

Contents

Preface vii

Prologue: The Rise of the Sigmas ix

Introduction 1

Chapter 1. “Some Measurements of the Temperature Variation in the Electrical Resistance of a Sample of Copper” 11

Chapter 2. “Do Falling Bodies Move South?” 17

Chapter 3. “The Isolation of an Ion, a Precision Measurement of Its Charge, and the Correction of Stokes’s Law” 26

Chapter 4. “Directed Quanta of Scattered X-rays” 38

Chapter 5. “A Determination of e/m for an Electron by a New Deflection Method” 46

Chapter 6. An Uncertain Interlude 55

Chapter 7. “Electron Polarization” 65

Chapter 8. “Mean Lifetime of V-Particles and Heavy Mesons” 73

Chapter 9. “Detection of the Free Antineutrino” 83

Chapter 10. “Measurement of the K_{e2}^+ Branching Ratio” 98

Chapter 11. “Determination of K_{l3} Form Factors from Measurements of Decay Correlations and Muon Polarizations” 111

Chapter 12. Bad Data: An Interlude 124

Chapter 13. “Measurement of the Antineutron-Proton Cross Section at Low Energy” 149

Chapter 14. “New Measurements of Properties of the Ω^- Hyperon” 157

Chapter 15. The Coherent Scattering of Neutrinos 168

Chapter 16. “Search for Neutral Weakly Interacting Massive Particles in the Fermilab Tevatron Wideband Neutrino Beam” 184

Chapter 17. “Measurement of the B^+ Total Cross Section and B^+ Differential Cross Section $d\sigma/dp_T$ in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV” 194

Chapter 18. “B Meson Decays to Charmless Meson Pairs Containing η or η' Mesons” 205

Chapter 19. The Case of the Disappearing Sigmas 212

Conclusion 221

Notes 251

References 275

Index 291