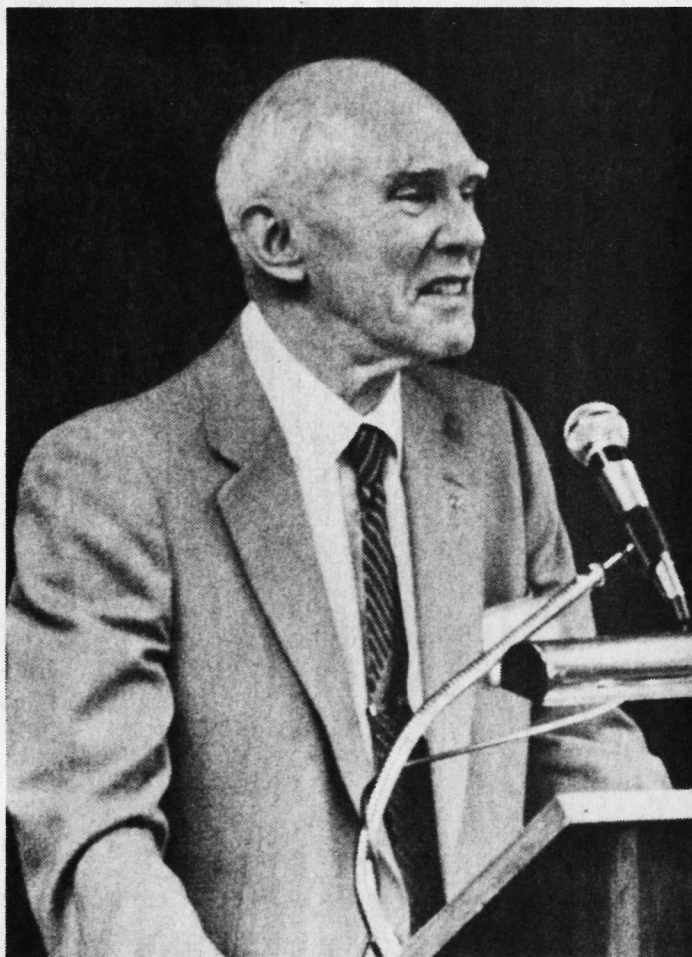


TEKwEEK

An interview with Howard



Howard at 1983 Tek shareholders annual meeting

HOWARD VOLLUM (Tek co-founder and vice chairman of the Board of Directors) shares some thoughts about Tektronix in a Tekweek interview. In an accompanying article, Howard's pre-Tek history provides a look at Tek's entrepreneurial beginnings.

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HOWARD VOLLUM:

Some thoughts
on Tek's
people, products,
traditions, future

By DON LEIGHTON

There was a time in the late '40's when Howard Vollum (one of Tek's founders and vice-chairman of the Board of Directors) knew every employee.

But because it's no longer possible for each of Tek's 20,000-plus employees to chat with Howard, Tekweek arranged this interview to give employees a chance to become a little better acquainted with Howard and to share some of his thoughts about Tektronix.

As the company grew, for a while Howard tried to maintain a personal touch by sending a birthday card to each employee. He still manages some personal contact through one of his favorite events, the service anniversary luncheons where he presents the "hardware" to persons with 20 or more years of service.

Away from Tek, Howard enjoys his family (wife Jean and five grown sons), music, and color photography (including making prints). A favorite retreat is the Oregon coast where they've had a beach house for 30 years. Three of his sons are following scientific/technical careers away from Tektronix.

Even though he tries to keep up with technology, Howard admits to lagging behind in at least one area—video games. "I've never tried them," he said.

Although Howard says his official duties are now rather limited and people don't have to do what he says, it's still not unusual for Tekweek staffers to hear that something was done "because that's what Howard wanted."

A typical Howard response to that remark can be found in a speech that he made to some employees on September 17, 1958:

"While we are on the subject of management opinion and its effects, perhaps another point might be clarified. This concerns the weight to be given to the personal preferences and opinions of management people at all levels.

"Perhaps I should speak only for myself on this, but I think many others will agree with me. Of course, I have ideas as to how many things should be done, and on many occasions express these opinions in discussions with individuals or groups. Long ago I learned, however, that more often than not, other people have better ideas than



I; and since we want the best available ideas, it does not bother me if things are done differently than I would have done them. The quality of the final result is what counts.

"Naturally, I would be annoyed if someone did things differently than suggested just to be contrary, but this happens so infrequently that it is of no consequence.

