CHEMICAL HERITAGE FOUNDATION

ROBERT ROBSON

Transcript of Interviews
Conducted by

David C. Brock and Christophe Lécuyer

at

Le Grand, California

on

17 November and 16 December 2005

(With Subsequent Corrections and Additions)

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This oral history is part of a series supported by grants from the Gordon and Betty Moore Foundation. This series is an important resource for the history of semiconductor electronics, documenting the life and career of Gordon E. Moore, including his experiences and those of others in Shockley Semiconductor, Fairchild Semiconductor, Intel, as well as contexts beyond the semiconductor industry.

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ROBERT ROBSON

1935 Born in Bowman, North Dakota on 11 May

Education

1955 B.S., Industrial Engineering, South Dakota State University
1959 Industrial Engineering, San Jose State, California

Professional Experience

Farnsworth Electronics Incorporated
1957-1958 Foreman

Fairchild Semiconductor Corporation
1958-1962 Production Superintendent

Amelco Corporations (Teledyne)
1962-1968 Manufacturing Manager

Intersil Corporation
1968-1970 Vice President of Manufacturing

Microma Corporation
1970-1972 Chairman and President

ABSTRACT

Robert Robson begins the interview with a discussion about growing up in South Dakota. He discusses his education, his involvement with the Army, and his early interest in electronics. He also details his move to California and his involvement with the electronics industry. He describes his employment at Farnsworth Electronics Incorporated and Fairchild Semiconductor Corporation. He describes his interaction with Robert Noyce, Gordon Moore, Andrew Grove, and several other prominent industry leaders. At Fairchild, Robson became production superintendent of the Special Products Group. He left Fairchild after working there for four years. Robson continues the interview by describing his relationship with the semiconductor industry, along with his employment at Amelco, Teledyne, Intersil, and Microma. Robson was manufacturing manager at Amelco, and went on to found Microma, where they worked on the digital watch at its beginning. After two years, Robson sold Microma to Intel and bought a thousand-acre ranch where he and his wife, Sharleen, farm nuts. Finally, he discusses his friendship with Gordon and Betty Moore, describing fishing and hunting trips they took together.

INTERVIEWERS

David C. Brock is a senior research fellow with the Center for Contemporary History and Policy of the Chemical Heritage Foundation. As an historian of science and technology, he specializes in oral history, the history of instrumentation, and the history of semiconductor science, technology, and industry. Brock has studied the philosophy, sociology, and history of science at Brown University, the University of Edinburgh, and Princeton University (respectively and chronologically). His most recent publication is *Understanding Moore's Law: Four Decades of Innovation* (Philadelphia: Chemical Heritage Press), 2006, which he edited and to which he contributed.

Christophe Lécuyer is a graduate of the École Normale Supérieure in Paris, and he received a doctorate in history from Stanford University. He was a fellow of the Dibner Institute for the History of Science and Technology and has taught at the Massachusetts Institute of Technology, Stanford University, and the University of Virginia. Prior to becoming a senior research fellow at CHF, Lécuyer was the program manager of the electronic materials department. He has published widely on the history of electronics, engineering education, and medical and scientific instruments and is the author of *Making Silicon Valley: Innovation and the Growth of High Tech, 1930-1970* (2005).

TABLE OF CONTENTS

INTERVIEWEE: **Robert Robson**

INTERVIEWER: **David C. Brock**

LOCATION: **Telephone Interview**

DATE: **17 November 2005 [Interview 1]**

BROCK: This is an interview with Robert Robson taking place on 17 November 2005. Let's start with a discussion of your early life. When and where were you were born?

ROBSON: I was born in North Dakota and raised in South Dakota.

BROCK: Can you tell me about growing up in South Dakota?

ROBSON: I was a pheasant hunter, a duck hunter, and a fisherman.

BROCK: A lot of outdoor activities in your youth?

ROBSON: I played football, basketball, and that sort of stuff.

BROCK: What was the community like where you grew up?

ROBSON: I grew up in Brookings, South Dakota, and it was one of the world's great places. In fact, I went back for my fiftieth high school reunion a few years ago, and it still is as pretty a place as it always was.

BROCK: Tell me about your family. How did your father and mother spend their days?

ROBSON: My father was a railway postman, and my mother was a home keeper and she drove a mail route.

BROCK: Was it a farming community primarily?

ROBSON: The eastern part of South Dakota was all farms. The town I grew up in was a college town: South Dakota State University was in Brookings. We lived on the outside of town and the main business was farming.

BROCK: Did you go to the public schools all the way through high school there?

ROBSON: I went to the public schools and I went to the college there.

