

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

*Science as Public Culture* joins a growing number of recent studies examining science as a practical activity in specific social settings. Jan Golinski considers the development of chemistry in Britain from 1760 to 1820, and relates it to the rise and subsequent eclipse of forms of civic life characteristic of the European Enlightenment. Within this framework the careers of prominent chemists like William Cullen, Joseph Black, Joseph Priestley, Thomas Beddoes, and Humphry Davy are interpreted in a new light. The major discoveries of the time, including nitrous oxide (laughing gas) and the electrical decomposition of water, are set against the background of alternative ways of constructing science as a public enterprise. The book makes a significant contribution to our understanding of the relationship between scientific activity and processes of social and political change in a period of great transformations in chemistry and in the conditions of public life.

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

---

*Science as public culture*

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

# SCIENCE AS PUBLIC CULTURE

*Chemistry and Enlightenment  
in Britain, 1760–1820*

JAN GOLINSKI

*Department of History  
University of New Hampshire*



**CAMBRIDGE**  
UNIVERSITY PRESS

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

Published by the Press Syndicate of the University of Cambridge  
The Pitt Building, Trumpington Street, Cambridge  
40 West 20th Street, New York, NY 10011, USA  
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press 1992

First published 1992

First paperback edition 1999

Printed in the United States of America

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

*Library of Congress Cataloging-in-Publication Data*

Golinski, Jan.

Science as public culture : chemistry and enlightenment in Britain,  
1760-1820 / Jan Golinski.

p. cm.

Includes bibliographical references and index.

1. Chemistry - Great Britain - History - 18th century. 2. Chemistry -  
Great Britain - History - 19th century. I. Title.

QD18.G7G65 1992

540'.941'09033 - dc20

91-39024

CIP

ISBN 0 521 39414 7 hardback

ISBN 0 521 65952 3 paperback

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

---

To my parents

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

# Contents

|   |                |
|---|----------------|
| Acknowledgments   | <i>page</i> ix |
| List of illustrations   | xi             |
| 1 Introduction: Science as public culture   | 1              |
| 2 “The study of a gentleman”: Chemistry as a public science<br>in the Scottish Enlightenment      | 11             |
| Chemistry as an academic discipline   | 13             |
| Gentlemanly science in the public realm   | 25             |
| The social construction of the Scottish program   | 37             |
| 3 Joseph Priestley and the English Enlightenment  | 50             |
| The uses of chemistry in Enlightenment England  | 52             |
| Making connections: Priestley’s career  | 63             |
| The experimenter and the writer   | 77             |
| 4 Airs and their uses   | 91             |
| Priestley’s chemistry in public education   | 93             |
| The birth of pneumatic medicine   | 105            |
| The analysis of air   | 117            |
| 5 The coming of the Chemical Revolution   | 129            |
| Lavoisier’s theory and its reception in Britain   | 130            |
| The instruments of persuasion   | 137            |
| Demonstration, authority, and community   | 145            |
| 6 “Dr. Beddoes’s Breath”: Nitrous oxide and the<br>culmination of Enlightenment medical chemistry | 153            |
| The Pneumatic Institution   | 157            |
| Enthusiastic respirations: The nitrous oxide incident   | 166            |
| The end of Enlightenment science?   | 176            |
| 7 Humphry Davy: The public face of genius   | 188            |
| Davy’s career: The creation of a public audience  | 190            |
| The voltaic pile: The making of an instrument   | 203            |
| Chlorine and “the lever of experiment”  | 218            |

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

---

viii

CONTENTS

|   |   |     |
|---|---|-----|
| 8 | Analysis, education, and the chemical community                               | 236 |
|   | Specialist careers in the London chemical community                           | 238 |
|   | The identity of the discipline and the reception of<br>Dalton's atomic theory | 255 |
|   | Mineralogy and the development of chemical analysis                           | 269 |
|   | Conclusion: Discipline-formation and public science                           | 283 |
|   | Bibliography  | 289 |
|   | Index   | 323 |

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

## *Acknowledgments*

Writing this book has occupied me for more years than I care to remember. As a result, I am indebted to a large number of people who, in one way or another, have enabled me to complete it.

