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Oral History Interview

with

Howard Vollum

Chairman of the Board

Tektronix

March 26, 1980

Conducted by

Linda Brody

Howard Vollum
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LB: Mr. Vollum, are you a native Oregonian?

Yes, I was born in Portland. I lived over in the Sellwood district of Portland. I grew up there. My parents were both Oregonians. My father's people came here and homesteaded in the Gresham area. My mother's people came here from Austria via Wisconsin and then to Oregon. So I have lived here all my life.

LB: Where did you receive your education?

I went to grammar school at St. Agatha's in the Sellwood district and to high school at St. Stephen's, which is over on 42nd and Salmon, I believe, and I went two years to what was then Columbia University, which is now the University of Portland, and then I went two years to Reed and graduated from Reed in physics in 1936. Columbia at that time had only two years of science; they had four year programs, but they only had two years in science.

LB: Were you influenced by any of the people on the Columbia faculty at that time? Or at Reed?

Very much at Reed. The faculty of the physics department was very important to me. The head of the department was a well-known physicist, Dr. A. A. Knowlton. We have a street named after him on the Beaverton property. And the man I was most closely associated with there was Dr. Marcus O'Day, who was also a physicist,

and who left Reed some years after I did, and went into government research until his death a few years ago. I think all of the members of the Reed faculty were inspirational. They had an unusually able faculty especially at that time: Dr. F. L. Griffith was very well-known as a mathematics teacher. Quite a number of people there, I think, were an influence to everyone who was there--Dr. Arragon in the history department, another Dr. Griffith who was in psychology.

LB: I believe you wrote your senior thesis on aspects of the oscilloscope and the development of oscilloscopes.

I have been interested in oscilloscopes for a long time. I had built an oscilloscope before I went to Reed. Actually I was out a year between my sophomore and junior years because that was the depth of the depression and my parents couldn't afford to send me to school anywhere. So I was out for a year, working part-time, and I had built an oscilloscope at that time. And I built several more while I was at Reed.

But my thesis was not on oscilloscopes. It was on another piece of electronic lab gear called beat frequency oscillator. This one was a little different than the more conventional ones. It had a meter that indicated the frequency it was generating, rather than reading it from a dial, as was customary. When you read the meter, it was whatever it was actually generating, whereas the dial might have indicated one frequency and it might have been generating another one.

LB: Can you trace back your earliest interest in science? Did you have an interest before you went to Columbia and Reed?

I was interested in radio at that time. I think I've heard a number of Portland radio stations when they came on the air. My father was an automobile mechanic. (He) built some radios, and I worked with him. I got interested in radios at the time which was really about one of the most important segments in electronics--probably the most important thing in electronics at that time. I used to repair radios. As a matter of fact, that's the way I made money to go to college.

LB: You were part of the war effort and you began with the defense department as a civilian employee and later were in the service as a signal corp officer.

That's not quite correct. I had a low number in the draft and so I was drafted and went to Camp Roberts, California. I was in one of the first groups to go to Camp Roberts and I was there for nine months after taking my basic military training in an infantry battalion. I stayed on in a headquarters company, taking care of the radio equipment for them for the next two groups. I had applied to officer's candidate school and also applied to a program that was called the Electronics Training Group. It was an attempt by people, I think with Dr. Vannevar Bush's program with the president, for a two-pronged effect.

In England they were in great need of technicians to maintain the radar equipment that they had. The British educational system, at that time, was not well-suited to developing a series of engineers or technicians. The Universities were excellent as they always had been, but they concentrated on developing scientists rather than people who could operate and take care of the equipment. So the idea was to provide commissions to Americans who had either an engineering or a science degree, and send them to England for a period, supposedly of six months. You spent the first six weeks of that taking training courses on the equipment that you were going to maintain, and then you went into the field and radar sites and were radar maintenance officers for the rest of the period. Of course, the United States was not involved at that time in the war. The idea was to provide a group of officers who had been actually on active radar sites and of course Britain was being bombed so we had a chance to work under actual conditions.

