\_\_\_\_ The \_\_\_\_

## Maunder Minimum and the Variable Sun-Earth Connection

## WILLIE WEI-HOCK SOON Harvard-Smithsonian Center for Astrophysics, USA

STEVEN H. YASKELL



## **Contents**

Foreword Acknowledgements		ix
		xv
1	A Sun Most Pure and Most Lucid	1
2	Background of the Maunder Minimum	11
3	The Maunder Minimum: Europe, Asia, North America (As Dated from c. A.D. 1620–A.D. 1650)	25
4	The Maunder Minimum: Europe, Asia, North America (As Dated from c. A.D. 1650–A.D. 1720)	41
5	Surveying the Maunder Minimum	73
6	Maunder's Immediate Predecessors in Delineating Solar Structure and Behavior: Towards Understanding Solar Variability and Sun-Climate Connections	85
7	Maunder's Early Life and Associations	97
8	Maunder and the Connection of Sunspot Behavior and Geomagnetism: Resolving "the Fifty Years' Outstanding Difficulty"	111
9	Studying Aurora the Scandinavian and American Connection: Tree Rings, Moisture and the Missing Sunspot Cycles	129
10	The Family Maunder: The B.A.A. and Astronomy for All	146
11	A Particle Theory for the Sun-Earth Connection	159
12	Our Knowledge of the Sun and Its Variability Today	174
13	Earth's Atmosphere and Its Story: A Perspective of Past Changes on the Present	188

## xviii Contents

14	The Maunder Minimum and Modern Theories of the Sun's Cyclical Machinery	216
15	Summary: Cycles of the Sun and Their Tie to Earth	236
16	The Maunders and Their Final Story	247
Index of Sources		251
Index		266