impact on earth sciences? Far from being esoteric, they occur everywhere, as we now see, even in as common a mineral as quartz.

One of the chapters that interested me particularly deals with the application of quasiharmonic lattice dynamics derived from modified electron gas theory to the mineral $MgSiO_3$. This mineral is probably the most abundant mineral in the earth's lower mantle, and so its study is of prime importance to geophysics. My own interest in the subject stems from work I did long ago on the tilting of oxygen octahedra in perovskites, which include $MgSiO_3$, in order to understand a phase transition in a rather obscure and not very useful material, $NaNbO_3$. I never imagined that this work would have any direct connection with the lower mantle, but again this relationship demonstrates the new closeness between modern earth science and other fields.

Additional chapters are devoted to high- and low-spin magnetic transitions, simulations of molecular dynamics, spin glasses, and polytypism. This is a rich spread of topics that any solid state scientist will recognize.

All in all, the editors have assembled a useful mixture of topics which the new breed of earth scientist, and possibly the old one too, will regard as required reading. I think we are going to see many more books like this in the future.

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Geologic Tubes

Explosion Pipes. VLADIMIR A. MILASHEV. Springer-Verlag, New York, 1988. x, 249 pp. $27. Translated from the Russian edition (Leningrad, 1984) by R. E. Sorkina.

Since the phrase "tubular bodies" is not likely to attract much attention, these geological formations have been lumped into the category of "explosion pipes," even though most researchers now agree that the word "explosion" must be used with many qualifying phrases. *Explosion Pipes* will be valuable to geologically oriented researchers interested in tubular bodies of many origins.

A key to reading this book is recognizing that tubular bodies do have many origins. The author points out that, because of the variety, the scientists who have studied these bodies come from diverse backgrounds. The differences of background and data collected have led not only to diverse conclusions but to severe problems in communication. These communications problems are amplified by the fact that explosion pipes are small, not ubiquitous, and often inaccessible—few researchers have seen more than a small fraction of the pipes in the world.

I recommend reading the conclusion before anything else in this book, even before the summary on the back cover, which might give the erroneous impression that the author considers only magmatic gases. The first sentences in the two-page conclusions section give a much better description: "This book is a synthesis of data on the geostructural setting, morphology, internal structure, mineral composition, and other features of tubular bodies. It deals with many problems relevant to the mechanism and conditions of diatreme formation."

The first half of the book summarizes data and hypotheses about kimberlite pipes. The next section describes nonkimberlite diatremes, and the final section discusses mechanisms and conditions of pipe formation. Here the author spends most of the space reviewing the evolution of concepts and the role of magma and relatively little on the conclusion he supports—that groundwater plays a major role in the formation of the pipes.

I found it difficult to get started with the book because of the author's heavy reliance on data from pipes in the Soviet Union, the many difficult petrologic and chemical terms, the failure of the preface and opening chapter to provide a good overview of the book, and small difficulties in the translation. Aside from these problems, I found the book to be interesting and generally well translated. It is a good summary of data that are difficult to find and of hypotheses about the rise of magma from great depths in the earth and its behavior in the near-surface environment.

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Some Other Books of Interest

Progress and Opportunities in Southern Hemisphere Optical Astronomy. V. M. BLANCO and M. M. PHILLIPS, Eds. Astronomical Society of the Pacific, San Francisco, CA, 1988 (distributor, Brigham Young University Press, Provo, UT). xiv, 427 pp., illus. $32. Astronomical Society of the Pacific Conference Series, vol. 1. From a symposium, La Serena, Chile, Jan. 1988.

In 1988 a symposium was held to celebrate the 25th anniversary of the selection of the site for the Cerro Tololo Inter-American Observatory. In all some 70 astronomers affiliated with institutions in South and North America attended, an effort having been made to invite frequent users of the Cerro Tololo facility. This volume is the proceedings of that symposium, at which contributors were asked not to focus on any preassigned topic but to "emphasize how observations from the southern hemisphere are advancing astronomical knowledge." In part 1 are collected the 18 invited papers delivered at the symposium, beginning with J. A. Graham's "The formation of stars like the sun" and ending with P. S. Osmer's "The space distribution of quasars," the longest papers being O. J. Eggen's "Cepheid variables and associated early type stars," J. E. Hesser's "Globular clusters in the Galaxy and beyond," and a two-part contribution on "Stellar evolution: theory and the real world" by I. Iben, Jr., with Eggen. These papers are preceded by abstracts and followed by brief discussions. Part 2 of the volume consists of summaries of 22 poster presentations from the symposium. In closing remarks Osmer notes some of the advances in astronomy that have occurred since the Inter-American Observatory was first conceived and identifies the strengthening of U.S. astronomy, most immediately through the construction of 8-meter telescopes in Chile and Hawaii, as a challenge for the next 25 years.—**K.L.**

Reviews in Modern Astronomy. Vol. 1, Cosmic Chemistry. GERHARD KLARE, Ed. Springer-Verlag, New York, 1988. viii, 251 pp., illus. $33.10. Based on a meeting, Cologne, F.R.G., May 1988.

This volume inaugurates an annual series sponsored by the Astronomische Gesellschaft and intended to "bring the scientific events of the meetings of the society to the attention of the worldwide astronomical community." The series will include the society's Karl Schwarzschild lectures and sets of papers on particular topics, as in this collection on cosmic chemistry. The volume contains 12 papers, all in English. It opens with a report on the composition of Halley's comet (Geiss), and subsequent papers treat chemical abundances in meteorites (Palme), stars (Gehren), and galaxies (Edmunds). There are also accounts of the chemistry of circumstellar shells (Omont; Goeres *et al.*), interstellar molecular formation (Herbst), nucleosynthesis (Arnould on the theory and Kratz on rapid neutron capture), the solar wind plasma (Schwenn), molecular clouds in the Milky Way as studied in the Columbia-Chile CO survey and with the German KOSMA 3-meter telescope (Ungerechts), and the state of interstellar molecular spectroscopy (Stutzki).—**K.L.**