52.6
1890	38.5	39.7	34.4	52.6	61.3	75.6	75.9	72.8	64.9	55.9	46.2	31.4	54.1
1891	33.7	35.2	35.9	55.6	59.2	71.0	71.2	73.0	72.2	55.7	40.8	39.4	53.6
1892	24.0	35.6	36.0	49.0	58.8	72.1	73.3	72.7	66.5	57.4	36.7	29.0	50.9
1893	17.7	30.2	38.9	50,4	58.0	70.1	76.1	72.1	66.8	53.8	38.6	31.9	50.8
1894	30.6	30.1	46.0	53.2	60.3	73.9	77.1	76.3	71.5	57.3	38.6	35.6	54.2
1895	24.8	22.3	37.3	54.2	62.8	74.7	74.5	78.1	72.4	50.7	41.8	33.9	52.3
1896	30.8	31.1	35.1	59.9	70.8	71.8	74.8	75.0	64.8	51.8	44.4	35.2	53.8
1897	25.9	33.2	42.8	50.4	58.3	70.5	78.0	73.0	72.6	62.2	42.0	33.0	53.5
1898	33.8	32.1	46.3	50.2	63.9	76.7	78.6	75.0	72.0	55.0	39.9	29.0	54.4
1899	28.6	22.6	37.7	55.9	65.6	74.0	76.8	77.2	68.9	60.6	46.1	30.6	53.7
1900	32.4	26.5	35.4	52.8	66.0	72.1	77.0	80.4	73.6	64.0	42.2	33.2	54.6
1901	32.0	24.8	39.7	49.0	61.0	74.0	82.2	76.6	69.3	57.6	40.2	27.4	52.6
1902	29.0	22.8	42.9	48.8	64.8	68.9	76.4	72.5	65.2	55.2	49.6	29.4	52.1
1903	26.2	29.4	45.8	50.9	64.8	67.2	77.2	74.4	69.7	56.0	38.2	25.4	52.1
1904	23.6	25.7	41.9	45.4	62.2	69.8	74.1	73.6	68.6	56.3	42.8	29.5	51.1
1905	24.1	21.4	45.8	52.0	63.2	71.8	74.8	74.6	69.2	55.0	42.3	33.0	52.3
1906	36.3	28.8	31.4	55.8	64.4	70.9	75.0	76.8	72.0	54.2	44.4	34.1	53.7
1907	34.4	28.7	47.8	42.2	56.5	68.4	75.4	73.0	67.8	51.8	40.1	33.8	51.7
1908	30.8	29.2	44.8	52.1	63.6	70.4	76.1	76.2	72.7	57.2	45.0	34.6	54.4
1909	32.3	36.6	38.9	50.0	58.9	72.2	72.0	74.5	64.7	51.0	51.0	25.3	52.3
1910	30.6	26.6	50.8	53.3	56.8	68.2	75.1	73.5	67.5	58.0	37.2	26.0	52.0
1911	33.0	36.0	39.6	49.1	68.0	72.6	75.5	73.8	70.2	57.3	38.8	37,1	54.2
1912	18.4	24.8	35.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean:	28.6	30.4	39.5	51.5	62.6	71.6	76.1	74.4	67.8	55.3	41.5	31.6	52.6

