Back Matter

The American Mathematical Monthly, Vol. 106, No. 2. (Feb., 1999)

Stable URL:
http://links.jstor.org/sici?sici=0002-9890%28199902%29106%3A2%3C%3ABM%3E2.0.CO%3B2-5

The American Mathematical Monthly is currently published by Mathematical Association of America.

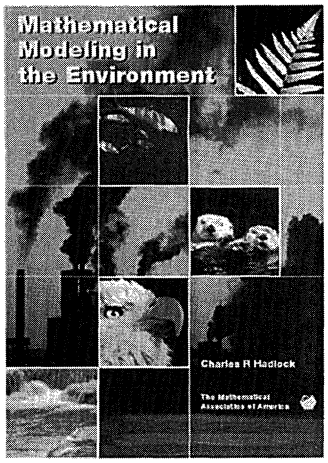
Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at http://www.jstor.org/about/terms.html. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at http://www.jstor.org/journals/maa.html.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

The JSTOR Archive is a trusted digital repository providing for long-term preservation and access to leading academic journals and scholarly literature from around the world. The Archive is supported by libraries, scholarly societies, publishers, and foundations. It is an initiative of JSTOR, a not-for-profit organization with a mission to help the scholarly community take advantage of advances in technology. For more information regarding JSTOR, please contact support@jstor.org.

http://www.jstor.org
Sat Dec 22 05:18:01 2007



THE MATHEMATICAL ASSOCIATION OF AMERICA

Mathematical Modeling in the Environment

Charles Hadlock

Series: Classroom Resource Materials

Packaged with a PC compatible disk that enhances the material in the text.

Suitable for classroom adoption in an innovative course for

- **a general education mathematics elective**
- **a mathematics or science major advanced elective**
- **an interdisciplinary course, even at a relatively elementary level**
- **a mathematical modeling course in a civil/environmental engineering program**

This book has a dual objective: first, to introduce the reader to some of the most important and widespread environmental issues of the day; and second, to illustrate the vital role played by mathematical models in investigating these issues. The environmental issues addressed include: ground-water contamination, air pollution, and hazardous material emergencies. These issues are presented in their full real-world context, not as scientific or mathematical abstractions; and for background, readers are invited to investigate their status in their own communities.

The first part of the book leads the reader through relatively elementary modeling of these phenomena, including simple algebraic equations for ground water, slightly more complex algebraic equations (preferably implemented on a spreadsheet or other computerized framework) for air pollution, and a fully computerized modeling package for hazardous materials incident analysis. The interplay between physical intuition and mathematical analysis is emphasized.

For more advanced readers, the second part of the book returns to the same three subjects but with a higher level of mathematical sophistication (adjustable to the preparation of the reader by selection of subsections.) Many important classical mathematical themes are developed through this context, examples coming from single and multivariable calculus, differential equations, numerical analysis, linear algebra and probability. The material is presented in such a way as to minimize the required background and to encourage the subsequent study of some of these fields.

An elementary course for a general audience could be based entirely on Part I, and a higher level mathematics, science, or engineering course could move quickly to Part 2.

A PC compatible diskette packaged with the text contains a spreadsheet program that facilitates the numerical experimentation with the Gaussian plume equation introduced in Chapter 3, as well as public domain DOS program (ARCHIE) for evaluating the consequences from various hazardous materials scenarios (e.g., the physical extent of flammable and toxic vapor clouds). Text is not tied to the use of this software, but it is included as an aid to meet the pedagogical objectives of the text.

Catalog Code: ENV/SA
312 pp., Paperbound, 1998, ISBN 0-88385-709-X
List: $55.00 MAA Member: $43.95

Instructor's and Solutions Manual for *Mathematical Modeling in the Environment*

Charles Hadlock

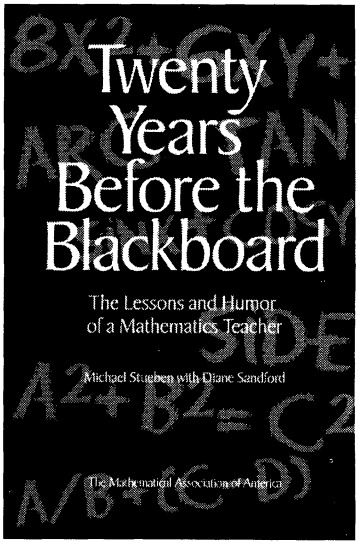
Contains the complete solutions and further discussion of nearly every exercise presented in the textbook. This includes both the mathematical/computational exercises as well as the research questions and investigations. Readers will benefit greatly from perusing solutions to the problems whether they have worked them out themselves or not. Students using this volume will still need to work out solutions of research questions using their own sources and adapting them to their own geographic locations, or using their own computational schemes, so this volume could well be useful for students in many course contexts. Enrichment material is included on the topics of some of the exercises. Advice for teachers who lack previous environmental experience, but who want to teach this material is also provided and makes it practical for such persons to offer a course based on these volumes.

