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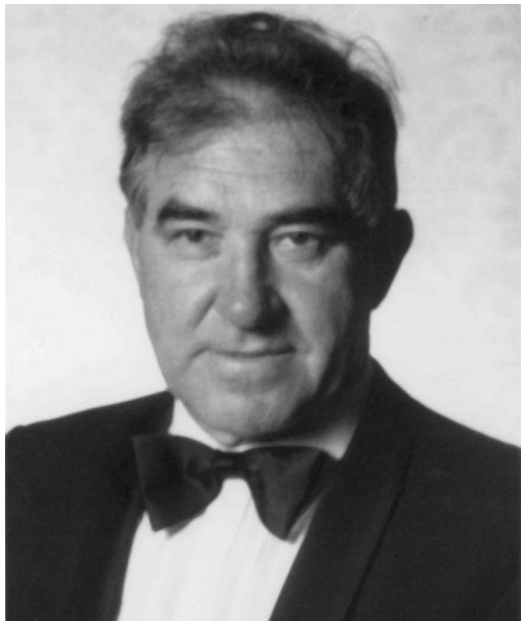
Erwin Parthé (1928–2006)



Erwin Parthé, Professeur Honoraire at the University of Geneva and Honorarprofessor für Strukturchemie at the University of Vienna, died peacefully at his Geneva home on 28 August 2006 after 9 years of very bravely battling intestinal cancer. Parthé was born 29 March 1928 in Vienna, Austria, as the only child of a middle class family likely of Huguenot origin. The Huguenots were French Protestants expelled in the 17th century by Louis XIV, many of whom settled in Germany and Austria. In the last month of World War II, Parthé's whole class was drafted to defend Vienna against the advancing Soviet Army. Unlike some of his classmates he survived the conflict and, together with the remainder of his unit, made his way west where they were taken prisoner by US forces who treated them well. Others, less fortunate, were captured and sent to Soviet labor camps.

He studied chemistry at the University of Vienna on his return, under the difficult circumstances of postwar life. The experimental part of his Ph.D. thesis in physical chemistry (1952–1954) was carried out under better conditions at the Metallwerke Plansee in Reutte, Tyrol. He was introduced there not only to powder metallurgical techniques for handling high melting materials; living in Tyrol also awakened an intense and lifelong love of the mountains. His thesis work, under the guidance of Hans Nowotny, was unusually productive and resulted in a series of eight publications on the synthesis, structure and properties of transition metal carbides and silicides.

He left Vienna for the Massachusetts Institute of Technology, Cambridge, MA, where he spent the next 5 years. Initially, he was a postdoc with John T. Norton and then became a lecturer in the Metallurgy Department where he deepened his understanding of alloys and intermetallics as he was making major contributions to that literature. He was a frequent visitor to Martin J. Buerger's laboratory where his knowledge of crystallography was greatly strengthened. He and Robert E. Newnham designed colored models of inorganic compounds (Parthé, the intermetallics; Bob, the oxides and minerals) from plastic spheres and brass rods, produced on Charles Supper's ball drilling machine developed in collaboration with Martin Buerger and sold commercially. Parthé's models

in the Metaloglass company catalogue were designated by the initial 'P', while others starting with 'N' were based on data calculated by Bob Newnham.

Erwin Parthé was among a small group of early users of neutron diffraction for crystal structure study; he made good use of the MIT nuclear reactor facilities established by Cliff Shull. One of us had the pleasure of meeting him for the first time at the Fourth IUCr Congress in Montréal, later at many American Crystallographic Association meetings. At that time, the ACA was relatively small but steadily growing. Parthé participated fully and regularly in the vigorous discussions at these twice-yearly meetings.

The deployment of Sputnik in 1957 led the Defense Advanced Research Projects Agency to fund several interdisciplinary materials research laboratories (MRLs), one of which was established at the University of Pennsylvania. Parthé's work had attracted the attention of Robert Maddin, chair of the new MRL at Penn, who invited him, along with John Hobstetter, to join the new laboratory as one of its first four faculty appointments. His 1960–1970 decade at Penn, first as an associate professor and then as a full professor, was another very productive period during which he and his collaborators determined the structures of numerous intermetallic and related materials, many of which were synthesized for the first time. His results led him to think deeply about structural space filling and systemization and to his first book *Crystal Chemistry of Tetrahedral Structures*. Its broad synthesis of the principles on which many important, mainly semiconducting, materials are based was immediately and quite widely accepted. The book was updated, rewritten and translated into French in a 1975 edition as *Cristallochimie des Structures Tétraédriques*, the version on one of the present writers' shelves.

