

LIFE OF A CHEMIST

PART I. BECOMING A CHEMIST

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My professional life as a chemist began in 1962 as a postdoctoral biochemist at the University of California-Berkeley. It ended in 2000 when I retired as Research Professor Emeritus (chemistry) at the University of Washington-Seattle – thirty-eight years!

But my story needs to start much earlier. As a young kid, I was always interested in how things worked and making things myself. Such as taking apart a large alarm clock, much to the chagrin of my mother. When I was about ten, my best friend and I pooled our money and bought a Gilbert Chemistry Set – most chemists I know also had Gilbert Chemistry Sets in their youth. This was housed in my parent's garage, where we made all sorts of interesting things, including stink bombs to annoy my older sister. Most chemicals in that set are now listed as dangerous – keep away from young children – by OSHA. I still have all my body parts and suffered no ill effects.

In Junior High School I made a short-wave radio receiver from individual components – no kits then – and in High School, my favorite course was chemistry, along with math and physics. Clearly, I was headed for some area of science. My father was a doctor and urged me to follow his footsteps. But knowing what his life was like as a solo physician – no group practice then, and he still made house calls – I decided that wasn't for me. Perhaps as a compromise, I thought that biochemistry would bring together my love of chemistry and my dad's wish that I would go into medicine. To be honest, I had no idea what biochemistry was all about, but it did involve chemistry. In my high school yearbook, I said I was going to go to Pomona College and become a biochemist. And I did. Both.

I chose Pomona College mainly because my sister was there, and I was familiar with the place. I only applied to one college – I considered myself smarter than my sister and thought if she got in, I would have no trouble getting in. My sister doesn't like to hear me say that. I was accepted in 1955. Pomona had an excellent chemistry department and a good reputation as a liberal arts college.

Chemistry was easy for me because I tried to understand and not just memorize. I got the highest grade in organic chemistry, while most of the pre-meds hated it. After my sophomore year, my organic chemistry professor asked me to stay and do research with him during the summer. About ten chemistry students did summer research, supported by NSF (National Science Foundation) grants to the

professors. I continued to do summer research after each subsequent college year. That was a unique experience, which prepared me well for graduate school. I graduated with a BA degree in 1959.

Going to graduate school was an easy decision – I didn't have to worry about getting a job, and tuition and meager living expenses were paid. These were the post-Sputnik years when science was well funded. I applied to the Universities of Wisconsin and Illinois, both had top-rated chemistry departments. I was accepted by both and chose Illinois.

During my first semester as a graduate student, I took my first course in biochemistry. In the second semester, I taught the introductory lab. I also had to pick a graduate advisor. I chose Professor Herbert Carter, who was also chairman of the department. He was more of a natural product chemist and I felt more at home in the organic chemistry side of biochemistry. He gave me some lab space and suggested a project to start work on while I was still taking courses.

To major in chemistry, one had to choose a major area of interest – I chose biochemistry – and two minors. Organic was my first minor and inorganic my second. The minors didn't need to be in chemistry – a friend of mine chose history as his second minor, which was a little unusual as he ended up with a history professor on his thesis committee. During my first year, I mainly took courses in organic, inorganic, and analytical chemistry, in addition to biochemistry. I also took a course in microbiology.

During my first semester, I started work in the lab. Carter was interested in a lipid molecule, phytosphingosine, which contained a double bond in a long hydrocarbon chain. The position of that double bond was not known. I decided on my own to run several successive reactions with that molecule, after which I would end up with a long chain aldehyde. The chain length of that aldehyde would determine where the double bond was located. I analyzed the end product using gas chromatography. As the results came off the instrument, I knew exactly the position of the double bond. It was a eureka moment as I ran down the hall to tell our postdoc my results.

My fiancé, Betty Kohl, was a chemistry major at Pomona, but a year behind me. As she finished her senior year, she also applied to Illinois for graduate work in chemistry. After being accepted, she flew out to Urbana-Champaign to do some research before starting graduate work in the fall. That August we were married in California and returned to Illinois for our graduate work. We both had fellowships. By each declaring the other as a dependent, we made a little more money than most married graduate students. Still, that was barely enough to live on.

By my second year as a graduate student, I was doing mostly research. I worked hard because there wasn't much else to do in Southeastern Illinois. I felt that the harder I worked, the sooner I would finish. My research went well, and before the end of my third year, my advisor suggested that I start writing up my thesis – I

didn't argue with him about that. After three years, I received my Ph.D. degree in 1962 – that was the shortest time, most students took four or five years.

Early in my third year our son was born. Betty decided to finish with a masters' degree in organic chemistry rather than proceed towards a Ph.D. She wanted to spend more time raising a family, and I was going to finish by the end of that year.

With a Ph.D. in chemistry, now what? That was an easy decision. My advisor recommended me to a colleague of his at UC-Berkeley, Professor Clint Ballou, and I accepted a postdoctoral position in the biochemistry department there. The project I worked on involved the experience I had as a graduate student. At the end of that year, I wrote a major research paper on my work and then had to decide what to do next. I could have stayed on another year as a postdoc, but even a postdoc's salary is not great. Instead, I decided to accept a position as a research chemist at the U. S. Department of Agriculture Western Regional Lab in Albany, next door to Berkeley. With more money, we were able to buy a small tract house in Pinole, a few miles north of Berkeley. Later that year our twin daughters were born, and our family suddenly grew larger.

In Part II, I will talk about my career as a biochemist.

Pictures: Stewart, 1959 (Pomona College graduation), and 2015

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