MARSH, R. E. & SCHOMAKER, V. (1980). *Acta Cryst.* B**36**, 219–220.
MARSH, R. E. & SCHOMAKER, V. (1981). *Inorg. Chem.* **20**, 299–303.
MASSA, W. (1977). *Z. Anorg. Allg. Chem.* **436**, 29–38.
SCHOMAKER, V. & MARSH, R. E. (1979*a*). *Acta Cryst.* B**35**, 1094–1099.
SCHOMAKER, V. & MARSH, R. E. (1979*b*). *Acta Cryst.* B**35**, 1933–1934.
VILMINOT, S., GRANIER, W., AL ORAIBI, Z. & COT, L. (1978). *Acta Cryst.* B**34**, 3308–3309.
YANAGISAWA, Y., KANAMARU, F. & KUME, S. (1979). *Acta Cryst.* B**35**, 137–139.

Book Review

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

Acta Cryst. (1983). B**39**, 287–288

Extended linear chain compounds. Vols. 1 and 2. Edited by JOEL S. MILLER. Pp. XVI + 481 and XVI + 517. New York and London: Plenum, 1982. Prices US$52.50 and 55.00 respectively.

Contents: Vol. 1: (1) The Solution Properties of One-Dimensional Metal Chain Complexes (Alan L. Balch); (2) Mass Spectrometry of Low-Dimensional Materials (F. E. Saalfeld, J. J. DeCorpo, and J. R. Wyatt); (3) The Synthesis, Structure, Electrical Conduction Properties, and Theory of Divalent, Tetravalent, and One-Dimensional Partially Oxidized Tetracyanoplatinate Complexes (Jack M. Williams, Arthur J. Schultz, Allan E. Underhill, and Kim Carneiro); (4) Linear Chain Bis(oxalato)platinate Salts (Allan E. Underhill, David M. Watkins, Jack M. Williams, and Kim Carneiro); (5) A Comprehensive Review of Linear Chain Iridium Complexes (Arthur H. Reis Jr); (6) Highly Conductive Halogenated Low-Dimensional Materials (Tobin J. Marks and Davida W. Kalina); (7) Structural Aspects of Iodine-Containing Low-Dimensional Materials (Phillip Coppens); (8) Linear Chain Platinum Haloamines (Heimo J. Keller); (9) Optical Properties of Linear Chain Haloamine Platinum Complexes (Dan S. Martin Jr); Vol. 2: (1) An Added Dimension – Two-Dimensional Analogs of One-Dimensional Materials (Martin B. Dines and Matt Marrocco); (2) The Electronic Structure of Semiconducting Polymers (C. B. Duke); (3) Band Structures of One-Dimensional Inorganic, Organic, and Polymeric Conductors (Myung-Hwan Whangbo); (4) Quasi-One-Dimensional Conductors: The Peierls Instability, Pressure and Fluctuation Effects (D. Jerome and H. J. Schulz); (5) Optical Properties of One-Dimensional Systems (D. B. Tanner); (6) Superstructures and Phase Transitions in One-Dimensional Inorganic and Organic Materials (Hayao Kobayashi and Akiko Kobayashi); (7) X-ray, Neutron, and Electron Scattering Studies of One-Dimensional Inorganic and Organic Conductors (Seiichi Kagoshima); (8) Photoconductive Properties of Organic Assemblies and a Comparison with Dark Conductors (Jerome H. Perlstein and Paul M. Borsenberger); (9) Cation-Radical Salts of Tetrathiotetracene and Tetraselenotetracene: Synthetic Aspects and Physical Properties (I. F. Schegolev and E. B. Yagubskii); (10) Structural Aspects of One-Dimensional Conductors Based on Tetrathiafulvalene and Tetrathiatetracene (Rimma P. Shibaeva); (11) Metal Complexes of Tetrathiafulvalene and Related Compounds (Allen R. Seidle).

'Low-dimensional' systems in the sense of chain or layer compounds with electrically or magnetically strongly interacting atoms or molecules within the chains or layers are attracting growing interdisciplinary interest in the scientific community of chemists, solid-state physicists and crystallographers. This conclusion can at least be drawn from the number of monographs related to this subject. The present series endeavours to cover '... all aspects of the diverse linear chain substances...' (quotation from the editor's preface to the first volume) within three volumes by a number of review articles. As long as the whole series has not appeared, it cannot be judged to what extent that ambitious objective will be attained.

The first two volumes present twenty papers. Each contribution covers its subject independently and can therefore be studied at the reader's choice. From the formal point of view most articles offer an introduction and a conclusion. All papers have a list of the notations used and of the references at the end. Although related topics are put together within each of the single volumes (*e.g.* five review articles on linear-chain platinum or iridium compounds in Vol. 1), there is no real specialization. Each volume contains a subject index.

The substances in question belong predominantly to the two classical families of linear-chain conductors, *i.e.* columnar platinum and iridium complexes of the Krogmann-salt type and stacked organic charge-transfer complexes or cation-radical salts based on tetrathiafulvalene (TTF, and analogues) and tetrathialenes, especially tetrathiatetracene (TTT). Semiconducting polymers, however, and miscellaneous organometal complexes are also dealt with, as well as the role of halogens as doping agents and as polyhalide counterions.

The spectrum of contributions to these two volumes certainly covers the most interesting physical properties very well (*i.e.* electric, magnetic, optical, phase transitions) – and the theoretical models for their explanation. In view of the intimate connection between the physical properties and the atomic or molecular arrangement in these substances an impressive amount of detailed structural and crystal-chemical information and arguments is woven into the

majority of the contributions. Some articles are particularly dedicated to structural aspects and crystal structures (No. 7 in Vol. 1 and No. 10 in Vol. 2). There are two very interesting papers in Vol. 2 (Nos. 6 and 7) on the results of X-ray and neutron diffraction studies of low-temperature phase transitions (superstructures, charge-density waves) showing impressively the complexity of phenomena encountered. Some important chemical and physicochemical aspects, however (*e.g.* syntheses, chemical reactivity, thermodynamic stability, kinetics, crystal growth *etc.*), are not equally represented. Therefore the reviewer appreciated the physicochemical touch mediated by the first two papers in Vol. 1.

The standard of all contributions is high throughout. The presentation of theoretical concepts seems to be comprehensible also for chemists and crystallographers, provided that they are familiar with the pertinent basic ideas of solid-state physics.

Summarizing, it seems to the reviewer that the soaring expectations in extraordinary phenomena (for instance high-temperature superconductivity) have cleared the way for a more realistic estimate of the potential of these substances. Nevertheless 'one-dimensional' materials represent a tantalizing domain of research. Many phenomena are not yet fully understood, and there is an open field for chemists to design compounds with exciting structures and properties.

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