

THE BECKMAN CENTER FOR THE HISTORY OF CHEMISTRY

RAYMOND F. BOYER

Transcript of an Interview
Conducted by

James J. Bohning

at

Michigan Molecular Institute
Midland, Michigan

on

14 January and 19 August 1986

With Subsequent Corrections and Additions

THE BECKMAN CENTER FOR THE HISTORY OF CHEMISTRY

Oral History Program

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James J. Bohning

on 14 January and 19 August 1986

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Dr. Raymond F. Boyer

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RAYMOND F. BOYER

1910 Born in Denver, Colorado on 6 February

Education

Case Institute of Technology
1933 B.S., astronomy
1935 M.S., physics

Professional Experience

The Dow Chemical Company
Physics Laboratory (Physical Research Laboratory)
1935-1945 Physicist
1945 Group Leader
1945-1948 Assistant Director
1948-1952 Director
1949-1952 Secretary, Executive Research Committee*
1952-1969 Director of Plastics Research
1969-1972 Assistant Director, U.S. Area Research and
Development (Polymer Science)
1972-1975 Research Fellow
1975- Research Professor and Affiliate Scientist,
Michigan Molecular Institute

Honors

1955 Honorary D.Sc., Case Institute of Technology
1968 Gold Medal, Society of Plastics Engineers
1970 Borden Award in Organic Coatings and Plastics
Chemistry, American Chemical Society
1972 Swinburne Gold Medal, Plastics Institute of Great
Britain
1978 Member, National Academy of Engineering
1983 Best Papers Award, Midland Section, Sigma Xi
1991 Election to Plastics Hall of Fame, June 20, 1991,
sponsored by the Society of the Plastics
Industry, Washington, D.C.

* This group, consisting of Dr. William R. Veazey, chairman; Dr. Edgar C. Britton, vice chair; and R. F. Boyer, secretary; was responsible for Dow's R&D operations for a three-year period following the death of Willard H. Dow, president, Dow Chemical, in a plane crash in March 1949. This committee ceased to operate when Ray A. Boundy was appointed as the full-time research director for Dow.

ABSTRACT

Raymond Boyer begins the interview with a brief description of his family, childhood, and school days in Ohio, touching on his early interest in electricity. He then tells of his undergraduate and graduate years at Case Institute of Technology, focusing on the influence of the faculty there. In discussing his career at The Dow Chemical Company, Boyer provides accounts of discoveries and innovations, especially involving polystyrene; several leading figures there, including Willard and H. H. Dow; and major organizational changes that occurred during his career. Concluding with a summary of his most recent research at the Michigan Molecular Institute, Boyer includes an interesting anecdote involving a Canadian chemist with the same name.

INTERVIEWER

James J. Bohning, Assistant Director for Oral History at the Beckman Center, holds the B.S., M.S., and Ph.D. degrees in chemistry. He was a member of the chemistry faculty at Wilkes University from 1959 until 1990, where he served as chair of the Chemistry Department for sixteen years, and chair of the Earth and Environmental Sciences Department for three years. He was Chair of the Division of the History of Chemistry of the American Chemical Society in 1987, and has been associated with the development and management of the Center's oral history program since 1985.

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- 1 Family and Childhood
Thinks highly of his school teachers. Benefits from The Book of Knowledge. Works for father after school. Interest in electricity inspired by Edison's influence in Ohio and The Electrical Experimenter magazine.
- 3 Case Institute of Technology
Choice to attend is arbitrary. Begins in electrical engineering but soon switches to physics. Astronomy Professor Nassau very influential--assists to find job and convinces to write bachelor's thesis in astronomy. Master's in physics.
- 7 The Dow Chemical Company
Nassau recruits. Goes through student training course, gaining exposure to many different departments. Begins work in X-ray Crystallography Department; moves to Grebe's group in Physical Research Laboratory (PRL) as expected. Britton's Organic Laboratory. Burned in explosion in carbon disulfide plant. Devises ASTM test for heat distortion of plastics. Develops technique for direct observation of polychlorostyrene single molecules. Travels a great deal during World War II to develop special cables. Becomes director of PRL. Contact with Willard Dow. Member of Executive Research Committee. Direction of Plastics research and development under Branch. Publishes article on dependence of transition temperatures on chemical structure in polymers. First exposure to styrene through light and heat sensitivity. Dissatisfied with new financially based management style. Becomes director of U.S. Area Research and Development in Polymer Science and first Dow Research Fellow.
- 30 Michigan Molecular Institute
Research and writing flourishes. Lectures at Soviet and Polish Academies of Sciences.
- 36 "The Other Raymond Boyer"
Interesting experiences abroad due to existence of Canadian chemist with the same name.
- 39 Controversy over Order in Amorphous Polymers
Conflict with Flory, who maintains that amorphous polymers are free of order. Encourages continued experimental research on multiple transition behavior of atactic polystyrene and liquid-liquid transition and gelation. Despite disagreement, regards Flory as premier polymer scientist.
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