

Chapter 11

Allied Chemical & California

As I said in the last chapter, Anne certainly knew that things were not going well at Holobeam. We had not made any plans on what we would do if I became unemployed. I think I assumed it could never happen, but it did.

My first instinct after being fired was to somehow make a living by consulting. I had a lot of knowledge in laser processing, but no real contacts. I did manage to obtain one contract with a printing company to evaluate the possibility of using lasers to inscribe rotary presses. This was a paper study and led nowhere.

I had to do something with my time and returned to playing tennis every day. Our local swim club had a tennis court and there was a men's tennis ladder. I set about challenging men who were above me in the ladder. I got a good bit of exercise while climbing the ladder. I was no Anne who, by the way, got to the top of the ladies' ladder.

Allied Chemical Company

This unemployed life changed when I got a call from Allied Chemical Corporation in Morristown, New Jersey. Dr. Jack Gilman asked me to come down for a visit. He said he had received a recommendation from Dr. Sam Tuccio, a recent hire at Allied from Lawrence Livermore Lab, that I would be a good man to direct an applications lab.

After some enjoyable technical discussions, Dr. Gilman hired me for his research lab. Allied Chemical had set up a fairly large new research lab in Morristown, which Dr. Gilman had designed and outfitted. They had achieved a number of research successes and they developed some excellent materials technology. These did not, however, exactly fit in with Allied Chemical's basic business in chemical products. I was hired as a group leader, but I had no group. For the first two months, I basically sat in the staff meetings as a listener. Gilman would query me after the staff meetings regarding my opinion on possibly converting some of these inventions into Allied Chemical products.

Allied had been doing research on potential laser materials and had developed an exciting one called Alexandrite. This material is actually chromium doped Chromium Doped Strontium Aluminate, not that it matters for the story. I had actually tested this material at Holobeam under a contract from Allied. We found it indeed was a good laser material. Our quick tests indicated that Alexandrite emitted light in the deep red on the normal chromium emission lines, similar to those in ruby.

Allied later found that this material was a tunable laser source and had considerable potential. This fact becomes quite important to me after I started my own company on the west coast.

There was a second and more immediately interesting technology that they were developing. It was a process for making something called amorphous metal. This is a metal that is cooled so rapidly that it cannot develop grain boundaries or crystalline orientation. This material was made

by mixing and melting the proper metallic constituents and then very rapidly cooling the material.

The process had been known for years as “splat cooling.” Allied developed this idea into a continuous manufacturing process by devising equipment that rotated a water-cooled drum with its surface moving at high-speed directly below a container of molten metal which had a narrow slit in the bottom adjacent to the surface of the drum. When the metal was heated and became hot enough, the metal flowed through the slit, was contacted by the cold fast-moving drum surface and spun out as a thin continuous amorphous metal ribbon.

Building the machine to manufacture this material was quite a project. The system for catching and winding up the rapidly moving foil was even more of a challenge. In any event, Allied solved the catching problems. There were a fair number of rooms full of boxes of tangled metal ribbon that was made before the catchers were perfected.

One of the most potentially useful metals, named Metglass was an iron material with extremely interesting magnetic properties. It had extremely low loss when used as a transformer and was also inexpensive. It contained no exotic metals.

I did some marketing research to determine who might want such material and contacted EPRI in California. EPRI was a co-operative industrial research institute set up by the electrical power companies to improve their efficiency. I made a suggestion to Allied that they contact EPRI to obtain

funding for a joint investment and full-scale development of this material. Allied initially had no interest, but once EPRI indicated major support, a joint multimillion dollar program was set up. This was the first outside funding for Jack Gillman's laboratory. The result of this work was to develop an extremely valuable material for power transformers. The material is still being manufactured in large quantities by a separate company that purchased the rights.

The Allied job was very interesting and well-paying, but the 49 mile commute over Route 22 in New Jersey was grinding me down. I discussed with Dr. Gilman about the possibility of being relocated to the Morristown area. He agreed with the idea but we discovered that Allied corporate policy was that you had to be more than 50 miles away from the facility before Allied would pay for relocation with no exceptions.

This was in the spring of 1976. Anne and I had been looking at the potential cost of college for the kids in New Jersey, which appeared to be fairly overwhelming. Anne had finished her studies at William Patterson for her Masters degree. At that time both Michigan and California had free, or very low cost college tuition. I had been to the bay area in California quite a few times, both while at Holobeam, and while at Allied. For many reasons, California seemed more attractive than Michigan.

GTE Sylvania was a military products company which was interested in getting into the commercial laser business to exploit some of their military laser products. My former colleague from Holobeam, Bud Erickson, recommended that they contact me.

This was the second west coast interview that I had. I had previously visited Lawrence Livermore National Lab to discuss working on their large laser Nuclear fusion project. Nothing came of that visit, but I again was impressed with the area.

I visited GTE Sylvania and they showed me some of the military laser technology that they were interested in introducing into civilian use. I was impressed. They offered me a job as the head of their commercial laser development lab and offered to pay for our family move. I flew back to talk with Anne. She said “yes!”

