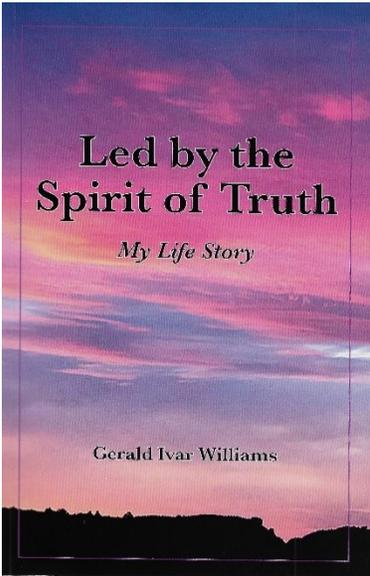


Three Satisfying Inventions!

INTRODUCTION

At the urging of his daughters, Jerry Williams wrote his life story. His book's front cover is scanned just below. The book's back cover is scanned at the right. → → →



When he was in 1st grade his teacher told him to print his name Jerry because that was what his friends called him, and that 'Gerry' was for girls. Most of his book is a poignant autobiography. In many ways Jerry was a Man of God and a Disciple of the Lord while being electronically creative to support their family life. He was one of the Greatest Generation that returned from WWII service for a successful career.

For this Information Technology article, editor Lowell Benson extracted Mr. Williams' professional work history – partially illustrated by the book's back cover. Please note the text of the first of his most satisfying inventions, the 1956 first use of transistors in a computer memory. Mr. Williams full list of patents is scanned hereunder on page 4. His history includes several technology companies; Zenith, Engineering Research Associates (ERA), UNIVAC, Transistor Electronics Corporation, and Control Data Corporation as well the company he founded – Williams Sound Corporation. I had met Jerry in the early 2000s at a monthly 1st Friday luncheon – read about of those luncheons at URL <http://vipclubmn.org/Articles/AGaggleOfGeeks.pdf> plus see a video interview of him during a 2007 luncheon linked from URL <http://vipclubmn.org/PeopleInterview.html#OldTimers>.

My Three Most Satisfying Inventions Gerald I. Williams

The Univac File Computer was designed and developed for Remington Rand in 1956 by a select team of four engineers: Don Weidenbach, Bob Wesslund, Jim Wright, and G.I. Williams. This was the first use of transistors in the memory portion of computers. The drawing for the related U.S. patent can be seen at the end of Chapter 8.



Personal P-A Broadcasting System

This product was conceived and developed to allow those with a hearing deficit hear the spoken parts of their church's worship service. As of 2020, more than 40,000 systems with more than 300,000 receivers have been installed.



OUR CHURCH IS EQUIPPED WITH A
Williams Sound Personal P.A. Broadcasting System
for members and guests with hearing impairment
PLEASE ASK AN USHER



The Pocketalker

Originally developed to assist pastors during hospital visits to parish members unable to use their hearing aids, the Pocketalker is now used by thousands of folks for a variety of reasons.

Mr. Gerald I. Williams Employment History

- 1941 to 1944 – part time electrical appliance repairman while in HS.
- December 1944 to July 1946 – US Navy, Electronics' Technician 2nd class.
- July 1946 to August 1948 – WCAL and KDHL radio station operations engineer while attending St. Olaf college in Northfield Minnesota.
- September 1948 to December 1950 – electrical engineering student at University of Minnesota in Minneapolis, MN.
- January 1951 to August 1951 – Zenith Radio and TV - Chicago, IL.
- August 1951 to fall 1958 – Engineering Research Associates which transitioned to UNIVAC.
- Fall 1958 to 1963 – Transistors Electronics Corporation - St. Louis Park, MN.
- 1963 to 1979 – Control Data Corporation - Bloomington MN.
- 1976 to 1987 – Williams Sound Corporation - Edina/Eden Prairie MN.
- 1987 – retired and sold Williams Sound Corporation to four employees.