"A much more frequent and important case comes when my suggestion is given much greater weight than I intended; and, in fact, may be quoted in support of some individual's position as a directive or order rather than a suggestion. If this takes place, please feel free to ask me how I feel about the items under discussion. I am sure all management people have the same problems and would welcome a chance to clarify their position."

Other than your official duties on the Board, are you involved in other Tek operations?

I'm really not involved in Tek operations directly, but I do talk with people when things come up that interest me. Or they talk to me about something they think I might have some viewpoint on.

I get letters from people that are unhappy about something, and I try to see that they get taken care of by the people that are most competent to do it and have it as their responsibility.

Do you still spend quite a bit of time trying to keep up with technology?

Oh yes, I read a number of journals and things of that nature. I talk with people about it. I try to be informed, although it changes so fast there is no way to really keep up.

I still like to visit with people involved in technology development at Tek. And I read lots of reports that come from those areas.

Do you do much reading besides technical papers and journals?

I read a couple of daily newspapers, plus a number of general interest magazines, and some photographic and aviation magazines.

If you get an idea about technology that you think might be useful here, how do you pass it along?

I usually try to talk to somebody that I think would be interested that works in that field.

You don't worry about going through channels?

I never have. I don't think in things like that it's out of order. I'm not directing anybody to do anything. I'm either trying to get some information or make the suggestion that this might be a good thing to do. Most of the time they don't do it. Not because it isn't good, but they've got plenty of things to do.

When you were in college, did you have any long range career goals?

I wanted to be an electrical engineer. The business side of it wasn't part of my plan. It just turned out that after World War II, there was an opportunity to set up this business to make oscilloscopes.

Who was the instigator in setting up the business?

It was basically Jack (Murdock) and me. I don't think I would have done it without Jack because I didn't know anything about the business side of it. He was pretty good at that, and he was a good technician too.

"It's like the guy in the TV commercial says, 'You make a good product at a good price, you're going to do all right.'"

In the last two or three years, we've been going through a period of major change at Tek. Are there any Tek traditions that you feel are particularly important to continue?

It's very important that we make the very best product in each category that we're interested in. It's important that we maintain our concern for our people and our customers and suppliers, as well as maintaining high standards. I don't think there are really any fundamental differences now from the past. Circumstances are different. They're always changing. But I don't think the fundamentals change very much. It's like the guy in the TV commercial says, "You make a good product at a good price, you're going to do all right."

What things about Tektronix do you take special pride in?

We've done really good things for a lot of people, and I'm very proud of that. The fact that we can make possible employment for a very large group of people is important. Now, because of the economy, there is a lot of talent that is not being utilized. I'm glad to see the economy picking up so that more of our people can get to doing the things they know how to do very well.

Also, I take real pride in the qualities of our people. I think they are far better than average as a group, and I think that working in this environment has helped develop them. We

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Howard and Jack turn 'daydreams' into Tektronix

By DON LEIGHTON

Tektronix was founded in January 1946, and by January 1948, the 511 oscilloscope was in such demand that the company was already 60 days behind on deliveries.

It's a bit like one of those show business careers that is called an "overnight success" but is really the result of many years of work.

In a like manner, Tek's "overnight success" had a foundation that was in the building stage for a number of years.

Howard Vollum actually built his first oscilloscope in 1934, the year after Dumont and RCA came out with small sealed cathode ray tubes (CRT's). Until 1933, the vacuum in a CRT had to be maintained by a constantly running pump. Basic oscilloscope technology had existed since Karl Braun, a German physicist, built a CRT in 1897.

Howard's first oscilloscope had a \$25 RCA 3-inch CRT mounted on a microphone stand separated from the rest of the circuitry so it could be turned at a convenient angle for the user. On one occasion, he took his first scope to Oregon State University where it was connected to KOAC radio to show modulation patterns. In those days, scopes were considered "lab gadgets" and not widely used.

Howard made his first oscilloscope for himself. But after showing it around, he built a couple more for other people.

He had wanted to attend OSU, but he stayed closer to home to cut costs. Howard attended the University of Portland (then Columbia University) for two years before transferring to Reed College where he majored in physics. He built that first oscilloscope during a year off from college between U of P and Reed. Howard's fascination with radio and electronics started about age 10, he recalls, during a period when his father built and sold some radios.

Following his graduation from Reed in 1936, in the midst of the "Great Depression," Howard's first job was with Radio Specialties for 35 cents an hour building radios for the U.S. Forest Service. His next job was as a radio service technician for Sears.

