Life is not made of the likely, Part 2

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As my unexpected career in graduate school ended happily with a PhD in Physics from The Johns Hopkins University, and I stayed on another year as postdoc and lab manager, I planned to find a good job. My father had firmly impressed on me that a man must situate himself to earn a living. Children are allowed to play and let their parents tend to the essential affairs of life, but as an adult—especially a now-married man—I had to be sure a had a job lined up before I left the university.

I applied for several positions in industrial research and a couple of others in academia. As a physicist specializing in nuclear structure, the obvious nonacademic jobs were in either building nuclear power reactors or building bombs. Building bombs seemed like a depressing occupation, and when you have a big success, you can't tell anyone about it. As I had learned about nuclear technology, it became increasingly clear to me that nuclear power had a long list of negative consequences, so I didn't want to do that. Ohio State wanted me to come there as a postdoc and continue the line of work I had begun as a graduate student. While I was proud of the work I'd done to earn my degree, I didn't see it as a worthwhile endeavor to minutely elaborate on it for a long career. I had a few options, but I wasn't excited about any of them, and time was growing short. I planned a last minute push to find an interesting industrial research job.

I was running the Van de Graff particle accelerator in the basement of Roland Hall one day to finish up data collection for a last technical paper. I had little to do. A glance at the gauges and an occasional twist of a knob was all that was required of me, so I pondered the job problem and scanned a magazine for job ads.

The Van de Graff accelerator helped mankind learn much about the atomic nucleus in the first half of the twentieth century, and it was named for it's inventor, Robert J Van de Graff, who was born and reared in Tuscaloosa, Alabama, and studied at The University of Alabama, about forty miles from my home. He is a much better example than I to prove that boys from the sticks of Alabama can understand physics as well as boys from New York City or Chicago. I wish I had known that earlier in my life.

A Van de Graff accelerator fills a very large room. It produces lethal amounts of radiation while it runs. So, I sat in a control room on the floor above, separated from the accelerator by three feet of steel and concrete. But it wasn't calm and quiet where I sat. Long rows of electronic equipment filled the room, and each cabinet in each row had a substantial blower in its bottom compartment to cool the circuits above. Rackety vacuum pumps chugged away in a back corner, and the rudimentary 1960s computers switched on their paper-tape punches every now and then to produce a very good imitation of a machine gun battle.

As I sat poring over job ads, I slowly became aware of an unusual knocking sound. When it became the focus of my attention, my first guess was that one of the vacuum pumps needed a new belt, or one of the cooling fans had become unbalanced. Those things happened regularly. A walk around the control room uncovered no such problem, and the sound remained distant, but persistent. Finally, I figured out it was someone banging on the door from the outside hallway.

I opened the door to find a bearded, shiningly bald, thoroughly professorial-looking man. Of course, I had learned to recognize what professorial looked like. A wide grin spread across his face as I opened the door.

Professor Michael Beer exhaled the considerable air he had held in to power his banging and visibly relaxed. “Oh, thank goodness. I was about to give up.”

Professor Beer came into the lab. I offered him the only comfortable chair in the control room and perched myself on the stool in front of the main control panel.

“I just had lunch with Yung Lee (my thesis advisor), and he tells me that you are pretty good at making lab equipment work.”

“Thank you. I've been tearing things apart and putting them back together since I was very young. My mother didn't like it sometimes--the times when it didn't work after I reassembled it. I can fix most anything now, I guess. As lab manager, I have to keep all this running.” I swept my arm around to indicate the room full of machinery and electronics.

“Well, I have a problem that might just see how good you are. Have you signed up for a job after your postdoc here?”

“No sir,” I said. “I've got a few options and one job offer, Ohio State, but I haven't made a decision.”

“Drop the sir. It's Mike. Can you spare a few minutes to come with me? I'd like to show you my problem.”

I turned off the accelerator, jotted a note in the log book, and followed Mike across the upper quadrangle to Jenkins Hall, the home of the Thomas C. Jenkins Department of Biophysics. Universities are very insular. Even though it's called a University because it brings together a multitude of disciplines; in fact, most people never venture outside their departments; and I had never in the six years I'd been at Hopkins ventured across the quad to Jenkins Hall.

I stayed all afternoon. Mike showed me an electron microscope. Electron microscopes can see things about a thousand times smaller than ordinary light microscopes. We looked at strands of DNA, little round knobby enzymes, sections of cells, and more bits of biology. I was fascinated.

Back in Mike's office, he explained. “The fundamentals of electron microscopy say that we should be able to resolve; that is, see separately, things as small as two Angstroms (an Angstrom is one ten billionth of a meter), but in practice, we can only resolve features ten times bigger. Nobody knows for sure, but I think it's just the imperfections of the microscope. If I had somebody who really knew how to fix machines, somebody who could tear a thing apart and put it back together <u>better</u> than it had been, I'll bet we could do some great things.”

The “great things” he had in mind included winning a Nobel prize. The specific target Mike had in mind for the microscope was to be nothing less than reading the genetic code in a molecule of DNA. The general structure of DNA had been known for only a bit over a decade, but as soon as anyone knew it contained the code specifying how its host organism was built, a race to read that code was inevitable. It was biology's search for the Holy Grail. Everyone knew that the winner got a Nobel prize.

I went back to nuclear physics just long enough to finish the research paper. For the second time in my still very young adult life, an unlikely, an undreamed of opportunity opened and swept away what I thought was to come. My life, it seemed, was not to be made of the likely.