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Pamphlet Describing M1379

Selected Documents From the Records of the Weather Bureau Relating to New Orleans, 1870-1912

National Archives Trust Fund Board
National Archives and Records Administration
Washington: 1986

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Records of the Weather Bureau

Record Group 27

SELECTED DOCUMENTS FROM THE RECORDS OF THE WEATHER BUREAU RELATING TO NEW ORLEANS, 1870-1912

On the eight rolls of this microfilm publication are reproduced selected documents pertaining to the meteorological operations and observations of the Signal Corps and successor Weather Bureau in the city of New Orleans, 1870-1912. Also included are a few miscellaneous letters and meteorological reports accumulated by the Smithsonian Institution, 1841-73, from Louisiana and New Orleans. These records are part of the geographically arranged series in Record Group 27, Records of the Weather Bureau. Please see "Related Records" below for mention of other material on the same subject.

Background

In the first decades of the 19th century, the navy, the General Land Office, and the Patent Office attempted to establish weather observation systems. But the most important programs were those set up by the Medical Department of the Army and the Smithsonian Institution.

In 1814 U.S. Army Surgeon General James Tilton ordered hospital, post, and regimental surgeons to keep weather diaries. Actual implementation of this order evidently did not occur until several years later, under then Surgeon General Joseph Lovell. Both Tilton and Lovell hoped to determine whether the climate affected soldiers' health. Military posts, which were situated throughout the country, seemed to afford excellent observation sites for obtaining relevant data.

By 1853 the U.S. Army Medical Department's weather system included 53 military posts. The surgeon general first began receiving reports from the New Orleans post in 1820.

Of greater significance was the meteorological observation conducted under the Smithsonian Institution. This program evolved from the weather system directed by James P. Espy, chairman of the American Philosophical Society's Joint Committee on Meteorology. By 1842, when he was named meteorologist to the U.S. government, Espy was receiving reports from 110 voluntary observers. These reports were forwarded to the Surgeon General's Office and the navy. Soon after the establishment of the Smithsonian Institution in 1846, the navy directed Espy to cooperate with the institution's meteorological section. Thus, Espy and Joseph Henry, the institution's secretary, developed a system for collecting meteorological data.

The Smithsonian weather system depended on limited financial support provided by the federal government and the cooperation of private citizens, army surgeons, navy officers, state weather services, and British officers in North America who

voluntarily submitted meteorological reports. The institution's main contribution was the provision of good instruments at reasonable prices and the compilation of the information supplied by these observers.

The most important innovation of the Smithsonian weather system was utilization of telegraph lines to transmit reports. Starting in 1849, reports were received at the institution from as far away as Cincinnati and New Orleans. Based on the information reporters conveyed, color-coded cards indicating prevailing weather conditions were pinned on a large wall map of the nation.

From the 150 stations with which it began, the institution's weather system grew to more than 500 stations by the eve of the Civil War. But costs limited the distribution of instruments, and some reports were irregular or incomplete. Believing the Smithsonian's resources inadequate for complete meteorological observations, Henry became an advocate of a national weather service.

Following the Civil War, a petition endorsed by many scientists, trade groups, and other organizations was presented to Congress, urging the creation of such a service. Responding to those who thought it would be operated with greatest discipline and economy by a military organization, Congress, in a joint resolution of February 9, 1870 (16 Stat. 369), established a national weather service under the army. The Secretary of War placed the new unit in the Signal Service (generally known as the Signal Corps after 1880) because of the service's access to military telegraph lines.

Within months the Signal Service began making meteorological observations. The New Orleans station, located in the city's customhouse, was among the original group of stations that first submitted reports on November 1, 1870. Most of the Signal Service's work was performed by army personnel, but the service employed a few civilians to do professional and scientific tasks. To train officers and enlisted men for the weather service, the army added a meteorological school to its telegraphy and military signaling school at Fort Whipple (now Fort Myer), VA. Soon after it was created, the Signal Service weather system inherited the meteorological records and data sources of the Surgeon General's Office and the Smithsonian Institution. In its first year, the service received reports from 56 stations; by 1890 it had 500 stations.

