Wayland E. Noland, Graduate Student, 1948-51, M.A. 1950, Ph.D. 1952.

I came to Harvard in Sept. 1948, fresh out of undergraduate work at the University of Wisconsin. Things had gone well at Wisconsin (in Madison, my home town) and I got a liberal education leading to a B.A. degree with a chemistry major, and served as a student speaker (.i.e., valedictorian) at the graduating honors convocation at Wisconsin. I was awarded a Pepsi-Cola three-year graduate fellowship as a result of a national competition. This, together with assistance from the Veterans Vocational Rehabilitation Act, a dividend from my army days which had set me up for a Master's degree in chemistry as an educational objective, made it financially possible for me to come to Harvard. I had spent part of the summer of 1948 mapping the bottom of Lake Wingra in my home town, work which combined with a summer of further research (1949) led to a 53-page paper entitled "The Hydrography, Fish, and Turtle Population of Lake Wingra," Trans. Wis. Acad. Sci. Arts Lett., 40(2), 5-58 (1951). This educational activity, while interesting and enjoyable, did not contribute to my preparation for the Harvard qualifying exams, nor did the fact that, with my basic four-year liberal arts chemistry courses, I had not had many of the advanced chemistry courses many of my contemporaries had. This was to become evident as soon as I arrived at Harvard and looked at sample copies of previous qualifying exams. Although studying began in earnest, it was really too late, as the results were soon to show, since only my performance in physical chemistry (B-) was considered passable, and the organic (given by Bartlett) was the worst (D). The name of Fieser was the one I had heard the most about before coming to Harvard, probably because of the fine Fieser textbooks and the strong interest in steroid chemistry at Wisconsin. At any rate, I was to get to know (and appreciate) "Organic Chemistry" even better before the next, and more successful, try at the qualifying exams came around.

I remember the stimulating Advanced Organic Chemistry Laboratory course taught by Dr. Bernhard Witkop, who stimulated my interest in indole chemistry, which has continued to this day. Other courses I remember particularly favorably were Kisty's memorable thermo course, an excellent course in Natural Products by Woodward, that master of both organic synthesis and the English language, a course in steroids by Fieser which I sat in on and enjoyed, and the second semester course in Inorganic Chemistry, taught by Eugene Rochow, a silicone chemist who came from General Electric. Not only was Rochow a great teacher but he had great foresight as to what would become important in the future; he instilled into us the importance of nuclear magnetic resonance, which had recently been discovered by Purcell at Harvard.

In the Advanced Organic Chemistry course during the first semester I met Paul Bartlett, who impressed me with his precise diction and systematic and logical presentation of a great variety of interesting material. He liked challenging essay exams and threatened to take off points (and did) if he couldn't read the writing. This wasn't my problem, because my

writing was laboriously legible, but I couldn't put it out fast enough, so for that reason (or others) I got a B. Bartlett was reputed to have poor eyesight, and he did have thick glasses, but I remember one time he pointed out to me an owl sitting high up in a tree in Harvard Yard that I never did see. Bartlett was on leave during the second semester of the Advanced Organic Chemistry course, and Gilbert Stork took over, and also taught Heterocyclic Compounds, another course which I enjoyed (and which is my "thing" today) and worked like a dog in, particularly on the term paper, which I believe I wrote on emetine and related alkaloids.