In 1970, he accepted the invitation to become Professeur Ordinaire at the Université de Genève where he established the very successful Laboratoire Interdisciplinaire de Cristallographie aux Rayons X. Numerous contributions from this laboratory, many published in *Acta Crystallographica*, appeared and several of his students and postdocs went on to establish crystallographic laboratories of their own. An early and widely used contribution was *LAZY PULVERIX*, a self-contained computer program published in *J. Appl. Cryst.* that let the user calculate X-ray and neutron diffraction powder patterns without recourse to crystallographic tables.

One of his 1980 papers offered a carefully designed nomenclature for presenting the most important structural features of a given inorganic crystal. This paper could well have received greater attention. He constantly sought to codify and simplify, as in his 1984 proposal for a standardized presentation of inorganic crystal-structure data, allowing identical or nearly identical structures to be recognized by transforming their atomic coordinates to a standard setting he developed. In 1993 he and his colleagues offered a computer program for this purpose, *STRUCTURE TIDY*, in which the Wyckoff sequence is taken as the basis and which provides a finer classification than the well known Pearson code. Eventually, he critically surveyed the entire crystallographic literature on the structures of intermetallic and related materials up to 1991 (nearly all solid-state compounds with the exception of most oxides and halides) in that way. The results of this monumental task were published under the title *TYPIX Standardized Data and Crystal Chemical Characterization of Inorganic Structure Types* in a four volume series (1596 pages) as part of the Gmelin Handbook (8th edition, 1993/1994). The structural data of some 3200 structure types are accessible here by space group and unit-cell content.

Parthé was a very active and most valuable member of the IUCr Working Group on Phase Transition Nomenclature, coauthoring its first report [Tolédano *et al.* (1998). *Acta Cryst.* A**54**, 1028–1033]. He felt obliged to resign before work on the second report had started when appraised of the state of his health. He also served on the IUCr Commission on Crystallographic Nomenclature's Subcommittee on the Nomenclature of Inorganic Structure Types [Lima-de-Faria *et al.* (1990). *Acta Cryst.* A**46**, 1–11] and on IUPAC's Inorganic Chemistry Division project, the 'Classification, terminology and nomenclature of borophosphates'.

Last, but not least, Parthé was a dedicated and enthusiastic teacher who liked to travel abroad. In combining both characteristics, he lectured in many countries on all five continents, frequently offering short courses on systematic crystal chemistry for graduate

students. His book *Elements of Inorganic Structural Chemistry* (170 pages, second edition 1996) is accompanied by a useful computer program. I. David Brown, reviewing the book, notes that 'the crystal chemist will find much of interest in the book, not least the definition of systematic labeling . . . .The text would undoubtedly be a helpful supplement to a postgraduate course' [*Acta Cryst.* (1977). B**53**, 737].

In nearly a quarter century at Geneva, Erwin Parthé and his collaborators published an average of more than six well cited papers each year. Nominated Professeur Honoraire at the University of Geneva on his retirement in the fall of 1993 he continued his research, dividing his time between the Department in Geneva and the Institute for Mineralogy and Crystallography at the University Geozentrum in Vienna until the spring of 2006. He received a Dr. h.c. degree from the Université de Savoie, France, in 1980. The mineral parthéite $Ca_2Al_4Si_4O_{15}(OH)_2{\cdot}4H_2O$ is named after him. In 1991 he was honored by the Hume–Rothery Award of the American Minerals, Metals & Materials Society. The photograph of Parthé above was taken on that occasion; its formality is somewhat atypical, since he liked the outdoors and preferred informality. He was a devoted pianist and frequently played chamber music with friends. He had at least one postdoctoral worker with whom there were no publications but who, nevertheless, was esteemed for his excellence as a pianist. This is all the more noteworthy since Parthé worked hard and expected similar dedication from his coworkers.

Erwin Parthé maintained a remarkably full life to the end, visiting China last year while lecturing at several universities and climbing in the Yellow Mountains of Anhui province. He skied in the Alps in the spring and enjoyed the Viennese Opera and concert season. He is survived by his dear wife Katrin (Katharina Sutter Parthé), his daughters Claudia and Sylvia from previous marriages, and two grandchildren. He will be deeply missed by all his friends and colleagues.

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