Materials; Part 4) Electrical, Optical, and Thermal Properties of Solids; Part 5) Diffusion and Mass Transport in Solids; Part 6) Phase Transformations in the Solid State; Part 7) Growth, Structure, and Morphology of Crystals; Part 8) Mechanical Behavior of Crystalline Solids; Part 9) Surface Phenomena—Nature and Properties of Solid Surfaces and Interfaces; Part 10) Structure and Properties of Liquids; Part 11) Effects of Radiation on Materials; Part 12) Techniques and Instrumentation.

This book is an attempt to provide perspective to the field of materials sciences and to set forth for a number of topics the degree of understanding which has been achieved and the important problem areas that still plague us. It is designed to be of particular assistance to the new research talent entering into this field of activity.

**Proceedings of the Conference on Optical Instruments and Techniques,** edited by K. J. Habell, *National Physical Laboratory, England* (John Wiley & Sons Inc., New York, 1963), 520 pp. $21.00.

*Contents:* 37 papers contributed by different authors and divided into 6 major parts. Part 1) Colorimeters, Spectrophotometers, and Spectropolarimeters; Part 2) Optical Design Techniques; Part 3) Image-Forming Systems and Instruments; Part 4) Optical Systems Associated with Rockets and Satellites; Part 5) New Techniques for the Production and Testing of Optical Components; Part 6) New Optical Techniques (Including Optical Application of the Maser Principle).

This conference was held at Imperial College, London, July 11–14, 1961. More than 250 delegates from 22 countries participated.

**Dynamics of Satellites,** edited by Maurice Roy (Academic Press, New York, and Springer-Verlag, Berlin, 1963), 335 pp. $15.00.

*Contents:* 25 papers contributed by different authors on such subjects as long-range effects in the motion of artificial satellites, the potential of the earth derived from satellite motions, the determination of atmospheric drag on artificial satellites, some problems of motion of artificial satellites about the center of mass, the libration of a satellite on an elliptic orbit, and the prediction of observed satellite orbits.

These papers, 22 of which are in English, constitute the Proceedings of the International Union of Theoretical and Applied Mechanics Symposium, held in Paris, May 28–30, 1962.

**Interplanetary Dynamical Processes,** E. N. Parker, *Enrico Fermi Institute for Nuclear Studies, and Department of Physics, University of Chicago* (Interscience Division, John Wiley & Sons Inc., New York, 1963), 272 pp. $12.50.

*Chapters:* 1) Introduction; 2) Observations; 3) Kinetic Properties of Coronal Gas; 4) Hydrostatic Properties of a Coronal Atmosphere; 5) Quiet-Day Coronal Expansion; 6) Hydrodynamical Model of Quiet-Day Corona and Solar Wind; 7) Energy Transport in the Corona; 8) Sudden Expansion of the Corona; 9) Extension of the Solar Wind into Space; 10) Interplanetary Magnetic Fields; 11) Interplanetary Irregularities; 12) Cosmic Ray Effects; 13) Propagation of Energetic Solar Particles; 14) Generalization and Extension of the Basic Solar Wind Model; 15) Stellar Winds. *Appendixes:* 1) Nonradial Expansion; 2) Particle Diffusion.

This monograph presents a theory of interplanetary dynamics based upon coronal expansion as the source of interplanetary gas motions. The theory is in a rudimentary state and is intended only as an exploration of the possibility that hydrodynamic expansion of the atmosphere of the sun is the origin of interplanetary activity.

**Rarefied Gas Dynamics,** edited by J. A. Laurmann, *Lockheed Missiles and Space Company, Palo Alto, Calif.* (Academic Press, New York, 1963), Supplement 2, Vol. 1, 541 pp. $16.00.

*Contents:* 28 papers contributed by different authors on such subjects as a new approach to nonequilibrium statistical mechanics of gases, calculation of collision integrals in the moment equation, shock wave structure with rotational and vibrational relaxation, surface erosion in space, studies of normal momentum transfer by molecular beam techniques, and energy transfer during atom recombination on solid surfaces.

This volume contains the Proceedings of the Third International Symposium on Rarefied Gas Dynamics, held at the Palais de L'Unesco, Paris, in 1962. The subjects covered should be of interest to both the fundamental researcher and the applied scientist working in high-altitude aerodynamics and low-density flows. Important specific advances and an over-all view of the current state of knowledge in the field are presented.

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**M. H. Smith,** *Associate Editor*

The James Forrestal Research Center, Princeton University

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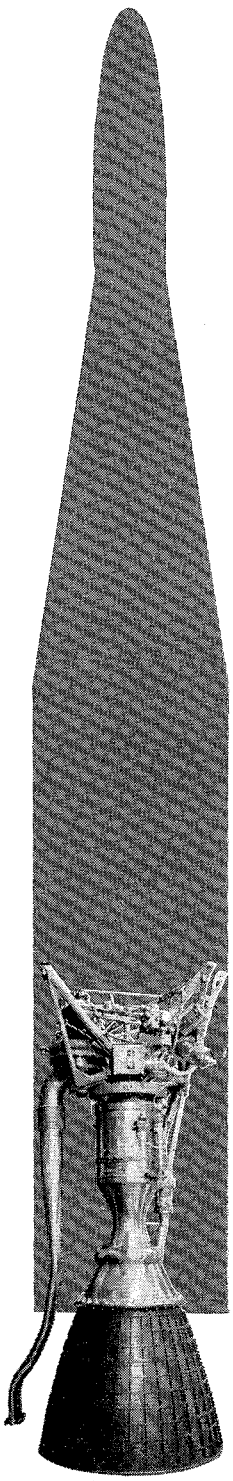

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