It was during the time he was working for Sears that Howard first wandered into M.J. Murdock Appliances in Southeast Portland, curious to meet the owner (Jack Murdock was later to be a co-founder of Tektronix). "I had heard good things about him," Howard recalled. Howard hadn't gone in looking for a job, but soon after that he was doing repair work in his home for Jack's customers.

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Howard—

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try to make education important and encourage people to get all the education they can.

I feel proud of the way that we have contributed to technology generally, because without good instruments, the development of technology would not be at the pace that it has been. Maybe somebody else would have made the instruments, but I feel we did it better.

Do you think it would have been better for the company if we had been located elsewhere?

No. I think we gained tremendously by being in the Northwest because of our pioneer heritage. This was an agricultural economy when it started, and in an agricultural economy, you don't hire an expert for every single thing. The fact that you can do it gives you confidence. I don't think we would have been anywhere near as successful on the East Coast as we have been here.

Was it difficult to recruit employees in the early days?

It has never been difficult. I don't think we've taken one out of ten applicants. People wanted to come to this area, and the people already here could do a lot of things. We didn't have to import people. They may not have had experience building oscilloscopes, but when they saw what had to be done, they went ahead and did it. I think that is a big difference between the East Coast and the West Coast.

What do you think of our new products?

We've got many new products now that are very good. But we've got to continue to bring out new products and to do it at a much faster rate than we have in the past. Before one product is introduced, we need to be started on the next. That's going to be really important. We have to shorten the development cycles.

In recent years, a number of people have left Tek to start their own companies. Do you have any advice to give to engineers who get the entrepreneurial urge to go off to start their own companies?

I don't think I have ever discouraged anyone who wanted to set up their own operation if they felt they had any sort of chance to do it. I don't feel bad about that. We have very good relationships with these people. Many have gone off

"It's important that we maintain our concern for our people and our customers and suppliers, as well as maintaining high standards."

to work for somebody else or to start their own business. They often come back, much better than when they left, with much wider experience.

On the other hand, we need to do more at Tek so that many of the needs of these people can be satisfied without their leaving. I think many of them find that it's not quite as easy as it looks.

Sometimes people would want to do a particular thing that Tek didn't have the need for or didn't have high priority. In some cases we were wrong.

For some people, the possibility of a big financial return is the big thing. But others are often more interested in seeing some particular thing developed.

Are there any things that you would have done differently?

Yes, I think so. I think we should have divisionalized or somehow divided the company into smaller pieces many years ago. It would have made a lot of difference. But it's much easier to look back. When you have made a successful and growing operation, you don't really look very much at taking it apart. You tend generally to keep it growing and increasing.

I think that smaller groups can be much more effective



TEK RETIREE EVELYN MARSH chats with Howard at the 1983 Tek shareholders annual meeting.

than large ones. I didn't realize that 15 years ago. We have the opportunity and certainly a lot of determination to do it now.

In your technological fantasizing, what kinds of instruments do you see the need for that we don't have yet?

I don't really know about any particular kinds, except I'm sure we're going to need more development of all of them to make them friendlier and smarter. We have to make things that meet the new challenges. Our logic analyzers for meeting digital device needs is an example.

Another area that we have a good start in, and I hope we really keep on with, is the fiber optics testing areas. That is rapidly changing, too. I think it is going to be very widely used, probably quicker than most people imagine. We're going to have to keep our leadership. I hope that's not an area where we say we've done very well and then wait to see what happens.

I don't really see the oscilloscope being obsolete either. They may not always have cathode ray tubes in them, but something that shows the waveform is going to be there. The oscilloscope is still probably the most needed electronic device.

What's the worst thing you've ever had to do in your work at Tektronix?

I don't know. I guess I try to forget those things.



VISITING TEK'S TECHNOLOGY PEOPLE is one way Howard keeps up with the state-of-the-art in electronics. Here he's seen at a technology display in Microelectronics (Bldg. 59).

You're on a number of boards. How involved are you in that type of work?

I've enjoyed very much serving on the boards of Pacific Power and Light and U.S. National Bank. And I'm interested in the Oregon Graduate Center, too, as well as the Tek Foundation and the University of Portland, especially the school of engineering. I've been getting off boards more than getting on boards.

Do you see a need for a change in the type of education for engineers?

There's a need to develop first class engineers in a scholastic sense, but the big thing now is to maintain their engineering expertise as the technologies increase. It really has to be a life-long education. You can't stop after you finish your education, wherever that is, because there has been a really new technology at least every 10 years, such as integrated circuits, VLSI, fiber optics, all kinds of variations.