Source: Alexander, 1924

APPENDIX 2

Jacksonburg Maximum Monthly Temperature

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1882	.....	.....	.....	.....	.....	.....	90	90	90	82	74	44	.....
1883	.....	.....	.....	.....	.....	.....	.....	94	.....	80	68	64	.....
1884	40	64	68	89	89	101	100	99	.....	95	52	58	101
1885	48	52	62	86	94	94	100	101	96	80	70	58	101
1886	58	58	70	86	90	94	99	96	90	80	62	60	99
1887	60	57	66	86	94	101	102	102	96	80	72	58	102
1888	64	54	70	88	84	94	96	96	84	76	70	52	96
1889	52	62	74	85	94	91	93	92	90	70	68	64	94
1890	64	66	68	78	88	95	96	99	91	86	71	55	99
1891	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1892	.....	66	70	80	85	97	100	94	91	88	63	65	100
1893	54	54	75	84	85	91	98	97	98	87	70	68	98
1894	57	64	83	86	88	98	99	102	98	89	68	62	102
1895	58	67	80	87	97	101	98	101	101	80	78	63	101
1896	57	68	72	89	97	95	97	97	97	75	71	59	97
1897	64	64	73	84	87	97	101	100	105	94	69	65	105
1898	65	64	72	82	88	97	99	97	97	90	70	58	99
1899	56	62	69	89	88	96	97	100	105	90	68	60	105
1900	63	63	63	81	93	91	96	100	98	90	72	55	100
1901	56	50	73	87	88	99	109	101	98	83	73	65	109
1902	53	55	68	85	89	96	97	95	91	82	76	55	97
1903	59	66	79	81	91	89	97	99	97	80	76	49	99
1904	54	64	73	77	90	89	98	95	94	88	71	62	98
1905	58	45	81	84	87	94	97	95	92	88	64	54	97
1906	75	66	59	86	99	95	94	94	92	82	74	60	99
1907	68	60	83	77	88	90	97	94	90	80	63	59	97
1908	51	55	71	81	92	97	100	104	100	90	71	61	104
1909	68	61	59	81	84	92	96	94	89	83	77	67	96
1910	56	56	86	84	82	92	95	97	90	88	68	53	97
1911	59	68	69	78	98	98	101	98	91	85	67	61	101
1912	52	66	68	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Absolute highest, 109 degrees on July 22, 1901.

Source: Alexander, 1924

APPENDIX 3

Jacksonburg Minimum Monthly Temperature

Year	Jan.	Feb.	Mar.	Apr.	May	June	June	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1882	.....	.....	.....	.....	.....	.....	62	58	45	38	21	12	.....
1883	.....	.....	.....	.....	.....	.....	.....	48	.....	38	8	3	.....
1884	—28	4	0	26	38	54	54	44	.....	28	10	—8	—28
1885	—17	—17	6	22	32	48	52	49	36	31	20	—5	—17
1886	—19	—12	12	26	38	48	60	52	40	26	18	—4	—19
1887	—12	10	12	22	48	54	66	60	36	26	—1	—4	—12
1888	0	2	2	30	32	50	60	50	38	33	22	14	0
1889	12	0	20	20	36	42	61	58	36	28	15	20	0
1890	4	16	2	28	36	50	53	47	40	31	25	11	2
1891	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1892	.....	14	14	20	38	54	50	50	44	30	16	1	.....
1893	—17	6	9	30	38	53	57	52	38	27	8	11	—17
1894	—8	5	12	26	32	40	54	50	40	31	17	—5	—8
1895	—12	—15	16	27	33	48	50	51	34	21	16	11	—15
1896	—6	—11	3	25	50	48	52	51	34	27	11	11	—11
1897	—13	6	22	22	32	45	49	50	39	33	15	6	—13
1898	4	—4	24	20	32	53	52	55	45	27	12	—4	—4
1899	—4	—22	3	22	44	49	53	54	32	34	26	1	—22
1900	1	—8	0	24	38	50	55	61	43	35	18	15	—8
1901	—3	3	1	30	39	42	58	58	38	32	20	—9	—9
1902	3	—6	8	22	33	46	52	47	38	30	25	0	—6
1903	—8	—9	19	22	29	45	55	50	40	25	8	—1	—9
1904	—10	—4	21	24	37	51	50	50	42	30	18	4	—10
1905	—2	—10	23	26	36	51	54	56	43	29	18	13	—10
1906	0	—3	6	25	32	47	54	53	47	22	20	5	—3
1907	—3	3	20	22	32	50	52	51	39	29	21	14	—3
1908	8	—1	25	22	32	44	54	52	36	26	16	11	—1
1909	2	3	14	22	31	49	52	50	38	25	22	—11	—11
1910	0	—4	16	24	33	40	52	48	45	25	19	5	—4
1911	1	10	10	22	32	50	48	48	34	34	11	10	1
1912	—8	—6	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Absolute minimum, —28 on January 6, 1884.