My first job and 8 months in Chicago

As my 1950 class approached graduation there were no posted job openings for electrical engineers in Minnesota, so I was pleased to see two bulletin board scheduled interviews. One was with RCA, the other with Zenith Radio. The RCA job would have required moving to Camden, New Jersey and it offered a salary of \$265 a month. The RCA job involved designing radio and television receivers. The Zenith job required moving to Chicago. Zenith offered a salary of \$290 and involved developing color television receivers before they were being manufactured.

I had earned money on weekends servicing radios and TVs while in high school and college. That experience gave me the impression that Zenith built a better product than RCA and I wanted to find out how and why. Making the choice between the two offers was easy on three counts

1. Chicago was much closer to Minnesota,
2. Zenith offered more money, and
3. Color TV was just in its infancy so the work would be more interesting and could last quite a long time.

Instead of jumping right into the design routine at Zenith, I was put through a sort of training program – a quite valuable experience. I was assigned to the Component Analysis Lab for three months. The knowledge I gained working there has served me well in all my engineering projects ever since and I learned why Zenith products were so reliable. My job was evaluating vender-supplied samples for conformance to Zenith's specifications and comparing the samples with the similar components already in use. The Zenith slogan was, "The quality goes in before the name goes on. "

Apparently I was a keeper. My next assignment was in their Failure Analysis Lab. Again, I learned more about why Zenith products were so reliable. For my first project, I was sent to the production line to take a new receiver off the assembly line before it was put into a cabinet and bring it back to the lab. I removed all the vacuum tubes, marked them with an identifier, tested them on a tube tester, and logged the result. I put them back into the chassis, and then connected the TV to an adjustable A/C power source set to 130 volts instead of the usual 120. The set was operated continuously for a period of perhaps six weeks and then was checked for picture abnormalities.

Established in 1980

Those test receivers were sold to employees without cabinets at a reduced price. I bought one then, made a nice wooden cabinet, and we used it until color TV broadcasting began.

I had been receiving an electrical engineering society magazine and noticed an ad from a company in St. Paul looking for electrical engineers. Friends Paul and Shirley were unhappy living in Marion IN, thus were going back to MN. I gave Paul the ad, a few days later he let us know that he had been hired by that company, Engineering Research Associates. Lorraine and I were ready to move too so packed the car and took off. Arriving in St. Paul, ERA offered me an engineering job on the same project as Paul.

My next task was to quit my job at Zenith. My boss was disappointed with my decision, but he kindly understood my reason for leaving. ERA offered to pay for our move to Minnesota, so we hired a packing and moving company. After 8 months in Illinois, we were quite happy now to be back closer to our families. We rented an apartment in Roseville until buying our first home in that suburb. In retrospect it was a very good move, because ERA became one of the pioneers in the computer industry. I worked in that industry for twenty-six years until I founded Williams Sound Corporation.

Engineering Research Associates and Remington Rand UNIVAC, St. Paul MN

In 1952, Remington Rand acquired ERA, and renamed it UNIVAC. In 1955, Remington Rand/Univac was acquired by Sperry Corporation. During my seven years at Univac, I was given complete freedom for design innovation. I was the first engineer to replace vacuum tubes and relays with transistors. As a result of my work, I was granted three U.S./patents. I also had the privilege of working side by side with some of the notable pioneers of the computer industry – the most famous being Seymour Cray, known as the ‘Father of Supercomputing.’”

Payroll Panic at Cutler Hammer Company, Milwaukee, WI

My supervisor, Robert (Bob) Erickson called me into his office to tell me about a phone conversation he was having with our UNIVAC Customer Engineer at Cutler Hammer in Milwaukee. It was payday there and they were unable to extract the necessary data from the computer to print paychecks. When Bob handed the phone to me the customer engineering tech told me he was trying to identify why the data was not appearing.

