Bill Terry Interview 9, February 22, 1996

KIRBY: This is Dave Kirby. I am about to conduct my ninth interview with Bill Terry. Today's date is February 22, 1996 and we are in HP's offices at 1501 Page Mill Road, Palo Alto. During our last interview, Bill, we had covered the time you were with the data products group and had taken the story up to the time you moved over to a new assignment. I think that would be 1974? Can you pick up the story from there?

TERRY: I don't think I'll pick it up at '74, Dave, because I think the last time I tried to cover via the annual reports from '74 to '80. And what I've got mostly are notes, memory joggers, out of the annual reports and the decade of the '80s.

TERRY: I had your binder of the '70s and I did whatever I could recollect out of those but let's talk about the '80s, but I want to tell you a story before we talk about the '80s that I made a note of in the last couple of weeks. I read something in the paper about ever-changing government regulations related to business and I don't remember exactly what the regulation was, but something jogged my memory about an experience that I had related to Hewlett Packard and the federal government. This happened in about... I had probably been working at the company three or four years, so this would be in the early sixties. And at that time, there was in effect something called the "Renegotiation Act". I don't know if you even remember that.

KIRBY: Yes, I vaguely remember it.

TERRY: This was a piece of legislation passed by the federal government during the Second World War and the problem during the war was that they were telling American industry-General Motors, Chrysler's and others-you build these fighter planes as fast as you can build them and you get this ammunition out because we've got to win this war and you just send us the bill and then we have reserved the right to go back and examine your books and make a judgment as to whether you made a "fair profit" on it. And the industry during the war lived with that-they had no choice-and there were, I guess, re-negotiations of contracts and there were payments adjusted. But the problem was that the legislation would never die and it just went on and on and on and on. And HP, like all companies that sold to the federal government, was subject to this renegotiation and you had to keep track of all of your sales and who they went to and you had an opportunity to make a determination of commerciality, the idea being that if you competed in the commercial marketplace with competition, that would be sufficient to set the prices in a fair way. And they also made a judgment that you didn't have to do this on an "each product" basis. You couldn't do it for your whole company but you didn't have to do it for each product; you could group the products into categories to determine their commerciality. And that's what HP did and I was the guy in marketing that had to justify how we grouped these things into different buckets.

TERRY: And so I would sit down with the model numbers and the catalog and I would say, "Well, these are all volt meters, so we're going to put all those in the volt meter category. And these are all signal generators and these are all oscilloscopes" and so forth, and then some of the people in the accounting department who worked for Van would use these categories as a test to make sure we met the commerciality rule. More than 50 percent of them were sold to commercial customers. They would occasionally come back to me and say, "Gee, Terry, this category doesn't meet the test. We're going to get in trouble, subject to audit and renegotiation. Can we move the volt meters and combine them with signal generators?" And I'd say, "No way! There's no way we're ever going to be able to justify that. If you think we ought to combine the synthesizers with signal generators, I think we can make a case that these are similar in a lot of different ways but we can't do this corner cases." So that was my job to do that. One day we got an official summons, the company did, from the Renegotiation

Board. Well, this thing was like a tax audit. You passed for certain years but you always had a two or three year backlog where they were still examining your records.

KIRBY: I see. They could come back at you.

TERRY: Right, and of course, we were very fearful not so much that they were going to renegotiate the profits. I mean, the profits were not a secret-they were in the annual report-but that we were going to go through a horrendous bookkeeping auditing chore that would disrupt everything. Anyway, we got an official notice from the Renegotiation Board that they wanted to have a personal discussion with us about our techniques and about our reports and that they were very concerned about what we were doing and so forth. And Van was the captain of the ship in regards to this, so he got me, because I knew all the details of how we did this...

KIRBY: The groupings.

TERRY: I was the guy carrying the bag and he recruited Bill Hewlett. And I don't remember. I don't know that they asked for Bill particularly but Van thought he was going to go in with all barrels loaded. So the three of us went back to Washington and we met with the Renegotiation Board. They had a very nice old mansion on some side street in Washington that was their headquarters. We met with a group, I guess, of about eight or ten people. Two or three of them were actually members of the Renegotiation Board. They were appointed by the Congress or the President-I forget which-and they were bright, young, super liberal Democrats of the Kennedy administration and the rest of them were the staff of the Renegotiation Office that ran this whole thing. And they started out and kind of read us the riot act about how they were really concerned about we'd always had these commercial exemptions and they were kind of concerned about we were selling all this stuff to the government but some way, somehow, we were able to categorize this stuff as if it were all commercial. And they started asking questions about these categories and I was the one answering the questions about "How come you think synthesizers are the same as signal generators?" And I found myself trying to explain this people who didn't know anything about technology or synthesizers or signal generators.

KIRBY: Not one thing?

TERRY: And just about that point, as I was trying to explain this, Bill Hewlett stopped and he says, "You know, I think it's obvious to me that we need to do a little background here on our company and our products and the technology. And would it be all right if I spent some time explaining this?"

Editor's Note: Hewlett served as a high technology Signal Corps officer at Ft. Monmouth in WWII.

And they said, "Well, yes, Mr. Hewlett." I think they were impressed he was there. So he stood up at a blackboard, or a flip-chart, and he conducted about a one hour presentation on the fundamentals of electricity, electronics, measurement, what is a signal generator, how does an oscilloscope work, and these people were absolutely fascinated! Particularly these young political appointees. Here's this master of technology, William R. Hewlett, giving us Electronics 1A, and he did a wonderful job. He really charmed them. He had them eating out of his hand at the end of this and they kind of said, "Well, there'll be some follow-up here, but we really appreciate your coming by and explaining how you're doing all of this" and so on and so forth. And we got off the hook and they never sent anymore inquiries.

TERRY: But I'll never forget that William R. Hewlett lesson in basic electronics.

KIRBY: That's right, that's right. The great school!

TERRY: You'll have to ask Van or I'll have to ask Van. I've probably remembered some things about that that never happened but it was funny.

KIRBY: Hang on just a minute. I want to shut the door.

TERRY: Let me look at my notes. I'm in 1981. I noticed in the annual report that everybody was smiling: Bill and Dave and John. Although there are statements in here about fourth quarter performance was generally disappointing; shortfalls, and high levels of committed expenses. So it looked ... it was a year that things didn't finish quite as nicely as we thought. There are comments in here, too, about profits being helped by a pension accrual reversal, and Van can tell those stories a lot better than I can. But we had to make judgments along the way about what was the appropriate amount for the pension to be accruing and then there were other forces from in the tax side or the outside auditing firms who would say, "You're over-accrued." We were never under-accrued and it was always going the other way. We either got too much money stashed away here; you can't really justify doing that. So occasionally we'd have to either lose the argument or fess up and we would reverse it and take it into earnings and reduce the pension accrual to what they thought was a more appropriate number, but it was always kind of a judgment call and it bugged everybody when we had to make these kind of adjustments because Dave always used to think of this as sort of phony accounting and messing around to make yourself look good. And if anything, he didn't really want to have us do that. High levels of R&D, 9.7 percent. That was a really high level. Bought property in Colorado Springs. This was the second site in Colorado Springs. We had been out on the trail, you and I, buying sites in Roseville and Boise, and then later on, I don't remember exactly, we decided that satellites-that was kind of popular-we'd have satellite sites, where you had multiple sites within a reasonable physical location and we thought that maybe they could share some services and you could have one accounting department for multiple sites. I'm not sure that it ever worked. But satellites were kind of popular and Fort Collins was a satellite of Loveland and Greeley, kind of a cluster, of organizations. When we bought the Briargate site, it was on the... Briargate, that's the name! I was trying to think of it. ... other side of town and it was a big site. The price was right. It had no houses around it but the houses were headed in that direction so we were very sensitive about what we were going to be like surrounded by houses, and we made a case to ourselves and the community that we could be a really good neighbor because we were there during the week and we weren't there during the weekend. And the neighbors were the other way around. They weren't there during the week and there during the weekends. So we lived compatibly with that. We had an argument, I remember, with Bruce Wholey, that was the head of facilities, about the siting of the buildings on the Briargate site. There was a theoretical way to point the building on the compass for maximum energy efficiency and they worked that out on the Briargate site, but we didn't like the view, we didn't like the way the buildings pointed because the people that were going to occupy this building, they wanted to look at Pike's Peak and the front range of the Rockies, which is a really spectacular view, particularly in the morning. And that meant you had to move the orientation of the building, as I recall, about 20 or 30 degrees and that was going to cost you so many kilowatts per year and Bruce's people were really kind of telling Bruce that these operating guys were crazy. We were going to do it our way. And I remember going to see Bruce and I said, "Come on, Bruce! The motivation of the people in the building is a helluva lot more important to me than the electricity bill!" He agreed with me and the building got oriented so you could look at Pike's Peak.

KIRBY: Instead of the railroad tracks or something.

TERRY: We also had a-things come back in your memory-we had a dinner one night after we'd finished the building with kind of a management group. Bill and Dave were there and members of the community, and it was a very nice affair but it almost didn't get started on the right foot because a fellow named John Reagan, who was kind of running the deal out of Colorado Springs, sent the invitations out to all the people that were going to attend from Palo Alto and he said this was a formal affair. And so most of us looked at that and said, "Well, I've got to get my tuxedo dusted off..."

TERRY: And just at the last minute, I think it might have been Margaret Paull, called up John Reagan and said, "You know, I understand this thing is formal and Mr. Packard is going to be wearing his tuxedo" and what John Reagan meant was it was formal, Colorado style, which meant you had to wear a tie. So...

KIRBY: Hah! That's great! I've never heard that story.

TERRY: So we all quickly repacked our tuxedos and put our suits and ties into a suitcase and went out there. But the Briargate site was occupied by HP. We built the building and I haven't look through this record here. We sold the building in the late '80s, early '90s. Times changed; product lines changed. The overseas business got more and more important and the site became surplus to HP's needs and we sold the site and the building to a local greeting card company, who had originally started in the Springs. A guy named Dusty Loo. The company was called Loo Art. I knew them when I lived there. They built up a very successful local greeting card company. I think they might have moved out into printing checks and other things besides greeting cards. And then they sold the company to some big time; it might have been Hallmark or some big time outfit like that. So we were able to sell the site and the building for a reasonable market value and get on with other things.

KIRBY: I never ... for some reason, I never visited the Briargate site.

TERRY: Nice site. Got to be surrounded by houses. Beautiful view. It was a standard; at the time, we had these standard corporate buildings. They were these standard two-story corporate buildings with a nice attached cafeteria and it turned out well for the new owners. It fits them just fine. We bought a site in '81 in Lake Stevens, Washington. This was part of the kind of spreading out beyond California. I don't remember if you were involved.

KIRBY: Yes.

TERRY: We up there, you remember, we drove around. We met some neat folks at...

KIRBY: Weyerhauser, right.

TERRY: ... Weyerhauser. We went to Tacoma. We were with some development guy who was showing us around. I remember we were in a van and it was raining and the windows were fogged up...

KIRBY: Yes, that's right.

TERRY: ... and the guy was saying, "This is a great site." And you'd rub the condensation off the window and here's just trees!

