

# My HP Memories

by Cort Van Rensselaer

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## **Foreword by John Minck**

### **Mr. HP Longevity – Cort Van Rensselaer**

*What better HP Memory, of the long history of Hewlett-Packard, than this one written by a man who actually worked in the Redwood Building, down the street from the Tinkerbelle HP site at Page Mill and El Camino? It was 1942, the world was at war. Undergrad Stanford EE Student Cort Van Rensselaer was taking some graduate courses, where he met Norm Schrock, who was in his Master's program and part-time engineer at HP. Norm introduced Cort to Packard thereby landing a part-time job in the machine shop, running a drill press. Some of us start from humble beginnings.*

*Upon graduation from Stanford in June 1944, he was promptly drafted, ordered to the well-regarded Chicago Navy Pier electronics tech school. But shortly thereafter his commission arrived (whew!), along with the usual "60-day-Wonder" Officers Candidate School, where they teach you to salute and march and attend to your uniform. After that some Sonar Training San Diego, then to Pearl Harbor until V-J Day. He then returned to Stanford and earned his MBA in 1948. Already an ex-HP employee, Packard approved his return, and he was thrown into a production control assignment, and made some early processing systems contributions, to be repeated often in his later years. His HP career spanned a remarkable 45 years.*

*I have to admit that I am partial to Cort's HP career. In the middle of the business recession of 1958, it was Cort who apparently saw some technical value in this naïve young 1958 Stanford graduate (me) from the Midwest. After about 15 minutes interviewing with Barney, Barney suggested that I would probably be best suited for Marketing, and that's when I was introduced to Cort. I think my own enjoyable 37-year HP career proved them both right; marketing was indeed the ideal place for my technical communications abilities to be applied to HP's world markets.*

*Cort's career at HP spanned so many decades that he obviously received many different functional assignments. His 1950's role was Domestic Sales Manager, bringing him into direct management of the diverse group of 13 independent Sales Representatives. The word INDEPENDENT cannot be overemphasized, because those businessmen had personalities bigger than their territories. From*

*the feisty Earl Lipscomb of Texas to the bombastic Tiny Yewell of Boston and the brainy Frank Waterfall of Chicago, Cort managed to deal with all 13 of them with aplomb and dramatically-increasing revenues. While a complete description of all of those wonderful cults of personality could fill a book, Cort's memoir does a masterful job of compiling their contributions to the growing HP business.*

*But probably his best known role was his leadership for the newly formed Oscilloscope Division when the first four Charter divisions were established in 1962. He moved to Colorado to take over the division, and build it into a force in the scope market. For all of you readers who wondered about HP venturing into a business sector dominated by a legendary competitor like Tektronix, this memoir will give you some flavor of the uphill battle HP had set itself on. Tek OWNED the oscilloscope market just like HP dominated microwave and counters and audio/video. Tek's internal circuit layouts and workmanship set the industrial standard from just after WWII, and their scope performances led the technology.*

*When you go up against the long-established leader like Tek, you need to choose your product battles carefully. It took many years, but HP started with remarkably successful products like the 120/130 series low-frequency scope line, capturing an important niche Tek missed. Then the blockbuster 185 sampling scope stole the technology lead from Tek from under their noses, with ultra high frequency response based on new sampling diode technology. HP's scope contributions continued with our own Colorado Springs Division CRT-tube R&D and production lab, bringing innovations like the internal graticule, for new display accuracy specs. Those early successes grew after Cort left Colorado Springs, and finally, with HP's company-wide expertise in digital technology of every stripe, HP scopes came into their own dominance of industry digital scopes.*

*Cort came back to Palo Alto in 1966, to assume a Corporate Planning role, which metamorphosed into the Corporate IT manager, when that function began to overtake corporate operations. It is hard to overemphasize these complex matters in those years of ferment, which saw HUNDREDS of mid-range computers absorbing the data management of EVERYTHING, from the input of the customer order, production planning, inventory, financial matters of all kinds, R&D data bases, quality, service, marketing, personnel. At one critical milepost, HP had installed over 450 of our own HP 3000 mid-range computers across the world. Getting all that right, migrating established processes into those computer nodes was ENORMOUSLY complex, and Cort's fine leadership shows in all those successes.*

*For me, the milestone of HP communications is what Cort and his team did with Comsys, an email system established within HP **long** before the Internet came to dominate our personal world. Imagine! Comsys was installed and running well by the time the HP Journal article described it in 1986. It became a people multiplier because our intra-company communications jumped in efficiency and speed to great proportions. I used to organize trade show activities from multiple product divisions and field support arenas, and the power of Comsys was priceless. In fact, I used to joke that with Comsys I could have organized the invasion of Europe. The power of the present day Internet gives you the idea.*

*For me, the genius of Comsys was not just the technical accomplishment of all those computers acting as message accumulators, formatting, AT&T-networks, switchers, etc. It was the management resistance to introducing the concept of EVERYONE keyboarding their own messages. Hank Taylor was Cort's strategy point man. Comsys was first set up so we marketing people just wrote out our messages to the field, and they were collected and keyboarded at a central IT place. Then Hank brought the keyboarding to an admin person within each office group, who also received the printed responses and hand-distributed them. But Cort was all-the-time working up to the point where every person got a computer and was expected to keyboard their own stuff. Not an easy sales job*

*for middle-aged men, who had never learned to type. But it got done, and the system prospered.*

*As you will see as you read this great HP life story, Cort represents all the best of the personal attributes that built the company culture and the HP Way. For those of us who knew Cort well, his personal style was extremely serious and no-nonsense, with more frowns than smiles, but the fact was that people liked him and admired his dedication and wisdom. His long decades of service gave him valuable experience that he put right back into all of his later years of IT management. That was a period of revolutionary advances in those internal management systems so vital to the corporate HP. We salute this man's lifetime of contributions.*

*John Minck*

**Lifetime Achievement  
Award**

**Cort Van Rensselaer**

*For his tireless and selfless pursuit  
of excellence in Information Systems  
and for his constant foresight in  
a rapidly changing environment*

**June 7, 1989**



Plaque presented by Lloyd Taylor at a Worldwide Information Systems Manager Conference at the Claremont Hotel, Oakland, June 7, 1989.

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## Introduction

None of us gets to choose when we were born. While we might sometimes like to think we would have enjoyed some other period in history, my guess is that most of us actually prefer our life the way it happened. In my own case, my life through the Great Depression, World War II, and the entire high-tech “Golden Age” was really an unbelievable experience. I would not want to re-do it in any other way. My long career at HP was profoundly satisfying, and coupled with my rewarding and fulfilling family life, how could anyone want for more?

This memoir remembrance is based on two oral history interviews done by Al Bagley on November 9, 1991 and November 21, 1992, as well as other material saved and recovered from long dormant files and boxes. I would also like to refer the reader to an excellent HP memoir by Hank Taylor (HPMemory.org archive) who expands in detail on many of the information technology (IT) and management programs that I will discuss.

## My Early Years

I was born in Berkeley, California on January 13, 1924. My father and mother married while they were going to the University of California. She only finished three years, then gave birth to me, so she always blamed me for the fact that she was not a college graduate. It was unusual in those days for college people to be married. My father was an aviator in World War I. He was stationed at March

Field near Riverside, CA, and my mother lived in Riverside. He met her there and after World War I, they both started going to U.C. They married in 1922 and he graduated in 1924.

My father majored in forestry. His first job was with the City of Berkeley in various positions, including one founding the Berkeley Tuolumne Camp near Yosemite. He and my mother built this summer camp and ran it for several years. With that background, he went into the resort business by creating a summer resort near Napa named Lokoya Lodge. I spent my early years there before the lodge went bankrupt in the Great Depression. My dad got out of the summer resort business at that point and decided to go into horticulture, which had always been a major interest. He became director of the Santa Barbara Botanic Garden in 1933. We lived in Santa Barbara until I started Stanford in 1941.

My father was a scholarly person. He wrote several books on native plants, and on ornamental plants and trees. One was a richly illustrated "Trees of Santa Barbara." I traveled with him on field trips, where he provided a role model of highly organized leadership. I have kept his field notebooks. My mother also had an important influence as I grew up. She was an artistic person with boundless energy. One of her major interests was creating decorations made out of native materials. She wrote three books on this subject and taught classes in a local studio. By demonstrating the contribution a successful woman can make she gave me a role model to follow when I became a general manager. During my career I hired many women to serve in professional roles where they made great contributions to HP.

My youthful interests were in radio and photography. When I was in high school my parents helped me turn the basement of our house into a workshop. I had a darkroom where I learned photo finishing and where I built and operated a ham radio station. At one point my parents became concerned that I was spending too much time indoors and needed more exercise. With their help I bought a 10 foot sailboat which was kept in the Santa Barbara harbor. I sailed it out to the harbor buoy, which was a mile offshore. Thinking back it seemed foolhardy because of the danger in a small boat, but I didn't think anything of it at the time. This was the beginning of a lifelong love of boats.

I recall that my first stirring of technical interest was a crystal radio set. In rummaging through a spacious rented house in Berkeley in 1933 we found a pair of headphones in the attic. My dad took me over to San Francisco on the ferry to a radio store where we bought a crystal set. I erected a 50 foot antenna and was able to listen to the local radio station. When we moved to Santa Barbara I started building battery operated receivers which would tune to more than one station. One of these was a portable receiver. This was actually built into a cigar box and it had a couple of tubes in it. I would take it on my bicycle and listen with a headset. This device fascinated a neighbor who built one for himself. Even the B batteries went in the cigar box, although the life of the batteries was fairly short. In those days car radios were a rare commodity.

Sometimes trivial memories come back; I remember the most awful thing that ever happened to me in those days was that I carelessly connected the batteries wrong and burned out the filaments in both tubes. These tubes must have cost about a dollar and a quarter each, and I made something like twenty-five cents an hour doing yard work for the neighbors. So in my juvenile mind, that was a disaster of major proportions!

I did carry on all those interests into high school, getting a ham radio license as the first step. I remember I had to go to Los Angeles to do that, since they didn't test for licenses in Santa Barbara. My real big problem was passing the code test. The concern I had was that if I didn't pass the code test I would have to arrange to go to Los Angeles again, a hundred miles away. This meant getting one of my folks to drive me down there. Fortunately, when I took the test I didn't quite get all the characters, but it was just plain English so I was able to decipher it and fill in blanks. My call letters were W6RHB.

I built transmitters which worked mostly on the eighty meter and ten meter bands. With ten meters at 30 MHz, there is often a sporadic transmission skip which carries signals hundreds of miles. I became familiar with this skip which used what was called the E ionosphere layer. When I later went to Stanford I needed to find a job and was hired in the ionosphere lab writing down the results of the transmission soundings from the E and other ionosphere layers. I got to learn a little something about

the theory behind radio transmission whereas I'd observed it earlier and didn't really know what was going on.

In Santa Barbara I put up two antennas. One was a Yagi array, which was for 10 meters. It could rotate to different directions. Then I had a long-wave antenna that I used on 80 and 160 meters. When conditions were right I could talk across the country. This experience was of great value while I was in the Navy, as I will cover later. Around that time, I decided I should get a radio-telephone first-class license, which is required to operate a radio broadcast station. Again I had to go to Los Angeles, but by that time I could drive myself.

I was sixteen when I got my radio-telephone first-class license. This led to an interesting job at KTMS, the local radio station, as a part-time announcer. I also helped out with keeping their regulatory papers straight. I did this while I was in high school, working after school. Later, while I was in college, I used my radio-telephone first-class license, whenever I'd come home. I would get a job as a relief operator at the transmitter so the regular staff could take vacations. Getting that license worked out well. I made some good money to support my college education.

### **Cal Tech or Stanford, 1941 - 1944**

By that time of my life, I was starting to think of college. I wanted to go to Cal Tech, a prestigious technical university. I was going to Santa Barbara High School, which seemed to be a good high school at the time. There was one problem, however, and that was that Cal Tech didn't like their science program. I found this out one day when my mother drove me to Pasadena to look into going to Cal Tech. I went to see the Registrar, who was very cordial. Then he looked at my record and said, "Well, unfortunately you can't get into Cal Tech." I asked why not and he said, "Because you're going to Santa Barbara High School and we know from experience that you don't have a strong enough science background." It was just as plain as that. Stanford had no such delusions, and I had no problem getting accepted at Stanford.

(It should be noted that my close friend Al Bagley, who interviewed me for this biography, is a proud graduate of Cal Tech.)

I graduated high school in June of 1941. By that time, the war in Europe had started and it was quite apparent that the United States was going to get into it. Stanford decided to offer a concentrated program where a student could graduate in three years by going four quarters a year. That appealed to me, so about a week after graduation, I went to Palo Alto and started college. I did finish Stanford in three years—twelve consecutive quarters. I majored in Electrical Engineering because Stanford didn't offer an electronics major at that time. For the same reason, my degree is an A.B. in Electrical Engineering rather than a Bachelor of Science degree.

I didn't have the opportunity to take courses from Fred Terman, who wrote the book on radio engineering, because he was in the East during WW II, heading up the famed Radio Research Lab (electronic countermeasures) at Harvard. I recall having a very pleasant visit with him when he was in Palo Alto. By that time I was far enough along in my technical courses to talk comfortably with him. After the war I knew him as an HP director.

The U.S. war started six months after I enrolled in Stanford. Engineering students were deferred from military service because of the assumption that they would have to give us technical training in the service anyway. This way we got the training at college, but we all understood that the day we graduated we were going to get drafted. That's exactly what happened, in fact, we were drafted three days before we graduated and then got three days of leave so we could go through the graduation. The number of male students at Stanford dwindled and dwindled and finally it got to the point where we knew everybody. There were only about thirty or forty guys on campus who were seniors. Some were younger, who were there as freshmen, not old enough to get drafted. But there were a lot of military people around, in the ROTC.

Because of the unusual circumstances, it was possible to take graduate courses as an undergraduate. In fact, I got part-time work at HP because I was taking graduate courses and I met a classmate who introduced me to HP. I was able to take something like forty-five units of graduate courses as an

undergraduate, so I really got pretty nearly the equivalent of a masters degree in electronics. They couldn't teach us about radar at that time because the klystron tubes were classified, but they were able to teach about magnetrons and they're very similar. We really learned. They taught us about electromagnetic waves and the way they would bounce off of things, so the point was that with that background, I said, "Oh!" the minute I saw a radar. I just put two and two together and could just see exactly what was going on.

During those years at Stanford I met many of the professors who became legendary names in the Stanford engineering establishment -- Hugh Skilling, Joe Pettit, Robert Helliwell, Bill Barkley, Ted Moreno, and others. I was somewhat active socially. I joined the AKL fraternity. I remember being involved in the Big Game Gaieties. I was credited as the sound person for the Gaieties, so I must have been involved in the production as the sound engineer. I was very interested in audio stuff at that time. In fact, one of the courses I took was given by Skip Athee. Skip was very interested in audio and he taught a course on acoustics. I was fascinated learning how to convert sound parameters into electrical terms. Then the analysis was done using resistance, capacitance, and so forth. It was an early version of circuit modeling. These big loudspeakers, like the Klipschorn, were designed by converting the acoustic properties into electrical properties.

During my Stanford twelve-quarter crash course, besides being able to take graduate courses, I could pretty much write my own schedule. In retrospect, I can see that I should have taken more liberal arts courses, but I took as few as possible so I could just concentrate on engineering. I met Norm Schrock in one of those courses. He was there as a graduate student and we'd chat between the classes. He told me he was working at a little company called Hewlett-Packard and that he was making good money to finance his graduate degree. He kept talking about what a good deal it was.

One day I told him that in Santa Barbara I had developed a big interest in radio and electronics. He mentioned that HP made test equipment. I said, "Well, that's interesting because I've always been interested in test equipment. In Santa Barbara I bought a used oscilloscope from a radio shop. It was my pride and joy because so few people had oscilloscopes. I had paid something like \$15 for it. The picture tube was one and a half inches in diameter. You could examine wave forms on it and you could present Lissajous figures to compare two audio signals.

Norm asked, "Do you use that thing?" I said, "Well, not really I don't," and he said, "We make audio oscillators at HP and one of the things that we have to do is use oscilloscopes to calibrate them. You just can't get oscilloscopes anywhere due to war restrictions, and I think Hewlett-Packard really would be interested in buying yours if you want to sell it." I thought about it a little and I said, "I'm really short on money and I'm not using it so it would probably be better for me to get rid of it and get the money because I'm going into debt going to school." He said, "I'll introduce you to Dave Packard, who runs the place. Bring your oscilloscope along."

I met Dave Packard who plugged in my oscilloscope and examined it. He said, "Yeah, we could really use this. You sure you want to sell it?" I said, "Yeah," and he asked, "How much do you want for it?" I said (knowing I had paid \$15 for it), "I don't have any idea what it's worth these days."

"Well," he said, "Let's see. Let's look in the Allied Radio catalog." Allied was the predecessor of Radio Shack. So he brought out this catalogue, which was sort of an electronic bible, and looked it up. Since it was wartime you couldn't buy any technical items but my oscilloscope was in the catalogue, and it was listed for \$39.95. Dave said, "How would it be if I gave you \$39.95?" and I said, "My God!" So he called over a man named Cavier, whom I didn't know at that time. I learned later that he was the treasurer. Dave said, "Please make out a check for this gentleman for \$39.95." I have often thought about this meeting with Dave Packard. Had it not occurred, the rest of my life would have been totally different.

That was in October, 1942. I was eighteen. I went back to school and I thought about it, "You know, that must be a really good outfit. People who are that fair really must be good people. In spite of that I never admitted that I only paid \$15."





Cover and page 50 of the 1941 Allied Radio Catalog. Page 50 showing a RCA Oscilloscope priced at \$39.95. Courtesy of [www.alliedcatalogs.com](http://www.alliedcatalogs.com)

## Hired at HP

A month later I decided that it really would be a good idea for me to get a job at Hewlett-Packard. I had met Dave Packard who ran the place, so I called up, made an appointment to see him and I said, "I would be able to work half time while going to school." I told him about my interest in electronics, ham radio and all that. He said, "Fine. We'd like to hire you." I said, "Well, I could start at Christmas vacation. I won't go home to Santa Barbara for Christmas and I could work over the vacation and get started." He said that that would be fine. So the first thing I did was to work for Dick Arms in the machine shop drilling holes in plastic insulators. This was the beginning of a 54-year Hewlett-Packard career, the continuity of which was broken only by my military service and my MBA education.



The original Polly & Jake garage



The Redwood Building at Page Mill and Ash St.



I reported for work in the Redwood Building, but also spent some of my time in the Tinker Bell Building, down at Page Mill and El Camino. (A new AT&T store now occupies this space.) The Redwood Building had just been completed and occupied when I started work in December, 1942. Production operations were still taking place at the Tinker Bell Building, which was behind Polly and Jake's Antique store. We needed better communication between buildings than the dial up telephone. So I built a pair of low frequency (RF) transceivers which communicated over the phone lines without being hard-wire connected. These provided full time communication and were in service for a year or so, probably breaking the Bell Telephone contract.

I drilled holes for a couple of weeks and then transferred into the production test department where I tested oscillators and 400A voltmeters. I did a lot of 400A's and then the really fascinating thing was testing the 300A. Gene Stiles and I had the job of testing the 300A and that was a very difficult job because it was so temperature sensitive. Those toroid coils would drift around and you were never quite sure whether you got the calibration right.



The first HP Catalog circa 1942 showing Dave Packard with a 200A in the lower left and a 300A, top center



The 400A was a voltmeter designed by Dave Packard. The 300A was a harmonic wave analyzer (an audio tunable voltmeter), designed by Bill Hewlett. It used a very sharply tuned, variable filter. The circuitry used the superheterodyne principle but was done at audio frequencies. The IF section depended on toroid coils to produce a very sharp selectivity so that you could reject all the side bands while tuning through the audio range. But it was notorious for needing a long warm-up period before being calibrated for use. The 300A electronics was housed in a handsome oak cabinet.

This part of the memoir is not in the right time line, but there is a later story about the 300A and Bob Brunner. It really speaks to the terrific working culture between HP people, who didn't take themselves too seriously, especially Dave and Bill. As mentioned before, the 300A toroid coils were very temperature sensitive. To use it you had to warm it up for hours and hours and then use it in a room that kept the same temperature. Otherwise, the thing drifted all over the place. But it was the only instrument that would actually do unique audio testing. We sold many and they were fairly profitable, but people just hated them. But if they had to do a certain job, it was the best there was.

