THE

JOURNAL OF SYMBOLIC LOGIC

EDITED BY

ALONZO CHURCH WILLIAM CRAIG

HERBERT ENDERTON DAGFINN FOLLESDAL Y. N. MOSCHOVAKIS

ANIL NERODE C. E. M. YATES

Managing Editor: ALFONS BORGERS

Consulting Editors:

C. A. BAYLIS JIŘÍ BEČVÁŘ JONATHAN F. BENNETT G. HASENJAEGER BARKLEY ROSSER HANS HERMES ARTO SALOMAA ANDRZEJ BLIKLE C. C. CHANG MARTIN DAVIS EDWARD E. DAWSON VERENA H. DYSON

CALVIN C. ELGOT FREDERIC B. FITCH GENE F. ROSE HANS HERMES ARTO SALOMAA
H. JEROME KEISLER KURT SCHÜTTE AZRIEL LÉVY
DONALD MONK
JOSEPH R. SH GERT H. MÜLLER RÓZSA PÉTER

MICHAEL O. RABIN JOSEPH R. SHOENFIELD I. F. THOMSON IEAN VAN HEHENOORT

VOLUME 42 NUMBER 3 SEPTEMBER 1977

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

Copyright @ 1978 by the Association for Symbolic Logic, Inc. Reproduction by photostat, photo-print, microfilm, or like process by permission only

TABLE OF CONTENTS

Imbedding of the quantum logic in the model system of Brower. By	
HERMAN DISHKANT	321
General random sequences and learnable sequences. By C. P. SCHNORR and	
P. Fuchs	329
Generalized quantifiers and elementary extensions of countable models. By	
Makgorzata Dubiel	341
On finite lattices of degrees of constructibility. By ZOFIA ADAMOWICZ	349
Amalgamation of nonstandard models of arithmetic. By ANDREAS BLASS	372
Ramsey's theorem in the hierarchy of choice principles. By ANDREAS	
BLASS	387
Modal operators and functional completeness, II. By S. K. THOMASON	391
Maximal and cohesive vector spaces. By J. B. REMMEL	400
Reviews 1. 4. W	419
European meeting of the Association for Symbolic Logic, Oxford, England,	12/2
1976. By R. O. GANDY and D. S. SCOTT	437
Notices of meetings	480

The JOURNAL OF SYMBOLIC LOGIC is the official organ of the Association for Symbolic Logic Inc., published quarterly, in the months of March, June, September, and December. The JOURNAL also contains the official notices of the Division of Logic, Methodology and Philosophy of Science of the International Union of History and Philosophy of Science.

Membership in the Association is open to any one interested in its work. Annual dues for students are \$9.00. Dues for other individual members are \$18.00 per year. Dues include subscription to the current volume of the JOURNAL. For their personal use, all members may purchase back issues at 25% discount.

For nonmembers, subscription to the current volume of the Journal is \$48 per year. Back volumes may be purchased at \$20 per volume for volumes 1–17, \$25 per volume for volumes 18–36, \$45 for volume 37, \$53 for volume 38, and \$60 per volume for volumes 39–41. Back volumes of JSL are also available on 16 mm microfilm and may be mounted on spools or in Eastman or 3M cartridges. Volumes 1–37 (1936–1972) are mounted on 5 spools and cost \$325.00 for spools or \$340.00 for cartridges.

Applications for membership in the Association, requests for information, all business correspondence and notices of change of address should be sent to *The Association for Symbolic Logic*, *P.O. Box 6248, Providence, Rhode Island 02940*. Dues and subscriptions to the Journal should be sent to *The Association for Symbolic Logic*, *P.O. Box 1571, Annex Station, Providence, Rhode Island 02901*; all orders must be accompanied by payment.

Articles for publication in the Journal should be sent to Yiannis Moschovakis, Department of Mathematics, U.C.L.A., Los Angeles, CA 90024 or to William Craig, Department of Philosophy, University of California at Berkeley, Berkeley, California 94720 or to Anil Nerode, Department of Mathematics, Cornell University, Ithaca, N.Y. 14850 or to C. E. M. Yates, School of Mathematics and Computer Science, University College of North Wales, Bangor LL57 2UW, Wales, U. K. or to Dagfinn Føllesdal, Department of Philosophy, University of Oslo, Blindern, Oslo 3, Norway. Authors and publishers are requested to send copies of books for review to Alonzo Church, The Journal of Symbolic Logic, U.C.L.A., Los Angeles, California 90024.

Continued on inside back cover

Second-class postage rates paid at Providence, R.I. and additional offices.