Chapter 9
Interregnum - Postdocs

As I have alluded to and probably stated, the years between 1966 and 1969 were were a sort of interregnum - a period between graduated school regime and professorship. In the physical sciences this is fairly common practice, giving newly minted Ph.D.s time to prepare their thesis for publication and perhaps some experience teaching. This is precisely what happened in my case. Dr. Goldwasser's group kindly gave me an additional year to condense my thesis findings and get them accepted for publication. You may read it in the Physical Review, **172**, pp.1354-1369, by me, three of the members of my committee, and Jerry Wray, a fellow student.

Another advantage of a post doctoral appointment is that it gives the new Ph.D. ample time for a search for a new position outside of his/her home institution. I sent letters of inquiry to four institutions: Notre Dame University, the University of Wisconsin, Iowa State University, and Los Alamos National Laboratory. I got positive responses from all of them, requesting that I visit for an interview and give a seminar. Notre Dame had an established high energy group, the University of Wisconsin had two prominent high energy groups, Iowa State was just starting one, and I was invited to the accelerator division of Los Alamos that was designing a new "meson factory" of which I would be a part.

I visited all four institutions, giving a seminar at each. I used my newly minted private pilot's license to fly to South Bend for the Notre Dame seminar. More on that later. Fortunately, I got offers from all four institutions: three as post doctoral appointments at the universities, and a full time staff appointment at Los Alamos. The $14,400/year offered by Los Alamos was particularly attractive, in addition to the beautiful mountainous setting of the West. But our families' location in Lombard and Freeport relative to the University of Wisconsin won out, and we decided to accept their offer. The $10K that they offered was still more than Joyce's Dad was making after many years as an electrical engineer.

We continued living in Fairlawn Village during the post doctoral appointment at the University of Illinois. It was a very comfortable, two-bedroom quadruplex, ideal for Joyce and our new son, Steve.

Before moving to Madison we

First Home, Madison

Our Garden in Madison

bought this pleasant, three-bedroom home in the south-west corner of the city.

It was a particularly good time for job hunting, especially if you were a physicist. I counted eighty letters of inquiry inviting me to apply for a position with their institutions, ranging from IBM to the University of Illinois-Chicago Circle. We had multiple communications with Chicago Circle, the University of Kansas, and Haverford College before making my decision. It was to be a critical decision in determining the future direction of our lives.

It turned out that Goldwasser's group at Illinois was on particularly good terms with the Walker, Erwin, Thompson high energy group at Madison. Both groups had developed the Midwestern Universities Research Association (MURA) 30" bubble chamber and had cooperated in the design of the Argonne ZGS accelerator. So our move to Madison was relatively painless.

My first several weeks at Madison were hectic. My supervisor, Dr. William Walker, announced shortly after I arrived, "Morris, get your suitcase packed. We're off to the Princeton-Penn accelerator." I was unfamiliar with the group's research agenda and even less familiar with this accelerator on the Princeton University campus. But the job of graduate students and post docs, as well of the faculty, was to "baby sit" the detector in high energy physics experiments. As a graduate student I had done this for weeks, both for the 80" bubble chamber at Brookhaven, and bubble chambers at Argonne National Laboratory.

Susie

While the duties surrounding the Princeton-Pen accelerator were routine, our own family circumstances were anything but. Joyce was pregnant with our second child, and I wanted to be home for the birth. Fortunately, my supervisors agreed, and I was allowed to be home during the birth of our daughter, Susan Joy, on November 3, 1967.

Naturally I was very active in professional meetings during graduate school and post doctoral days. I usually attended both the American Physical

Ice Storm of 1967

Society (APS) winter meeting in New York as well as more local meetings. I would often give a talk on my thesis or active research projects. By simply being a member of APS one was entitled to present papers at APS meetings.

