

CONTENTS

Foreword	v
Note from the Editor	vi
Acknowledgments	xii

VOLUME 1

Part 1

Introduction	3
<i>M. Shifman</i>	
Introducing Boris Ioffe	9
<i>B. V. Geshkenbein</i>	
Boris Lazarevich Ioffe is 75	15
<i>I. B. Khriplovich</i>	
Chapter 1 Pages of the Past	17
A Top Secret Assignment	18
<i>B. L. Ioffe</i>	
Editor's Comments	53
Snapshots from the 1950's	65
<i>Yu. F. Orlov</i>	
Chapter 2 The Making of QCD	79
Quantizing the Yang-Mills Field	80
<i>L. D. Faddeev</i>	
The Discovery of Asymptotic Freedom and the Emergence of QCD	89
<i>D. J. Gross</i>	
Editor's note	120
Recollections on Dimensional Regularization and Related Topics	121
<i>C. G. Bollini</i>	

Historical Curiosity: How Asymptotic Freedom of the Yang-Mills Theory Could Have Been Discovered Three Times before Gross, Wilczek, and Politzer, but Was Not	126
<i>M. Shifman</i>	
Part 2	
Chapter 3 From Hadrons to Nuclei: Crossing the Border	133
<i>S. R. Beane, P. F. Bedaque, W. C. Haxton, D. R. Phillips and M. J. Savage</i>	
Chapter 4 Chiral Dynamics	271
<i>H. Leutwyler</i>	
Chapter 5 Aspects of Chiral Symmetry	317
<i>A. Smilga</i>	
Chapter 6 Nucleons as Chiral Solitons	359
<i>D. Diakonov and V. Yu. Petrov</i>	
Chapter 7 Chiral QCD: Baryon Dynamics	417
<i>U. Meißner</i>	
Chapter 8 Hadrons in the $1/N$ Expansion	507
<i>A. V. Manohar</i>	
Chapter 9 QCD Inequalities	569
<i>S. Nussinov</i>	
Part 3	
Chapter 10 Regge Poles in QCD	603
<i>A. B. Kaidalov</i>	
Chapter 11 Small x Physics and the Colored Glass Condensate	637
<i>L. McLerran</i>	
Chapter 12 On Gribov's Ideas on Confinement	653
<i>A. Vainshtein</i>	
Appendix Ioffe's Publications and Ph.D. Students	663

VOLUME 2

Part 4

- Chapter 13 QCD in a Finite Volume 683
P. van Baal
- Chapter 14 Compact Variables and Singular Fields in QCD 761
F. Lenz and S. Wörlen
- Chapter 15 Instanton-Induced Effects in QCD 823
E. V. Shuryak

Part 5

- Chapter 16 Perturbative QCD and the Parton Structure of
the Nucleon 887
W.-K. Tung
- Chapter 17 Multiloop Evolution of the QCD Coupling
Constant and Quark Masses 973
K. G. Chetyrkin
- Chapter 18 Multi-Parton Amplitudes in QCD 995
Z. Bern
- Chapter 19 Generalized Parton Distributions 1037
A. Radyushkin
- Chapter 20 Analytical QCD and Multiparticle Production 1101
V. A. Khoze, W. Ochs and J. Wosiek
- Chapter 21 Space-Time Picture of High Energy Scattering 1195
H. G. Dosch
- Chapter 22 High-Energy QCD and Wilson Lines 1237
I. Balitsky
- Chapter 23 Exclusive Processes in Quantum
Chromodynamics and the Light-Cone Fock
Representation 1343
S. J. Brodsky

VOLUME 3

Part 6

Chapter 24	Quark-Hadron Duality <i>M. Shifman</i>	1447
Chapter 25	QCD Sum Rules, a Modern Perspective <i>P. Colangelo and A. Khodjamirian</i>	1495
Chapter 26	Topics in the Heavy Quark Expansion <i>N. Uraltsev</i>	1577
Chapter 27	Weak Decays of Heavy Quarks <i>F. De Fazio</i>	1671
Chapter 28	Renormalons and Power Corrections <i>M. Beneke and V. M. Braun</i>	1719

Part 7

Chapter 29	Confinement, Magnetic Z_N Symmetry and Low-Energy Effective Theory of Gluodynamics <i>A. Kovner</i>	1777
Chapter 30	Flux Tubes and Confinement in the Seiberg-Witten Theory: Lessons for QCD <i>A. Yung</i>	1827
Chapter 31	Millennial Messages for QCD from the Superworld and from the String <i>M. J. Strassler</i>	1859

Part 8

Chapter 32	The Center Symmetry and its Spontaneous Breakdown at High Temperatures <i>K. Holland and U.-J. Wiese</i>	1909
Chapter 33	2D Model Field Theories and Finite Temperature and Density <i>V. Schön and M. Thies</i>	1945
Chapter 34	Hot and Dense QCD <i>A. V. Smilga</i>	2033
Chapter 35	The Condensed Matter Physics of QCD <i>K. Rajagopal and F. Wilczek</i>	2061