| JERRY'S PATENTS | | |
|-------------------|---|-----------------|
| <i>Date Filed</i> | <i>PATENT TITLE</i> <i>Date Granted</i> | <i>Patent #</i> |
| | DATA REVOLVING | |
| August 23, 1954 | September 19, 1961 | 3,001,180 |
| | DIODE SWITCHING CIRCUITS | |
| May 12, 1955 | March 10, 1959 | 2,877,451 |
| | SWITCHING CIRCUIT IN A MATRIX ARRANGEMENT UTILIZING TRANSISTORS FOR SWITCHING INFORMATION | |
| August 6, 1957 | September 24, 1963 | 3,105,224 |
| | MOUNTING ASSEMBLAGE FOR ELECTRICAL CIRCUITS | |
| November 14, 1958 | May 9, 1961 | 2,983,892 |
| | SELF CONTAINED PANEL SIGNAL AND CONTROL | |
| November 14, 1958 | May 23, 1961 | 2,985,874 |
| | LOW VOLTAGE NEON INDICATOR LIGHT | |
| November 7, 1960 | June 26, 1962 | 3,041,499 |
| | APPARATUS FOR DISPLAYING CHARACTERS SELECTABLE BY DIGITAL DATA | |
| May 5, 1966 | December 24, 1968 | 3,418,043 |

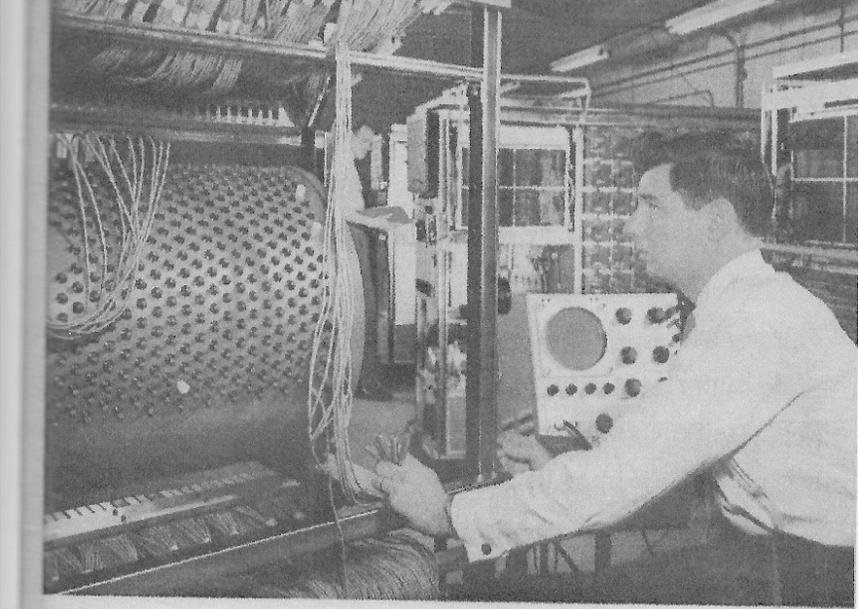
Apparently, his scope probe had slipped and made an accidental connection that erased the timing track. I said, "No problem, there is a spare timing track." He said he accidentally erased that one too. "Oh?" I told Bob, "this is serious?"

To write a timing track in the factory, the technicians use a six-foot-high rack of equipment that cannot be transported in an airplane seat. I thought perhaps my personal Heath kit audio generator at home could be adjusted to the correct frequency and copied to the recording head. With that idea, I was on a flight to Milwaukee the next morning.

I was met at the airport and taken to the customer site. I connected my audio generator to one input of the dual trace oscilloscope and the second probe to a erased timing track. It was soon apparent to everyone that my generator was not stable enough to write a usable timing track.

Taking a step back, I saw there was another drum in that cabinet, so I re-connected the scope probe from my generator to the timing track of the second drum. There was a slight difference of speed between the two drums so I held my handkerchief against the protruding shaft of the faster drum and found I could synchronize the two drums perfectly. The technician then rigged up a cable to connect from the read head of the second drum's timing track to a write head on the defective drum with a push button. Everybody got ready so when the drums were synchronized, I yelled, "PUSH!" And we were done.

