

physicist. I rewarded her kind assistance in preparing this review by a free copy of the book, and it is to her joy that I refer.) I would even recommend it to the aforementioned student, should I fail to change his intentions.

SHELDON LEE GLASHOW
Department of Physics
Harvard University
Cambridge, Mass.

Geomagnetic Diagnosis of the Magnetosphere (Physics and Chemistry in Space, Volume 9)

A. Nishida
256 pp. Springer-Verlag, New York, 1978.
\$38.50

The interaction between a magnetized celestial body and a magnetized plasma flow is one of the basic phenomena in cosmic electrodynamics. This subject has evolved from a study of geomagnetic disturbances, namely a study of Earth's magnetic field and the solar wind, which is one of the important subjects in the field of solar-terrestrial physics. In fact, many of the modern concepts, such as the magnetosphere and magnetospheric substorms, have evolved on the basis of a study of geomagnetic disturbances.

There is no doubt that satellites and space-probe observations of our electromagnetic environment have drastically improved our understanding of physical processes involved in the interaction between Earth's magnetic field and the solar wind. However, for a quantitative understanding of this interaction, Earth is still the most important platform for the observations among all "satellites." This is partly because most magnetospheric phenomena manifest themselves in the polar region along magnetic field lines, and thus one can infer the magnetospheric phenomena by setting up networks of observatories.

Among various instruments used in this study, a ground-based magnetometer is one of the oldest and an extensive network of magnetic observatories has been operating for many years. Their geomagnetic observations are widely used in monitoring or *diagnosing* magnetospheric conditions. It is very appropriate that the "Physics and Chemistry in Space" series has a comprehensive review of this subject. Atsushi Nishida is certainly one of the most appropriate choices to take on this task, since he has considerable experience in the subject.

The author describes clearly and concisely how we use geomagnetic variations on Earth's surface and in space (satellite observations) as a diagnostic tool in understanding various processes in the magnetosphere. A diagnostic tool would, of course, not be reliable unless one fully understands how a specific magnetospheric phenomenon manifests itself as a specific type of geomagnetic variation in

the magnetosphere and on the ground. At the present time, some of the identifications of the manifestation are still controversial. In such cases, the author presents his own view and those of others.

For the readers of PHYSICS TODAY, the major point of this book would be to show how complicated the seemingly simple interaction between a magnetized celestial body and a magnetized plasma flow is—and how far magnetospheric physics has come in understanding this interaction.

S.-I. AKASOFU
Geophysical Institute
University of Alaska
Fairbanks

new books

Particles, Nuclei and High-Energy Physics

Theoretical Nuclear Physics. J. M. Blatt, V. F. Weisskopf. 878 pp. Springer-Verlag, New York (first published, Wiley, 1952), 1979. \$32.00

Photopion Nuclear Physics (Papers presented at a symp., Troy, New York, August 1978). P. Stoler, ed. 474 pp. Plenum, New York, 1979. \$42.50.

Collective Ion Acceleration. C. L. Olson, U. Schumacher. 238 pp. Springer-Verlag, New York, 1978. \$34.00

Cosmic Rays and Particle Physics-1978 (Proc. of a conf. at the Bartol Research Foundation, Newark, Del., October 1978). T. K. Gaisser, ed. 524 pp. American Inst. of Physics, New York, 1979. \$23.50

Atomic, Molecular and Chemical Physics

Alkali Halide Vapors: Structure, Spectra, and Reaction Dynamics. P. Davidovits, D. L. McFadden, eds. 542 pp. Academic, New York, 1979. \$55.00

Experimental Methods in Heavy Ion Physics. K. Bethge, ed. 251 pp. Springer-Verlag, New York, 1978. \$14.30.

Excited States in Quantum Chemistry (Proc. of the NATO Advanced Study Institute, Kos, Greece, June, 1978). C. A. Nicolaides, D. R. Beck, eds. 585 pp. Reidel, Dordrecht, The Netherlands, (US dist.: Kluwer Boston, Hingham, Mass.), 1978. \$59.00

Kinetics of Ion-Molecule Reactions (Proc. of the NATO Advanced Study Inst., La Baule, France, September 1978). P. Ausloos, ed. 516 pp. Plenum, New York, 1979. \$49.50

Fluids and Plasmas

Sixth International Conference on Numerical Methods in Fluid Dynamics (Proc. of a conf., Tbilisi, USSR, June 1978). H. Cabannes, M. Holt, V. V. Rusanov, eds. 628 pp. Springer-Verlag, New York, 1979. \$27.00

Plasma Transport, Heating and MHD Theory (Proc. of a workshop, Varenna, Italy, September 1977). T. Stringer, R. Pozzoli, E.

Sindoni, J. P. Carnihan, G. G. Leotta, eds. 440 pp. Pergamon, Elmsford, N.Y. 1979. \$44.00

Theory of Magnetically Confined Plasmas (Proc. of a course, Varenna, Italy, September 1977). B. Coppi, T. Stringer, R. Pozzoli, E. Sindoni, J. P. Carnihan, G. G. Leotta, eds. 454 pp. Pergamon, Elmsford, N.Y., 1979. \$50.00

Crystallography, Low-Temperature and Solid-State Physics

Positrons in Solids. P. Hautojärvi, ed. 255 pp. Springer-Verlag, New York, 1979. \$31.40

Crystals for Magnetic Applications (Crystals: Growth, Properties, and Applications, Vol. 1). C. J. M. Rooijmans, ed. 139 pp. Springer-Verlag, New York, 1978. \$29.00

Field Matter Interactions in Thermoelastic Solids. K. Hutter, A. A. F. van de Ven. 231 pp. Springer-Verlag, New York, 1978. \$12.50

Solid Surface Physics. J. Hölzl, F. K. Schulte, H. Wagner. 228 pp. Springer-Verlag, New York, 1979. \$37.80

Theory and Mathematical Physics

Integral Representations of Functions and Imbedding Theorems, Vol. II. O. V. Besov, V. P. Il'in, S. M. Nikol'skiĭ. 311 pp. Wiley, New York. 1979. \$19.95

Green's Functions in Quantum Physics. E. N. Economou. 251 pp. Springer-Verlag, New York, 1979. \$24.20

Advanced Mathematical Methods for Scientists and Engineers. C. M. Bender, S. A. Orszag. 600 pp. McGraw-Hill, New York, 1978. \$28.50

Energy and Environment

Energiesparen jetzt! M. G. Kiss, H. P. Mahon, H. J. Leimer. 304 pp. Bauverlag, Wiesbaden, Fed. Rep. Germany, 1978. DM98

Energy for a Technological Society: Principles, Problems, Alternatives, (Second Edition). J. Priest. 400 pp. Addison-Wesley, Reading, Mass. 1979 (first ed. 1975). \$12.95

History, Philosophy, Society and Government

Physical Theory as Logico-Operational Structure. C. A. Hooker, ed. 351 pp. Reidel, Dordrecht, The Netherlands (US dist.: Kluwer Boston, Hingham, Mass., 1979. \$48.50

Albert Einstein's Theory of General Relativity: 60 Years of Its Influence on Man and the Universe. G. Tauber, ed. 352 pp. Crown, New York, 1979. \$14.95

Nuclear Physics in Retrospect: Proceedings of a Symposium on the 1930's (Proc. of a symp., Minneapolis, Minn., May 1977). R. H. Stuewer, ed. 356 pp. U. of Minnesota, Minneapolis, 1979. \$25.00

Scientists in Power. S. R. Weart. 356 pp. Harvard U.P., Cambridge, Mass., 1979. \$17.50 □