mechanisms. Therefore the periodicity of permutations is not a good criterion for the construction of Q and the Dieter group. In my opinion, a good criterion—if it exists—has not yet been discovered except when the Dieter group is the Pechukas or the Longuet-Higgins group.

Hyperchirality, a controversial subject, is discussed at length in the book. It is well known that, in a family of permutational isomers, two enantiomers have point groups with identical permutational expressions. It is possible, however, for two isomers that are not enantiomers to have this property. Ten years ago Dugundji, Marquarding, and Ugi proposed that such isomers be called hyperchiral isomers. Their attempt to predict observable consequences of these purely algebraic properties has been refuted; the discussion of the subject in the book dwells upon the formal aspects of the problem, but it does not provide evidence in favor of characteristic properties of hyperchiral isomers or against the idea that hyperchirality is merely a mathematical artifact.

The book also contains various detailed illustrations as well as a clearly written appendix that outlines mathematical material.

Does the book really open perspectives in theoretical stereochemistry? It adopts an unconventional—and sometimes provocative—point of view, but the methods and concepts that are developed in it are often rather similar to previously developed ones.

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Scattering Phenomena

Electron-Molecule Collisions. ISAO SHIMAMURA and KAZUO TAKAYANAGI, Eds. Plenum, New York, 1984. xiv, 570 pp., illus. $85. Physics of Atoms and Molecules.

For the formal theorist, electron-molecule collisions offer the basic unrestricted many-body problem with the added spice of a multicentered, nonspherical target having several degrees of freedom. In a chapter with a nice historical flavor, Takayanagi provides a superb introduction to the basic theory. He provides a context for the other chapters by bringing into a coherent whole all of the pieces familiar to the graduate reader (such as potential scattering theory, expansions of nonspherical potentials, the concept of cross sections, simple experimental systems, and Born's approximation). The same ability to bring life to a subject that Takayanagi displays is seen throughout the book. Notable in this respect are Shimamura's elegant exposition of the otherwise dry and daunting theory of angular momentum and Herzenberg's explication of resonance effects in vibrational excitation by the use of familiar potential well scattering theory.

Drop a single electron into the electronic mixture that is a molecule and it can catalyze fascinating reactions, often tickling the molecule's atoms into jumping from one bound, attractive well into another or onto a curve in which the atoms inevitably slide apart. The study of the weak and temporary interactions that bind the electron to the neutral molecule long enough for such reactions to take place efficiently is the major challenge of the field and the common thread in the book. The foundation in scattering, angular momentum, and resonance theory and in experimental technique that has been laid in earlier chapters particularly complements a chapter by Hall and Read, who discuss the bewildering variety of negative ion states from a spectroscopic point of view. Compton and Bardsley take us on a tour of the particle zoo that results when the molecule is tickled into self-destruction: electrons and positive, negative, and neutral atoms (or even other molecules), which are often unpredictably excited. Both of these chapters provide not only a concise survey of what is known, but also a generalist's view of how it became known and might be understood.

Knowledge of a phenomenon includes knowledge of the rate at which things happen (that is, the probability or cross-section for a process) as well as knowledge of the states and products that are produced. The novice scientist, and perhaps also the expert, is well served by two chapters laying out the major experimental and computational techniques in some detail. Trajmar and Register provide a very readable (to a theorist like myself) description of all the major experimental techniques and the physics involved in the extraction of data therefrom. For the computational physicist, electron-molecule collisions offer one of the best opportunities to humble even the most advanced modern computers. Buckley, Burke, and Noble show how the scattering theory is molded, and approximated when necessary or useful, into powerful computational methods applicable to all of the processes discussed elsewhere. Like the others, these chapters provide not only the accessibility of a textbook but also the exhaustive bibliography of a good review article. I know of no better answer to the "What's your field like?" question of the potential graduate research student than to hand him or her this book.

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Reprints of Books Previously Reviewed

The Invention of the Modern Hospital, Boston, 1870–1930. Morris J. Vogel. University of Chicago Press, Chicago, 1985. Paper, $6.95. *Reviewed* **214**, 1338 (1981).

Powers of Ten. A Book about the Relative Size of Things in the Universe and the Effect of Adding Another Zero. Philip and Phylis Morrison and the Office of Charles and Ray Eames. Scientific American Library, New York, 1985 (distributor, Freeman, New York). Paper, $19.95. *Reviewed* **221**, 1281 (1983).

Books Received

Effective Lagrangians in Quantum Electrodynamics. Walter Dittrich and Martin Reuter. Springer-Verlag, New York, 1985. vi, 244 pp. Paper, $14.60. Lecture Notes in Physics, vol. 220.

Electron Impact Ionization. T. D. Märk and G. H. Dunn, Eds. Springer-Verlag, New York, 1985. xii, 384 pp., illus. $58.50.

Elements of Petroleum Geology. Richard C. Selley. Freeman, New York, 1985. xiv, 449 pp., illus., + plates. $44.95.

Elliptic Problem Solvers II. Garrett Birkhoff and Arthur Schoenstadt, Eds. Academic Press, Orlando, Fla., 1984. xiv, 573 pp., illus. $39. From a conference, Monterey, Calif., Jan. 1983.

English-Russian Dictionary of Computer Science. V. K. Zejdenberg, A. N. Zimarev, and A. M. Stepanov. E. K. Maslovsky, Ed. 3rd ed. "Russkij Yazyk", Moscow, and Pergamon, New York, 1984. 504 pp. $50.

Entrapment in Escalating Conflicts. A Social Psychological Analysis. Joel Brockner and Jeffrey Z. Rubin. Springer-Verlag, New York, 1985. xiv, 276 pp. $37. Springer Series in Social Psychology.

Environmental Geochemistry and Health. Report to the Royal Society's British National Committee for Problems of the Environment, S. H. U. Bowie and I. Thornton, Eds. Reidel, Boston, 1985 (distributor, Kluwer, Hingham, Mass.). xii, 140 pp. $27.50.

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Enzymes in Organic Synthesis. Pitman, London, 1985 (U.S. distributor, CIBA Pharmaceutical Co., Newark, N.J.). viii, 248 pp., illus. $35. Ciba Foundation Symposium 111. From a symposium, London, May 1984.

Voltage and Patch Clamping with Microelectrodes. Thomas G. Smith, Jr., *et al.*, Eds. American Physiological Society, Bethesda, Md., 1985 (distributor, Williams and Wilkins, Baltimore). viii, 260 pp., illus. Paper, $39.50. From a workshop, Hayman Island, Australia, Sept. 1983.

Water, Earth, and Fire. Land Use and Environmental Planning in the New Jersey Pine Barrens. Jonathan Berger and John W. Sinton. Johns Hopkins University Press, Baltimore, 1985. xx, 228 pp., illus. $25.

Water Quality Management. A Review of the Development and Application of Mathematical Models. M. B. Beck. Springer-Verlag, New York, 1985. viii, 107 pp., illus. Paper, $10.50. Lecture Notes in Engineering, vol. 11.

Western Forests. Stephen Whitney. Knopf, New York, 1985. 672 pp., illus. Paper, $14.95. The Audubon Society Nature Guides.

Wetlands. William A. Niering. Knopf, New York, 1985. 640 pp., illus. Paper, $14.95. The Audubon Society Nature Guides.