The tech straightened up the site and told the computer users that the payroll data should be available. We went out for a cup of coffee and they took me to the airport. When I got back to the office and told Bob the story, he said, "Jerry, write that up and I'll see that it gets into the user manuals and a service bulletin to all the file-computer sites."

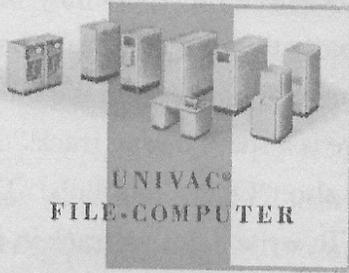


they're building PROFIT-POWER into this electronic brain

Univac File-Computer will open up a vast new world of profits because it will...

- * whip through your routine accounting chores in a fraction of the time, for a fraction of the cost.
- * keep fast, up-to-the-moment records on large volumes of fast-moving items or accounts.
- * provide fast, accurate answers to your vital profit & loss questions—guide management action.
- * furnish you with large-scale surveys and reports impossible with conventional methods.

Why not let us *show* you how the PROFIT-POWER of Univac File-Computer can help you reduce costs... seize opportunities... please customers... get the jump on competition. Call your local branch or write for free folders: "A Big New Step Toward the Automatic Office," today, Room 1916, 315 Fourth Ave., New York 10.



**UNIVAC®
FILE-COMPUTER**

Remington-Rand Univac
DIVISION OF SPERRY RAND CORPORATION

Jerry in a Remington Rand Univac advertisement, Newsweek, Sep. 1956

At UNIVAC, I gained a lot of knowledge about digital technology, the importance of engineering documentation, thorough design testing, and most importantly, the value of customer involvement and support for new product development. Undoubtedly, the greatest lesson I learned during my time at UNIVAC is that management must be visible and demonstrate its interest in all phases of a company's business. If Sperry Corporation management had done that, there probably would not have been a company called Control Data.

At UNIVAC, I had the opportunity to observe how morale can completely disintegrate when top-level management shows no interest in the employees or their work. I saw how a company can be torn apart by political infighting. My supervisor, Bob Erickson, called me into his office to tell me Bill Norris was leaving his job as general manager of the St. Paul UNIVAC operation to start a new computer company. If Bill Norris decided to walk away from the fight, it was also time for me to explore new possibilities.

Soon after this, a parts salesman named Don Hamilton called on me at UNIVAC. I told him I was looking for a new job. One night after supper, Don called me at home to say he was thinking of starting a new company to manufacture products his customers were unable to get through the companies he represented. Don asked if I would be interested to help get this business started. I was interested, that business became Transistor Electronics Corporation. *Read this clipping then continue.* → → → →

[Transistor Electronics Corp, St. Louis Park, 1958-1963](#)

In St. Louis Park we soon found ourselves teaching Sunday School and involved in other church activities. But the president of TEC, who also belonged to that church, told me not to get too involved because he wanted me to put all my effort into the company. I chose to ignore that warning because I felt that I had to put my commitment to God ahead of my commitment to my employer. We continued to be involved at the church, and the company prospered too. The president became a very wealthy man in a few years, and we were also blessed financially.

In the fall of 1958, I was invited to participate in forming a new company to be called Transistor Electronics Corporation. TEC was being organized to develop and manufacture complex components for the computer industry – items needed in designing transistor technology into computers. Those components were not available in the marketplace at that time.

Don Hamilton, the president of TEC, was a man with excellent marketing skills, so the business developed very quickly. However, I was driving twenty miles to work across town before there were any freeways, so Lorraine and I



At TEC I was free to pursue anything that looked like a good opportunity, beginning with managing the engineering activity and later manufacturing and ultimately the entire operations. After one trip to New York, I observed that company success was taking its toll on the president's health and personal relationships. Friction developed between us, and it became apparent that we had fundamental differences over the future direction of TEC. I recalled a prayer-poem by Reinhold Niebuhr that says, "God grant me the serenity to accept the things I cannot change; the courage to change the things I can; and the wisdom to know the difference."

