

Contents

| | | |
|--|--|-----|
| Part I | Lasers and Laser Spectroscopic Techniques | |
| <hr/> | | |
| From (Incr)edible Lasers to New Spectroscopy By T.W. Hänsch (With 4 Figures) | | 3 |
| High-Power Solid State Lasers By J.F. Holzrichter (With 5 Figures) | | 17 |
| From Micromasers to Antimasers: When One Photon in a Cavity May Be One Too Many...By S. Haroche (With 7 Figures) | | 29 |
| Laser Glass: An Engineered Material By S.E. Stokowski (With 17 Figures) | | 47 |
| One Is Not Enough: Intra-Cavity Spectroscopy with Multi-Mode Lasers. By P.E. Toschek and V.M. Baev (With 12 Figures) | | 89 |
| Spectroscopic Applications of Frequency Modulated Dye Lasers By A.I. Ferguson, S.R. Bramwell, and D.M. Kane (With 6 Figures) | | 112 |
| Reminiscence of Schawlow at the First Conference on Lasers By D.F. Nelson | | 121 |
| <hr/> | | |
| Part II | Atomic and Molecular Spectroscopy | |
| <hr/> | | |
| Laser and Fourier Transform Techniques for the Measurement of Atomic Transition Probabilities. By J.E. Lawler (With 4 Figures) | | 125 |
| Atomic Engineering of Highly Excited Atoms By M.H. Nayfeh (With 11 Figures) | | 141 |
| Study of Small but Complete Molecules – Na ₂ By Hui-Rong Xia and Zu-Geng Wang (With 7 Figures) | | 174 |
| Laser-Driven Ionization and Photoabsorption Spectroscopy of Atomic Ions. By W.T. Hill III and C.L. Cromer (With 4 Figures) | | 183 |

| | |
|---|-----|
| Two-Photon Resonant Parametric and Wave-Mixing Processes in Atomic Sodium | |
| By Pei-Lin Zhang and Shuo-Yan Zhao (With 1 Figure) | 195 |
| On the Nature of Hochheim Alloy. By G.W. Series | 201 |

Part III **Solid State Spectroscopy**

| | |
|---|-----|
| Optical Spectral Linewidths in Solids | |
| By R.M. Macfarlane (With 12 Figures) | 205 |
| Spectroscopy of Solid-State Laser Materials | |
| By S. Sugano (With 24 Figures) | 224 |
| Ruby – Solid State Spectroscopy's Serendipitous Servant | |
| By G.F. Imbusch and W.M. Yen (With 13 Figures) | 248 |
| Four-Wave Mixing Spectroscopy of Metastable Defect States in Solids. By S.C. Rand (With 14 Figures) | 268 |
| The Turvy Topsy Contest | 290 |

Part IV **Miscellaneous Ideas**

| | |
|--|-----|
| Using a Tokamak to Study Atomic Physics: Brightness Ratios of Transitions Within the $n=2$ Levels of Be I-like Ions (<i>CIII</i> to <i>CrXXI</i>). By H.W. Moos (With 6 Figures) | 295 |
| How to Squeeze the Vacuum, Or, What to Do When Even No Quantum Is Half a Quantum Too Many | |
| By M.D. Levenson (With 8 Figures) | 306 |
| Raman Spectroscopy of Biomolecules | |
| By T.J. O'Leary (With 6 Figures) | 317 |
| For Arthur Schawlow on His Sixty-fifth Birthday | |
| By P. Scott | 327 |
| The Authors | 330 |
| Index of Contributors | 337 |