THE BULLETIN

OF

SYMBOLIC LOGIC

EDITED BY

RICHARD A. SHORE, MANAGING EDITOR ANDREAS R. BLASS ALEXANDER S. KECHRIS DANIEL LASCAR CHARLES D. PARSONS ANDREW M. PITTS

> Volume 1 · Number 3 · September 1995 ISSN 1079-8986

PUBLISHED QUARTERLY BY THE ASSOCIATION FOR SYMBOLIC LOGIC, INC. WITH SUPPORT FROM ICSU AND FROM INSTITUTIONAL AND CORPORATE MEMBERS

Copyright ©1995 by the Association for Symbolic Logic. All rights reserved. Reproduction by photostat, photo-print, microfilm, or like process by permission only.

https://doi.org/10.1017/S1079898600010441 Published online by Cambridge University Press

TABLE OF CONTENTS

ARTICLES

American logic in the 1920s, by MARTIN DAVIS	273
How to compute antiderivatives, by CHRIS FREILING	279

COMMUNICATIONS

Frege's theorem and the Peano postulates, by GEORGE BOOLOS	317
Optimal proofs of determinacy, by ITAY NEEMAN	327

In memoriam: Raphael Mitchel Robinson, by LEON HENKIN	340
ASL Spring Meeting, Kansas City, MI, May 6–7, 1994	344
Third Souslin Conference, July 21–27, 1994	350
Meeting of the Australasian Association for Logic, August 26–29, 1994	351
ASL Winter Meeting, San Francisco, CA, January 6–7, 1995	359
ASL Annual Meeting, Irvine, CA, March 30 – April 2, 1995	377
Notices	390

THE BULLETIN OF SYMBOLIC LOGIC (ISSN 1079-8986) is published quarterly, in the months of March, June, September, and December, by the Association for Symbolic Logic, Inc. at 1325 South Oak Street, Champaign, IL 61820, U.S.A. Second class postage is paid at Champaign, IL and additional offices. The BULLETIN is distributed with THE JOURNAL OF SYMBOLIC LOGIC and the 1995 annual subscription price for the two journals is \$230. Postmaster: Send address changes to *The Bulletin of Symbolic Logic, Journals Division UIP, 1325 South Oak Street, Champaign, IL 61820, USA*. Business correspondence should be sent to the Secretary-Treasurer of the Association, C. Ward Henson (address on inside back cover).

The BULLETIN invites submission of *Articles* and *Communications*. Articles should be expository or survey papers of broad interest that are accessible to a wide audience of logicians. They may deal with any areas of logic including mathematical or philosophical logic, logic in computer science or linguistics, the history or philosophy of logic and applications of logic to other fields. *Communications* should be announcements of important new results and ideas in any aspect of logic. The *Communications* may be short papers in their final form or preliminary announcements (extended abstracts, position papers) of longer, full papers that will be published elsewhere. In any case, they should, in addition to a description of the new results or ideas, include enough history, background and explanation to make the significance of the work apparent to a wide audience. *Communications* will be quickly refereed and published within six months of the submission of final versions.

Continued on inside back cover

10 9 8 7 6 5 4 3 2 1 00 99 98 97 96 95

THE BULLETIN OF SYMBOLIC LOGIC

EDITED BY

RICHARD A. SHORE, MANAGING EDITOR ANDREAS R. BLASS ALEXANDER S. KECHRIS DANIEL LASCAR CHARLES D. PARSONS ANDREW M. PITTS

> Volume 1 1995

PUBLISHED QUARTERLY BY THE ASSOCIATION FOR SYMBOLIC LOGIC, INC. WITH SUPPORT FROM ICSU AND FROM INSTITUTIONAL AND CORPORATE MEMBERS

The four numbers of Volume 1 were issued at the following dates:

Number 1, pages 1–144, March 17, 1995 Number 2, pages 145–272, May 25, 1995 Number 3, pages 273–392, August 24, 1995 Number 4, pages 393–544, December 6, 1995

Numbers 1–4 of this volume are copyrighted ©1995 by the Association for Symbolic Logic, Inc. Reproduction of copyrighted numbers of the BULLETIN by photostat, photoprint, microfilm, or like process is forbidden, except by written permission, to be obtained from the Secretary of the Association, C. Ward Henson, Department of Mathematics, University of Illinois, 1409 W. Green St., Urbana, IL 61801.

The paper used in this BULLETIN is acid-free and falls within the guidelines established to ensure permanence and durability.

This BULLETIN has been registered with the Copyright Clearance Center, Inc. The appearance of a code at the bottom of the first page of an article indicates the copyright owner's consent for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law, provided that the per-copy fee stated in the code is paid directly to Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923. This consent does not extend to copying for general distribution, for advertising or promotion purposes, for creating new collective works, or for resale. Specific written permission for such copying must be obtained from the Association.

CONTENTS OF VOLUME 1

The Bulletin of Symbolic Logic, by RICHARD A. SHORE, Managing Editor	1
Guidelines for logic education, by THE ASL COMMITTEE ON LOGIC AND EDU-	
CATION	4

ARTICLES

DAVIS, MARTIN, American logic in the 1920s	273
FREILING, CHRIS, How to compute antiderivatives	279
GOLDRING, NOA, Measures: back and forth between point sets and large sets	170
JECH, THOMAS, Singular cardinals and the PCF theory	408
JENSEN, RONALD, Inner models and large cardinals	393
PARSONS, CHARLES D., Platonism and mathematical intuition in Kurt Gödel's thought	44
SHOENFIELD, J. R., The mathematical work of S. C. Kleene	9
URQUHART, ALASDAIR, The complexity of propositional proofs	425
VAN DALEN, DIRK, Herman Weyl's intuitionistic mathematics	145

COMMUNICATIONS

BOOLOS, GEORGE, Frege's theorem and the Peano postulates	317
LEMPP, STEFFEN AND LERMAN, MANUEL, A general framework for priority	
arguments	189
NEEMAN, ITAY, Optimal proofs of determinacy	327
RATHJEN, MICHAEL, Recent advances in ordinal analysis: Π_2^1 – CA and related	
systems	468
STEEL, JOHN R., $HOD^{L(\mathbb{R})}$ is a core model below Θ	75

IN MEMORIAM

Christopher John Ash, by Julia Knight	202
Alonzo Church, 1903 – 1995, by H. B. Enderton	486
Raphael Mitchel Robinson, by LEON HENKIN	340

MEETINGS OF THE ASSOCIATION

European Summer Meeting, Keele University, England, July 20 – 29, 1993	85
addition	489
Annual Meeting, University of Florida, Gainesville, March 5 – 8, 1994	116
European Summer Meeting, Clermont-Ferrand, France, July 21 – 30, 1994.	203
Spring Meeting, Kansas City, Missouri, May 6 – 7, 1994	344
Winter Meeting, San Francisco, California, January 6 – 7, 1995	359
Annual Meeting, University of California, Irvine, March 30 – April 2, 1995.	377

MEETINGS SPONSORED BY THE ASSOCIATION

Third Souslin Conference, July 21 – 27, 1994	350
Meeting of the Australasian Association for Logic, August 26 – 29, 1994	351

NOTICES

Notices	142
Notices	269
Notices	390
Notices	535

OFFICERS AND MEMBERS

List of officers and members of the Association for Symbolic Logic	491