

Contents

Preface	
<i>Lizhen Ji, Frans Oort, and Shing-Tung Yau</i>	ix
Photographs	xi
The Legacy of Bernhard Riemann After One Hundred and Fifty Years, Volume I	
What One Should Know About Riemann But May Not Know?	
<i>Lizhen Ji and Shing-Tung Yau</i>	1
Riemann's Influence in Geometry, Analysis and Number Theory	
<i>Sir Michael F. Atiyah</i>	57
Riemann's Saddle-point Method and the Riemann–Siegel Formula	
<i>M. V. Berry</i>	69
The Period Matrices and Theta Functions of Riemann	
<i>Ching-Li Chai</i>	79
Riemann's Hypothesis	
<i>Brian Conrey</i>	107
Extension of Holomorphic Functions Defined on Non-Reduced Analytic Subvarieties	
<i>Jean-Pierre Demailly</i>	191
Bundles with Extra Geometric or Dynamic Structure	
<i>F. T. Farrell</i>	223
The Theory of Shock Waves: From Riemann through Today	
<i>James Glimm, Dan Marchesin, and Bradley Plohr</i>	251
Riemann's Existence Theorem	
<i>David Harbater</i>	275
The Historical Roots of the Concept of Riemann Surfaces	
<i>Lizhen Ji</i>	287
The Story of Riemann's Moduli Space	
<i>Lizhen Ji</i>	307
Riemann and the Modern Concept of Space	
<i>Jürgen Jost</i>	359

The Legacy of Bernhard Riemann After One Hundred and Fifty Years, Volume II

Survey on Analytic and Topological Torsion <i>Wolfgang Lück</i>	379
The Riemann Minimal Examples <i>William H. Meeks III and Joaquín Pérez</i>	417
Manifolds of Mappings and Shapes <i>Peter W. Michor</i>	459
The Riemann Hypothesis over Finite Fields: From Weil to the Present Day <i>James S. Milne</i>	487
The Riemann-Hurwitz Formula <i>Frans Oort</i>	567
Early History of the Riemann Hypothesis in Positive Characteristic <i>Frans Oort and Norbert Schappacher</i>	595
Riemann's Influence in Number Theory from a Computational and Experimental Perspective <i>Michael Rubinstein</i>	633
Riemann Problem and Shock Capturing Schemes <i>Chi-Wang Shu</i>	681
A Discourse on the Measurable Riemann Mapping Theorem & Incompressible Fluid Motion <i>Dennis Sullivan</i>	691
The Mertens Conjecture <i>Herman J. J. te Riele</i>	703
Hodge Structures, Coniveau and Algebraic Cycles <i>Claire Voisin</i>	719