

The Yellow Professor

This photograph was taken on the 25th of February 1961 outside the entrance to the Science Building at Iowa State University. The occasion was my graduation from the doctoral program at the university. A quick glance at the photo will show the connection between it and the title of this essay. It was the last of a series taken that day. We had tried to stretch the film a bit past its usable length and my professor didn't quite make it onto the usable emulsion. When one of my kids—shown below—saw the photo, she aptly labeled him “The Yellow Professor.”



Dr. William Lockhart (this is my only picture of him) has been one of the most prominent influences in my life—and I certainly would not be where I am today without that influence. This is the story of the five years in which that influence was established and developed.

I started at Iowa State College in 1954, a year after I returned from Korea at the end of the war there. My initial major at the college was Landscape Architecture because I had grown up in the family greenhouse business. However, before the

end of my first year, I changed my major to Botany and began to consider the possibility of graduate work, leading to a career in research. Then, before long, as I considered the time commitment for graduate work, I began to re-consider a goal I had entertained in my younger days—medical school. So, while still in my second year, I changed my major to pre-med and began to plan for a career in medicine.

Soon after I arrived on the campus, I had acquired a job as a research technician in the Botany Department. Although I had financial support from the GI Bill, we had a child on the way and I needed that job to help support our growing family. Now, with a new career goal, it made sense for me to seek a job working in a field closer to that goal. As it happened, a friend from our local church was an instructor in the Bacteriology Department at Iowa State and I asked him if he knew of anyone on the faculty in his department who might need a technician. The following week he let me know that Dr. Bill Lockhart in his department had just received a research grant from the Damon Runyan Cancer Fund that had money for a technician. I interviewed for that job and was hired. So, before the end of my second year in college, I had begun on my ultimate career path—although I didn't realize it at the time.

Dr. Lockhart's laboratory was in the basement of the Science Building on the Iowa State campus and that's where I began hanging out when I didn't have classes to attend. (However, I

did have another office on the campus where I had to spend some of my spare time. As commander of a reserve unit that met on the campus, I had military administrative duties that required some of my time...but that's another story) As I had never yet taken a course in bacteriology, I had to learn on the job how to do even the minimal skills needed to be a useful research technician. I expect that, because I was older than most undergraduates—and had spent over three years in the army—Dr. Lockhart apparently felt that it was worth his effort to train me for the job. In fact, almost from day one, he began preparing me for proficiency in the laboratory. Of course, washing dishes was always a major part of my job (they were all washed by hand at the time—and there were always a lot of them), but the professor made sure I learned how to prepare culture media, how to manipulate cultures and how to keep records. He also encouraged me to become involved in the design of equipment and methods to facilitate the research he was engaged in.

Over my next two years of undergraduate work, I became a major contributor to research in our laboratory, even supervising the work of other technicians—and I helped design a major piece of equipment, the publication of which became my first scientific paper as a co-author. Meanwhile, Prof. Lockhart had begun a subtle, low-key effort to convince me that my future was in research rather than medical practice. His arguments were compelling. He pointed out that I could get financial support for going to graduate school, while I would have to pay for medical school myself. And, although he never said so, I think he felt that medical practice would be a waste of what he considered to be a mind made for research. In the last analysis, the decision was made for me when my wife became pregnant with our second child. My eligibility for support from the GI Bill was running out and I didn't relish trying to support my growing family while paying for a medical education—so the professor's arguments became persuasive.

With two quarters remaining before graduation, I changed my major to Bacteriology and loaded my schedule for those quarters with bacteriology courses to get sufficient major credits for graduation. Meanwhile, I applied for graduate school at Iowa State (now a University) and, at Bill Lockhart's urging, I also applied for a predoctoral fellowship from the National Science Foundation. So, as I was already well situated in the laboratory where I would be doing my doctoral research, I began setting up that research project.

Prof. Lockhart's research was essentially a study of cellular growth, using bacteria as the test system. The organism he had chosen for that work was a strain of *Escherichia coli* (*E. coli*)—and that would be the organism I would be using in my own work. In my technical work for the professor over the past two years I had developed several methods and calculations for use in the laboratory. They ultimately resulted in three published papers—all published while I was still in graduate school and all contributing to the research I would submit in support of my doctoral work.

As I look back on it now, my professor's research program was not particularly earth-shaking and my own contribution to it was less than memorable. Yet, his influence in my life and career were far greater than I could ever have hoped for. In this stage in my development as a laboratory scientist, Bill Lockart was ideally equipped to shepherd me through the process. He was not an exceptional scientist. He WAS an outstanding educator. He taught me to be comfortable in the laboratory—to ask useful questions of the systems I was working with, even though those systems were not at the cutting edge of science at the time. He did spend time talking with me about systems that were on the cutting edge. Ours was a classical Bacteriology department and the cutting edge (the new field of molecular biology) was not represented in the research of any of our faculty. However, Bill Lockhart kept up with the current literature in

molecular biology and encouraged me to do the same—to the extent that my frenetic schedule allowed.

The philosophy on which Prof. Lockhart's research program was based—and the basis for his grant from a cancer fund—was that cancer cells are characterized by abnormal growth patterns and abnormal growth control. He believed that we will never understand abnormal growth until we get a better handle on what happens during normal growth. So he set me on a path leading to a better understanding of normal growth. As I look back on it, it was pretty pedestrian work, but it was credible science and it resulted in two papers in scientific journals—in addition to my thesis, titled *Mechanisms of Growth Control in Bacteria*.

One of those journal papers quoted work in which one of the authors was Moselio Schaechter who was then on the faculty of the medical school at the University of Florida. As I neared the end of my tenure in graduate school, Prof. Lockhart began to point me toward what he considered to be the next phase in my development as a first rate scientist—namely, a post-doctoral tenure with a well-established, top-of-the-line molecular biologist. The name of Dr. Schaechter stood high on his list of possible candidates. How I ended up doing post-doctoral work in Dr. Schaechter's laboratory is a story I have written elsewhere (www.ocomm.net/memories/gainesville.pdf), but I need to emphasize here how big a part Bill Lockhart's influence played in assuring that it would happen.

First, although some major professors were notorious for keeping graduate students under their control for years beyond their minimum required tenure, my professor did everything he could to assure that I would graduate within that minimum (three years). I had the sense that he felt that he (and Iowa State) had done everything they could for me and that I needed to get into the next phase of my education as quickly as possible. By then, we had three kids and my NSF fellowship was running out. However, Prof. Lockhart had just been named the new chairman of the Bacteriology Department and he was now in the position to give me a faculty position for my last two quarters of graduate school. This made it possible for me to complete those last two quarters on time and head for Florida with cash in the bank.

I went on to a rather short, but well regarded career as a laboratory scientist. That career would never have become nearly as well regarded had I not spent those five years in that basement laboratory at Iowa State under the influence of Dr. William R. Lockhart. For that, I will remain eternally grateful.

Richard E. Ecker
July 2017