I was selected in that group and commissioned a second lieutenant; it was a direct commission. I was the first person at Camp Roberts to receive a direct commission, so I was a corporal one day and a second lieutenant the next.

LB: The war effort contributed a great deal to science and technology. Were you able to profit from your experience as a signal corp officer?

Yes, very much so because I went to England and took a course on a search light control radar set, but I never went on the active search light site, because as a result of this course, I was selected to go to one of the British radar labs. There was one which was operated by the Ministry of Supply who were responsible for Army equipment. I went to the lab of an organization called the Air Defense Research and Development Establishment, ADRDE, located at that time on the south coast of England in a town called Christchurch. I went to work there on the development of a radar set which was designed to control the fire of the coast artillery guns at Dover. They, of course, had radar on them but we were developing a much more accurate one than the one that was in use at that time. I spent almost two-and-a-half years back on that project, sort of six months at a time. I was always going to be sent back, except there were extensions and they kept going on. I didn't come back until very close to D-Day.

I was lucky enough to work with a group of very good scientists and engineers in an area of radar development which was right at the cutting edge of the technology, using very short pulses and the shortest wave length that were available at that time. So I had an opportunity to work in an area of radar which was very important and very difficult. Of course, test equipment for this sort of thing was not readily available and we had to make our own in most cases. The part of the radar set that I was concerned with was the indicator section, that is, the display section of the radar, the thing that the operators look at. That's really a specialized form of oscilloscope and so the techniques that I learned, and the technology that developed, was directly applicable to me and oscilloscope design, which of course, was my interest. It worked in very directly. Then when I came back from England, I was sent to the Signal Corp Laboratories at Belmar, New Jersey. There we worked on variation of this coast artillery radar set, which was designed to track mortar shells to locate the mortar that fired the shells, by extrapolating part of the trajectory that you could observe back to its source. The coast artillery radar set that we worked on was designed so that you could not only see the ship that was a target, but you could also see the splash from the shells when they landed around it. It's called a shell splash radar. In order to do that, you had to have short pulses and high frequencies, otherwise it would all blur together so you couldn't tell shells from the target.

This led to then making corrections for the next shot. If you didn't get where you aimed, you took appropriate corrective action. That wasn't possible until that time. And the problem with the mortar-locating radar is to see a rather small thing there at a substantial distance - a sixty millimeter mortar shell is only about a foot long and to see it at 5000 yards - it's fairly small. It's going pretty fast so you don't have much time. We were just getting that device into reasonable shape to use when the war was over. Which was perfectly alright with me.

LB: Did the armed forces go on to use this improvement?

Yes, they did. Technology is much advanced. Of course the computing facilities are so much greater, that you can do a lot better with a smaller amount of information. It's kind of interesting - the measure of the extent that the United States would go to protect soldiers. Now mortar is one of the deadliest weapons. It causes more casualties than most other ones. The United States government was willing to spend large sums of money to put a radar set in the front lines, and the chances of it getting destroyed were pretty good. At that time my guess would be that these were in the price range of a quarter of a million to half a million dollars and they were very likely to get blown up. Of course, they cost a lot more than that now.

LB: You were given several awards.

I got the Legion of Merit for the work in England and then an Oak Leaf Cluster, which is equivalent of a second for the work in the United States.

LB: How did you become acquainted with Jack Murdock?

When I graduated from Reed, I went to work as a radio service man and I had an independent business of my own also as a radio service man. I just heard that Jack was opening up a store out on Foster Road, that was for radio, appliances, refrigerators and that sort of thing. He needed a radio service man; he was interested in radio and was a service man himself. So I went out there and as the result of that, I set up the radio service department in his store. I worked with him for a couple of years until I got drafted. Jack eventually went in the Coast

Guard and closed the store. We renewed our friendship after the war. We corresponded during the war and we talked about the possibility of manufacturing instruments before the war and after the war. During the war it got more evident that chances were better and we probably knew more about it and there was a lot of rebuilding to do after the war so we decided to start off and have a try at it.

I got out of the war in November, 1945, and Jack got out a little bit later. There was a point system and I had a lot of points because of the overseas service so I got out a little earlier. We got together at that time and incorporated January 2, 1946.