When Jack Petrak came to HP it was recognized that the state of the art on circuit design and components had moved forward. We could, for example, now use crystal filters and transistors. So Petrak designed the 302A, a superior replacement for the 300A. When Bob Brunner finished designing his 202A low frequency function generator, he moved to sales work down south at Neely Enterprises. One of his jobs was to publish a quarterly newsletter to Neely customers. He wrote an article about the new HP 302A. The article said that it was commonly known that the 300A was a dog to use. It was politely said, but the point was that he really ran down the 300A when contrasting it with this new 302A instrument.

I read the newsletter piece and said, "Oh-oh!" So I ghost wrote a letter for Bill Hewlett. It said, "Bob, I received your quarterly publication and I observed what you said. But you must realize that the 300A - at the time I designed it - was a technical triumph and that I had great pride in it and I still do. I understand why you've said what you did, but I really feel that you could have done it more politely." So I took this into Hewlett and said, "This is a wonderful scam opportunity. "Oh God," he said, "Yes!" He signed the letter and we mailed it. We didn't hear anything for a few days. Then Hewlett got a call from Bob Boniface, who was Neely's Vice President and Brunner's boss, who said, "You know, Bill, we really believe that you weren't serious, but we felt that for the relationships between our companies and all that we really ought to get this straight." So Hewlett and Boniface worked out how to make

Brunner suffer further! This went on for a couple of weeks before the truth finally came out. It showed the wonderful personal interactions that were typical of the HP work culture.

Back at HP, at that point, having worked in the production test department, I had the opportunity to work in the lab. The lab, at that time, was in the Redwood Building. In the Redwood Building, there was the front office and Bill and Dave's offices, leading to a passageway and then you were in the lab. The lab had a bench that went around the outside of the room. Everyone sat at this bench and in the middle there was a stock room. The lab was the domain of Brunton Bauer.

I was told there was a custom instrument that was being made and that the order was for about five or six of them. They told me that I would assemble them and wire them up for Brunton to test. The testing was really quite sophisticated. I came to work at seven o'clock and Brunton didn't come in until eight or eight-thirty. One morning I finished wiring one instrument and I took it over to his place and I began to tune it up myself. Luckily, he looked on that as being a reasonable show of initiative and he helped me a little bit. Then he said, "I'd better take over and you go back to making these things."

When I finished that job, I was thinking that maybe I could work in the lab. The experience had given me a taste of lab work as a technician - and I thought, "This is really good. I'll have a good time here." I came to work the next day after the specials job was finished. Brunton greeted me at the door, handing me my tool box and said, "You're no longer working in here." I went out to get my time card (at the time we had time cards and we punched in). I started to punch out my card figuring I had been fired. Fortunately somebody came by and said, "What are you doing here? You're supposed to be in production test." And I said, "Nobody told me that." "Well," he said, "that was the plan. You're supposed to go into production test now." I've often thought, if someone hadn't caught me, I might have just punched out, walked out and never come back.

In production test, I reported to George Blanchard. Gene Stiles and I were working together. That's where I got to know Gene very well. He later went to field sales and moved up to manage the Florida Region. But I did go back in the lab later on, and worked on a product called the 401A, an adaptation of Packard's 400A voltmeter which measured very low-frequency voltages. It handled the low frequencies by a slide-back principle, where you would compare one voltage with a preset voltage. These were very low frequencies, something like 0.1 Hertz. So you could see the oscillations on the meter. You'd calibrate it against a line on the first meter and then look to the second meter which told you the voltage.

It worked all right, but it was very crude. I left HP and served in the Navy for several years. When I came back to work at HP after receiving my MBA, Noel Eldred was there. He hadn't been at HP when I worked there previously. I remember he thought it was very important that he take me aside about the second day that I came back to say, "I want you to know that I was the one who killed your 401A as an HP product." That was so typical of Noel, being so honest and straightforward. I think HP sold all of three of these 401A's.

Another product I worked on was a General Radio design which we got a government wartime contract to build. It was an RF-frequency meter that would tune over quite a frequency range, maybe 15 to 50 megahertz. If you were out by a transmitter and you needed to know what frequency was being transmitted, you could get a rough idea as to where you were with this instrument. We had a contract for about a hundred of these. My job was to build some of the test equipment that was needed to do the testing.

At that time, General Radio Company was considered our chief competitor. Their company had been in business for a long time, and had a reputation for quality and performance, and high price. We were able to ace them out of getting new products into production. One time Brunton Bauer went to a trade show and saw a GR prototype of a distortion analyzer. It tuned using an LC circuit. What Brunton

observed was that an important part of it was a vacuum tube voltmeter which we already had in our 400A. The other important part of it was the capacitance-tuning, similar to our audio oscillators, Hewlett's invention. So Brunton said, "Well, General Radio couldn't have the patents on that. It's just an idea so there'd be nothing wrong with our just doing it." He came back and put together an HP product in three months. It went into production and became a tremendous success. General Radio came out with theirs about a year later. I was impressed with how swiftly Brunton just latched onto that idea and produced it.

Along about that time, I decided to work on a "G-Job," which was our name for work that we did for ourselves, but using company parts and often some shop facilities. I realized that whenever you used a 330-type of distortion analyzer, let's say to test a new amplifier design, you usually also needed a companion audio oscillator. So I basically built an oscillator and a 330 distortion analyzer in one box. Since the 330A used a variable capacitor and a resistor for tuning and an audio oscillator did the same thing, it seemed to me that you could save space and save money by doing the tuning in the audio oscillator rather than in the other machine and just have certain specific frequencies that you would do the harmonic testing on. Both the 330 and the audio oscillator were continuously tuned. Therefore, make just one of them continuously tuned and have the other one just receive specific frequencies. I don't remember which I chose. The last time I turned it on it still worked which was kind of surprising given the short life of some electronic components.

I hoped HP would make a product using my prototype design, but no such luck. Someone correctly observed that it was more profitable for HP to sell two instruments separately than one combination! I worked at HP as a part-time student for about a year and a half. I made enough money to pay my college expenses with enough left over to buy a fairly nice car. I even had some money in the bank when I went into the service.



## US Navy, 1944 - 1946

I graduated in June of 1944 and was drafted immediately. I had taken the Eddy test which was given as a qualification for a Seaman First Class rating in the Navy. Successful completion showed that a person had enough ability to learn to be an electronic technician. So I was ordered to the Great Lakes Naval Training School as an Apprentice Seaman, but I didn't actually get started in that because I had also applied for a commission. After I'd been there about a month, my commission came through, and

suddenly I was a naval officer! Next I was ordered to the University of Arizona at Tucson, AZ, where I went through a "sixty-day-wonder" training to learn how to be a naval officer.

350 of us officer trainees lived in a huge gymnasium they called the "Bear-down gym." At that time it was off by itself and there was this other old, old building called "the old number one" where we had our classes. This great university has 35,000 students now, and there are high-rise buildings all around it. Jean (my wife) and I went back years later, and found that Bear-down is still there. We went to lunch on the fourth floor in one of these new buildings. We looked across to a roof which was labeled Bear-down Gym. It is still used as a gym, remarkably. I was at Tucson for 2 months, marching in 114 degree Arizona summer weather; incredible, I lost about fifty pounds. I also learned how to shoot and clean a 44 pistol.

From my officer training, I went to San Diego where I went to sonar school for two months on Point Loma and learned how to repair sonar equipment. Because of my previous electronics experience this work was elementary. When I finished, the need for technicians who could fix sonar was so great that they put me on an airplane and flew me to Hawaii. By this time it was December, 1944. In typical military fashion, once I got there, they didn't need sonar specialists.

I was attached to what was called Com Serve Pac, which was an acronym for a headquarters group in the Pacific. We were located on the hill above Pearl Harbor. They had a pool of jeeps. The officer I was working with had responsibility for installing radios in the jeeps in preparation for the invasion of Japan. I had a group of people, electronics techs and others, all working on jeeps that were never used in combat. My group had a big celebration the day the War was over.

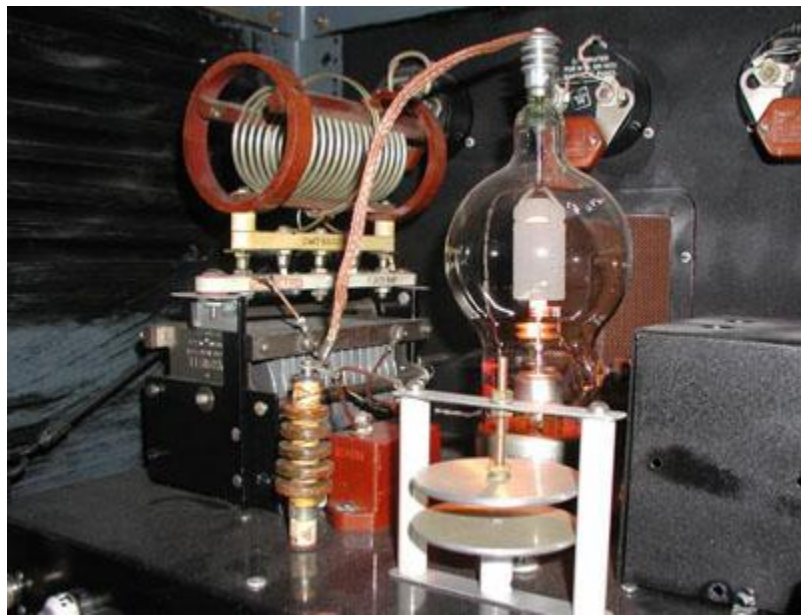
I learned there was a shortage of telecommunications equipment which was used to convert radio signals to operate teletype machines. These converters were on order from the manufacturer but would not be available for several months. So I designed a converter box which our electronic technician group manufactured. We made several dozen, which were put into use immediately.

At this time I arranged for my fraternity brother, Ensign Ray Alden, who also was a member of the ComServPac organization, to join my group. Ray participated in building our telecommunication converters. When he was discharged from the Navy a year later, this experience led him to join a communications company. He eventually became president. His memoir cites his ComServPac experience as heading his career in the right direction.

Some of the jeeps were used in the Iwo Jima landings, but as we worked in Hawaii, the war moved fast in the Pacific, and with the atom bomb, it was quickly over. So, here we were, sitting on the island with really nothing to do. Early mustering out was awarded to other personnel who had borne the brunt of the war. Unexpectedly the government decided they could now open up the 10-meter band for ham operation. This wouldn't interfere with any military operations which had slowed appreciably. We had an enormous warehouse where all of the electronic equipment that had been taken off vehicles and ships was surplus and stored. It was waiting to be demolished. Everyone knew it was never going to go back to the United States, and I was given the opportunity to give away this equipment to any hams who wanted to use it. I remember I had a lot of fun because I knew a number of hams around Pearl Harbor and, of course, the word spread pretty fast.

I found some wonderful surplus transmitters that had been used for VHF communications ground to aircraft. They were tuned to the 150 megahertz band, but it was easy to convert those to 30 megahertz. With a lot of help from my technicians I built a magnificent ham radio station transmitter. It delivered about 2,000 watts, which, of course, was illegal. (Ham radio transmitters were limited to 1,000 watts.) We used a surplus transmitter that used big Eimac 250TH power tubes. It had two of those in the final amplifier and two of them in the modulator. We were located at an old, extinct crater that had eroded in, creating a flat surface. That turned out to be a beautiful ground plane for a 500 foot rhombic antenna shaped in a trapezoid. It was bi-directional and had very high gain.





The 250 TH Power Tube still in use today on a 7 MHz Ham Radio Amplifier  
Courtesy of W5FRS

We could get it to be single directional by putting a resistive load on the far end of it. In Hawaii, the great circle route goes through San Francisco and Washington D.C., so you can effectively cover the whole United States with one antenna direction. Our rhombic antenna had something like 40 db of theoretical gain and with about 1500 watts it put out quite a signal. We'd turn the transmitter on when the band was open and call CQ (a request for a conversation). I had scrounged a spectrum analyzer from somewhere, and suddenly there would be 40 or more spikes on its screen, showing replies.

"Which one should I talk to?" I used my own call letters, even though technically the transmitter was illegally too powerful. If someone checked, I could always scale it back. Then we also built a Yagi array antenna to talk to Guam and we relayed messages from Guam through to the United States. It was a lot of fun putting my ham radio experience to a good use. We communicated with other hams all over the United States: San Francisco and Midwest, etc. Here we were building our equipment at government expense? We were assured this program was justified by delaying the return of service people to a flooded workforce.

While I was attached to ComServPac I got to know a senior officer who had an important position with Operation Crossroads. Operation Crossroads was the project to determine the tactical damage to Navy ships from the new technology of the atom bomb. They were setting up a controlled experiment at Bikini Atoll in the South Pacific and they planned to send many ships out there to blow up a bomb and take a lot of measurements. He wanted me to sign on for that operation, but I didn't particularly want to because, while it was an interesting thing to do, I really wanted to get out of the service. I wanted to go back to Stanford, where I had re-applied and been accepted. If I had gone on Operation Crossroads, I would have had to postpone my graduate work for a year.

I was stationed briefly at Mare Island, north of San Francisco at that time. I accompanied the senior officer to Alameda where the ship was leaving for the Bikini test. He said to me, "I have a number of letters that I want to write and I want to get those posted and I haven't quite finished them yet. I would like you to go out on this ship and come back with my letters on the pilot boat." This was one terrifying experience because I was expected get off a ship at sea onto a smaller boat where the waves are ten feet high, outside the Golden Gate. That is a really high casualty transfer process. I worked my way down the Jacob's ladder and at one point the guys on the little boat said, "Jump backwards!" I jumped and they caught me. Shortly after that experience I did get mustered out.

In retrospect, my military experience was very valuable to me because I'd never supervised people before. The GI Bill was also a great benefit by providing money to continue my education. I would never have chosen to attend the Business School if it hadn't been for my military experience. In the Navy I was classified EDO, (engineering duty only). Before this classification was used the Navy was



not making the best use of officers with a good engineering background. If these people were placed in a line officer situation, they lost the ability to do critical technical duties. What I found was that my EDO classification was a terrible stigma and that I was considered a second-class citizen by the line officers. The Navy experience showed me that much as I liked engineering I wanted to have a career with broader interests. That's why I applied to the Stanford Business School.

I'll include this final story about my Navy life here, although it belongs later when the Korean War started and I was working at HP. I had previously made friends with a career officer who was then at Annapolis. As the Navy began to mobilize to support the war, they went to him and asked, "What reservists should we recall?" He came up with a list of names which included mine, so one day I got this thick registered letter that said I was to report to active duty. Dave Packard was about to go back on a trip to Washington, and we had just signed a Navy contract for the 616A signal generator. So he went to the Navy and said, "You know, we were counting on this guy being here when we took this contract. We didn't know that this might happen." So they cancelled my active duty orders. (whew!)

### **Stanford Business School, 1946 - 1948**

As I considered my options near the end of my Navy duty, I thought about the engineering stigma suffered by engineering-duty-only officers. I had gotten to know a couple of career officers who were Naval Academy grads. One of them was the man I mentioned who urged me to go to Bikini Atoll. The other was Bill Boehm who recalled me to duty during the Korean War. It was because of the advice of these career officers that I made the final decision to go back to the Business School. We had the G.I. Bill then. It was very advantageous to use it to get additional education because it was virtually free. In its own way, that massive government program was brilliant because it prevented a desperately bad unemployment situation from occurring at the end of the war, as had happened at the end of previous wars.

I re-entered Stanford in the fall of 1946. About half way through the second year I observed that my fellow students were getting ready to do job interviewing with companies. I was reluctant to do this because it took so much time. I thought, "Well, I'd worked for Hewlett-Packard before and I really felt very positive about the company." If they wanted me back, I'd certainly consider that very seriously. In fact, I was hoping I could avoid going through all this interviewing.

I had also had some contact with HP during that period because in 1946 Norm Schrock asked me to go skiing. I had never skied, but I had seen skiing pictures, such as "Sun Valley Serenade," and I looked forward to learning how to ski. At that time, it was not a sport that everyone came to enjoy, as later. We drove up to the mountains in Norm's Chevrolet. Another HP guy, Noel Eldred, also came along. We had a very pleasant weekend. We didn't do much skiing because of various things that happened, but that's where I got to know Noel, who became my boss, mentor and good friend.

### **Love and Marriage**

I was discharged from the U.S. Navy in June, 1946. At that time my father was taking a sabbatical leave of absence from his position as director of the Santa Barbara Botanic Garden. He and my mother and sister were living in a cabin at Idyllwild, a resort in the mountains near Palm Springs. Jean and her parents lived in a town called Calipatria, in the Imperial Valley, south of Palm Springs. Her father was a rancher and cattle breeder. Jean and her mother spent every summer at Idyllwild to escape the summer heat. Jean's father liked the heat so he stayed in the valley most of the summer.

Horseback riding was a very popular sport at Idyllwild. My mother had a horse. Jean brought her horse from Calipatria. My sister, who had arrived at Idyllwild some time before me, introduced me to her new friend, Jean, who was an avid rider. I learned later that Jean had taken riding lessons and competed in horse shows at Stevens College in Missouri. She even learned how to ride sidesaddle! In June, 1946 Jean had just graduated and earned her teaching credential from UCLA. I wanted to get to know this attractive brunette.

I decided the best way to romance her was through her equestrian interests. So I bought a horse. That was my best decision ever. Jean and I spent the summer riding around the mountain together. By the end of the summer we were inseparable. Our marriage lasted 64 years until Jean's death in 2011.

When Jean and I decided to get married we knew that we were not going to make it entirely on the G.I. Bill. She needed a job locally since she was then teaching grammar school in Long Beach. In 1947, Dave Packard was the chairman of the Palo Alto School Board. I decided to ask if he could help her to get a teaching job. Looking back on it, this was a very presumptuous thing to do. He was very polite about it and he explained that wasn't part of his duty on the board, but he did get her name and, sure enough, she got the job.

I had another contact with Dave later that year when I got to worrying about what I was going to do about getting a job following graduation from the Business School. I said, "I'm going to be graduating and I'm thinking about going through this interviewing process and I wondered if there might be a place for me here at HP." "Oh yes," he said, "We'd like to have you come back. You just count on that." I never asked him how much he would pay or anything about fringe benefits. Dave said that that they'd be fair about my pay, and I never thought about it again.

Three weeks later he called me and he said, "I was wondering if it might be possible for you to work part time while you're finishing your degree because Al Spear, whose been handling our production planning, has gotten TB and he's going to have to take off six to nine months. We really need somebody to do that and it seemed to us that with your background with the business school, you'd know how to pick up fast on that function. We also think you could do it about half time. Would you come to work half time?" So I said, "That'd be okay." I started work on January 1, 1948, which is my official date for the beginning of continuous HP service.

Jean and I married when I was half way through the business school program. She worked as a teacher to support us, teaching at the Stanford Elementary School on the Stanford campus. It is no longer there. With income from the G.I. Bill and Jean's salary we survived well.

We moved into a shack on Moody Road in Los Altos Hills. My parents had given us some money as a wedding present and we bought two acres with a building, well and vineyard. A fraternity brother of mine had bought similar property a mile away. I had a lot of respect for him and figured that if he was doing that, it was a sensible thing to do. We added onto the structure quite a bit, and it ended up being a reasonable sized house with a couple of bedrooms. We lived there for two years and made a profit when we sold it. In 1950, we built the house on Parma Way in Los Altos. Interestingly we sold the Moody Road two acre property for \$7,000. Properties in that location are going for \$1 million per acre in today's market.

### **Back to HP for good**

I knew that coming back to HP, and handling an administrative task was going to be an interesting challenge. Al Spear had been doing production planning for about 45 different products at that time. We built each instrument to order. We waited until we got an order before building the instrument. Often we ran out of parts before the instrument was completed. We really had to build our products in anticipation of orders to avoid unsatisfactorily long deliveries. So we began building instruments in production runs of twenty-five to fifty at a time. To do that, we had to have all of the materials on hand, which meant we had to figure out how many resistors to buy, how many capacitors to buy, tubes and so forth. Bob Sundberg, as purchasing agent, would buy all the materials, but he didn't know how much to order.