KIRBY: Yes, that's right, I remember that. The trees were so thick, it was just this dark mass. You couldn't see anything! I mean, it was just a wall of green and I think one of us said, "How far back does this extend?" and he said, "Oh, as far back as you can ever think." I mean, it went on for miles.

TERRY: But we kind of like Tacoma. Remember the Weyerhauser headquarters? That was really a beautiful place.

KIRBY: Oh, beautiful! Because of that little valley.

TERRY: There were ideas here-I think Bruce must have been with us-about building a headquarters building and there were some neat ideas there.

KIRBY: That was a terrific building.

TERRY: It was the zone lighting and a barbershop downstairs and a gift shop.

TERRY: We never did get our barbershop but it was a nice place, and I think there are some ideas that Bruce and others got out of that building that ended up in Building 20. But we finally ended up going north. Tacoma looked fine but we went up north to Lake Stevens near Everett and looked at a number of sites there, and eventually bought the Lake Stevens

property, which was a fairly straightforward kind of deal. We did, in the process, when we were up there at Lake Stevens looking around, run into an old friend of the family by the name of Ann Laudel, she had been the personnel manager. She was really the only personnel manager I think after Lou Packard before Ray Wilbur got involved. But she was the personnel manager in '57 when I came to work and she had retired many years later. Her husband, Del Laudel, worked around here. He had his own little graphic arts company. And we ran into her just by accident at some event and she told us about the community and she warned us about the floodplain but generally supported our idea of coming up there. But I've lost track of her, whether she's still living up there or not. And I note in the paper every time there's a big flood in Washington, that bridge that goes across the valley, that causeway is gone every year. The plant is well-above the floodplain but some of the highways are flooded.

TERRY: '81 was the year we bought the site in Bristol. I didn't have very much to do with that. I was out of the computer business and other people had been walking around the UK and we bought the site in Lyon, in France, that was relatively close to Grenoble but not really that close. It was in southern France; it had a big university. It was a nice piece of property. I was involved somehow in looking at it. The French were building new highways around this and it was very hard to get to the properties, so the French government and local developers hired a helicopter so we drove down a torturous, muddy road, got in a helicopter and that was the only way we could look at the property.

TERRY: And I've lost track of the Lyon site and whether that's really grown and whether that's been a good asset for HP.

KIRBY: I don't know. Bristol, of course, became a laboratory.

TERRY: Yes, and a big manufacturing site for disks, optical disks and things like that. When we bought the Bristol site, there was an old house on the site and there was some interest in the community about keeping this house and we were very careful not to make any commitments about keeping the house. We said, you know, "We'll look into it" and so forth. As it turned out, the house was reasonable and it was refurbished by HP and it's a nice little meeting conference center. It's a nice kind of two-story old stone farmhouse that turned out to be one that we could keep and make useful use out of. '81, we added 7,000 employees. That was a big hiring year! We must have been out on every college campus in the world. Two-for-one stock split. Alberding and Mariotti were named VPs. Doolittle and Van Bronkhorst were senior VPs. That's the first time we used that title, "Senior VP". For International/US marketing, CFO. Francis Moseley and Barney Oliver retired. You've heard lots of stories about...

KIRBY: That long ago, huh?

TERRY: Yes, they came off the board. Francis was a really unique individual. I got to know him a little bit back in those rep days because the reps, prior to HP acquiring them, also represented Moseley. It was and, in fact, I think maybe that's how Bill and Dave got to know Francis is, again, through the reps because they had this product line and they got to know Francis through that. He was a really unique guy. He was a real innovator, he was an engineer's engineer. He had some very basic patents and he was the originator of the WWII instrument landing system for aircraft. I forget who he worked for but...

KIRBY: He worked for Collins.

TERRY: Right.

KIRBY: Back in, what, Cedar Rapids?

TERRY: Cedar Rapids, yes.

KIRBY: Iowa, yes.

TERRY: But he was a very warm guy. He was very good with sales people and very good with customers. He was just a broad gauge individual.

KIRBY: A terrific guy, right, right, great sense of humor.

TERRY: Bill Haynes joined the board in '81, came from Standard Oil or Chevron of California. None of us were quite sure about Bill and we got to know him later on. We introduced the HP125, a stand-alone personal computer/terminal. That was a big mistake as a product. It really didn't meet the need. It was kind of our first foot in the water in PCs. It started out being designed as a terminal. I think Ely was probably in charge of it at that time and we took a microprocessor, called a Zilog Z80, and we stuck it inside and we thought we had a PC, but we really didn't understand the user interface, the software, the distribution and the other things...

KIRBY: A few things!

TERRY: ... you know, the other details along the way.

KIRBY: A few "unimportant" details.

TERRY: You know, woulda-coulda-shoulda. That one was not a step in the right direction but that was the year we introduced the 12C. The 12C was the handheld calculator follow-on in the family of the famous HP80 business calculator and the 12C is still in production today, as far as I know, and the 12C was the one that finally put the nail in the coffin of all the old bond calculation tables. Up to that point, we were making progress, that is, people were signing up for the answer you got out of the HP calculator as opposed to these bond tables, and when the 12C finally came along, they totally threw the bond tables away and from that point on, you'd see little asterisks on complicated financial transactions, like bond offerings, that "all calculations have been done on an Hewlett Packard 12C." So we became the standard of the industry. The techniques that we used to do this, people just accepted this as the standards. There was mention in the annual report of using television inside the company. I don't know, were you writing the annual reports then?

KIRBY: Yes, I ... Well, no. By that time, somebody else was doing it, I think. Somebody from my department.

TERRY: It's mentioned several times in the '70s and '80s. I think it was sort of a glamorous thing to show the shareholders and the public how we were using television inside the company. There were nice pictures of people and so forth. For training and various things. The first mention I found was in '81 of what was called "The Manufacturer's Productivity Network"-MPN. This was a concept. It was an invention of the computer group. Paul was very much in the middle of it and I can't remember who the other people were and I don't know who the ... It might have been Joe Schoendorf who was the guy who came up with this idea, but the idea was you could go to a customer and say-and this is, you know, 17 years ago-"What you really ought to think about, Mr. Customer, is a series of interconnected networked computers with certain kinds of databases and certain kinds of applications, and shared information and a whole bunch of neat stuff, and that's going to have a really significant impact on your productivity. You're going to be able to ship more widgets per hour and less employees and so forth." So this idea of a "Manufacturer's Productivity Network" began to appear as a kind of a selling concept and a sort of a view of the future. The darn problem was that it very quickly got turned into a concept in view of the future, it got turned into a product. People thought it was a product. The sales people, the people within the divisions in the computer group began to, I think, lose track of this as "It's a concept, folks; it's not even that we're going to wheel one in." So they were going around trying to sell people, "What you ought to do is buy a 'Manufacturer's Productivity Network'." They meant a whole shit-pot load of computers and software, and that went not too well because, you know, it kind of got distorted. Rather than a concept that you build a piece at a time, you know, people were

trying to set up high level sales calls with the president of the company and the president of some General Motors' division about this "thing" that we were going to do for them. It didn't got particularly well but one of the ones that really got 'way track was a variation on that called the "Engineering Productivity Network"-the EPN. And that isn't in the annual report, thank god, but that was, I know Joe Schoendorf was very much involved in this. It was the equivalence of the "Manufacturer's Productivity Network". The idea was you'd go to an engineering department-Boeing Aircraft-and you'd say, "Hey! Here's our product concept of all these interconnected computers and workstations and PCs and software and applications software, networking software, and if you do all this the way we tell you to do it, you're going to have great increases in engineering productivity. New products will come out the door likety-split and CAE will really work." And Joe Schoendorf was the sales guy behind this and I accused him at the time and later of being the world's greatest salesman because he could sell something that did not exist! The "Engineering Productivity Network" did not exist! It was a concept. It was "we've got a few pieces here" and even today, it has taken industry 16, 15 or 16, years to get where they are today and I haven't checked but I bet you that where industry is today, the best is not as good as what was described in 1981 as what was going to happen. We're still not quite there. But Joe went around and he sold a couple of these things. He sold one particularly to RCA in Somerville, New Jersey, and he got some guy in RCA, who was a pretty big wheel, hooked on this and the guy hooked the management of RCA, and they started buying bits and pieces of this from us and then they kept saying, "Well, you know, where's the whole thing?" Yes, we've got these little things.

TERRY: And Joe started around this and that, and then Joe went on to some other job and some other people ... Somehow, I got involved. I can't remember. We had to go tell RCA that this was a bunch of smoke and mirrors, and that we were working toward a vision and we didn't have something to wheel in. The guy that Joe had worked with got fired over this. The management of RCA threw him out on his ass and they didn't like us for quite some time. But productivity networks and diagrams and concepts ... I think they probably advanced the organization but there was a year or two there, where they were kind of a tough potion.

KIRBY: You mentioned Joe. I hadn't thought of him for years and years and years.

TERRY: Yes, he's my neighbor. He lives right down the street from me in Palo Alto.

TERRY: And the wife's name is Nancy, and she was a very good computer scientist at HP in Cupertino.

TERRY: I don't know if he married her when she was there or not, but she was really very well thought of and she left HP after Joe left and went into the business of raising a family. And I think she may be back in the industry and Joe kind of lives the good life as a consultant. He goes around.

KIRBY: He always impressed me as a guy who could really sell.

TERRY: Oh, boy! I used to tell him to his face and I used to tell other people the story. "If you give Joe Schoendorf a product that we can deliver, and say, 'Joe, you go sell this thing to somebody,' he is going to go do it."

KIRBY: He's going to get the max potential out of it.

TERRY: As I commented before, selling things that don't exist tend to be easy for Joe.

TERRY: Also in the annual report was mentioned the HP hospital accounting system. If I think hard enough, this also had a buzz thing on it. It was not a health care productivity network! I know that but it had some title on it and this was the beginnings of the era of applying computers into the administrative functions of a hospital, which was then-and even more today with Medicare -and absolutely huge market. There's just so much opportunity and so much paper floating around. So HP got in and decided that this is something that we wanted

to do and we had the computers and the basic software. We didn't have the application software, and so we started to develop our own application software for the hospital, for the various modules. You'd have the admittance module and you'd have the pharmaceutical module, you'd have the nutrition module, you'd have the billing module and so forth. And after about a year of development at some pilot sites, the people involved and I was a little involved for some reason or another, we began to get a real appreciation of how complicated a hospital is and how much information is floating around and the requirement is it's floating in real time; people have to have access of this information. And again, like the manufacturers productivity network, we began to think that we had bitten off something a lot larger than we could possibly chew. We installed about four or five systems with one or two basic modules that we developed-the admittance module and I can't remember the other one-and we found that we were 'way over our heads. This thing was a heck of a lot more complicated. There was no way in the world that we were going to do all the application software for the hospital. So we knocked it in the head, that is the internal development work of the application software. We took the stuff back that we had installed in these hospitals and we went into a "We're going to work with third parties" mode. We got the basic glue and then later on, we got the basic interconnects with the instruments, who are taking real-time data from patients but we're not going to devote...

KIRBY: We were talking about application software for hospitals.

TERRY: Yes, we got our comeuppance. We found out how complicated it was. We retreated from the market and went to work with third parties helping them, lending them equipment, helping them with marketing and sales. We even put money into some of them to build up a base of third parties as we called them, supporters of application software, and this after the MPN experience and a few others really began to sober people up on doing everything. We found out we couldn't do it all and that working with third parties was not easy. This was really tough! But, man, it was a heck of a lot better than trying to do everything ourselves.

