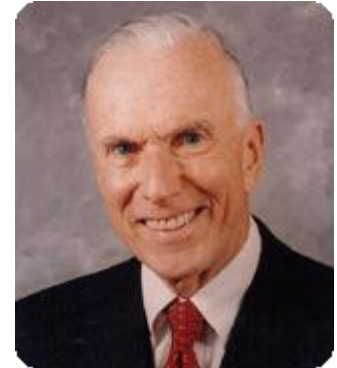


My HP Life and Beyond, by George Stanley

Mr. Transistor Basics--George Stanley

Foreword by John Minck

When your life experiences before joining Hewlett-Packard include childhood memories of a family life seared by the Great Depression, with multiple family moves and poverty staring you down, you develop a personality which is able to take on almost anything life throws at you. Couple this background with a life event that we sometimes read about, but never know anyone who went through it - George missed a scheduled military flight out of Massachusetts to Germany, which crashed into the Atlantic, killing all aboard.



George Stanley came up from his bootstraps and fought his way into an excellent education. His story of getting an interview to gain acceptance to Stanford University is more than charming and fortuitous. It worked. His BSEE degree and AFROTC led to USAF service managing surveillance radar into Eastern Germany and controlling the Frankfurt/Berlin air corridor. In this role, his radar team caught the track of the FIRST U-2 spy plane coming out of the Eastern Block, and after manipulating his radar functions to assure that something REALLY was over 60,000 feet, was told by his upper Command to burn all records.

Now add in George's remarkable success at HP, patent holder from his days as a microwave design engineer, Author and Chief Trainer of the "Transistor Basics Course," a widely acclaimed tool for our global service departments and many, many customers worldwide. Later, follow his appointment as the Cheerleader in Chief for the newly introduced HP-IB computer architecture, and you have a technology career which delivers VERY interesting reading.

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My HP Life and Beyond, by George Stanley

- Part 1 -

My Life Before HP

Chapter I: The Early Years

There is little doubt that my life was greatly influenced by the instability of the Great Depression years, caused by the inability of my Father to find continuing work, and resulting in multiple moves of our family to many, many locations. Coupled with this was my late starts in education and some slowness in my learning processes, which today would probably be classified as learning disabilities. For example, I didn't really start school in earnest until I was 11.

My childhood memory is full of location moves, Alexandria, VA, Great Barrington, New Marlborough, MA, New York City, under the Elevated tracks, and thence back to Great Barrington. I was seven and still had not started school. I also endured a number of physical ailments and accidents such as getting my lungs badly damaged from running through a field of burning poison ivy. I had serious setbacks with bronchitis and bronchial pneumonia.

In 1940, the family moved to Arizona, onto a working cattle ranch, which doubled as a boarding school. So I learned ranch life by helping as much as a young 10 year old could. The war had started in Europe and I can recall serious conversations with an old cowhand about his life fighting Indians when he was young.

Chapter II: Boarding School

In June 1944, I graduated from the William Cullen Bryant Grade School in Great Barrington, MA. I believe it was then that my parents realized that with my limited schooling I was not ready for high school and later college. As a result they decided I should go to a "good" prep school that in their mind would prepare me for college. My Grandfather Darlington had set aside some money for the education of his four grandchildren so off I went to Eaglebrook School in Deerfield, MA and was put back one year. There I spent two years repeating eighth grade and doing the first year of high school.

I struggled with grades as most of the other students had been attending private school since kindergarten. I previously had only had about four years of schooling if you added up all the bits and pieces. In spite of my laboring over schoolwork, I had a relatively good time. There was skiing, baseball and football and I tried all three even though I was very skinny for any serious football. And in the summer of 1945 the war ended and that made everything look better.

In September 1946, I entered The Hotchkiss School in Lakeville, CT. If I thought Eaglebrook was tough, Hotchkiss was much tougher. I had a very difficult time because I was such a slow reader. Even though I worked very hard, I continued to get very poor grades. Also, in November of my first year I came down with pneumonia. Finally in June 1949, I graduated (barely) and was now ready for college. Since my father had attended Yale, I was told that was where I should go. I applied and surprisingly got in. As you will soon see it was a big mistake.

There are a few interesting Hotchkiss stories that you should know about. The two things that could get you immediately expelled were smoking and having a radio. Naturally, I tried both. With the war over there was a lot of surplus WWII electronic equipment for sale at very low prices. I bought a small portable (battery operated), surplus, short wave radio and was able to modify it to pick up the top half of the AM broadcast band. Also, during school breaks I built radios from kits and sold them to other students.

One day my mother visited the school and was invited to lunch at the headmaster's table. She was seated on his right. I was on the other side about four places down. During desert, she asked, in a loud voice so I could hear her, "George, have you sold your radio." My spoon was half way to my mouth, and I believe it momentarily paused as the hair on the back of my neck prickled. I didn't say a word but had visions of going home with her. Luckily, nothing happened. I guess the headmaster, a.k.a. "the Duke" felt that I should not be expelled for my mother's faux pas. I immediately sold my radio.

As there was a drama club that put on plays, several of us worked on stage lighting. One thing we discovered there was a cupola above the back of the stage that we could reach by climbing. This was our favorite spot for smoking. One day in June of my senior year I was up in the cupola smoking away. I could look down on the main entrance and the headmaster's office. Along came the headmaster, "the Duke". He was within spitting distance. I held my breath hoping he would not smell or see any smoke. He did not, but that close call made me give up smoking. Why risk all when I was only a month away from graduating.

Chapter III: Starting College

My freshman year at Yale was another difficult year. My grades continued poor, and I got quite sick with the flu in the spring. The only bright spot was that I took a reading test and discovered I had a seventh grade reading level. I was told I was not college material. I seriously thought of just quitting school. The Korean War had started in June and the Army was an alternative. Instead, during summer break, I signed up at "The Reading Institute" in NYC. This school was connected to New York University and located on 12th St. I took a room on 9th St. and walked to school.

At the beginning of the term this special school gave me three days of psychological and physical testing. They told me I had an IQ of 130 but could not read at grade level. They also said I was dyslexic, should make more of my own decisions and not feel I had to do what my parents wanted. All this was an eye opener. I went to classes for four hours each morning and then had special homework to do in the afternoon. It worked. When I was tested at the end of summer, I read at college level.

I decided to start college all over again and enrolled at Union College in Schenectady, New York. Union College is an excellent, small, technical college, and I did reasonably well. The math department at Union was the best I have ever encountered. Now I was beginning to enjoy college. I also enrolled in the AF ROTC program.

Chapter IV: Going to California

In June, the day after my last exam, I started a required surveying course. Each day consisted of four hours of classroom work and four hours of fieldwork. This class lasted until July 3rd. When I returned home, I talked with my friend, Harry Carlson. We decided to drive across country to California and get summer jobs in LA. I had a very good friend, John Tracy, who worked for Western Airlines in LA, and I knew we could stay with him until we found jobs. I had friends along the way that we stayed with for a night and even stopped at the Quarter-Circle-V-Bar Ranch in Arizona. It had expanded quite a bit since 1940 and was an interesting stop.

When we reached LA, both Harry and I found jobs at Lockheed Aircraft Service, which was located on the other side of the runway from Burbank Airport. We had to be at work at 7 AM but were finished at 3:15 in the afternoon. We were electricians and our job was to rewire F-80s for the Korean War. The F80 was called, "The Shooting Star", and was our first jet plane. We had to buy all our own tools and toolbox. I still have a few of those tools today.

At the far end of where we worked was a restricted area that was very "off limits." Later when I was in the Air Force, I would find out that this was the beginning of a very secret project. I'll tell you about it later. Each weekend after work we explored nearby sites. One weekend we even took the ferry over to Catalina Island without making any reservations. I think we found the last available room on the island. Over Labor Day weekend we decided to drive up to Yosemite because that was where you could drive through a tree. This we had to see! On the way back I said I wanted to stop in Palo Alto.

Chapter V: Applying to Stanford

When I was at Union College, I pledged a fraternity and had to address Christmas Cards. I remembered sending one to Mr. Richard Balch, Dean of Men, Stanford University. When we reached Palo Alto, I looked up Dick Balch's address in the phone book, drove to his house and saw a man working in his rose garden. I walked up, introduced myself, and said I was attending Union College and was thinking of transferring to Stanford for Winter Quarter. He said, "why not this Fall Quarter?" I was surprised as I expected Stanford would start in a few weeks. Mr. Balch suggested I stay over and on Tuesday, see his friend, the Dean of Admissions, Rexford Snyder.



Harry drove our car back to LA, and I got a room at the Cardinal Hotel in Palo Alto. In the morning I walked to the campus, found Mr. Snyder's office, walked in and said I would like to see Mr. Snyder. The secretary asked if I had an appointment. I said, "No", but Dick Balch suggested I see him. The secretary said that Mr. Snyder was leaving in an hour for vacation in British Columbia but she would check with him. He invited me in and I gave him my pitch being sure to mention that I was in AF ROTC. I felt with the Korean War going on it was important to hear that I could not be drafted. After hearing my story he gave me a special address and said to try and get all my high school and college records sent in by the end of the following week. A week after that there was going to be one last admissions meeting to consider a few special cases and they would include mine. I was given a special number and extension and told to call at 5:30 on Friday of the following week. Then I would be told "yes" or "no".

I flew back to LA, continued my job at Lockheed, made many calls and sent telegrams. When the special Friday came, I put a lot of change in my pocket and went to a pay phone. I called the number, got the extension, identified myself and asked the big question. I was told that not all my records had arrived, but I would be admitted for fall quarter "on probation." Wow, did I have a lot to do. If I had not made it, I would have immediately started driving across country as Union College had already started. I told Lockheed I was quitting, my friend Harry stayed on and made a career at Lockheed switching over to the Missiles and Space Division. I called my parents and they were shocked. They barely knew of Stanford, but remembered that a distant cousin went there in the 30's and after graduation immediately joined the Communist Party!