Catalog Code: EVS/SA
150 pp., Paperbound, 1998, ISBN 0-88385-713-8
List: $18.95 MAA Member: $14.95

Phone in Your Order Now! ☎ *1-800-331-1622*

Monday – Friday 8:30 am – 5:00 pm FAX (301) 206-9789
or mail to: The Mathematical Association of America, PO Box 91112, Washington, DC 20090-1112

THE MATHEMATICAL ASSOCIATION OF AMERICA



Twenty Years Before the Blackboard

The Lessons and Humor of a Mathematics Teacher

Michael Stueben with Diane Sandford

Series: Spectrum

A perfect gift for the new teacher. . . or for anyone interested in the teaching of mathematics.

This book is the legacy of twenty years of mathematics teaching. During this time, the author searched for motivation techniques, mnemonics, insightful proofs, and serious applications of humor to aid his teaching. The result is this book: part philosophy, part humor, and part biography. Readers will be amused and enlightened on every page.

Mr. Stueben shows how he has used humor and wordplay to motivate his students. The book is filled with wonderful problems and proofs, as well as the author's insights about how to approach teaching problem solving to high school students. Sections of the book also treat the use of calculators and computers in the classroom. A section on mnemonics shows how teachers can use memory aids to help their students learn and retain material.

All in all, *Twenty Years Before the Blackboard* provides a goldmine of ideas for the classroom teacher. Although Mr. Stueben taught at the high school level, his book is an excellent "methods" book for mathematics teachers at all levels.

Read what Martin Gardner has to say about this fascinating book:

It's been decades since I read so entertaining a book about mathematics. The book is a treasure-trove of mathematical jokes, rhymes, anecdotes, word play, mnemonics, and beautiful proofs. For teachers there is an abundance of wise advice based on the author's twenty years in high school teaching. Mathematicians at all levels, from amateurs to college professors will not only chuckle over its gems, but learn much they did not know before. —Martin Gardner

Catalog Code: TYB/JR98
174 pp., Paperbound, 1998, ISBN 0-88385-525-9
List: $29.50 MAA Member: $23.50

Phone in Your Order Now! ☎ *1-800-331-1622*

Monday – Friday 8:30 am – 5:00 pm FAX (301) 206-9789

or mail to: The Mathematical Association of America, PO Box 91112, Washington, DC 20090-1112

Shipping and Handling: Postage and handling are charged as follows: **USA orders (shipped via UPS):** $2.95 for the first book, and $1.00 for each additional book. **Canadian orders:** $4.50 for the first book and $1.50 for each additional book. Canadian orders will be shipped within 10 days of receipt of order via the fastest available route. We do not ship via UPS into Canada unless the customer specially requests this service. Canadian customers who request UPS shipment will be billed an additional 7% of their total order. **Overseas orders:** $3.50 per item ordered for books sent surface mail. Airmail service is available at a rate of $7.00 per book. Foreign orders must be paid in US dollars through a US bank or through a New York clearinghouse. Credit Card orders are accepted for all customers.

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Qty.	Catalog Code	Price	Amount
_____	TYB/JR98	_____	_____

All orders must be prepaid with the exception of books purchased for resale by bookstores and wholesalers.