BROCK: Okay. You mentioned playing a lot of sports during high school—

ROBSON: We had one of the world's great football teams.

BROCK: What position did you play?

ROBSON: I played linebacker and end.

BROCK: You must be a big guy. [laughter] What was happening in the classroom during high school, what sort of subjects interested you the most?

ROBSON: I don't know. I went to college and I ended up going into industrial engineering. I'm on the city council now and I am really bad mouthing the schools here because they don't teach English, reading, writing, and arithmetic.

BROCK: Right.

ROBSON: I guess I concentrated on reading, writing, and arithmetic.

BROCK: [laughter] How do you account for your interest in industrial engineering when you went to college? Were you interested in mechanical things such as radios or cars as a young man?

ROBSON: I had a semester or a quarter in college and then I got drafted. In fact, my dad was on the draft board and I think he got me drafted. [laughter] Because I got halfway decent grades on whatever they put me through, I ended up in electronics in the Army. This was in 1953 or something—in those days electronics was all in the tube business.

BROCK: Right.

ROBSON: These things were big messes. They never operated very long, and that's how I got into the electronics business.

BROCK: Was that primarily for radio communications while you were in the service?

ROBSON: Yes, we had a couple of radar sets in our division, over in Germany, but it was mainly that all communications was done by tube sets, radio sets.

BROCK: How long were you in the service?

ROBSON: I was in for—I like to look back on it as being the most miserable time of my life. I was in for twenty-one months. But the older I get, the better I like it because I went all over the world.

BROCK: You were in Germany?

ROBSON: Twenty-one months.

BROCK: When you came back you resumed your studies at—

ROBSON: I resumed my studies and then I moved out to California in 1957. My girlfriend, who lived in a town called Pierre, South Dakota, moved out to California with her parents, and I followed her out and we got married that summer, in 1957, out in Palo Alto.

BROCK: Why was her family moving out to Palo Alto, or to the Bay Area?

ROBSON: Her mother had just gotten a divorce and she had a lot of money, so she bought a motel called the Paso Del Norte Motel in Palo Alto right across the street from Rickeys [Hyatt]. So, I stayed in Palo Alto. I came out with a friend of mine. We stayed at the motel.

BROCK: Was this right after you graduated?

ROBSON: Yeah. I don't know if it's still there even.

BROCK: I know exactly where that is.

ROBSON: That's where we got married in 1957, in the Presbyterian Church there in Palo Alto, and we had our reception at The Rickeys. By then I was living in a motel across the street, and my girlfriend, my wife, was living with her mother there in the motel. The mother kept saying, "Hey, you got to get a job," so I went to work at a place called Farnsworth Electronics [Farnsworth Electronics Incorporated]. It's right across the street from the original Fairchild [Fairchild Semiconductor Corporation].

BROCK: What sort of an outfit was Farnsworth?

ROBSON: Farnsworth was a very famous engineer in the Second World War, a really sharp guy. My job as a foreman there was making selenium rectifiers. I got into the semiconductor business in 1957.

BROCK: Were you overseeing a production line for these rectifiers?

ROBSON: I had a whole production line. I had about forty girls working under me stacking up these little selenium cells, and most of the stuff got sold to the government.

BROCK: Right. With being newly married and getting this new job, what was your life like outside of work? Did you get into outdoor activities in the Bay Area?

ROBSON: Well, a little bit, but not much. I never had much time. I went deer hunting down around, south of Gilroy [California], and went duck hunting up around the area over here [Le Grand, California]. I went fishing out in the Bay. But most days were pretty newly married, working pretty hard. Not making a hell of a lot of money either.

BROCK: I guess Fairchild was just getting started about the time you—

ROBSON: Fairchild was right across the street.

BROCK: Okay.

ROBSON: On Whisman Road.

BROCK: When did you make the move across the street to work with them?

ROBSON: What happened is that Farnsworth was bought out by IT & T [International Telephone and Telegraphs], I think. They moved the production operation down to Puerto Rico. I said to another guy that ran the night shift, "Look. I'm going to go across the street and get another job over at Fairchild and you can take my job." So, that's what happened. [laughter] I actually walked right across the street. I went over there and I was hired by Gene [Eugene] Kleiner .

BROCK: They must have been gearing up for production, or were they already—

ROBSON: No. This was a completely preproduction operation. They didn't—I was hired as a foreman, and I actually personally assembled the first silicon transistors they made. They had just started.

BROCK: This was in 1957 that you walked across the street?

ROBSON: 1957 or early 1958.

BROCK: Who were you working directly with to get that assembly operation?