Two days later, in September 1951, I drove to Palo Alto, registered at Stanford, found a room and started a heavy load. I was determined to succeed. I remember spending every Saturday afternoon and evening writing up my lab reports. Anyway, for me I did quite well. This first quarter I got Bs' in all my courses. I was on my way. Three years later, in June 1954, I graduated with a BSEE in Electrical Engineering and was commissioned a 2nd Lieutenant in the Air Force.

I was one of the lucky ones. With the Korean War almost over and a business recession starting, the Air Force did not need as many junior officers. Most of my ROTC classmates were made airman first class. I received a commission because I had a BSEE. I had a great time at Stanford. It was the right university for me, and I really blossomed. For the first time in my life, this was where I wanted to be. As time went by, I learned how to study and overcame my missing early schooling years. My grades got better and better.

Chapter VI: Going Overseas

After spending all of July and hearing nothing from the Air Force, I was getting restless. In August I decided to visit GE in Pittsfield, Mass near where my parents live to see if they wanted to take a chance on me. They did and hired me, putting me on an engineering training program that would take me to a variety of GE sites over the course of a year. GE felt that even if I was called up, I might come back to them after my AF service. My first assignment was the Telechron clock factory in Framingham, Mass. I was there all of September and into early October. One day I had a call from the message room. The young woman said I had a message that was too long to read over the phone so I had better come down and pick it up. It was from the Air Force and told me I had 10 days to report to Camp Kilmer, N.J. for overseas processing. Being an officer, I was allowed to bring a car and the government would transport it to my overseas site.

Well, I had to close my apartment, buy a uniform, transport my things home and then quickly get to Camp Kilmer. I did, went through the series of shots, VD films, received my dog tags, and attended classes on how to behave in a foreign country. One day I took my car to the port and was all set. Unfortunately, it was too late in the week to finish so I had to wait until Monday. On Monday I boarded a bus to Wendover field in Massachusetts. Ironically, this was fairly close to Framingham, MA where I had just left. When I reached Westover, I was told that the BOQ (Bachelor Officer Quarters) was full so I was put up in a downtown hotel and

told a Sergeant would pick me up early in the morning. I was scheduled on the "Blue Plate Special". This was the best MATS (Military Air Transport System) plane and was primarily reserved for military families. This sounded good. However, in the morning, no Sergeant showed up. I waited and waited then called and a pick up driver was sent, but I missed my flight. As you will see shortly, I was very lucky to have missed this flight.

Later in the afternoon I was later booked on a C54 cargo plane. It had no seats. Luckily, there were three doctors with me so I wasn't totally alone. This flight went to the Azores and then the next day to Frankfurt, Germany. We took off in a heavy rain, and I had to carry a locked briefcase of top secret material that was destined for SHAPE HQ near Paris. We landed at 3 AM at the US air base at Lajes. The Azores is a Portuguese possession so I was visiting my first foreign country. MATS is fondly called "Midnight Air Transport Service" so we took off at 11 PM the next night. Our pilot flew right over Paris and circled so all four passengers could get a 4 AM view of this lovely city. We landed at 7 AM at the US Rhein Main Air Base at Frankfurt. Needless to say we were all pretty tired. My doctor friends and I checked into the military hotel in downtown Frankfurt then decide to "see the city" so we took a sightseeing tour bus and immediately fell asleep.

Nine years after the end of WWII, Frankfurt was still a city in rubble. The train station as well as many buildings had heavy bomb damage. At our hotel the corridor on the third floor ended with a single German 2x4 across open space. The rest of the building was missing. As it was the end of October it was quite cold. Later in the day when we returned to our military hotel, there was a copy of the "Stars and Stripes" newspaper with big headlines, "MATS 'Blue Plate Special' lost at sea." This gave me quite a jolt as it had taken off from Westover Field. The date and time seemed to check out. I believe it was the plane I was supposed to take. All were lost. Over the next 10 days I worked my way through several military bases and finally was assigned to a radar site near Kassel, Germany. Kassel is 120 miles NE of Frankfurt and close to the then East German border.

Chapter VII: Life at Rothwesten, Germany

Rothwesten was a small Luftwaffe base with an interesting history. Illegally built in 1935 and hidden in a wooded area, Rothwesten was Hitler's first flying school. Such a facility had been clearly forbidden under the terms of Germany's WWI surrender. From the air the base structures were designed and built to resemble a series of harmless appearing apartment buildings. Murals on the walls of the officers and NCO club depicted humorous scenes of pilots' early flying attempts.

In 1948 secret negotiations took place that soon made Rothwesten unexpectedly world famous. In early 1948 and held in tightest security, the Base's Building No.1 was a conference site for the Allied Occupation Powers who were exploring a number of possible changes in West Germany's currency system. To escape notice and discovery by both the public and the headline hungry press, they deemed it necessary to conduct these sessions at a remote US installation. In 1948 the Allies announced Germany's historic change from the Reichmark to Deutschmark for its metal and paper money.

While the living accommodations were excellent, the radar site was five miles away on a high hilltop and housed in winterized tents. We operated 24 hours/day, seven-days/week. We could not regularly get spare parts for the space heaters so often were very cold during winter. There were several occasions where the temperature was 35 degrees F below zero and once our wind speed indicator blew away after registering a speed of 95 knots.

There were three events that I would like to comment on: Our involvement in the U-2 program; how I did something that the Air Force liked so much they gave me a medal; and how and why we landed an F86 fighter plane on the autobahn.

First, my job was radar maintenance officer. I supervised three crews. One worked the 8 AM-4 PM day shift, the next 4 PM to midnight, and finally the third, midnight till 8 AM. Also, we were responsible for two diesel generators that made the electrical power for the site. The two main radar units were a long-range (200 mi.-radius) search set made by Bendix and a very high-powered height finder made by General Electric. I spent my first three months cross training as a radar controller so was qualified to control aircraft.



George in Germany, 1955

We had a three-part mission: Our main activity was aircraft control of the Frankfurt/Berlin Air Corridor. This was by far and away the busiest of the three air corridors into Berlin. This Corridor was 20 miles wide and subject to strong cross winds. If a plane strayed out of the corridor, a Russian or East German fighter plane would come up and sometimes fire on the wayward plane. One time an Air France passenger plane was badly shot up, the co-pilot killed, and the plane barely made it into Berlin's Tempelhof airport. The way we verified a plane's position was to take the plane's coordinates off the radar display and using a black grease pencil, plot its position on a small map in front of the radar screen.

At the same time the plane's position was plotted on a large, edge-lit area map along with all other aircraft. You may have seen this done in movies. A person stands behind a large, see-through map and writes backwards so everything is correct when looking at the map front. For years this was the way we controlled the Berlin Corridor. The aircraft controller at the radar display was an officer trained to do this and communicate with an aircraft via a headset radio. There were eight of these radar displays so we could control eight aircraft at once; plus, one other controller working the height finder. Besides controlling the Berlin corridor we had responsibility for fighter aircraft control and early warning responsibility for any attack coming out of East Germany or Russia. All our information was relayed to a central Air Force coordination site that Hitler built inside a hollowed out mountain in SW Germany near the Ramstein Air Base. Hitler built this facility during WWII and designed it to withstand an almost direct bomb blast.

Editor's Note:

George recently discovered this very old report, written when he was in charge of Air Traffic Control for the Berlin-Frankfurt air corridor at the German/then-Russian border. George had modified his USAF radar PPI display to plot brightened lines for the air corridor, the border, and other landmarks. Very clever thinking, and it made navigation instructions more timely. See full report in Appendix B at the end.

A friend who was one of our main aircraft controllers said the process of transferring a plane's position to the small map of the Berlin Corridor was not very efficient. He asked me if I could make the Berlin Air Corridor come up on the radar screen along with all the aircraft returns. I thought about this for a long time. Luckily, I had access to a famous set of books called the "Radiation Lab Series", better known as "The Rad. Lab Series". These books were written at the end of WWII by the engineering teams at MIT and Harvard where most of our radar was developed. These books contained everything known about radar. The man who led the work on radar countermeasures at Harvard during WWII was Fred Terman. Dr. Terman was Stanford's Dean of the School of Engineering, and in my senior year I took his yearlong, "Radio Engineering" course.

With the help of the "Rad. Lab Series" that Fred Terman helped write I built a video map unit that did exactly what my friend asked for. Not only did it display the Berlin Corridor; it also showed the East German border along with a number of air bases in both East and West Germany. This unit really speeded up and simplified the job of controlling aircraft in the Berlin Corridor. For this work, the Air Force gave me a medal during the 1956 Memorial Day air show at Ramstein Air Base. I marched out to the center of the parade ground where an Air Force General pinned on my medal while planes were zooming overhead. Pretty heady stuff for a 24-year-old first lieutenant. A few days later I came down with regular measles and had to spend a week in the isolation ward at Wiesbaden Air Base just outside Frankfurt. I was the only one there and had a radio for company. I listened to AFN (American Forces Network), and the popular tune of the day was Gogie Grant singing "The Wayward Wind". I must have heard this tune a 100 times.

On a warm summer day in June, 1956 a call came over the intercom into our radar maintenance area that "our radar was all screwed up!" (Actually they used a more colorful word). I immediately went into our operations area to see what the problem was. One person watching the height finder noticed a radar "return" at the very top edge of the radar screen. Actually, it was under the metal trim around the top edge of the display. As this was well above the top of the height finder range, he said the radar must be broken as the height of this "return" would have to be about 60,000 feet and nothing could fly that high. Also, this radar return was coming out of East Germany! It looked like a real return to me and I felt I could prove it.

We asked for and received permission to transfer all our planes to other radar sites. From the maintenance area I could tip up the search radar antenna with a hydraulic control even while the radar continued to turn and operate. As the large rotating dish moved up, all regular traffic dropped off and suddenly a "return" popped up exactly where the height finder found it! This proved something was coming out of East Germany and slowly coming down into West Germany! Wow. We immediately called in this very startling event and after a short delay were told that our information was relayed to HQ12th Air Force in Wiesbaden. Then the answer came back from HQ, "burn your records and don't talk about this incident!"

