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Allan H. Murphy
UCAR Visiting Scientist at the
National Meteorological Center

Dear Editors:

I found Eli Jacks' "Quiz on the Interpretation and Use of the National Weather Service's Statistical Guidance Products" (Digest, November 1990) particularly interesting and useful, and I hope you will print more articles of this sort.

Felicia Ackerman
Dept. of Philosophy
Brown University
Providence, RI

BOOK REVIEW

TITLE: **Meteorology in America, 1800–1870**
AUTHOR: James Rodger Fleming
PUBLISHER: The Johns Hopkins University Press
701 West 40th Street; Suite 275
Baltimore, Maryland 21211
Copyright: 1990: Price: $45.00 (Hardback)

Fleming's book, **Meteorology in America, 1800–1870,** examines thoroughly the origin, growth, and subsequent development of meteorology during the colonial and Civil War periods to the time the United States established a national or military weather service. This time segment may be divided into four sections: (1) the age of individual, isolated weather observers prior to 1800; (2) a developing and expanding era between 1800 and 1870 (the subject of this book); (3) the rise of government services from 1870 to 1920 and beyond; and (4) the present professional period which began during the 1920's.

Chapter One, Early Issues and Systems of Observations, narrates the origin of meteorology in Europe. Following this, the scene changes to colonial United States. Thomas Jefferson, James Madison, and Benjamin Franklin were three significant contributors to atmospheric science. Prior to 1836, the Army Medical Department was the only organization supporting meteorological research. Later, from 1817 through 1850, the General Land Office, and the Academies in the State of New York became involved.

From 1834 to 1843, early American experts vehemently argued among themselves concerning alleged causes or origins of certain peculiar weather events. Chapter Two lists three prominent scientists who were involved: William C. Redfield, James Pollard Espy, and Robert Hare. Each man presented and strongly upheld his unique theory concerning the origins of wind circulation, water vapor distribution, rain formation, tornadoes, spouts, whirlwinds, and atmospheric electricity. These men consistently attacked each others' theories and their friendships suffered. Other scientists eventually became involved in this well known "storm controversy" throughout this time period. Near the close of this age, the early 1840's, several meteorologists toured Europe in an attempt to gain followers of their theories. This controversy subsided, only to surface many years later when institutions dedicated to meteorological advancements were being formed.

In Chapter Three, the philosophy of observations is discussed. Espy labored long and hard to try to coordinate weather observations throughout the United States. More institutions joined in this effort, linked together by a Joint Committee on Meteorology. The Franklin Institute, Philadelphia, led the way in 1831; shortly thereafter, the American Philosophical Society reluctantly joined the Institute, followed by several colleges, the Navy Shipyards, The Albany Institute, Army Medical Department, and the Smithsonian Institute. The appointment of Joseph Henry to lead the Smithsonian Institute began a new era in the construction of meteorological observations and systems throughout the United States. In 1848, a movement commenced to distribute instruments, blank forms, guidelines, and tables to all "correspondents" in the United States and Canada. Later, Mexico, Latin America, and some Caribbean nations were invited to participate. Chapter Four describes Henry's desperate efforts to solve the nagging "storm controversy" which raged some years before. He strongly felt that expanded observations would be the key to its solution. The Navy Department aided the Smithsonian in its far-flung endeavors in linking amateurs and professionals for the purpose of observations. Efforts were more limited than what the planners had envisioned. By 1870, observers were principally located east of the Mississippi River and north of the Carolinas and Tennessee. Only a scattering of observers lived in the deep South, and about a half a dozen existed the full length of the west coast of the United States.

Troublesome times, however, erupted again, as documented in Chapter Five. Since a more comprehensive picture of synoptic meteorology was evolving now, the scientists reignited the "storm controversy." Each scientist was increasingly anxious to advance his theory which would be "proven" by these expanded observations. Large numbers of scientific experiments with subsequent research papers were presented at AAAS (American Association for the Advancement of Science) Meetings. Heated exchanges were made at these colloquia and friendships again faded. Besides, the "big four," Henry, Espy, Redfield, and Hare, a new name appeared—Matthew Fontaine Maury. Maury wanted to chart air currents over the oceans, involve agriculture in weather observations, and bring meteorology into the realm of commerce as well. Scientists in Europe accepted Maury's ambitions, whereas those in the United States seemed to gradually shoulder him off to the sidelines of science. Eventually the deaths of some of these scientists quieted the struggle. A scandal erupted between the Smithsonian Institution and the Army Medical Department involving the "ownership" of meteorological data. In the conclusion of this chapter, history seemed to imply that this peculiar event temporarily weakened the Smithsonian's contribution to meteorology.