First and foremost I must thank the Master and Fellows of Churchill College, Cambridge, who elected me to a Junior Research Fellowship in 1986. Without the confidence they placed in me I should not have had the opportunity even to begin a project such as this. The students and faculty of the Department of History and Philosophy of Science also made my time in Cambridge profitable and enjoyable. The Institute for Research in the Humanities, University of Wisconsin-Madison, granted me a visiting Postdoctoral Fellowship in 1989, and the Huntington Library, San Marino, California, awarded me a V.M. Keck Foundation Fellowship in 1990.

Prior to this, the Royal Society had given a grant-in-aid for research that enabled me to initiate the project while I was at the University of Lancaster in 1985. It was brought to completion in the congenial surroundings of the University of New Hampshire, where the members of the Department of History and the Humanities Program have made me feel thoroughly at home.

Various colleagues have read and commented on whole or part of the manuscript. I greatly appreciate the comments of John Brooke, John Christie, John McEvoy, Roy Porter, Lissa Roberts, Simon Schaffer, Jim Secord, and Steven Shapin. Going considerably beyond the call of duty, Homer LeGrand gave the entire manuscript a very careful reading and then drove through the snows of New Hampshire to discuss it with me.

Other friends in Cambridge and elsewhere have offered general encouragement and advice. For sustaining me in these ways, I am deeply grateful to John Christie, Cathy Crawford, Larry Klein, Javed Majeed, Lissa Roberts, Jim and Anne Secord, Larry Stewart, Mary Terrall, Paul Wood, and especially Simon Schaffer (for his inspiration).

At Cambridge University Press, John Kim, Frank Smith, Helen Wheeler, and Richard Ziemacki have all been remarkably helpful and forbearing.

Audiences at a number of institutions have heard presentations of portions of the work, and I am grateful for their attention and advice: De-



Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain, 1760-1820

Jan Golinski

Frontmatter

[More information](#)

X

#### ACKNOWLEDGMENTS

partment of History and Philosophy of Science, University of Cambridge; History of Science and Medicine Seminar, University College, London; Centre for History of Science, Technology and Medicine, University of Manchester; Science Studies Program, University of California, San Diego; Department of History of Science, Johns Hopkins University; Department of History of Science, University of Wisconsin-Madison; and Program in History of Science, Cornell University.

I should also like to thank the staff of the following institutions for their assistance with my researches: Cambridge University Library (Rare Books Room); Whipple Library of the Department of History and Philosophy of Science, University of Cambridge; British Library (Reference Division); Leeds University Library (Special Collections); Glasgow University Library (Special Collections); Royal College of Physicians of Edinburgh; Royal Institution, London; Memorial Library, University of Wisconsin-Madison; Huntington Library, San Marino, California; and Wellcome Institute for the History of Medicine, London.

The British Museum (Department of Prints and Drawings), the Huntington Library, the Cambridge University Library, and the National Portrait Gallery, London, have all helped with the supply of illustrations and have generously granted permission for their reproduction.

I am also grateful to the Glasgow University Library, the Royal College of Physicians of Edinburgh, the Royal Institution, and the Huntington Library for permission to quote from manuscripts in their collections.

Cambridge University Press

978-0-521-65952-9 - Science as Public Culture: Chemistry and Enlightenment in Britain,  
1760-1820

Jan Golinski

Frontmatter

[More information](#)

## *Illustrations*

|     |  |                |
|-----|--|----------------|
| 1.  | Portrait of Joseph Black by David Martin   | <i>page</i> 42 |
| 2.  | Portrait of Joseph Priestley by E. Sharples  | 64             |
| 3.  | Priestley's experimental apparatus   | 84             |
| 4.  | Anonymous caricature of Priestley as "Docter Phlogiston"   | 180            |
| 5.  | "Revolution Anniversary," by W. Dent   | 182            |
| 6.  | "M. Francois introduces Mr. Pr***tly," by James Sayers   | 183            |
| 7.  | Portrait of Humphry Davy by H. Howard  | 192            |
| 8.  | "Scientific Researches," by James Gillray  | 202            |
| 9.  | The voltaic pile of Gay-Lussac and Thenard   | 215            |
| 10. | Interior view of the laboratory at the Royal Institution,<br>with the arch leading through to the basement lecture<br>theater at the right | 220            |
| 11. | Plan of the laboratory of the Royal Institution, with the<br>basement lecture theater at the left  | 221            |
| 12. | The chemical theater at Guy's Hospital   | 250            |
| 13. | Cronstedt's "portable laboratory" for examination of<br>minerals in the field  | 280            |
| 14. | Blowpipe and associated apparatus for mineralogical<br>analysis in the laboratory  | 281            |