

## Contents

---

<b>LIST OF CONTRIBUTORS</b>	<b>v</b>
<b>PREFACE</b>	<b>xi</b>
John Clarke Slater, a Biographical Note of Appreciation <i>Philip M. Morse</i>	1
John Clarke Slater, His Work and a Bibliography <i>Robert S. Mulliken</i>	5
Comments on Professor J. C. Slater's Paper "Cohesion in Monovalent Metals" <i>Per-Olov Löwdin</i>	15
Cohesion in Monovalent Metals (Reprinted from <i>The Physical Review</i> <b>35</b> , 509–529 (1930)) <i>J. C. Slater</i>	17
A New Approach to Many-Electron Theory at Intermediate Densities <i>Leland C. Allen</i>	39
Exclusion Principle and Measurement Theory <i>H. Margenau</i>	81
The Equations of the Free Motion of an Isotropic Spinning Particle <i>L. H. Thomas</i>	93
Note on the Saddle-Point Character of Hartree and Hartree-Fock Wave Functions <i>C. A. Coulson</i>	97
Second Quantization in the Electronic Theory of Molecules <i>H. C. Longuet-Higgins</i>	105
On the Factorization of Secular Equations by Group Theory <i>W. Byers Brown</i>	123
On the Existence of a Maximum in the Interaction between He(1s2s; $^3S$ ) and He(1s $^2$ ; $^1S$ ) <i>F. A. Matsen and D. R. Scott</i>	133
Recursion Formula Method for Three-Particle Problems <i>Arthur A. Frost and Jashbhai C. Patel</i>	147

Computation of the Magnetic Hyperfine Structure of Atomic S-States <i>R. K. Nesbet</i>	157
Application of Quantum Theory to Atomic Processes Occurring in Planetary Nebulae <i>S. J. Czyzak and T. K. Krueger</i>	167
Spin-Orbit Interaction in Self-Consistent Fields <i>E. U. Condon and H. Odabasi</i>	185
Collisions of Slow Positrons with Atoms <i>H. S. W. Massey, L. Lawson, and D. G. Thompson</i>	203
Slater Screening Constants in Atomic and Molecular Orbitals <i>J. O. Hirschfelder and A. C. Wahl</i>	217
Accurate Gaussian Wave Functions: HF Again <i>J. W. Moskowitz, D. Neumann, and M. C. Harrison</i>	227
The Bonding Characteristics of Diatomic MO's <i>Robert S. Mulliken</i>	231
Pictures of Molecular Orbitals <i>A. C. Wahl</i>	243
Localized Orbitals and Localized Adjustment Functions <i>S. F. Boys</i>	253
Localized Atomic and Molecular Orbitals. III <i>C. Edmiston and K. Ruedenberg</i>	263
Ein neuer Ansatz für die Energiehyperflächen drei- und mehrzentrischer Systeme <i>H. Preuss</i>	281
Molecular Diagrams and Photochemistry <i>R. Daudel</i>	295
Electron Transfer and Atomic Magnetic Moments in the Ordered Intermetallic Compound AlFe <sub>3</sub> <i>Linus Pauling</i>	303
The One-Electron Approximation: Epistemological, Spectroscopic, and Chemical Comments <i>Chr. Klixbüll Jørgensen</i>	307
Linear Diamagnetic and Paramagnetic Response <i>H. Primas and J. Riess</i>	319
Molecular Fragment Models of Parts of Conjugated Heterocyclics <i>R. B. Hermann, P. G. Lykos, J. D. Sharp-Ritter, and R. Moccia</i>	335

Charge Transfer Complexes in Biochemistry <i>Alberte Pullman and Bernard Pullman</i>	345
The Augmented Plane Wave Method and the Electronic Properties of Rare-Earth Metals <i>A. J. Freeman, J. O. Dimmock, and R. E. Watson</i>	361
New Studies of the Band Structure of Silicon, Germanium, and Grey Tin <i>F. Herman, R. L. Kortum, C. D. Kuglin, and R. A. Short</i>	381
The Materials Game — An APW Analysis of the Lead Salts <i>George W. Pratt, Jr.</i>	429
Quantum A Go Go <i>Earl Callen</i>	439
On the Use of Phase Shifts for Studying Impurity Effects in Narrow Bands: With Application to the Electronic Structure of Substitutional Alloys of Transitional Metals <i>J. Friedel, F. Gautier, A. A. Gomès, and P. Lenglart</i>	445
Limits of the Band Model and Transitions to the Metallic State <i>R. Fröhlich</i>	465
Energy Bands in Periodic and Aperiodic Fields <i>H. Jones</i>	469
Some Elementary Thoughts on the Slater Intra-Atomic Exchange Model for Ferromagnetism <i>J. H. Van Vleck</i>	475
Some Aspects of the Theory of Spin Waves in Metals and Alloys <i>E. P. Wohlfarth</i>	485
Band Structure of Transition Metals Calculated by the Green's Function Method <i>I. Yamashita, S. Wakoh, and S. Asano</i>	497
Superconductors and Superfluids <i>John Bardeen</i>	511
The Impedance Field Method of Noise Calculation in Active Semiconductor Devices <i>W. Shockley, John A. Copeland, and R. P. James</i>	537
The Size of an Exciton in a Molecular Crystal <i>G. G. Hall</i>	565

Finite Rotation Groups and Crystal Classes in Four Dimensions: II. Revised Tables and Projection of Groups of Antisymmetry in Three Dimensions	571
<i>A. C. Hurley</i>	
Quantum Noise VIII: Harmonic Oscillator Relaxation from Definite Quantum States	587
<i>Hung Cheng and Melvin Lax</i>	
The Projected Hartree-Fock Method: An Extension of the Independent-Particle Scheme	601
<i>Per-Olov Löwdin</i>	
 AUTHOR INDEX	625
SUBJECT INDEX	636