Mary Somerville

In an era when science was perceived as a male domain, Mary Somerville (1780–1872) became both the leading woman scientist of her day and an integral part of the British scientific community. Her scientific writings contributed to one of the most important cultural projects of Victorian Britain: establishing science as a distinct, integral, and unifying element of culture. By the time of her death, Somerville had achieved near-mythic status in Britain. Her works reflect both the power of science to capture imagination and the influence of cultural factors in the development of science. They provide a window into a particularly lucid and illuminated mind and into one of the most formative periods in the evolution of modern scientific culture. This retelling of Somerville's story focuses on the factors that allowed her to become an eminent scientist and argues for rethinking the story of women's participation in science.

Kathryn A. Neeley is Associate Professor in the Division of Technology, Culture, and Communication at the University of Virginia; past President of the Humanities and Technology Association; and Chair of the Liberal Education Division of the American Society for Engineering Education. She has written for *Research in Philosophy and Technology*, *IEEE Transactions on Professional Communication*, and the proceedings of the American Society for Engineering Education. She is co-editor of the forthcoming *Liberal Education for 21st-Century Engineering*.

Cambridge Science Biographies

MARY SOMERVILLE

SCIENCE, ILLUMINATION, AND THE FEMALE MIND

KATHRYN A. NEELEY

CAMBRIDGE UNIVERSITY PRESS

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, UK
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, VIC 3166, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain
Dock House, The Waterfront, Cape Town 8001, South Africa

http://www.cambridge.org

First published 2001

Printed in the United States of America

Typeface Palatino 10/12 pt. *System* QuarkXPress [BTS]

A catalog record for this book is available from the British Library.

Library of Congress Cataloging in Publication Data
Neeley, Kathryn A. (Kathryn Angelyn), 1954–
Mary Somerville: science, illumination, and the female mind /
Kathryn A. Neeley.
p. cm. – (Cambridge science biographies series)
Includes bibliographical references and index.
ISBN 0-521-62299-9 – ISBN 0-521-62672-2 (pb)
1. Somerville, Mary, 1780–1872. 2. Women scientists – Great Britain –
Biography. I. Somerville, Mary, 1780–1872. II. Title.
III. Series.
Q143.S7 N44 2001
500.2'092 – dc21
[B] 00-049363

ISBN 0 521 62299 9 hardback
ISBN 0 521 62672 2 paperback

For the Choir Invisible

Contents

Author's Preface

In one of her best known poems, George Eliot wrote of "the choir invisible," the "immortal dead who live again / In minds made better by their presence." In the work of which this book is the culmination, I have been sustained and inspired by my own Choir Invisible, who have enlarged my view of what was possible and accompanied me on what has turned out to be one of the most challenging and rewarding journeys of my life. I dedicate this book to them.

The group has many members, all of whose voices have been important, but there are four who have been particularly strong presences in this work: my grandmothers, Nina Bookhardt Neeley and Jessie Rivers Von Harten, my great aunt Myrtle Von Harten Davison, and my dear friend Ann Doner Vaughan. Their capacity to inspire and support others has not been diminished by the passage from this life to the next.

The Choir also includes Mary Somerville, whom I have never properly met but who has been an excellent companion and most agreeable subject through the years I have spent with her. I have on occasion been accused of acting too much as her advocate. On one level, of course, this charge is quite justified. For as long as I have truly appreciated what she accomplished, I have felt an obligation to help bring it to light. An unusual and fortuitous set of circumstances put me in a position to comprehend her work, and I have worked hard to help others do so. I would add that I did not begin this project as Somerville's advocate. When I first encountered her, I saw Somerville and the esteem in which her contemporaries held her as a puzzle. It has only been with the passage of much time and the assistance of many generous people that

I have come close to understanding what she accomplished and why it was valued.

Another sustaining presence in this project has been Elizabeth Chambers Patterson, who catalogued the Somerville Collection, transformed a mountain of correspondence into a coherent account of Mary Somerville's career, and documented the eminence Somerville achieved in her own day. Without her work, mine simply would not have been possible, and I am very grateful to her.