The engineers who graduated 20 years ago have to do a lot of self-education to keep up. I think they're going to need some formal help. Schools are going to have to develop a life-long process, and companies will have to give some time for people to keep up. That could be compared to the 10 per cent down time for maintenance allowed on most machinery. If we make the same allowance for engineers, that would be four hours a week. That would be like one class. It wouldn't be the traditional engineering subjects because they already know those things. It would involve new technology. That's one of the most important things that's coming into engineering education.

If engineers were like machinery, we could buy the newest and best ones and use them until better ones came along and then trade in the old ones for new ones. If we could keep doing that, we wouldn't have an education problem. But that isn't what we want to do.

What qualities are found in the best managers?

First of all, a manager has to be very competent in what-



ever field he or she is trying to manage. I don't believe at all in the theory that an MBA manager can manage everything. I think we have had plenty of demonstration around here that it doesn't work. So, first of all, you have to know the territory. That doesn't mean that you're the best in every aspect. You just have to be knowledgeable and understand.

Beyond that, you need a high degree of empathy for the people you're managing.

I'd really like to see a serious look at eliminating the term "manager." Maybe "leader" isn't the right word, but that's the closest I've been able to think of. There's a lot of difference between leading and managing. Leadership, I think, has more meaning.

It's the kind of idea that many people think is really

"The oscilloscope is still probably the most needed electronic device."

great, but others don't think it's a good idea at all. Since "manager" is an accepted term throughout the business world, I'm sure there would be a lot of problems from changing, but it seems to me to have more pluses than minuses.

This thing which arose in the last 15 or 20 years of "professional manager," I can't really buy. As far as I know, colleges don't have "leadership" programs.

A person can't help but respond to his or her title. I think Earl is a leader, or whatever it's called. I think a lot of our managers are leaders. More would be if they were called that.

It sounds like you might be in favor of the type of participative management being tried at Forest Grove.

Sure. That's not new to Forest Grove. It was here at the start. Then we kind of got away from it. I think it's very important that we get back to it.

Are there any ideas you have for those who don't like to change, to encourage them to be more open to change?

I don't know what you do to get people to change. It's usually not based on any rational process. You know what to do lots of time, but you don't do it. A good example is an overweight doctor. He has all the information, but that doesn't help him very much in losing weight.

I don't mean that people aren't changeable. They certainly are, but in many cases it's hard to change.

A training program can help, but you can't get anything like 100 per cent success from it. But that doesn't mean you shouldn't do it.

Do you have any encouraging words for employees?

If everybody keeps doing the very best they can as the economic situation in the world improves, Tek is going to be in pretty good shape. We've had rough times, but those

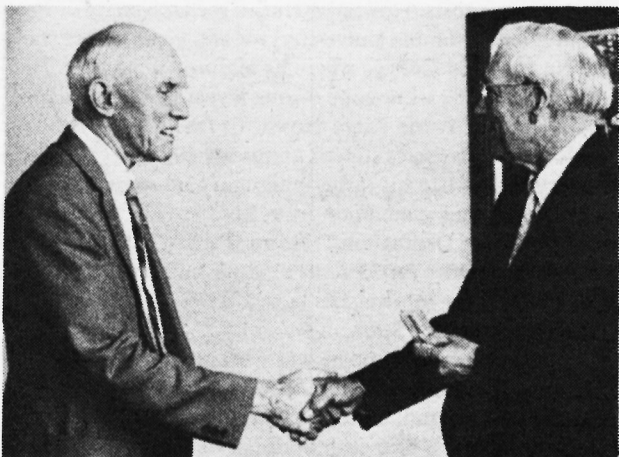
"We've done really good things for a lot of people, and I'm very proud of that."

times would be considered good times by many companies. We certainly haven't lost money, nor have we had the kind of layoffs that many companies have had. We don't like to lay off anybody. We don't operate on a hire when you need, fire when you need basis. I think that has a lot of good to it. It brings some problems, but it's far more good than bad.

At one of the annual meetings a few years ago, you quoted someone as saying that Tek has the best worst times of any company.

Something like that is true. We certainly have had smoother sailing than many industries, such as timber and steel and some other kinds of manufacturing. The sad thing about many of those is that they may never return to the way they were.

In our case, we should not only return to where we were, but greatly surpass that level. If we don't, then it's our fault because the technological needs are going to be even greater.



HOWARD VALUES LONG-TERM EMPLOYEES and enjoys presenting the "hardware" at service anniversary lunches. Byron Witt was honored for 30 years service in September.