LB: Were you the only partners or were others involved?

There were some others. I think they were mostly friends of Jack's. One of them in Portland was a neighbor of his, an accountant. His name was Glenn McDowell. Then there were several other people who were Coast Guard friends of his who came with us. But Jack and I always had the principal part.

LB: What kind of business did you engage in? Were you manufacturing? Or were you developing, or was it a combination of appliance repair?

Tektronix started out in an effort to design and manufacture cathode ray oscilloscopes. We were in a building on Southeast 7th and Hawthorne, which was built for us at that time, and we leased. And because it was on a fairly busy street and because we knew we weren't going to have any income from the manufacturing for some time, we put in a radio retail store and service department. Then as our Tektronix activities grew, that eventually moved next door and was called Hawthorne Electronics - it is now Hawthorne Stereo.

LB: Was your oscilloscope priced competitively?

Yes, one of the big advantages we had was a substantially lower price than any of our competitors, in addition to superior performance. We had everything going for it. The first oscilloscope that we had sold for \$595 and the competition was something like \$1800. We had a lot of advantages. It's kind of interesting that Tektronix today manufactures an oscilloscope which is very superior to that for approximately the same price in current dollars. (laughs)

LB: What market did you sell to at this time?

Our market was the electronics industry, as such. Our first sales were through manufacturers representatives. And we were lucky to get an outfit-two very good ones-one on the east coast and one on the west coast. Both of them were in business before the war and had established good contacts with other lines. The principal line was Hewlett-Packard and Bill Hewlett was the signal corp fellow officer of mine and I knew him during the war. He was of help to us in making contacts with these representatives. So we sold them to the electronics industry. Before the war there was very little electronics industry, but wartime spawned a lot of activities. There were many people who received a lot of training input - people who had been college professors became very active engineers, and people who weren't active in engineering prior to that time, but had become competent engineers. Those people didn't go back to their old professions but went into electronics. So we sold to nationally established companies, any that were in existence.

LB: How did you select the name Tektronix?

We wanted a name that you could trademark and that ruled out some types of names. We felt that if we chose a name that had names of cities or anything like that in it, or general terms like "Consolidated Engineering Company", there is one in almost every state, you couldn't get a trademark. We had an intention of always being a national concern because there really wasn't any electronics industry concern in Portland. So we decided that we had to have a coined name that's a combination of Technical Electronics. We made the spelling of it, we thought, easy, with a 'k' and an 'ix'.

LB: How did you integrate the activities of the retail store and the manufacturing? Were you carrying on at the same location?

Yes, but it wasn't really the same people. They were in the same building, and we owned both of them, but the manufacturing was in the back and upstairs and the store was in the front.

LB: I think I read that you polled your employees in the late 1940s, as your business was beginning to grow. You asked them where they would like to locate, what area would be most liveable. Why did you do that?

We had a five year lease on the building we were in and it was pretty obvious that in a couple of years that it was going to be too small. We thought that very likely we would have to find someplace where there was a large amount of ground and those places are first of all outside the city and we asked. We didn't do this in any highly official way, we just asked about where most of the people thought they wanted to be. There was a pretty strong consensus that the west side, a little ways out of the city was a good place. We found out that it was good because we had an extremely wide variety of housing available in a relatively small radius. Near our Sunset tract, there was an apartment at the Cedar Hills Shopping Center. There were plots available for anything from a fraction of an acre to a number of acres. There were new houses that were in all price ranges going up around there in the Cedar Hills area. There were a number of people who wanted to build their own homes and a number of our people did. There was a lot of do-it-yourself activity and you could have a farm, or you could have an apartment, or something in-between all within a few minutes from the site. That area was developing good schools and I think it was a very good area.

LB: Who were some of the employees who contributed to the company during that early period?

I think everybody contributed, very very much. We have always been very fortunate in having an extremely competent, motivated group of people. If I mentioned them, I'm sure I would leave out more than I would include.

LB: Your Sunset plant was ready for occupation in 1951. What influenced your choice of the generous campus like design for the Sunset Plant?