When it came to a choice of research adviser, I narrowed it down to Bartlett and Stork, and there I chose the already proven track record. When I went in to Bartlett to tell him of my choice, I wasn't very sophisticated and so I told him I would take whatever problem he wanted to give me. That was probably a mistake as I walked out with the styrene diiodide problem, which maybe he had been trying to sell since Dan Trifan had done his pioneering thesis work on it. The stuff decomposed vigorously even at room temperature, and wasn't much fun to work with. My task was to prepare it in crystalline form and study photometrically the kinetics and equilibrium of its decomposition in a thermostatted Beckman cell in carbon tetrachloride solution. I pipetted all the carbon tetrachloride by mouth rather than using a rubber bulb; it had a lovely, sweet taste, but I don't think I would do it that way today (This is not intended to imply that there was a general neglect of safety procedures in the Bartlett group; "P.D." had a standing offer to provide prescription safety glasses to anyone who would use them; I took him up on it and still have them). I learned a lot about iodine-olefin chemistry and about the distinguished Harvard names who had been involved with it in years gone by: George Bogdan Kistiakowsky and George Shannon Forbes. I hope that I added some bricks to the wall, which was later completed in elegant fashion by Gideon Fraenkel. My contemporaries in the Bartlett group were Fred Tate, a great guy from Rice Lake, Wis., who made life more pleasant with his quiet, straight-faced humor, and who is now Assistant Director of Chemical Abstracts; Ed Lefferts, a chemical engineer in cellulose acetate work from Eastman Kodak Co. and a very skillful experimentalist and glassblower, and Dick Jones, a quiet New Englander who had a difficult experimental problem involving polymerization kinetics, and who is now with the DuPont Co. Among the senior graduate students were Dan Cotman (who, I believe, was a postdoctoral at the time, waiting for a job), a sharp guy who went to work for Monsanto in Springfield, Mass., congenial Bob Barnes, now at Amoco in Naperville, Ill., and Jim Gardner and Elly Webster, both from Shaker Heights, Ohio. Jim had an experimentally difficult problem involving photometric kinetics in Beckman cells of degassed solutions, and I remember how difficult it was to keep the seals from breaking when the apparatus was cooled and degassed in a dry ice bath. Jim, formerly a Vice President at the National Research Corporation in Cambridge, is now a Vice President at Armour Industrial Chemical Co., in

McCook, Ill. Elly Webster is a likeable, outgoing gal who made everybody her friend, an outpost of Radcliffe in the Harvard sea. She is now a professor and one-time dean at Wellesley College (it is a small world: a close friend of hers and now a trustee of Wellesley College is Mrs. Stanley M. Goldberg, the wife of a physician of mine. Thus, indirectly, I hear about Elly Webster and even her water-skiing exploits on Lake Minnetonka when she visits the Goldbergs in Wayzata, Minn.).

The greatest thing about Harvard for me was the people I got to meet and interact with, both graduate students and postdoctorals, many of whom have become leaders in their fields, as well as professors, and those who came to seminars, particularly the visitors to the Bartlett seminar whom I got to know best through the vigorous "give and take" which occurred. Among these visitors I particularly remember are Cheves Walling (then with Lever Brothers), Jack Roberts (then at MIT), and Richard J. Ogg (on leave from Stanford). Among the postdoctorals I got to know and like were Manuel Ballester from Barcelona, Spain; Leonard Spialter, now a chemist with the Air Force at Wright-Patterson Air Force Base in Dayton, Ohio; Ralph Weston, who has made a name for himself in chemical kinetics; Paul N. Rylander, a distinguished chemist and prolific author in the field of metal catalysts with Engelhardt Industries; Daniel E. Koshland, Jr., now a distinguished biochemist at Berkeley and a member of the National Academy; the friendly Bulgarian from Brown University, Garbis Megurian, who now, like John McCollum (one of the junior graduate students) and Bob Barnes, is with Amoco in Naperville, Ill.; and Jerry Dunn, a Canadian from Iowa State who then went to the University of Manitoba. Among the junior graduate students in the Bartlett group I got to know (besides John McCollum) were Fred Greene of MIT and J. Org. Chem. fame, whose parents and mine got to know each other and lived one block apart in graduate student days at the University of Wisconsin before his parents went to Yale-in-China; Martin Stiles of the University of Michigan and also of journal-editing fame; Sidney Friedman, who went with the U.S. Bureau of Mines; John Kice, once of Oregon State and now Chairman of the Chemistry Department at the University of Vermont; and Ed Trachtenberg, now at Clark University, who knew what everybody was doing and kept us all informed. Ed and I belonged to the then sizeable bachelor group and often ate together during my second and third years at the graduate dining hall (Harkness Commons) along with many other Harvard classmates.