My first task was to make a sales forecast. I had to figure out how many of each product we were going to sell each month in the future and then decide when to schedule those needed runs. After that I would then calculate the materials required for all those runs. Of course, there were a lot of component duplicates like a thousand ohm resistor which would be used in all kinds of instruments. I had to devise a way to figure that out. Understand that all of this data handling was done manually. To handle this information I introduced a Kardex system which had a clever card file cabinet and drawers and cards for each individual and distinct part. The card would describe the part, where we purchased it, how many we had on order and how many we had in stock. Each card was continuously updated as new shipments came in or as we withdrew a certain number for a given production run. We posted all that information every day.

We used what we called the “bible.” This is now called a material requirements planning (MRP) system and it is done on computers. The bible was a huge multi-page spreadsheet that had the products along the top, the parts along the side with a grid of squares. The squares showed how many of each part was used in a product. Then we used a Friden calculator to add up everything, based on the run schedule, and determine what our purchase requirements were. We figured them out over a period of time. We'd give this information to Bob Sundberg and he'd place the purchase orders. It's really interesting looking back to realize that what we did manually for a number of years is providing the same information that today's automated systems do on a massive scale for the huge company that HP has become.

The Kardex system was commercially available, but we expanded and designed inventory card formats that had not been used before. Then, along with Bruce Wholey, who was designing microwave signal generators, we extended the Kardex to factory fabricated parts. In most of our complex mechanical products like signal generators, much of the superior performance was tied to HP-made machined parts, from castings or metals or plastics. Each of these precision parts required a long process sheet with multiple operations from casting to machining to plating to lapping, etc. We named all the parts, and assigned them fab part numbers, so scheduling could follow similar processes. The machine shop used its own master schedule.

We were innovating on many levels those days, as sales accelerated with new product introductions. The sales forecast was always the weak link, and still is. We tried a process to attempt to account for some sloppiness in the sales forecast by what we called safety stocks, a built-in cushion with a percentage of over stock of certain long lead parts.

The production schedule fed back to the run books in the marketing department. As orders were mailed from customers to our Sales Representative offices across the country, each product in an order would be logged manually into a run book, which by now had delivery dates established. That allowed the run person to feedback acknowledged delivery dates to the field office and thus back to the customers, who could plan their programs accordingly.

We used a Gantt chart process for loading the shop for required personnel hours. For each part we prepared a card, on which one dimension represented the number of people-hours it took to build a run. We knew this from history. We would put those into a Gantt chart format and figure out how many different runs we could get done given the capacity of the shop, with so many people-hours available. It was primarily the assembly that we loaded it against. That affected how many people Ed Porter, the manufacturing manager, hired. If the forecast looked short, we'd use that as the way of knowing we needed to hire more people.



On those little cards, we would log say: 25 - 616A, which meant we would have a run of 25 of the 2-4 gigahertz signal generators. We knew from experience that it took say 200 people-hours of work to put each run together. Let's say the card was two inches long. Each inch represented a hundred people-hours. So we'd take a bunch of those little cards (they were different colors depending on the type of products) and jiggle them around. For each month there would be a series of these cards laid out in a row horizontally we'd make sure that the length of the row didn't exceed the total time the shop had available.

At that time we had one assembly area. The people who worked there were trained so they were expected to instantaneously change from one job to another. In those early days, the manufacturing technique was called point to point wiring, using pre-made harnesses and what we called Kingman cards, which held components. Everything was done by copying. We'd keep one sample that worked right and we'd copy that. Everyone would look at it and then they'd take a given resistor and they'd just walk along and put that resistor in each unit. Later we got into production workstations like Lazy Susans that were more efficient and allowed one person to do more of the total assembly and wiring. But the idea was that people were pretty versatile.

I did production control management until 1950. It's what today is called materials requirements planning (MRP). It was production control, production planning, and materials management, except that I didn't do the purchasing. Bob Sundberg was the purchasing agent. Dick Were ran the stock room. I figured out what to buy.

One Sunday morning I got a call from Dave Packard at home. It was after we moved to the first saw-tooth roof building, which was called Bldg. 8. It illustrates how much Packard got into the details of our jobs. He said, "I'm concerned about our production schedule and I would like to review this and wondered if you could come in today and we could go over it?" I came in and Eldred, the sales manager, was there. Eldred and Packard and I spent six hours, going through every detail of the sales forecasts of all these Gantt charts I just mentioned, the whole business. It was really interesting to me how important it was for Packard to get right into every detail. He was basically auditing every single detail that I was doing on my whole operation. Dave was concerned that we were buying too much given uncertain business conditions. Hopefully, that meeting alleviated his concern.

I can recall another very interesting practice. We held monthly production meetings. We'd go off to a restaurant for lunch and then we'd have our meeting. All the production managers and all the people concerned with production were there. Eldred would come and talk about the sales forecast, etc. We did this every month for a long time. Packard and Porter and Eldred were always there, as well as people like Bill Doolittle, who was one of the production managers. Dick Arms from production would be there, etc. It was all the people who were involved with the management of the sales and manufacturing area. It was held at one of the many restaurants on El Camino which HP people frequented. These meetings created an atmosphere of cooperation among the manufacturing people. We ran an effective and efficient manufacturing operation.

About 1950, Dave acquired from Varian a line of waveguide test instruments. These were instruments like slotted lines, detectors, and attenuators. They were available in six waveguide sizes. The line consisted of so called passive plumbing. Such components were used to connect microwave measurement systems together. Altogether there were about fifteen different products. Varian had developed all of these as part of the equipment they needed to use for testing their klystrons during their WWII production. They came in various waveguide sizes, from the S band (3 GHz) to the P band (18 GHz). It was a nice line of test equipment, but Varian didn't want to dilute their highly profitable klystron tube business by going into the test equipment business. For HP, it was a perfect complement to our expansion into MW signal generators.

Dave saw this lineup as an opportunity, and it became my job to do the large amount of paperwork needed to integrate these products into our production control system. I had to give stock numbers to them and I had to figure out what the different parts were. There wasn't any need for making the drawings because this had been done by Varian. It was a matter of our setting them up to do the production.

I decided it would be a good idea to introduce our production people to these new products, to know how our customers used them. None of our people had seen anything like these products before. I wrote up a little brochure, maybe fifteen pages long, with one page for each product. There was a drawing of the product and then an explanation of what it was used for. I explained some of its characteristics and what you needed to know if you were going to make it; for example, the requirement for mechanical precision.

It was intended for the production people, for the machine shop and for the people who would be working with the products and testing them. It was entirely oriented toward the internal side of things. We printed up some copies and handed them around to manufacturing people who showed some real interest. A few days later Packard came over to me and said, "This is good stuff." I said, "Well, thank you." He said, "I think we'd like you to work in the marketing department instead of the manufacturing department."

He said, "I wish you'd think about that." So I said, "That's a nice thing to think about." I wasn't too interested in doing that, but I went over to my boss, Ed Porter and said, "Dave has suggested the idea of my working in marketing." And Porter said, "Yes, and I'm going to miss you." So HE KNEW! It reminded me a little bit of the time that Packard apparently decided that I should go from the lab to production test and Brunton threw me out of the lab without telling me.

### **Sales Department, 1957 - 1960**

I did move over to the Sales Department and Noel Eldred became my boss. He had a staff of excellent people including Bea McCarthy and Byrd Bey and Pat Glass (Morgan). I was so impressed with those women. They were able to turn out perfect quotations for customers. They could type up four, five, six-page quotations involving lots of money and calculations and never made a mistake—and they did it fast. You know, today we all use our word processors to do that sort of thing. I don't believe there's anybody around today who could do the type of work those ladies did with ease. Not only that, the quotes involved many carbon copies, meaning that a single character mistyped would need to be erased on 5 copies. The Xerox guys hadn't worked their magic yet.

After moving to the Sales Department I continued to do the sales forecast. Phil Towle took over my other production control responsibilities. He loaded the shop with jobs. I continued to prepare the master production schedule every month and I managed customer quotations. Our aerospace customers required full written quotations before approving their purchase orders.

Compared to today's complex marketing departments, we ran a very simple shop. Most of our promotional material, data sheets, catalogs, and brochures were done by our advertising agency, L.C. Cole. Bob Orr was our account manager. He worked very closely with Noel on all of that outbound material. I accumulated spec sheets from the lab engineers in preparation of handing it to the agency. One of the people in the back office at L.C. Cole, assisting Orr, was Dave Kirby, who later joined HP and became our top Public Relations Manager, a real pro at promoting the company.

We didn't go for many titles. However, I have a 1960 newspaper article which identifies me as the U.S. Sales Manager. I never really liked actual selling much—the daily customer contact part of it—but I really enjoyed doing the support work, the quotations and all that back office stuff. We used to have annual sales seminars for the reps, in addition to the meetings at the annual IRE show in New York. I had a lot to do with putting those sales seminars together, and enjoyed doing that. The annual sales seminars were legendary in the company because in addition to all of the technical training, and business discussions with management, they were social events too, where a lot of people in the company came to know the sales reps personally.

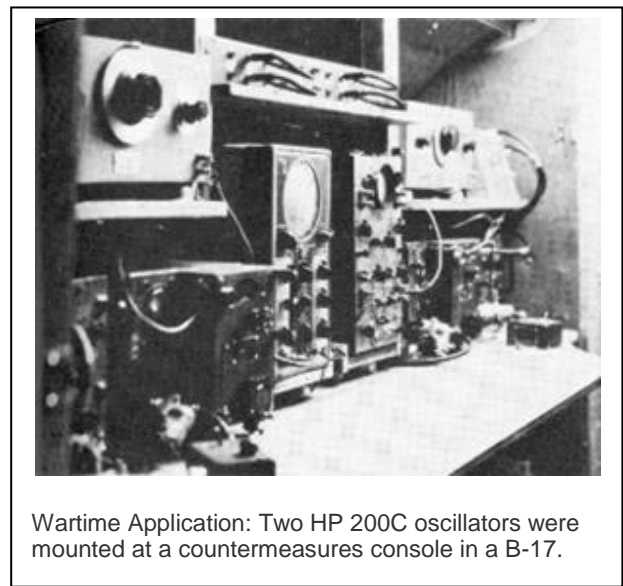
## The Sales Representatives



*The following sections are based on information provided  
By John Minck, Carl Cottrell, Dave Yewell, Bill Terry,  
Bob Grimm and Al Bagley.*

It is fair to guess that in 1939, when Dave Packard got set to travel to Los Angeles to answer the product inquiry from the Chief Engineer of Walt Disney Company, that he thought first about looking up a Sales Rep. The Disney engineer had seen the first HP ad for the HP 200A oscillator in an IRE publication. He had the task of upgrading theatre sound systems across the US, for the upcoming movie, Fantasia. He was going to need a quantity, and the price was very attractive. Our legend has it that Dave put a box under his arm, walked into the West LA office of Neely Enterprises and asked, “Does anyone here know how to sell electronics?” Neely had been representing manufacturers of sound systems, speakers, amps and microphones. With that challenge, someone from Neely drove him to the Disney studios, and the HP relationship with Reps is history.

It is not altogether clear whether HP moved immediately to reps across the US, but probably not. It was wartime, and although HP was building up production rapidly, it is more likely that production was mainly directed at military and government contract research uses. In a comprehensive 1984 book by Alfred Price, *History of US Electronic Warfare*, two HP 200C oscillators were shown mounted in a B-17 aircraft as part of the system called a Ferret. Their objective was to fly near enemy radars and collect technical data such as radiation frequencies, repetition rates and so forth. The RCM operators would use the oscillators to match such parameters and record the critical data. It may be remembered that Fred Terman had moved East to manage the Harvard Radio Research Lab, which designed all kinds of electronic countermeasures. So it is quite likely that he brought with him the key knowledge of HP measurement products.



The story of the HP Sales Reps is such an important one to the business success of HP. They were independent businessmen, with specialized knowledge and performance in selling high tech products to a sophisticated customer group. For HP, their dominant and energetic personalities speak volumes



about their success, and I wanted to spend several pages with my remembrance of some of the personality profiles of these unique individuals. This section is devoted mostly to the 1950s, as our small company was finding its stride in the market. These sales professionals were most useful to young and growing manufacturers, who needed sales outlets in the US and around the globe. Their customer bases were precisely the ones that HP needed to reach.

The reps offered knowledge of the local markets and a fully-operating organization with offices, sales people, service facilities, and full support of accounting, etc. Their repair and calibration centers were also highly valued. They did this for a sales commission of 15%, less in certain areas where the higher concentration of customers made operating costs lower, going down to 12%.

These independent businessmen represented many different manufacturers or "principals." They took special care that their various product lines didn't compete (too directly) with each other. Thus they were mostly complementary, supplying compatible extensions of test and measurement product lines. In the 1950s, Neely handled both HP instruments and Tektronix scopes, with no conflict, since HP's scope line didn't emerge until about 1960. Neely also handled BLH (Baldwin-Lima-Hamilton) strain gages, Sanborn strip-chart recorders, Boonton Radio VHF test instruments, Moseley X-Y recorders, Varian Klystron tubes and instruments, and others. HP later bought out a number of those complementary companies and their product lines.

### **Nine Old Men**

Before reviewing all the U.S. Sales Rep owners, I wanted to touch on a major organizational change which involved what was called the "Nine Old Men." In the early 1950's, the Northeastern U.S. was represented by a single organization called Burlingame Associates, owned by Col. Bruce Burlingame. They had everything from Maine to Washington D.C., all along the eastern seaboard. In 1950 or 1951, shortly after I got into the sales department, Burlingame had a road show. I remember going on the road show and at that time I met several of his salesmen, Bob MacVeety and Bob Asen. Bob Asen invited us to his home in Connecticut, which was a beautiful home, and we wondered if Bruce Burlingame had ever been to this impressive showplace. We were quite convinced that this was a much nicer home than Bruce had. Bob Asen had the whole group come by his home for an asparagus luncheon that I remember was very good.

During that road show, Bruce Burlingame had a heart attack and died. He was not actually on the road show, but he died during the time the road show was taking place. There was a discussion about what he would have liked done and the conclusion was that he would have wanted the show to go on. So we went on with the road show. It was common knowledge that there was considerable dissension among his more senior people, about the way Burlingame was running his business. It was likely that they didn't feel that they weren't getting compensated well enough for all their hard work and success. Many of these disaffected were his key office managers along the coast.

When the old Colonel died, there were some legacy difficulties with the Burlingame family estate, and his business staff regarding their management succession and ownership. HP chose not to wait for it all to settle out. Dave decided to set up new business relationships with many of the previous city managers from the old Burlingame organization. Thus, Tiny Yewell set up Yewell Associates for Boston and Northward. Robert Asen, Milt Lichtenstein, and Charlie Sargent got together around New York City, and formed RMC Associates. Ivan Robinson and Leon Levy covered the area around Philadelphia. Fred Horman took the Washington area, and Rube Ryerson covered upper-New York. Pete Lahana had been an Office Manager for Burlingame and was one of the original "nine-old-men." Pete was to be Yewell's assistant manager for the Boston area. But after a time it became clear that he and Tiny did not see eye-to-eye. At that time the Colorado territory became available to assign to Pete, so there was an amicable parting of the ways.

I wasn't involved in these meetings, but I heard many stories about it. The claim was made that they had to import another shipload of Chivas Regal scotch. The meetings were in one of the New York hotels down near the center of town, down near Gino's restaurant. Gino's place was called the VIP Club, owned by Gino Conti. That was an amazing restaurant, and during the IRE Show it really jumped, as did the Bombay Bicycle Club, at the Essex House, at the south end of Central Park They consumed gallons of Chivas Regal and out of all this they set up five sales organizations which

corresponded with where they all were living. So we ended up with five reps instead of one and they were called the nine old men.

Dave Yewell remembers from conversations with his Dad that somehow Tiny was the guy who got the opportunity to form Yewell Associates. Tiny asked and Dave agreed to loan him \$5,000 to launch it. All on a handshake. The first offices were on Commonwealth Avenue in downtown Boston. There was his Dad, a secretary, (he called female employees beetles, until HP culture stopped that). His first employee was Vince Yaras.

All the reps still handled all their other product lines. You can imagine that with all these business relationships changing that the legal matters were serious. Although it must be noted that ALL of the original business "contracts" between HP and the Reps were reportedly based ONLY on a handshake. That is the remarkable trust that Bill and Dave engendered for their business dealings. It is likely that later business arrangements had formal contracts.

## **Rep Negotiations**

After my move to Marketing, I found that a lot of our time was spent in the "care and feeding" of our relations with the Sales Reps. It was normally a very smooth and friendly business arrangement, but then it came time to re-negotiate their sales commissions downward. Now THAT was going to upset some pretty headstrong business people. There was also another period of negotiation when Bill and Dave studied the situation and decided that it was time to buy up all the Reps and make the Field Sales operation a part of the overall HP company.

I'll first cover a few details on when HP management saw a need to negotiate a reduction in the commission rates. We had two classes of reps; big reps and little reps. The big reps were paid, twelve percent commission and the little reps were paid fifteen percent. This justification came from the perceived efficiencies of scale. All of them also represented other companies and those other manufacturers weren't paying that much. That was one point. The other point was that we had grown so much that it was getting to the point the commissions were somewhat inequitable with factory salaries. The decision was made that we needed to lower the rate was being paid, to bring the fifteen percent down to thirteen and the twelve percent down to ten.

Eldred and Packard decided that this new arrangement was to be negotiated first with Norm Neely because Neely was the biggest Rep by some amount. Noel and I planned to talk face-to-face with Norm about this, so we flew down to North Hollywood, where we were greeted by Bob Boniface. He told us that Norm was out of town. We thought that was an interesting coincidence, but we went ahead and had the discussion with Boniface. Since Neely did not appear to want to participate in our discussion, it is likely he wanted to deal directly with Packard.

By this time, all the Reps were aware of the oncoming negotiation and the damage to their revenues. So they decided as a group that they wanted to make a combined presentation to show HP that this was not a good idea. They asked if they could come out to Palo Alto and do this at a time other than a sales seminar time. They had reserved a room at Rickey's and we all met there. Tiny Yewell was delegated as the spokesperson and he got up and made a long pitch about why this plan didn't make sense and the great value they were providing for the present commission numbers. Then Packard got up to respond. He said, "Gentlemen, I've got bad news for you. This turns out to be hay fever season. I'm suffering terribly with hay fever. I don't feel like spending a long time on this discussion. Your ideas are noted, but they aren't going to get you anywhere."

All of the Reps with the exception of Rube Ryerson went along with the Packard ultimatum. Rube just simply said that he couldn't accept this. "I won't go along with it," he said. He and Tiny had a meeting and Tiny tried to tell him, "Look, this isn't the end of the world." Rube said, "No, it's the principle of the thing" and he quit. HP then appointed a new rep firm E.A. Ossman and Associates. The leader Eddie Ossman and his field engineers traveled to Palo Alto for a 10 day training program. A few months later Ed was killed in an automobile crash. Suddenly the new rep organization was leaderless. Ed's widow decided to close the business and HP bought back the demo stock, service equipment and parts.

Noel Eldred sent Bill Terry to Syracuse to start a new “direct” sales organization. It also sent a message to the other reps that HP was prepared to "go direct" Bill recruited many of the former Ossman employees and leased 3 new offices. Noel then suggested to Bill that he should move to Syracuse. That motivated Bill, the native Californian, to quickly recruit Bob MacVeety from RMC to head the new Syracuse Sales Division, HP’s first in the US.

## Rep Acquisition Plan

Then, around 1961, the decision to acquire the Reps was made, and we began the acquisition process. We understood that this wasn’t going to be easy, because of the fierce independence of these business owners. In the 1960 period, Packard assigned John Young, who was a new Stanford MBA, hired in the middle of 1958, to move over to report to Ed van Bronkhorst, the Treasurer. His task was to make a detailed study of the reasons and advantages to buying and integrating the field sales force, as well as a tactical plan for implementing this crucial move. I was still Sales Manager, responsible for maintaining a top relationship with all these Reps, even as we were talking about removing their status as business owners. These were enterprises that most had personally founded and built up and took considerable pride in their independence.

Now, with regard to the acquisition of the reps, HP had become such a large part of their various businesses that they really were not independent any more. I think the first one to recognize this and to be very up front about it was Earl Lipscomb. I guess it had gotten to the point where HP was about 80 percent of some Reps’ revenue. Part of that reason was that HP had over the previous several years bought some of the other independent manufacturers like Boonton Radio, Harrison Labs, Moseley Recorders, and especially Sanborn Medical, which was the largest.