Shipping & handling _____

TOTAL _____

Payment ☐ Check ☐ VISA ☐ MasterCard

Credit Card No. _____ Expires ___/___

Signature _____

Princeton = Mathematics

The Importance of Being Fuzzy

And Other Insights from the Border between Math and Computers

Arturo Sangalli

Cloth $24.95 ISBN 0-691-00144-8

An Imaginary Tale

The Story of $\sqrt{-1}$

Paul J. Nahin

Cloth $24.95 ISBN 0-691-02795-1

Towing Icebergs, Falling Dominoes,

and Other Adventures in Applied Mathematics

Robert B. Banks

Cloth $29.95 ISBN 0-691-05948-9

The Real Fatou Conjecture

Jacek Graczyk and Grzegorz Swiatek

Paper $22.50 ISBN 0-691-00258-4
Cloth $55.00 ISBN 0-691-00257-6

New in paperback

Conversations on Mind, Matter, and Mathematics

Jean-Pierre Changeux and Alain Connes

Edited and translated by M. B. DeBevoise

Paper $14.95 ISBN 0-691-00405-6

Cycles, Transfers, and Motivic Homology Theories

Vladimir Voevodsky, Andrei Suslin, and Eric M. Friedlander

Paper $24.95 ISBN 0-691-04814-2
Cloth $59.50 ISBN 0-691-04815-0

Quaternions and Rotation Sequences

A Primer with Applications to Orbits, Aerospace, and Virtual Reality

J. B. Kuipers

Cloth $49.50 ISBN 0-691-05872-5

Congratulations to

Curtis McMullen,

author of

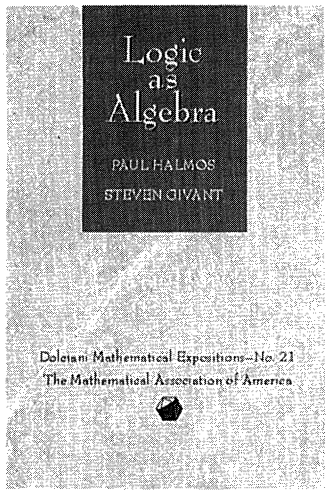
Complex Dynamics and Renormalization and *Renormalization and 3-Manifolds Which Fiber over the Circle,*

winner of the

Fields Medal.

Princeton University Press

AT FINE BOOKSTORES OR CALL 800-777-4726 • HTTP: //PUP.PRINCETON.EDU



THE MATHEMATICAL ASSOCIATION OF AMERICA

Logic as Algebra

Paul Halmos and Steven Givant

Series: Dolciani Mathematical Expositions

This book is based on the notes of a course in logic given by Paul Halmos. This book retains the spirit and purpose of those notes, which was to show that logic can (and perhaps should) be viewed from an algebraic perspective. When so viewed, many of its principal notions are seen to be old friends, familiar algebraic notions that were "disguised" in logical clothing. Moreover, the connection between the principal theorems of the subject and well-known theorems in algebra becomes clearer. Even the proofs often gain in simplicity.

Propositional logic and monadic predicate calculus—predicate logic with a single quantifier— are the principal topics treated. The connections between logic and algebra are carefully explained. The key notions and the fundamental theorems are elucidated from both a logical and algebraic perspective. The final section gives a unique and illuminating algebraic treatment of the theory of syllogisms—perhaps the oldest branch of logic, and a subject that is neglected in most modern logic texts.

The presentation is aimed at a broad audience—mathematics amateurs, students, teachers, philosophers, linguists, computer scientists, engineers, and professional mathematicians. Whether the reader's goal is a quick glimpse of modern logic or a more serious study of the subject, the book's fresh approach will bring novel and illuminating insights to beginners and professionals alike. All that is required of the reader is an acquaintance with some of the basic notions encountered in a first course in modern algebra. In particular, no prior knowledge of logic is assumed. The book could serve equally well as a fireside companion and as a course text.

Contents: **What is Logic?:** To count or to think; A small alphabet; A small grammar; A small logic; What is truth?; Motivation of the small language; All mathematics. **Propositional Calculus:** Propositional symbols; Propositional abbreviations; Polish notation; Language as an algebra; Concatenation; Theorem schemata; Formal proofs; Entailment; Logical equivalence; Conjunction; Algebraic identities. **Boolean Algebra:** Equivalence classes; Interpretations; Consistency and Boolean algebra; Duality and commutativity; Properties of Boolean algebras; Subtraction; Examples of Boolean algebras. **Boolean Universal Algebra:** Subalgebras; Homomorphisms; Examples of homomorphisms; Free algebras; Kernels and ideals; Maximal ideals; Homomorphism theorem; Consequences; The representation theorem. **Logic via Algebra:** Pre-Boolean algebras; Substitution rule; Boolean logics; Algebra of the propositional calculus; Algebra of proof and consequence. **Lattices and Infinite Operations:** Lattices; Non-distributive lattices; Infinite operations. **Monadic Predicate Calculus:** Propositional functions; Finite functions; Functional monadic algebras; Functional quantifiers; Properties of quantifiers; Monadic algebras; Free monadic algebras; Modal logics; Monadic logics; Syllogisms.

