

## CONTENTS

CONTRIBUTORS TO VOLUME 18. . . . .	v
FOREWORD . . . . .	vii

### The Nightglow

F. E. ROACH

I. Definitions . . . . .	1
II. Units of Brightness . . . . .	2
III. General Spectroscopic Description of the Night Airglow . . . . .	4
IV. Nightglow Instrumentation . . . . .	6
V. Nightglow Observatories . . . . .	9
VI. Nightglow Heights . . . . .	9
VII. The Hydroxyl (OH) Nightglow . . . . .	13
VIII. Oxygen 5577. . . . .	14
IX. Oxygen 6300. . . . .	22
X. Sodium <i>D</i> in the Nightglow . . . . .	28
XI. Nightglow from the O <sub>2</sub> Molecule . . . . .	29
XII. Hydrogen Emission in the Nightglow . . . . .	29
XIII. Excitation Mechanisms. . . . .	29
XIV. Concluding Remarks . . . . .	42
References . . . . .	42

### Recent Developments in Computer Organization

F. P. BROOKS, JR.

I. Introduction . . . . .	45
II. Metaprograms . . . . .	46
III. Multiprogramming . . . . .	49
IV. The Content-Addressed Memory . . . . .	52
V. The One-Level Memory . . . . .	55
VI. Last-In-First-Out Register Stacks. . . . .	59
VII. The Fixed-Plus-Variable-Structure Computer . . . . .	62
References . . . . .	64

### Atomic Collisions Involving Low Energy Electrons and Ions

MANFRED A. BIONDI

List of Symbols . . . . .	67
I. Introduction . . . . .	68
II. Theoretical Developments . . . . .	72
III. Low Energy Elastic and Inelastic Collisions. . . . .	75

IV. Attachment and Detachment of Electrons . . . . .	116
V. Recombination of Positive Ions with Electrons and with Negative Ions . . . . .	137
References . . . . .	158

**Semiconductor Device Evaluation**

DAVID P. KENNEDY

I. Introduction . . . . .	167
II. The <i>p-n</i> Junction Diode . . . . .	169
III. The Junction Transistor . . . . .	216
References . . . . .	248
List of Symbols . . . . .	249

**Electron Emission Microscopy**

G. MÖLLENSTEDT AND F. LENZ

I. Introduction . . . . .	251
II. Electron Optics of a Cathode Lens . . . . .	254
III. Photo Emission Microscopy . . . . .	262
IV. Secondary Emission Microscopy . . . . .	283
V. Ion Induced Emission Microscopy . . . . .	298
VI. Thermionic Emission Microscopy . . . . .	320
References . . . . .	326
AUTHOR INDEX . . . . .	331
SUBJECT INDEX . . . . .	339