Even though they did have a few other lines, the other lines were almost a nuisance. They just really couldn't give them the right share of attention from their standpoint. From our HP standpoint, it created a diversion of attention. I feel like the most important part of that was the negotiation of how much they got paid, not whether it was the right thing to do or not. That was my impression of it. Still another reason was that Tektronix had slowly been setting up their own Field Sales organization. Their technique was that they cut off the Reps one by one, finally including Neely, their biggest outlet. Which also led the HP field team to put a lot of pressure on Packard to get HP into the scope business.

The actual buy-out process went so smoothly we could hardly believe it. Certainly the financial offers were generous, Dave and Bill were personal friends with all these owners. Their business relations were settled on a handshake before this. They wished to recognize the great contributions of all of them. And having seen how Tektronix handled their replacement of many of the same reps, WITHOUT ANY COMPENSATION, must have been on their minds. Tek just notified a rep that their relationship was terminating. It is one business option, but not one that Dave and Bill would accept. All but 2 out of all 13 reps sold out, and became wealthy men.

In 1960, I had moved to the General Manager post at Dymec, and Dick Reynolds had assumed my Sales Manager role. The sales support assignments, as shown in a Nov 1, 1961 organization chart, were as follows:

<b>Reg Sales Mgr.</b>	<b>Sales Engineer</b>	<b>Regions</b>
John Young	John Minck	RMC, Robinson
Dick Cline	Frank Wezniak	Bivins & Caldwell, Horman, Stiles
Bill Terry	Gene Warrington	Ossman, Sterling, Yewell
Jack Nally	Jim Prestridge	Crossley, Harris-Hanson, Lipscomb
Tom Kelly	Jerry Metzger - Ed	ARVA, Lahana, Neely

Within about a year, the company decided to create the first four Charter Operating Divisions, and many of these sales engineers moved to take over marketing assignments attached to those divisions. Young and Minck moved to Microwave, Terry and Warrington moved to Oscilloscopes, Kelly and Metzger moved to Audio-Video, soon to become Loveland. Ed Smith moved to Frequency & Time Division, and later moved to Santa Clara when the division built its new facility.

## A Showcase of Sales Professionals

Because of their crucial role in building HP from a tiny company to a global player, I wanted to pay a little tribute to these reps individually. These are my personal observations on the personality profiles and unique operating styles of those sometimes flamboyant Rep individuals. I would also like to observe that some of my most memorable and enjoyable business times were spent in the company of our HP salesmen, not just their bosses. These were people who lived daily on their expertise and ability to deliver value to their customers. Their personalities were large, their enjoyment of life showed through when they walked into a room. I think it was just a matter of being gifted with more than ordinary confidence in their sales abilities.

Along with each region below and Rep owner, I will add some other good memories of those other personnel as well. After assembling this Sales Rep section, I also decided to ask several other HP old timers to add their comments and specific memories of that great period in HP history. I am indebted to John Minck, Carl Cottrell, Dave Yewell, Bill Terry, Bob Grimm and Al Bagley for their additions to this story of field relations and life at that interface.

In 1950, I moved into the sales department where I reported to sales manager Noel Eldred. My only prior exposure to the “sales reps” was to attend a social function at a sales seminar. Suddenly I was heavily involved with managing their operations and working with them directly. Noel assigned me to handle quotations, which required frequent and critical rep contact.

Being highly independent, the salesmen didn't like someone coming between them and “big marketing boss” Eldred. So, as often as possible, they would get to him first, which did little to share his load. After a while, Noel complained to Norm Neely who promptly communicated to the other reps that they should talk to me whenever possible. After that I became very busy and got to know the individual reps well.



Norman Neely "Fastest Rep in the west," as titled in a September 1969 MEASURE Magazine article.  
Courtesy of the Hewlett Packard Company

**Norm Neely.** Neely was the essence of the professional technical salesman. He had been in the sales rep business since the early 1930s when he sold sound systems and accessories. His organization was highly organized, almost like a military operation. His field engineers all seemed to be stamped out from the same mold; crew cuts, clean cut, aggressive, etc. In fact, their recruiting process came to

involve special vocational interest testing. Their central organization, headquartered in North Hollywood, was located on land that was one of the original Spanish land grants, and the site of the peace treaty of the Mexican-American War, Campo de Cahuenga.

Neely built most of his district offices, around California, Arizona and New Mexico, in the Spanish mission style, with tile roofs, graceful outdoor corridors, etc. At headquarters, there was a stylish bar room, called the Cahuenga Room, which might open for special occasions during the day, but would be opened at the end of every workday. Visitors were always pleased to take a period of relaxation in the bar. Norm's wife, Jane, handled all the interior design including all colors, furniture lighting etc. Norm also contributed to the "ambiance" by hiring only females that excelled in looks, noticed by all visitors when they approached at 5PM with a scotch and soda. Norm was sure that some after hours communication between sales reps was good.



Mike Talbert gives guided tour of new Neely mobile demonstrator to San Diego businessman Ash Brown as Norm Neely looks on.  
(From MEASURE Magazine, July 1964) - Courtesy of the Hewlett Packard Company



Bob Boniface

**Bob Boniface** was Norm Neely's right arm. He handled administration so Norm could concentrate on sales. One day Norm called to announce that Bob had been recalled to active duty in the Korean War. Bob's steady hand was sorely missed at Neely Enterprises. At War's end, Bob retired from the military with high honors for bravery and leadership. Later, when Neely Enterprises was acquired by HP, Bob moved to Palo Alto, as vice president of administration.

It was typical for personnel to move in both directions. Factory marketing people would find that they wished to try field selling, and would apply to their preferred owner. The opposite was true too, field people might tire of the constant stress of selling and move into the factory marketing. The reps like Bob Boniface made an important contribution to HP's top management ranks. (Bob's personality profile is available on the website [HPMemory.org](http://HPMemory.org), in the [HP People section](#).)



Bob Brunner

Another key rep, **Bob Brunner**, joined HP as an engineer in 1950. We became good friends and joined in social events with our wives, Gini and Jean. After a few years working in the HP design lab it became clear that Bob would be effective in a sales capacity. He had already designed the highly successful HP 202A low-frequency oscillator, with a clever waveform shaping principle. He transferred to Neely Enterprises and moved to the L.A. area. Jean and I and our son, Steve, visited Bob and Gini one time. Their daughter, Nancy, and Steve played in the swimming pool. Nancy was the "little princess" and Steve was the "little monster," a moniker that stayed with him for a long time. Bob later moved BACK to the factory to assume a group Sales Manager role. Field experience was very valuable to factory marketing functions. (Bob's personality profile is available on the website [HPMemory.org](http://HPMemory.org), in the [HP People section](#).)

Bob returned to Palo Alto as sales manager of the Oscilloscope Division, reporting to me. In spite of my entreaties, he refused the opportunity to move to Colorado Springs, and took a corporate marketing job. Bob served as a corporate engineering manager with oversight on R&D Lab project management in the far-flung divisions. He is well remembered for his "Brunner-gram" charts for project status. He called them Beetlegrams because they looked like spiders.

**Rudy Poucher** was a great story teller and the life of every party. He covered the Sacramento territory for Neely as salesman, then as expansion happened after the HP acquisition, he became HP's manager in that area.

**Ed Moore** was manager of the San Diego office. A fun-loving person, he had both a sailboat and an airplane. One time, he and his wife, Edwina, invited Jean and me to join them for a cruise to Santa Catalina Island. We became good friends. Later, they ran into bad weather on a Mexico trip. The storm tore the wing off Ed's airplane. It was necessary to "negotiate financially and liberally" with the Mexican authorities to return Ed's and Edwina's bodies to the U.S.

After the buyout, the Rep in the Northwest, **Ron Merritt**, decided to retire. Neely's organization easily moved in to handle that territory.





Norm Neely at the wheel of "La Siesta"  
From MEASURE Magazine, October 1976  
Courtesy of the Hewlett Packard Company

**Norm Neely** was a sailor, and had a succession of boats. I was invited to sail with him on several occasions. In later years, Norm built a very large yacht, and designed it to be built of marine aluminum. Bill Terry remembers being on the yacht during a field visit, and the discussion began comparing their latest efforts in "hi fi" (long before stereo) equipment. Some asked Norm what he had and he reeled off a list of the finest equipment money could buy. Some said "that must sound great in your living room," and Norm said, "No, not in living room, it's on my boat!"

Neely's organization did things in a BIG way. The main social event during the annual WESCON (Western Electronic Show and Convention) was the Neely Cocktail Party. It was an industry-wide affair, and a huge blowout. Wescon rotated between LA and San Francisco, so the evening party moved with it. Everyone -- customers, competitors, HP and other principals -- was invited and the liquor flowed freely. I suspect that many instruments were sold as a result of these parties.

Norm Neely also realized that electronic instruments were difficult to carry around and get authorized into and out of a customer plant, for demonstrations. A fairly elaborate setup was often needed to do a convincing job, meaning more than one instrument was involved with the time needed to set up. One answer to this problem was the Neely road show, where the instruments were carried in trucks and multiple demonstrations set up on customer premises, or in commercial motels nearby. The other approach was to outfit a bus with complete demos that could be moved into customer parking lots. Demo setups were changed regularly, especially as new products became available.



Al Oliverio

The original bus driver, **Al Oliverio**, really enjoyed his work. He was a natural salesman who could carry on an engaging conversation on most any subject. He was a self-taught car expert who later moved to HP Palo Alto, and was promoted to HP's senior vice president and direct sales manager to the auto industry. Al is another example of the rep organization developing expertise for the company as a whole.

I had a memorable Neely Road Show experience in Las Cruces, New Mexico, where we had put on a demonstration at an important customer facility. We proudly showed the new 524A Frequency Counter, which was a large, heavy instrument. I got up early the morning after the demo and decided to get started loading the truck, which required carrying the frequency counter some distance. I found out the hard way that this instrument was more than a one man load and have suffered back problems the rest my life. Not a good memory. Bill Terry has another memory of that road show. The motel electrical power that was furnished was not enough to run all the tables of demos. **Rudy Poucher** somehow found a power pole climber outfit, strapped it on and clipped on to other lines to borrow some power.

The original bus drivers were new-hire field engineers until one of them rolled the bus off the road and soon professional full-time drivers were hired instead.



HP TRAVELAB  
Courtesy of the Hewlett Packard Company

**Tiny Yewell.** Tiny was a large man, both physically and in his very presence. Paul G. Yewell got his Tiny name in high school. He was a bombastic, fun loving man who found great delight in personal relationships. It goes without saying that most of the social connections with all the Reps were

lubricated with alcohol. Tiny was beneficent to his troops, relied on many old timers like Vince Yaras and Larry Freeman and many others.



Corporate Sales Manager Bill Terry (left) and "Tiny" Yewell  
at the Yewell Associates booth at the NEREM show in Boston November 1963.  
From MEASURE Magazine, December 1963  
Courtesy of the Hewlett Packard Company

He was often the spokesman for the entire group of HP Sales Reps, although he often shared that role with Norm Neely. His Northeast Region had its own culture, and one of the great rewards for factory marketing people of doing a good job for Tiny's men was to get an invitation to his annual fishing trip outing held on East Grand Lake, Maine, along the Canadian border. A prize was awarded (probably a bottle of Scotch) to the biggest catch measured by weight. In one competition, both Tiny and Larry Freeman caught good-sized fish but Tiny won by stuffing his fish with lead sinkers. A crestfallen Larry felt better when Tiny later came clean and gave him the prize. This event was always held during the Fall "leaf tour," when the entire Northeast region erupted in tree colors of magnificent proportion.

**Vince Yaras** was a genuine character. He liked to entertain by singing in his powerful voice. Vince attended one of our first rep training sessions (along with Herb Gunderson of ARVA). At the end of the training program I invited the reps to spend the weekend at Yosemite. One of the trees near our cabin was named "The Grisly Giant," so we gave Vince this nickname. His response was to sing a loud and discordant song, "Grandma's Lye Soap," which woke up the camp. It went, "Do you remember Grandma's lye soap, good for anything in the home, for pots and pans and dirty dishes, it wouldn't suds and couldn't foam." Years later he was still asked to perform this song at Yewell functions.

Vince also had a trumpet in the office he would blow loudly whenever a big order came in.



At this RMC meeting, clockwise around the table from the far left, are: Bob Asen, Harry Mayo, Hal Plamjack, Bob McAll, Howard Greenwald, Stu Yellen, Joe Arcidiacono, Herb Kulik, Mel Young, Bob Adams, Rick Alexander, Rod Foley, and Milt Lichtenstein.

From MEASURE Magazine, August 1963 - Courtesy of the Hewlett Packard Company

**Robert Asen, Milt Lichtenstein, Charlie Sargent.** These three salesmen took over the New York City, New Jersey sector of the old Burlingame company. Bob Asen was an older man, high collar, business-like, accounting mentality, and essentially the inside man of their crucial high tech sector. In addition to his grand estate in Connecticut, he lived during the week in an apartment just south of Grand Central Park. The territory involved the very sophisticated aerospace operations on Long Island, Grumman, Sperry, AIL, plus the world class research facilities of Bell Labs, ITT and RCA in New Jersey.

Milt Lichtenstein and Charlie Sargent were outside salesmen, who were quiet but persistent sales personalities. Charlie ran the New Jersey office, and was a bit curmudgeonly. An inveterate cigar smoker as I recall.

**Ivan Robinson and Leon Levy.** Ivan Robinson was a methodical man, with a quiet demeanor. It should be remembered that long before their entry into ownership of their Rep companies, these men were all successful sales people. For our HP type of complex product, different sales personalities could be equally successful. Some were aggressive, "That customer has my money in his pocket." Others used the consultative sales style, which relied on presenting an overwhelming technical presentation. Ivan was the latter.

Leon Levy was the inside partner, and very much the financial watchdog for their organization.

**Fred Horman.** Talk about mild mannered men, Fred Horman was the mildest. Fred Horman was a grandfatherly gentleman. His territory was very important to HP because it covered government procurement agencies. Fred's key salesmen, Paul Guercio, Tom Strasser and Bob Patton were the sales power who made it run. (Bob later left Horman and started his own very successful firm.)

Fred kept a boat in Chesapeake Bay, not far from Washington. On several HP sales trips he invited me to join in weekend cruises.

In 1956, I spent six months on an executive loan from HP to the U.S. Department of Commerce in downtown Washington. It was noted that in the Korean War period there were few business people with an understanding of how Washington worked. Armed with this knowledge, I became a member of the National Defense Executive Reserve.

Jean, Steve and I lived in a 7th floor apartment at Hunting Towers in Alexandria, Virginia. **Marty Whitcomb**, one of Fred's salesmen, invited us to accompany his family on a weekend visit to Norfolk, Virginia. We traveled overnight on a ferryboat that was equipped with staterooms. As we were putting our children to bed prior to visiting the bar, one of them switched off the light. At this instant, the ship's 100 decibel whistle sounded, scaring the kids to death. They figured they were responsible for the noise. We had to give up our bar plans for babysitting that evening.



Frank Waterfall, Walt Wallin, and Business Manager Bill Harmsen in the Crossley Associates Chicago executive offices.  
From MEASURE Magazine, September 1963  
Courtesy of the Hewlett Packard Company

**Al Crossley** was an older man, who in this period was turning over his operations to the well-respected **Frank Waterfall**. Frank was a real technical pro, who I think had actually taught engineering before joining Al's sales operation. Frank and Barney Oliver were very good friends, which gives you some impression of his scientific ability. The territory covered the greater Chicago region, through the Dakotas. Waterfall quickly took over management of this important territory as HP bought the ownership of that Rep. His lieutenant was **Walt Wallin**.

As a Stanford Business School student, I was introduced to the Strong Vocational Interest Test. This test consisted of a series of questions, the answers to which, when decoded, provided vocational guidance. For example, the salesman outcome differed widely from the engineer outcome. I reasoned that the test would be helpful in staff recruiting. In order to get a baseline I asked several of our rep salesmen to take the test. As expected, they scored high in sales, but, also in engineering, showing they were properly employed as field sales engineers for our high-tech product line.

Our director of R&D, Barney Oliver, became interested and took the test. Surprising, the result showed that he should be a salesman. This was contrary to all of our predictions, Barney being a genius class scientist. Under questioning, Barney admitted he had fudged the test by pretending he was Frank Waterfall as he answered the questions.

Frank was a clarinetist of considerable ability. He was the lead musician in his college band. At a sales seminar we hired the famous Turk Murphy Jazz Band for evening entertainment. Turk asked Frank to sit in. Next morning I found Frank rummaging around the music stand. He said he had lost his ligature.

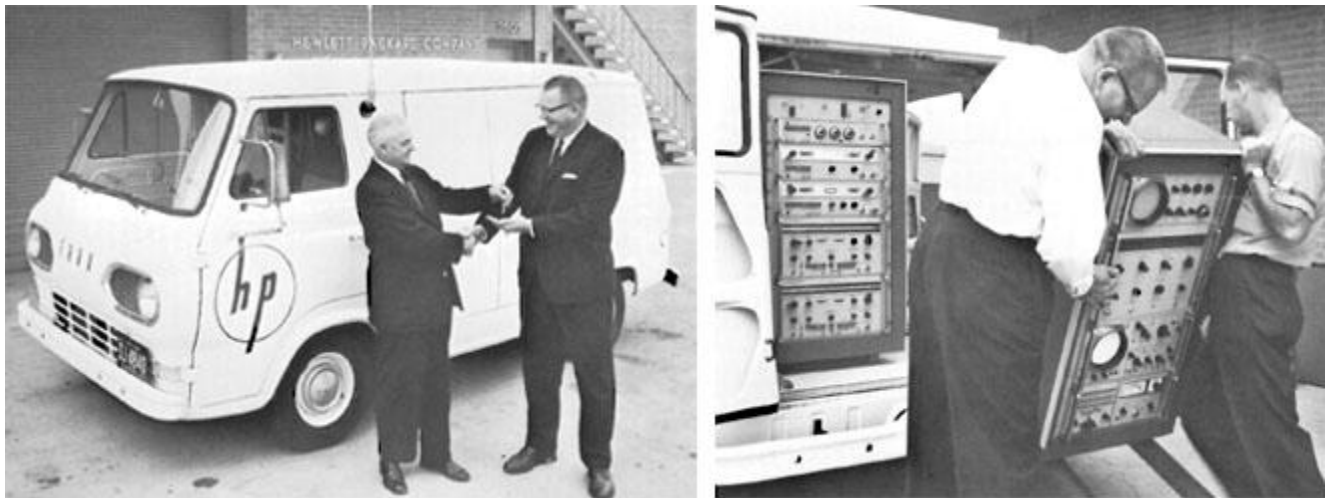
Since that was before Google's time, I had to look up the word in the dictionary. By the way, Packard and Turk Murphy were close personal friends of long standing.

**Harris-Hanson.** Harris and Hanson were responsible for the territory around St. Louis. Harold Harris was the leader, Ken Hanson handled the back room functions. It was considered a minor rep territory, yet there were some serious HP customers in this region. There were major aircraft companies such as McDonnell and the Cessna, Beech type of small plane manufacturers. It included a number of important military bases.

On a sales trip to Midwest airplane manufacturers I was flying one evening to Kansas City. We landed in a severe thunder and lightning storm with heavy rain. Later, on the TV in my hotel room, I learned that a tornado had touched down in a Kansas City suburb cutting a several hundred foot wide swath for several miles.

Next morning my Harris-Hanson sales rep host, and I flew over the disaster area in his light airplane. The scope of the damage made me happy that I lived in California.

#### A happy wagon for smooth demonstrations



Left: In solemn ceremony. Earl Lipscomb presents Lyle Jevons with keys to the Happy Wagon. - Right: Lyle Jevons and John Smylie of the Southwest Sales Division show how spectrum analyzer demonstrator unit can be moved into a customer's plant.

From MEASURE Magazine, December 1964 - Courtesy of the Hewlett Packard Company

**Earl Lipscomb.** Earl Lipscomb was the prototype of the proud Texan. A small man, but a positive personality with a feisty spirit that gave in to NO MAN. I don't happen to remember if he was a University of Texas (go Horns) grad or from Texas A&M. Whichever it was, the opposite graduates never had a chance of being hired in the Lipscomb organization until HP finally took over ownership. He ran the organization with a happy spirit and a "good old boys" atmosphere.

