

## CONTENTS

CONTRIBUTORS TO VOLUME 21. . . . .	v
FOREWORD . . . . .	vii

### **The Polarization of Electron Beams and the Measurement of the $g$ -Factor Anomaly of Free Electrons**

P. S. FARAGO

I. Introduction . . . . .	1
II. Description of Polarized Electron Beams. . . . .	3
III. The Effect of Macroscopic Fields on Polarization . . . . .	13
IV. The Production of Polarized Beams . . . . .	24
V. The Measurement of the $g$ -Factor Anomaly of Free Electrons . . . . .	45
References . . . . .	63

### **Fast Ion Scattering against Metal Surfaces**

C. SNOEK AND J. KISTEMAKER

I. Introduction . . . . .	67
II. The Dynamics of Two-Atom Collisions . . . . .	70
III. Scattering Experiments with Solid Targets . . . . .	78
IV. Light Emission From Ion-Bombarded Metal Targets . . . . .	92
References . . . . .	98

### **Kinetic Ejection of Electrons from Solids**

DAVID B. MEDVED AND Y. E. STRAUSSER

I. Introduction and Background . . . . .	101
II. Experimental Techniques . . . . .	110
III. Experimental Results . . . . .	131
IV. Theory . . . . .	165
V. Conclusions and Probable Trends . . . . .	173
References . . . . .	174

### **Scanning Electron Microscopy**

C. W. OATLEY, W. C. NIXON, AND R. F. W. PEASE

I. Introduction . . . . .	181
II. Principles of Design of the Scanning Electron Microscope. . . . .	186
III. Techniques and Applications . . . . .	212
References . . . . .	246

**High-Speed Magnetic-Core Memory Technology**

L. A. RUSSELL

I. Introduction . . . . .	249
II. Coincident-Current Toroidal Core Storage . . . . .	250
III. Two-Dimensional Core Memory . . . . .	273
IV. Special Ferrite Storage Devices and Memories . . . . .	279
References . . . . .	283

**Physical Foundations of Plasma Applications for  
Generation and Amplification of Microwaves**

V. YA. KISLOV, E. V. BOGDANOV, AND Z. S. CHERNOV

I. Introduction . . . . .	287
II. Slow Waves in Plasma . . . . .	291
III. Interaction of Slow Waves with Electron Stream . . . . .	296
IV. Plasma Traveling Wave Tube . . . . .	306
V. Plasma Backward Wave Generator . . . . .	314
VI. Interaction on Longitudinal Waves . . . . .	321
VII. Operating-Wavelength Shortening Problems in Plasma Devices . . . . .	324
VIII. Experiments on Amplification and Generation of Millimeter Band Oscillations by Means of Plasma . . . . .	327
IX. Conclusion . . . . .	329
List of Symbols . . . . .	329
References . . . . .	330
AUTHOR INDEX . . . . .	333
SUBJECT INDEX . . . . .	343