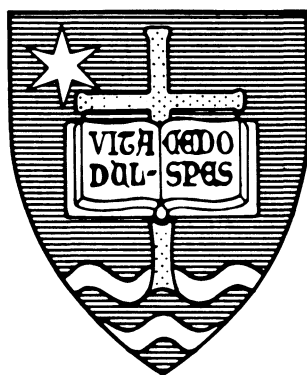


# *Notre Dame*

## JOURNAL OF FORMAL LOGIC



VOLUME 27, NUMBER 4  
OCTOBER 1986

PUBLISHED QUARTERLY BY THE  
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA

# NOTRE DAME JOURNAL OF FORMAL LOGIC

## *Editors:*

Michael Detlefsen  
Kit Fine  
Mark E. Nadel  
Howard K. Wettstein

## *Consulting Editors:*

Elliott Mendelson  
V. Frederick Rickey  
Alan Rose  
Paul Young

## *Associate Editors:*

Ernest LePore  
Penelope Maddy

## *Business Manager:*

Michele Daugherty

VOLUME 27, NUMBER 4, OCTOBER 1986

## CONTENTS

Classical harmony. By <i>Alan Weir</i> .....	459
Gentzen systems, resolution, and literal trees. By <i>Daniel J. Dougherty</i> .....	483
Modal logics with functional alternative relations. By <i>Krister Segerberg</i> .....	504
Kripke-type semantics for Da Costa's paraconsistent logic $C_\omega$ . By <i>Matthias Baaz</i> .....	523
Finite Kripke models of <b>HA</b> are locally <b>PA</b> . By <i>D. van Dalen, H. Mulder,</i> <i>E. C. W. Krabbe, and A. Visser</i> .....	528
Modality and possibility in some intuitionistic modal logics. By <i>Josep M. Font</i> .....	533
Strong normalization for typed terms with surjective pairing. By <i>A. S. Troelstra</i> .....	547
A new variant of the Gödel-Malcev theorem for the classical propositional calculus and correction to my paper—The connective of necessity of modal logic $S_5$ is metalogical. By <i>Zdzislaw Dywan</i> .....	551
On the characterizability of the frames for the "Unpreventability of the present and the past". By <i>Alberto Zanardo</i> .....	556
Systems of sentence logic with trans-atomic units. By <i>Richard Butrick</i> .....	565
Sums of finitely many ordinals of various kinds. By <i>Martin M. Zuckerman</i> .	572
Near coherence of filters, I: Cofinal equivalence of models of arithmetic. By <i>Andreas Blass</i> .....	579
Identities and indiscernibility. By <i>Guus Broesterhuizen and</i> <i>J. Wierzejewski</i> .....	592
Volume 27 Contents .....	607

---

*Notre Dame Journal of Formal Logic* is published quarterly by the University of Notre Dame in January, April, July, and October of each year. The Journal is composed by Beljan, Ltd., Dexter, Michigan and printed by Cushing-Malloy, Inc., Ann Arbor, Michigan. Second-class postage paid at Notre Dame, Indiana 46556.

Subscriptions are \$40.00 per year for institutions and \$20.00 for individuals. Back volumes are \$20.00 each for Volumes 1–10 and \$35.00 each for Volumes 11–26. Orders for subscriptions and back volumes (accompanied by payment) and changes of address should be sent to the *Business Manager*, P.O. Box 5, Notre Dame, Indiana 46556, U.S.A.

Copyright © 1986 by the University of Notre Dame. All rights reserved.  
Codon: NDJFAM.

*Notre Dame Journal of Formal Logic* ..... (ISSN 0029-4527)

ALAN ROSE

1927–1986

The editors report with sorrow the unexpected death of their colleague Alan Rose on April 9, 1986. Dr. Rose received his undergraduate degree from Cambridge University in 1948, and his doctoral degree from the University of Manchester in 1960. He began his academic career at the University of Aberdeen in 1950. In 1952, he moved to the University of Nottingham where he remained until his death. He published on a variety of subjects in mathematical logic during his career, and served this *Journal* for a number of years as a consulting editor. His contributions in both regards shall be sorely missed. And to his wife and five children go our deepest sympathies.

