

The History of Meteorology:
to 1800



**American Meteorological Society
Historical Monograph Series**

The History of Meteorology: to 1800

The History of American Weather (All four volumes—\$40.00)

Early American Hurricanes (1492-1870), 1963—\$12.00

Early American Winters (Two volumes—\$22.00)

(1604-1820), 1966—\$12.00

(1821-1870), 1967—\$12.00

Early American Tornadoes (1586-1870), 1970—\$12.00

**The Thermal Theory of Cyclones: A History of Meteorological
Thought in the Nineteenth Century, 1979—\$35.00**

The History of METEOROLOGY: to 1800

H. Howard Frisinger
Colorado State University

HISTORICAL
MONOGRAPH
SERIES

AMERICAN METEOROLOGICAL SOCIETY

First Printing

Science History Publications
NEW YORK • 1977

Second Printing

American Meteorological Society
Boston • 1983

© 1977 (first printing) by Neale Watson Academic Publications, Inc.
(CIP data on final page)

© 1983 (second printing) by American Meteorological Society
45 Beacon Street
Boston, Massachusetts 02108

ISBN 978-1-940033-91-4 (eBook)
DOI 10.1007/978-1-940033-91-4

If the publishers have unwittingly infringed
the copyright in any illustration reproduced,
they will gladly pay an appropriate fee
on being satisfied as to the owner's title.

Contents

Preface	ix
The Period of Speculation	
<i>Chapter One</i>	
The Beginning	1
<i>Chapter Two</i>	
Aristotle's METEOROLOGICA	15
<i>Chapter Three</i>	
The Dark Before the Dawn	25
The Dawn of Scientific Meteorology	
<i>Chapter Four</i>	
The Thermometer	47
<i>Chapter Five</i>	
The Barometer	67
<i>Chapter Six</i>	
The Hygrometer and Other Meteorological Instruments	81
<i>Chapter Seven</i>	
Meteorological Observations	99
<i>Chapter Eight</i>	
The End and the Beginning	123
Index	145

To Mim

Preface

Within this century meteorology has emerged as one of the most active and important branches of the physical sciences. As man's activities have moved into the atmosphere and beyond, the science of the weather has assumed increasing significance in his life. Not only are giant steps being taken in the acquisition of meteorological knowledge, but extensive efforts are being devoted to finding ways of harnessing the tremendous energy present in the atmosphere. Such efforts as cloud seeding, hurricane modification, hail suppression, and fog dispersal exemplify these attempts to control the weather. As the importance of this science has increased, so has the interest in the history of meteorology. This interest has provided the motivation for this book.

Yet, notwithstanding the increased interest in the history of meteorology, very little has been written about it, and most of the work was done during the first quarter of this century by authors like Cleveland Abbe, Gustav Hellmann, and Sir Napier Shaw. The attempt to fill this gap even partially has occupied much of my interest and time over the past ten years.

There are, I believe, three major periods in the history of meteorology. The first, c. 600 B.C. to 1600 A.D., could be called "The Period of Speculation," when the dominant meteorological authority was Aristotle's *Meteorologica*.

The second period, 1600 A.D. to 1800 A.D., could be labeled "The Dawn of Scientific Meteorology." It was highlighted by the invention and early development of the basic meteorological instruments such as the thermometer, the barometer, and the hygrometer. Continuous and systematic meteorological observations, which were vital to the advancement of the science, were first initiated during this period. Thus, the foundations of modern meteorology were laid in the seventeenth and eighteenth centuries.

The third major period in the history of meteorology begins in 1800 and has been marked by the growth and refinement of its modern theories. It was after 1800 that meteorology, perhaps more than any other scientific discipline, drew extensively from related areas of the physical sciences for its growth and development. Such sister sciences as mathematics, physics, and chemistry

have contributed much to advances in the study and understanding of the atmosphere. Because of the variance in the development of meteorology before and after 1800, I have chosen to restrict this study to its early history.

H. Howard Frisinger
Colorado State University