Its stations were the Signal Service's principal means of gathering and disseminating information. They varied in resources and responsibilities. The best equipped of them typically took six observations each day, of which three were

incorporated in immediate telegraphic reports while the others were consolidated in monthly written reports. Some stations had to post river reports, storm warnings, weather maps and bulletins, and supply information to the press.

At first, the Signal Service's primary concern was with practical meteorology--forecasts and storm warnings--especially with a view to facilitating navigation on the seacoasts and Great Lakes. As time passed, nearly all those who were affected by the weather saw that they might benefit from the expansion of federal meteorological activities. Consequently, the Signal Corps gradually undertook new functions to assist agriculture, transportation, and inland navigation.

Despite such improvements there was growing dissatisfaction with Signal Corps direction of the weather service. Secretaries of War Robert Lincoln and William Endicott did not believe the weather service should be administered by the army. Some claimed that a civilian agency would be less expensive, provide more accurate forecasts, and do more comprehensive research. Establishment of the Department of Agriculture afforded an alternative home for the federal meteorological unit.

In accordance with the recommendation in President Benjamin Harrison's first annual message, Congress provided for the creation of a National Weather Bureau in the Agriculture Department (26 Stat. 653; approved, Oct. 1, 1890). The transfer of function was accompanied by a transfer of meteorological records from the Signal Corps to the new agency. The Weather Bureau retained many experienced employees from the Signal Corps's meteorological service; it also supplied better equipment to stations, greatly enlarged the staff of trained forecasters, established a system of district forecast centers to improve the accuracy of weather predictions, and provided new research and warning services. By 1907 the Weather Bureau was receiving reports from 888 paid stations and approximately 3,360 cooperative stations.

Records Description

Daily Journals, 1870-1907

In connection with their observations, weather stations accumulated various types of meteorological information, most of which was entered on tabular forms and transmitted to Washington. Accounts dealing with phenomena that were difficult to quantify, and with station operations, were entered in journals. Included in the journal entries were narrative descriptions of wind, precipitation, river level, clouds, storms, and effects of inclement weather. The entries also dealt with the station's instruments, personnel, procedures, cautionary signals, and related matters.

The format of these documents was not substantially changed during this period; but they were given several titles: "Abstracts of Daily Journals" (1870-95), "Daily Journals" (1895-1904), "Monthly Meteorological Reports" (1905-7). Submitted monthly by the enlisted man--later, Weather Bureau official--responsible for each weather station, these documents contain entries (daily for the years 1870-1904; less frequent for the years 1905-7), accompanied by marginal notes that highlight the most important matters. Beginning in June 1881, each monthly abstract included an index, compiled on Form 140 (after 1891, Form 1014). From July 1895 onward, these monthly indexes were supplemented by an annual index.

Some of these records have been filmed out of order: The volume for 1888 follows that for 1889; the 1897 volume follows that for 1899.

Station Inspection reports, 1871-1912

Weather stations were periodically inspected by army officers, then Weather Bureau civilian inspectors. These records reflect the subjects of such inspections, including the station's address, floor plan, equipment, books, records and personnel; and the bulletins, reports, maps, and other information it distributed.

The intervals between inspections were irregular. Under the Signal Service, reports were submitted on Forms 14 and (later) 131, which dealt with all aspects of a station's operations. Under the Weather Bureau, these were superseded by specialized documents: Form 4001, "General Work," and Form 4002, "Confidential--Personal," which were generally submitted in conbination .

Records of Hourly Wind Direction, 1891-1904

Records of Hourly Wind Movement, 1881-1904

The Signal Corps worked to improve the equipment of it stations. Nonetheless, self-recording instruments came into widespread use very gradually. Experiments with such instruments were conducted in the 1870's and 1880's in the Office of the Chief Signal Officer, but until 1888 the Signal Corps did not use self-registering instruments, except to measure wind velocity. By 1890, however, there were 25 Signal Corps weather stations where such instruments continuously recorded the most important meteorological data.

