

CHEMICAL HERITAGE FOUNDATION

L. LOUIS HEGEDUS

Transcript of an Interview
Conducted by

Hilary L. Domush and Jacqueline Boytim

at

Chemical Heritage Foundation
Philadelphia, Pennsylvania

on

5 and 6 December 2013

(With Subsequent Corrections and Additions)

CHEMICAL HERITAGE FOUNDATION
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Chemical Heritage Foundation
Center for Oral History
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L. LOUIS HEGEDUS

1941 Born in Budapest, Hungary, on 13 April

Education

1964 Dipl.-Ing., Chemical Engineering, Technical University of Budapest
1972 Ph.D., Chemical Engineering, University of California, Berkeley

Professional Experience

1964-1965 Research Institute for the Organic Chemical Industry, Budapest, Hungary
Research Engineer, petrochemical process research

1965-1968 Daimler-Benz AG, West Germany
Group Leader, Materials Testing

1972-1974 General Motors Research Laboratories, Warren, Michigan
Associate Senior Research Engineer
1974-1975 Senior Research Engineer and Group Leader
1975-1980 Departmental Research Engineer, Catalysis Research

1980-1984 W.R. Grace & Company, Columbia, Maryland
Director, Inorganic Research
1984-1995 Vice President, Inorganic Research
1995-1996 Vice President, Corporate Technical Group

1996-2001 Elf Atochem (now Arkema, Inc.), King of Prussia, Pennsylvania
Vice President, Research and Development
2001-2006 Senior Vice President, Research and Development

2006 Louis Hegedus, LLC
President

2010-2013 RTI International, Research Triangle Park, North Carolina
Distinguished Visiting Fellow

Honors

1978 Chemical Engineer of the Year, American Institute of

Chemical Engineers, Detroit Section

- 1980 Professional Progress Award, American Institute of Chemical Engineers
- 1981 Chemtech Leo Friend Award, American Chemical Society
- 1988 R. H. Wilhelm Award, American Institute of Chemical Engineers
- 1989 Elected member, National Academy of Engineering
- 1991 Honorary Doctor of Engineering, Technical University of Budapest, Budapest, Hungary
- 1994 Honorary Member, Romanian Catalysis Society
- 1999 R&D 100 Award for novel method for asbestos abatement, shared with team members at W.R. Grace, *R&D Magazine*
- 1999 Honorary Member, Hungarian National Academy of Engineering
- 2000 Catalysis and Reaction Engineering Practice Award, American Institute of Chemical Engineers
- 2005 Award of Merit in Appreciation of Contributions Rendered for the Continuing Advancement of Chemical Engineering, Chemical Marketing Economics Group, American Chemical Society, New York
- 2006 Management Division Award, American Institute of Chemical Engineers
- 2008 Selected to be one of "One Hundred Chemical Engineers of the Modern Era," American Institute of Chemical Engineers
- 2014 Elected Corresponding Member, Academy of Athens (Greece)

ABSTRACT

L. Louis Hegedus grew up in Szolnok, Hungary, one of two sons. His father and brother were both chemical engineers, and his mother was a teacher. He received what he considers to be a broad and excellent education at the Versegly Ferenc Gimnázium and passed the very long and difficult entrance exam to the chemical engineering program of the Technical University of Budapest. After graduation he was recruited to work at the Research Institute for the Organic Chemical Industry, where he worked on the development of a polyester process.

After one year at the institute, Hegedus obtained a visa to tour Europe and ended up with a job as a chemical engineer at Daimler-Benz in Mannheim, Germany. Eventually his fiancée was able to join him, and they married. Having gained a proficiency in English, Hegedus was accepted into the chemical engineering Ph.D. program at University of California, Berkeley; he wrote his dissertation on chemical reaction engineering with Eugene Petersen. He published many papers, seven from his dissertation, and wrote the first book on catalyst poisoning. Early computers required him to learn Fortran at Berkeley; he laughs to think of the meager computing power of those computers now.

The Clean Air Act of 1970 had automobile manufacturers scrambling to design catalytic converters for all their cars, an enormous effort that Hegedus calls one of the largest privately-funded non-government research effort up to that time in history. Hegedus's work for General Motors during those years eventually led to his nomination to the National Academy of Engineering. He says General Motors hired a number of new graduates from top universities to work on the development of the catalytic converter with the thought that they did not know that it was impossible. Hegedus also thinks that the catalytic converter was one of the greatest technical successes of chemical technology ever.