When the time came to listen to the proposal to buy him out, most of us at the factory could not CONCEIVE of Earl accepting the offer to turn over his pride and joy. And yet, amazingly, Lipscomb was actually the FIRST rep to sign on to HP.

Bill Terry remembers that Earl had two paintings in his office. One showed oil fields and cattle, while the other showed people picking cotton. Earl's message to his sales reps was that if you do well you will be with the critters and oil. Do poorly and you will be picking cotton.

**John Bivins & Dave Caldwell.** The Bivins and Caldwell Company, headquartered in High Point, NC, was the essence of Southern charm and hospitality. It exuded the smooth and gracious southern style. John Bivins was the powerhouse, the front man, and the brains. Dave Caldwell was the finance man, keeper



of the internal operations controls, and more or less invisible. It was a large and important territory, stretching from Virginia to New Orleans.

As was obvious, when you would travel from a factory to visit customers in the B&C territory, you could immediately see that their corporate style matched perfectly with the technology customers. So the Bivins and Caldwell region was all Southern charm, but financially, it was run on the cheap. Visitors were treated graciously, yet the business mode was relaxed.

**Art Lynch.** Art ran another small region, just the State of Florida. He too was a quiet man, good natured, although in the presence of all of the other boisterous individuals, some were just more subdued. Art eventually turned over operation of his business to Gene Stiles. Gene had originally worked in the HP factory, then moved to the Crossley Sales Region for building some sales experience. Then he moved on to Florida.

Art had an airplane which he used to cover his territory, which was quite large, from Miami to the Florida panhandle city of Pensacola. I visited him one year to call on NASA and numerous other government facilities. Art assured me the efficient way to make these visits was by air, so we started off from Fort Myers. Our first stop was Orlando, where it began to rain soon after we landed. Pilot Art did not have an instrument rating, so we had to wait for the rain to clear. Three days later we gave up and traveled commercial. Art had to pick up his airplane later. So much for efficient travel, in a region where rain was common.

**Ron Merritt.** Ron's company was called ARVA, and I don't remember the meaning of the acronym. He had quite a lot of territory, including some major customers like Boeing, yet it was a small revenue outfit. On the death of Herb Grunderson, Merritt decided to retire and Neely easily expanded northward to take over that region.

As mentioned earlier, during World War II, I was stationed for a year on Oahu at Pearl Harbor. I was able to fly to the other islands for rest and relaxation (R&R), so I became familiar with much of what later became a U.S. state.

HP was represented in Hawaii by Ron Merritt of ARVA, our Pacific Northwest rep. Ron particularly liked the Hawaii territory because he could combine vacation and business trips to the islands. However, he wasn't generating much in the way of sales. As the U.S. sales manager, I wanted to get some hands-on selling experience so I convinced Ron that I should try a direct sales approach.

I had a red telephone installed on my desk, with a Hawaiian HP phone number. I traveled the islands and was cordially received by customers and users of HP equipment. We put the word out that there was a direct line to the HP factory for technical and sales support. I waited and waited for sales calls, which never materialized. Later I found the problem. Almost all the Hawaii test equipment business was military oriented, and purchasing for those commodities was handled centrally in Washington.

Ron Merritt's key salesman was **Herb Gunderson**. I got to know Herb through our rep sales training program. Herb and his wife, Maureen, were avid skiers. When first married, they worked winters at Sun Valley, he as a ski instructor, she as a hostess. Herb's children were the same age as mine, so our two families arranged a camping trip in the Sierras, where we had a great time.

Herb covered an immense territory for HP and his other principals, requiring long hours of driving. Sadly, he fell asleep at the wheel of his truck and front-ended a big rig. ARVA never recovered from his loss.



Lahana & Company's new building is first structure completed at Denver Technological Center.  
From MEASURE Magazine, December 1963 - Courtesy of the Hewlett Packard Company

**Pete Lahana.** Pete Lahana owned the Rocky Mountain region, headquartered in Denver. Although quite a lot of territory, it was yet a small business. Pete had previously worked in the Burlingame business, and then moved to Denver to manage that region. He was an intense individual, serious and yet with a good sense of humor. He seemed to wear a frown always.

Incidentally, Pete introduced me to the Colorado Springs area, when I was studying potential locations for moving the scope division in the early 1960's.

**Sy Sterling.** Sy Sterling catered to the highly automotive-type market in the Detroit area, and the merchant suppliers to Detroit from around Ohio, Indiana and Illinois. Sy's sales strategies featured a special custom instrumentation system engineering department, well before it became stylish to provide complete measurement solutions. Since Sterling's overall revenue was only about 50% HP, it made sense for Sy to decline the buy-out offer, just two out of 13. He took the other 50% and stayed in the automotive support business.

### **Houseboats and Picnics**

In 1957, Carl Cottrell and I became interested in houseboat cruising in the California San Joaquin Delta region, where there is said to be 1,000 miles of waterways. We decided to rent a houseboat for a long weekend and invited some HP factory and rep friends to join us. The reps included John Bivins, Bob Boniface, Bob Brunner, Dave Caldwell, Bob McVeety and Walt Wallin. Noel Eldred also attended and provided a gourmet dinner.

The Delta area is a fisherman's paradise, but licenses are required. At one point, John Bivins was fishing off the top of the houseboat when the sheriff made his rounds. John's pole, lines and bait ended up out of the sheriff's sight at the bottom of the Delta. Such a great time was had by all on this the first of what we now call "Great Houseboat Expeditions" that we have repeated the cruise every year since.

In the early days the annual HP picnics were held at Adobe Creek Lodge in Los Altos Hills. Several hundred factory people and families attended. Dave and Bill passed out liberal sized steaks. We played fun games and consumed gallons of beer. All the northern California reps were invited. Jack and Gerry Ingersoll, and Rudy and Ruth Poucher are rep names I recall.

**International.** International trade was handled in those early stages by foreign trade brokers who managed the much more complex business of international shipments. This involved financial letters of credit, government customs documentation, and much more. There was little attention to selling, just order taking through the mail and telegrams. Gradually, in the foreign countries that had large sales potential, international sales representatives were brought on board. Many of these companies were similar in organization to the U.S. sales rep companies, except for the more tenuous communications processes. It was some years after the US buy-out that HP moved to buy out the European reps.

There were plenty of stories, laughs and memories in 1990 when 10 of HP's original sales reps gathered for a long-awaited reunion.



Bill Hewlett and Dave Packard (front center) paid tribute to sales reps (from left) Sy Sterling (from today's Midwest Sales Region), Mill Lichtenstein (Eastern), Harold Harris (Midwest), Bo Byers (Southern), Ron Merritt (Neely), Tiny Yewell (Eastern), Frank Waterfall (Midwest), Norm Neely (Neely), Bob Boniface (Neely) and Pete LaHana (Neely).  
From MEASURE Magazine, September-October 1970 - Courtesy of the Hewlett Packard Company

### **Jarvan, 1958 – 1960**

During my term as U.S. Sales Manager I was a frustrated engineer. I was working in sales but I really would rather have been doing engineering work. I talked earlier about my 401A slide-back voltmeter design that was such a disaster. I wanted to recover my reputation as a product designer. The oscilloscope camera provided this opportunity. I'd always been interested in photography. In addition to ham radio, I dabbled in photography in high school. Our main competitors, Tektronix and DuMont Labs both offered scope cameras. I reasoned HP should have one too.

The idea was to clamp a camera onto the front of the oscilloscope and then take a picture of the pattern using the Polaroid instant developing camera system. By doing that, engineers could capture wave form patterns. This was useful in doing analysis and for making permanent records for the lab notebooks. The problem was that the lenses available for this application were camera lenses. In an ordinary camera, the focal length from the lens to the film is always a great deal shorter than the focal length from the lens to the picture object. In fact, a typical camera will not focus closer than about three feet, while in this case the focus needed to be about four inches. Also, you wanted the image that you were recording, which typically was done on a black and white Polaroid camera, to be full size. So you needed what was called one-to-one conjugates. The distance from the lens to the screen on the scope should be the same as the distance from the lens to the recording film.

The difficulty was that existing lens gave what was called the pin-cushioning effect. A rectangle ended up with rounded sides, which was very unsatisfactory. All the oscilloscope cameras did that because there weren't any short-conjugate lenses. In fact, nobody even knew how to make a short-conjugate lens at the time. I don't remember whether the following happened before Bill Jarvis and I became partners in this venture or not. I do recall going to Packard at one time and saying, "You know, I have this idea for an oscilloscope camera and I think I know how to improve what's on the market. I'd like to work on this." He gave me his blessing to go ahead. In fact, he said, "If you need any parts or anything like that, please feel free to liberate them from the stock room."

At that time I had a trip scheduled to the East Coast and decided I would go by the Wallensack Company and one other optical company. These were the two leading optical companies in the U.S. At Wallensack, in Rochester, NY, I was greeted by the chief engineer. I had written ahead of time and told them what I was interested in talking about, and had included a written report. In it I explained the problems with oscilloscope cameras and what needed to be corrected. He had gone through and carefully corrected all my spelling errors of which there were quite a few in the report. (It reminded me of Barney who loved correcting engineer's English.)

But the good news was that the chief engineer was really excited because he had just obtained a scientific computer that allowed him to design a short-conjugate lens that would get rid of this pin-cushioning effect. Now he had a customer! He'd designed it, and he knew how to do it, but he had to have some kind of a way to convince his management that there would be a demand for the product. He said, "If you'll agree to buy these lenses for your oscilloscope camera, I have enough confidence to build them." I gave him a minimal order for perhaps a dozen lenses and he went ahead and built lenses that had never been built before. This was a real contribution. Our orders were enough to convince Wallensack to get into production.

It is still puzzling to me that HP didn't see a need to set up a lab project and design such a camera. But they didn't. So Bill Jarvis and I talked about it and decided to do an informal partnership to build and sell them through HP. We called our venture Jarvan. After we had the lenses, there was a lot of work to make prototypes. Bill was heavily involved in that and, in fact, we had two patents. I don't know if they were ever issued, but two were applied for. One of the patents was on the design of the overall camera itself which had some rather unique features. The second one was on a detent mechanism that was a very simple thing but very useful to customers. It allowed operators to take pictures of several wave forms and put them on one piece of film to save film. We made those two inventions and with some help from Patent lawyer Jean Chognard we got patents applied for on them.

Bill and I spent a great deal of time on weekends and vacation days. Then we found a subcontractor to build the camera cases. Then we finally went to HP and said if you'd like to market this thing, we'd like to make it for you. HP gave us a purchase order. We rented a loft in a building across the street from Sears. We had about a thousand square feet. We hired John Wilcox, who was a student at the Stanford Business School, looking for a summer job. He said he wanted to buy a TR-8 sports car and he needed to get some money to do that.

Some years ago I went back to a Stanford Business School reunion and John Wilcox came up and said hi. We reminisced about the camera and the work he had done that summer. I hadn't seen him in all that time. He'd had a very successful career and started a small company he had recently sold and was retired now. Bill and I sort of played the role of what is now called "venture capitalists" in sponsoring John's venture.

I was U.S. Sales manager at an important transition time for our reps. Bill was responsible for supporting a major rep territory. We realized that running our company and doing a proper job for HP was too much for us. We had to make a choice. Bill wanted to leave HP to start his own instrument

company where he could do his own thing. I was never really convinced that the design of the camera totally belonged to us, since HP had clearly sponsored some of the expenses on it. I wasn't sure this was an adequate foundation on which to start a business. As I recall, we built maybe 200 cameras during the summer and they all sold. We would package them in a box and seal the box up, deliver them to HP who then took the orders and sent them to the customers. We had a big quality control issue to make sure they were really right because no one at HP was checking them. We didn't have any problems with recalls that I was aware of, but eventually we decided that we just couldn't continue this.

Finally, HP offered to buy our patents, which they did, and we negotiated the price for that and turned our inventories over to HP. John Wilcox went to work for HP on a part-time basis to help get the program started. The product was transferred to Colorado Springs and eventually they designed other, more advanced models. I don't know how successful the product was for HP as I never really saw the numbers on that. I do know that we really took Packard's advice to heart: Worry about today and tomorrow will take care of itself. We made a profit from the very beginning on the business, something I felt very good about. The upshot of it was that we got a new product line for HP. It gave me enough money to pay off the mortgage on our house. And Bill Jarvis went on and started another company called Wiltron, with, I'm sure, some of the money he got out of our venture.

When Bill left, he took some engineers with him, Pete Lacy and Dwain Dunwoody, who made millions and millions of dollars when many years later they sold Wiltron to the Japanese company, Anritsu. Bill has gone on to build a large winery in the Napa Valley, with a huge underground tunnel complex. His wines are well-respected and are on the high end of the price ranges.

### **Dymec, 1960 - 1961**

Around 1960, after about 10 years in the sales job, I really wanted to do something different. At one of the New York shows, after one of those big luncheons I told Noel that I would really like to try some other functional job. He said he understood that. Soon the opportunity came along when they needed a different general manager for Dymec. The division was about five years old, and had several hundred people in the organization. I was brought over to replace the general manager, Bob Rawlins.

One of the problems I faced was that our sales reps had difficulty selling Dymec's products, which were more systems than instruments. Something had to change to keep the reps happy. A second problem was that a number of government contracts had been inked. There hadn't been a good understanding of what was required when you were involved with these government-type contracts. For instance, there was one big contract with Melpar, where Dymec suffered a million-dollar loss. Another was with a company that was a contractor for the Minuteman ballistic missiles. That one was a \$500,000 loss. These were both cases where they just hadn't been bid right. I remember one of the things I had to do was to preside over the completion of those contracts. That was fairly painful. Dymec would refer to them as the "first order," as if we were always going to get a second one, so that justified the low bid. Of course, the second contract seldom materialized.

The Melpar deal was on an electronic countermeasures system and Melpar was making a test set for testing electronic countermeasures aircraft. This meant that they had sensitive receivers that were scanning the whole RF spectrum. Obviously the test equipment couldn't be radiating signals. If there was anything coming out of the HP generators other than the desired test signal, it would be detected and mess something else up. So that was a big issue.

There was a discussion about this electromagnetic interference requirement problem and everyone recognized it. The guy at Melpar said, "Don't you worry about that. We'll build a screen room that will protect all of that. You don't have to do anything about it." So Rawlins said, "Okay, that'll be fine. But," he added, "the contract doesn't make that all that clear." The guy said, "Well, don't worry about

it. I give you my word that I'll take care of that." Rawlins said, "The worst thing that could possibly happen is that you would drop dead." The guy said, "Yeah, that's true, but that won't happen." The next week he resigned. Well, the government came back and said that every box had to be certified for EMI and, of course, in those days our generators didn't do that. I can recall there was just a huge panic. In spite of some creative engineering by Art Fong to fix the problem we lost a terrible amount of money. A government contract with a word-of-mouth guarantee, that's not smart management.

Another interesting example was the Minuteman project. The contractor had an in-house inspector who made sure that everything was made in such a way that it couldn't possibly fail. One of the concerns they had was that as you put the electronic components in during the manufacturing process, you might nick a wire and then, over time as they vibrated, the nick would expand and they'd break off. This guy had a microscope and he went through every single product looking at every single wire and if there was the slightest nick that he could see, he'd reject it and we would have to go back and rebuild the thing. It was just awful.

### **Industry Volunteer**

In those years I became involved in a number of other activities outside HP. In 1955, I was co-chairman of the HP University Funds Matching Program. I got into fund raising for the Stanford Business School. It seemed to me there was a wonderful opportunity for people to help out the universities because they got a tax deduction for doing it. I had heard that some companies also did funds matching, so that appeared to be an additional incentive to give. Suppose you got a fifty percent tax deduction and then you got the gift funds matched. For every twenty-five cents you put up, the university would get a dollar.

I went to Bill to Hewlett and suggested that it would be a nice if HP would start doing funds matching. Hewlett may have already thought about this and he liked the idea. I can recall working with a lot of people, George Kan and others, on these campaigns where we'd have to raise funds. It was the forerunner of what we know now as the Philanthropy Office. This program didn't involve civic giving or other charities. It was just the funds matching for universities and many more universities than Stanford were beneficiaries.

In 1956, I was involved in another highly unusual activity which should be mentioned. I became Deputy Director of the Scientific Motion Picture and Photographic Products Division of the Defense Services Administration of the U.S. Department of Commerce? HP belonged to a trade association called SAMA (Scientific Apparatus Makers Association). SAMA was a trade association, set up for the purpose of allowing people and businesses with common interests to get together and talk about things without being in violation of fair trade restrictions. They also maintained a Washington D.C. office which assisted (we never used the word "lobbied") the Department of Commerce with programs they needed to do.

It had become customary for SAMA member companies to provide people to work at the Department of Commerce on what was called a W.O.C. (Without Compensation Status), with the idea that these people would learn about how the Commerce Department operated. If we had another emergency, as we had just gone through in the Korean War, there would be people who would understand what needed to be done to organize industry. The other benefit was to provide some visibility to the people in the Department of Commerce about what industry was doing. It was customary for the different member companies to send people there. Sometimes they'd stay for six months and sometimes they'd stay for a year. Packard proposed that I go back and spend six months. I believe this was in 1955.

My boss, Nathan Golden, was the Director of the Scientific Motion Picture and Photographic Products Division. He was tremendously interested in the motion picture industry and really loved the notoriety of being associated with actors. His office walls were covered with pictures of him with Clark Gable



and with Myrna Loy and all those actors and actresses. He was not that much interested in scientific apparatus, but nevertheless his group was responsible for that area. I became his Deputy Director, which was a ceremonial position, and was given a huge office with great big desk. I confess I never met Myrna Loy, but it was a fascinating experience. I just couldn't believe these bureaucrats. All the stories you hear are true. Jean and I spent six months there and lived in Arlington, Virginia, in an apartment called Hunting Towers. It was really nice. It was about twenty-five miles from Washington and I took a bus downtown every day to the Department of Commerce.

I needed some kind of a project while I was there, because I wanted to keep busy - so I decided to make a survey of the electronic test equipment industry. Since I had virtually full time to spend on this project, I surveyed every significant company and every product that was made and put together a report that was about a quarter of an inch thick. I also drew some conclusions about areas that didn't seem to be covered. I was thinking about national defense considerations and all that. One of the national magazines got hold of my report and came out with a statement that said, "Van Rensselaer says there's a glaring gap in the test equipment industry," which was quite an exaggeration.

One thing that was very interesting about this job was how people are careful to protect you against charges like conflict of interest. There was a great deal of concern about this. Dave had been advised to write a letter to me stating that while I was in Washington D.C. I had no connection with Hewlett-Packard, that I was completely free of any responsibilities concerning HP. That was made very clear. But when I made this survey, Nate Golden was quite concerned that information that formed the background of this paper could be of value to HP. The survey itself was public knowledge. It was published and anybody could read it. But I had all the background information in my desk.

One day about three weeks before I left, it suddenly disappeared. It was all gone. I never said anything about it because I understood why that happened and I think I really appreciated that he was protecting me. The papers really had no value as everything had been put in the report. It was, I think, helpful to HP, though it could have been just as helpful to any of our competitors because they could all read it. In fact, I made sure that all the companies who had participated in the study received a copy of it. I gave quite a few presentations explaining the program to people.

For me personally, this assignment was a mixed blessing. I think I brought some industry expertise into the DOC, and I certainly got an eyeful of the internal operations of a government department. If I had been more experienced, more mature, I might have helped more in that respect. At the time I was sort of awed by the whole thing and I was very critical of what I saw, a kind of do-nothing attitude of people. I didn't know what to do about it and I felt I couldn't do anything about it. It was just something you had to accept.

As an example, some orders came down from high up somewhere that said they wanted to have a survey of some activity that was going on in industry. This had been fanned out to different departments in the Commerce Department who were responsible for these different industries. The guy who got the assignment had to write one paragraph about what was going on with regard to a certain topic. He wrote his thing and it was the most awful gobbledygook you've ever seen. It didn't say anything and in particular, it didn't take any position on anything. In essence it said, "Up is down. Red is green. Blue is black," maybe, and so forth. I said to him, "But what good is this? It doesn't say anything. You know what's going on here. You could say it." "Well," he said, "I'm not about to stick my neck out on this thing." It was just kind of sad. But the point is that somebody with a little more maturity could have done something about that.