Employed Again

Anne was ready to move west and took on the job of selling the house. While I started working in California, she held a huge garage sale and set about getting the house ready for sale. One of the first problems was to get rid of my collection of lumber which was stored in the basement. Another was taking down my Lionel railroad tracks that we had set up on the table in the basement. We had considerable stuff in the basement because it was a dry large basement. We felt that was a positive feature of the house. Needless to say there was a torrential rainfall after we had cleared the basement and we had water leaking in through the casement windows. Anne had a frantic few days drying this up before the realtors planned their open house.

We were not trying to make money on the house, just to sell it at the prevailing price. It did indeed sell quickly at \$46,000. GTE Sylvania paid for moving our belongings and ourselves

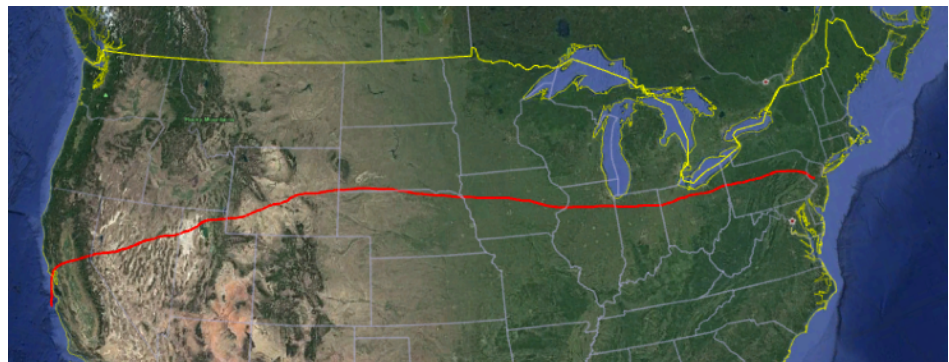
to California. Once the house was sold, the family and kids said our goodbyes to our friends and neighbors and the moving trucks arrived. The company had paid for a container move, which was supposed to be superior.

We were planning on driving our large yellow Chevrolet van to California. Our family cat, Heidi, was not traveling with us, but our good friend Eileen Palmer was going to keep an eye on him and send him out on a plane after we arrived and had a house. The new owners of the Ringwood house were not particularly cooperative with this plan, but Eileen did manage to get the cat on a flight. Heidi arrived after we were settled in Cupertino.

This is the route that we took across the country.

I had decided that 200 miles a day was the proper rate of travel.

I reserved rooms at Holiday Inns at this spacing all across the country. Our daily plan



was to get up, have breakfast, get on the road for a few hours and arrive at the next Holiday Inn by about lunchtime. Every Holiday Inn has a swimming pool. We might or might not do any sightseeing wherever we stopped, but we were sure to have a swimming pool for the kids to enjoy.

The kids ordered their own meals. They each had a per diem which they could spend any way they wanted. Any money that was left at the end of the trip was theirs. Monica was the most diligent and had the most money left. Mary really enjoyed ordering desserts. The other three kind of randomly stayed within their budgets.

We left in August, planning to be in California in time for the new school year. We had driven up to North Jersey on the 200th anniversary of America and celebrated by watching the parade of tall ships on the Hudson River. This was our last East Coast memorable event.

We stopped at Cleveland to visit Anne's brother and sister-in-law but did not divert up into Michigan as we had been there a year or so before. The flat open states rolled by day by day with Peter meditating in the back of the van and the other kids alternately reading, talking, or watching the endless flat countryside.

We scouted for notable things along the way, my first memory is of the Corn Palace in Nebraska. We checked it and found nothing memorable about corn. The next is the Great Salt Lake. We detoured up to the Great Salt Lake. where I was going to wade out into the water and experience how high one floated in saltwater. The place where we stopped, was a very shallow part of the lake and I walked out a quarter-mile and it was still little more than ankle deep. I never did try floating. After Salt Lake City we drove by and looked down at the Grand Canyon. We were properly amazed. I remember stopping at Jackson Hole ski resort. It was in the summer, so there was no skiing, but the mountain

peaks surrounding the town were gorgeous. We took time out from our travels to take a white water boat trip on the Snake river and a gondola ride to the top of the surrounding peaks. We passed the faces of presidents carved on the side of Mt. Rushmore. Sheila called it “Face Mountain.”

We saw Old Faithful geyser, but no bison in Yellowstone National Park. We continued on through Reno, up over the mountains and down past Auburn and through Sacramento. We followed route 80 towards the Bay Bridge, but we diverted North so that we would cross over the Golden Gate Bridge. We went through San Francisco and down Highway 280, to our new home in Cupertino.

While Anne had the job of selling our house in New Jersey, my job was to find a six bedroom house near GTE Sylvania in Saratoga or Cupertino. We decided buy a home in Cupertino. When I was told the price was \$91,000, I laughed and said I’ll be back tomorrow with an offer. I did not want to show him that I was so stupid as to pay that kind of money. When I came back to make an offer the next day, he informed me that the house had sold the previous day at that price. He told me there was an identical house across the street at \$500 more and I humbly rushed over to buy it. It was fairly new and it was empty. The kitchen was however fairly dirty. We were then staying in a motel, and I was reporting for work. Anne washed down the kitchen and a couple of days later the truck arrived in Cupertino with our furniture. GTE Sylvania had paid for a premium container move, but they still managed to break a couple of items, apparently dropping a container. In any event.