The land was available and wasn't expensive at that time and the Sunset tract was only partly flat and that was the part that we built the building on. The other goes up to the Barnes Road and we never expected to be able to utilize the five acres that we had. The building we put up would last for awhile but

we had to add to that very shortly and then build another one over by Barnes Road. When we built that one, we said that the hillside by Barnes Road had a lot of apple trees on it and we had to decide whether to cast our fate with oscilloscopes or keep the social security (laughs) of having apple trees!

LB: How many acres do you have on the Sunset campus?

Sunset campus, originally was about five acres, and then we bought a few and we had eight or nine acres. It wasn't very large. When we saw that that was going to be too small, then we bought the Beaverton tract with 300 acres. It's almost full now, the buildings take up space and the parking areas take up space.

LB: Your design is very generous. It's very appealing to the eye.

Yes, I think our Wilsonville plant is even nicer as far as an attractive relationship to the trees and so on.

LB: Is your interest in constructing brick buildings for energy efficiency or appealing to the sense of permanence?

I think it's mostly the latter. Brick buildings can be energy efficient or not. The heat conductivity of brick is fairly good so they're not as good an insulating wall as some other type but it is attractive and I think it gives the impression of permanency. We've used it. Some buildings are largely brick and other's have small elements of brick. The brick ties them together. It may not be desirable to use brick all over, like we have some which have metal paneling to the walls and in some places because it's possible to take that out and put equipment out, which you can't do with the brick wall. We have a lot more windows in the buildings that we built at one time when energy was cheap than you would have now, but brick kind of became a unifying thing of Tektronix buildings and I think it's a very good way to do that. And it's permanent. We have some inside brick walls, a wall where you have the brick on the outside and on the inside, a cavity wall. I think they are attractive and very durable, don't require any painting or anything like that. Over a period of time you may pay as much for the paint as you would if you had put in brick in the first place, and it never does look as good.

LB: In the early years, your company experienced a lot of growth. Were you meeting your expectations as far as manufacturing and sales forecasts were concerned?

We did very much better than we had ever hoped. We didn't really plan on a quantitative basis. You have to do that when you're larger - but our philosophy was to build the best instrument that we possibly could for the lowest price that we could come out with a satisfactory profit on, and make all of them that people wanted to buy (laughs). We didn't say that we were going to make 'x' number of them in the next year. We had some ideas of what we thought the market was, but in every case we were way too low. Electronics had expanded faster and we got a bigger part of the market than we had ever anticipated. Our competition didn't really do real well as far as responding, and we were always ahead of them technically.

LB:: How would you describe the labor market?

The labor market is excellent here. The people are very competent and I think the educational system is very good here. People in the northwest have an independent attitude and confidence, that it really doesn't matter if they have done something before; if someone else could do it, they could do it better. I think the basis of the population around here, especially at that time was oriented to farming, agricultural activities. You have to do everything on a farm; you can't whistle somebody to fix something - you have to do it yourself. There was very little 'factory heritage' around here, which I think is a very undesirable circumstance...where perhaps in some places in the East a man's parents and maybe his grandparents worked under rather difficult conditions in a factory and there were a lot of conflicts with the management. There was naturally a great deal of mistrust. But I don't think that was prevalent at all in the West because it was not industrialized. People did not have a built-in distrust for the management.

LB: Your idea of factory heritage, I think, is something that would be very important to future scholars. Could you define it a little further, because it seems to be a phenomenon that is present with us in our culture right now.

If your parents and their parents had worked in a factory as the Industrial revolution came on, and many times the conditions weren't ideal and the management - labor relations were probably one sided - they felt that they didn't have a fair shake. When that took place during a couple of generations, then you have a sort of inherited bias against the management. It would be hard to live that down; it certainly would take some time and experience on your own part in other circumstances to overcome that. We all have that, those sort of biases.