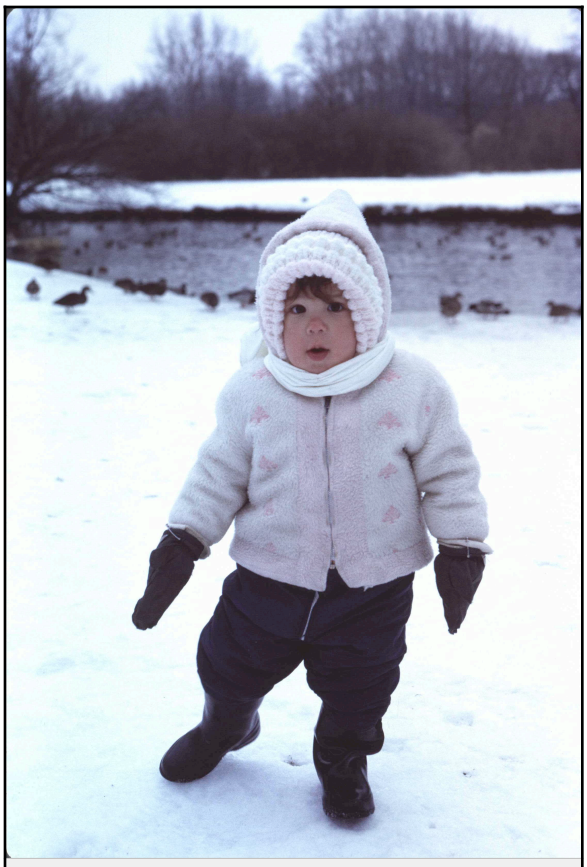
The January, 1967, New York APS meeting was particularly memorable, for several reasons. First, we had decided to drive our VW bug. Our two-year old son decided to throw up his breakfast of eggs all over his new, blue coat and the car while we were on the Pennsylvania turnpike. We were able to wash it out at the next launder mat. Second we stayed at the Abby Victoria hotel in New York with our physics colleague, Jim Loos, and his family who were there also. This allowed each couple to share baby sitting duties while the other couple "did the town". It was a great arrangement! Finally, while we were attending the APS meeting in New York, the midwest had a terrible ice storm. The larger, hard wood trees all had their top branches torn off and some of the smaller trees survived by bending over so their tops touched the ground. The damage was heart breaking.

One fortunate feature of "corporate physics", which is how high energy physics is done, is that graduate students "take their turn". Students just joining a group assist more advanced students with their theses and get to work on a number of projects. If they make significant contributions to a project they can expect to get their names attached to any papers. This was particularly true during my Madison year and resulted in my name appearing on several papers that got published in future years.

This also explains why new faculty in the social sciences and humanities are sometime at a disadvantage compared to new faculty with post doctoral experience. They often come to their new faculty position while still finishing their thesis and have at most one or two publications. My post doctoral experience at Madison offered me teaching experience in both electricity and magnetism and in electronics which were a tremendous advantage in future years.

Perhaps the most important event during this interregnum was the birth of our daughter, Susan Joy.

Joyce and Steve in new York



Susie and the Madison Ducks

She was born at Madison General hospital two weeks ahead of schedule. After waiting several hours in the men's waiting room while Joyce was in labor, I was sent home with instructions that the hospital would call when the baby was born. This was before fathers were given the right to be present at their children's birth. So I went home, watched "Gun Smoke" and got the call the following morning that it was a "she" and she was here. This event completed our family of four.

Another interesting event occurred about the time of Susie's birth. Grandpa Hauger died about this time, and Grandma Hauger had died a few years earlier. They left five thousand dollars to my folks as an inheritance. My folks traveled to Island Lake investigating property, and spent five thousand dollars for the ice house and eight acres of a boy's camp that had recently closed. This became our get-away cabin up North for the family and friends, and we have continued this tradition to this day. Here is a photo of Susie in her jumper swing in front of our car and the island. Our extended family has had many wonderful outings with our friends, and we discuss its role in our lives in a future chapter.

Susie at Island Lake

Of course our social life did not suffer during these in-between years. One great advantage of our location in Madison was the proximity of both our childhood homes. Freeport was just over an hour by car, and Joyce's parents in Lombard, Illinois, just over two hours. So we were able to spend most holidays and other visits with them.

One fall trip to visit her parents our VW bug broke a rod and needed a whole new engine. We didn't have the money, so Ivan loaned us the $300 which the new engine cost.

Dad Reading to Michele, Susie and Steve

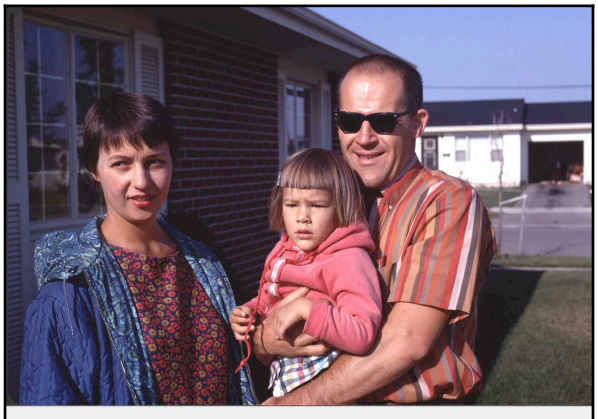
We continued our annual trips to either the Tetons or Colorado or both. On the New York trip to the APS we visited with Robert and Ruthann Johansen. Robert was working on his PhD. in international relations and peace studies at Columbia University. Upon completion of his degree he took a position at Princeton University and, later in his career, at the University of Notre Dame, heading the peace studies department. Ruthann served as President of Bethany Seminary in Indiana.

