

# Contents

*List of Contributors*  
*Preface*

vii  
ix

## Theory Papers

- Multiphase Parabolic Free Boundary Value Problems  
*J. R. Cannon* 3
- One Phase Moving Boundary Problems *Avner Friedman* 25
- Application of Classical Analytical Techniques to Steady-State Free  
Boundary Problems *Bernard A. Fleishman, Ross Gingrich, and*  
*Thomas J. Mahar* 41
- Hodograph Methods and the Smoothness of the Free Boundary  
in the One Phase Stefan Problem *David Kinderlehrer and*  
*Louis Nirenberg* 57

## Methods Papers

- The Numerical Solution of Multidimensional Stefan Problems  
—A Survey *Gunter H. Meyer* 73
- The Interrelation between Moving Boundary Problems and Free  
Boundary Problems *Colin W. Cryer* 91
- Numerical Methods for Alloy Solidification Problems  
*George J. Fix* 109
- Numerical and Analytic Solutions of Moving Boundary Problems  
*J. R. Ockendon* 129
- Finite Element Methods for Certain Free Boundary-Value  
Problems in Mechanics *J. T. Oden and N. Kikuchi* 147

Comparison of Numerical Methods for Diffusion Problems with Moving Boundaries <i>N. Shamsundar</i>	165
--	-----

The Applicability and Extendability of Megerlin's Method for Solving Parabolic Free Boundary Problems <i>A. D. Solomon</i>	187
--	-----

### Applications Papers

An Applied Overview of Moving Boundary Problems <i>Bruno A. Boley</i>	205
--	-----

Modeling of Moving Boundaries during Semiconductor Fabrication Processes <i>R. W. Dutton and D. A. Antoniadis</i>	233
---	-----

Low-Speed Dipforming <i>Michael F. Malone and Gabriel Horvay</i>	249
--	-----

Permafrost Thermal Design for the Trans-Alaska Pipeline <i>J. A. Wheeler</i>	267
---	-----

Heat Transfer Characteristics in a Model Ice–Water Heat Sink <i>Yin-Chao Yen</i>	285
--	-----

<i>Panel Discussion</i>	307
<i>Author Index</i>	315
<i>Subject Index</i>	319