

THE
JOURNAL
OF
SYMBOLIC LOGIC

EDITED BY

ALONZO CHURCH AZRIEL LÉVY ARTHUR N. PRIOR
BURTON S. DREBEN ANIL NERODE GERALD E. SACKS

Managing Editor: ALFONS BORGERS

Consulting Editors:

ALAN ROSS ANDERSON	EBERHARD M. FELS	RÓZSA PÉTER
YEHOSHUA BAR-HILLEL	FREDERIC B. FITCH	MICHAEL O. RABIN
C. A. BAYLIS	G. HASENJAEGER	ABRAHAM ROBINSON
Jiří BEČVÁŘ	HANS HERMES	GENE F. ROSE
JONATHAN F. BENNETT	CAROL R. KARP	BARKLEY ROSSER
PAUL BERNAYS	H. JEROME KEISLER	ARTO SALOMAA
ANDRZEJ BLIKLE	DONALD L. KREIDER	KURT SCHÜTTE
C. C. CHANG	DONALD MONK	DANA SCOTT
WILLIAM CRAIG	RICHARD MONTAGUE	JOSEPH R. SHOENFIELD
MARTIN DAVIS	ANDRZEJ MOSTOWSKI	J. F. THOMSON
EDWARD E. DAWSON	GERT H. MÜLLER	JEAN VAN HEIJENOORT
VERENA H. DYSON	F. C. OGLESBY	R. L. VAUGHT
CALVIN C. ELGOT		CHARLES E. M. YATES

VOLUME 33
1968

PUBLISHED QUARTERLY BY THE ASSOCIATION FOR SYMBOLIC LOGIC, INC WITH
SUPPORT FROM THE U.S. NATIONAL SCIENCE FOUNDATION, FROM UNESCO
THROUGH ICSU, AND FROM INSTITUTIONAL AND CORPORATE MEMBERS

*Copyright © 1968 by the Association for Symbolic Logic, Inc.
Reproduction by photostat, photo-print, microfilm, or like process by permission only*

Reprinted 1972, 1974 in U. S. A.

THE
JOURNAL
OF
SYMBOLIC LOGIC

EDITED BY

ALONZO CHURCH AZRIEL LÉVY ARTHUR N. PRIOR
BURTON S. DREBEN ANIL NERODE GERALD E. SACKS

Managing Editor: ALFONS BORGERS

Consulting Editors:

ALAN ROSS ANDERSON	EBERHARD M. FELS	RÓZSA PÉTER
YEHOSHUA BAR-HILLEL	FREDERIC B. FITCH	MICHAEL O. RABIN
C. A. BAYLIS	G. HASENJAEGER	ABRAHAM ROBINSON
JIŘÍ BEČVÁŘ	HANS HERMES	GENE F. ROSE
JONATHAN F. BENNETT	CAROL R. KARP	BARKLEY ROSSER
PAUL BERNAYS	H. JEROME KEISLER	ARTO SALOMAA
ANDRZEJ BLIKLE	DONALD L. KREIDER	KURT SCHÜTTE
C. C. CHANG	DONALD MONK	DANA SCOTT
WILLIAM CRAIG	RICHARD MONTAGUE	JOSEPH R. SHOENFIELD
MARTIN DAVIS	ANDRZEJ MOSTOWSKI	J. F. THOMSON
EDWARD E. DAWSON	GERT H. MÜLLER	JEAN VAN HEIJENOORT
VERENA H. DYSON	F. C. OGLESBY	R. L. VAUGHT
CALVIN C. ELGOT		CHARLES E. M. YATES

VOLUME 33
1968

PUBLISHED QUARTERLY BY THE ASSOCIATION FOR SYMBOLIC LOGIC, INC WITH
SUPPORT FROM THE U.S. NATIONAL SCIENCE FOUNDATION, FROM UNESCO
THROUGH ICSU, AND FROM INSTITUTIONAL AND CORPORATE MEMBERS

The four numbers of Volume 33 were issued at the following dates:

Number 1, pages 1–160, April 26, 1968

Number 2, pages 161–320, July 23, 1968

Number 3, pages 321–496, October 10, 1968

Number 4, pages 497–682, January 1969

All numbers of this volume are copyrighted by the Association for Symbolic Logic, Inc. Reproduction of copyrighted numbers of the Journal by photostat, photo-print, microfilm, or like process is forbidden, except by written permission, to be obtained through the Business Office of the Association for Symbolic Logic, P.O. Box 6248, Providence, Rhode Island 02904, U.S.A.