In the same sense, even a person of great maturity, Mr. Packard, went back to become a DOD deputy and even he couldn't fix the bureaucracy. He ran into that same damn problem. The contrast, though,

coming from an alive, non-bureaucratic outfit like HP must have been just terrible. If you had come from a more bureaucratic company, it might not have been quite so bad. That was a real big step. In 1957, I became Director of Instrumentation Electronics Committee for I.S.A. (Instrument Society of America). At the same time I became a Director of WEMA (West Coast Electronics Manufacturers Association). WEMA started as West Coast Electronic Manufacturers Association. It was started right after the war, a time when it was perceived there was some pretty strong electronics activity taking place on the West Coast, but that fact wasn't recognized. The general impression that people had was that everything that went on in regard to radio or electronics happened on the East Coast, thinking GE and Westinghouse and RCA, etc.

Packard was one of the people who was quite instrumental in getting WEMA started. At first it involved fifteen or twenty-five companies, primarily in Los Angeles, and the Bay Area. Then it expanded and became the Western Electronics Manufacturers Association because WEMA began to get companies located in Phoenix and Denver, Seattle, and so forth. Now it's expanded to become the A.E.A.(American Electronics Association).

I was involved as a director for several years. Although I was a director of the whole organization, I was also very much involved in the local Bay Area chapter. We had monthly meetings. One valuable thing we did was to make salary surveys, which were useful to be sure the organizations were on a par with competition. WEMA also did a lot of lobbying and was very active in Washington. It was helpful to get a number of different companies to look at some of the general problems of the industry. They had at that time, as they do now, a paid staff and they sponsor the big regional trade show, WESCON.

### **HP at Mid-Life**

In these years, HP was transitioning from where the founders ran everything through a few senior people who were with them from the start. It was necessary to hire a new level of younger people who would become our mid management. Around that time, Eldred decided to rename his department to be Marketing instead of Sales. I went to an American Management Association (AMA) seminar on marketing, it was a multi-week meeting. You'd go for a week and then you'd come back and then you'd go for another week and then come back, etc. I think it was a three-week course where you'd get in a room with a bunch of executives from other companies and you'd go through some really good material. But it was very much related to the real world because you were all there together from various industries.

One of the things they made a big issue of was the difference between sales and marketing. I can recall coming back from that course and spending a lot of time with Eldred and Bill Jarvis. Bill had joined marketing then, and we discussed all the things I'd learned about the difference between sales and marketing. It seemed to me at the time there was a very clear distinction and I remember that Noel was very interested in that because he needed some ammunition in order to explain this to other people. I suppose that Packard might have gone to one of these industry association meetings too, and found that all of the other companies were calling their sales departments marketing departments.

As HP Corporation went public on the NYSE, we grew up all of a sudden. The corporation needed formal officers, so we had to have four vice presidents. We had Barney Oliver for R&D and Cavier for finance, Porter for manufacturing and Eldred for marketing. That was about the time of the first Sonoma management meeting. Probably no one single HP person will admit to conceiving the idea of a formal time allotment at those meetings to poke fun at management. I will admit to being involved, but also equal contributors were Bagley, Grimm, van Bronkhorst, Kirby, Cottrell, and others. We specifically set out to roast the new vice-presidents. We had a lot of fun. We got up and made little stand-up presentations at that particular time. That was Hewlett-Packard's first humor skit at a management meeting. Later on, on my suggestion, we wondered why not write a script and make the vice presidents themselves get up and read their own humor. That started the tradition of the

management skit written by the wild guys and Dave and Bill and the others would have to stand up and read their parts.



Monterey management meeting cartoon reflects my multiple job changes

Speaking of funny events, one comes to mind, concerning the Editorial Bar and Grill in New York City. HP people used to frequent the place during shows and seminars and we were perhaps some of the best customers that the owner, Gino, had, although sporadic. When I went to this AMA course there were maybe twelve or so sales executives from other companies there. They wanted to get together for dinner, so I said, "Let HP host you for a dinner." There were maybe six or seven of them. I called Gino and made a reservation. Well, when we arrived, it was as though I was the King of England. It was almost embarrassing, because my friends were just awed by this treatment. They said, "How on earth could you ever arrange this?" They thought this was the sort of thing you'd need months to arrange. They couldn't believe that someone from the West Coast could establish this kind of relationship with a New York restaurant.

Norm Neely had a good principle about how you needed to have one place where you could go dependably. Then you knew that you were going to get the right treatment to make the right impression. You just couldn't fool around with that. You had to make sure that you went back often enough that you had one place you could always count on. Gino knew all of us by our names and he knew our habits after a while. He was almost part of the company. A good New York restaurant would want to make anyone who made a big arrangement feel like the King of England. Norm made a big thing out of that and he taught Boniface and Brunner that was a good idea. So if you're in New York City and you go out to lunch with Brunner, sure enough the maître d' will say, "Hi, Bob" as you come in.

I felt that 1957 represented a really major change in the company because that was the time that Hewlett and Packard came to the conclusion that they really had a company that was going to go places. They realized that to make that happen, they had to change the way they were running the company. At that point, they selected about thirty key people and said this was the "management staff" and then we all went off to that Sonoma retreat. It's very interesting that those retreats were always on

weekends. We didn't have time to do that stuff during the work week. Just imagine today having a weekend off-site meeting, how well that would go over?

The main purpose of this meeting was for Packard to explain the company's to these thirty managers. (See Appendix A.) Packard wrote the company's objectives, which have not changed all that much in the ensuing years. The first objective, which has been toned down a little bit, was that we would make fifteen percent profit before tax, year after year, on everything that we did. I recall that we went through this thinking and then said, "Now if there's anybody in this room who disagrees with this objective, they don't belong here." He was directly straightforward, always was. I love that management style. No fooling. This is it. At the same time, he was so sympathetic to our feelings. He knew if someone might have a little difference. He was willing to discuss things, but, boy, he was in charge. No doubt about it.

I remember that's where the first mimeographed sheets came out with the corporate objectives. There were lots of very good discussions on where the company was going to go. What are our various roles? What do we do at these meetings? The other thing that happened was that in the role that I had of doing the sales forecasting I was keeping careful track of how HP was growing. I observed that if you took semi-log paper and plotted our sales vs. years on it that it made a straight line. I was showing this graph and was very proud of it. Barney looked at it and he said, "What this shows is that we're going to be equal to the gross national product in (whatever) year."

In the early 1950s, HP was innovating in its business practices. We were small, but growing rapidly, and needing a continuing stream of new hires. Our company benefits included an early profit sharing process, which was rather unique among Bay Area companies. But in those days, it was not customary for companies to have health insurance. A number of HP employees had become ill, had had to take substantial time off. Some had experienced very high medical bills.

In response to reports coming back to him, Bill Hewlett sent a questionnaire out to all the employees in the company asking them about their medical bills. Jean and I had had above average medical bills. Bill called all the people into his office who had had medical bills that were out of the ordinary to try to get some understanding of how much of a burden this was for people. I was very impressed that he showed this personal interest. Shortly after that, HP started a health insurance program. This was years before other companies had such programs and I've always felt that Bill was a real pioneer in the health area.

There's another story I get a kick out of. Barney came to the company about 1954, so I guess this story took place about 1956 - a year or two after he came to the company. Barney was a staunch Democrat. Most of the rest of us here were Republicans and Barney loved to argue the merits of the Democrats. Adlai Stevenson was running for president and Barney just took anybody on who had any other ideas about Stevenson. It actually got to the point that one time Dave Packard cautioned us all, "You know, we really have a job to do here and you're giving too much attention to this election business." We all backed off.

At that time Barney and Dave and Bill were the only people in the company who had offices. On the morning after the election, which Adlai Stevenson lost, Barney came in fairly late with this huge box under his arm. He went in his office and he closed the door and there was this pounding and all sorts of noise going on in there. Finally he opened the door. His whole office was done in black crepe. He had a huge picture of Adlai on the wall with black crepe around it.

Another story involved Barney and Herbert Hoover. This must have been about 1960 because Building 1 on the hill had been built. Building 1 was the Lab building and Building 2 was built for manufacturing. But the administrative headquarters was still down by the railroad tracks. I suppose Dave Packard was introduced to President Hoover through HP Director Ray Lyman Wilbur, who had

been President Hoover's Secretary of the Interior. Dave and Mr. Hoover became very close friends. One time Dave asked us if we'd like to have lunch with Mr. Hoover and he set up the luncheon under the overhang of Building 2.



A memorable luncheon with President Hoover at the new Bldg 1, on the new Page Mill site in Stanford Park. The five gentlemen around Mr. Hoover, from left to right are: Barney Oliver, Mr. Hoover, Dave Packard, Noel Eldred, Cort Van Rensselaer.

Dave picked up Mr. Hoover at the Hoover Library and brought him over to HP. We were all assembled around the table on the patio when he and Mr. Hoover came in. He introduced us and then we sat down to lunch. Mr. Hoover began to talk about his experiences and beliefs; it was fascinating to hear about his early life. But he was complaining about the terrible burden of taxation and how awful this all was. Barney looked at him kind of quizzically and then he threw his arms out expansively toward Building 1, Building 2 and the excavation for the new buildings and said, "Well, you've got to realize that taxes build all this!" Barney's point was that we were selling a LOT to the aerospace and military-industrial complex, and that a lot of our revenues came from the government.

Gene Stiles had worked in Palo Alto for some time. When I worked with him he was in the production test department and then he went on to other jobs. His real love was dealing with people. He was very good at that and he was a great sales person. He eventually went back to work for the Crossley organization in Chicago, and later took over the Florida Region from Art Lynch. One time Stiles and a number of the other sales people were entertaining someone from out of town who was visiting HP. Toward the end of the afternoon, about 4 o'clock, they decided there wasn't really enough time left to do any useful work so maybe they should just go and have a drink. They walked into this bar and the

bartender looked at Stiles and the other sales reps and he said, "Don't you guys ever work?" We did have a hard-drinkin' bunch of sales reps.

## **Going International**

I believe HP's first move away from Palo Alto was to Europe. We went public in 1957. At the second annual management meeting, also held in the Sonoma Mission Inn in 1958, Hewlett announced that we were going to become an international company. He had come to the conclusion that the time was right, that we had products that were needed outside the U.S. and that we could be successful at this. Then immediately following that meeting, we set up an office in Geneva which Bill Doolittle ran. We also set up a warehouse in Basel, Switzerland to stock certain high volume instruments and reduce some of the delivery time to customers.

One of the first tasks was to establish a factory presence in Europe because he realized even then how much more effective our whole operation would be in another country if we had a factory presence there. So Fred Schroeder was hired for Germany, he came over here and worked for Ray Demere for six months in a factory position. Then Fred and Ray together went to Boeblingen and set up a modest factory, and later we built a permanent complex. My recollection is that was the first move that we made away from Palo Alto.

I had the opportunity to go to the dedication of the first permanent building in Boeblingen. My main recollection is of the train trip from Boeblingen to Geneva. The dedication of the Boeblingen plant was held in connection with a sales seminar held in Geneva at the Du Rhone hotel. At that time, Carl Cottrell was the manager in Europe. He had replaced Bill Doolittle, who came back to the U.S. We still had sales representatives across Europe, and all of these reps were invited to the dedication in Boeblingen and then they all had to get to the sales office in Geneva.

Carl figured it would be just as cheap to have a train trip to get us between those cities. So he arranged with our travel agent to get the President's car of the Swiss National Railway which was reserved for very high dignitaries. This car was taken over to Boeblingen and after the dedication about forty of us boarded the train and began heading for the border of Switzerland. The waiters brought out cocktails and we had a lengthy cocktail party. Then a dining car was connected and we all went into the dining car for a sumptuous repast, including several kinds of wine.

At that point I remember the travel agent came down the aisle asking people how they liked it and Packard said to him, "For second class travel, this isn't too bad." The travel agent's English wasn't good enough to realize Dave was joking, and he said, "Mr. Packard I want to assure you that this is the finest travel in the world." But the point is that when we got to Geneva no one was in any shape to do much of anything except to be directed to his bedroom at the hotel. I understand from Carl that both Lu Packard and Flora Hewlett took him aside and said that the whole thing was unseemly. They hoped it wouldn't happen again.



## GmbH addition set for October completion

WITH CONSTRUCTION now on schedule, the big new addition to the GmbH plant at Boeblingen, Germany, is expected to be ready for occupancy by the first of October.

The two-story structure will more than double the space available for manufacturing, engineering, and administrative operations, bringing the total usable area to 80,700 square feet. The present plant building, which is immediately adjacent, has 32,300 square feet.

Currently, 180 people work there but plans call for a substantial increase within the next five years. When the new building is completed, several product lines will be added to the German company's growing list. Included will be industrial and X-Y recorders, and power supplies.



From MEASURE Magazine, July 1964 - Courtesy of the Hewlett Packard Company

## HP, Colorado, 1961 - 1964

The reason I brought up Boeblingen is that I wanted to note that Boeblingen was our first factory away from Palo Alto and the second one was Loveland. Ralph Lee had a lot to do with the realization that labor rates even in those days were a whole lot lower in other places than they were in the Bay Area. He thought we could do a more economical job of manufacturing in other places. Stan Selby, who had been brought up in Idaho Springs, CO, and had a great love for Colorado, began looking for sites. Colorado was obviously his first choice. It turned out that Loveland, Colorado had a very future-looking banker named Rice and he made a big pitch to Stan about all the great things that Loveland would do for HP. Stan was very turned on about this, but of course we didn't want anyone to know that was the case because the land negotiations were still taking place.

Rice and the head of the Chamber of Commerce of Loveland came out to Palo Alto to make a presentation to the whole Executive Committee. They stayed at Rickey's, the leading Palo Alto hotel. They were in the bar at Rickey's, the night before their presentation, talking about their presentation and the word Loveland came up. The bartender said, "Did you say Loveland?" They said, "Yes," and he said, "Are you from Loveland, Colorado?" They said, "Yeah," and he said, "Well you know it's an interesting thing. There's a big company in Palo Alto that's just made the decision to move to Loveland."

Loveland was a very positive experience and basically what they did was to take the bread-and-butter instruments, the ones we really knew how to make, the cash cows, and one at a time they moved them to Loveland. They built the organization up in a methodical manner, hiring just a few people at a time. It was really done in a very effective way and it was an extraordinary success. It was manufacturing only to begin with. But within about a year or so they decided that they really needed a full division, which meant they had to have R&D as well. That's when Marco Negrete was chosen to go back and head the first lab operation there. All of this was done in a temporary building.

The first Loveland operation was in an HP built building, but it was fairly small, 5,000 to 10,000 square feet. It was downtown in Loveland and it was such a success that we quickly realized that we needed to expand. The property where the main plant is now had been purchased at that time, but there

was really nothing out there. The decision was made to build a major building, 100,000 square feet or so. I went to the dedication of that building.



The HP Loveland Building in 1965 - From MEASURE Magazine, January 1965 - Courtesy of the Hewlett Packard Company

By this time, I had been general manager of the Oscilloscope Division for about a year, but was still in Palo Alto. We were really struggling. My job was to find a place to relocate, so I looked at New Mexico, Arizona and in Oregon where Tektronix, McMinnville was recommended as a possible site (where we later acquired Field Emission Corporation). At that particular time I hadn't looked too much around Colorado, but I did go to the ground breaking for the first main building in Loveland. We still had sales reps, at least we did in Colorado. Pete Lahana was still a rep for Colorado, and Pete was there at the ground breaking. We were chatting about the fact that I was supposed to find another location. He said, "Why don't I pick you up tomorrow and we'll drive down to Colorado Springs? I'm very familiar with the place and I'll show you around." He did and I was really taken by it. I thought it was a marvelous place. So Pete Lahana was the person who really set us in that direction.

The reason I covered the HP experience with growing in Loveland was that we might have learned from that experience when pushing into Colorado Springs. Because of the success we'd had in Loveland, Ralph Lee, in particular, decided that we should move our oscilloscopes to Colorado. He thought that our difficulties with Tektronix could be solved by moving to a lower cost area. I was told that the executive committee had decided to make this move.

A lot of people have always said that we chose Colorado Springs because of Dave Packard's home being in Pueblo, which is 30 or 35 miles south of there. But the fact was that at that time I knew that Dave was from Colorado, but I didn't know that he was from Pueblo. So that affinity had nothing to do with the original decision there although I imagine it had a lot to do with Dave's support of our choice. I didn't make the final decision obviously, but I made a recommendation and I know he was very proud of the fact that we were building a major plant in Colorado Springs.

About that time, HP considered that we would be doing more moves out of town with time. So they came up with a general criteria for site selection. A site should be within an hour's drive of a major airport and near enough to a good university that employees could go to the university part time. In Palo Alto, we had a very successful program with Stanford called the Honors Co-op, which led to Masters degrees. Those were a couple of criteria that Colorado Springs did meet as I remember it. We didn't do so well on the university part of it, but there were other criteria such as a wholesome environment where people would like to have their families, a good school system, a nice town atmosphere, coupled with that gorgeous view of the mountains.



These pictures show the beauty of the HP facility against Pike's Peak and the Rocky Mountains.

I remember that Albuquerque did not fare well because there were always feelings that there might have been some organized crime things going on. Colorado Springs did not do well on the university criteria, but our argument was that we would be able to get courses into Colorado Springs. Within a very short time after we were there, the University of Colorado put an extension division there. I'm not sure whether it was the University of Colorado or Colorado State, but they had engineering courses in Colorado Springs. A TB hospital that was no longer used was converted into a branch of the university. So that's how we got around that problem. I know there was discussion about it at the time.

The next thing that came along was the need for a general manager for the Dymec division. I was asked if I wanted the position, accepted and became general manager of Dymec, a job I held for less than a year. When that all started, HP was divided into four sections. Bruce Wholey was head of the microwave, Norm Schrock was head of the oscilloscope, Bagley was head of the frequency and time and John Cage was head of the audio-video.

The decision was made that the company should divisionalize and the Microwave Division was the first to be set up under Bruce Wholey. The Oscilloscope Division was the second, I think because we were having so much difficulty business-wise with the Tektronix competition. They began talking with Swede Wild, who wanted to be the manufacturing manager for the Oscilloscope Division. He was probably talking to Ralph Lee, and they were trying to figure out whom to get for a general manager. At that time, Bob Grimm was my manufacturing manager at Dymec and clearly had all of the necessary background and understanding to move up to be general manager.

Swede came to me one day and he said, "I've been appointed on an ad hoc basis to talk with you about the possibility that you might like to take on this oscilloscope challenge." I thought about it a little bit and decided I'd had fun at Dymec but we really had good reserve people there, meaning Bob Grimm. I thought it would be quite interesting to see what I could do in the oscilloscope area where I clearly had an interest because of the camera project.

One organizing comment is worth mentioning here. We were realizing that it was crucial for an operating division to have the R&D and manufacturing groups very close together. They wanted a communication between the lab and manufacturing. Our scope manufacturing was set up in Building 7C, which was at 395 Page Mill Road, while our lab was still up in Building 1 on the hill. We moved all of the lab people from Building 1 down to that location and we set up the manufacturing in the

building next door. It was just a few months after we moved together that this matter of moving the division to Colorado came up.

It wasn't just manufacturing and R&D that we wanted to have together. We also wanted to have marketing. The idea was that marketing people gave us the close coupling to the customer and needed to be located along with the Lab and production. In designing them, we were also taking manufacturing needs into account. That concept became the whole nature of how HP organized and co-located. We were really pioneering. By having these small divisions with this three-way focus on things, that gave us a chance to really be able to get that coupling right. It worked extremely well. It's one of the very important HP legacies, because it put decisions about most things at the lowest possible management level.

HP's competitors in scopes were unlike our other product lines. Tektronix was the leader and Howard Vollum was the president and chief executive officer. Like Hewlett, he had been in the Signal Corps during World War II and had been involved in the development of high-frequency oscilloscopes that were needed for supporting radar equipment. The Signal Corps had developed some oscilloscopes that had ten megahertz of bandwidth. When he got out of the Signal Corps, he and some other people founded Tektronix on the basis of those designs. They started in early 1946 or '47, and became the standard of the industry. Dumont was there ahead of them making the lower frequency thyratron sweep scopes. RCA also had some scopes. I can recall going to Neely road shows when Neely represented Tektronix and we all would marvel at how great these instruments were. When we acquired our reps, it became very clear that we had to have a competitive scope product line. Tektronix had pulled out and set up their own sales force long before we acquired our reps; so the reps really needed an HP high-frequency scope. We had come along with low-frequency scopes that had been very competitive but we were at least 10 years behind with the main part of the market which was 10 MHz.

