Chapter 14

Laserscoppe

XMR was still in its building on Scott Boulevard and we were investigating different laser technologies that might make money when Peter Hertzman, an engineer whom I had met at laser show, introduced me to a medical doctor who had been looking for a way to operate a medical laser inside an operating room. The existing argon gas lasers were large and inefficient and required more electrical power than the existing operating rooms had available.

After finding out what Dr. Rodney Perkins requirements were, I suggested that the required laser output energy in the green could be obtained by frequency doubling the output of neodymium YAG laser. Jim Murray and I had succeeded in

frequency doubling a YAG laser while we were at Holobeam. The best available doubling crystal at that time was Lithium Niobate this material however, had to be held at a certain temperature in order to doubling the frequency of the incident light from the inferred into the green. It also heated the crystal while the frequency-doubling was occurring. It was almost impossible to achieve stability.

I had recently learned about a new doubling material called KTP, which could be operated in a configuration that was temperature insensitive. I proposed to Dr. Perkins that we could make such a laser, but I said we did not have the finances to develop it for him. He proposed that we start a new company, name it Laserscope, and that he would arrange the financing. Dr. Perkins was a well-known ear surgeon who had previously started a couple of companies and he had good access to venture capital financing. We agreed that we would do the research and development for the proposed medical laser as a partner in the new company.

I did not know at the time but this agreement would lead, years later, to a good bit of my retirement finances.

Since I owned most of XMR, I put the stock in the newly formed company as part of the existing XMR. It seemed the right thing to do as we would be using company space and resources. This turned out to be somewhat dumb since Amoco would not agree to my buying the stock back when they purchased XMR.

This new material KTP had actually been invented at DuPont laboratories on the east coast and was being manufactured

under a DuPont license at a small crystal growing company called Airtron. KTP is grown by a process called hydrothermal growth where the proper chemical components are put in a high-temperature, high-pressure chamber. The chamber temperature is slowly reduced and hopefully the material forms the desired crystals. Airtron had indeed produced some small crystals, but the KTP was only one of their products and they were producing only one crystal every few months.

This was not sufficient if we were to have a product and Dr. Perkins and I traveled to the east coast to encourage a greater effort. We arrived at Newark airport and were greeted by a limousine that Dr. Perkins rented for the day. We had a morning meeting with the Airtron executives and attempted to convince them of the value of growing larger KTP.

Airtron was a small research company operating out of a small industrial building. They had a three man technical crew that was charged with the crystal growth. After our technical lunch meeting, we suggested lunch and they suggested we go to a hamburger place a block or so away. As we went out the front door, we waved at the waiting limousine that picked us up and drove us a block and half to the hamburger place, waited until we had finished, and drove us back to the Airtron office. I think this impressed them more than all of our projections of how much material we would possibly need. Over the years we got to know the Airtron people quite well because KTP turned out to be a fairly difficult material to grow. The crystals, which were typically a half centimeter cube would often have a region best described as a white

streak. They were not only bad frequency doublers but had a tendency to shatter.

During this research on frequency doubling, we were approached by an instructor at Stanford who told us that they had a Chinese student whose VISA would be revoked unless he had a job. He had good references and we needed technicians so we hired him. His name was John Yao and it turned out that he was an excellent technician, although we did have an exciting time when he temporarily lost one of the doubling crystals in an opening in the optical bench. He is now one of the most senior laser faculty members at the best university in China.

Ted Fahlen eventually demonstrated a laser system at XMR producing 2 watts in the green using this material and our neodymium YAG laser. About this time DuPont, the owner of the KTP material patent put additional money into Laserscope in the development effort and moved Laserscope out of XMR buildings and into their own laboratory space. I remained on the Board of Directors at Laserscope through an IPO, several presidents, some additional venture investments, and the developing of a successful medical laser product for treating benign prostate disease.

The basic product of Laserscope was a small high-power green light output laser. The laser had to be reliable and ideally have an output power of at least 100 watts. Over the years, Laserscope continued to get better and better performance out of their lasers and was able to demonstrate most of the medical advances that we had predicted

Laserscope had its major technical and financial success in the treatment of benign prostate growth, PBH. Older men often developed a constricted urinary path through the prostate. This was non- cancerous, but prevented normal urination.
The existing clinical procedure consisted of giving significant painkillers to the patient and actually scraping away the encroaching tissue. Beyond being later painful, this required the patient wearing a catheter for an extended period.

The Laserscopes procedure utilized a thin fiber with a beveled end which reflected the laser beam towards the side and onto the tissue surface. The green wavelength had the property of both removing tissue and cauterizing the remaining surface. Optimally, the patient had no bleeding and did not even require a catheter.

Incidentally, most of the research work at Laserscope was with bull prostates. The Laserscope machine was successful with most of the profit being made by replacement optical fibers as that was a patented part of our machine. A new fiber was needed for every operation. Laserscope shipped these machines to hospitals around the world.

Laserscope continued to investigate other medical procedures which could be done with the laser. We did a series of experiments on treating the skin for various problems. While we occasionally got extremely good results, the variation in the skin from patient to patient, even in different areas of the same patient, prevented this product from ever being really successful.

While laser treatment for BPH was very successful, it was a slow process to convince surgeons to switch from their alternative procedures to using a laser.

Early in its life, Laserscope had spent its basic startup funding and was only able to obtain continuing funds at a very low stock price. This diluted the ownership of the initial investors and founders, but I had transferred my shares to Amoco as part of the XMR arrangement. I did get continuing Laserscope options as the Chairman of the Board and these turned out to be quite valuable when Laserscope was later acquired by another company.

As Chairman of the Board, I had a fairly active involvement over the years. I helped promote a Marketing Manager to be the CEO. I later negotiated his termination settlement when he failed to perform. I helped to promote the head of research and development to be the new CEO and watched the slow, painful growth of a small company with a novel product in the difficult medical device area.

Dr. Perkins was no longer significantly involved in Laserscope. He founded several new companies on hearing research and products. The Perkins live a wealthy lifestyle; they have a beautiful home with a tennis court in a wealthy neighborhood in Hillsboro. When he wanted to rebuild his house, he bought the neighboring house to live in during the construction.

We eventually sold Laserscope. The new owners brought in a new technical staff and managers and made Laserscope a division of their own large company. I found out later that

they predicted that the stock value of Laserscope, added to their own stock value would be more than $1 billion and they believed that the resulting combination would become a large enough company to enable a huge initial public offering. It never happened. The existing employees (myself included) did very well in the acquisition and I was to see four of our product managers move on to other small companies and be reasonably successful.

The Perkins entertained Anne and me at their vacation home on the Snake River in Oregon. It was a trout fishing weekend. We embarked on two motorboats, each boat having a guide, and we attempted fly fishing. Since the guide knew the river well, we ended up with a fair number of fish. We drifted further on down the river until lunch time when we pulled ashore to a grill and picnic table. It had been set up by another crew of people so that we could enjoy the fresh trout in early afternoon. It was

indeed plainly upper-class fishing and we certainly enjoyed it. A couple of drivers arrived and took us back to the house. A somewhat strange, but enjoyable, interaction with the rich.

After all my long-term involvement with Laserscope, from being one of the founders, developing the crucial green laser at XMR, being on the Board, even Chairman of the Board, but never being employed by Laserscope, we ended up selling the company for $715 million. With only my options of board member stock over the years, I still received over a million dollars for my options in 2005.

It was a parallel activity for me to XMR, after helping the company develop the frequency-doubled laser emitting in the green, I basically watched from the sidelines. The sale of the company did not happen until 2006. I was deeply involved in Candescent a new venture by then.

I still am fascinated by the medical industry.