We followed this "aircraft" down and realized it landed at Wiesbaden Air Base about 125 miles away. That night a friend of mine was driving to Wiesbaden, and I asked him to see if there was anything unusual on the runway. When he returned, he said he saw a very strange plane with huge wings. He said it looked like a large glider with an engine. . . it was our first U-2 Flight. This was June 1956, shortly after President Eisenhower proposed "open skies" to Russian Premier Krushchev where we would allow planes to fly over each other's country. Krushchev said "Nyet" to the idea. Two days later our first U-2 flew, and we picked it up much to the Air Force's surprise. We then saw about one U-2 a week thereafter.



The Lockheed U-2

Later these flights originated in Turkey, crossed Southern Russia, several east block countries and landed in Germany. Since the U-2s at Wiesbaden could be seen from the autobahn, the AF moved the landing site to a more secure airbase in SW Germany. Later, U2s flew out of Peshawar, Pakistan and the Gary Powers flight where he was shot down was scheduled to fly over the heart of Russia and land at Bode, Norway. The U-2 was a Lockheed development and the seeds to this program started in the Lockheed Aircraft Service building where I worked the summer I first came to California. Kelly Johnson was its colorful leader who later moved his operation to a more secure location. The U-2 was a very successful program until Gary Powers was shot down on May 1st (May Day) 1960. We had four years of superb intelligence gathering and were about to close down this program, as our Corona Spy Satellite Program was about to take its place.

About a month later, August 1956, we had a strange radio call over an emergency frequency that was always kept open. We heard, "Calling US radar". We responded and found ourselves talking to the pilot of an F86 fighter plane. Using a special radar feature we located him over the Polish/German border. He said he was almost out of fuel. Back when I set up my video map of the Berlin Corridor, I added several East Germany airfields as well as some of our own. We told the pilot that with his low fuel we were steering him to an East German airfield. He didn't like this and asked, "what is my other option?" As it was a nice clear, sunny day, he had great visibility. With the help of my video map we could see that there was one place where the East German border bent eastward. Luckily, the autobahn to Berlin went right through this area and we told him to head for this spot. We would land him on the Autobahn. Hitler had designed the autobahns as alternative landing sites, and we were going to test out his idea! This autobahn to Berlin did not have heavy traffic as you had to go through the East German border and checkpoint. Mostly, it is truck traffic.

Our pilot soon flamed out which made handling his plane much harder as he lost his hydraulic power control. We didn't know on which side of the border he would come down. I raced to my car, picked up a doctor from our small clinic and sped down the Autobahn to Bad Hersfeld where I turned onto the autobahn branch to Berlin. Meanwhile our team at the radar site called air/sea rescue to send a helicopter to look for a downed F86 on the autobahn, hopefully on our side of the border. It took me about 45 minutes to get to the border and there he was. . . a half mile inside West Germany! Lucky him.

Air Sea Rescue's helicopter was there, and I talked briefly to the pilot asking why he was over the Polish border. I'm not sure he gave me a truthful answer. He said he was on a "non navigational aids flight and entered a 180 degree wrong heading." I'm sure he had more explaining to do later. We had to disassemble his plane and trucked it out. A small tree growing up in the grassy median had bent a wing when the plane rolled off the Autobahn pavement. Another thing the pilot told me was that just before he landed, he was looking right

into the eyes of a truck driver. He pulled hard on the stick (no hydraulic power) and just managed to clear the truck. I'm sure that truck driver had some great stories to tell.

I used my vacation time well while in Germany. I spent 10 days skiing in Switzerland, a week in Paris, 10 days in Scandinavia, four days in Holland (in the rain), two weeks in Spain including time on the island of Mallorca, two weeks divided between the Rivera and Italy, a week in Berlin and two trips to Austria. The first trip to Austria was temporary duty that coincided with the Russians leaving and Austria getting independence, what a celebration! There was a lot of dancing in the streets.

Editor's Note--A Fascinating Coincidence from 1956

A little over a year after we published George's memoir, we just received this email from a reader, Rick Moser, whose father was involved in one of the USAF incidents that George wrote about. It was the day that his USAF radar team assisted an F-86 pilot who was "lost" inside East Germany, and very low on fuel. They vectored him to the German Autobahn where he dead-stick landed safely with minor damage to the front gear of the fighter. Rick has kindly consented to our publishing the story of his father's F-86 Group, stationed in France, although his father was NOT the lost pilot. George confirms the story, because the dates match and only one F-86 pilot landed emergency on the Autobahn in 1956.

See that story at the end of this HP Memoir, in Appendix A

Chapter VIII: Returning to the US

In August 1956, I sold my trusty 1949 Ford and bought a brand new 1956 VW bug. It cost \$950. In September, I left Germany and returned to the US. The government shipped my VW back to Brooklyn, and I picked it up in November. In January I set out across the US and returned to the San Francisco Bay Area. I took a job at Stanford University's Applied Electronics Lab. This lab was 100% funded by the Air Force. We designed and built one-of-a-kind black boxes for the U-2 program. If the Air Force liked our work, they would farm it out to a company that did government contract manufacturing.

At Stanford I did some work on noise figure and this brought me into contact with Hewlett Packard. HP had just developed an automatic noise figure meter and Bill Hewlett called up Fred Terman and asked to have Stanford evaluate this new product. I got involved and that's how in 1958, I ended up as a microwave design engineer at HP. I stayed in the AF Reserves for five more years and reached the rank of Captain. I did my two-weeks per year at Castle AF Base in Merced, Ca. In the fall of 1962 during the Cuban Missile Crisis, I received a call at HP from an AF Reserve unit in Oakland asking if I would go back on active duty and go to Berlin. They needed someone with my AF specialty and were leaving on the weekend. I asked if it was "optional". He said "yes". I declined and soon thereafter resigned my commission.

My HP Life and Beyond, by George Stanley - Part 2 - The Hewlett Packard Years

Chapter IX: Life as a Microwave Design Engineer

When I started at HP, I went on a rotating, engineer training program. I worked a job per month and then moved to another position. This program lasted six months and was a lot of fun. It gave me an excellent overview of different positions and gave HP managers a look at the "new guys". I did some boring tasks like filing burrs off waveguide castings, but did some very interesting assignments in the test section at the end of a production line. I did well here and often was asked back when the workload was high. I also enjoyed two

assignments on the lathes in manufacturing and in the model shop. Interestingly, we had another BSEE who had an MBA, but did poorly on this program and was let go.

One day my supervisor told me that at 4 PM there would be a "beer bust" in a nearby warehouse and all were invited. I asked "why?" and was told "we had had a good month". OK, I went. There was a small combo, beer and peanuts. The production guys and gals were on one side of the room and the engineers and managers were on the other side. I found myself talking to Dave Packard, who was very easy to talk to. Then a young woman, who was no more than five feet tall, walked over from the production area and approached us. She looked up at Dave, who was about 6' 6", and said, "Mr. Packard, will we ever have unions at HP?" I wanted to hear this answer and without hesitating, Dave answered, "Well, if we cannot do a better job than the unions then 'yes', we probably should." The young woman said, "thank you Mr. Packard" and walked off. Wow, what an answer! He put the employees first. I expected a very different answer.

After completing my rotational tour I joined the microwave design team and started working on expanding our line of microwave sweep oscillators. In my area I had a desk and workbench and spent most of my time building and testing circuits. One circuit I made was a very simple power output-leveling device that could be retrofitted into all our sweep oscillators. HP decided to patent it so the competition couldn't copy it. With this success you would think that I was on my way.

Strangely, I found circuit design somewhat boring and lonely as you could go days without much interaction with others. Yes, it was nice to see your products going down the production line, but most of the time you filled up lab notebooks and tested circuits that you had built. Once when I had a new product almost ready for production, I came back from lunch to find Dave Packard sitting at my desk. He said, "George, tell me about your product". This just shows how involved Hewlett and Packard were with all the details of the company. When you had a product about to go into production, you went through a product review and Bill Hewlett always seemed to ask the one question you forgot to consider. Bill Hewlett, Dave Packard and Barney Oliver, VP for R&D, always attended our new product reviews. Of course we were still a fairly small company.

At this time everything was done with vacuum tubes, but that was about to change. I was restless and started taking marketing courses at night school. I found these fascinating. Then one day my supervisor approached me about going back to get an advanced EE degree. When I told him I was taking marketing courses, he said I should make up my mind. Either go back for a masters in EE (HP would pay) or transfer into marketing. I chose marketing.

HP did a lot for the individual. For example, when each one of our children was born, we received a baby blanket and a very nice personal note from Lucile Packard. Our daughter carried her blanket everywhere.

Chapter X: Switching to Marketing

One interesting thing that held true for all the years I was with HP was that 50% of our sales came from products we introduced over the previous three years. What this says, is that we introduced a lot of new products with a lot of new technologies. This steady stream of new products required a lot of technical training to both our field engineers and to our customers. As a result HP set up a Product Training Department and that's where I ended up. It was also used to introduce marketing concepts to people like me. We trained customers at HP and also went out into the field to train customers to use and repair our products. HP discovered that providing technical training to our customers was a very effective way to sell. As a result I did a lot of traveling both in the US and abroad. Some of these trips were quite long. There was one trip that was six weeks long where I went to England, Germany, France, and Israel then back to Germany before returning home.

When I was in Israel, the Mossad, Israel's secret service, wanted to hear my presentation on our new Spectrum Analyzer. As they do not like to be seen in public, they did not want to go to my presentation. We set up a special session in my hotel room. My room was tiny as I had a hard time finding a room and this was not the best hotel. The man came directly to my room without calling from the lobby. I pasted paper from the dresser drawers on the wall, sat on my bed and drew the block diagram and described the key features. With my Air Force and U2 background, I sensed what he wanted to know, and he asked all the right questions. After he left I went out of my room and the chambermaid stopped me. She wanted to talk. The trouble was I did not speak Hebrew and she did not speak English. I tried German but no luck. She spoke French so I had to rely on my high school French. What she said was a surprise. She said, "I want to thank you for helping my people." Here the Mossad agent quietly slipped into my hotel so he would not be seen in public and the chambermaid knows all about it.