My first oscilloscope I used as an engineer in Hewlett-Packard was called the Hewlett-Packard Oscillosynchroscope. It had been designed by Norm Schrock a couple of years before I got there in 1942. It had been put up in their attic so that Norm could devote his entire time to designing the 460BR distributed amplifier. So we put off getting into scopes about ten years in order to make the distributed amplifier. The scope consisted of two boxes. A power supply sat under the desk or bench and the display unit sat on top. It had so many voltages in the thing that you had to have a separate power supply that was a big accessory box.



1The HP 460AR distributed amplifier



### More Information

The HP 150A

Our first official high-frequency oscilloscope was called 150A. It was somewhat of a kludge. We sold a fair number of them, but we could never make money on the project because the design was cumbersome. We hadn't had time and experience to be able to build a clean, simple, low-cost design which was easy and efficient to build, and basically what our competitor was offering. The second HF scope we came out with was the 175A. That was the one we introduced when we went to Europe. The big contribution on the 175A was that by that time transistors had come along and Norm Schrock invented a transistor tube combination which took advantage of the best features of tubes and transistors and these went together.

We bought our first CRT tubes for the first low-frequency scopes from Dumont. But early on we recognized that if we were serious about this business, we had to have the ability to build the display tubes. Dave Packard hired Bert Squire. He came from the Midwest and had worked for one of the television manufacturers. He also had a lot of experience building video display tubes. He set up a production line which was in the lower level of Building 1, and had a lab there where he built the new tube designs. Some of our contributions came from our design lab expertise in the video display tubes.

When we decided to move to Colorado Springs, I was trying to recruit all of our key people to go there. Bert was uncertain about whether he wanted to move. Yet, he was our guru when it came to tubes, and, in fact, he designed the whole manufacturing facility for CRT's in the Springs. When it came time to move to Colorado after the building was finished, he was not sure. At that time we were really strong on a decision-making scheme called Kemper Trego Analysis – KTA. All of us went to KTA so we could learn how to structure our decision process. Bert went to KTA for the weeklong course and when he came back I sat down with him and asked, "What did you learn at KTA?" He said, "You know I've had to make this decision about going to Colorado Springs. I needed to have some kind of problem at the course I could test KTA against. So I chose my own career decision. It turned out that staying with HP and going to Colorado Springs got 342 points and leaving HP and doing something different got 343 points."

The tiniest shade in judgment could have changed his decision. I don't remember that I argued as strongly as I should have with Bert about this. I wish I had now because he did leave HP, took another job and three months later found out he had an inoperable brain tumor. He was gone within six months or so. You know, I talked earlier about HP and the fine medical benefits. Bert lost all those medical benefits when he left HP, which was just a tragedy for his family. It was so sad.



At the Scope Division, Norm Schrock was my head of R&D and Swede Wild was manufacturing. Bob Brunner, who had been down with Neely Sales, wanted to come back to factory work, so he agreed to come and work as our marketing manager. He did a great job; but again, he didn't want to go to Colorado Springs. So I selected Dick Cline, who came out of the field. Gene Warrington was another person involved in marketing.

The move to Colorado Springs was a major operation, pretty much all at once. The mistake that we made in the move to Colorado Springs was failing to recognize the lessons that we'd learned at Loveland. Loveland had gone so well that we said, "It's a piece of cake," and we just didn't—at least I didn't—understand clearly how they had done the job at Loveland. Nor did I realize the need to emulate that. It was interesting that when the decision was made to move to Santa Rosa, Doug Chance came around to see me and asked, "I know the move to Loveland and the move to Colorado Spring had a lot of problems and I want to learn all I can from that." At that point, I could say clearly what we did right and what we did wrong.

The point of it all was that the Loveland Division was a very successful move because we moved in slow steps. At Colorado Springs Division, we did start out with a small group of people who moved back to Colorado Springs and got a pilot going. After we got the pilot going, we built a large, beautiful, permanent 140,000 square-foot building right on Garden of the Gods Road. It was a very large, two-story building and at that point we proceeded to move everything at once from Palo Alto. We hired 350 people within six months. It was just a real lesson in what not to do because while all those people had excellent potential few knew very little about HP. They had no indoctrination into the HP culture. The infrastructure that was required to indoctrinate them into this culture didn't exist. There weren't enough of us experienced people to be able to build that up quickly.

The other thing about working in a remote HP division that was a tremendous eye-opener for me was that I felt we were being stifled by the HP bureaucracy. Understand this was 1960, and HP was a much smaller company. Corporate managers were requiring that we spend a lot of time on administrative detail, etc. that seemed to be getting in the way of our main mission. I felt that if we moved away from Palo Alto, we wouldn't have that problem to contend with. The thing I didn't realize was that the administrative services that were being provided for us in Palo Alto were extremely important. These were things we kind of took for granted; the accounting function, personnel, payroll, building services, stockrooms. We had our own purchasing operation but we were also being aided by the company's purchasing operation.

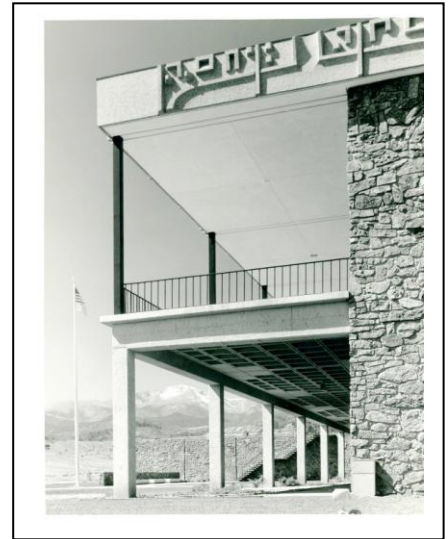
When we went to Colorado Springs, it was just like all those services got turned off. It was just "snap" and it wasn't there anymore. As a result, we experienced a nightmare the first year or so there. In addition, and by the way, at the same time we had to compete with the strongest electronic test equipment company in the world, other than HP, Tektronix. They had a hell of a lead on us. The executive committee had made the decision we should move away to Colorado and I had become very committed to doing that and had selected the site in Colorado Springs. One day Dave Packard called and said he wanted to come and see me. It was a little unusual for him to say he wanted to come and see me. Usually he asked that I come and see him.

He came to my place in Building 7C and sat down at my desk. "You know," he said, "I've been thinking about this move and I've come to the conclusion that labor rates are not our major problem in the Oscilloscope Division. It's engineering. I don't see how we're going to improve the engineering that much by moving to Colorado." In other words, our difficulty in competing with Tektronix is that they're ahead of us from the technical standpoint and our technical power base is here in Palo Alto. Wow, I was sure at that point he had come to the conclusion that we should scrub this whole plan. But I was really committed to it and I felt it was a big challenge. I told him that by this time I had a whole group of people who were enthusiastic about the project and I was also. He said, "Well, I'll leave it up



to you." But he was so right. Eventually we did build the strength in engineering that was necessary and we did some marvelous work, but that wasn't until several years later. It was really under Bill Terry's leadership that that took place. I think Bill Terry demonstrated his leadership ability in getting the Oscilloscope Division into a proper operation and making it run smoothly.

I did have a heck of a tough time making a profit out there and I did a number of things to try to, along with low manufacturing costs, keep it an economical operation. But Packard hit the nail on the head, that we needed more of a technical contribution. I remember that one of the big difficulties we had was the cost of that large building. I had argued that we really couldn't afford a masterpiece building like this, but Packard wanted to have a beautiful building there. And he sure got a beautiful one. People probably don't remember the fascia that's on the building, that has characters on it. The architects didn't really take the characters from any culture. They might have been Indian symbols or symbols from a Middle East language. One day we had some visitors, including our sales rep from Israel, and one of the visitors asked, "What do the symbols on the fascia mean?" and I jokingly said, "Well, what it says is 'Beat Tektronix' in Hebrew." The guy from Israel looked at the characters for a few minutes and said, "No, it doesn't."



My family LOVED living in Colorado. Jean was brought up on a farm in the California Imperial Valley and her father always had horses, so she was a horse lover from years back. She was never able to do anything with that interest while we lived in the Bay Area. To help her enthusiasm for moving to Colorado, we had the understanding that she was going to be able to have horses when we got there. We rented a place that was not too far out of town, but it was in the middle of a five-acre plot of land, with plenty of room for horses. It was right at the southern end of the Garden of the Gods. We actually had one of those red rocks right in our back yard and we had a gorgeous view out of our living room window of Pikes Peak. It was a marvelous place.

I went to a trade show in Los Angeles about two weeks after we'd moved to Colorado Springs. When I came back from the trade show, it was fairly late at night, our daughter Amy and Jean were talking in the bedroom. We talked for a while and then Amy said, "Mommy, have you told him yet?" I said, "Told me what?" and Amy said, "Well, we bought three horses!" Jean had gone off while I was in Los Angeles and bought three horses, not one horse, and we didn't even have a corral to put them in. So the next weekend my oldest son, Steve, and I went over to a big hardware store and bought fence posts and fencing and a post-hole digger. We had to build a shelter for the horses because, of course, in the winter when it gets cold and the wind blows, they have to have shelter. Fortunately Jean had given us a week before the horses were delivered.

We were able to ride the horses around the Garden of the Gods. I remember Bob Brunner came back one time and took a long ride around the Garden of the Gods that was nice. Jean had a wonderful time there and it was really a great place to live. We wished we'd been able to stay longer. While I was general manager, I got appointed to become director of a bank. Selby had the same experience in Loveland. I guess that the banks find it's very helpful to have people who are managers of local companies to be recruited as directors because that tends to help them get other customers. I remember one time I was involved in an audit at the bank and I was appalled by the number of mistakes I found. I thought banks kept everything in perfect order, but even without any experience I found a lot of errors.

Regarding our product development projects, the 150A was designed in Palo Alto, before the move. The 175A was also designed there, but we continued to work on it at Colorado Springs Division

because it was modular and used plug-ins for various special measurements. There was a two-channel plug-in and there was a high-gain plug-in and so forth. Those plug-ins were designed in Colorado Springs. Floyd Siegel was the engineer. He had worked on the project in Palo Alto. That was another lesson I learned that has helped me ever since. When we were about to introduce one scope, Barney was using a prototype and he observed that the triggering wasn't as good as it ought to be. Of course, triggering is terribly important in an oscilloscope because that allows the picture you're looking at to stand still. With bad triggering, the picture will jiggle around.

Barney said that he felt we needed to go back and do some more work on the triggering circuit on the scope. I got the team of engineers together and we had a long talk about it and they convinced me that the triggering really was adequate, so we overrode Barney's recommendation. That was one of the things that customers told us was a very negative factor on the scope. Eventually we did have to go back and redesign the triggering circuit; but by that time the scope had gotten a bad reputation. That was a strong lesson for me that a general manager can't always side with his people and back them up. You've really got to be careful about doing the right thing.

We were gaining experience on many fronts. The wham-bam fast move was wrong. The first 150A was introduced far too soon. It was not ready when we introduced it, probably caused by extreme pressure from the reps. Our first ad said, "Finally a reliable scope - Hewlett-Packard Company," and Packard insisted we take it to the show and introduce it when it seemed to me it was too early. And then we kept being in a rush to try to catch Tek, not realizing that ten years of experience is damn tough to overtake in a few weeks. We sometimes compromise on quality and functionality to meet deadlines. The projects I can think back on, that have really been the most successful and have had the longest life in terms of applications software, are the ones where we've really taken the time to do the job right.



Dave Packard demonstrates some of the features of the 150A high-frequency oscilloscope,  
1st March 1956 - Graemere Hotel, Chicago, Illinois.  
Courtesy of the Hewlett Packard company

When transistors first came out, Jack Petrak was designing the 302A completely with tubes and it was almost ready to go. Hewlett and Packard looked at the prototype and said, "You know, we could do this with transistors and it would make it a much more saleable product and it would have a longer life." We basically started all over again with the design of it and that turned out to be an extremely successful product. But it was about a year later when we brought it out because of the switch from tubes to transistors.

After I was managing in Colorado for about a year or so, the division was still having a lot of difficulty and I was the boss, so the "buck stopped with me." The conclusion at Corporate was that they really ought to have someone else as the general manager. Stan Selby came down from Loveland to take over as general manager for a year or two. I heard about it when Dave Packard himself came back to Colorado Springs and explained to me that they had reached that conclusion. I really appreciated the fact that Dave personally came to tell me. It was a sad event for us as a family because we liked it there and we would have liked to stay, but it was the right thing for HP and it certainly worked out well for us in the long run. I guess the most important thing about that job was I really learned how strongly HP was committed to supporting its people. I was asked to come back to Palo Alto, was given what I considered to be an important job in Palo Alto, and had lots of support from people there. So many companies under those circumstances would just say Bye, Bye.

This is not a complaint, only an observation. No doubt that H and P recognized the tremendous task we had been given - to try to move a division to Colorado and to try to catch Tektronix all at once. And they finally understood you don't catch up with Tek's ten years advantage in a high-technology field overnight. They gave us a helluva a tough job. Another thing that happened was that we were competing against Tektronix that had about ten times as many engineers as we did. But the Hewlett-Packard's philosophy of keeping a profit going from the very beginning made us run with a minimal R&D staff. Once when corporate HR was divvying up the seven new engineers coming into HP one year, we were surprised we only got one or two of them. We were working with the famous ten percent for R&D rule. It seems obvious that one should temper that a bit in that you can't give every part of the company exactly the same operating ratios when taking on the King of the Hill. You have to make investments in some areas.

### **Corp. Planning, 1965-1967**

Ernie Arbuckle, who was Dean of the Stanford Business School and a director of HP, had been urging Hewlett and Packard to consider more long-range planning at HP. We'd really never had a department that was devoted to that, so when I returned, I was asked to start a department to look at long-range planning. My task was to figure out how to take the plans that were made by the individual parts of the company and put that into some kind of a coherent over-all program. Austin Marks, who was working on economic studies at that time, joined me and we had a secretary. We started this long-range planning program. I went to a number of American Management Association seminars on long-range planning and Packard asked me to join him one time at a seminar that was put on by the famous Boston Consulting Group. So I was able to create a general plan to make the HP Long Range Plan a part of our central business strategies.

I then left that Planning area to concentrate on data processing. John Doyle moved into the function for a time, and then Fred Schroeder came over from Europe. There have been a series of people who have handled that. The function is now called Corporate Development. In reporting to the executive committee, I pointed out that in studying the literature on long-range planning I found a number of references to the fact that HP was considered to be the leader in that area. I also noted that Packard was considered by some of the experts to be sort of guru in this whole area. But Ernie Arbuckle felt we didn't really have any long-range planning.

Those different perceptions of HP's long-range planning were interesting. If you look at our corporate objectives and think about the legacy of that and think about that in the context of long-range planning, what could be more in the realm of long-range planning? You take the corporate objectives, you couple with that the idea that we're going to make a profit every day as we go along, and the future will take care of itself. By the way, we've also got our objectives out there that clearly define where we're going and what our values are. I think that one of the main ideas that came out of those

efforts was that HP should be studying more acquisitions. Consequently, a lot of the work that has been done there has been to study possible acquisitions.

## **Data Processing, 1967-1976**

The 2116A was our first computer. I seem to recall that that came out about the mid-60's. Kay Magleby worked down in Dymec for R&D under Grimm and they came out with the 2116. Kay had previously been in the oscilloscope lab and wanted to get a PhD. We decided it would be appropriate for us to sponsor that. Somewhere along his PhD time we left to go to Colorado Springs. He finished his PhD and then went with Dymec. Someone came along with some preliminary ideas about a computer. Kay Magleby was the guy who really took that thing and put it together. It was basically an instrumentation controller.

Ed Porter was responsible for the systems and procedures department and the data processing department, which was pretty small at that time. We had some difficulty with the Avondale Division, that had been the F and M Scientific Company, which we acquired to get into the chemical analytical measurement business. The founders and all the other key people left shortly thereafter and really left things in a totally unmanaged state. Porter was asked to move back to Avondale and temporarily take over the general manager post through a transition period. Emery Rogers later left Varian and was assigned to take over Avondale Division.

Porter's departure left systems and procedures and EDP management areas uncovered, so Packard asked me if I would take them on in addition to the corporate planning activity. In our data processing department we were using a Univac solid-state 90 computer which had a 5,000 word memory and we were just converting that to the new IBM 360. Matt Schmutz was manager of the EDP department and had a vision that we really ought to use HP's products in some commercial applications. Rich Nielson was working on data communication. Rich has been very active with HP and has done some great things; but at that time, Matt said to Rich, "Why don't we take the 2116 and see if we can't use it as a data-communication controller. You know, this was years ago. Everybody realizes how difficult it is to control data communication and networking and all of that, so this was a really pioneering effort.

Rich was able to figure out how to use this rather primitive scientific computer to do a very nice job of that. We began to send our data over telephone lines years ago in the late 1960's, early 1970's. We set up a communications system that was called Comsys and that was all based on using the 2116 as the data switch. So that was our first contribution of the use of HP's computers in the commercial world. In fact, there was a big attempt to make the software that Rich developed for that project into an HP product. It was never really successful because we were never really able to figure out how to market it. We knew how to use it ourselves, but we didn't know at all how to market it, since we had zero experience in the computer business.

It wasn't long until HP realized that the 2116A could serve as a very inexpensive Time Share computer. In 1964, Dartmouth University had just developed a simplified programming language, BASIC, (Beginner's All-purpose Symbolic Instruction Code). It was designated the HP 2000, and was very popular with schools and engineering departments, for training and practice in the new technology of software development. HP even used a form of BASIC to program instruments after the 2116A became an instrument controller. There were other enhancements to the 2116, but that was our scientific type computer, and for a time our first corporate objective mentioned computers as a part of a field of interest, but said it would be for use in instrumentation.

The next computer that came along was the 3000. It was introduced the first time in about 1973 and was oriented toward doing commercial type data processing. Our objective was that we were not going to be another IBM. This is when Tom Perkins and George Newman were managing the computer group. I once went to the computer division in Cupertino when George Newman, I believe, was

general manager. Tom Perkins was also in corporate development at that time, before he left to become a legendary Venture Capitalist.

George was showing me this 32-bit machine and they were so proud of it. It was going to be the greatest mid-range computer, but the development costs at that time were killing them. So they had to scale it back. Ultimately the 3000 came out as a 16-bit machine, rather than a 32-bit. That system was code-named the Omega. In the EDP Center, we were anxious to make use of the 3000 and we had made sure to get one of the early versions for evaluation. We had hired Paul Haeffner, who had worked for IBM and several other companies in the data processing business, and had quite a bit of experience. He was very skeptical of whether the software for the 3000 was really ready to go. The hardware was okay, but the operating system was fluky. Paul was hired as a salesperson to go out and sell the machine. He took it out twice and demonstrated it and came back and reported to the general manager of the division that it wasn't ready for the market yet. He said, "We can't market it because it will be a failure and we'll get a black eye." He was virtually fired on the spot. It was definitely a case of the messenger bringing the bad news to the king! But he was absolutely right.

The HP Solid-State Device Division was the first user of the 3000 and reported all their problems to the Cupertino Group. Over a period of time, they were able to work the bugs out of the software. At that time, I had a terminal at home, and I would log on to their 3000, to play with it to see if it was going to work in the EDP Center. I don't remember the exact circumstances on the large revisions to the software, but eventually it did get debugged.

At about that point, Paul Ely was the head of the computer activity. Paul and Dean Morton were good friends and Dean Morton was head of the medical division. Paul made a deal with Dean that Dean would use the 3000 as the foundation for building the manufacturing systems that were needed at the Waltham Division. Bill Terry was very much involved in this computer too. I can recall having meetings with Bill and Paul Ely and with Dean about this. It was determined that the role of my department - the data processing department - was to convert the software from the IBM 360 to the HP 3000. The software we were concerned with was manufacturing software like MRP (Manufacturing Requirements Planning). It supported the division's use of the 3000.