"P.D." was noted for his belief in physical fitness and, thus, social affairs in the Bartlett group included Christmas vacation skiing junkets to "P.D.'s" favorite slopes at Stowe, Vermont. I took no part in these because I was a non-skier and took a dim view of the odds for broken bones; besides I always took the train home to Madison, Wis. for Christmas vacation. Then there were the annual get-togethers of the group with Paul and Lou, and Joanna, Geoffrey, and Sarah at the Bartlett family home at 288 Concord Road in Weston. An inspection of the premises revealed that "P.D." was an even better collector of "potentially useful" items than I have become. I also remember vividly a group outing at Walden Pond.

During the latter part of my research stay at Harvard I moved from the east end research lab on the third floor of Converse to the private lab next to "P.D.'s" office on the fourth floor, where the Beckman DU spectrophotometer which I would need was kept. I took a lot of time cleaning up, cleaning out, and reorganizing the lab (it needed it, as it seemed to have the accumulations of decades, many with well-known names on them). The door to "P.D.'s" office was kept shut and when I went to see him, it was through the front door of his office to the hall. He came into the lab occasionally, usually to develop ozalids of graphs he was preparing for his papers. I remember many nights when I would have a kinetic run in progress and the noisy refrigerator and I would keep company in the wee hours. "P.D." didn't usually come in at night. Because my lab had more available floor space, an evening bridge game, when it developed, would usually develop there. I don't recall that I participated often if at all, but I did enjoy kibitzing on the conversation while I worked. One night Ed Trachtenberg and, I believe, Paul Rylander, Dan Koshland, and probably Elly Webster had a game going while things were cooking and runs were underway in their respective labs. It happened: "P.D." came in, walked by in the hall, nodded a greeting to the assembled group, and went on into his office. He never said anything about it that I can recall, but the game quietly broke up.

One summer when "P.D." was away (maybe at UCLA), Harold Kwart came back for the summer to do some work, took over "P.D.'s" office and worked in my lab. Harold kept his dog in "P.D.'s" office, and I often wondered how that would sit with the boss if he knew.

When I was looking for a future job, after an interview at Harvard with J. Harold Perrine I was invited to visit Sun Oil's lab, then at Nowood, Pa. There I met Abe Schneider all wrapped up in neoprene and carrying out an HF alkylation. Sun Oil didn't make me an offer then, but they later hired me as a consultant at their Marcus Hook labs for a very pleasant 12 years from 1958-1970. When I started there, Abe Schneider was by that time Manager of Basic Research; he is now Scientific Adviser, the top man on their scientific ladder. When I got a telegram from Lloyd Reyerson at Minnesota offering me a DuPont postdoctoral fellowship at $3600 with Walter Lauer and asking for a decision in 24 hours, I had pretty much made up my mind to take it when I went to see "P.D." He didn't push me in one direction or the other (I also had offers from Dow and Amoco), but it turned out that he knew Walter Lauer (and spoke of his work on the Claisen rearrangement of phenyl allyl ethers) and had himself been on the staff as an instructor at Minnesota for two years (1932-34) before returning to Harvard. So I went in the fall of 1951 to Minnesota, back in my beloved Midwest, and had fun working with Walter Lauer on the nitration of monodeuterobenzene. I have been at Minnesota ever since. After administrative assignments as Acting Chief of the Organic Division for one year (1961-62), Acting Chairman of the Chemistry Department for two years (1967-69), and Area Coordinator of Organic Chemistry for two years (1972-74), I am now back to being just a professor again, and I have passed the midpoint of my ten-year term as Secretary of Organic Syntheses, Inc.

Waylond E. Noland