The first self-recording instrument to come into general use was the Robinson cup anemometer. Its four cups were attached to a shaft whose rotations, transmitted through a reduction mechanism, actuated a dial; for each mile of wind

movement, a series of pins on the dial operated a switch, producing an electric impulse, which caused a stylus to make a mark on a chronograph register. Around 1890, a variety of other automatic meteorological instruments came into use, one of which was the self-recording anemoscope, used to monitor wind direction. Four cams attached to its shaft operated in conjunction with four electrical contacts corresponding to the cardinal directions, so that at least one, and sometimes two, of the contacts were always closed; the resulting electrical signal indicated the wind direction. After 1890 weather stations began using meteorographs, which provided automatic continuous registration for two or three types of meteorological data; typically, wind direction and velocity, and rainfall. By 1904, the Weather Bureau had 166 triple-register meteorographs in service.

The records of hourly wind direction (Form 1021) and hourly wind movement (Forms 165 and 1022), based on data from self-registering instruments, were generally submitted monthly by the New Orleans weather station. Some of these documents, however, were compiled in Washington. These reports contain lines for each day and columns for each hour. The right-hand column of the wind direction records indicates the prevailing wind direction for each day; the bottom line, the prevailing wind direction for each hour. The right-hand column of the wind movement records indicates the total wind movement for each day; the two bottom lines provide sum and mean of wind movements for each hour.

Cotton Region Reports, 1883-88

Responding to popular requests, the Signal Corps in September 1881 began collecting and issuing reports of meteorological data in the "Cotton Region," which included Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas. This area was divided into districts, in each district was a group of substations and a district center. New Orleans was a district center; in 1885 it supervised 13 substations. At the substations, observers (initially, railroad and telegraph company workers; later, voluntary weather observers) made daily observations of maximum and minimum temperatures and rainfall at 6:00 P.M., 75th meridian time. They submitted only monthly reports (on Form 144), which were reviewed at district centers, then distributed throughout the South and transmitted to the Office of the Chief Signal Officer.

In addition to temperature and precipitation data, these reports occasionally contain entries regarding severe storms and other unusual occurrences. Reports were required only for the months of April through October. There are no New Orleans reports for April 1885 or April 1887.

Records of the Smithsonian Meteorological Project, 1841-73

Records relating to meteorological observations in Louisiana acquired by the Signal Service from the Smithsonian Institution weather service are fragmentary; they include abstracts of journals (1841-44), a graph embodying weather data and mortality statistics (1848-49), a meteorological register (1853), a copy of the New Orleans Board of Health annual report for 1849, records of readings of the self-registering thermometer at the Board of Health office (1872-73), and several letters and miscellaneous documents pertaining to the collection and dissemination of meteorological information.

Related Records

The composition of this microfilm publication is designed to complement other microfilmed reports pertaining to meteorological conditions in New Orleans that were submitted to the surgeon general, the Smithsonian Institution, and the Weather Bureau. These reports are found on rolls 195, 196, and 196A of Climatological Records of the Weather Bureau, 1819-1892, T907. The records themselves are also part of Records of the U.S. Weather Bureau, RG 27. In addition to these microfilmed records, RG 27 contains many unmicrofilmed records concerning weather conditions in New Orleans. Particularly relevant records are scattered throughout the series of Weather Bureau general correspondence, 1870-1965.

Also available from the National Archives are copies of weather diaries prepared in New Orleans by private individuals intermittently from 1810 to 1873; these records are on one roll of a set of microfilm accessioned from the Environmental Science Services Administration.

Meteorological data recorded in New Orleans after 1892 is available from the National Climatic Data Center, Environmental Data and Information Service, Department of Commerce, Asheville, NC 28801.

Timothy D. W. Connelly wrote these introductory comments.

This microfilm publication was produced through a cooperative arrangement between the National Archives and the Historic New Orleans Collection.

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GSA DC-8911603136