Our sales rep in Israel was very pleased with my work. He said that one of his customers wanted to give me a tour of the country from Eliat in the south to Lake Tiberias, which is also known as the Sea of Galilee, in the

north. Included were Jerusalem and Bethlehem and all points in between. All told, I spent four days touring the country as his guest. In Israel there always seems to be tension in the air, and I have been there three times. Later I'll describe two other interesting incidents from different trips. This mysterious customer (Mossad??) even provided a car and companion driver for the last two days. I asked my driver friend what he did. He said that when he did his compulsory military service, he was a paratrooper. When I asked about his regular job, he hesitated and then said he processed information. Our microwave measurements program was very popular with our customers. At the same time transistor products started coming out of the lab. After finishing a series of marketing courses, I started taking a yearlong series of courses on solid state physics and transistors. The transistor course was an excellent course taught at a nearby junior college by a celestial physicist from Lockheed. It was one of the best courses I have taken. I also took a course in servomechanics through the University of California. It might seem strange that I was taking engineering course while in marketing, but it made perfect sense at a technological company like HP even for a person in marketing.



George Teaching a Customer Class In Spectrum Analysis
MEASURE Magazine January 1968

Interestingly, I found I had a knack for explaining very technical material to others. Maybe it was all the schooling I had later in life. Also, as a child I was quite shy and a teacher has "position power" and that makes it easier to be in charge. All this helped me blossom. I often called on Dave Packard as a speaker when I was running a large training program for our own people or for important customers, and he was always very willing to help me out. Both Packard and Hewlett were very approachable.

Chapter XI: A Home Run with Transistors

After I completed my yearlong transistor course I simplified the material and offered it to our service technicians. I ran this course from 7-9 am three days a week. Also, I recast it to emphasize what you needed to know to repair our products. At the time, college professors wrote all the transistor books, and they seemed to want to impress people with their knowledge of matrix equations. I aimed my material at the repair technician and kept it simple. Most of these guys were trained during WWII and everything was vacuum tubes. If the vacuum tube was hot to touch, it was probably OK. If it was cold, the filaments were open and it was burned out. Transistors were scary. They were totally different in operation and there was no book or course aimed at the service world. These guys were desperate, and with my background running the radar maintenance crews in the Air Force, I had a good feel for their needs



Cover of "Transistor Basics"

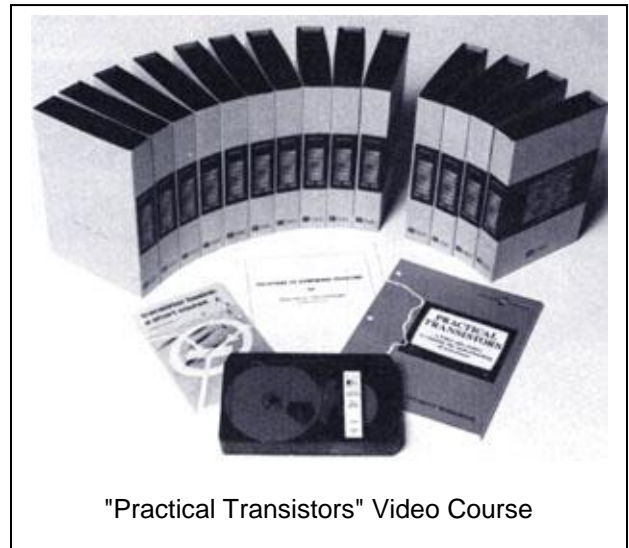
and capabilities.

Shortly after finishing the course for our technicians, we had a request from our sales manager in our Southern Sales Region to put together a weeklong training program for all his customers. He wanted to rent a small college in North Carolina in June after the students had left and asked us to put together a group of courses where customers could select from a curriculum just as they would in college. We came up with four or five one to two-day courses but felt we needed one more course. I suggested I take the transistor course I had done for our service guys and add it in as a two-day course.

The response was overwhelming. I fine-tuned it for a mix of students from engineers to technicians, and when I returned to California I had multiple requests for copies of the handout material. I could barely keep up with the demand so I sent the handout to a publisher, and he said he wanted me to expand it into a book. I did and in time sold over 100,000 copies. It was translated into Spanish and Portuguese (for Brazil). HP also offered this course to customers and it became so popular that I trained three other instructors to help me out. There were times when two of us would go out together, set up in adjacent conference rooms in a large hotel and teach simultaneously to over 100 in each room. It was a two-day course. Once at Cape Canaveral in Florida I gave it in the Mission Debriefing Room. There must have been close to 200 there.

After crisscrossing the US and Europe for about a year giving the transistor course over and over I began to think about what to do next. Just at this time Packard said he wanted the training group to set up a TV studio, and I was to be the lead. We hired an excellent director from the College of San Mateo, bought a studio quality Ampex tape recorder and built up a team. Now, what to do with the studio. I suggested adopting my transistor course to TV. This was a challenge, but after a few false starts we did it. I had been getting up early to watch a PBS series on atomic physics and was fascinated by some of their props. I ended up building a whole set incorporating a lot of special effects. I wanted to show current flowing in the transistor and also in simple circuits so I built a magnetic blackboard and added large cutout transistors.

Once late at night on a trip to San Diego I was watching the late night news and the weatherman showed flashing lighting bolts. If I could figure out how he did it, I could adopt it to show current flow in my cutout transistors. I discovered it was done with polarized light passing through a rotating polarized spinner and beamed onto special polarized strips of plastic. We did this, and I had some great visuals. I ended up with 15 tapes in the series. Each tape was 30 to 45 minutes long, and I purposely did not copyright the material. I felt we would get a lot of goodwill if we allowed companies to copy the tapes. This turned out to be true. We still sold hundreds of my tape series in every format used in the world. Many years later when visiting S. Africa two individual told me they had watched my transistor series. I asked where. One said in Buenos Aires, the other said in Tel Aviv.



"Practical Transistors" Video Course

At about the time we finished the TV Transistor Course, Stanford University set up a TV link so they could provide SF Bay Area companies with TV courses.

Stanford asked HP if we had anything to help them get started. We gave them my transistor tapes and they ran them for several years. There is an interesting story here. One day I received a call from a man who identified himself as a Standard Oil of California Executive. He said he was watching my transistor series in San Francisco over Stanford's ACE microwave television link and doing the homework on the commute train. One day his daughter brought him her transistor radio and said it was broken. Since he was taking a transistor course, would he please fix it? He was terrified at first, but plunged in following my instructions on how to check the transistors. He found a shorted one, went out bought a soldering iron, took out the transistor, went to an electronics store, bought a new one, replaced it and the radio worked! He was so excited he had to tell me about it. His daughter was impressed.

One of the highlights of my transistor course was that you could predict key circuit values (voltage gain, current gain, input impedance and output impedance) by inspection and without doing a lot of calculations. No other book offered this feature. One day I had a call from a student who had taken my two-day course at the same time he was taking a college transistor course. When he took his college final he finished in 20 minutes and got every question correct yet the instructor gave him a 'F' in the course. This student went to see the instructor who said the only way he could have finished a two hour exam in 20 minutes with every question correct was to have cheated. Besides, the student didn't show how he came up with the answers. He just wrote them down. This student showed his instructor my book and explained how he had done it. Finally the instructor changed

his grade to a 'C'. . . only a 'C' because the student hadn't worked the problems the way the instructor had taught the class! My, oh my.

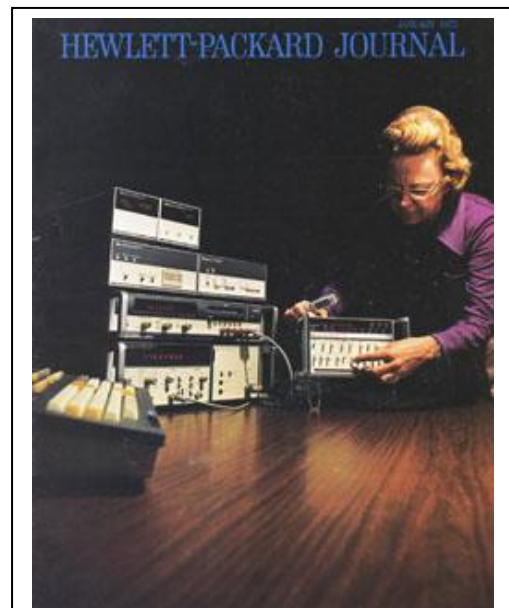
My tape series was required viewing for every technician at HP and for both HP technicians and engineers in Japan. Japanese Engineers had to watch it to practice learning in English. In the US a George Stanley fan club started up among HP services technicians, and I had to sign a lot of books when I visited one of our sales/service offices in the US. One technician told me I only owned three neckties because that was all I wore in the 15 tape series. He was right. We sold tape sets to colleges, universities, the US military, companies and to some technical high schools. Once on a visit to NSA (National Security Agency) on an entirely different topic, the service group found out I was visiting and ask me to visit them. At NSA you are escorted everywhere even to the bathroom! The service team showed me around their area and showed me some very interesting instruments. I had a similar experience at Oak Ridge Atomic facility in Tennessee. In time a college affiliated with PBS picked up my transistor course, and it was shown over one of our local PBS stations. Students had to come in to take their midterm and their final exams.



