

Contents

Preface	vii
Forewords	ix
<i>Frank Press</i>	
<i>Val Fitch</i>	
<i>Hans Fraueinfelder</i>	
The State of Physics, 1987: A Tour d'Horizon	1
<i>D. Allan Bromley</i>	
The Roles of Government	99
<i>Pierre Aigrain</i>	
The Role of Industry: Knowledge and Skills	107
<i>H. B. G. Casimir</i>	
International Space Science	115
<i>Hans Mark</i>	
Physics at the Edge of the Earth	129
<i>Joseph P. Allen</i>	
The Scanning Tunneling Microscope: Science and a New Era of Microtechnology	141
<i>Joseph E. Demuth</i>	
Artificially Structured Materials	163
<i>A. Y. Cho</i>	
Phases and Phase Transitions in Less Than Three Dimensions	177
<i>Michael E. Fisher</i>	
The Fractional Quantum Hall Effect	185
<i>Horst L. Stormer</i>	
Modern High-Temperature Superconductivity	211
<i>C. W. Chu</i>	
Superconductivity and its Applications (Modern and Traditional Approaches)	243
<i>Yu. A. Osipyan</i>	
Physics and Biology	255
<i>Hans Fraueinfelder</i>	
Physics and the Information Age	269
<i>Paul A. Fleury</i>	
Towards the Limits of Precision and Accuracy in Measurement	291
<i>Brian W. Petley</i>	

High-Temperature Plasma Physics Harold P. Furth	315
Frontiers of Atomic Physics Daniel Kleppner	347
Quarks and Gluons in Nuclear and Particle Physics Leon Van Hove	361
Particle Physics Beyond 1 TeV Thomas Appelquist	379
Acknowledgments	385
National Organizing Committee	386
Scientific Program	387