Catalog Code: DOL-21/JR98
152 pp., Paperbound, 1998, ISBN 0-88385-327-2
List: $27.00 MAA Member: $21.95

Phone in Your Order Now! ☎ *1-800-331-1622*

Monday – Friday 8:30 am – 5:00 pm FAX (301) 206-9789

or mail to: The Mathematical Association of America, PO Box 91112, Washington, DC 20090-1112

Shipping and Handling: Postage and handling are charged as follows: **USA orders (shipped via UPS):** $2.95 for the first book, and $1.00 for each additional book. **Canadian orders:** $4.50 for the first book and $1.50 for each additional book. Canadian orders will be shipped within 10 days of receipt of order via the fastest available route. We do not ship via UPS into Canada unless the customer specially requests this service. Canadian customers who request UPS shipment will be billed an additional 7% of their total order. **Overseas orders:** $3.50 per item ordered for books sent surface mail. Airmail service is available at a rate of $7.00 per book. Foreign orders must be paid in US dollars through a US bank or through a New York clearinghouse. Credit Card orders are accepted for all customers.

Qty.	Catalog Code	Price	Amount
_____	DOL-21/JR98	_____	_____

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

All orders must be prepaid with the exception of books purchased for resale by bookstores and wholesalers.

Shipping & handling _____

TOTAL _____

Payment ☐ Check ☐ VISA ☐ MasterCard

Credit Card No. _____ Expires ___/___

Signature _____

AMERICAN MATHEMATICAL SOCIETY

AMS CHELSEA PUBLISHING

Titles in this series were previously published by the well-known imprint within the mathematical community, *Chelsea Publishing Company* of New York. Now available from the AMS, the selections below include beginning and intermediate level works.

Recommended Text

Basic Geometry

Third Edition

George David Birkhoff and **Ralph Beatley**

Offers a sound mathematical development ... and at the same time enables the student to move rapidly into the heart of geometry.

—The Mathematics Teacher

Should be required reading for every teacher of geometry.

—Mathematical Gazette

A highly recommended high-school text by two eminent scholars.

1959; 294 pages; Hardcover; ISBN 0-8284-0120-9; List $20; All AMS members $18; Order code CHEL/120MM92

Recommended Text

A First Course in Functional Analysis

Second Editon

Caspar Goffman and **George Pedrick**

This text starts on an intermediate level of generality: sufficiently general to convey to the student the flavor of abstract methods in analysis and to cover many important applications, and still down-to-earth to make easy reading for beginners. The tradition founded by Banach, and favorable experiences from many courses, point to metric spaces as a suitable initial subject, and the present book keeps in this tradition ... The authors have selected and presented in a clear and readable way the basic material which is most likely to be used frequently. A wealth of examples, counterexamples, applications and exercises accompany the abstract theory throughout.

—Mathematical Reviews

An attractive feature of the book is that each major theorem is followed by ... illustrations of its use. There are many well-chosen problems. Some problems ask the reader to apply an abstract idea to a concrete situation and others ask the reader to develop more theory.

—American Mathematical Monthly

This second edition includes exercises at the end of each chapter, revised bibliographies, References and an Index.

1983; 284 pages; Hardcover; ISBN 0-8284-0319-8; List $28; All AMS members $25; Order code CHEL/319MM92

Recommended Text

Elements of Algebra

Fourth Edition

Howard Levi

The reader who masters the contents of this book will have had a stimulating intellectual experience, a good basis for understanding the mathematical manipulations of algebra, and an acquaintance with modern mathematical thought.

—The Mathematics Teacher

This book is addressed to beginning students of mathematics ... the level of the book, however, is so unusually high, mathematically as well as pedagogically, that it merits the attention of professional mathematicians (as well as of professional pedagogues) interested in the wider dissemination of their subject among cultured people ... a closer approximation to the right way to teach mathematics to beginners than anything else now in existence.

—Bulletin of the AMS

This 4th edition includes additional exercises by Paul Meyer.

