

CHEMICAL HERITAGE FOUNDATION

ELKAN R. BLOUT

Transcripts of Interviews
Conducted by

James J. Bohning and Arnold Thackray

at

Harvard School of Public Health, Harvard Medical School, and Cambridge, Massachusetts

on

30 May 1991, 13 September 2002, and 22 November 2002

(With Subsequent Corrections and Additions)

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ELKAN R. BLOUT

1919 Born in New York, New York on 2 July

Education

1939 B.A., chemistry, Princeton University
1942 Ph.D., chemistry, Columbia University

Professional Experience

1939-1942 Research Assistant, Columbia University
1942-1943 Research Fellow in Chemistry, Harvard University

Polaroid Corporation

1943-1962 Chemist, Research Division
1948-1958 Associate Director of Research
1958-1962 Vice President and General Manager of Research

1950-1962 Research Associate, The Children's Cancer Research Foundation, The Children's Hospital Medical Center, Boston, Massachusetts

Harvard Medical School

1950-1952 Research Associate in Pathology
1956-1960 Research Associate in Pathology
1960-1962 Lecturer in Biophysics
1962-1964 Professor of Biological Chemistry
1964-1990 Edward S. Harkness Professor of Biological Chemistry
1965-1969 Chairman, Department of Biological Chemistry
1990-present Edward S. Harkness Professor of Biological Chemistry, Emeritus

Harvard School of Public Health

1978-1989 Dean for Academic Affairs
1986-1988 Chairman, Department of Environmental Science and Physiology
1987-1990 Director, Division of Biological Sciences

1980-1990 Treasurer, National Academy of Sciences

Honors

- 1942 National Research Council Fellow, Harvard University
- 1954 Fellow, New York Academy of Sciences
- 1955 Fellow, American Academy of Arts and Sciences
- 1958 Fellow, American Association for the Advancement of Science
- 1962 A.M. (honorary), Harvard University
- 1963 Fellow, Optical Society of America
- 1969 Member, National Academy of Sciences
- 1970 Class of 1939 Achievement Award, Princeton University
- 1976 D.Sc. (honorary), Loyola University
- 1976 Foreign Member, USSR Academy of Sciences
- 1979 Member, Institute of Medicine
- 1982 Honor Scroll Award, Massachusetts Institute of Chemists, Division of the
American Institute of Chemists
- 1990 National Medal of Science
- 1990 Elkan R. Blout Professorship in the Biological Sciences, Harvard
University Medical School and School of Public Health
- 1991 Ralph F. Hirschmann Award in Peptide Chemistry, American Chemical
Society

ABSTRACT

Elkan R. Blout begins the interview with a description of his family and childhood. Growing up in Manhattan as an only child, Blout was cared for by his parents, aunts, and uncles. He attended DeWitt Clinton High School, in the Bronx, earning marks that were high enough to skip three grades. Blout was still too young to attend college when he graduated, so he enrolled in the Philips Exeter Academy. The school was tough both scholastically and socially, but he made it through by attending his classes regularly, and playing bridge. After a year at Exeter, Blout attended Princeton University, becoming one of only twelve Jewish students accepted in 1935. As a Jewish student, Blout struggled against discrimination from both the University and the students. He graduated in 1939, and married Joan E. Dreyfus that same year. In 1942, Blout received his Ph.D. in chemistry from Columbia University. He then accepted a fellowship at Harvard University, where he worked with Louis Feiser and R. B. Woodward. After a year, Edwin H. Land offered Blout a position at the Polaroid Company. At Polaroid, he helped develop the instant photographic process and the color translating microscope. At the same time, he received a research grant to study synthetic polypeptides, and established a spectroscopy laboratory at Children's Hospital of Boston. In 1961, Blout left Polaroid for more academic pursuits at Harvard Medical School. During his long, fruitful relationship with Harvard University, Blout has done much to improve both Harvard's Medical School and Harvard's School of Public Health. In 1984, Blout divorced Joan Dreyfus and married Gail Ferris. In 1991, Blout became the senior science advisor for the Food and Drug Administration. Blout concludes the interview by expressing gratitude for the John Philips Award, which he was awarded in 1998.

INTERVIEWERS

James J. Bohning is Professor of Chemistry Emeritus at Wilkes University, where he was a faculty member from 1959 to 1990. He served there as chemistry department chair from 1970 to 1986 and environmental science department chair from 1987 to 1990. He was chair of the American Chemical Society's Division of the History of Chemistry in 1986, received the Division's outstanding paper award in 1989, and presented more than twenty-five papers before the Division at national meetings of the Society. He has been on the advisory committee of the Society's National Historic Chemical Landmarks committee since its inception in 1992. He developed the oral history program of the Chemical Heritage Foundation beginning in 1985, and was the Foundation's Director of Oral History from 1990 to 1995. He currently writes for the American Chemical Society News Service.

Arnold Thackray is President of the Chemical Heritage Foundation. He majored in the physical sciences before turning to the history of science, receiving a Ph.D. from Cambridge University in 1966. He has held appointments at Oxford, Cambridge, Harvard, the Institute for Advanced Study, the Center for Advanced Study in the Behavioral Sciences, and the Hebrew University of Jerusalem. In 1983 he received the Dexter Award from the American Chemical Society for outstanding contributions to the history of chemistry. He served on the faculty of the University of Pennsylvania for more than a quarter of a century. There, he was the founding chairman of the Department of History and Sociology of Science, where he is the Joseph Priestley Professor Emeritus.

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NOTES

1. W. D. Paist, E. R. Blout, F. C. Uhle, and R. C. Elderfield, "Studies on Lactones Related to the Cardiac Aglycones. III. The Properties of β -Substituted $\Delta^{\alpha,\beta}$ -Butenolides and a Suggested Revision of the Structure of the Side Chain of the Digitalis Strophanthus Aglycones," *Journal of Organic Chemistry*, 6 (1941): 273-289.
2. See note 1 above; E. R. Blout and R. C. Elderfield, "Synthesis of β -Substituted $\Delta^{\alpha,\beta}$ -Butenolides from Methyl Ketones," *Journal of Organic Chemistry*, 8 (1943): 29-36; E. R. Blout, J. Fried, and R. C. Elderfield, "The Condensation of Ethyl Oxalate with Ethyl γ -Cyclohexylcrotonate and a Method for Predicting the Products from Such Condensations," *Journal of Organic Chemistry*, 8 (1943): 37-42.
3. R. B. Woodward and E. R. Blout, "The Condensation of Acyloins with Ethyl Acetate," *Journal of the American Chemical Society*, 65 (1943): 562-565.
4. For a complete list of Elkan Blout's publications, see Chemical Heritage Foundation Oral History Research File #0095.
5. E. H. Land, E. R. Blout, D. S. Grey, M. S. Flower, H. Husek, R. C. Jones, C. H. Matz, and D. P. Merrill, "A Color Translating Ultraviolet Microscope," *Science*, 109 (1949): 371-374.

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