I well remember people who were prominent in the Oregon business and politics that I didn't know personally and were, perhaps in my opinion of them from the press, I didn't think too highly of them. Later when I got to know them personally, in some cases I found that it was quite different and my impression of them. So I think in Oregon, particularly in the west generally, there wasn't a large number of factories or large organizations of any kind, so that people were more independent in many cases, came from an agricultural economy, where at that time certainly it was almost entirely individual. So you just didn't have any built in bias toward big business because they didn't have any experience with it.

LB: Is this an idea that you formulated yourself, or something that you might have thought about as you read certain publications?

I don't know, I don't know really where that came from, I don't know where ideas come from. I haven't seen much that I can recall that has been written about it. But I'm sure that there has been...

LB: When did you begin to expand your product line?

We started making just one model of the oscilloscope, but as soon as that was engineered, then work started on other models. You need a fair spectrum of instruments to cover the various needs and you needed an even larger number then than you do now because we know how to make them lots more flexible now, than we did at that time. So we started expanding the number of oscilloscopes immediately. And we brought out a number of models as fast as we could.

There was a need for various other electronic instruments, which were related to the use of oscilloscopes and signal generators of various types, and we had to have those to engineer and manufacture oscilloscopes. And other people needed them, so our line expanded in that way, too.

LB: Do you recall when that might have been?

The first oscilloscope was available in June of 1947. That seems like a long time after we started, but actually we don't engineer any oscilloscope models in that short of time now. But during the same time we had to get this building built and that wasn't extremely simple either because everything was in short supply. We all had lots of veteran's priorities so we got materials. I think, as quickly as anyone could have. But it was about a year before the building was built, which is not an unusual time. So as soon as we got that one out in June, I'm sure at that time we had started work on the next model. There were a succession of models, generally, in increasing complexity, but not always. Some of them were simpler.

LB: When did your corporation enter the international market?

We've been in the international field almost as long as we've been in the domestic one. Because in electronics there really isn't any difference between the needs of the people in one country or another and English is a fairly universal language for scientists.

Our first exports were to Sweden and I'm not sure of the years, but (it was) probably 1948 or 1949. So we've had a major export market almost our entire history.

LB: I think I've also read that you have several plants, one in England, I believe?

Yes. We have plants, one in England, in the London area, and on the island of Guernsey in the English Channel, in Holland in a city called Herenveen, and a fifty-fifty owned company in Japan. Tektronix and the Sony corporation are partners in

a company there that builds Tektronix equipment for sale in Japan and in the Far East. It also designs and builds instruments that we sell in our United States and the rest of the world.

LB: How long have you been associated with Sony?

Since 1956, I think.

LB: You said earlier that there were limitations on your buildings, but I was wondering about product advancement. I'm thinking of manufacture, and the tools for manufacturing your products, and technology.

We have a lot of good people who are willing to take on jobs that need to be done. We've never had to hire some expert from the outside, who has a great reputation in the area. At that time, we did a lot of it ourselves, I don't mean that we did everything, certainly we had architects make the buildings and we hired people in engineering with whatever training was needed. A lot of them ended up doing things which were somewhat different from what they were hired for. And that's continued to this day - people who haven't changed their profession completely, but still work for the same company, even though they are in quite different jobs than those they started. There is a very large variety of jobs and always has been because we started off with a high degree of integration. We made a lot more of the oscilloscopes than most people did. We did more of our own manufacturing and less purchasing. We still do that, although we buy whatever we can and anything where our use of it is just the same as everyone elses, we don't have any advantage to making it. But where you need something that is a little bit different to suit your particular needs, then if you have the facilities to make it you can make it in such a way that it better suits you and results in a much better product. It may not be a better device, whatever it is; it may only be different, but for your purposes, it's a lot better. People who build components for wide use have to make them with a lot of compromises so they can have a very broad market.- and sometimes the compromises are harmful to you. You might even want a thing that would be easier to make, and simpler,

because you don't need certain characteristics, but you need certain characteristics emphasized and that may just be fun of the mill. So we've had a highly integrated activity here, for a long time.

LB: How did you and Mr. Murdock divide your time with the company, engineering, research, administration, and that sort of thing?

