



## Harold Ray Snyder

May 21, 1910-March 8, 1994

Harold Ray Snyder had a long and distinguished career (1937-1976) in teaching, research, editing, and administration at the University of Illinois. Steeped in the Illinois tradition, he was born at Mt. Carmel, was graduated from the University in 1931, where he did senior research with Professor R. C. Fuson, and completed his Ph.D. at Cornell University in 1935, where he did his thesis research with Professor John R. Johnson, who had previously been on the staff at Illinois. After a year at the Solvay Process Company in Syracuse, N.Y., Dr. Snyder decided to give up industrial work and to seek an academic position. Roger Adams obliged with an offer of a postdoctoral research assistantship for the academic year 1936- 1937, and Harold Snyder joined the teaching staff of the University of Illinois in 1937. In that same year, Charles C. Price arrived, augmenting the "Big Four" of Adams, Marvel, Shiner, and Fuson. It is interesting, but not surprising, because Adams was one of the founders of *Organic Syntheses*, that all six of these University of Illinois staff members edited individual volumes. Harold Snyder's was volume 28. He was also on the Editorial Board of *Organic Reactions* and assumed, or perhaps was delegated, major responsibility for editing the first seven volumes during 1942-1953 while Adams was Editor-in-Chief.

Harold assembled and maintained a group of industrious, dedicated, and loyal research students that consisted first of senior undergraduates, then of a mixture of seniors and graduate students, and finally of graduate students plus an occasional postdoctorate or visiting professor on sabbatical leave. He had a close and continuing relationship with his students. This resulted in part from the hospitality, warmth, and genuine human interest of Harold and his wife, Mary Jane McIntosh Snyder. The major contribution to this relationship came from Harold's style of research direction. Some partial quotations from his former students support this conclusion. "Harold Snyder was a benevolent research supervisor who gave me as much freedom in research as I could use." - Ernest L. Eliel. "Snyder regarded research as a learning experience for his students rather than as a training exercise or a source of papers for himself." - James H. Brewster. "Well do I remember, and after all these twenty-five years recall ever more vividly, how you let

me have free rein to follow my own interests in the laboratory." - Louis A. Carpino (writing to Harold in 1976). "Dr. Snyder was a tremendous teacher who always took an extra step for his thesis students and helped them throughout their careers." - Robert E. Jones.

Many students have mentioned the excellent graduate course in classical organic synthesis that Harold offered, which was also an avenue for the recruitment of some of the best research students. His attitude toward the developing mechanistic theories was that they were "useful when they suggest new experiments, but dangerous when they discourage them" (Brewster). Toward his colleagues - I write here as a one-time junior colleague - he was tolerant, generous, and helpful. He was a purist in language, so one could learn from him about style, logical development of ideas, choice of words, and grammar. He had a dry sense of humor which occasionally was capable of providing a hilarious response. Perhaps unknown to his students, but appreciated by his staff colleagues and friends, was his propensity for engaging in practical jokes, including well-staged and rather elaborate ones.

When Harold was not at his office desk he was likely to be found in the library or in the laboratory across the hall from his office in Noyes Laboratory. There he tried out new reactions on a test-tube scale before he assigned them to students, especially undergraduate research students. He explained to me that it was wise to generate a bit of optimism at the outset of a research problem. He also encouraged his graduate students to try test-tube reactions initially. His early research involved the practical synthesis of amino acids, from which logical developments followed for the synthesis of unnatural amino acids and antagonists of the natural amino acids. It is pleasing to note that his synthetic organic methodology has been applied recently to the point mutation of peptides using biotechnology .

He and his students developed C-alkylation with quaternary ammonium salts and nucleophilic displacements on such salts, including the stereochemistry. His name is immediately associated with important innovations in the use of polyphosphoric acid for inter- and intramolecular condensations, cyclizations, and functional conversions in organic chemistry. He pioneered the use of boron trifluoride as an efficient catalyst in the Fischer indole synthesis and discovered new reactions of anils, including Diels-Alder reactions. He and his students delineated the requirements for disproportionation of tertiary amines. He developed the synthesis and chemistry of arylboronic acids. One of his fundamental ideas was for the incorporation of sufficient boron into organ-specific drugs that they could then be selectively neutron-irradiated at their *in vivo* locus. Chemists/pharmacologists are still trying to meet this challenge. In addition to Harold's many research publications and patents, he coauthored a textbook, *Organic Chemistry* (John Wiley, 1st edition 1942) with R. C. Fuson.

During the Second World War, Harold carried out work for the National Defense Research Committee, the War Production Board Rubber Research Program (with Marvel), and the Committee on Medical Research. Within the latter program, the team of Snyder, Price, and Leonard, together with their graduate students, helped develop the process for production of the antimalarial drug Chloroquine in time for its use in the Pacific. The drug is still in use today, although resistant strains of parasites are a problem in some areas of the world. Just before the war, Harold had been awarded a

John Simon Guggenheim fellowship (1939), which represented an unusually early appreciation of his record in chemical research. However, his trip to Europe, which included a series of lectures in Italy, had to be postponed until 1952. A Professor of Chemistry at Illinois from 1945, Harold served as Associate Head of the Department during 1957-1960 and Associate Dean of the Graduate College during 1960-1975. In the latter role, he also served as Secretary of the Research Board, which was a very responsible position because the Board distributed all internal research grants and graduate fellowships. It is clear that Harold's objectivity and his modest nature contributed to his long and effective tenure in that office. Outside the University, Harold was a consultant to Merck and Company and to Phillips Petroleum Company. He was also an adviser to the Office of Naval Research in the evaluation of ONR research grant applications.

A symposium in Honor of Harold Ray Snyder was held in 1976 which was attended by friends, associates, and former students who gathered to pay tribute. The Symposium also marked his 65th year and his retirement from the University of Illinois. Further, his former students organized the Harold Snyder Endowment Fund, which supports undergraduate students, who have an interest in organic chemistry, to do research with a University of Illinois faculty member. Since 1990, two Snyder Scholars have been supported annually. Additional scholarships are probable with increases in the Endowment Fund.

Harold Snyder was predeceased by his first wife, Mary Jane Snyder, and by his second wife, her sister Bonnie McIntosh Snyder. He is survived by his three children, Dr. Jane Snyder of Columbus, Ohio, Dr. John Snyder of Basking Ridge, New Jersey, and Dr. Mary Ann Nirdlinger of Sylvania, Ohio; four grandchildren and several nieces and nephews; and a sister, Joanne Dorsch of Lake Kiowa, Texas. He will be long remembered by his own family and by the many former students and colleagues who constitute his professional family.

Nelson J. Leonard  
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