KIRBY: Do it ourselves.

TERRY: And we bought Apollo, that was really kind of a crowning blow that ended most application software development at HP. And I'll tell that story if I can recall as we go along. But in those days, we were still on the idea that, man, we were going to do the whole darn thing and we didn't need anybody else. Not too realistic. The '81 report has a picture and describes something called the "Hewlett Packard Interface Link"-HPIL- that was a variation on HPIB, the Hewlett Packard Instrumentation Bus. It was simpler, it was slower, it was serial instead of parallel and it was intended to be able to use a handheld calculator with a fair amount of power, to control instruments. It was kind of a nice idea but it didn't really go anywhere. It wasn't really that many applications for it and it kind of died of its own weight. I seem to remember the things that didn't work, except for the 12C! We also had a picture in there of the ebeam Machine, the electronic beam lithography machine and this was we were in the integrated circuit development and manufacturing business, and one of the ways you ... a conventional of putting a pattern on a piece of silicon is to put a photo-resist on it, that's something that's sensitive to light, and then you shine light through a mask so you make an image on the silicon wafer on the photo-resist through this optical mask. And that has some limitations in terms of how fine a line you can get and another way you can do it is not with optical means and a light but you can actually shine an electronic beam. You put the thing in a vacuum and you write on it a beam, just like a beam in a cathode ray tube writes on a television set. And that was thought to be a really good deal and you could greatly increase the resolution density. And so various people in the United States were working on this, IBM particularly, in research laboratories but we started our own research laboratory development here at HP labs and we made some real basic contributions, and we spent a very large amount of money. The machines themselves cost in excess of a million dollars, at

least. And there was a lot of pawing and hollering at HP labs. I don't know, Dave. I'll bet the company spent at least $10 or 20 million on this over three or four years. This stuff was really expensive and development was really tough. The darn thing was about half the size, a third of the size of a boxcar just physically. It was huge! It was a E-B, wasn't it? Yes, it stood for Electron Beam and was abbreviated E-B. We built one or two machines here in Palo Alto. We actually a machine and moved it up to the Santa Rosa and used it for microwave applications and as far as I know, it or a variant of it is still there today. But it wasn't too successful and in fact, E-B lithography has never really caught on in the industry. People have learned how to continue to push optical lithography so the E-beam has never quite arrived. It's expensive and complicated and this optical technique has made sufficient progress that it never came about but nothing ventured, nothing gained. 1982 said that we had satisfactory performance. I don't know if people are smiling, but things were evidently a little bit better. It wasn't disappointing like the previous year. R&D is ten percent of sales, spending a lot of emphasis on new products.

KIRBY: How large were the sales then?

TERRY: Sales were a total $4.2 billion, up from $3.6 billion, so we were zooming along making pretty good progress. The earnings grew: $2.49 a share to $3.05. We introduced in the annual report as usual a number of new products: the HP 75 was a not too successful handheld calculator. The HP9000, which was a variation on the workstation product line of years of old. It was a very successful product. It took us further into the CAE business and again, we were learning with that product about should we or should we not do our computer-aided engineering software development or should we work with third parties? And we started off doing some of our own computer-aided software development, at least some of the very basic packages-schematic capture was one of the very basic packages-and found ourselves in competition and alienating other third party software vendors who we really wanted to be in our camp but they kind of said, "You guys are developing your own application software and we don't want to do that and we aren't going to recommend your workstation. We're going to recommend somebody else's workstation because we think you're in competition with us." And we wrestled with that for a while and then when Apollo was acquired, that really put the nail in the coffin.

TERRY: We had a much bigger hardware base and we just couldn't afford to alienate all these folks by thinking we were in competition with them and we needed them, so we knocked off a few of the packages we had. It wasn't too disruptive in the marketplace and we got more and more third parties CAE vendors signed up, Mentor Graphics, a number of them, to work on our combined HP-Apollo workstation platforms. That was really the end, almost the end, of application software development at HP. There have been some pockets around. There is one in the microwave area of microwave CAE, which is a very narrow, very niche marketplace, and we know an awful lot about microwave design that we still exist with our own application software. In fact, we bought a company in Los Angeles called EESof to add to our application base, and there was an always very successful mechanical computer-aided engineering mechanical CAD package in Germany, that was invented by the Germans. It was applied in German industry very successfully on workstations and that was a successful software development and we were able to attract a few other people around the edges of it. But except for those two, we never did make it in application software and today, it's, you know, it's 95 + percent others within our basic platforms and software. Something called NMOS3 was introduced. That stands for N-channel, Metal oxide silicon technology. It was another variation on the IC development progress path. This was done in Loveland, later in Fort Collins. It was a really good state-of-the-art process that allowed us to make some of the chips that went into these state-of-the-art workstations, 32-bit chips. We had a lot of relations with Motorola in terms of design and interchange of process

information. But it was a good one.

TERRY: NMOS3.

KIRBY: Capital N-M-O-S.

TERRY: Right, NMOS2 came along in '82. There was something called NMOS3 and there's probably an NMOSX, that's in place right now. But they were all, you know, just along the curve of density and speed and power.

TERRY: They were really state-of-the-art IC processes that we used internally for particularly this workstation. October of '82, we won the Deming Prize. This was the YHP Deming Prize. I think many of us who were close to YHP really were not only pleased but slightly shocked by this. I had been over there a lot and they put one tremendous amount of effort into this. It was about a three-year campaign, led by Ken Sasaoka.

KIRBY: It was incredible! I can remember people staying up, working 16 hours a day.

TERRY: Oh, yes. He challenged the organization. It was one of these things a good leader does every once in a while and carefully, you know, challenging the organization, "Here's the goal. We're going to the moon!" You know, he said, "In three years, we're going to win the Demming Prize" and they really put a lot of effort into it and it was good effort. It wasn't just effort to fluff and win the prize. It was basic effort inside the company that was going to make it and has made it a really good operation. But we were all, as I say, slightly shocked and extremely gratified that they won the Demming Prize and we made a fair amount of fluff here in the United States.

TERRY: We put in our ads and we it in our publications.

KIRBY: It was a very positive thing.

TERRY: Yes. Tom Pike retired in '82. I didn't know him real well. He was really an interesting guy.

KIRBY: I didn't either. I think Packard got to know him, was it during the war?

TERRY: It could have been. I'll have to search my memory for his business affiliation. He was retired, I believed.

KIRBY: And he had a fairly significant job in the federal government at one time.

TERRY: I believe he did, also.

KIRBY: He was in Washington.

TERRY: And among other things, he was a rather vocal-not at the board meeting-but around the edges, a reformed alcoholic.

KIRBY: Oh, absolutely! He used to talk about AA all the time.

TERRY: Oh, yes. He was really a believer and a preacher of that. And hearing him talk about it, you really had to respect the guy because he was a very strong guy who believed in that. I think he might have been a Stanford graduate also.

KIRBY: John Fery arrived from Boise Cascade.

TERRY: Right, and all of us know him and his contributions. He had a really tough business proposition at Boise Cascade. It had been a business that had really been run into the ground, in some ways, and John was in a rebuilding mode and he did quite a good job of doing it. Shirley Huffstedler arrived and I guess, Dave, she was the first female board member?

KIRBY: Ah, yes. I think she was.

TERRY: Yes, I think I can say that without any further mistakes. I can't think of anyone else. So yes, she was the first. And shortly after she arrived, either at some committee meeting or

something or other, where she started making some statements that kind of bothered me a little bit because, I knew she was a Democrat and I knew she had been in the Carter administration, but I hadn't ... but when I heard her starting to make these statements, my antennae kind of went up about "Oh, boy! Talk about a liberal Democrat!" I began to get a little nervous.

KIRBY: Oh, yes. That's right, she was secretary of education in the Carter administration.

TERRY: Now as I got to know her, and I think a lot of other people at HP, we found out, yes, she was liberal but she was a very educated and smart person who knew about business and she knew about economics and she knew about the importance of making a profit. But she also had a real empathy about how you treat your people and things like that. So she fit into HP real fine.

KIRBY: But I remember that first reaction was...

TERRY: That's right, we thought "Is this going to fly?"... or were we going to have a problem here? Incidentally, somewhere you're going to have my memory on this. This is the early days; this is HP had its first board in about '57 or '58, when we went public, the first outside board. And we had a guy that joined who was from Virginia., Bob Garner. I think his background was ... he was from Washington, Virginia and I think it was a combination of law and politics.

KIRBY: He had a marvelous accent, southern accent.

TERRY: Yes, and a charming guy, and those of us ... I wasn't on the board at that time; this is reaching back. We used to get to know these people a little bit when they had a lunch and they'd served booze at these lunches and this guy used to drink three or four fairly stiff cocktails for lunch.

KIRBY: Oh, yes, he loved to drink.

TERRY: And one day, he tried to walk through one of these glass walls!

KIRBY: Absolutely!

TERRY: He was in Dave's office and the one next door, and it's real.... Geez, it's lucky the guy didn't kill himself! He bounced off this glass wall.

KIRBY: Glass wall, that's right.

TERRY: And then about a few months later, it was announced that he was leaving the board. I was not privy to what happened but the story that I heard through the rumor wheels was David Packard said, "We're not going to be needing your services on our board anymore." I can remember, Bill, Bob Garner. He used to love to visit Loveland and Colorado Springs. And he loved sherry, so the Loveland people would bring in a huge supply of sherry and they used to tell marvelous stories about Garner. But he's the only guy I think of in the company's history that's kind of been invited to not be on the board anymore so, you know, out of the sweep of time in a lot of corporations, HP's done a good job picking people and sticking with them. You know that story of Loveland and him reminds me. I may have told this story but it was the dedication of the original Loveland building, or maybe the second building, and there was a big party up there, an afternoon cocktail party, and the governor of the State of Colorado was there and his name-you're going to have to help me...

KIRBY: McNichol?

TERRY: Yes, I think it was a McNichol? Or maybe even before him. Anyway, the governor showed up and the governor had about three or four stiff belts on an empty stomach and the governor began to act-remember this story?

KIRBY: I think it was McNichol.

TERRY: The governor was...

TERRY: First name was Steve? I'm not sure.

TERRY: Steve, yes. I'm not sure it's him or the guy before him, but the governor began to act a little gassed and a little rowdy and Dave Packard grabbed him sort of gently by the lapels and took him over in the corner and told him he wasn't going to have any more to drink and he ought to behave himself. So, Dave has a way of keeping these people under control.

TERRY: '82, we introduced the Fetal Heart Monitor at GmbH. This was a development brought to us by a doctor, a German doctor, being able to detect a fetal heartbeat externally from the mother. It was a kind of a complicated acoustical signal processing deal. I forget the doctor's name; it's in the record. I think the HP Germans were looking for something to do. They needed charters. They were tired of manufacturing transferred products and this looked like a good idea. I think some of us who didn't know anything about it were a little skeptical that there was a market for this. It turned out there was a market and they were really one of the pioneers. They've done a great job over 20 years of really being the leader in fetal heartbeat monitoring, but that got started in '82. There was also a mention in '82 of the Manufacturers Productivity Network, so it was still around.

KIRBY: Still hanging around!