He next accepted a job as a director of central research at W.R. Grace and Company. Although he had moved gradually into management as a research vice president, he continued to stay close to technical research, to publish, and to attend conferences, staying part of the international scientific community. Legal and business problems mounted at Grace, however, and Hegedus was recruited to be research vice president for North America at Elf Atochem, the chemical branch of the French national oil company Elf Aquitaine. The company merged with Total and then spun off Arkema, a worldwide chemical company. Hegedus has retired from Arkema as senior vice president for research and development. In retirement, he founded his own consulting firm, as well as having been a Distinguished Visiting Fellow at the Research Triangle Institute.

Hegedus discusses the balance between process and product research in chemical engineering, and the place of materials science in future work. From his perspective, the next exciting technology, already being worked on, is advanced batteries, which will lead to electric cars for all. Throughout his interview Hegedus evinces his love of and excitement about the challenges posed to chemical engineering. He is an amateur pilot, an area of his life that permits no risk, and he urges everyone to test drive the Tesla S. He has many publications, patents, and awards to his credit.

INTERVIEWERS

Hilary L. Domush was a Program Associate in the Center for Oral History at CHF from 2007-2015. Previously, she earned a BS in chemistry from Bates College in Lewiston, Maine in 2003. She then completed an MS in chemistry and an MA in history of science both from the University of Wisconsin-Madison. Her graduate work in the history of science focused on early nineteenth-century chemistry in the city of Edinburgh, while her work in the chemistry was in a total synthesis laboratory. At CHF, she worked on projects such as the Pew Biomedical Scholars, Women in Chemistry, Atmospheric Science, and Catalysis.

Jacqueline Boytim is a program associate in the Chemical Heritage Foundation's Institute for Research. Before joining the Institute, Boytim worked in visitor services in CHF's museum. She earned her bachelor's degree in Science, Technology, and Society at the University of Pennsylvania.

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<p>Born in Budapest; grew up in Szolnok, Hungary, one of two children. Father and brother both chemical engineers too; mother teacher. Memories of World War II. Parents' expectations; Hungarian high school system. Verseyhy Ferenc Gimnázium; excellent education. Early interests in geography and biology. Life in Communist Hungary. Soccer.</p>	
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<p>Technical University of Budapest; long, hard entrance exam. Six-day weeks; rigorous; attendance required; much memorization. Labs. Thesis on electrochemistry under J. Petro led to interest in electrochemistry and catalysis. Uprising in 1956; memories of Russian tanks in Szolnok. After graduation most people assigned to jobs, but Hegedus recruited to Research Institute for the Organic Chemical Industry. Used early gas chromatograph in the development of a polyester process; building machine; hours of work; living in Budapest. Motorcycle trip to North Sea with friends.</p>	
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<p>Applied for visas to the West with friends; spent month touring free Europe. Obtained job at Daimler-Benz in Mannheim, [then West] Germany. Job as group leader in materials testing ; life in Mannheim; Béla Barényi. Daimler huge operation. Fiancée left Hungary; they married. Wanted to attend top university to learn English; chose University of California, Berkeley.</p>	
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<p>Aided by Gabor Somorjai, got into Berkeley. Amazed at brilliant faculty and excellent students. Missed fall quarter; got job at Chevron Corporation; invented and published an analytical procedure. Wife became draftsman for Bechtel Corporation. Dissertation on chemical reaction engineering, with Eugene Petersen. Learned Fortran. Published many papers. Charles Simonyi and early computers.</p>	
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<p>Auto pollution and emissions control becoming hot topics. Clean Air Act. Took job with General Motors Research Laboratories (GM). Designing catalysts for all cars – millions of chemical reactors that had to last one hundred thousand miles. Almost unlimited support; possibly largest privately-funded non-government research effort. Large number scientists and engineers from various fields were involved. GM hired a number of fresh graduates from top universities to work on the catalytic converter. Feels his GM work eventually led to nomination for National Academy of Engineering (NAE). Friendly competition between various departments within the company. Wrote first book on catalyst poisoning. Other collaborators. Women in field. Antitrust constraints</p>	

	meant different auto manufacturers had different designs. Details of converters. Entire field of reaction engineering affected by catalytic converters and vice versa. Synthesis of catalytic converters and computers led to unimaginable progress in achieving low emissions, high fuel economy, and high power output at the same time. Loves electric cars. Catalytic converter one the greatest technical successes of chemical technology ever.	
Moving On	Catalytic converter work done; recruited to W.R. Grace's central research department. Discusses two daughters and their careers. With Grace went back to the chemical industry. Still publishing but increasingly managing. Many different kinds of technical challenges and problems at Grace. Offices and plants worldwide; all very interesting. Necessary to continue to be part of scientific community. Research into asbestos. Award for study showing that asbestos can be chemically converted to a harmless material. Balancing research work with management. Peter Boer's style. Still maintains extensive network. Council for Chemical Research (CCR) and American Institute of Chemical Engineers (AIChE).	59
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