Jack was general manager and he had the business experience. At the start, I confined myself almost entirely to the engineering aspect of it; engineering was my part of it and the business areas were Jack's, although these areas weren't exclusive in any way. In a small company, there isn't any such thing as compartmentalization; everybody does something some of the time.

LB: You weren't really small very long it seems.

That's true.

LB: I'm sure that you were probably very shocked with Mr. Murdock's death. Did his death affect the company in any way?

No, not directly. Jack had been taking less direct interest in the company over the years and at that time he was not active in the company management at all. He was chairman of the board and director; he was around a lot. He was pursuing mostly his interests at that time, so it didn't effect the company at all. We were very sad to lose him as a valuable associate. Jack, incidentally, probably had more than anyone else to do with many of our characteristics that we have around here. He was always very friendly, very open, was very good with problems with people and under his influence. We've always been on a first name basis and we've downplayed titles and positions and so on - all that was part of Jack's sense of ethics and good business practices. That was important to us. It started setting a tone that has continued all this time.

LB: I was going to comment that your company has been enormously successful, due in part to some of the innovative personnel practices. What are some of your philosophies concerning the employees of Tektronix?

I guess fundamentally we believe that everyone is an individual and everyone wants to do a good job and the job of the company is to make it possible for them to do it. I think we also believe that all people are honest, and we won't make rules - just to take care of a few situations - which would handicap everyone else. We'd rather pay a little price, if necessary, to have a large amount of freedom rather than have everything loosely circumscribed. And we've been able to hold to that pretty well, even though we're a large company. You're never able to do it quite as well in a large company. I think really the key thing is that we are firmly convinced that everyone is honest, and everyone wants to do the best possible job. No one is hurt quite as much as the person himself if they can't do a good job, for whatever reason; they know it, before anybody else does.

LB: Your lack of formality has been demonstrated by something you said about not acquiring a bigger office with your advancement and no personal parking places. Do you think that because you feel this way about your employees there wouldn't be any need for your employees to unionize?

That is what we feel. We feel that we can provide all the communications channels and do the various things that a union will do and do them better and not have any sort of a "we-they" situation. I think that is very important. Some people assume that any company of any size has to be unionized, but that's not true. There are very large companies non-unionized in the electronics business. IBM is not unionized; Texas Instruments is not unionized; Hewlett Packard; Eastman Kodak is not unionized. I think it just came because of the way they were started, and the way they grew, and not necessarily the easiest way because a union does a lot of things you have to especially do. It takes a different orientation but I think it's very worthwhile.

LB: You have even gone so far as to establish a human relations department. Does that facilitate the handling of personnel problems?

Sure. We have people in the personnel department who are physically in the various buildings and people can go to them with any kind of problem that they would have that they can't help or do anything about. The chances are pretty good that they know where to go and how to get these people to someone who can help them. That's the kind of thing that typically you go to a union steward for. In many cases it's the same kind of thing, and in other cases there are many things that need to be done that are not of a nature of being antagonistic.

We have another organization, that is the Employee Representative system. When we had two hundred people, there were more people than we could get in some sort of area to have a general meeting discussion, and we felt that we had to have some kind of way to represent them. So we divided the company into various areas - that is physical areas. I think it was about one representative for 20 or 30 people. These people met with the management of the company and with their own people for a period. I think it was an hour every two weeks or something of that nature. They asked their representatives to bring whatever questions they had and they would be answered in the most appropriate way - sometimes it was by doing something about it, sometimes it was by giving the rep an answer to give to them, and sometimes it was by calling them and talking to them or whatever seemed most appropriate. That's grown now to where we have a lot more area reps than we had employees at that time (laughs), but it's gone on for many years and it's an important part of the company. It's really an attempt to get people to know more about the company. At their regular meetings they have a speaker from various parts of the company and sometimes they go on tours of other areas to find out and know what's going on in other areas. They have been concerned for a long time with the Red Cross blood drawings and the United Good Neighbors: they have been very active in that. Area reps go on agency tours and they tell the people about what they have seen. These area reps serve for a period, I'm not sure what it is today, but it used to be eight months. It was a continuing thing. One who is elected is elected a couple of months in advance and would work with them so they would move into the transition.