The era of genuine and serious organization of observations is examined in Chapter Six. The Smithsonian rapidly recovered from its brief bout with the Army Medical Department and again pioneered the way. This Institution was joined by the U.S. Patent Office, Department of Agriculture, the War Department, and the Coastal Survey. For the first time ever, maps were drawn which depicted precipitation, temperature, and large scale wind flows across the United States. The goal of "cooperative observers" was attained—finally. In addition, European scientists became interested in this project, and contributed sufficient data to aid in the construction of charts of global circulation, particularly in the northern hemisphere.

The crowning achievement for these "cooperative observers" and of the national weather service, was development of its inter-communication abilities, the telegraph, as stated in Chapter Seven. With the development and expansion of the telegraphy system in the United States, the observers and meteorologists were able to assemble weather information and observations quickly, resulting in synoptic charts. Advancements were rapid for a time until the Civil War almost obliterated the telegraphy network; many observers were caught up in the War, some of whom never returned. However, the vision was not lost, and during the Reconstruction (1865–1870), the network of wires was repaired. The Signal Corps, established during the Civil War, was assigned the responsibility to coordinate both the telegraph system and weather observers. The official telegraphic weather service was created as part of the Signal Corps by the United States Congress on February 9, 1870. Throughout all of this work, the Smithsonian Institute still played an integral part—prior to, during, and after the Civil War.

The United States, hence, became the undisputed leader in synoptic meteorology as a result of this telegraph weather service. As described in the last chapter, Chapter Eight, American scientists travelled the world to inform other nations of what had occurred and also to help them in their efforts. Besides, the scientists also wanted to update themselves on how Europe was progressing in meteorology. The cooperation between American and European scientists yielded solutions to some of the meteorological problems which had caused such a controversy during the previous decades. The science of meteorology was finally embarking upon a new era, in which even more thrilling discoveries were made by the investigators.

Meteorology in America, 1800–1870, is an excellent example of a work involving the history of science. The text itself is accompanied by extensive notes, an appendix, and bibliography. Black-white illustrations including tables, charts, and weather maps are amply distributed throughout the book. Anyone who is fascinated by the history of meteorology will do well to read and study Fleming's extraordinary work. The book is a result of intensive research, organization, and excellent writing, and is highly recommended for use in a college/university setting or for anyone who has an interest in this fascinating narration and documentation.

Merlin W. Zook
Book Reviewer

ANNOUNCEMENTS

CALL FOR PAPERS—ANNUAL MEETING

The Annual Meeting of the National Weather Association will be held October 8–11, 1991, at the Hilton Hotel in Salt Lake City, Utah. The hotel is conveniently located in downtown Salt Lake City and provides service to the International Airport located about seven miles west of the downtown area. Rates for single or double rooms are the same: $69.00 plus tax ($54.00 plus tax government rate). Make reservations by contacting the Salt Lake Hilton directly, using their own toll-free number, 800-421-7602. Be sure to mention the NWA Annual Conference.

The Conference theme is "APPLICATIONS OF NEW TECHNOLOGY AND DATA SETS IN OPERATIONAL METEOROLOGY." In addition to the central theme, we would like to weave a secondary theme through the sessions, "HYDROMETEOROLOGICAL PROBLEMS ASSOCIATED WITH COMPLEX TERRAIN." Even though orographic influences are more pronounced in the western U.S., they have application everywhere. We want to ensure that several papers address this secondary theme. The program will feature invited and submitted papers, keynote presentations, demonstrations of new technology, a poster session and training workshops. The topics of the workshops have not been determined, but they will address the latest techniques in operational meteorology. You are encouraged to submit abstracts (maximum of one typed page, including authors' names, addresses and telephone numbers) to the Program Chairman by June 15, 1991. Following is a list of topics we'd like to include in this Conference.

Current topics of meteorology, hydrology and oceanography

Mountain hydrometeorology

Local studies/forecast procedures

Training techniques

Severe Storms (thunderstorms, microbursts, winter storms, hurricanes)

Application of technological advances (Doppler, profiler, mesonets, new software, workstations, etc.). Demonstrations of new technology are encouraged.

Cooperative applied research projects between operational forecasters and the research community

Applied service programs (e.g. fire weather, marine, agriculture, aviation, space shuttle)

Numerical modelling/statistical guidance

Forecast verification

Droughts, floods and water management

Satellite applications

Environmental issues (e.g., global warming, acid rain, ozone depletion, air pollution)

Broadcaster and private sector weather services

The above list of proposed topics is certainly not exhaustive; we will consider all papers.