Source: Alexander, 1924

APPENDIX 4

Jacksonburg Total Monthly Precipitation

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1868	.....	.....	.....	.....	.....	5.75	1.50	5.87	7.62	1.69	2.25	1.94	.....
1869	2.04	3.57	6.82	4.00	5.34	3.99	2.85	2.52	3.27	2.34	4.04	3.44	44.22
1870	6.65	2.75	4.21	1.15	0.40	3.25	4.67	2.20	1.39	2.30	1.50	3.10	34.57
1871	3.25	3.84	4.27	2.70	5.50	5.10	3.07	8.65	0.50	1.70	3.70	2.95	45.23
1872	0.93	2.07	0.82	4.35	3.70	3.50	5.70	5.05	2.45	2.40	0.65	2.21	33.83
1873	3.20	4.02	2.00	2.55	3.85	3.50	7.65	2.15	2.10	3.15	2.30	5.95	42.42
1874	4.30	4.75	3.20	3.05	0.25	3.85	2.60	0.90	1.25	0.80	4.15	3.00	32.10
1875	1.85	1.50	3.95	1.15	4.40	9.55	12.40	3.75	0.45	2.80	4.60	4.50	50.90
1876	7.95	2.20	4.25	4.40	2.75	4.65	3.85	4.80	2.70	2.05	2.05	1.17	42.82
1877	2.06	0.30	5.50	2.20	3.35	7.12	6.30	2.25	1.70	1.75	4.45	2.70	39.68
1878	4.92	2.45	2.45	5.15	1.95	2.40	5.45	4.55	3.40	2.70	2.70	4.55	42.67
1879	2.75	2.65	6.75	1.50	2.15	3.80	5.35	9.00	3.90	0.80	4.35	5.50	48.50
1880	5.75	2.95	4.55	6.35	3.65	8.35	3.00	4.70	3.45	3.30	4.60	3.55	54.20
1881	5.00	4.90	4.85	2.30	0.75	2.45	3.05	1.05	2.00	6.15	6.05	5.70	44.25
1882	6.30	6.25	5.10	2.55	5.90	7.70	3.55	2.25	1.60	1.20	1.65	2.25	46.30
1883	2.80	7.40	3.00	2.70	6.50	4.28	2.50	2.55	1.30	6.50	3.50	2.75	45.78
1884	2.60	7.65	3.10	2.55	5.40	1.65	1.70	1.20	5.25	1:15	0.85	3.40	36.50
1885	4.05	2.95	1.22	3.17	2.62	3.25	3.65	5.35	4.50	2.00	2.35	1.90	37.01
1886	3.20	1.51	2.35	5.30	6.40	6.25	3.45	4.60	4.45	1.55	4.55	3.05	46.66
1887	1.85	6.25	3.50	5.05	2.25	3.25	0.70	1.75	1.45	0.40	4.05	3.35	33.85
1888	3.85	2.15	5.35	1.90	5.10	3.40	3.05	7.80	1.40	3.85	4.65	0.85	43.35
1889	2.60	0.60	0.40	0.50	4.20	3.60	2.45	0.60	2.45	2.05	4.12	2.05	25.62
1890	5.40	5.00	5.65	1.95	4.35	5.60	0.30	3.35	3.40	1.80	2.20	1.50	40.50
1891	3.25	4.15	5.60	2.45	1.75	2.95	2.45	2.50	1.95	0.95	6.30	2.65	36.95
1892	0.85	3.95	1.85	5.45	4.15	3.75	1.55	2.60	2.65	0.15	2.20	1.15	30.30
1893	3.90	4.90	1.30	6.60	6.60	3.65	1.15	1.40	2.10	2.25	1.75	1.75	37.35
1894	1.45	4.35	1.70	1.15	2.70	2.65	0.10	0.75	2.60	1.00	1.00	2.45	21.90
1895	5.10	0.80	0.50	1.35	1.45	5.40	1.60	2.55	0.20	0.40	5.35	3.30	28.00
1896	1.85	1.55	2.70	1.65	2.95	3.95	4.75	3.80	6.60	0.70	2.70	1.35	34.55
1897	2.60	3.85	8.15	3.55	3.60	1.70	3.40	1.27	0.65	1.30	8.00	3.12	41.19
1898	6.70	1.25	8.28	0.85	3.10	1.50	1.25	4.45	3.75	4.25	3.95	2.85	42.18
1899	4.68	2.80	3.15	1.00	2.85	1.20	3.95	3.40	0.55	1.90	1.50	3.70	30.68
1900	2.54	2.86	1.95	1.75	3.80	2.55	3.40	2.90	0.45	2.05	2.75	1.05	28.05
1901	2.40	1.90	1.80	1.45	1.90	3.35	0.55	1.15	3.25	1.50	0.55	2.85	22.65
1902	1.85	0.45	2.15	1.98	3.27	9 57	1.29	0.84	4.89	4.19	3.51	4.51	38.50
1903	3.22	6.58	3.82	2.87	4.55	3.83	2.39	3.43	0.54	2.13	2.02	2.28	37.66
1904	4.53	2.31	7.35	2.83	4.37	2.72	2.06	1.99	2.72	1.05	0.65	4.22	36.80
1905	2.32	2.27	3.46	3.63	6.92	2.99	4.15	10.97	2.86	5.25	2.30	2.16	49.28
1906	3.89	1.83	5.74	1.61	2.48	4.24	7.66	4.94	2.96	1.77	3.40	4.34	44.86
1907	8.54	0.85	7.32	3.22	3.25	2.73	6.35	2.67	5.72	3.15	3.58	3.14	50.52
1908	2.13	5.46	4.42	4.90	5.19	2.55	3.45	1.09	0.36	0.41	1.08	1.30	32.34
1909	2.69	7.36	2.00	5.72	7.00	5.89	5.33	4.60	0.79	5.25	2.13	4.19	52.95
1910	3.69	.....	0.05	2.35	4.70	1.71	3.70	0.98	3.71	7.96	1.38	2.97	.....
1911	3.61	1.55	3.12	5.06	1.93	3.97	1.82	4.97	4.73	4.46	2.98	3.80	42.00
1912	3.29	1.93	4.81	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean:	3.59	3.27	3.65	2.90	3.70	4.07	3.43	3.41	2.64	2.44	3.05	2.97	39.12