Robert was my brother's age and his brother, Emmert, was my age and my best friend. For many years they were guests of Doug and Audrey at Island Lake. Robert's parents, Vera and Charles, were also some of my parent's best friends. Vera was Sunday School Superintendent most of my sixteen years of perfect attendance at the Freeport COB.

After Charles's death, Vera joined my parents in their retirement community, Pine Crest of Mt. Morris, Illinois. So the friendship continued. After Robert and Ruthann moved to Indiana she moved to the Peabody Retirement Community.

One of the most satisfying mountain climbing trips occurred during the summer of 1969. The University of Colorado hosted a high energy physics conference which many of my friends from both the University of Illinois and the University of Wisconsin attended. Our family had camped and climbed in both Rocky Mountain National Park and camped there with the Bluemels. So I suggested to a number of my friends that we go climbing. After all, one can't be expected to sit in conference all day!

Robert and Ruthann Johansen



Polly, Van and Cris Bluemel

Climbers on Hallets Peak

Here Dr. Uli Kruse of the U. of Ill. leads the group with Dr. Al Erwin of the U. of Wis. bringing up the rear. In the next photo Dr. Murray Thompson of the U. of Wis is waving as Al Erwin checks out the country with binoculars. Jim Loos of Illinois is under a rock. In the last photo the climbers have reached the summit of Mt. Toll in the Indian Peaks the next day. Murray is in front, Jim Loos is to his right and our mathematician friend, Dr. John Bramson of the University of Colorado to his right.

Murray and I did a rather dumb thing on our climb of Hallets Peak in Rocky Mountain Park. We challenged each other to a foot race the last 100 yards of the summit. I forget who won, but Murray, right off the low lands, became violently ill. He threw up his newly eaten lunch and turned white. But he survived the decent and, as you see, climbed with us the following day.

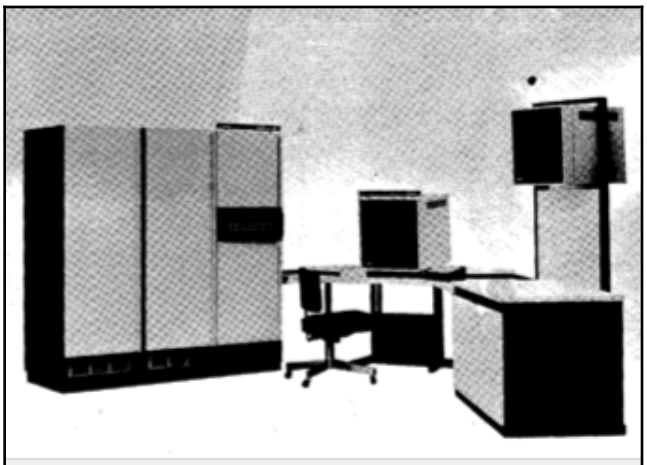
Climbers Resting

John Bramson was a graduate of North Central College and had become friends in graduate school. We also overlapped at Illinois where he received his Ph.D. in math before joining the faculty of the University of Colorado. We visited their home several times in Boulder. Perhaps you will see another picture of Mt. Toll in the Mountains chapter. It is beautiful!

Climbers on Mt. Toll, Indian Peaks

At this point it is probably appropriate to mention a project which grew out of my post doctoral appointment and was my first introduction to computer graphics. The title of

my proposal was *Development of an Interactive Data Analysis System* and it involved the University of Wisconsin Computing Center's new ADAGE AGT/10 computer graphics system combined with the University's Univac 1108 computer to visualize high energy particle events and study their momentum space distribution.



ADAGE Graphics Terminal

I wrote the proposal in the fall of 1970 for salary and computer support for the summer of 1971 with coordination of Murray Thompson of the Walker-Erwin group. The Graduate school of the University funded the project and it was carried out as proposed. The combination of the ADAGE terminal for displaying elementary particle interactions and the Univac 1108 for doing the actual computations was incredibly awkward. The combination of the two computers and graphics terminal was probably 1/100 as powerful as today's desktop computers, but it did show the potential of computer graphics as a research tool. This inspired much of my later career work in computer graphics.

During my post doc years in Madison I served as an instructor in the Physics Department. I was responsible for Dr. Wilmer Anderson's Electricity and Magnetism laboratory for one semester and Dr. Paul Moring's Electronic Aids to Measurement 623 laboratory both spring semesters. In fact, on at least two occasions I also did the lectures when Paul was absent. I also covered for Al Erwin lecturing on electricity and magnetism when he was absent. So my Wisconsin faculty colleagues recognized early on that I was interested in teaching and put me to work.