TERRY: It wasn't quite dead yet. 1983 was an okay year. It grew 12 percent overall: it grew 18 percent in computers, grew 20 percent in instruments. Instruments outgrew computers! I can't remember why. It may be in some of these new products. It had a big sales-hiring year that year. We were really out looking for salespeople, I'm sure all the way across the company, particularly in computers. Hiring went up 10.5 percent. This was the year we introduced the HP150 Touchscreen. The HP125 which was built on the base of a terminal earlier, as I said, was not a successful product.

TERRY: Cyril Ultrasonic, was very involved and I think he was head of the PC business. Paul was there. They got this idea of the touchscreen and it really was a good idea and it's used today quite extensively. The problem was that you needed a lot of application software that would take advantage of the touchscreen. You just couldn't touch the screen, you had to have really neat applications.

KIRBY: Instead of a mouse, you touched the screen.

TERRY: Exactly, instead of a mouse or instead of a key, it's say, you know, you'd get a box that said "yes" or "no". So you see these today all over the place, airport terminals and so forth. We launched this thing with great hoorah. We had mugs and the theme the advertising agency thought up was "Setting you free" and we had a butterfly that flapped around.

KIRBY: Oh the butterfly! That's right, the butterfly TV commercials.

TERRY: Right, we're going to set you free because, you know, it was a little bit like the Macintosh at the time. It was user interface. This thing is so friendly. You know, we're going to free you from the keyboard and the mouse and you can touch the screen. It wasn't a bad product and it got out and we sold some but it never really fulfilled much of our ambitions because, again, the software developers were kind of intrigued but they weren't really sure this was the wave of the future and there were a few neat applications, where you could point and drag and so forth, but most of the applications still took a mouse and a keyboard and our machine was a little expensive. It had this extra circuitry in it for this touchscreen. So it didn't really turn out to be a big deal. In fact, I think there was only one family of HP 150s and it lasted probably, I'd guess, three or four years maybe and then it kind of went away and we didn't have any more touchscreens. I think I recall that the ad agency at that time was Leo Burnett in Chicago. And they came up with the butterfly ad, yes. HP-Genenchem was set up. This was an interesting proposition. I believe Lou Platt was heading the analytical group. I may have some notes in here about that. The idea was that the genetic engineering industry, Genentech in South San

Francisco, was a really fascinating wave of the future and they had a whole set of measurement problems, process sensing and measurement problems, that were really unique and that was going to be a big market for the analytical instrument group. But this was all new scary stuff and we had no geneticists on our staff anywhere, even at HP labs, so what we ought to do is cooperate with a big force in the industry and see if, together, we couldn't learn what their problems were and use some of their technology and make instruments that fit their problems and so forth. Great idea! Still used extensively today. Strategic partnerships is what you'd call it today. The problem was, and the people who are still around-Lou will tell you exactly as I did-we put too much structure into it. We set up a legal entity called HP-Genenchem, with ownership, with a contract, with a lot of attorneys, with a board of directors, you know. Oh boy! And what happened was that two things happened. All this structure and all this stuff got in the way of the basic "Let's work together helping each other out" and the other thing that happened that we anticipate was the people at Genentech were so damn busy getting their company started, they really didn't have a helluva lot of time for us, so we couldn't really get them with or without all this structure to really sit down, you know, "I need an appointment for an hour to talk about this thing". Well, they're busy developing their proprietary agents and so forth. So it did make a few ... It did make some progress. We never did develop a product and after about, I guess, three or four years, it folded. We folded it. Lou was working for me at the time and he folded it up and we parted company with Genenchem. We may have ... we reassigned the people. We had about 12, 15 people. A fellow named Ivan Crockett, he was in charge of it. I remember Ivan Crockett. That may have been a mistake also. Ivan was a typical HP electrical engineer. We didn't have any geneticists. But anyway, we folded the whole thing up. We reassigned the people; that wasn't a big problem, there were 15 of them, back into the analytical group, scientific division, over here and we parted ways with Genenchem. Folded it up. And I think the lesson we all learned was it's great to cooperate with customers but you'd better understand each other's motivations and resources and watch out for all this structure you can put around these things. A little more of "Let's have a handshake and see how it goes." We increased the ownership of YHP to 75 percent. The troops in the ranks had been oscillating around about this for years. You know, "How come we're doing all the work and YHP works off YEW-Yokokawa Electric Works-how come they walk off with 51 percent of the money?" And of course, people that were a little wiser and older, like Dave Packard, said, "Well, you know, just don't worry about that. This thing will work itself out." And in 1983, I'm sure Dave got involved, it did get worked out. Dave went to Shozo and pointed out to him that the contribution of the partners over the years had shifted dramatically in terms of...

KIRBY: Excuse me. Didn't YEW get 51 percent?

TERRY: I can't remember. I thought we had 51 percent.

KIRBY: That was the Japanese law, I think.

TERRY: You may be right.

KIRBY: Yes, it was YEW 51, HP 49. Anyway, continue.

TERRY: I think you're right because that came up again later. And in those days, the 49/51 had little to do with how actually things ran and even when we arrived in '83, the contribution of YEW was relatively small. It was smaller than it was in the beginning. They provided all the initial people. They had a lot of the coaching that went on and it wasn't ... others were closer to this than I was. I don't think it was a problem with Dave and Shozo Yokokawa to agree that, yes, it's time to make a change in ownership. KIRBY: I do think, Bill, that Bill Doolittle was trying to get this done.

TERRY: Yes, he would be the guy.

KIRBY: The 75 percent and I think he told me he had real problems with Shozo. He'd have a

meeting with Shozo and Shozo would be nodding as though "this is all fine" and then, in a week, Doolittle would get a memo from Shozo and they were right back to ground zero! I mean, you know. '83, let's see. That's 13 years ago. I think we were just beginning to understand that when Japanese people say "yes", they mean "I hear you." They don't mean "I agree with you", they mean "I hear you." That's right, "I hear you." And it was one of these typical things. Doolittle was getting very frustrated and he talked to Packard, and Packard had an idea, and that was to put Shozo on the Hewlett Packard board.

TERRY: That's right. That's my next comment. And Doolittle said it was an absolute stroke of genius. He sprung it on Shozo, Packard did, and from that point on, HP had 75 percent.

KIRBY: Yes, that was in my notes and it was the year that Bill Doolittle went off the board, and so I think that was an even better reason for Dave to have international representation on the board.

TERRY: Exactly, yes.

KIRBY: And I think Shozo was naturally flattered by this and Shozo was on the board, I guess, Dave, about a year and a half, maybe two years. I believe he came to every meeting. He didn't say much and he didn't do much but you could kind of tell talking to him, he really enjoyed being there. He liked to be with Bill and Dave and all these board members, and it was, as you say, it was a stroke of genius on Dave's part to get from here to there. Oh, I bet it was a real feather in his cap in Japan.

TERRY: I got involved with Shozo. I might as well tell this story now. This would be in about 1991, '90 or '91. The original YHP joint venture sold all of the company's products, including analytical products-that's what this story is about. They didn't do very well with analytical instruments. Most of their business was test and measurement, and later on it was T&M and computers, but very heavy measurement oriented because that's what the Japanese customers wanted, these high tech tools. Analytical was small; it must have been a twentieth the size of T&M. It was specialized; it was in a different industry, the chemical and pharmaceutical industry. And Emory Rogers, who was in charge of analytical, used to be frustrated about his low level of sales and he used to tell stories about going over there and trying to reason with these Japanese guys at YHP and he never did get anywhere until he started kicking them in the ass and raising hell. And he'd make a little progress and then he'd leave and it would fall back some. Now, at the same time, Yokokawa Electric Works in the process business, they also had an analytical instrument division that made some non-competitive products, kind of esoteric products, but after a while, Emory and then probably Lou or Dieter after him, decided that we were really going to split off of YHP and Ken Sasaoka said, "Fine, I don't have a problem with that. I just can't do everything here and analytical is really difficult." So we gave YEW the HP analytical product line and said, "You're not... how would you like to rep us and sell this stuff?"

KIRBY: And so they did and they did a pretty good job at it. I mean, they understood this stuff.

TERRY: Right and they were calling on the same customers?

They were calling on the chemistry and the pharmaceutical because they had to sell them these process systems. So that went on for a while, and they started to get some sales. And then we began to get ambitions to do more than just selling, which is kind of a natural progression. We wanted to do some R&D. We wanted to do some manufacturing in Japan.

KIRBY: In Japan? Okay.

TERRY: The Japanese, we thought, could make some of the components, the pumps and other things that went into this. And so we started talking about some kind of a joint venture arrangement. In the meantime, we had invented a line of modular liquid chromatograph systems. They were invented in Germany against a company called Waters here in the United States, a worthy competitor. And we were making some pretty good progress on that,

and unbeknownst to us, in the YEW analytical development lab-now, at this point, YEW is our sales arm-but in their development lab, without anybody telling us, they make a carbon copy of our product.

KIRBY: Oh, really?

TERRY: A Japanese copy of our product! And they get a data sheet together and take it off to a trade show, without telling us at all what they're doing. And all of a sudden they are in direct competition with us. Their sales force with our product is in direct competition with their lab. So Dieter just about went absolutely stark crazy over this! I got him calmed down and I got a hold of Shozo, and I went over there and I pointed out that this was not in keeping with what we had in mind. And he was shocked. I don't think he knew.

KIRBY: He didn't know anything.

TERRY: No, and it took him about two weeks to can the guy that was doing it and abandon the product, and get it back to square one. But I started off a conversation, that took two years, with Shozo about "You know, Shozo, there's really a lot more that we can do here but we can't do it with this kind of arms- length relationship. So why don't we set up a joint venture company that's going to do sales, marketing, manufacturing and R&D in Japan for a certain class of these analytical products?" And he began to warm up to the idea and then one famous day, we got to who's going to run this and who's going to own it? And I told him-and this took a lot of sake and talking-I told him that we had to run it and we had to own because we represented the biggest factor: we had all the technology; yes, they had the sales force, yes, they had some other products but they were pretty small contributions and I wanted 51 percent of this. And he tried to talk me out of this for about three meetings, that you know, we both agreed it was kind of symbolic. I said, "I agree it's symbolic, Shozo, but frankly, I need this to get my people motivated to really put everything into this company and frankly, I think our contribution is going to be a lot higher than 51 percent and you're going to make out just fine." And I can't remember exactly just how I closed like Dave and the board, but there was something that came up that I was able to get Shozo. I remember sitting in his office in Tokyo and he kind of looked at me and says, "Well, Bill, I guess you really mean it." And I said, "Yes, Shozo, I mean it. I've got to have 51 percent to make this work."

TERRY: And he leaned across the table and he said, "Okay, it's a deal. Let's do it your way."

TERRY: Now, I haven't checked lately, but the last time I checked, this thing has been a super success. We've got a really good guy running it who came from YEW.

TERRY: So I think it's another one of these things in the latter years, in a shorter time-frame, shows that Shozo is a real smart businessman.

KIRBY: You were talking about the analytical business in Japan, weren't you?