I made a painful, but peace filled decision. The hours of night work, the weeks and weekends spent away from family, the struggle to reach the top of an industry which offered a bright financial future, all that work that had finally begun to pay off, was discarded in a simple letter of resignation. The act of emptying out my desk, taking down my personal pictures, walking out and locking the front door of the building that I had helped to plan and build, after everyone else had left for the weekend, is a feeling will never forget.

Control Data Corporation, Bloomington 1963-1979

I never believed in burning bridges. In this case, many of the friends I had had at UNIVAC were now working at Control Data and they encouraged me to join them. One of those friends was

Bill Keye, one of my supervisors at UNIVAC – *far right of this drum set photo.*

He was VP for engineering at CDC. After Bill took me on a tour of the company's plants, he gave me a choice of several opportunities. He explained that they were having trouble with some of their outside suppliers. One example was the quality and high cost of voltage-regulated DC power supplies. This was technology



(L-R) Jack Hill, Dr. Arnold Cohen, Frank Mullaney, Bob Perkins, Arnie Hendrickson, and Bill Keye.
ERA - Engineering Research Associates (observing various Magnetic Drums)
Photo courtesy of Charles Babbage Institute

with which I was familiar. I told Bill I could start with that project while I got acquainted with the company's out of town divisions to see what other products should be considered.

The division I created to design and build the power supplies soon proved successful. The next project was to produce a multilayer printed circuit board. To do this, CDC acquired a local fledgling company that had good technical talent but lacked the resources to produce a satisfactory product. CDC provided the needed support equipment and with backing from the division that needed that circuit board, employee morale was bolstered. It was soon delivering a quality product.

Then I had a new job title as General Manager of Technical Standards, I explored how CDC could collaborate with its competitor so develop standards that would allow their computers to interconnect. This led to Computer and Business Equipment Manufacturers Association (CBEMA) which in turn connected to American National Standards Institute (ANSI) and the American Standard for Information Interchange (ASCII).

At the first CBEMA meeting, an IBM representative nominated me to be chairman. As a result, I became the de facto representative for the United States on the International Standards Organization (ISO). Meetings were infrequent, but always in wonderful places like England, the Netherlands, Germany, France, and Italy. I was able to take Lorraine with me to many of those places.

Around 1974, I attended a planning meeting of CDC's upper-level management for the computer division. The chair said, "We build the biggest, fastest computers in the world, and that's what we are going to keep on doing." I stood to say, "You guys don't know where this world is going. When memory becomes more affordable there will be computers on every desk and there won't be enough work for these dinosaurs that we're building." Another guy stood up and said, "Jerry, I have known you for about fifteen years and that is the dumbest thing I've ever heard you say." The meeting ended; about four years later CDC transitioned to Ceridian, eventually closing as desk-top computers took over. During the agonizing Reduction-In-Forces, I had to lay-off many, many people. Fortunately, I was able to find positions for some, but it was a difficult time for all concerned.

The mother of invention – the beginnings of Williams Sound Corporation!

A year or so before the last round of layoffs at CDC, one of the couples in our church came to the pastor telling him that their elderly mother was unable to hear his sermon because of a hearing impairment. The pastor relayed the issue to me because I had installed the church sound system. I had installed headphones and jacks in the pews of several churches but observed that few people used them. There seemed to be a stigma to sit in the 'deaf row.' I thought about trying a recent low-cost AM transistor radio in conjunction with a specialized transmitter attached to the church's sound system. That way, a hearing-impaired person could sit anywhere, pull out the 'pocket' radio with an earbud and adjust the volume. I built a transmitter using some spare parts in my home workshop, bought a Sony pocket receiver, removed the speaker, and fixed the station selector to the test transmitter frequency. I tried it a couple of Sundays to check out the system. Then I gave it to the lady showing her how to use it. After the service I approached her, and she started to cry. I asked why the tears to which she said it was the first time she had heard the sermon in her three years at the church. Her daughter asked for a few more receivers for other hearing-impaired people.