Tektronix—

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Howard collected from the customers and then paid a percentage to Jack.

When Jack Murdock graduated from high school (about the time Howard was finishing college), Jack was given the option by his father of spending a sum of money to attend college or start a business. He chose the business route. Howard describes Jack as a generally sharp guy, good businessman, and very customer oriented.

In 1939, Howard became a Portland area supervisor for the government-sponsored National Youth Authority which paid young people to attend job training classes. He taught classes in servicing radio equipment.

It was during these pre-World War II years in the late '30's that Howard and Jack started daydreaming about someday manufacturing electronic products.

Howard was issued a low number in the military draft lottery and was inducted in February 1941. Again by chance, he was assigned to infantry basic training at Camp Roberts, near San Luis Obispo, California. After basic, he was kept on there as part of the training cadre so he could service the radio equipment. On one occasion, he recalls, he was sent to repair the base commander's radio, which only needed a better antenna.

In an effort to get out of the basic training cycle, Howard applied to join the Electronics Training Group, a government program to send scientists and engineers to England to help with their radar maintenance. The program called for three months training and six months in a technical position.

But Army paperwork was particularly slow-moving in

those days before Pearl Harbor was bombed on December 7, 1941. Things moved faster after that, however, and within two weeks, Corporal Vollum became 2nd Lieutenant Vollum assigned to the radar project in England. Howard and another member of the group spent more time studying than lolling about the local pubs, as did the rest of the group. As a result, they were tops in their class and were soon promoted to 1st lieutenant. After the training class, Howard was assigned to a project working on better radar control of the shore guns at Dover.

The project team developed a 3-centimeter wavelength radar instead of the previous 10-centimeter. The Germans, thinking the war would be short, had stopped development of their radar; as a result, they never developed a means of detecting the high resolution system.

It was about this time that Howard got the idea that he could build a better oscilloscope than any then available.

For his work in England, Howard was awarded the Legion of Merit from the U.S. government.

After 2½ years in England, Captain Vollum was reassigned to Evans Signal Laboratory, Belmar, New Jersey, where he designed the display system for radar used to detect enemy mortar locations. This radar had the shortest pulse and highest frequency of any operational radar at the time. This work earned Howard an oak leaf cluster on his Legion of Merit.

Some 26 years later, John H. DeWitt, Jr., who had been director of the Evans Signal Lab, wrote of Howard: "I was closely associated with Vollum for two years during World War II. He was in charge of a development group working under the highest possible priority for the development of special radar equipment designed to locate enemy mortars. At that time it was not possible to purchase oscilloscopes which would permit measurement of the .1 micro-second pulses used in the radar equipment. It was through his direct personal effort that suitable measuring equipment was developed and which equipment laid the groundwork for the modern oscilloscope.

"Vollum's genius in the field of measuring equipment, in my opinion, lies in the fact that he is always able to get

down to basics in the analysis of a problem and in solving it comes forward with a highly imaginative and unique answer."

DeWitt wrote that letter in support of Howard's nomination for the Morris E. Leeds award presented by the Institute of Electrical and Electronic Engineers (IEEE) "for outstanding contributions in the field of electrical measurement." Howard received the award in 1973.

Howard's wartime projects gave him the opportunity to study all available technology on CRT displays and to work with other experts in the field.

At the start of the war, Jack sold his business and enlisted in the Coast Guard. During the war, there was some correspondence between the two, in part discussing the possibility of starting a business together after the war.

After the war, Howard and Jack got together, pooled their mental and financial resources with a couple of other working investors and formed Tektronix, located then in Southeast Portland. "At no time in history was there ever such an opportunity to start new things," Howard said. Howard was always president of Tek but shared all non-technical decisions with Jack. He doesn't recall any arguments with Jack: "He was hard to get mad at."

While developing a product to market, they formed Hawthorne Electric to sell radios and do repair work. A drive-in door provided for installation and/or repair of car radios. But once the manufacturing process started, there was little time left for the service business. Hawthorne Electric was sold to one of the other investors and Tektronix became a full-fledged electronics company specializing in designing and manufacturing oscilloscopes.

Early purchasers of the 65 lb. 511 included the U.S. Navy, Yale, Princeton, Cornell, the Bell System Laboratories, RCA, Reed College and the U of O Medical School.

The "511" stood for "5-inch tube, 1 channel, 1st model." It sold for \$595, compared to \$1,800 for a two-piece DuMont scope that was mostly pre-war technology.

Howard believed that a volume-produced, fairly priced oscilloscope could become a universal test instrument.