TERRY: Yes, I think I kind of finished that story. I was a little bit of a torture along the way because it takes too long to get something done with the Japanese, including Shozo. But he finally agreed that it was a good deal to do and that we ought to have the symbolic 51 percent controlling interest, and we got it started and got the leader from YEW, set up the organization. Dieter Hoenn did all of this and I'm not privy to the numbers anymore but it's been a very successful organization and it's got a good future in Asia for sure.

TERRY: Let's see, we talked ... we weren't ... I may have said the wrong thing in '82. In '83, we were still talking about productivity networks. We had expanded from the manufacturers' productivity network to the information productivity network where we talked about "integrated software packages for total business solutions."

KIRBY: Wow!

TERRY: So again, our mouth was getting a little bit of our ability to deliver... The solution to all the

world's ills. And we did mention the EPN, the engineers productivity network, division headed by Dick Moore, with Joe Schoendorf as the marketing manager in Cupertino and that was the one I mentioned we were really guilty of getting out and selling things that didn't exist. We did some reorganization in computers that year. I'm not sure exactly but we integrated PCs and workstations, and put them under a common management because they were coming together and that's even an issue today in 1996. We talked about the touchscreen computer for business applications and again, I mentioned it was a nice technology idea but we really didn't have that much software to support it. We talked about 60 computer centers in the United States and these were called data centers at one time, later computer centers, where we had equipment and technical people and software experts and we could run benchmarks, as they're called, and test software and that's a very expensive resource to get the really good people in there, and we've always teetered back and forth about how much of that resource we can afford, whether it ought to be in a factory, whether it can be in a sales office. Today I think we're in the mode of having probably having probably three or four of them in the United States, and we move the customers to Atlanta or Los Angeles rather than try and have a lot of these things scattered around. It's more the human resource problem than it is the equipment resource.

KIRBY: '83 was a year that the Queen visited Cupertino.

TERRY: Oh, yes, Queen Elizabeth. I only watched that from the sidelines. It was kind of funny to see Franz Nawratil walking her around. Here's a German citizen with a heavy German accent along with Dave Packard showing the Queen of England around. It did reawaken in my mind various visits that we had had through the previous years of royalty, and I haven't got a record in my head but we've had a lot of them.

KIRBY: We've had certainly some royalty from the smaller countries. I think Sweden and Belgium...

TERRY: Belgium, we had some.

KIRBY: Right, right. But the Queen's visit was a big deal and...

TERRY: The biggest deal before that-and I hadn't been working here too long-it might have been about '59 or '60, before I went to Colorado Springs-was Charles DeGaulle.

KIRBY: Right, right, in '60.

TERRY: Charles DeGaulle arrived here and I ... He always wore that French military hat which made him look about four inches taller than he really was. But he was a big guy to begin with and, you remember the story, he was very-I don't know what you call it-farsighted or nearsighted. He didn't have very good vision without glasses but he was too vain to wear glasses, so the people with him, his handlers always had to be careful that he didn't stumble over something. And this is a story from the guys, the troops. One of the troops in the trenches; that's what I was. His advance people had come here and talked about this visit and what he wanted to do and they found out that Dave Packard was about the same size as he was, and they didn't like that. They wanted somebody that was smaller than DeGaulle. So Packard was excused from the visiting rounds.

KIRBY: That's the story I got. It wasn't that Dave was out of town because... I thought it was nice of Dave to say, "Well, you know, I'm involved in a lot of these things. I'll give Bill a chance to do it."

TERRY: I don't think so. The story as I heard was that DeGaulle wanted to stand up, you know, a head above everybody and Hewlett was a little shorter, quite a bit shorter, than Dave so Bill was the one who showed him around the plant. And of course, when they walked around the plant, DeGaulle in his big hat, he stood up, you know, right on top of everybody. He was the center of attention! And I remember-I was in the plant at the time-that to get between the floors of the building, he rode the freight elevator because he didn't want to take a chance of stumbling down the stairs. So that was a big thrill for all us to see I guess he was the

president or prime minister or whatever of France. And he walked around in this building and one of these right here on the Palo Alto complex.

KIRBY: And that's when Noel Porter was mayor of Palo Alto, so he played host from the City's standpoint and then Hewlett was the host here. I observed this thing and it was obvious was DeGaulle understood English although he would not utter a word of English...

TERRY: I think that's the story.

KIRBY: ... because you could watch him. Somebody would be saying something, and he would nod, but you know, the French.... President Mitterand in France visited the area here years later and spent some time at Stanford and the Stanford PR people told me it was the most agonizing painful experience they'd been through because the French were so arrogant about everything, and then they did all this and they didn't get one thank you note or letter or any acknowledgment of anything. So anyway...

TERRY: But the Queen was here in '83.

KIRBY: You're right.

TERRY: Well, that one came off successfully, as I recall and it was a nice visit. Everything went pretty smoothly. I didn't participate directly but we got a lot of nice publicity.

KIRBY: My department was directly involved. You know, I had to put a lot of people to work on this thing and our biggest problems came from the White House. The British were absolutely very comfortable about everything. Their attitude was "You know best how to do this so we'll let you do it." But the White House was just calling us every day, you know, so....

TERRY: I'll be darned.

KIRBY: Typical thing but in any event, it was very successful.

TERRY: I did get sort of peripherally involved some way or somehow, this business association. David Baldwin, who is head of British ... he was the country manager of HP in the United Kingdom; he came up through the ranks in T&M and I had known him from a long time and David had a reputation of being a bit pompous and he was a bit pompous.

KIRBY: Yes, that's right.

TERRY: He put high stake in being oscillating in high social circles, to say nothing of the royalty. He tried to get in on this visit and that got quashed by you or Franz or somebody along the way because David wanted to be the one that showed the Queen around.

KIRBY: That's right, that's right and Doolittle, he phoned Doolittle, and he was, I think, irate, you know. I think he was quite wounded for months and months after that.

TERRY: Oh, yes. David, as I say, he had a reputation among other HP managers of being really pompous. I used to defend him every once in a while and point out the fact that, you know, the idea is to make the salespeople look like the customers, not like how you think they look like. I had that problem years before, after we'd bought the reps, and people would come here from the east coast and somebody here in this building would say to me, "Gee! Gee, they're all Jewish!!" And I'd say, "Yes, well, most of the customers on the east coast are Jewish, and they're not all blond beach-boys like they are down in Neely." But I used to point out the same thing with David Baldwin, that there are a helluva lot of customers in the United Kingdom that are just as pompous as David Baldwin.

KIRBY: Absolutely, absolutely.

TERRY: So the idea is to make them kind of work together. I did get involved with David on a visit of the Duke of Edinburgh to Queens Ferry. There's a scheme in the United Kingdom-I can't remember the exact name of it; it's kind of like Colorado outward bound-it's for youth and the sponsor is the Duke of Edinburgh, the Queen's husband, and HP had put money into this

thing. It was a good charitable kind of a deal, and they had a party at the Palace in Edinburgh and had a lot of these young people on the lawn and the Duke of Edinburgh went out and introduced himself to all these young people. They were all kind of winners in some sort of a regional competition and they had a big fancy dinner, and I sat at the table with the Duke and Jackie Stewart, the race car driver and his handsome wife...

KIRBY: Jackie Stewart?

TERRY: Jackie Stewart, and my wife and I were all dolled up in tuxedo and so forth, and then the next day, the Duke of Edinburgh came to the South Queensferry plant and did a plant tour that David Baldwin and Finley McKinsy took him on. But that was a day-and-a-half experience of watching David Baldwin performing in front of royalty, and he was absolutely in his element!

KIRBY: Oh, I bet he was perfect!

TERRY: He was having a great time. And the rest of us renegades from the colonies were kind of sitting around, pawing at the ground, wondering what or when it was going to get over. Anyway so much for visitors, royal visitors.

KIRBY: I'll go off a bit on a story related to that. Roger Wilson, who used to be our PR guy in England and now is in Geneva, he told me once that Queensferry was going to host ... they got an award from the United Kingdom, not the Scottish government, the UK... It probably was the Queen's Award to Industry. Well, maybe so, anyway, somebody, some government official from London was going to give it to them. So he was due to fly up there and it was going to be late in the afternoon and all the employees would be there and it was going to be held in the social club at Queens Ferry. Anyway, somebody opened the club too early and a lot of employees went out there and that, combined with the fact that this official arrived late, and so when David Baldwin, when Baldwin got up to introduce all this, there were a whole bunch of HP hecklers in the audience!

TERRY: All half-gassed, all against the English!

KIRBY: Rogers said it was really a riot. Anyway....

TERRY: I hadn't heard that one.

TERRY: I was trying to think of another one. He used to call David, "HMS Baldwin" behind his back; he didn't like that at all. There were a lot of those occasions. Oh, the one I was trying to think of. There's an award scheme in the United Kingdom of honors. We don't have that in the US and being an O.B.E.-Order of the British Empire-Commander of the British Empire was a big deal and very surprising to us because of this Queen's Award to Industry for exports plus some really good work that had been done up there, Peter Carmichael was awarded one of these things and he went down as a Scotsman, put his kilts on, and accepted this down at Buckingham Palace and we were all very honored and thought that was great. Well, that really made Baldwin mad!

TERRY: Because he was the head of the country and Peter was this Scots renegade guy, running the division up here...

TERRY: And then life went on and time went on and we invented some more products and David grew the sales organization, and then out of the blue, Finley McKinsey was named C.B.E.-Commander of the British Empire, and that really set David off!

KIRBY: Oh, that's right, McKinsey was that.

TERRY: Because David was oscillating around with these guys.

KIRBY: Right, right, he'd be going to Ascot, races...

TERRY: And when is it my turn? When is it my turn? After it happened with Finley, those of us

that had any sense decided we'd better stop needling Baldwin. He's already feeling badly enough about this, and, son of a gun, it must have been about five years later, David hit the honors list and he joined the deal and he went to the Palace and got his thing and it all came out fine in the end, but it was a little bit of pulling and along the way. We introduced something called the HP75, which was a handheld calculator with a few more functions in it and we bragged about how we were using it as a productivity tool for our sales force. Alberding was leading this charge. And it worked reasonably well and we had some variations on it but we learned some real lessons about software tools, user interface and databases. The idea was that the salesperson could retrieve a lot of data from this and they could enter messages and do a whole bunch of sexy things but it was hard to do and not all the sales force were computer jocks. They weren't comfortable with doing this and we found out the hard way how difficult it is to maintain these so-called databases. You know, database is product information, I mean, you're talking about a lot of work and keeping it up to date and the thing died after a while of its own weight. And they're still used, I think, in the company and other companies but fairly sporadically by people who are really comfortable with this stuff and it's never really caught on, where you have an entire sales force equipped these really neat computers that they do a lot of their work on. They just do it other ways. Ely was elected an executive vice president in '83, leader of the computer business. Platt was the VP of analytical; that's why he was in this Genenchem thing. Alberding was senior vice president. Hackborn was group vice president for information products and that was the famous start of the laser jet and a lot of the peripherals that Dick was involved in. '84, we set up our relationship in China with CEIEC. I'm going to have to remember what it stands for. It's the Electronics Industry ... Let's see, I can't pick the numbers, the letters out of my head right now... Yes, Committee for something. ... but it was the Ministry of Electronics and a branch of the Ministry of Communications, and many of us went over there and tried to understand this communist nation, and it was just damn near impossible. I don't think any of us really realized until we got there and tried to dig into it just how big the bureaucracy was. I mean, it was worse than India by quite a bit. I mean, they had so many people that had nothing to do... So many levels. And levels, and titles, and they moved around and, you know, trying to get a straightforward explanation even from the federal government seemed easy here compared with trying to understand what that thing is but we did get it set up. We had a friend, who we made a friend over there, Chining Liu of HP, was very involved. He was a guy from HP-Medical, Chinese-American, who was one of the spearheads on this thing along with Lee Tang and Bill Doolittle before, and he got to know the head of administration of the Ministry of Electronics. His name is Jiang Zemin. And Jiang Zemin today is the odds-on successor of Deng Shao Ping.