Chapter XII: The Beauty of HP-IB

Since my transistor tape series was doing well I was ready to move on. At this time HP was working on how to connect our line of measurement instrument with a small desktop calculator (think small computer) that we had recently introduced. If we could do this, we could synergize our whole product line and help our customers improve their manufacturing efficiency. The trick was to come up with something that would work with both our slow and fast instruments. One very clever guy came up with a process where an electronic handshake occurred with each data item so the data transfer rate was flexible and set by the slowest active instrument. This was in contrast to a fixed data rate that would have to be set by our slower products. Our effort required a lot of coordination with U.S. and International Standards groups

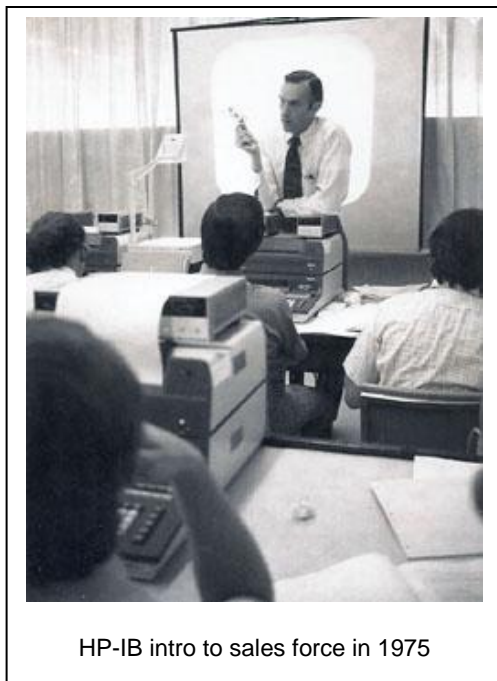
We divided the work up. One guy took on the standards challenge, two guys worked on the technical details, and I took on the marketing/training program. My challenge was to completely train our worldwide sales force on how to program a small, desktop computer that we had just introduced. You see virtually all our products were analog, as was our sales force. Since I did not know how to program, this was a big challenge for me. Besides, I only had about three months before we wanted to start the big introduction. The date was to coincide with the approval of the IEEE Standards Committees and that would get a lot of publicity. On top of that it was the fall of 1974, and there was a business recession so our sales were suffering.



HP Journal, January, 1975

HP had decided to close everything for Thanksgiving week. Each morning that week I made a lunch and went in to teach myself how to program so I could collect data from the few instruments that had our new special interface. We called this HP-IB, the Hewlett Packard Interface Bus. Then I started on a crash program of long days and nights to write two training manuals. One was pure programming. The other was how to control instruments via the HP-IB. The launch began in March 1975 in Palma de Majorca. Majorca is an island in the Mediterranean, and we brought in all our European field engineers. We did two, one-week programs back to back. Jane Evans was loaned from our F&T division to help me prepare the material and launch HP-IB. The January 1975 Hewlett Packard Journal shown here has Jane on the cover.

Majorca was a full-scale, senior sales seminar and HP-IB was only one of many new products we introduced. I had overall program responsibility that required bringing in a huge amount of equipment, working with customs, getting all my handout material printed and shipped. This was a huge undertaking. After Majorca, I was asked to delay my return to the US and go to England to train all our UK service guys. After returning to the US, I immediately had to train our US sales force and then do the same at all our manufacturing sites. I was traveling non stop with equipment and getting pretty worn out. I had to make special arrangements with the airlines to handle 5 large transit cases and have them accompany me. Surprisingly I was never charged extra. As one airline representative said to me, we are in the service business, and if you give us advanced warning, we can prepare for you.



HP-IB intro to sales force in 1975

This HP-IB was really taking off, and I also had to give a lot of customer presentations so our customers would appreciate the power of connecting instruments to small desktop computers. They caught on quickly with the result that there was an increase in manufacturing test efficiency across the U.S. and in Europe. Obviously, we had to do the same in Japan and the Far East. By now, it was clear that we needed more than just me so we set up a new field sales position called HP-IB specialist. Now I had to train this new group of guys. I combined this with my customer training trips, and the designated person would accompany me around his/her sales region. All told, our HP-IB effort synergized all our product lines and greatly increased sales. It was quite dramatic.

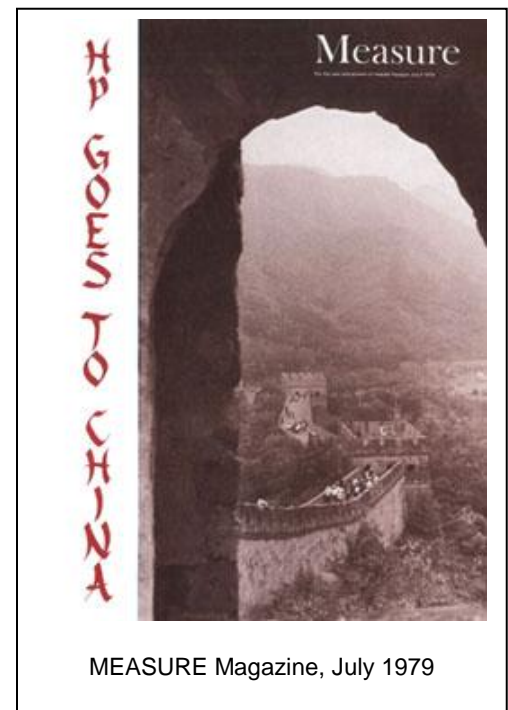
I'll finish this chapter with another story. When we were doing a seminar in Spain, we had taken over the whole hotel. The King of Spain and his entourage did visit as they were vacationing in Majorca. I remember that one of the very attractive women in the entourage stayed behind the king's tour and asked me a lot of question about what we were doing. I didn't mind at all. This picture below shows how our local Field Office set up a skit to recognize the visit by the real King. I believe the evening's entertainment team tried to duplicate and build on that.



It should be recognized that throughout HP, there was a good humor about working with each other, across national boundaries. At management conferences and often at Field Events, there would be humorous awards and skits to recognize accomplishments. The Germans had the best for one week, as they did something called "The death of BCD" It was very funny and the Germans were not known for their humor. They probably repeated it the following week. In all my travels, through countless counties, I found a camaraderie that I don't think existed in any other high tech companies of our time.

Chapter XIII: China

Shortly after Nixon opened up China, my Boss, Bob Brunner, found out that a college friend was in the Chinese Communist Government. Bob contacted him and asked if he would like a team of HP engineers to come to China and teach them the latest in western measurement techniques. They said 'yes' and I was picked to head the effort. Our hidden agenda was for me to get the name, position and mailing address of every attendee. Since we planned to take a lot of equipment with us, everything had to be coordinated with the State Department. Every instructor had to supply a written copy of his presentation three weeks ahead of time so our assigned Chinese translator could go over each person's material. For a week, I went into work after dinner and dictated my HP-IB talks. They were then transcribed and I sent them off.



I found out that we could take our wives if we paid their airfare. Hotel expenses would be the same for two as for one. Our China team consisted of seven guys and their wives. We went in May 1979 staying overnight in Tokyo. I remember that as we were in a high rise hotel and after going to bed there was a good sized earthquake that really shook the building. We spent two weeks in Beijing setting up and giving our program and then the Chinese government allowed us to work our way south. One unsettling memory was seeing live dogs in the market with all their legs tied together. They were for sale for meat. Overall we spent four weeks in China and finally exited to Hong Kong.

We were tightly controlled and escorted everywhere. This was a time when all the men and women wore Mao jackets. The only traffic in the streets of Beijing was bicycles, trucks, and buses. Sometimes I would take a walk in the evening and noticed that there were groups of people huddled under the streetlights. They were reading.

Our wives were well taken care of. The Chinese Government assigned tour guides who took them out each day for sightseeing. These guides were top government translators who were assigned to practice English and learn American idioms. One day my wife, Leanne, was asked, "What does, 'in the same ballpark' mean?" Each night we were hosted by Chinese Government officials, who kept toasting us and we had to reciprocate. They had a very powerful clear liquid, and I think they were trying to get us drunk. We had to be

careful. As this was at the height of the communist control, a young red-guard revolutionary marched my class into the room. He would tell them when to sit, tell me when to start, stop and take a break. I would lecture for a few minutes, than stop and let the translator do his thing. Then I would start up again. Attendees came from all over China by train, and it was often a two-day trip. We were even given a tour of the Great Wall. Being one of the first companies allowed into China gave us a big edge.

Shortly after I returned, the Chinese Government invited Dave Packard to China and he negotiated setting up a sales office there. He also suggested to the Chinese that they send a half dozen of their top engineers to HP, and he would give them jobs for a year so they could see how we ran a modern US manufacturing plant. I took them for the first three months to give them a cross section exposure to HP products, just like we trained our own "Neophyte" Field Engineers. My goal was to make them inside salesmen of our HP products when they returned to China.

Just to show you how strange some things work out let me describe an incident involving the Chinese and George Schultz, who was our Secretary of State at the time. George Schultz's son, Peter, was working at HP in the same building where the six Chinese engineers and I were located. One day George Schultz showed up to see his son. I had a panic call from someone in our personnel department. He said, "don't let the Chinese out until the end of the day." I asked why and he said that if a reporter saw George Schultz entering the building and a little later, six Chinese walked out, there would be a big story on the evening news saying that Secretary of State Schulz is holding secret meeting with Chinese diplomats at Hewlett Packard!

Hewlett Packard was becoming a popular stop for visiting dignitaries. Charles deGaulle visited HP, as did the Queen of England.



The HP Team on the Great Wall - From left to right:
Dean Morton, Bert Desmond, Frank Ryan, John Young,
Blake Peterson, Bruce Farly, Art Fong, and Bob Frankenberg.



Chapter XIV: Getting Fired

As time went by I moved on to manage all the technical training for the instrument side of HP. The success of HP-IB allowed HP to go heavily into the computer business, which was set up separately from the instrument business. There was a certain amount of competition between these two organizations. The computer side of the business was growing rapidly but not too profitable. The instrument business was very profitable but not growing as rapidly. The overall feeling was that the instrument business was the cash cow that allowed the computer business to grow. Also, there was a distinct personality difference between the instrument business and the computer business. The computer business often sold through sales channels and negotiated big deals. Instrument selling was field engineer to customer engineer. Our objective was to help the customer solve his measurement problem and this created long-term relationships. We tried all sorts of ways to bridge the gap but none worked very well.

