

~~ENTREPRENEURSHIP AND VENTURE CAPITAL~~

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THE BEGINNING OF THE HOME SMOKE DETECTOR

As background to a slide presentation on venture capital which is my current activity, I was asked to present a summary of Statitrol Corporation and the home smoke detector. The story itself is interesting, and I enjoy telling it, but it also identifies a variety of financial mechanisms and a variety of different types of financing.

I must add that Statitrol was started while I was still ^{MANAGING PEARSALL} operating a manufacturer's ^{REPRESENTATIVE} agency for heating and air ^{HANDLING} conditioning products which I had started in 1955 as Pearsall Company.

The static neutralizer ^{WAS THE SUGGESTION} was not my idea but the idea of a young man who sold static meters for the B. K. Sweeney Company. ^{HE} I first offered to pay for the materials if he would put a unit together that he felt could be sold for the control of statics in ^{PHOTO DEVELOPING} dark rooms. ^{HE} He proceeded to buy a small electric ^{FLOOR} heater from Skagg's drug store, tore out the heater elements and inserted a ballast from a flourescent light fixture, connected the output to some sharp metal points, to which were applied 3000 volts, AC. To avoid anyone coming in contact with high voltage, ^{WE} he coupled the points through a capacitor limiting the energy so that the voltage was still there but it was essentially harmless. Total parts cost including labor on this little device was about \$35. We decided a selling price of ^{\$165.00} about \$180 would not be out of line.

A large graphic arts supply house in Chicago, the Harold Pitman Company, heard about the device and asked for a demonstration. After two false starts, I finally made a successful demonstration in Chicago and then found, to my surprise a few days later an order in the mail for 15 units. Two weeks later another order for 30 units and within ^{MONTHS} 60 days we were shipping 200 a month, all to the same customer. We subcontracted the assembly of these units with an ^{ELECTRONICS} company in Broomfield, Colorado, ~~Instruments Incorporated.~~

About a year after introduction, sales began to slow ^{UP} due to a maintenance problem ^{WHERE} these sharp high voltage points caused a precipitation of dirt from the air and in a dark room with heavy concentrations of photographic development chemicals in the air, the product would lose it's effectiveness in as little as two weeks. It was necessary then to clean the device and start over.

We decided to develop a more sophisticated product. We then set up a laboratory, built a test fixture and a ^{SMALL} small homemade instrument, ^{SENSOR TO} to measure the concentration of ions in a very crude way. ^{HEIR IS WHERE} THE INVENTOR, LYNN BLACKWELL WAS INTRODUCED AS A FORMER CONSULTANT TO SWEENEY. LYNN HAD BEEN INVENTING SINCE GRADUATION FROM THE U. OF COLO. HE DESIGNED MANY PRODUCTS BUT NONE BECAME FINANCIALLY SUCCESSFUL. FOR EXAMPLE, HE DESIGNED AND BUILT A ^{UTAH} GARAGE FULL OF BEIGIER COUNTERS JUST AS THE RADIUM DEPOSITS PETERED OUT.

We soon discovered that when smoke was allowed to enter the fan that our ion measuring device was dramatically affected.

Weeks later I happened to be demonstrating some of our heating equipment at a teachers convention at the Denver City auditorium. Across the aisle from our display booth was a fire alarm display ~~for~~ Honeywell.

When the educators were in session, the aisles were empty and there was nothing to do but wander through the rest of the booths. I mentioned to the salesman for Honeywell in his fire alarm display, that there was no smoke detector. Almost as a ^{RE}joke I asked him to come down to the office and we would demonstrate a smoke detector. Surprisingly he came in the next day and we demonstrated the unit. When he saw this small battery powered device react violently when smoke was inserted in the unit, he exclaimed that we should forget statics and get into smoke detection.

Two months later we decided to do some development after finding out that such a device had already been developed in Switzerland in 1946 and was just now being introduced to the United States. Further investigations showed that they required a 140 microcuries of radium 226 and 218 volts to power their system. In our case, we were working with 24 volts and 1/10 microcurie of radium 226. Keep in mind that neither of us would be allowed to use that material today since it is a gamma emitter.

Within the next two years it was necessary for me to sell Pearsall Company to my key employees, borrow everything possible from the bank, and maximize sales of the static neutralizers. With all of this, the development of the ionization detector consumed all of our funds and more. As an emergency measure, I sold 52% of the company to Powers Regulator Company of Skokie, Illinois who could see value in putting smoke detectors in air ducts consistent with their pneumatic control systems. This resulted in getting another \$130,000 which was gradually consumed in further development. After two years we managed to secure Underwriters Laboratory approval on the first ionization commercial ^{SMOKE} detector made in the U.S.

