

THE BECKMAN CENTER FOR THE HISTORY OF CHEMISTRY

HARLAND G. WOOD

Transcript of an Interview
Conducted by

James J. Bohning

at

Case Western Reserve University

on

19 January 1990

THE BECKMAN CENTER FOR THE HISTORY OF CHEMISTRY

Oral History Program

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HARLAND G. WOOD

1907 Born in Delavan, Minnesota on 2 September

Education

1931 B.A., chemistry, Macalester College
1935 Ph.D., bacterial physiology, Iowa State College

Professional Experience

1935-1936 Fellow, National Research Council, University of Wisconsin
1936-1943 Instructor and Assistant Professor, Iowa State College
1943-1946 Associate Professor of Physiological Chemistry, University of Minnesota
Case Western Reserve University
1946-1965 Professor/Director, Biochemistry Department
1965- Professor of Biochemistry
1967-1969 Dean of Sciences
1970-1978 University Professor
1978- Emeritus University Professor in Biochemistry

Honors

1942 Eli Lilly Award in Bacteriology
1946 Sc.D., Macalester College
1952 Carl Neuberg Award
1954 Glycerine Award
1955 Senior Fulbright Research Scholarship, University of Dunedin (New Zealand)
1962 Commonwealth Fellowship to Max Planck Institute fur Zellchemie (Germany)
1968 Modern Medicine Award for Distinguished Achievement
1969 National Institutes of Health Senior Research Fellowship, University of Georgia
1972 Lynen Lecturer and Medal
1972 Sc.D., Northwestern University
1976 Senior Scholar, Fulbright Hays Program (Australia)
1979 Senior U.S. Scientist, Humboldt Award
1981 Alumni Citation of Distinguished Citizen, Macalester College
1982 Sc.D., University of Cincinnati
1985 Lynen Memorial Lecture, 13th International Congress of Biochemistry
1986 Selman A. Waksman Award in Microbiology, National Academy of Sciences
1987 Rosenstiel Medical Research Award
1988 Michelson-Morley Achievement Award

1989 Wellcome Visiting Professor in the Basic Medical
Sciences Award, St. Louis University
1989 The Distinguished Achievement Citation, Iowa State
University
1989 President's National Medal of Science
1990 William C. Rose Award in Biochemistry and Nutrition

ABSTRACT

Harland G. Wood begins the interview with a brief discussion of his role in the restructuring of Western Reserve University's medical curriculum. He then reflects on his childhood and education, recalling that his former Latin teacher (then, his high school principal) first sparked his interest in chemistry. He chronicles his career in chemistry and molecular biology from his college years at Macalester through his extensive laboratory research at Iowa State College, where he first developed his concept of the fixation of carbon dioxide by bacteria; the University of Minnesota, where he continued this research; various other temporary positions; and finally his current work at Case Western Reserve University. Throughout the interview, in addition to discussing research and the influence of various colleagues and associates, he often focuses on the numerous advancements that have occurred during his lifetime and their impact (both positive and negative) on the way laboratory research is conducted. He concludes with his thoughts on the future of science, stressing the importance of continued enthusiasm and motivation in scientists of all ages.

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 Case Western University Medical School
Reorganization of curriculum on an organ system basis.
Fights to get changes through.
- 3 Early Education
Growing up in rural Minnesota. Athletics stressed by family. Grade school and high school. Hopes to go to medical school. Family background.
- 5 Macalester College
Effects of the Great Depression. Rooming with brother. Marries wife, Millie. Strong influence of biology professor O. T. Walters. Decides to pursue Ph.D. in chemistry because he cannot afford medical school.
- 7 Iowa State College at Ames [now Iowa State University]
Begins work on bacteria metabolism with Chester H. Werkman. Shows C. B. van Niel to be wrong. Virtually runs laboratory on his own. First discovers fixation of carbon dioxide. Begins to work with Alfred O. Nier. Negative influence of Werkman.
- 19 Case Western University
Initial dissatisfaction with administration. Chairman of Biochemistry Department. Enjoys continuing laboratory work.
- 21 University of Wisconsin
Spends one year postdoc working with Edward L. Tatum and William H. Peterson on vitamins and metabolism. Returns to work at Iowa State because jobs difficult to find.
- 22 Iowa State College at Ames
Construction of mass spectrometer and thermal diffusion column. Works with Lester Krampitz and Mert Utter. Mistake prevents being first to show carbon dioxide use by animals. Nier continues to assist greatly.
- 30 University of Minnesota
Measures glycolysis in rats' brains. Becomes acquainted with prominent biochemists.
- 32 Case Western University
Reorganization of Biochemistry Department. New curriculum and administrative procedures. Discussion of current demographics.

- 37 Additional Activities
 Journal of Biological Chemistry (generates controversy
 while on editorial board). General Secretary, then
 President of International Union of Biochemistry.
 President's Scientific Advisory Committee. Sabbatical
 in New Zealand.
- 41 The Future of Molecular Biology
 Impact of high technology. Hope for a chemical
 explanation of depression. Genetic engineering.
 Necessity of motivation.
- 45 Notes
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INTERVIEWER'S NOTE

Professor Harland G. Wood has described much of his personal and scientific life in two autobiographical publications:

1. "My Life and Carbon Dioxide Fixation," in J. F. Woessner, Jr. and F. Huijing, Editors, The Molecular Basis of Biological Transport (New York: Academic Press, Inc., 1972), pp. 1-54.
2. "Then and Now," in Annual Reviews of Biochemistry, 54 (1985): 1-41.

In this interview the focus has been primarily on personal reflections of people and events in his career rather than on the scientific details which he has already clearly defined in these two papers.

NOTES

1. a. H. G. Wood, "My Life and Carbon Dioxide Fixation," in J. F. Woessner, Jr., and F. Huijing, ed., The Molecular Basis of Biological Transport (New York: Academic Press, Inc., 1972), 1-54.
b. H. G. Wood, "Then and Now," Annual Review of Biochemistry, 54 (1985): 1-41.
2. R. E. Buchanan and E. D. Buchanan, Bacteriology for Students in General and Household Science (New York: Macmillan, rev. ed. 1926).
3. O. Kamm, Qualitative Organic Analysis (London: Chapman and Hall, 1923; 2nd. ed. New York: John Wiley & Sons, Inc., 1932).
4. H. G. Wood and C. H. Werkman, "The Utilization of CO₂ by the Propionic Acid Bacteria in the Dissimilation of Glycerol," Journal of Bacteriology, 30 (1935): 332.
5. M. B. Visscher, "A Half-Century in Science and Society," Annual Review of Physiology, 31 (1969): 1-18.
6. E. A. Evans, Jr., "The Metabolism of Pyruvate in Pigeon Liver," The Biochemical Journal, 34 (1940): 829-837.
7. E. A. Evans, Jr. and L. Slotin, "The Utilization of Carbon Dioxide in the Synthesis of alpha-Ketoglutaric Acid," Journal of Biological Chemistry, 136 (1940): 301-302.
8. A. G. Ogston, "Interpretation of Experiments on Metabolic Processes Using Isotopic Tracer Elements," Nature, 162 (1948): 963.
9. H. G. Wood, C. H. Werkman, A. Hemingway, A. O. Nier, and C. G. Stuckwisch, "Reliability of Reactions Used to Locate Assimilated Carbon in Propionic Acid," Journal of the American Chemical Society, 63 (1941): 2140-2142.
10. A. Baird Hastings, Crossing Boundaries: Biological, Disciplinary, Human: A Biochemist Pioneers for Medicine, H. N. Christensen, ed. (Grand Rapids, MI: Four Corners Press, 1989).

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