Source: Alexander, 1924

APPENDIX 5

Jacksonburg Heavy Rainfall Events

Year	24-Hour Period		48-Hour Period		72-Hour Period		96-Hour Period	
	Date	Amount	Date	Amount	Date	Amount	Date	Amount
1875	June 2	3.40	.....	.....	.....	.....	.....	.....
1875	Aug. 1	2.70	July 29-30	4.05	July 29-31	4.40	Jul.29-Aug.1	7.10
1876	.....	.....	Jan. 26-28	3.25	.....	.....	.....	.....
1877	Mar. 7-8	2.50	.....	.....	.....	.....	.....	.....
1879	Aug. 16	2.50	.....	.....	.....	.....	.....	.....
1879	.....	.....	Aug. 23-25	3.50	.....	.....	.....	.....
1880	Apr. 26	2.75	.....	.....	.....	.....	.....	.....
1885	Sept. 8	a1.70	.....	.....	.....	.....	.....	.....
1886	May 13	2.75	.....	.....	.....	.....	.....	.....
1888	.....	.....	Aug. 20-21	3.30	.....	.....	.....	.....
1890	June 15	b2.90	.....	.....	.....	.....	.....	.....
1891	.....	.....	Nov. 22-23	3.10	.....	.....	.....	.....
1893	.....	.....	.....	.....	Apr.29May1	4.15	.....	.....
1895	June 19-20	2.50	.....	.....	.....	.....	.....	.....
1895	.....	.....	Nov. 24-25	3.00	.....	.....	.....	.....
1896	.....	.....	Sept. 27-28	3.40	.....	.....	.....	.....
1897	Mar. 3-4	c3.75	.....	.....	.....	.....	.....	.....
1902	June 29	4.10	June 29-30	5.02	.....	.....	.....	.....
1904	Mar. 25-26	3.50	.....	.....	.....	.....	.....	.....
1904	Dec. 26-27	2.50	.....	.....	.....	.....	.....	.....
1905	Aug. 14	4.25	Aug. 14-15	4.75	Aug. 13-15	4.95	.....	.....
1907	Mar. 13	3.60	Mar. 12-13	5.17	.....	.....	.....	.....
1909	Feb. 23	4.11	.....	.....	.....	.....	.....	.....
1910	.....	.....	Oct. 5-6	7.50	Oct. 4-6	7.61	.....	.....

Notes: At Hamilton, on August 21, 1920, 4.48 inches fell within 24 hours, of which 4.00 inches fell between 5 p.m. and 8 p.m. Aug. 2, 1885, 1.40 in 2 hours.
1918, 4.50 inches fell within 48 hours.
(a) Fell in 18 min. beginning at 6.00 p. m. Storm was accompanied by a noise like "a heavy freigh train". (b) 1.40 in 40 min. (c) 3.75 in 7 hours.

Source: Alexander, 1924

APPENDIX 6

Jacksonburg Snowfall

Year	Jan.	Feb.	Mar.	Apr.	May	Oct.	Nov.	Dec.	Annual
1868	.....	.....	.....	.....	.....	.....	.....	8.0	.....