1961; 189 pages; Hardcover; ISBN 0-8284-0103-9; List $14; All AMS members $13; Order code CHEL/103MM92

AMS
AMERICAN MATHEMATICAL SOCIETY

All prices subject to change. Charges for delivery are $3.00 per order. For optional air delivery outside of the continental U. S., please include $6.50 per item. *Prepayment required.* Order from: **American Mathematical Society**, P. O. Box 5904, Boston, MA 02206-5904, USA. For credit card orders, fax 1-401-455-4046 or call toll free 1-800-321-4AMS (4267) in the U. S. and Canada, 1-401-455-4000 worldwide. Or place your order through the AMS bookstore at www.ams.org/bookstore/. Residents of Canada, please include 7% GST.

MATHEMATICS BOOKS FROM BCS

ASPECTS OF TOPOLOGY 2nd Ed. C.Christenson/W.Voxman (Dec. 1998)
Featuring a clear style and broad range of subject matter, this is an excellent text for a senior level or graduate course in topology. Provides lucid coverage of the standard topics of general topology as well as an introduction to continua, inverse and direct systems, homotopy theory, covering spaces, triangulation and classification of 2-manifolds, topology of n-manifolds, dimension theory and many other topics, even including a Fox and Artin example of a wild arc and sphere. There is a vast wealth of exercises and an extensive index.

ISBN 0-914351-07-9	Paperback	503pp	US$48.00
ISBN 0-914351-08-7	Hard cover	503pp	US$75.00

TORSION THEORIES OVER COMMUTATIVE RINGS W.Brandal/E.Barbut (1996)
An ideal choice for an undergraduate or graduate seminar. Meticulous.

ISBN 0-914351-06-0	Paperback only	122pp	US$28.00

NUMERICAL LINEAR ALGEBRA Willy Brandal (1991)
Designed as an undergraduate text. Carefully written with the appropriate level of rigor.

ISBN 0-914351-05-2	Paperback only	212pp	US$30.00

Note. To keep the student's cost as reasonable as possible:
1) We publish new editions only for mathematical and/or pedagogical reasons.
2) We do not send examination copies.

Translations of classics into English.

FUNDAMENTALS OF GRAPH THEORY A.A.Zykov (1990)
Translation, of the 1987 Russian edition (M.:Nauka.Gl.red.Fiz.-mat.lit.).

ISBN 0-914351-04-4	Paperback only	371pp	US$48.00

THEORY OF CONVEX BODIES T.Bonnesen/W.Fenchel (1987)
Originally published as volume 3 of Springer-Verlag's "Ergebnisse" series in 1934.

ISBN 0-914351-02-8	Paperback only	183pp	US$30.00

GRAPH THEORY:A Development from the 4-Color Problem Martin Aigner (1987)
A translation of the 1984 German edition published by B.G.Teubner.

ISBN 0-914351-03-6	Paperback only	233pp	US$36.00

TOPOLOGY OF SURFACES André Gramain (1984)
A beautiful introduction to the concepts and methods of differential topology. Originally published in 1974 by Presses Univeritaires de France.

ISBN 0-914351-01-X	Paperback only	227pp	US$24.00

KNOT THEORY Kurt Reidemeister (1983)
A translation of Springer-Verlag's 1932 German edition.

ISBN 0-914351-00-1	Paperback only	158pp	US$20.00

Visit **http://www.harbornet.com/bcsassociates** to view the Table of Contents for the above books.

Sorry, but we can only accept prepaid orders from individuals and do not accept credit cards. Orders from USA will be sent 4th class bookrate: please include $2.00 for postage and handling for the first book, and $.75 for each additional book up to a maximum postage and handling fee of $5.00 For priority mail include $3.50 for the first, and $1.00 for each additional book.

If you insist, we will ship UPS with the following shipping and handling fees: $6.50 for the first book, and $1.50 for each additional book.

Foreign orders must be paid in US dollars. Orders from Canada and Mexico: surface $3.00 for the first book and $1.00 for each additional. Other foreign orders please add the following postage and handling charges: $3.50 (Surface Mail) for the first book and $1.00 for each additional book. Foreign Airmail will be at cost plus $1.00 per order (cost varies from about $12.00 to $23.00 for the first book and averages more than $6.00 for each additional book).

BCS ASSOCIATES
bcsassoc@adrift.harbornet.com

P.O.Box 3614 University Station
Moscow, ID 83843–0478

THE MATHEMATICAL ASSOCIATION OF AMERICA
1529 Eighteenth Street, N.W.
Washington, DC 20036