I have also enjoyed the support of an extensive Choir Visible, who have helped me in more ways than I can possibly enumerate here. Mary Crum first introduced to me to the excitement of learning and to the numerous connections among literature, science, and life. Mel Cherno read the entire manuscript (some of it more than once) and offered both perceptive critique and cheerful encouragement.

Nina Byers opened my eyes to Mary Somerville's potential as a subject and introduced me to the resources of Somerville College. Pauline Adams, Hillary Ockendon, and Derek Goldrei, all of Somerville College, provided warm hospitality and many other forms of concrete aid. I am particularly grateful to Somerville College for permission to quote from the unpublished manuscripts of the Somerville Collection held at the Bodleian Library and for allowing me to use Mary Somerville's self-portrait as the frontispiece for this book. Simon Mitton, Alex Holzman, and Sally Gregory Kohlstedt of Cambridge University Press provided both inspiration and direction as the project evolved.

My dear friend Joe Vaughan died just as I was beginning the last round of revisions of this manuscript. To the end of his long life, he was a veritable choir in his own right. His generosity of spirit and capacity to help others recognize their better selves are qualities from which I have greatly benefited and which I hope to emulate. He read and critiqued this manuscript and offered the invaluable perspective of a pragmatic visionary.

Clare Hall and Cambridge University provided a wonderfully stimulating atmosphere that allowed me to refine my thinking about Somerville in ways I could not have previously imagined. I am grateful to Clare Hall's president, Gillian Beer, and to the fellows and other visitors at Clare Hall for their hospitality and willingness to share ideas.

I have enjoyed the support of numerous other friends and colleagues who mastered the fine art of asking "How is the book coming?" without conveying the least hint of anxiety. I would like in particular to mention Ralph and Libby Cohen, Mary Hamer, Nick Cumpsty, Susan Bernstein, Ingrid Townsend, Patricia Click, and George Webb, as

well as Mike Bowles, who helped enormously with the extensive travel arrangements required for the completion of this project, and Mark Whittle, who read parts of the manuscript and offered an astronomer's point of view. I am also grateful to Amanda French and Johannah Mayfield, who served as my research assistants, and to Michael Dettelbach, who helped me find my way through the culture of nineteenth-century science.

But perhaps the most noteworthy group are those who did the most, who understood the enterprise the least, and whose involvement grew entirely out of their affection for me. They include my parents, Sam and Verna, and my sister, Betsi, into whose family it was my great good luck to be born, and my three sons, Michael, Arthur, and Elliott, each of whom, in his own distinctive way, has enriched my life beyond measure. But the greatest thanks are due to my husband, John Crafaik, whose strength and determination helped me create the space in my life where this work could be completed and who has made innumerable sacrifices for the development of my career. And, who knows, some day he may even read this book.

Charlottesville, Virginia
September 8, 1999

Key to Parenthetical References to the Works of Mary Somerville

Conn	*On the Connexion of the Physical Sciences* (1846 ed.)
Mech	*Mechanism of the Heavens* (1831)
M I	First manuscript draft of Somerville's autobiography, *Personal Recollections* (Somerville Collection)
M II	Second manuscript draft of *Personal Recollections* (Somerville Collection)
MMS	*On Molecular and Microscopic Science* (1869)
PD	*Preliminary Dissertation on Mechanism of the Heavens* (1832)
PG	*Physical Geography* (1850 ed.)
PR	*Personal Recollections from Early Life to Old Age of Mary Somerville* (1873) Note: Material that was included in M I or M II but omitted from the published version of *Personal Recollections* is distinguished in the text by italic type.

Note: The *Preliminary Dissertation on Mechanism of the Heavens* (1832) was originally published as an extended introduction to *Mechanism of the Heavens* (1831), then was published separately in 1832, and is often treated as a distinct work. The text is the same in both editions, but the pagination differs. The direct quotations from the "Preliminary Dissertation" that appear here are cited using the pagination of the 1831 text of *Mechanism of the Heavens*.