1869	1.0	6.2	3.0	.....	.....	.....	.....	9.0	.....
1870	8.0	13.5	5.5	.....	.....	.....	.....	5.0	.....
1871	9.0	2.5	0.0	.....	.....	.....	.....	5.0	.....
1872	2.5	8.5	2.5	.....	.....	.....	.....	12.5	.....
1873	9.0	1.0	3.2	.....	.....	.....	8.0	1.0	.....
1874	12.0	7.0	1.0	5.5	.....	.....	4.0	8.0	37.5
1875	2.5	10.0	14.0	1.5	.....	.....	0.0	1.5	29.5
1876	6.0	4.0	10.5	0.0	.....	.....	4.5	12.5	37.5
1877	8.2	0.0	3.0	0.0	.....	.....	0.0	.....	.....
1878	17.0	0.8	0.0	0.0	.....	.....	1.0	20.0	38.8
1879	13.0	18.0	8.0	.....	.....	.....	.....	.....	.....
1880	6.5	5.0	5.5	0.0	.....	2.0	14.0	14.0	47.0
1881	18.0	.....	16.0	2.3	.....	.....	2.0	3.0	.....
1882	18.0	.....	.....	.....	.....	.....	3.0	4.0	.....
1883	.....	7.0	13.0	0.0	.....	.....	0.0	26.0	.....
1884	27.0	5.0	6.0	2.0	.....	.....	.....	7.0	.....
1885	10.5	19.0	11.0	0.0	.....	.....	3.5	3.5	47.5
1886	14.0	10.5	9.0	22.0	.....	2.0	8.0	7.0	72.5
1887	5.0	1.0	3.0	1.0	.....	.....	9.0	1.0	20.0
1888	2.5	.....	5.0	.....	.....	.....	1.5	1.0	.....
1889	2.5	2.0	4.0	0.0	.....	.....	0.0	16.0	24.5
1890	5.0	3.0	1.0	0.0	.....	.....	2.0	.....	.....
1891	.....	.....	.....	.....	.....	.....	.....	.....	.....
1892	.....	.....	.....	.....	.....	.....	.....	.....	.....
1893	.....	.....	.....	.....	.....	.....	.....	.....	.....
1894	4.0	9.0	3.0	0	0	0	2.0	4.0	22.0
1895	24.0	5.0	.....	.....	.....	0	0	4.0	.....
1896	1 0	9.0	26.0	0	0	0	0	.....	.....
1897	14 0	13.0	T	1.0	3.0	0	T	7.5	38.5
1898	2.0	1.0	5.0	0	0	T	3.0	10.0	21.0
1899	9.9	12.0	4.0	0	0	0	T	7.0	32.9
1900	T	7.6	T	0	0	0	4.0	5.0	16.6
1901	10.0	8.5	T	3.0	0	0	0	5.0	26.5
1902	11.0	3.0	2.0	0	0	0	2.0	7.5	25.5
1903	19.0	9.0	0	0	0	0	3.0	6.0	37.0
1904	.....	10.0	.....	T	0	0	T	5.0	.....
1905	15.3	8.0	.....	2.1	0	0	0	.....	.....
1906	12.0	10.0	30.5	0	0	1.0	.....	8.0	.....
1907	6.0	2.0	5.0	6.0	0	0	2.0	1.0	22.0
1908	0.2	7.0	4.5	2.0	0	0	0	.....	.....
1909	18.0	3.0	T	T	T	0	0	12.0	33.0
1910	10.0	.....	.....	.....	0	T	0.2	16.0	.....
1911	14.5	6.0	T	0	0	0	5.0	2.0	27.5
1912	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean:	9.7	6.9	5.8	1.6	0.2	0.2	2.5	7.6	34.5