These years at Madison were very hectic politically. The Vietnam war was raging. Dow Chemical was recruiting in the Commerce Building, and the students were protesting by at least the hundreds. The police were called in to allow the recruiting to continue, and the situation escalated. The national guard was eventually called in, and I have movies of them exiting school busses with fixed bayonets. They used tear gas to disperse the protesting students, and I had to dismiss my E & M lab because my students were being tear gassed.

Sterling Hall Bombing

The Bombing Van Remains

It did not help the situation that the new wing of Sterling Hall, the Physics Building, was designated as the Army Math Research Center. Even though no classified research was conducted there, protesting students wanted to close it down or at least remove it from campus. So we should have expected that trouble was brewing. In fact, my office was on the third floor, just feet from the Control Data 3600 computer that was housed in the Research Center that we used to analyze our bubble chamber data.

Trouble occurred at 3:42 a.m. on August 24, 1970, when four Vietnam war protesters drove a Ford van loaded with ammonium nitrate, fuel oil, and dynamite up to the unloading zone of the Research Center, called the police to warn of an explosion, and fled in a car after lighting the fuse. This bomb killed one post doc, Robert Fassnacht, injured three other people and blew out every window in direct site of the explosion, or within site of the direct reflection of the explosion. It damaged twenty three buildings and every window of the east side of the UW-Hospital. It blew out my hallway office door window and the windows of the office facing the courtyard. My graduate school friend, John Lynch, heard the explosion and helped rescue the survivors.

Why did I have an office in Sterling Hall in 1970? Because I was hired as a Visiting Professor to teach Electronics 623 in summer school at UW-Madison the following five years after my instructorship. I lived at the Faculty Club, the YMCA, two years at Prof. Bob Borchers home (who was on leave at Berkeley), and one year at our friends, Murray Thompson.

The interesting thing is that, the year I stayed at the campus YMCA, one of my housemates at the YMCA was Dwight Armstrong, one of the Sterling Hall bombers. I could not help but visualize Dwight and his co-conspirators assembling the bomb's detonator in the room just below mine. Until the Oklahoma bombing this was the biggest terrorist attack in America. Those "good old days" are not ones I ever want to go back to.

Control Data 3600 After the Bombing

On a much more cheerful note, the University of Illinois offered me the chance to fulfill a life-long dream - fly-

Me and a Cessna 150

ing! The University's Institute of Aviation at Willard Airport offered flying instruction with the promise of a private pilot license for $800. This included ground school, Link simulator training, and all the flying time required to pass the license exam.

At that time Willard Airport was the second busiest airport in Illinois (to O'Hare) and had a fleet of over 70 Champion 7Fcs and Cessna 150s for pilot training. Common knowledge was that the Institute trained more pilots than anyone except the air force. In addition to pilot training the Institute offered training in aircraft maintenance. I entered the program immediately after getting my Ph.D. degree. The training was thorough, and I had excellent flight instructors. The last several in-flight sessions included instrument training in which a yellow screen was placed around the windshield, and I wore blue goggles (or visa versa). The effect was to hide all visual clues of the landscape and allow me to see only the instruments. Then the instructor said "Turn 90° to the right. Climb 1000 feet. Head due west." and so on. It developed great confidence in reading the instruments.

The Link trainer was an interesting device. It had short, 5' wings, but a cockpit nearly identical to our training planes. The controls were identical to those of the plane and simulated the real response of a plane with two degrees of freedom, pitch and roll. It was developed before WW II and used to train the pilots of many nations.

By the end of summer I had my private pilot's license. The solo flight were to several middle Illinois airports, including Peoria and Bloomington as I recall. The only mishap was my failure to switch frequencies from flight control to ground control when I landed back at Willard. I was duly chewed out by my instructor.

The only other incident was on the flight back from South Bend to Willard Airport during my job interview at the University of Notre Dame. I faced pretty strong head winds from the south during this flight, and I should have landed to refuel. Instead, I pressed my luck and landed at Willard with very little fuel left. I was not reprimanded but heard about the close call


Fairlawn Village from the Air

from the grapevine.

During my visiting faculty years at Madison I joined both the Hoofers sailing club and the Hoofers climbing club. For $25 one got all the sailing instruction that was

Family Flight from Madison

Devils Lake from the Air

needed to become a certified Tech dingy sailor which I did. In the climbing club I met several climbers who were to become my climbing partners in the Tetons. By the early 1970s we owned a sailboat on Lake Michigan. About that time I decided that two expensive and relatively risky hobbies were enough and gave up flying.