KIRBY: That's what I've heard.

TERRY: He is the leader of the People's Republic of China, and he is a good friend of HP. I know people like Chining Liu and others at HP can call him up on the phone on a first name basis, so, sometime in the future, you find out the bank can really help you along the way. He's a really interesting guy. He, I believe, I don't believe he was totally educated in the United States but he has been in the United States for education and he is an engineer. His background is engineering.

TERRY: And he has visited here on several occasions and knows a lot about HP. I met him when we first got organized. I met him later when he was the mayor of Shanghai. I went down there one time when we were trying to put together a joint venture with analytical, an analytical instrument factory in Shanghai, and we were using his influence or his interest-it didn't go together. Ten years later, it did go together, but it didn't work out at that time. But we had a nice meeting and I told him what we were doing and his counterparts told him what they thought. They couldn't quite come up with the money and there were some other

problems, so we agreed the timing wasn't right. But I'll never forget. He told me a story I'll repeat about being the mayor of, I don't know if Shanghai is the biggest city in the world or it's got to be in the top two or three in terms of population and I said something kind of flippant, making conversation, about "What's like to be the mayor of the biggest city in the world?" He had just arrived from an electronics industry, and he said, "Well, it's really a big problem." He spoke reasonably good English, by the way. He said, "It's really a big problem." He said, "I've got a range of things to deal with here that kind of boggle the mind." He says, "My problem today is melons."

KIRBY: Melons?

TERRY: He's got a problem with melons. "This is melon season and people love these melons, but what do we do with all these melon rinds?" And he said, "I've got X-thousand metric tons of melon rinds to get rid of everyday and they smell!" he says. "So I've got a big problem on my hands." And we decided the best way to get rid of these melon rinds, well, I think I said, "Well, why don't you just dump them in the river that runs through Shanghai?" and he said, "Well, we tried that but that doesn't work because when the tide comes back in, all the melons come back and they smell terrible!" So he said, "We got this great idea. We hauled all these melons off and we dumped them in the ocean not too far from here, where there aren't very many people living, and they started to make a big hoorah about this, because the tide was bringing the melons into their villages and it had the same smell problem." And he said, "I was wrestling with that problem and then we had this giant typhoon and it not only wiped out all the melons, it wiped out most of the villages!" So he said, "The problem has kind of solved itself."

KIRBY: Oh, that's great, that's great.

TERRY: The problem of a big city mayor. I'd love to see him again. Every time I see his picture in the paper, he gets younger. I mean, he's got a really good hair dye that keeps his hair getting blacker and blacker! But an interesting guy. We introduced a product in 1984 called the 8510. I was in the T&M business. This was a microwave network analyzer that cost about $80,000 apiece and talk about the right product at the right time! People were doing exotic microwave development, stealth applications, development of modern communication components, and the customer base, once they got a look at what this thing could do, we could do similar things in the RF frequency spectrum but not in the microwave spectrum, and this product you could do it in the microwave spectrum. And the people that saw this just went absolutely crazy and if you look back over the T&M history of the so-called vintage chart of products, you'll see a big spike in 1984. I believe we must have sold $100 million worth of these things in 12 months and delivered quite a few of them, so it was a huge product success, just made a heck of a lot of money. New models of the HP3000, new models of what was called the Think jet and the Laser jet. The Think jet I believe was one of the first of the ink jet family. The "think" part was, I don't know, I guess it was smart. It was a small machine. It used some of the first thermal ink jet cartridges. It was nice and we were very proud of it. It was not very expensive. It was small and what we were really proud of and we thought was the number one product attribute benefit was it was quiet. The competition were dot matrix printers. They had little needles that went like that through a ribbon and printed, and they weren't ... Our machine was a little faster but they could go fast, too, but they were really noisy. They sounded like a sewing machine plus.

KIRBY: Or a teletype.

TERRY: They sounded like a teletype and so we went out with flags flying and said, "Boy! We've got this really great machine and it's quiet, and you can hear a pin drop." And I think we might have run some of our first television ads on that theme.

TERRY: Well, it took us about three months to figure out, get it through our dumb heads, that the

number one attribute of a printer is how good it prints, not whether it makes noise or not. And it turned out the print quality was not quite good enough. In fact, the print quality wasn't as good as the dot matrix, and so we kept selling the product but this is Dick Hackborn and friends, we were retreated quickly to the lab and said, "We've got to get to work on the print quality. Print quality is the number one attribute of a printer. Not quietness and other things." And people backed up and they did a heck of a good job in probably less than 12 months of getting the print quality up and better than the dot matrix. Now we could go out and say, "We've got better print quality, and by the way, it's quiet."

KIRBY: That's secondary.

TERRY: And man, things really did take off. Expanded the field sales organization. Added a leasing division. In fact, it later became a leasing company because we found for tax reasons, it would be better to have it as a company and we had a president, Joe Barr, was the president of the leasing company.

KIRBY: Right, I remember that. And Joe Barr took a great deal of pride in being the president. He would always flash his business card at us, us lowly vice presidents, and tell everybody he was the damn president of the leasing company. Joe did a good job at that. Joe is a bit of a wheeler-dealer.

TERRY: Oh, yes. He's got a good financial background. He know what he's talking about. New organization of business units. Dean Morton was named a COO.

KIRBY: Chief Operating Officer.

TERRY: Chief Operating Officer. Doyle was in charge of what was called the information systems and network sector. I think that's the first time we dug up the word "sector". We didn't ... I remember talking to you about it. Maybe. Yes, we ... remember we looked at charts. We looked at General Electric charts and we were looking for a name and it stuck for about ten years and then went away, but we were looking for something to kind of name this umbrella organization. There wasn't a lot of organization. There were three individuals. We dug up a name for it. Alberding was then in charge of sales and marketing within this organization. And Doyle was in charge of information systems, and I was T&M and other things, and I guess it must have been Hackborn who was in charge of peripherals. And I'll get on to some other organization things here in a minute. Alvarez, Bennett, Brown and Van Bronkhorst retired from the board. Louie Alvarez was a...

KIRBY: This was '84?

TERRY: '84, yes, Louie Alvarez was a real contributor. He was a wonderful person. He was a super scientist and he was a kind of behind the scenes helping out in many areas, HP labs particularly. He'd spent a lot of time down in Santa Clara divisions. And of course, Bob Brown was a good friend of ours for a long, long time. Wayman was named Vice President and Controller. Bob had been working in Loveland and I asked him to move out here to become the Controller of T&M. I liked Bob a lot, really a sharp guy, and he had a way of really being able to get behind the numbers, which we all appreciated in a controller-don't just bring us the numbers; bring us some insight to what all this really means.

KIRBY: Yes, and what we have to do about it.

TERRY: And Bob was really good at it. Bob, I used to say in his evaluations, was his own person and he would occasionally go a little far and I used to watch him do it and I'd let him do it up to a point. That is, we'd go off to a division for a performance review and they'd get up and they'd start through their financials and other things, and Bob would start zeroing in on them and start asking a bunch of questions, and they'd begin to get fairly pissed off and Bob would get more pissed off, and I'd let it run up to the point where, you know, and then I'd stop and say, "Bob, okay, that's enough." "Let's change the subject." Parenthesis: "I'm in charge, Bob,

not you." And Bob was really good at that but he, you know, if he wasn't managed a little bit like all of us, he could maybe go a little bit too far, but he was really great. We added Paul Miller and Hicks Waldren. Much of the motivation with Hicks, well, George Bennett had had a financial investment background and Paul Miller came on with that background.

KIRBY: Onto the board?

TERRY: Onto the board, so he was a really good board member filling in for George Bennett in the financial, pension management and all of that. And Hicks Waldren was attracted to the board because we thought we needed some more advice and expertise in the whole area of consumer marketing, and his background was heavily that: Heublein, General Electric, and at Avon Products. And he made a number of contributions. He worked very closely with Alberding, as we sort of built up retail and he knew a lot about advertising and stuff like that. There was a major reorganization in '84. It started in the field first. This is where we combined the instrument and computer organizations and turned it sideways into an market-oriented organization. This had come about in several different ways. First of all, we had this thing called the "gray area". What's the difference between an instrument and a computer? How do these things all hook together? Who sells what? And I had been preaching peace and harmony and a reasonable definition of roles, and frankly, the guy on the other side of the equation, Paul Ely, was preaching war and rape and pillage and stuff like that. And I used to hear stories about how an instrument person would go in and sell a bunch of instruments to somebody with workstations hooked up to them, but they couldn't get a commission on the workstations; the commissions went to the computer people.

KIRBY: Even though they sold it.

TERRY: And the computer guy would get, you know, a $5,000 commission and he'd come over to the instrument guy and he'd, in public, give him a $100 bill and say, "Thanks, sucker!"

KIRBY: Really? Wow!

TERRY: Yes. This is the kind of behavior that was not good. So that heavily drove the field and at the same time, we had hired McKinsey to come in and help us with this problem, this gray area, this merging of products and how do you manage a sales organization. It was the sales organization, much more than the factories, that motivated this. The company's use of general purpose consultants was practically zero before that time. We'd had a guy-you're really testing my memory, now-in probably 1959 come in, Bob Holsinger, and do a study for us on selling spare parts. A guy named Wendell Brown worked for Carl Mahurin and ran the spare parts business, and I see him up at the Palo Alto Hills Country Club every once in a while. But except for that, HP people, I think Bill and Dave were ... they didn't think very much about these general purpose business consultants. They thought they were kind of "You know, we ought to know how to run our own business, and if we need some help in a kind of a specialized area, well, fine. But when it comes to general business management, that's our job. We don't need these guys." But for some reason or another, John thought it was a good idea and...

KIRBY: John Young?

TERRY: John Young and he hired McKinsey and this stuff ain't cheap, boy! You can go $100,000 a month through these meters without any trouble at all. Anyway, McKinsey walked around this problem and said, "We recommend that you reorganize from a product basis-instruments and computers, and so forth-into a market basis: automotive, aerospace and so forth-and you put these combined teams of people together." Their initial recommendation included the whole company and I took great umbrage with that with John and said, "Look, I think analytical and components and medical..."

KIRBY: Yes, you can't do that.

TERRY: "I know we sell computers in hospitals and I know we sell computers on analytical

instruments, but these are really specialized" and I prevailed and John finally agreed, "Okay, we leave them out of it and just let them kind of do their own thing." They'd share common administration facilities in the field. But we combined the instrument and the computer sales forces and we took it apart again about four years later. But we did put it together. Then that was followed by a reorganization of the factories, not in the individual division sense or even what you might call groups, but how you arrange these things and who was in charge of what. So fortunately, if you were down in a division like Cupertino or...