Having survived the layoffs at CDC, my wife and I discussed the possibility of finding another job – one day Herb Streitz stopped by to have me calibrate his recording equipment. He asked what was new in my life. I told him about the wireless hearing support system idea. Herb then included an idea survey in his fall advertising distributed to ~2,000 pastors. There was a 1% positive response so relying on Proverbs 3:5-6 "Trust in the Lord with all your heart and do not rely on your own insight ... he will make straight your paths." So, I contacted the local FCC office to begin the process of obtaining certification for church low power transmitters. It took time and testing but we did achieve certifications for the churches and devices.

Orders were coming in and we began shipping systems. It was thrilling to receive letters telling how our product was helping people but running a part-time business in conjunction with my full-time job at Control Data placed extraordinary demands on my time.



Lorraine at her Williams Sound desk in the basement rec room

We were depleting our inventory of receivers very quickly and a new problem arose. The receiver manufacturer discontinued the model we were using, and the replacement model was not adaptable. I used ten days of vacation time from CDC for an investigative trip. I flew to Hong Kong with 40 addresses and company names from the Yellow Pages; then with the help of two previous church members living there, I found a solution to my quest. Again, prayer helped the result!

By October of that year, we had outgrown our basement space and moved the business into a business site in Eden Prairie. I left CDC to devote full-time to the business. By April 1986 we had about 35 employees and had outgrown all space available to us in that building. We continued to grow, made deals with manufacturers' representatives to include our products in their dozen lines of commercial sound products. This opened the floodgates of orders. Ironically, after several subsequent moves to larger spaces Williams Sound, now called Williams AV, is back on Valley View Road in Eden Prairie, just a short distance from its first location.

In 1987 I thought about my promise to Lorraine that I would retire at age 60 if the Lord made it possible, but I would need someone to run the business. My brother-in-law said he had a neighbor looking for a new job. His name was **Jim Broz**, and the rest is bright history for Lorraine and me. I believe that our angel had interceded again. In August '87 we sold Williams Sound to four of the employees giving them four years to pay us out of the company's earnings. We retired to Lake Hubert near Brainerd – I later moved to Northfield when Lorraine passed away in 2006.

EPILOGUE

Special thanks to my daughters Elizabeth and Susan, who spent many hours refining and proofing *Led by the Spirit of Truth, My Life Story* - it would not have been possible without their help. *Jerry!*

Here you have it, an eight-page version of Jerry's 220-page life story. Now, if you take a break to read http://vipclubmn.org/Articles/75-Years_Ago.pdf; on page 7, Don Weidenbach had written, "I have received some phone calls saying they had seen the Tribune article, including Jerry Williams." Obtaining his phone number from Don; I called Jerry and had a good reminiscing chat. From Don's 1976 Sperry retirement party are Jerry, Jim Wright, and Don.



Jerry gifted me a copy of his book. I am donating it to the Lawshe Memorial Museum in South St. Paul, Minnesota for the ERA Legacy display. Thanks to Dick Lundgren for editing this paper.

It is indeed a small world!

1. On page 65 of his book, Jerry mentions his life being influenced by Reverend Rueben Gornitzka during a talk at St. Olaf College. Rev. Gornitzka was the lead pastor at Central Lutheran Church in Minneapolis where he baptized our first son the winter of 1961.
2. On page 85 Jerry notes that they had rented an apartment at 1230 Rose Vista Court. Don Weidenbach recalls that they too had lived at Rose Vista Court at one time as had Gloria and I, we had rented in 1233 Rose Vista Court for the year after my 1966 U of MN graduation.
3. Jim Broz of the third paragraph above is married to Nancy, nee Simonson, from Alexandria MN. She is Lowell's 1956 HS classmate and 1953 Lutheran church confirmation mate. *LABenson*