At this time I was offered a contract from Honeywell for 15,000 ^{SELF CONTAINED} units over a three year period. This was for our second generation device not yet through Underwriters Laboratories. Nevertheless, taking this letter contract to my ^{banker} he referred me to Central Investment Corporation, the only venture ^{company} in Denver at that time. I was able to borrow \$250,000 at 8% (the market at that time ^{was} 5%) ^{THIS} which allowed me to pay off Powers Regulator Company (who were ^{anxious} to sell their interest) for \$150,000, pay off creditors for \$75,000 leaving \$25,000 of operating capital to get into manufacturing for Honeywell and completing the Underwriters Laboratories approval on the second model.

The contract worked well, but it was necessary for us to move into new facilities. To do this, I applied for an SBA "504" loan. This was a complicated mechanism which ultimately involved five mortgages, one of which we held ourselves for \$20,000. We were able to borrow \$90,000 to build our first 10,000 square foot plant in Lakewood. Before completing the exclusive Honeywell agreement in 1969 we had lined up additional fire alarm company outlets, had introduced model improvements and expanded distribution mainly through the Simplex Time Recorder Company ^{EVERETT} to Europe.

During this time I had engaged the services of an inventor, Lyman Blackwell. Although we could not allow Lyman in our engineering department, he was an idea man and continued to present new product ideas.

As he did about once a month, Lyman came in one day with a little box, laid it on the desk and announced that he was convinced that we should make early warning smoke detection available to all households in the United States as cheaply as possible. At that time two detectors in a house would have cost a minimum of \$1,500.

Noticing the four "double A" batteries tacked to the back of this box, I advised Lyman that neither the National Fire Protection Association nor Underwriters Laboratories would stand still for a battery powered device when it is applied to life safety. He then said "suppose, as the batteries started to die it did this: - and at that point he flipped a switch and the unit made the characteristic click, click, click at a frequency of about once per second. I asked how long would this signal last and he replied "about ~~one~~ week". I then asked how long would the batteries last? He said "keep in mind that an ionization current in our detector is so small that it barely consumes any current at all and we should be able to use the battery essentially for its full "shelf life". I asked how long is that? And he replied "two years".

^{*} At that point I made a decision that we would design, build and approach the fire alarm industry with the first ^{EVERETT} battery powered home smoke detector. This was in 1970. Over a period of the next two years we presented this product to fire departments, building code authorities, Underwriters Laboratories and the National Fire Protection Association. All of them responded essentially with enthusiasm for the product but with an acknowledgement that it would never be approved as a life safety device because batteries were not reliable as a power source.

It was ^{THEN} necessary for us to petition to change the standards of the National Fire Protection Association before Underwriters Laboratories would ~~even~~ accept the product for evaluation. Keep in mind that Underwriters Laboratories tests a toaster not on whether ^{OR NOT} it toasts toast but on whether it is safe to the user. Unlike the toaster a smoke detector tested by Underwriters Laboratories must not only be safe to the user but it must perform to precise standards of sensitivity and long term reliability. It must remain on the ceiling in ^{quietly} operational readiness and yet able to respond ^{TO SMOKE OR P.O.C.} in seconds. We were finally able to approach Underwriters Laboratories with an NFPA standard and they could begin testing the device. We finally ~~received~~ approval about April, 1974.

WERE THE FIRST TO REC FINAL 1972

(P.O.C MEANS "PRODUCTS OF COMBUSTION")

Surprisingly, we were then able to convince the National Building Code authorities that it would be a major benefit to life safety that each home and each apartment should have at least one early warning smoke detector. In other words, this became a requirement to install a smoke detector if you were to get a building permit for a home in those cities that adopted the National Building codes. *UNIFORM BLDG CODE - WITH APPROVAL OF IBCSO (UNIFORM BLDG CODE AUTHOR'S)*

The marketplace almost exploded, we could not keep up with production and our employment ultimately grew to 1000 people attempting to stay ahead of orders. Creating a vacuum in the marketplace because of our inability to satisfy demand, many companies began to fill the void until 1977 when the company was sold to Emerson Electric, there were 54 known competitors in the marketplace including manufacturers from Hong Kong, Singapore, Southern Ireland, etc.

Along the way it was necessary to expand our plant and I was able to go back to SBA and secure through Central Bank a guaranteed SBA 7A type loan.

Obviously, our initial \$250,000 loan was paid off although it was two years late. The venture capitalist then exercised warrants to purchase one third of our company for \$90,000 which, 12 years later netted them over \$6,000,000.

The company was merged with Emerson Electric in 1977 under what was termed a "pooling of interest" or, in other words, an exchange of our assets for Emerson stock. ~~Fortunately~~ Emerson stock has continued to do predictably well.