KIRBY: We were talking about the reorganization in the field.

TERRY: Yes, we did the field first and that went down okay. It didn't go down very well with the instrument people. Jim Arthur was in charge of the combined organization and he had come from the computer side and Jim had placed this great emphasis on loyalty and it turned out we had a seminar about four months after we did this out here, a sales meeting I should say. We invited the top 100 sales supervisors in the United States-this would be district managers, area managers, region managers-and I remember telling Dick I was really concerned because I believe the number was 89 out of 100 were from the computer group.

KIRBY: Jesus! That's incredible!

TERRY: So the computer people, you know, "takeover" was the word and I was preaching harmony and let's give it a chance but it was this computer takeover. And the people from computers who became in charge, they weren't, you know, overly ambitious or evil but they were ambitious and they liked this: "Now I'm in charge of everything. I can go to General Motors and sell everything"

KIRBY: That was a mindset.

TERRY: Now they didn't realize it-took them a while to realize-that "Okay, you're in charge. Now you've got, what, 9,000 products to understand. You've got 27 factories who are going to be beating upon you." The breadth of the job after people got into it that a lot of them, many of my good friends, said, "You're right. This is just 'way too much if I'm going to be effective and as a sales supervisor, I don't want to be a person that just takes people out to lunch. I want to understand the products, the benefits. I want to really be able to evaluate the sales force." And that's the sort of thing that brought it down after a while. It was 'way too broad!

KIRBY: Excuse me.

TERRY: So the field was done first and then about six months later, we started thinking about the factory organization and it wasn't the divisions and Loveland and the volt meters, it was the structure above it. And we had a couple of meetings to talk about this. McKinsey was still involved and they were making some recommendations about how we ought to group these factory resources together to match the market orientation of the field, and Paul was in charge of computers and he was having some problems. Paul is a great guy but he tends to kind of have a big mouth and strong feelings and so forth. But anyway, we had a meeting over in Half Moon Bay with about ... it was kind of a management council. I forget what we called it. There were about 10 or 12 people there; Boniface was there and John Young. I don't believe Ralph Lee was there. Dean and I, Paul; people like that. Probably Bob Wayman. And McKinsey made some comments about how maybe we ought organize these factory resources and Paul was really on his high horse. He said, as Paul can, he got very offensive and abrasive, and he said, "That doesn't make any damn sense! What we ought to do is the following..." and what he described, essentially, and you know, I may be misrepresenting this, but what he described was he was going to take over the company. He was going to be in charge of all of computers, all of instruments except for microwave, and I think components were included in there, and he'd leave microwave instruments and medical and analytical and somebody else could do that but he was going to run all the rest.

KIRBY: All the other stuff.

TERRY: And I'll never forget...

KIRBY: So he chose McKinsey at the meeting? He sort of took them on, right?

TERRY: No, well, he kind of used them as a vehicle and says, "You're ideas are not necessarily wrong but I have an even better idea. He was so willful about it and you know Paul; he gets an idea going and, man, he's going. And, you know, it ... I don't know how I felt. I felt maybe a little disappointed. I wasn't particularly worried but I thought, "Jesus Christ, this is ... I don't think this is the right direction." I'll never forget. I drove home with Boniface, Young, Morton and I; we shared a carpool over to Half Moon Bay, and I remember how things stick in your head. John Young had a very bad cold-he was really feeling miserable-and he was really concerned about the direction. He was really concerned about Paul and he made a statement driving over the hill over here, "Well, I'm going to have to do something about Paul." And we all kind of gulped hard. About two weeks later, he took Paul out of the job, worked with the rest of us and we reorganized the factory resources along the following lines. We set up the design and manufacturing sector (we must have called it), I can't remember. We didn't call it group. And I was in charge of that and that had Lou Platt -he was the vice president/general manager in the manufacturing systems group- worked for me and he the classical 1000 mini-computer that was sold in the technical manufacturing organizations, and a few other things I don't remember. Bill Parzybok was the vice president of the designs systems group and he had the workstations, the remnants of the EPN, and stuff like that, and he had some of the instrument groups, divisions. We split the instrument divisions between design systems and manufacturing systems. And we had an instrument group manager, which was Dick Anderson, who had all the microwave divisions. The rest of them were split up between Parzybok and Platt, and John Blockker was the general manager of components. And those four guys worked for me. Then we set up the office and information systems sector that John Doyle was in charge of and Cyril Yansouni, who was in charge of the PCs-it was called the PC group, I think. Doug Chance was the general manager of the information systems group, and Dick Hackborn was the GM of the peripheral group. And so we had all the computers under Doyle, Yansouni, Chance and Hackborn, and we had something called chemical analysis and health care sector, and Paul was in charge of that and Ben Holmes and Dieter Herne worked for Paul. And that went down okay with Dieter and not at all with Holmes. He was almost had worked in the computer group years before, had moved out to Massachusetts and he was pretty upset, and I know John calmed him down, and said, "Look, let's just give this thing a chance." But I think most of us said, "All right, let's give it a chance" and Paul put his heart into it for at least the first six months but after a while, it was became kind of apparent that chemical analysis and health care in this big company wasn't really going to be enough for Paul.

KIRBY: Yes, it wasn't center stage.

TERRY: Right. He worked in that mode about ten months, then left. And I don't remember; maybe I've got it in my notes. We did some more ... Well what we did was, we took ... no, we reorganized again and I'll get to that story later. But '84 was a tough year in terms of this change in the sales force, change in the field and I look back on it and I don't know what we would have done otherwise. Fortunately we didn't really change the individual salesperson's assignment. We changed their boss, which is disruptive, and we didn't change the role of the individual divisions. You're working on this; you're working on that. So, you know, we didn't really screw up the company. We did some screwing around at the top.

KIRBY: Ely's departure, how much of a contribution did the fact that, I guess Bill and Dave were getting increasing letters and comments from employees about Ely. I vaguely remember that.

TERRY: Do you remember that? I do remember. I don't remember as it being a cardinal event. I mean, Paul was a controversial guy. His strength works against him in many ways and there would be comments along the way but it might have peaked in '84 just like it did at this Half

Moon Bay meeting. Paul was so sure he was right that it really had got in everybody else's craw.

KIRBY: Yes, but then he left in '85.
TERRY: He probably left in early '85.

KIRBY: And he went to Unisys?
TERRY: He went to ... did he? Oh, boy. No, he went to a company before that that was sold to Unisys.

TERRY: Convergent Technology.

TERRY: Convergent Technology had a founder-whose name I'll have to recall-who decided or his board decided he needed some full professional management help and he kept meddling with Paul and that was a problem and then later on, they ... and Paul hired Cyril to go over there..

TERRY: And I think Paul left. I'm sure he left Convergent kind of under a cloud getting into an argument with this founder and then Cyril took over, and then they sold it to Unisys. So Cyril tells the stories about working for Blumenthal at Unisys.

TERRY: '85, the annual report says it was a difficult year. We were having a slump. I don't remember exactly why we were having a slump. It's fun to look at these annual reports and the people that write them, they capture the mood of the year because Packard is not smiling. Look at that picture of Packard!

TERRY: Man! He looks, he's sitting at this desk in this office, there's a kind of scowl on his face. Bill is smiling and John is smiling but Dave is not looking well, at least not looking happy, and it's difficult year for the electronics industry. Again, part of our problem was we'd had such a big '84. This 8510 product I mentioned just $100 million in new business, big profits, so we had a little bit of an encore problem but it was a slump, the orders slump spread into national and international markets and so forth and so on. So we substantially limited hiring and so forth and so on.

KIRBY: '85?
TERRY: '85, difficult year. Did not anticipate a slowdown.

KIRBY: Tell me something: when did Joel Birnbaum come in? Wasn't he on board by then?
TERRY: I can't remember.

KIRBY: Or maybe he wasn't?
TERRY: I remember Barney's leaving. Barney had a bit of a problem fitting in. John used to rag him about strategy and Barney used to rag John about "What do you mean by strategy?" And they got in... Barney, frankly, had some problems in a larger HP lab, in terms of the administrative part of it, and we tried some things, getting Barney an administrator, and that kind of worked and didn't work. Barney must have left in about or retired in about '86 or so. I'm not sure.

KIRBY: Well, you mentioned that he had retired off the board.
TERRY: Off the board, but I think ... Maybe he did retire that year.

KIRBY: '81?
TERRY: I don't know. I'd have to go look at the Barney Oliver data. But '85, eight percent growth in revenue and one percent growth in orders, and a $6 billion level. That was a real slowdown compared to previous years of adding 10% or more each year. 20 percent. Defense cuts; strong dollars; and so forth. We consolidated the management of printed circuit boards and integrated circuits, for better or for worse. It's kind of a ... It didn't fit in this

new organization that I described originally and we had a meeting up in Meadow Wood and spent time talking about the organization of these kind of service elements, making PC boards and integrated circuits and John drew a matrix on the board and we all kind of signed up for that little bit of matrix management. It seemed to work for a while. Hiring controls. $50 million grant program, a pretty big deal. Artificial intelligence was talking about it and I read some articles recently.

KIRBY: A buzz term.

TERRY: Yes, it was and it's turned out to be more of a technique than it has a product. So there've been some articles recently. I've read that it never delivered the promise that it withheld but it has settled into software development as an interesting thing to consider but at the time, we were kind of high, a little too high, on it in terms of how big a deal this was going to be. Risk technology began to appear, so Joel was definitely on the scene.

KIRBY: Yes. That would be it. I've got a note here to ask about RISC.

TERRY: Yes, Joel brought that from IBM. We used a headhunter. John used a headhunter to find Joel and then John and I believe both Bill and Dave put in some personal effort to recruit Joel from IBM because Joel was a long-term IBM employee. You'll have to ask him, but I don't believe he was unhappy or ready to leave but he was getting a little concerned about IBM and he knew a lot about this RISC technology. He knew the guy who had originally developed it at IBM, John Cocke. Joel thought very highly of this guy and he was recruited here and he brought...

KIRBY: Joel was?

TERRY: Joel was. Not just for RISC. He just looked like he was a really good broad gauge guy to run HP labs but obviously the RISC thing was a big interest and so, Joel set up a project within HP labs to work on the so-called risk reduced instructions set. It is the buzz that follows it around. It was really more as Joel described it, a "tailored" instruction set. It did not necessarily have less instructions. A typical instruction set at the time would have 130 instructions in it, and Joel kept pointing out to people, "The objective is not necessarily to get the 130 down to some lower number. We can even have 130. But we're going to have instructions that are much more efficient in their processing of a certain kind of application." And he established a team here at HP labs and, of course, they did all the pioneering work on it that resulted in what was called the Spectrum Program. That was the follow-on, the 32-bit follow-on, to the HP3000, the original 16-bit machine that we had taken a lot of years-probably too many-past its useful life milking performance out of it before we got onto this 32-bit thing. I think of all the things in the John Young era that John ought to be recognized for, was his faith in Joel and his-I was going to say "risk"-his ability to take a risk on Joel and his RISC technology.