Barbara Jacobson was the lead programmer. She and her associate, Nancy Piercy, spent half their time back at Waltham and half their time in the Bay Area. The project lasted several months and ended up being very successful. I remember one time Bruce Wholey was asking Barbara how she liked the 3000. This is after she had worked with it for a couple of months. She said, "Oh, it's just another computer." But that's how we got started. That's how the 3000 got proven. I had a lot to do in the early days with the in-house feedback on what a 3000 was good for and what it wasn't good for.

Next is the story of Comsys, a remarkable leap forward in corporate communications WAY before the Internet was even a dream. When Porter was there and I first became involved with it, we called it the Systems and Procedures Department. There were two groups in there, one group that was doing system analysis type of work and the other group was the data processing group. Data processing was headed by Bud Eldon and Matt Schmutz, reported to him. Betty Sox was also involved. At the time she was responsible for the payroll. It was called the Systems and Procedure Department and the data processing was with it. Another person who was in the Systems and Procedures Department was Dick Hackborn. Dick was a systems analyst there and he wrote a learned article for the IEEE Journal on some aspects of return-on-investment analysis on data centers. He wasn't there very long, but this was when he first started working for HP. Another person who was involved there was Bob Puette, who later became general manager of the Personal Computer Group.

Bob Puette led the effort on our order processing system, which was a key project for communicating with the field offices on customer orders, acknowledgements and delivery information. We called it the HEART system. We needed a new marketing system and everyone was convinced that that ought

to be done. Since I had worked in marketing for so long, I really felt that I understood a lot about what was needed there. I was working in the systems and procedures and the EDP department and this was a system that was needed to support marketing.

At that time, I was reporting directly to Dave Packard. I was talking to Dave about this and telling him about how I really wanted to build this system. He said, "It seems to me that this system is to support marketing and that the person who really needs to direct this effort is Noel Eldred because that way we'll make sure it meets the marketing needs." This was revolutionary thinking in those days. Today, anybody in data processing will tell you that's the only way it's ever going to work. But Dave saw that so clearly years ago. I've told that story any number of times. So Bob Puette and Bill Johnson moved over to work with Noel and that system was developed as part of the marketing operation, which is exactly what made it successful, I'm sure.



Barney Oliver, Bill Hewlett, and Arthur C. Clarke - In an aviation magazine interview, late 1969, Arthur Clarke, author of 2001--A Space Odyssey, mentioned that his Christmas wish was for an HP 9100A Desktop Calculator. Remarkably, the article found its way to HP where Barney Oliver solicited funds to fulfill the wish. See the full story in the April 1970 Measure.

### **Other HP Stories, the HP-35**

I want to tell a story about the Model 35 and Bill Hewlett. I was not directly involved, but would like to relate my observations on that project. The HP-35 was our first handheld calculator. It was introduced in 1972. We had a desktop calculator, the 9100A, that was about the size of a typewriter. In fact, it's the one that looked like the one in the movie, 2001 Space Odyssey, remember the HAL computer. That 9100A had given us lot of smarts about building calculators. Tom Osborne had played a big role in the 9100A project. But the CPU-on-a-chip came along, and with that stunning capability, technology on a chip, Barney was very excited about how this could lead to a handheld calculator. But the person who was the most enthusiastic was Bill Hewlett. I remember that there was great skepticism about such a product, not because we couldn't do it technically, but because it was a new challenge to

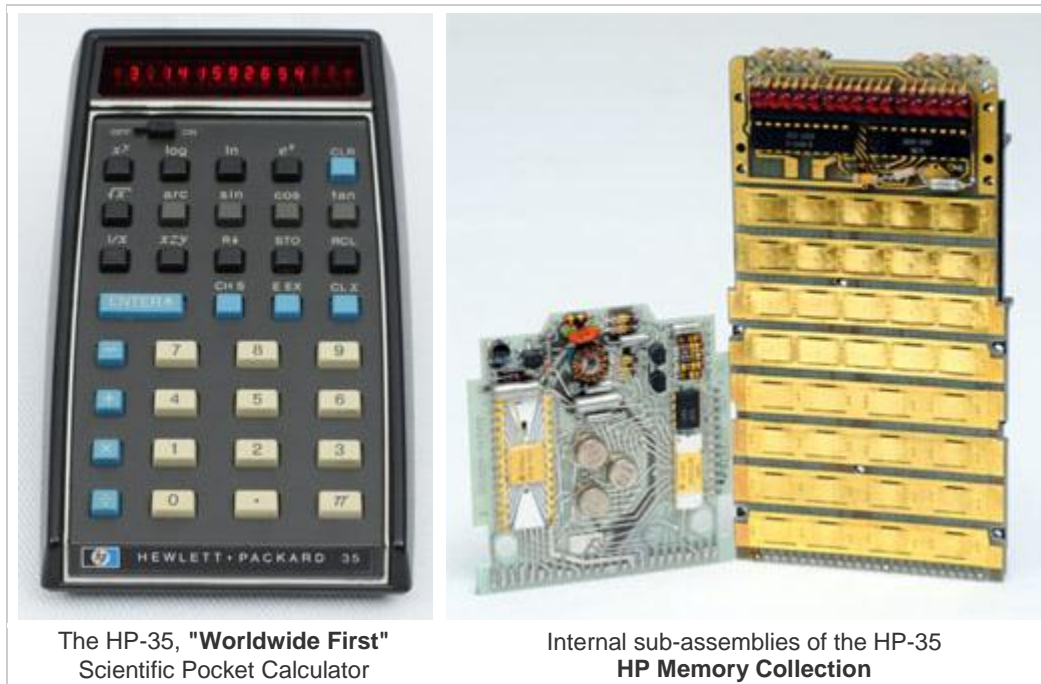


market such a different product. There was great fear that we wouldn't be able to market a product that was clearly aimed at the consumer rather than the scientific and engineering area.

There were great debates about that, but Hewlett kept persisting that this was really something we ought to do. This project was located in HP Labs, and eventually they came out with a run of these prototypes. Hewlett was going to New York and he took along one of the prototypes to play with. He was sitting on the airplane next to a gentleman while he was working with it. This guy looked at it for a long time and he finally said, "What is that anyway?" Hewlett said, "Would you like me to demonstrate it for you?" The guy said, "Yeah, I sure would." Hewlett showed him how it worked. It was basically an infinitely accurate slide rule, and this guy was just really fascinated with it.

Remember this is when there was great skepticism as to whether this product could be marketed. The guy finally said to Hewlett, "That's really something. How much is it going to cost?" and Hewlett said, "It's going to be \$395.00." This guy says, "Goddamn you!" Hewlett was really taken aback by that and he looked at him kind of funny. And the guy said, "You just cost me \$395."

Hewlett came back from that trip and he said, "Guys, this is going to be a success." Of course it was. It was so successful, in fact, that I remember Hewlett giving talks about the quality of the earnings, because half the company's earnings were coming from that single product. I think we made it for about \$50 and sold it for \$395.



The HP-35, "Worldwide First"  
Scientific Pocket Calculator

Internal sub-assemblies of the HP-35  
HP Memory Collection

## My Product Creations

We talked about products that I've worked on that have ended up being HP products - the slide-back vacuum tube voltmeter and the oscilloscope camera. There was a third one which is called the Portfolio Management Pac. This was a software product that worked on the Model 85 personal computer, the first personal computer HP brought out. This computer had the little four-inch square CRT on it. Through investment clubs I've belonged to, I'd become interested in keeping track of securities. I was interested in developing software for the purpose of managing a portfolio of securities and keeping track of the prices and all that, getting automatic quotations from the Dow Jones service over the phone line.



The HP-85 "Personal Computer", with some dedicated interfaces, and software packages

I had been using the Model 85 which was a wonderful machine. It was very easy to program and it was really a tremendous contribution. It was very successful for the technical market but it was never successful for the business market. I talked to the people in Corvallis who had built it about the idea that they really ought to have some business-type applications and this was a business-type application that could work on the computer. At that time there was some slack in our department at HP and I had a couple of people there who were pretty good programmers on small computers. I led the effort to design a portfolio management pac. This was a software package for the 85. We programmed this and got it working and introduced it as a product. I remember one of the biggest issues was getting the instruction manual written. Corvallis hired a contract writer, who created a tremendous manual. As it turned out, we did not have any way of marketing software in this area. I was told later, not directly by John Young, but by a friend who knows John quite well, that John said this was really a waste of time because we couldn't market it.

But we did finish it. Two of my friends who were investment managers had contributed quite a bit to the understanding of the functionality of it and one of them used it for a substantial length of time in running his business. The other person who made very good use of it was Bill Hewlett. It apparently was just the program he was looking for since he was managing a number of portfolios. I know he said something about his wife having an investment club and he kept track of the market for them. He said he thought it was just great. But nobody else in the world bought it. I think the number of sales was in the low couple of hundreds. It was terribly disappointing as we'd put so much effort into it and it really was quite a good product. That experience goes with a common perception about HP, "Boy you guys are sure sharp technically, but you don't seem to understand marketing very well."

Several times I had a couple of consulting assignments that were very interesting and were very rewarding in what I learned from them. The first of those was at YHP in 1972. This was five or six years after we had started our joint venture in Japan. YHP early on had put a small computer into their management operations but had had little success with it. It was just very hard to get people in Japan to get enthusiastic about, so they had taken it out. In the early '70's, they'd grown quite a bit and decided they really did need to get serious about computer data technology. I was asked to come over and consult with them on how to computerize their business.

Jean and I spent three weeks in Japan. Our host and my partner in this project was Gi-san Nakatsukaza. Gi-san is still with YHP and has been a leading person in their marketing efforts. He was promoted to manager of administration in the 1990s. During the three weeks I was at YHP, we put together a plan for installing an HP computer and automating all their factory processes. At the end of

the three weeks, we first had a meeting with Shozo Yokogawa and his staff. Shozo Yokogawa was the head of YHP at that time.

We started to make our presentation on what we were going to do and Shozo said, 'I'll tell you what we should do. We should have Gi-san go off with the Japanese and Cort go off with the Americans (who were working at YHP) and spend an hour talking about this in Japanese and English. Then we'll get back together and talk about it together.' So that's what we did. The next thing we did was to have a meeting of the whole staff of YHP to go over this plan. In that meeting we had simultaneous translators who did an amazing job of translating Japanese into English and English into Japanese. About a third of the words were technical words they messed up on. The ordinary words were just fine; but, of course, we all understood the technical words so that wasn't a problem for us. Anyway, as a result Nakatsukaza and his staff went ahead and installed an HP computer and over a period of years it worked out very well.

While I was working with Gi-san on the computer systems, Jean was exploring Japan. She found it easy to follow the instructions to take the train to whatever destination she desired. As an American, she stood out and the Japanese were very helpful in giving her guidance. So, I got some brownie points at home by having her accompany me on this trip.

The second consulting assignment that was very interesting was in 1986. It involved Samsung Electronics Division. Samsung is one of the largest companies in Korea. I believe they're an eight- or ten-billion dollar company, perhaps even fifteen billion. Samsung Electronic Division was a two billion dollar operation at that time. It's probably larger now. Alan Bickell called me one day and said we had a joint venture partnership with Samsung Electronics and that they had bought a number of HP 3000s and were having great difficulty in making them work in their manufacturing applications. Alan felt we could help them by working with them and explaining how they could use the computers effectively in their business. He asked that I put together a consulting team to go over there and spend some time helping them with this problem.

I found three other people who had a set of skills that were important in covering this area. We were there for a little over two weeks. First we were briefed by HP on the joint venture Samsung-Hewlett-Packard situation. Then we were briefed by Samsung on the specific difficulties they were having. And finally we spent the next week and a half or so on visits to their different factories. The Samsung Electronics Division made everything from refrigerators to television sets to microwave ovens in many different factories. We went to each of the factories and observed what the problems were.

Basically, it turned out NOT to be the computer problem. The problem was that they didn't have their business under control. They didn't have forecasting. They didn't have inventory control. They didn't know what their inventories were. They didn't know what they had on order and all of that. So it was a matter of business fundamentals, not the computers. The reason they were having trouble with the computers is that if you apply computers to processes that are out of control, of course, you have garbage in, garbage out.

The final thing we did was to make a report to the president of Samsung Electronics and all of his staff on what needed to be done. We recommended that they should bring in some business people to work with their EDP people. A couple of months later, they had management changes, so nothing really happened on this.

About two years later, the new Samsung management visited us in Palo Alto and I was asked to make a presentation to them on what we were doing with our HP manufacturing systems. In this presentation I got out my notes from the consulting assignment and brought this up, just casually, saying how I had enjoyed the opportunity to do this consulting and how we had made certain recommendations. The new president, who was there, got up at the end of my talk and began to speak in Korean to his staff. I

didn't understand what was going on, but finally he said in English, "Please sit down." He went on to talk at great length to his staff. I was asked leave and return later in the day to make a full presentation to them about what this was all about.

My guess is that he was reprimanding his staff, with me gone. Sam Solt, who was with HP, was asked to go over there and work with them for six-months to help them get those management problems solved. It took a while, but finally we were able to accomplish something with their overall operations. It's hard to know if I overstepped my instructions by bringing up the previous recommendations, but it was clear that they hadn't followed up on my suggestions. I wasn't trying to be critical. But perhaps it did light the right fire for their president to get his people calibrated.

I've had the opportunity over several decades to make numerous presentations to HP customers on how we are managing our HP information systems inside the company. We had gained an industry reputation on how to do all those data management operations efficiently and effectively. I think there were over a hundred HP customers or potential customers to whom we've explained one or another aspect of this. A lot of that was based on three magazine articles that I've written that have explained how the HP systems were organized and some of the positive experiences that we've had.

The earliest of these articles was published in 1979 (See Appendix A) and the other two more recently. The sales organization has duplicated those articles and passed them out to a lot of HP customers. I've been told that they've been helpful in terms of getting customers to recognize that HP computers can be used to do business data processing in a successful way. One other experience happened when a woman named Cheryl Weiden, who worked in marketing for Varian, found out about our uses of medium computer systems for marketing applications. Cheryl Weiden and I became great friends. She had been given the opportunity by her boss to spend some time trying to figure out how to help Varian Associates modernize their computer operations, to take advantage of HP experiences.

Once again it was the same old problem there, garbage-in, garbage-out. We spent a long time preparing recommendations for them. But then shortly after we made our recommendations, they changed presidents. They hired a man from Square D Corp, Tracy O'Rourke. Tracy became their chief executive officer and things turned around quickly. But, again, I never thought their main problem was the computer systems themselves. It was deeper than that, which is very often the case. Overlaying a new computer and slick software does NOT solve an operation problem where the organizational processes are not clean and accurate.

The other experience I had that I want to mention had to do with the selection of independent auditors – independent corporate accountants. HP had used Main LaFrentz as our external auditors for many years. Ed van Bronkhorst actually was working with Main LaFrentz when he joined HP. The view at HP was that we had become a very large company and some of the services Main LaFrentz offered at the time were not oriented toward meeting some of our problems. HP determined that we needed to seek a different external accounting firm, so a task force was set up to handle this. Ed van Bronkhorst was the head of it and I was asked to be a part of the task force because one of the concerns that they had, of course, was our rather complex information systems.

We interviewed all of what was then called the big eight, (the largest, independent national accounting firms), and we spent a day with each of these firms. We made presentations to them and each made presentations to us. Out of that extensive exercise we selected two or three firms to look at in more depth. Our list included Main LaFrentz, the organization we had had for many years. We also made field trips to see what they did in the field. George Abbott, who was head of HP's internal auditing department, and who works most closely with the external auditors, and I had the opportunity to go to Sao Paulo, Brazil. The purpose of that trip was to interview three different firms to get a picture of how they were handling audit operations in a very foreign environment. That was a fascinating experience. We had a chance to spend some time in Rio before we went to Sao Paulo, where we met

with the auditors. We came back from this memorable experience and made our report, along with others, and then made a decision to hire Price Waterhouse as our firm. Price Waterhouse has retained the HP contract for several decades.

## Looking Back

Looking back over all the decades of challenging work under the wonderful HP work culture, I can't believe my good fortune in 1942 to have found the best high tech company of the second half of the 20th century. My first meeting with Dave Packard, when I brought a personal used RCA oscilloscope to the plant, was the HP contact that settled my life. It was wartime, and as a young electrical experimenter and radio ham, I had bought the 1-inch diameter used CRT scope for \$15. Such equipment was virtually impossible to find in the WWII production buildup, and the fact that Dave offered me the going (new) price of \$39.95 convinced me that this was a man and company of considerable integrity.

My first job was in the machine shop drilling holes in plastic panels. This was followed by countless assignments in every phase of the company's operations.

In this HP memoir, I have tried to show the reader that it was possible to have a world-class company in technology and marketing and business, and yet to run it with a humane and human scale of operations. When all of us, working together, created the HP Way, we lived it daily, and used it to advance global electronic frontiers in a meaningful fashion.

--Portola Valley, CA  
December, 2013

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## Appendix A

### ATTACHMENTS

These documents are download-available at the end of Cort's memoir at [HPMemory.org](http://HPMemory.org).

- Packard, David, *Growth from Performance*, Presentation to 7th Region IRA Conference, April 24, 1957
- Van Rensselaer, Cort, "Centralize, Decentralize, Distribute," *Datamation Magazine*, April, 1979.

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## Appendix B

### CVR Time Line

A.B. (in Elec. Engr.) Stanford University, 1944; M.B.A., 1948.  
Electronic Development Engineer, Hewlett-Packard Co., 1942-1944  
Served as Lt. (j.g.), U.S.N.R. in Pacific Theater, W.W.II, 1944-1946  
Nat'l. Treas. & Chrmn. Endowment Fund Brd., Alpha Kappa Lambda Frat., 1947-1952  
Production Control Mgr., Hewlett-Packard Co., 1948-1951  
Asst. Sales Mgr., Hewlett-Packard Co., 1951-1956  
Served (without compensation) as Dep. Dir. Scientific, Motion Picture and Photographic Products Div.,  
Business and Defense Services Admin., U.S. Dept. of Commerce, 1956  
Member National Defense Exec. Reserve, 1956-1970  
Dir., Inst. Electronics Div., Instrument Soc. of Am., 1956-1958  
Dir., Dymec, Inc., 1956-1961  
U.S. Sales Mgr., Hewlett-Packard Co., 1957-1960

Pres., Growth Assoc. (investment club), 1957-1958  
Dir., Western Electronic Mfrs. Assoc. (WEMA), 1957-60 (Sectry., 1958)  
Partner, Jarvan Co., 1958-1960 (manufactured oscilloscope cameras) Treas.,  
Growth Investors (investment club), 1958-1960  
Treas., Page Mill Assoc. (investment club), 1960-1979  
Gen. Mgr., Dymec Div., Hewlett-Packard Co., 1960-1961  
Gen. Mgr., Oscilloscope Div., Hewlett-Packard Co., 1961-1964  
Fund Raising Leader, Stanford PACE Pgm., 1964-1966  
Gen. Mgr., Colo. Spgs., Div., Hewlett-Packard Co., 1964-1965 (moved division to Colorado)  
Dir., Exchange Natl. Bank, Colo. Spgs., Colo., 1965  
Mgr. Corp. Planning, Hewlett-Packard Co., 1965-1967  
Corp. Data Processing Mgr., Hewlett-Packard Co., 1967-1976  
Chrmn., Stanford Business School Fund, 1971-1974  
Corp. Mfg. Information Sys. Mgr., Hewlett-Packard Co., 1976-1988  
Author, "Centralize, Decentralize, Distribute", DATAMATION, Apr. 1979  
Treas., Portola II and Portola III, (venture capital funds), 1979-1989  
Author, "Global, Shared, Local", DATAMATION, Mar. 15, 1985  
Senior Consultant, Information Technology, Hewlett-Packard Co., 1988-1993  
Author, "Real World Data Management", COMPUTER DECISIONS, Oct. 1988  
Received Hewlett-Packard Lifetime Achievement Award, June 1989  
Reg. Prof. Engr., State of Cal.  
U.S. Patents D-189007 & 837224

## HP Memories

This memory of Cort Van Rensselaers's career at *hp* results from the work of the [www.hpmemory.org](http://www.hpmemory.org) website of Marc Mislange, who with John Minck (and Cort) edited and published his Memoir.

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 "<http://www.hpmemory.org>."