In time Bill Hewlett and Dave Packard retired and then HP began changing. In 1985 the computer business passed the instrument business in size and computer people began taking over key management positions. I ended up working for a computer person who had just been hired from the Oregon School System. As business was slipping she was told to save money. She came to me one day and said that since I was the highest paid person in the department (I was the department manager), I had 30 days to find another job inside HP, and if I couldn't, I would be terminated. As I had an excellent reputation, there were a lot of very upset people throughout HP. At the time our Japanese Managing Director was visiting the U.S. He came to see me and was quite disturbed. He said years ago I had been his teacher, and teachers were very special people. I was very touched and had no trouble finding another position. I went into HP Labs, which is HP's advanced R&D organization and worked with the person who did the key technical work on the HP-IB.



A year later, the instrument side of HP set up a new organization that specialized in automatic test. Automatic test includes the whole area of combining instruments and computers and was a natural fit for my background. One thing I was asked to do was to form a team and create a Computer Aided Test Symposium (CAT) that would travel the world. This CAT Symposium consisted of four technical talks in the morning (two tracks of two talks), another four in the afternoon and a product fair at lunchtime. The handout included all the talks. We served lunch and took this Symposium around the world. Each year we would create a whole new program. I wrote a new talk each year and gave two different talks at each stop. All this took a lot of coordination, as I had to have a moving van type of truck waiting at the end of the day. We usually did three stops per week at different locations. I did this very successfully for three years and as a lot of my time was spent in Europe, I eventually was offered a position working out of our European Marketing Center in Amsterdam.

One European tour started with a stop in Israel and I flew there from Chicago with a change in Frankfurt. Going through Israel security is always a challenge both going and coming back. You are told to arrive about four hours before plane departure, and when I left Israel, my plane was scheduled out at 8:30 am so I had to arrive at Ben Gurion Airport at 4:30 am. After you check in you move to a large room. There were no chairs so you just stood around. After a while woman came up and started asking me questions. Why did I come to Israel, name everyone I met and talked to etc. Luckily, I had several business cards from fairly high-ranking executives and government officials. She seemed satisfied, I continued to wait. A half-hour later a man approached and began the same routine. After about fifteen minutes he smiled, took out a stamp pad and stamped my ticket and my carry on with a strange symbol. This was my clearance to move upstairs. It was now about 6:30 am, but suddenly there was an urgent message to evacuate the building. We all had to go out into the parking area. After an hour we were allowed to return. I was told that there was a bomb scare as security found a bag with a false bottom. Finally, we boarded our flight and lifted off. I was going to Lisbon with a plane change in Zurich. It was long day.

Chapter XV: Three Years in Amsterdam

My wife and I and two dogs moved to Amsterdam in 1989. We had a small house on the south side of Amsterdam, not too far from the HP office. Since I had been in Germany in the 50's, I was interested to see how Europe had changed in 35 years. We were there from 1989 through 1992, and my work took me from Finland to South Africa and into the Middle East. This was the time when the Berlin Wall came down, Germany received full independence, and the first Gulf War happened. It was a fascinating time to be in Europe. In my Air Force days, I was stationed close to the East German border. Now I could drive across that border into East Germany and see the 'other side' I had always wondered about. One time Leanne and I drove to Prague, but we stopped in Dresden. As you may know Dresden was firebombed near the end of WWII and was reduced to rubble. In 1992 very little had been rebuilt, and I was reminded that it looked just the way most German cities looked when I was in Germany back in the 50's.

My business took me all over Europe and once again back to Israel. Again on this trip, the Mossad wanted a private conference. However, they wanted to do it at a secure location, not in my hotel. I showed up and met a very pleasant man. He was wearing slacks and a sport shirt. We talked for over an hour. The only thing unusual was that he had a pistol tucked in the waistband of his pants. On a different day I visited a defense installation south of Tel Aviv. When I checked in with the receptionist everything looked normal: counter, phone, PC, etc., but she also had an UZI machine gun next to her keyboard. I had the feeling she knew how to use it.

When I was asked to go to South Africa, Leanne and I decided to take a little extra time, and at the end signed up for a week at a private game park inside the Kruger National Park. My business needs took me to Johannesburg, Cape Town and Durban. These three cities are very different. Johannesburg was built because it is where the gold mines are; Cape Town is at the southern tip of Africa and was always a port of call for ships going around the Cape. It reminded me of Santa Barbara; Durban is on the Indian Ocean and was very warm and tropical. Durban is more like Miami. Amsterdam was an interesting assignment as it took me all over Europe. We have three children who came over for home leave at least once a year. My youngest son, Douglas decided to take intensive French in Normandy during the summer of 1992. He lived with a French family, transferred to the Sorbonne in Paris, married one of his instructors and now lives in S. France working as Professor at an Art Institute. Our two other children chose to return to the U.S., finish college there and are doing very well.

Chapter XVI: Time to Go

Leanne and I rotated back to the US at the end of 1992, and I stayed at HP until March of 2000. Hewlett Packard continued to change. Somehow we lost that wonderful environment that Bill Hewlett and Dave Packard created. Looking back I can see that many of the creative people we attracted during the early years began to leave about the time Packard and Hewlett retired. The company never was the same after that. It was a very special time, and I was lucky to be part of it.

Chapter XVII: The El Camino Hospital Foundation

Just after retiring from HP in 2000 a friend who was on the El Camino Hospital Foundation Board asked me if I could help him out. The hospital had gone through two reorganizations that had left both the hospital board and the hospital foundation board in disarray. It was clear to me that our local hospital needed help. I viewed this as a great opportunity to give back to the community. In addition, a few years later, the State of California passed an earthquake safety law (SB1953) that said every acute care hospital in CA had to retrofit, rebuild or close by 2013 and that the rebuild money had to be locally raised. I joined the El Camino Hospital Foundation Board and after three years became the Chairman of the Board. I held this position for three years and am still a board member. During my early years on the Board I helped hire a new hospital CEO, a President for the foundation, and a consulting firm to map out a fund raising strategy for the next five years.



The El Camino Hospital

At first we thought of retrofitting our hospital, but this would mean closing three floors at a time, steel girders outside of the building. Then we would have an earthquake safe 1950s hospital. For about 15% more we could have a new 21st century, state-of-the art hospital. Luckily, we had the land to do the latter thanks in part to Jack Melchor. Jack, who was once an HP VP, helped acquire a 20 acre orchard for the original site. In time the new hospital was completed and is now ranked one of the top hospitals, not only in CA but in the US and the world. In October 2009, Popular Science magazine said, "the new El Camino Hospital in Silicon Valley is the most technologically advanced in the world."

George Stanley
Los Altos, CA, 2011

Appendix A

Editor's Note: A Fascinating Coincidence from 1956

Email: Rick Moser, Friday, July 20, 2012 at 14:04:00

Hello Sir,

I'm an engineer at the Georgia Tech Research Institute, and wanted to respond to your interesting HP memoir. Incidentally, I am writing my own life story as well, for my kids, as much as anything else. My Dad was an F-86 pilot, flying out of Chaumont AB, France in 1956. He was with the 48th FBW (Fighter Bomber Wing) and was standing alert with the guy who went over East Germany.

Here is a story from my memoirs (as best I remember it)...

Dad told a funny story once about when they would stand ready-alert watches on the East German border. Basically they would have four F-86's idling on the runway, waiting to be fired up if the Russians attacked, or maybe waiting to be loaded up with a nuke bound for Moscow.

After the week-long, or so, exercise was over they would race out to their F-86's and takeoff, helter-skelter. Sometimes they would cut each other off or take off from the taxi ramp (the ramp is the taxiway that parallels the runway) and race back to Chaumont, last one home buys the beer. Picture a bunch of teenagers racing hot rods through the countryside and you get the idea. Their navigation was a little more rudimentary then than it is now. They would take off, do a 180 degree turn, then race at tree top level for 120 minutes, pop up, roll inverted, locate the airfield at Chaumont, and land.

Anyway, one of the guys forgot the 180 degree turn at the beginning so 120 (or it might have been 90) minutes later he popped up and didn't recognize where he was. He contacted a tower somewhere and was trying to sort out where he was and the tower noticed somebody tooling around 120 minutes **inside** East Germany. The tower asked him to do a turn to starboard and sure enough, that was the contact in **East Germany**.

The pilot got back down on the deck and streaked for West Germany and safety. He ran out of gas while still over East Germany but was able to glide over the border and land on the Autobahn freeway, whew. He snapped off his front gear but they repaired the damage, refueled him and he took off from the Autobahn and headed for home. I bet he got quite a ribbing in the bar that week."

I wonder if that was the same guy from your story.

Also, I used to have your Transistor Basics book; it was well written.

Thanks,
Rick

Followup:

George responds: Rick's remembrance of his Dad's story looks right to me although I don't believe that the repaired F86 took off from the Autobahn. I can't be sure, but I was told that it would be trucked out. I remember that the wing was dented near where it connected to the main part of the plane. I believe there would have been a local story if it had taken off from the Autobahn as the road would have to be closed, the plane refueled, repaired, etc. That would have taken quite a bit of time and special tools and equipment. I suspect the story got embellished over time.

What makes me think my story is about Rick's Dad's friend is what the pilot told me: "He was on a non-navigational aids flight and entered a 180 degree wrong heading." That fits with Rick's account that he forgot to do the 180 turn.