TERRY: Because there was an easy way out. There was a 32-bit more conventional machine being worked on by Dick Anderson in the Cupertino division, which was a more evolutionary step and we'd had this Alpha-Omega thing sticking in the back of our heads, about taking too big a leap forward. But John Young was convinced that we ought to take a bigger leap forward and he canceled or had canceled this 32-bit conventional machine and said, "We're going for the brass ring! We're going with this RISC technology." And boy, that was a really gutty decision. Yes, it was because I imagine there were some executives around who thought it was foolish. I'm not sure about foolish but it was just like the Alpha-Omega. It was "Ohmigod! Here we go into the wild blue yonder again!" Now we got, I don't know, a billion dollar HP3000 to use at risk as we step off into RISC technology in the Spectrum Program. After it moved out of HP labs, an organization was formed called the Spectrum organization, headed by George Bodeway.

KIRBY: Bill, is your mike hitting the table here?

TERRY: It was a transition organization to take the idea from HP labs off into the systems part of the company. It did a good job in the transition. It probably lasted a little too long as a transition organization and George may have not been the right guy to do it but eventually it disintegrated as an organization and the whole thing kind of went down into the normal structure of the operative divisions of the computer part of the company. I have a note on Arbuckle. I guess Arbuckle must have retired from the board in '85. Bob Boniface retired in '85. Ernie Arbuckle was a great friend of the company, Bill and Dave; made a lot of contributions. January '85, Paul resigned from the company, and medical and analytical came over to me. So that's when I first got officially involved in the medical and analytical business. It said in the annual report we were very cautious about '85. It was organized around the objectives, like many of the annual reports.

KIRBY: Yes. We used to hit that about every five years.

TERRY: Touchscreen II was introduced. I think I said the wrong thing earlier. We had two versions of the Touchscreen. We weren't able to give up! I don't remember what Touchscreen II did that Touchscreen I didn't do. It probably had a bigger screen, it went a little faster, it had colorful butterflies.

KIRBY: Different model number.

TERRY: Right, but we were still pushing away and "setting you free" must have appeared on Touchscreen II, not Touchscreen I. That was in '85. We talked about the '84 reorganization. We talked about centralizing, marketing management under Dick Alberding and this included marketing and communications things. It included trying to get a little more cohesive appearance of the company before the customer, and that was a good objective although it tended to go a little too far in my opinion in some areas. Dick and the advertising agency started designing standardized data sheets and, you know, what fits in some of the gas chromatographs maybe not fit a retail application or, you know, it was a broad company trying to get anything other than some basics established but they tried to do that. They tried to, well, they proposed and Dick kind of legislated that we would all use the same format in our ads and the T&M people were the historical renegades and I had to simply tell them, "Look! This is the way the company is going and it's not that bad, guys, so we're going to do it, so stop arguing with me." And they'd say, "Well, the computer part of the company is driving the business" and I'd make some excuses for that and it was kind of funny. About three years later, the first ones to abandon it ... the T&M people had all fallen into line.

TERRY: And three years later, the computer people would bolt! And the T&M people would then say, "I told you, Terry! These guys don't know what the hell they're talking about." Alberding and the agency invented, what was it called? I called them "tag lines," these things you put under the logo.

KIRBY: Oh, yes.

TERRY: Not like "setting you free." "We can make a big difference" or there were several variations on these things.

KIRBY: Yes, what were those things?

TERRY: I remember one-I'd have to search my memory...

KIRBY: Three or four words or something.

TERRY: ... that we invented that went on there and Dick said, "By god, that's what we're going to do" and then we found out like other companies do, when you translate it into French or German, they don't sound good at all.

KIRBY: It doesn't work, yes, yes, that's right.

TERRY: It doesn't work at all and the Europeans would say, "Well, look, this isn't going to work". So they'd invent yet another variation on it and it gets all out of whack. Vectra PC appeared

in ’85 and that was either-it wasn’t the first-but it was an early use of brand names. Laser jet, I don’t if laser jet, we probably were using laser jet but we started to get a lot more interested in brand-naming things for family and promoting the brand and people would read the Proctor and Gamble books and the brand recognition's and all those kind of things, and some of us old farts would say, "Well, yes, that’s great but you’d better have a better product than the other guys before you go out selling these brand names." But the Vectra still lives today and I think it’s gained some amount notoriety. A new family of mid-range 3000s. New defibrillators. This was a product that I don’t remember exactly how it came to us. It was developed and manufactured in McMinnville, Oregon. We had a small factory in McMinnville. We had originally bought an x-ray outfit in McMinnville. That didn’t work for medical applications. We moved the defibrillator product line from Waltham, Massachusetts out to McMinnville. That was their product line. They did a good job at it. It was kind of a niche market, kind of specialized but they had a pretty good market share and we made some money out of it. Who was the guy who managed that for a long time and may still be there? Well, the last, well, Bill Craven managed it for quite a number of years. Then Ken Patton followed him. Ken Patton and before Bill Craven, I think it was we were still in the Femcor days. Walt something-or-other was the original founder of the other organization. Anyway, the defibrillator was a nice product line. We had a competitor, by the way, I’ll tell you story about the FDA, Food and Drug Administration in Physio-Controls. The Food and Drug Administration has a lot of regulations about medical devices, you know, from the days of quacks selling things to grow hair and so forth, and they would do routine inspections of factories for good manufacturing practices and, in fact, we helped them quite a bit in learning and teaching them how to do good inspections and so forth, good manufacturing practices for software which was new to them. But we put a great deal of seriousness into one of these FDA things and these FDA inspectors, frankly, were really kind of a bunch of low level types who liked to drink coffee and stay indoors and look at the girls. But we treated this with great seriousness and when they said, "Look, we don’t like this or that", we would salute and say, "Yes, we’re going to work on it" and follow up and so forth. We had a competitor named Physio-Controls. It was owned by Eli Lilly in the Seattle area and they were tough as hell, and they had one of these inspections and as it turned out, the managers of this competitor of ours decided they weren’t going to listen to this crap at all, so they told these FDA inspectors they were full of bullshit and they ought to go away. About two months later, the FDA shut them down.

KIRBY: Shut down the company? Wow!

TERRY: Shut down the company and it was shut down for over a year, and boy, did we sell a lot of defibrillators!

KIRBY: That’s amazing!

TERRY: Boy, talk about an object lesson about fighting city hall! Oh, man. In 1985, the manufacturing productivity network is now pretty much officially dead and replaced by CIM-Computer Integrated Manufacturing. Now we are a little bit sobered up on what it really takes to do all this and we talk about computer-aided engineering, computer-aided design, CADCAM- CAM is computer-aided manufacturing. And we talk about computer-aided tests and so we’re still kind of buzzing it up about all this integrated stuff but we’re getting a little smarter about it. We bought a site in Barcelona. I was involved for some reason or another. We had had factories in a number of major places in Europe. We were very slow in Italy and Spain was really getting on the economic track. They joined the EEC; they had a new president, Peppy Gonzalez, who is still the president; and it looked like a good place to grow. And so we were convinced that this was a good place to grow and we selected a site in Barcelona. I think I got involved because the question then came up about What are we going to make there?" and we decided that a good product line to get started there was

plotters, which were these large-scale plotters, I must have been involved in the San Diego division and plotters were being made in Boeblingen and I was convinced this was the right thing to do and I know John was and others. So it was a matter of getting it done, and I had two problems on my hands. First of all, the plotters were extremely profitable. We were making a ton of money on these things and the Germans were not really very interested in giving up all these profits to somebody else. So I had to recruit Eberhardt and nudge him and push him and cajole him and threaten him that this was what we were going to do and I, just out of luck, I got him to volunteer one of his guys, Wolf Mickel, to do the start-up venture. So I got that part of it done. Then I went back to San Diego division-Bryan Moore was in charge; I had recruited him to replace Dick Moore-and he was in charge and he didn't think this was a very good idea because he liked the Germans and it was all stable and they were making money and he didn't have to worry about it.

KIRBY: Yes, and this would lead to some confusion.

TERRY: Well, he had to participate in a start-up So he said to me one day-I'll never forget-down in San Diego, he said, "Boss, I guess if you tell me I've got to do it, I'll do it." And I looked across the table and I said, "Bryan, I'm telling you you've got to do it." So he says, "Okay, I understand." So we got it done and the thing got started up. I've seen Wolf Mickel; he's working for Selectron within the last 30 days. And I haven't got any numbers on Barcelona but it's been a very good organization. In fact, HP España is damn near up to a billion dollars a year. I visited there once and there was an American running it. He must have succeeded Wolf. There was a guy named George Taylor, who was the R&D guy, came from San Diego. But I don't remember who the second American was. And then there was-I'm ashamed I can't think of his name-the country manager.

KIRBY: Juan Soto.

TERRY: Yes, I communicated with him recently. I was in Spain this Spring for three weeks.

TERRY: And I picked a business magazine in a parador up in northern Spain where my wife and I were, and I bought this business magazine in English and it says, "HP is number one in PCs in Spain."

TERRY: So I got home, I wrote Juan a note and said, "Congratulations!" and he wrote me a very nice response and said, "Boy, we're sure glad you started that factory in Barcelona. It's made a big difference here!

TERRY: We said something about Plastics in Formosa. We were fiddling around. I don't know why we picked Formosa instead of Taiwan. No, it was Formosa Plastics, that was the name of the company. It was known as Taiwan.

TERRY: And we had a computer-integrated manufacturing system that we wanted to kind of jointly develop with Formosa Plastics and this was a good thing because it was a cooperation-you've got this problem making all these plastics, printed circuit boards and plastics; we've got all these computers. Can't we work together to figure out how to run your business? And we sent a guy over there named Happy Holden. I don't know if you know Happy. He was a really optimistic, bubbly kind of guy. I'm not sure a lot came out of it but it was an example of a pretty good relationship of working with customers and we've had a lot of good relationships with Formosa Plastics.

TERRY: I'll tell you one story about Formosa Plastics. We went over there on a board tour about this time, and we split the board up in this tour. We'd start in one location and have an official board meeting and then we'd split the board up and go to different locations. And I went to Taiwan with Jim Hodgson, who was a board member, and I and our wives and Wen Koh was the country manager of HP Taiwan. Wen Koh was a wonderful guy, bubbling, enthusiastic, really understood computers, let the TM guys do their thing. He was a very, very excellent

manager. But one of the things we did while we were there was we went to have dinner with the chairman of Formosa Plastics. His name and picture had been in the paper in business magazines through the years. I forget his exact... Wang, Chairman Wang, was his name, W-A-N-G, and he was a very influential guy. We had this joint venture going. He owned ... his company owned the biggest hospital in Taipei, so he was a big medical customer. And he had his fingers, typical Chinese entrepreneur, in a lot of different things. So we go to have dinner with him in his penthouse in his business building in downtown Taipei and we waltz in there about 6 o'clock in the evening, gussied up, and we all introduce ourselves and then we sit down at this huge round table. There must have been 20 to 25 people around this table. The American visitors were on one side with our Chinese friends from HP and all around the rest of this table were mostly men, there must have been 12 of them, and they were all the chairman's sons. But they all looked different. Well, we found out later the chairman had had three or four wives.

TERRY: And there was a woman that was sitting next to the chairman, younger than the chairman-the chairman must have been in his mid-seventies-quite a bit younger than the chairman, who was beautifully dolled up and she had these flashy diamond rings on, very vivacious and that was the chairman's mistress. And we found out later that was one of the chairman's three mistresses that he had.

KIRBY: Honestly?