TABLE OF CONTENTS

On the strong semantical completeness of the intuitionistic predicate calculus. By RICHMOND H. THOMASON	1
Universally free logic and standard quantification theory. By ROBERT K. MEYER and KAREL LAMBERT	8
An algebraic study of tense logics with linear time. By R. A. BULL	27
Modifications of Quine's ML and inclusive quantification systems. By GEORGE GOE	39
Constructively accessible ordinal numbers. By WAYNE RICHTER	43
Effectively extensible theories. By MARIAN BOYKAN POUR-EL	56
On the completeness of some transfinite recursive progressions of axiomatic theories. By JENS ERIK FENSTAD	69
On the scope of the classical deduction theorem. By WITOLD A. POGORZELSKI	77
On systems containing Aristotle's thesis. By R. ROUTLEY and H. MONT- GOMERY	82
Some calculi with strong negation primitive. By J. JAY ZEMAN	97
Structures elementarily closed relative to a model for arithmetic. By EUGENE W. MADISON	101
Functional completeness in one variable. By JAMES ROSENBERG	105
A note on recursive relations. By FREDERIC B. FITCH	107
A minimal canonically complete m -valued proper logic for each m . By RICHARD L. CALL	108
Reviews	111
Notice of the International Social Science Council	160
Subformula theorems for N -sequents. By HUGUES LEBLANC	161
On simplifying the matrix of a wff. By PETER ANDREWS	180
Systems of predicative analysis, II: Representations of ordinals. By SOLOMON FEFERMAN	193
Infinite products of recursive equivalence types. By DON C. FERGUSON	221
A simplified account of validity and implication for quantificational logic. By HUGUES LEBLANC	231
Nonstandard logic. By JAMES R. GEISER	236
The consistency of Leśniewski's mereology relative to the real number system. By ROBERT E. CLAY	251
The decidability of certain intermediate propositional logics. By C. G. MCKAY	258
Independence of two nice sets of axioms for the propositional calculus. By T. THACHER ROBINSON	265
On the Craig-Lyndon interpolation theorem. By ARNOLD OBERSCHELP	271
On Meyer and Lambert's quantificational calculus FQ. By HUGUES LEBLANC	275
Reviews	281
Notice of a meeting of the Association for Symbolic Logic	320
A survey of proof theory. By G. KREISEL	321
Metarecursively enumerable sets and their metadegrees. By GRAHAM C. DRISCOLL, Jr.	389
Reducibilities in intuitionistic topology. By DIRK VAN DALEN	412

TABLE OF CONTENTS

The Post correspondence problem. By DENNIS F. CUDIA and WILSON E. SINGLETARY	418
Degrees of recursively enumerable sets which have no maximal supersets. By A. H. LACHLAN	431
$S_3(S) = S_{3.5}$. By M. K. RENNIE	444
Implicit definability and infinitary languages. By KENNETH KUNEN	446
Hauptsatz for higher order logic. By DAG PRAWITZ	452
Lemmon-style bases for the systems S_1^0 - S_4^0 . By J. JAY ZEMAN	458
The semisubstitutivity of strict implication. By J. JAY ZEMAN	462
Reviews	465
Meeting of the Association for Symbolic Logic, Leeds 1967. By M. H. LÖB, F. R. DRAKE, and J. DERRICK	490
Abstracts of papers	490
Notice of a meeting of the Association for Symbolic Logic	496
Announcing <i>The philosophical forum 1968</i>	496
Degrees of unsolvability of constructible sets of integers. By GEORGE BOOLOS and HILARY PUTNAM	497
Some undecidable problems involving elementary functions of a real variable. By DANIEL RICHARDSON	514
Uniformly introreducible sets. By CARL G. JOCKUSCH, Jr.	521
Topological logic. By NICHOLAS RESCHER and JAMES GARSON	537
Uniform Gentzen systems. By RAYMOND M. SMULLYAN	549
Analytic cut. By RAYMOND M. SMULLYAN	560
An unsolved problem in the theory of constructive order types. By ALAN G. HAMILTON	565
The inadequacy of Kripke's semantical analysis of D2 and D3. By R. ROUTLEY and H. MONTGOMERY	568
Replacement in some modal systems. By IVO THOMAS	569
Remarks on some theorems of Keisler. By PER LINDSTRÖM	571
A notion of effectiveness in arbitrary structures. By W. M. LAMBERT, Jr.	577
Reviews	603
Annual meeting of the Association for Symbolic Logic. By BURTON DREBEN and JAMES THOMSON	636
Abstracts of papers	636
Regional conferences in mathematics	644
Notice of a meeting of the Association for Symbolic Logic	645
Announcement of the Northwest Association of Logic Teachers	645
List of officers and members of the Association for Symbolic Logic	646
Announcing <i>Studies in the Philosophy of Logic</i>	681