LB: You have a remarkable record as far as length of service. I was amazed when I read about your Guernsey plant and the employees that stayed on there.

The Guernsey plant has been a very good kind of an operation from all standpoints. Guernsey is primarily a summer resort for the British although it is much closer to France than it is to England. It's had a very seasonal employment pattern and one of their big products there is growing vegetables, tomatoes, they grow lots in acres of green houses. There was no technical activity at all, apart from the telephone system. So any Guernseyman who was technically inclined had to leave home. The Guernseymen are very independent, the people are not English and Guernsey is an independent country. It's represented by Britain and it generally adopts similar laws to Britain but it has its own government and it has its chief officer, the bailiff. Jersey, which is another island nearby, is very similar and both have their own money, their own stamps, and their own passport and so on. But they have a special relationship with England; England can't assess them anything very well for defense because they didn't defend them during the war. They were occupied by the Germans and it was pretty hard on them, but they have a relationship with England somewhat like Puerto Rico has with the United States. Things that are manufactured in Guernsey generally are considered to be manufactured in England, but they have essentially no duties because they have no industry to protect. So the British come over and buy watches and perfume.

Our plant there has grown; we have about 600 people. We are the largest employer on the island and have a very good relationship with the government and I think we are considered good citizens. It's a popular place. A lot of Englishmen would like to live there, because they have very low taxes, and it's a beautiful place. It's not very big. The coast is very attractive with swimming and boating and all that. They allow very limited immigration because it would be overrun. But anyway, we provide them with a stable year-round employment, a very good stable operation and they are very good people. We speak the same language but they are also somewhat different; they are very independent. We don't have anywhere near as much socialist government. It is much more, "I can take care of myself."

LB: It seems like here you wouldn't have the more limited geographical features so probably employee turnover here would be a bit higher, although comparatively low in the locality.

It's very low. We have a much lower turnover rate than is normal for industry and I think there are several reasons for that. One is the great variety of jobs that we have and the ability to transfer to a different kind of job crosswise or upward. We have very active programs of that type. We have our education program which is very important. We put great emphasis on individual improvement - so that they take on greater and greater jobs. The Tek education program is a very large activity.

LB: You have been honored by a number of honorary degrees for your activities. From a personal standpoint, has being the chairman of the board of a major corporation affected your way of life?

No, I don't think so. It's given me freedom to do things that I probably wouldn't have been able to do. But I don't regard it as anything very unusual. I've never been involved in any of the other kinds of activities. We don't really have much connection with the other firms in the city like retail establishments or something like that. We have very few customers in Oregon in our business. One of the really great things for Oregon's standpoint about a company like ours is that almost all of the revenue that we get is from outside the state so those are much more valuable dollars than recirculating dollars in a community from one place to the next.

LB: You have several sizeable parcels of land in Oregon. Do you advocate expansion in other areas of the state?

We've been trying to develop a land bank in the sense of having land available in different parts of the state which we think will be developing, and which we think we can provide a very useful role of employment and type of activity that is not there. It takes a long time to go through all the regulations and there aren't too many places. So we think we'll have activity in many of these areas and in the future. In every case we are trying to buy big enough tracts so we can add on without having to get another one because it may not be available.

LB: You are implying that you're interested in expanding the industry?

I think so.

LB: Will Tektronix be competing against similar local manufacturers?

There is no one really here that competes with us. There could be, at some time. In Vancouver, we are going to be very close to a new plant that Hewlett-Packard Company is going to build. They are, of course, a major competitor in the electronics and oscilloscope instrument business, but that plant is not designed to make anything competitive with us. I don't think it would make any difference if they were, because we are competing for customers. Where the thing is manufactured is not important.

LB: You place a lot of emphasis on customer service.

Yes, it's very important. Now things are getting pretty complicated, but service always has been extremely important.

LB: I have one last question, has your career been satisfactory?

Very much so. We never anticipated this sort of size from the company we started. I'm very proud of it and very proud of the people that were part of it and what they accomplished through the years. Both by themselves and for our community and the scientific world now.