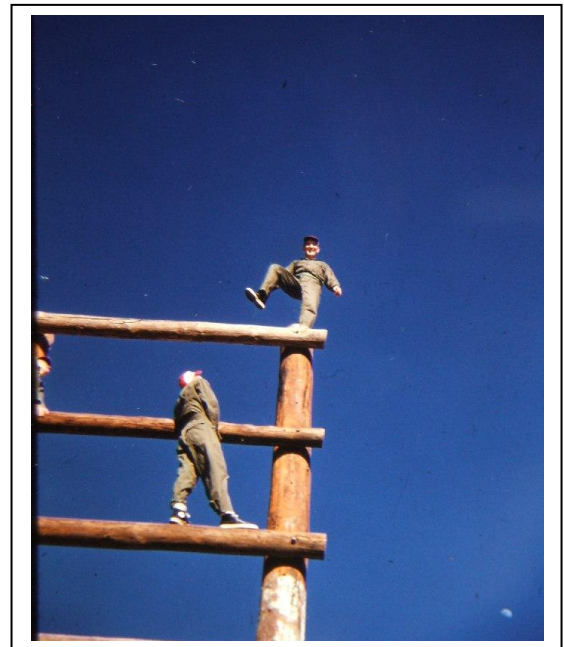
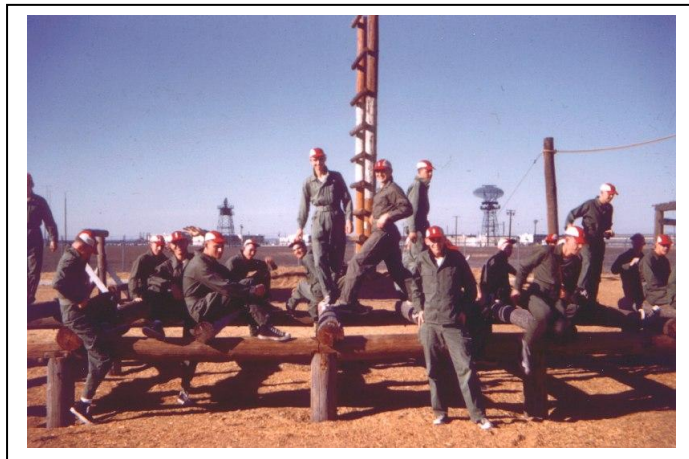
Rick: My dad has passed away, or I could ask for more clarification. He told me this story once about 30 years ago, so my recollection could be fuzzy. :o)

As I recollect the story, Dad said they sent out a grizzled old Sergeant who replaced the front landing gear and the plane took off from the highway. I may have remembered parts of the story incorrectly though. My dad's name was Dick Moser. He retired from the USAF in the 1980's.

Minck: Reading Rick’s story of his Dad’s F-86 pilot experiences reminded me of my own days in the USAF pre-flight navigation cadet training program of 1954. In the personality profiling that went on for choosing pilots and navigators—which the USAF called the pilot selection process—we navigators tended to be sort of venturesome yet “relatively” more cautious and responsible. But as Rick describes the flying antics of his Dad’s fighter pilot comrades, they undertook their missions with a gusto and daring that was needed for future combat at Mach 1. Like Tom Cruise in Top Gun.

So being a motorcycle driver was a plus for pilot training, those that loved going fast with some risk-taking. But if you had had a motorcycle ACCIDENT, which WAS your fault, then you might be considered potentially reckless and careless, and would not qualify. I’ll make my point with a couple of pictures of our pre-flight training routine, which show a field day for teamwork exercises in problem solving. The tower of telephone poles was intended for climbing up one side and down the other. If I recall, getting over the highest horizontal pole required a little assistance from your team members to boost you over the top log safely, one after the other. But I guess we can easily see who will be selected for later pilot training.

In spite of the flying enthusiasm of those young pilots, they were in the USAF flying cadre who saw serious service in Vietnam. Col. Richard Eugene Moser received 2 Silver Stars, one Legion of Merit, and 7 Distinguished Flying Crosses during service in Vietnam, and over a 33 year career.



Appendix B---Radar Modification Report, found in 2014.

Editor Note:

Author Stanley recently came upon his USAF technical report, which he wrote years ago during his assignment to a radar post in Germany, that controlled the Berlin Corridor (Frankfurt to Berlin). He had cleverly modified the radar maintenance extra PPI (plan position indicator) display to generate the desired display. He drew a map of the Berlin Air Corridor, the border between East and West Germany and added several key air fields. He then had a photographic film negative overlay made

The photo overlay film was black, except for transparent lines which represented the Berlin flight corridor and the other key features. This overlay was then positioned on the PPI. As the rotating sweep crossed those transparent lines, the blue sweep light triggered the photo-multiplier tube, sending amplified pulses into the real operational display PPI, thus adding an illuminated map of the Berlin corridor, and other key points for the radar operators. Previously the operator needed to relay range and azimuth coordinates to a plotting board to locate the plane's position. This new approach worked so well that the Air Force asked George to make another unit for another radar site.

Luckily, George had access to a series of books known as "The Rad Lab Series" that contained all the radar information known at the end of WWII. In it he found key information that made his novel approach possible. It circumvented trying to get the manufacturer to create an upgrade. For this, George marched out at a Memorial Day ceremonial event at Ramstein Air Base, with massed troops and overflights by jets, to be awarded the Military Commendation Medal. Quite an experience for a 24 year old AF lieutenant. No wonder HP hired him some years later.

HOMEMADE VIDEO MAPPING

By Lt. George Stanley, Ground Electronics Officer, USAF

The Mark II video mapper is a much simplified version of the Mark I unit which was designed and built by the radar maintenance section of the 601st AC&W Squadron in April 1955. Compared to commercial units such as the AN/GPA-5, the Mark I and Mark II models represent an entirely different approach to video mapping.

The novel feature of this system is the utilization of an extra CY-137/CPS-1, plan position indicator scope as the initial pick up unit. Only power, trigger and selsyn information were fed to this PPI giving a rotating sweep. The map negative was then fastened to the face of the CRT, cathode ray tube. This system gives the same result as holding the sweep fixed and rotating the map as is done in conventional units. It is necessary to rotate either the map or the trace since two coordinates are needed to correctly locate a point on the face of the CRT. The range component is given by the scanning spot of the trace, and the angular component is given by the rotating trace or the rotating map.

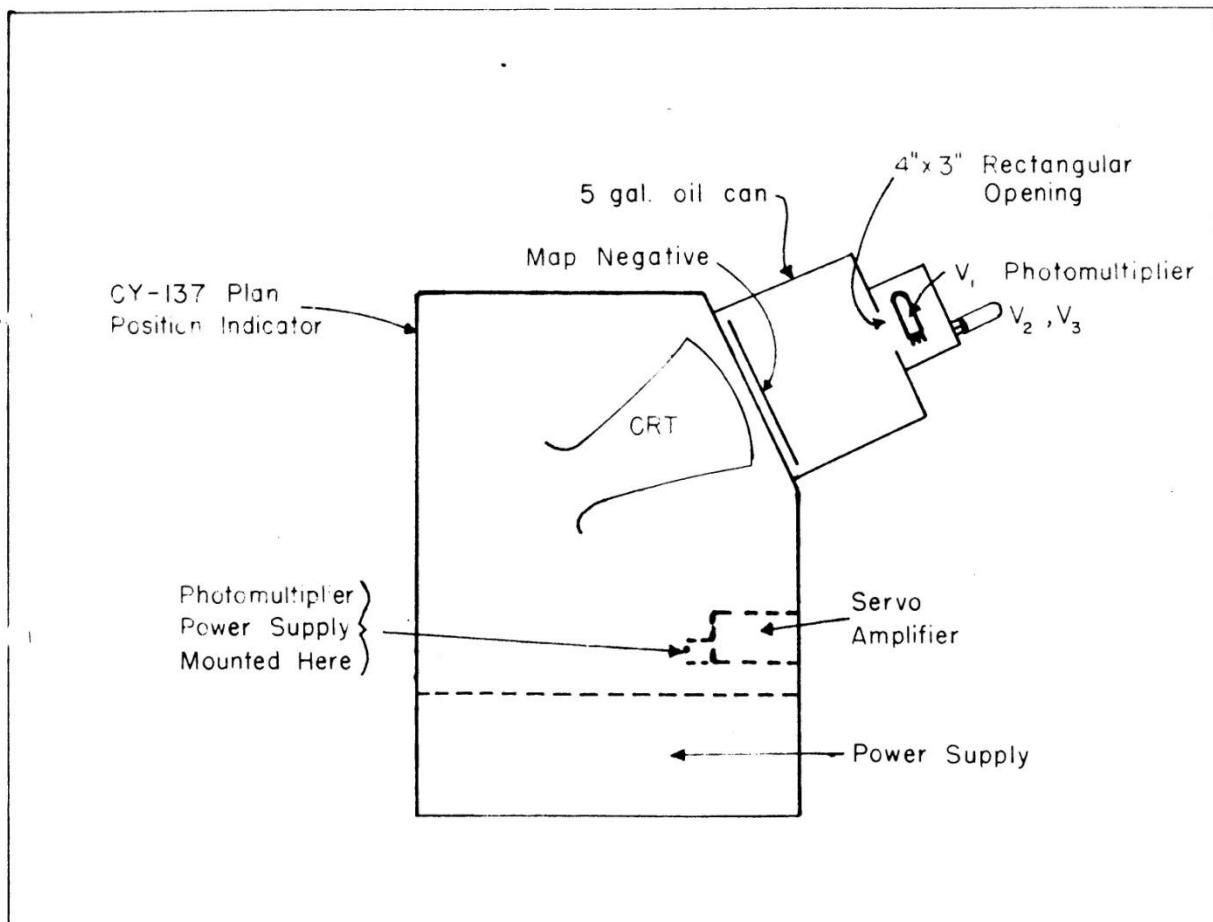
Some thought was given to the CRT since the trace must have an exceptionally fast decay time. Conventional systems use a special CRT here. However, one unusual feature of the photomultiplier tube, 931A, is its color sensitivity. This tube is most sensitive to the blue trace and hardly sees the yellow afterglow at all. Therefore, using a conventional CRT the output from the photomultiplier will be almost completely dependent upon the fast decaying blue trace.

The overall aim of the entire design is to keep it simple and use parts on hand, for example, the light shield over the cathode ray tube was made from a five gallon oil can which was painted flat black on the inside surface. Also the tube socket for the 931A photomultiplier had to be constructed because this tube has an eleven pin base and no eleven pin tube socket was available.

The attached photographs and drawings show the layout of the video mapping equipment mounted on the CY-137 plan position indicator scope. V2 and V3 are mounted on the top of the small chassis at the end of the oil can, and V1, the photomultiplier is housed inside this chassis. The photomultiplier tube power supply is mounted on the back of the servo amplifier inside the CY-137 scope, and all other voltages are derived from this scope.