Source: Alexander, 1924

APPENDIX 7

Jacksonburg Sky Condition

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
No. days—													
Clear.....	9	10	12	13	14	15	17	17	17	17	13	9	163
Partly Cloudy..	6	6	6	5	9	9	10	10	5	6	6	5	83
Cloudy.....	16	12	13	12	8	6	4	4	8	8	11	17	119
With Rain.....	8	6	9	8	9	8	8	7	5	5	6	6	85

Frost (1890-1911): Average date last killing in spring, April 28; first killing in autumn, October 17. Latest killing ever recorded May 21, 1895; earliest, September 23, 1896.

Source: Alexander, 1924

APPENDIX 8

Methodology

The primary sources of information for this study were the Presidio observers' daily weather records themselves. Copies of their monthly reports and the data digitized from those reports were available from the Midwestern Regional Climate Center in Champaign, Illinois, or the National Climatic Data Center in Asheville, North Carolina. The monthly reports can be considered original sources because they were written by the observers and not altered by subsequent readers.

There were a variety of secondary sources that held information about the Presidio, its history, and its people. The author visited and collected information from the holdings of the National Climatic Data Center at Asheville, North Carolina; the Cincinnati Public Library, the Cincinnati Historical Society Library, the University of Cincinnati Archives, the Lane Library in Hamilton, Ohio, the Butler County Historical Society Museum, the Western Kentucky University Library, and the LDS Family History Library in Salt Lake City, Utah.

The tertiary sources were reference materials that are available on-line. Among those were the metadata prepared by the Office of the State Climatologist of Ohio, the Midwestern Regional Climate Center, and the National Climatic Data Center substation histories. Two genealogical research sources, Ancestry.com and Genealogy.com, were used to provide some of the personal information about the observers. For location analysis, the interactive maps available from TopoZone.com were used.

There was an attempt to glean information from all these sources that would allow a glimpse into the lives of the observers, the location of the observation site, and the historical environment that produced the climatic history of the Butler County, Ohio. Maps, drawings, and photographs were included when appropriate to illustrate the information.

Throughout the research for and preparation of this study, the objective was to produce a document that future studies can use to evaluate the validity of the data that were collected at Jacksonburg, judge the trustworthiness of the observers who collected them, and determine the climatological significance of the whatever variability may be discerned.

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