Contents

List of contributors
Photographs of contributors
Preface
Abbreviations and acronyms

Part I Overview

1 Introduction and synopsis
2 Rise and fall of the hadronic string
   GABRIELE VENEZIANO
3 Gravity, unification, and the superstring
   JOHN H. SCHWARZ
4 Early string theory as a challenging case study for philosophers
   ELENA CASTELLANI

EARLY STRING THEORY

Part II The prehistory: the analytic S-matrix

5 Introduction to Part II
   5.1 Introduction
   5.2 Perturbative quantum field theory
   5.3 The hadron spectrum
   5.4 S-matrix theory
   5.5 The Veneziano amplitude
6 Particle theory in the Sixties: from current algebra to the Veneziano amplitude
   MARCO ADEMOLLO
7 The path to the Veneziano model
   HECTOR R. RUBINSTEIN
8 Two-component duality and strings
PETER G.O. FREUND

9 Note on the prehistory of string theory
MURRAY GELL-MANN

Part III  The Dual Resonance Model

10 Introduction to Part III
10.1 Introduction
10.2 \(N\)-point dual scattering amplitudes
10.3 Conformal symmetry
10.4 Operator formalism
10.5 Physical states
10.6 The tachyon

11 From the \(S\)-matrix to string theory
PAOLO DI VECCHIA

12 Reminiscence on the birth of string theory
JOEL A. SHAPIRO

13 Personal recollections
DANIELE AMATI

14 Early string theory at Fermilab and Rutgers
LOUIS CLAVELLI

15 Dual amplitudes in higher dimensions: a personal view
CLAUD LOVELACE

16 Personal recollections on dual models
RENAITO MUSTO

17 Remembering the ‘supergroup’ collaboration
FRANCESCO NICODEMI

18 The ‘3-Reggeon vertex’
STEFANO SCIUTO

Part IV  The string

19 Introduction to Part IV
19.1 Introduction
19.2 The vibrating string
19.3 The rotating rod
19.4 The relativistic point particle
Towards Modern String Theory

Part V  Beyond the bosonic string

27  Introduction to Part V
27.1  Introduction
27.2  Chan–Paton factors
27.3  The Lovelace–Shapiro amplitude
27.4  The Ramond model
27.5  The Neveu–Schwarz model
27.6  The Ramond–Neveu–Schwarz model
27.7  World-sheet supersymmetry
27.8  Affine Lie algebras

28  From dual fermion to superstring
29  Dual model with fermions: memoirs of an early string theorist
30  Personal recollections
31  Aspects of fermionic dual models
32  The dual quark models
   KORKUT BARDAKCI AND MARTIN B. HALPERN

33  Remembering the dawn of relativistic strings
   JEAN-LOUP GERVAIS

34  Early string theory in Cambridge: personal recollections
   CLAUS MONTONEN

Part VI  The superstring

35  Introduction to Part VI
  35.1  Introduction
  35.2  The field theory limit
  35.3  Unification of all interactions
  35.4  The QCD string
  35.5  A detour on spinors
  35.6  Spacetime supersymmetry
  35.7  The GSO projection
  35.8  The Kaluza–Klein reduction and supersymmetry breaking
  35.9  The local supersymmetric action for the superstring
  35.10 Supergravity

36  Supersymmetry in string theory
   FERDINANDO GLIOZZI

37  Gravity from strings: personal reminiscences of early developments
   TAMIAKI YONEYA

38  From the Nambu–Goto to the σ-model action
   LARS BRINK

39  Locally supersymmetric action for the superstring
   PAOLO DI VECCHIA

40  Personal recollections
   EUGÈNE CREMMER

41  The scientific contributions of Joël Scherk
   JOHN H. SCHWARZ

Part VII  Preparing the string renaissance

42  Introduction to Part VII
  42.1  Introduction
  42.2  Supergravity unification of all interactions
  42.3  A novel light-cone formalism
  42.4  Modern covariant quantization
42.5 Anomaly cancellation
42.6 A new era starts or, maybe better, continues

43 From strings to superstrings: a personal perspective
MICHAEL B. GREEN

44 Quarks, strings and beyond
ALEXANDER M. POLYAKOV

45 The rise of superstring theory
ANDREA CAPPELLI AND FILIPPO COLOMO

Appendix A Theoretical tools of the Sixties
Appendix B The Veneziano amplitude
Appendix C From the string action to the Dual Resonance Model
Appendix D World-sheet and target-space supersymmetry
Appendix E The field theory limit
Index