In order to contain the maximum detail in the line work it is necessary to consider two important points: the line width of the map negative and the brilliance setting at the rotating trace. By trial and error the optimum line width was found to be $1/32$ " and for good results the line work must be consistent in both width and density. Probably the most important setting in the whole system is the brilliance level.

If the brilliance control is too low, limiting will not take place and some lines may appear brighter than others. If the brilliance control is too high, then the point of limiting is past and the pulse widens out. Therefore, the optimum operating point is just past limiting and before the pulse begins to widen. This condition is extremely important and is probably the reason for the difficulty in obtaining fine line work in some video mapping systems.



TROUBLE SHOOTING CHART - VIDEO MAP

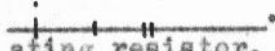
1. NO OUTPUT

a. Usual trouble is no sweep on PPI because of loss of trigger. Therefore, take out V2,6AC7 and V3,6AG7 on pickup chassis and look thru tube sockets for a rotating sweep. No sweep means trouble in the PPI pickup scope. Check trigger input, power supply voltages, and gear train for rotation.

2. OUTPUT but distorted, fuzzy, or blurred

a. Looking at "A" scope, pips should appear like this



b. If pulses are both positive and negative and weak i.e.  Trouble is probably a shorted cable or shorted terminating resistor. Measure resistance of output cable when removed from video map chassis. Resistance should be somewhere around 50 ohms. Target simulator will affect the measured resistance if it is connected to this line.

c. Fuzzy Map can be caused by incorrect brilliance control: too high.

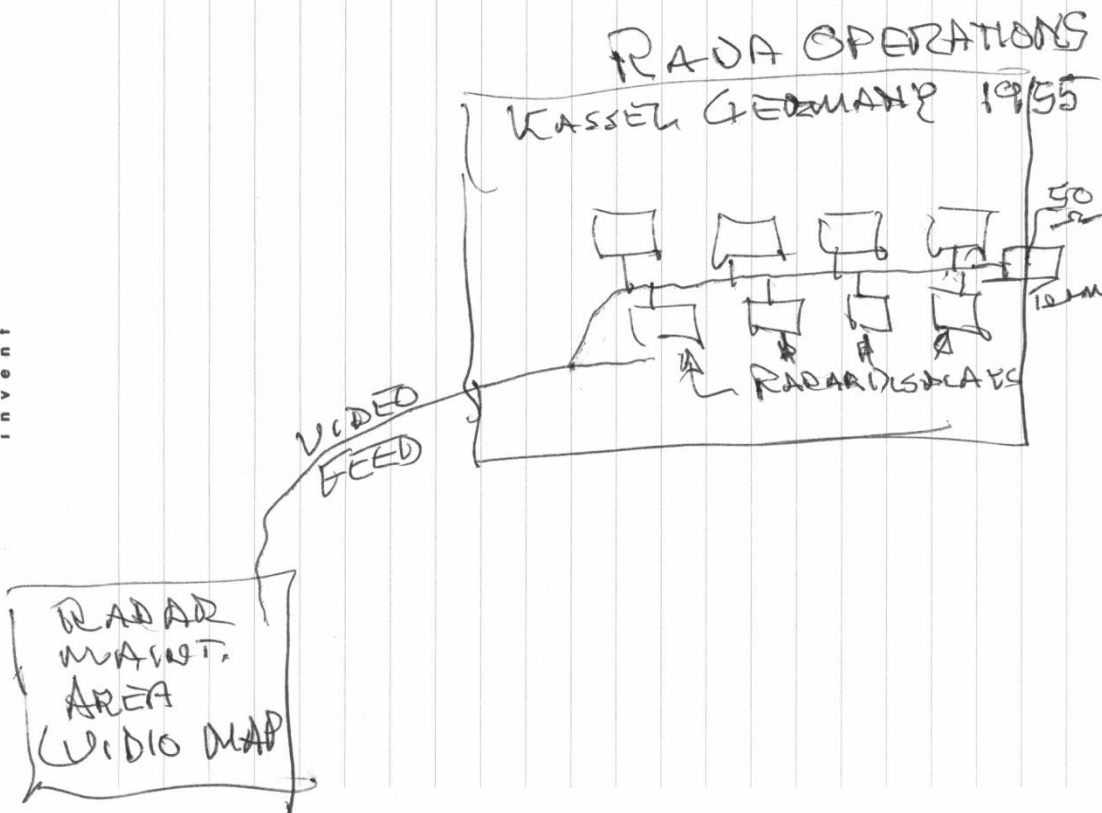
d. Distorted Map presentation caused by brilliance control too high and/or an unlinear or bent sweep. A bent sweep will make the circles appear as ellipses. This condition can be corrected by changing the "L" range setting and readjusting the "L" size control. It is best to have "L" range control set so sweep does not count down.

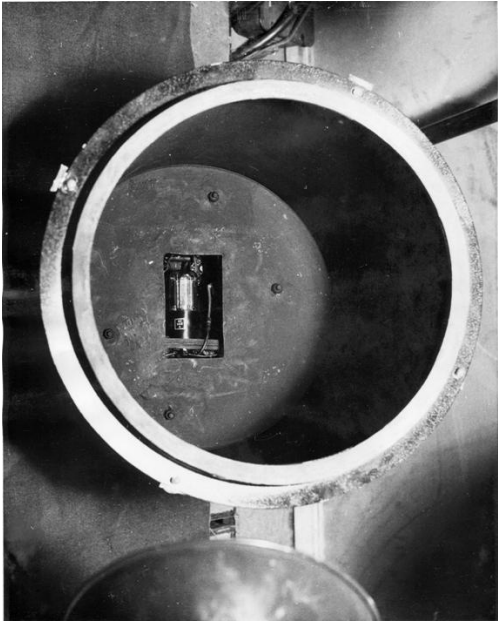
e. Map lines appear too wide and have grass around them. This condition is caused by PPI brilliance control being set to high or open terminating resistor. After video output cable and terminating resistor have been checked brilliance control should be adjusted to just give a limiting signal thus producing as thin a map line as possible.

f. Errors in range or azimuth are most often caused by variations in line voltage. If line voltage is OK adjust focus control for thinnest possible trace. Trace can be viewed thru tube socket base. Range is adjusted with "L" size control. Azimuth can be adjusted by turning centering screws which are located around neck of CRT and slide the focus coil forward and back on neck of CRT. REMEMBER accuracy of map position is directly dependent upon stable line voltage. Range and Azimuth adjustments will never have to be made if 120V line voltage is kept to $\pm 2V$. If line voltage is unstable, then map will have to be adjusted daily. Unstable line voltage will cause the center of the sweep to drift thus causing a range and azimuth error. THE MORE STABLE THE LINE VOLTAGE THE MORE ACCURATE THE MAP. If a suitable constant voltage transformer is available it would be definitely advantageous to use it between the PPI and the 120V line.

15 July 03

The photo of the video amplifier shows four stages of amplification. Later, I redesigned to make a one stage amplifier, given hard and clipped with a diode and using another diode for de restoration. That is, I selected a narrow section of the ^{output} phase to send to the operations center

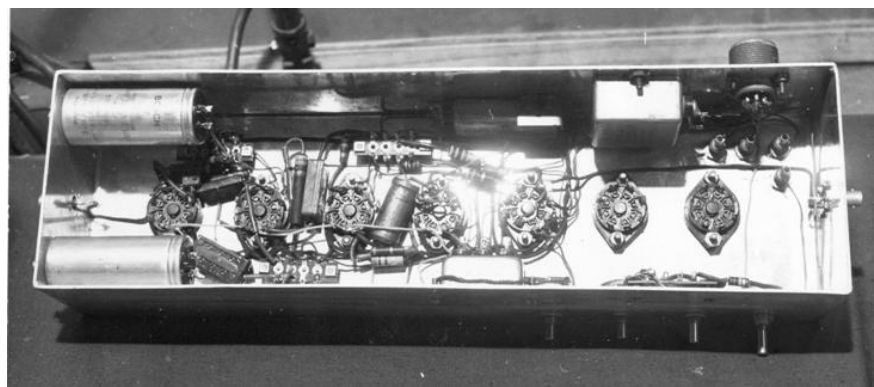




Oil can cover for PPI scope, with photomultiplier tube at back end..



Dual power supply for pulse amplifier and photomultiplier



Pulse Amplifier Shaper.

***hp* Memories**

This memory of George Stanley's career at *hp* results from the work of the www.hpmemory.org website of Marc Mislange who with John Minck (and George) edited and expanded George's previously-written life story. One of the main objectives in starting this website five years ago was (and still is today) to get in touch with people who have worked at *hp* from the birth of the company up to today. We are interested in hearing your memories no matter what division or country you worked in, or whether you were in engineering, marketing, finance, administration, or worked in a factory. This is because all of you have contributed to the story of this unique and successful enterprise.

Your memories are treasure for this website. While product and technology are our main concern, other writings related to the company life are highly welcome, as far as they stay inside the *hp* Way guidelines.

Anybody Else? Please get in touch using the Contact US form at "www.hpmemory.org".

References:

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- [MEASURE Magazine January 1975 - The wide wide world of HP video...](#)
- [MEASURE Magazine June 1975 - The Interface Bus takes the road...](#)
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- [BENCH BRIEFS Nov-Dec 1972 - Testing the Field Effect Transistor](#)
- [BENCH BRIEFS Sep-Oct 1974 - All About Diodes](#)
- [BENCH BRIEFS Nov-Dec 1974 - Troubleshooting Transistorized Circuits Faster](#)
- [BENCH BRIEFS Jul-Aug 1980 - Basic Transistor Troubleshooting Revisited](#)

- [More information about the book "Transistor Basics," by George Stanley](#)
- [More information about HP Technical Training in the 1978 General Catalog](#)
- [More information about HP-IB in the January 1975 HP Journal](#)