

My Recollections of Hazards at the MIT Digital Computer Lab and Lincoln Lab

by Stewart Coffin

(Written around 1987 and revised in 2009)

Most of my work there was with d-c power supplies. Considering the high voltages used in the old vacuum tube circuits and the low impedance of the centralized power supplies by which we distributed power to the computers and throughout the lab, it is lucky that no one was electrocuted. There were other hazards too.

Shortly after I came to the Computer Lab in 1953, I accompanied Bob Jahn on a trouble-shooting mission to the power supply room in the Whittemore Building. Those power supplies, in addition to being poorly designed in general, contained many relays that were adversely affected by soot from the B. & A. railroad tracks that ran just outside. Bob cautioned me not to stand behind the racks while he tried to recycle the power back on. When I asked why, he pointed out several holes in the wire-reinforced glass windows as might have been made by a shotgun blast. These were caused by the occasional rapid disintegration of one of the waist-high horizontally mounted cartridge fuses in the six-phase thyatron plate circuit, with the fuse holder cap and their remains being fired through the window and out into the freight yard below.

Later, I completely redesigned and rebuilt those supplies under the leadership of Joe Gano, who was a pioneer in closed-loop power regulation. I always regarded them as one of the minor engineering triumphs to come out of that project, but alas, they were a technology with a dead end, as was also their successor in which we replaced the thyatrons with magnetic amplifiers and the vacuum tubes with transistors.

It used to be said that no one had ever seen one farad in one place at one time, but in the XD-1 power supplies at Lincoln Lab that was no longer true, as some of them contained more than one farad in rack upon rack of electrolytic capacitors. I sometimes wondered if an explosion of one can, especially when they were overcharged as so often happened, would trigger a chain reaction and a colossal meltdown or big explosion. We did have some rather spectacular failures, but that particular feared disaster fortunately never occurred.

A major hazard at the Lab was what might have been referred to as work-related stress. This is probably a misnomer, as my impression was that it was worse when there was practically no work to be done, as was sometimes the case, especially during my last year at MITRE in 1959. Two of the engineers I worked with left the Lab by way of a mental hospital.

Coming to the Lab directly from a rural background as I did, I don't believe that I ever became completely accustomed to security gates, armed guards, and the like. After a while, of course, you tend to put them out of your conscious mind. For many years afterward, I used to have an occasional recurrent nightmare of having lost my badge while inside the Lab and thus being unable to get out, becoming a fugitive from the guards or trying to crawl out through some confusing underground passageway. Later I was relieved to hear that others also had somewhat similar experiences. I have finally figured out that we all must harbor a deep subconscious fear of imprisonment. Having to show one's badge to leave the lab at the end of a stressful working day may have had some practical security reason, but psychologically I think it was a mistake.

I have no regrets, especially of my two years at the Computer Lab, which were actually some of the best years of my brief engineering career. Still, it is a relief to have served one's time and be on the outside.

Postscript to Computer Lab Report

By Stewart Coffin

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Back around 1965 as I recall, many former Lincoln Laboratory engineers, myself included, received a questionnaire from someone at the Sloan School of Management conducting a survey of businesses formed by those of us who had "graduated" from the Lab. I never saw the results, but depending upon what one means by "business," they may have numbered in the hundreds. All it takes to start and run some businesses is an office or workbench, and sometimes not even that.

I filled out that questionnaire as best I could. It was apparent from the questions that corporate size was considered some measure of success, so my quaint answers may have got no more than a glance and a laugh. Success is difficult to define, much less to measure. I suspect that many useful, creative, and socially desirable enterprises were prejudicially excluded from that study simply on the basis of size.

One of the more positive developments to come out of the turbulent 1960s was a revival of cottage industry and individual enterprise. Many engineers were attracted to this, including some of my former associates at Lincoln Laboratory. While many of those small businesses were in electronics and technology, others tended more toward the arts and crafts. There might appear to be little if any connection between some of those and the work at Lincoln Laboratory, but I wouldn't be so sure. I cite my own case as an example.

I left Lincoln laboratory involuntarily when our entire group was transferred to form part of MITRE. After a year at MITRE with not much to do, I left to work for Joe Gano in his newly formed backroom business called Dynamic Controls Company. Alas, twice we became experts in obsolete technologies. The last I knew, Joe was studying to become a lawyer (unsuccessfully I later heard).

While still at Dynamic Controls and seeing the end coming, I started my own basement business in reinforced plastics. I probably never would have done this had I not become interested in thermosetting resins from our work with encapsulation of electronic modules in epoxy. When that business was in its sixth year, I was tinkering one day with some scrap materials and came up with a novel little puzzle to amuse my children. That led into woodworking and geometrical puzzles, an interest that continues to this day. Recently, while compiling a book on geometrical puzzles, I realized that my interest in mathematical recreations sprang in part from an informal association that some of us formed at Lincoln Laboratory in the 1950s, brought together by a puzzle column in the Lincoln Laboratory newsletter. Gus O'Brien was one of the prime movers. I wonder if that column still exists.

The next time such a survey is undertaken by the Sloan School, I hope they will make an effort to include small cottage industries and crafts. Consider the following: They do not clutter up our beautiful rural landscape with huge industrial parks or choke our winding country roads with speeding commuter traffic. Besides providing many useful products, satisfying work and healthy living, many home industries involve children in practical and educational activities, to the benefit of the individuals, the family, and the community. How many other businesses can claim to accomplish all of these things?