dently and almost simultaneously by workers at the University of Chicago led by the late John Jamieson. Also in the preface we are told that one reason for writing this book was that "no extensive synopsis of the DAC and its achievements has previously been published." However, an early review by Stanley Block and Gasper Piermarini, "The diamond cell stimulates high-pressure research," appeared in the September 1976 issue of PHYSICS TODAY (page 44), which is incorrectly referenced by Ferraro on page 37. More recently, A. Jayaraman published two review articles, one "Diamond anvil cell and high-pressure physical applications" (*Reviews of Modern Physics* **55**, 65, 1983—which is incorrectly referenced by Ferraro on page 38) and another, "The diamond-anvil high-pressure cell," that appeared in the April 1984 issue of *Scientific American* (page 54). In addition, in their book *Comparative Crystal Chemistry*, Robert Hazen and Larry Finger devote two chapters to a very thorough review of the development, designs and applications of the diamond-anvil cell.

Another misleading statement is found in the chapter dealing with the elements. Here Ferraro states about nitrogen (page 65), "A fourth phase (epsilon) has been reported to exist at a pressure >49 kbar (Kobashi *et al.*, [*Phys Rev B* **26**, 5996] 1982)." The work by Koji Kobashi and his colleagues is a theoretical calculation predicting a new phase of nitrogen. The correct citation for the discovery of a new phase of nitrogen above 49 kbar is to a 1979 paper by Richard LeSar and his collaborators at Los Alamos; this reference is found in the first sentence of the Kobashi article. The work of LeSar's group is not referenced by Ferraro in this chapter.

In the central chapters Ferraro presents an abundance of data from the literature on the pressure dependence of vibrational frequencies in a variety of inorganic materials. He gives data on space group symmetries, active vibrational modes and known phase transformations, and, where possible, makes comparisons. At times, however, the selection of materials appears to be somewhat arbitrary. For example, Ferraro includes a section on nitrogen but makes no mention of oxygen, even though oxygen undergoes a number of dramatic color changes around 100 kbar (M. Nicol, K. R. Hirsch, W. B. Holtzapfel, *Chemical Physics Letters* **68**, 49, 1979). Even more curious is that there are lengthy discussions dealing with the possible metallic phases of hydrogen and xenon, but nothing is said about the well-studied metallic phase of iodine (K. Takemura *et al.*, *Physical Review Letters* **45**, 1881, 1980).

There is a good section on coordination compounds. Here Ferraro reviews a set of rules developed by R. G. Perason and Richard F. Bader using group theory and perturbation theory to examine the vibrational distortion of ground-state molecular configurations. From these analyses one can forecast stable molecular structures, rigidities and modes of reaction. Ferraro applies these selection rules to a variety of four-, five-, six-, seven- and eight-coordinate complexes. In this same section he provides good reviews of the effects of pressure on spin states, on oxidation–reduction reactions, on ligand isomerism and on internal vibrational transitions.

The book has many figures, most of which come from the literature. The need for some of these is unclear; for example, Chapter 7 presents several pages of spectra from a variety of materials—bearing fluid, automobile paint, a taillight lens, water-based enamel paint, polyester fiber, acrylic rug yarn, hair from women and men, and the explosive material HMX. Presumably these are included to establish the obvious point that spectra obtained from different materials are themselves different; no discussion of the various differences is given in the text.

The book does include useful and interesting summaries of a variety of areas in which pressure is used as a tool, such as geoscience, investigations of one-dimensional conductors, studies of prospective superconducting materials and forensic science. It also serves as a good source of references, which are grouped into their respective fields. Unfortunately, some of the citations contain misprints.

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new books

Solid-State Physics and Electronics

Advances in Circuits and Systems. Proc. Int. Conf., Beijing, China, June 1985. Institute of Electronics, Academia Sinica, Beijing, eds. 549 pp. Science Press, Beijing, and World Scientific, Singapore (US dist. Taylor and Francis, Philadelphia), 1985. $77.00

Electronic Structure, Dynamics, and Quantum Structural Properties of Condensed Matter. *NATO ASI Series.* Proc. NATO Adv. Study Inst., Antwerp, July 1984. J. T. Devreese, P. Van Camp, eds. 591 pp. Plenum, New York, 1985. $89.50

Nonequilibrium Phonon Dynamics. *NATO ASI Series.* Proc. Nato Adv. Study Inst., Les Arcs, September 1984. W. E. Bron, ed. 679 pp. Plenum, New York, 1985. $97.50

Noise and the Solid State. D. A. Bell. 175 pp. Wiley, New York, 1985. $32.95. *Monograph* □