ROBSON: I worked with a guy by the name of Dick [Richard] Parker. John Carnahan was another one of the foremen. My main boss was Jean Hoerni, because I was running the

diffusion, masking, and all that stuff. Then I had my own little assembly line where we assembled the stuff that we made.

BROCK: Describe the manufacturing operation and the facilities in those earliest days. How many people did you have? What the physical plant was like?

ROBSON: I could try. [laughter] I guess it was probably about an 8,000 square foot building, and Gordon [E. Moore] worked in offices up above with big glass windows looking out over the production area. The building was divided into the diffusion and masking and then into the production and testing area.

BROCK: All in one?

ROBSON: I don't even know if the building's still there or not.

BROCK: I think it is. The whole production operation, assembly and test were all in that one big space?

ROBSON: All there. I had another guy I was working with and that was Harry Sello. Harry was basically in charge of preproduction. That's what we were, preproduction. I worked for Harry too.

BROCK: When you say that you were really doing preproduction, I'm not quite sure what you mean by that.

ROBSON: It means we didn't have anything to sell. [laughter] We didn't have anything to sell for several months until we made these first transistors. We sold those first transistors for about sixty dollars apiece to the government—government agencies and defense people.

BROCK: So, it was really in the early months getting—

ROBSON: As far as I know there were no silicon transistors that had been built that were ever used for anything. Remember these transistors were the things that took the place of the old tubes that I spent all my time throwing out in the Army.

BROCK: Right. Tell me your recollections of what it was like working with Jean Hoerni and Harry Sello in this preproduction phase. Was there a lot of pressure? What were they like to work with?

ROBSON: It was just was a lot of long hours. I was working with Gordon, Bob [Robert N.] Noyce, and all these guys—they were all there everyday. Jay [T.] Last and Vic [Victor] Grinich and all these guys. We didn't know what the hell we were doing. I guess Bob Noyce was probably the smart one.

BROCK: [laughter] About how many people were there overall?

ROBSON: I was employee number sixty-four. Probably a year from when I went to work there, I probably had about forty people working for me and that was probably half the place.

BROCK: Your role was quickly becoming the general foreman for the silicon transistor production line?

ROBSON: I was. I had the assembly line, but I also had the diffusion and masking. I remember going to work down there with—and Bob Noyce would come in at night. We worked terribly long hours. Bob Noyce would come in and tell us how to do the masking, because he was a real genius at that stuff.

BROCK: I've heard a lot of people talk about how he was also a very charismatic guy. Was that your experience also?

ROBSON: Absolutely, in fact I remember going up to his cabin in Tahoe on the weekends with my wife. He had a cabin up there and we would go skiing.

BROCK: How would you describe some of the other people that you mentioned? What were your early impressions of Gordon, for example?

ROBSON: Gordon was—let me see. How do I say it? Gordon was in charge of research. In order to do anything we had to go in and talk to Gordon about it. He was just a hell of a lot of fun to be with. Smarter than hell. Here you're talking chemistry. His job was the chemistry.

Noyce's job was the physics. And those two don't—I guess they come together but they come together about where I am. I don't know anything about it. [laughter]

BROCK: When you say, "Gordon was a lot of fun to be around," could you expand on that?

ROBSON: Well, we were about the same age. We went out. Right down the street was a bar called Rupe's and we used to have a beer. But Gordon was always a little more reserved than the rest of the guys.

BROCK: Was Jean Hoerni more outgoing? What was he like in those days?

ROBSON: He was one of my favorite guys. He was another true genius, and he and I worked together for the next fifteen years, I guess. But he was a hotheaded Swiss. [laughter] I just thought he was great. After four years at Fairchild, he and I moved over to a place called Teledyne–Amelco [Teledyne Technologies].

BROCK: With Jay Last?

ROBSON: Well, maybe Jay was involved, but I don't remember. Jean and I went over there.

BROCK: Okay.

ROBSON: After four years there, we went to another place called Intersil [Intersil Corporation], which it was bought out by GE [General Electric Company]. I worked with Jean Hoerni for many years. He was a great guy.

BROCK: Personally and professionally?

ROBSON: Professionally he was another physicist like Bob Noyce. He knew diffusion. He knew how long you left a wafer in the oven until it got down to forty angstroms, and that sort of thing. He's gone now, I think.

BROCK: Yes, he is.

ROBSON: We went out and had a beer at night. He was—I'm not saying a playboy—but he did have a few problems with his wife. So did Bob Noyce. Gordon never did.

BROCK: Let's go back to those early days of Fairchild, before you had product to sell. Were you getting a lot of guidance in that preproduction, or that early production phase, from Hoerni about how the operators should do the diffusions and troubleshooting issues?

ROBSON: Jean ran the diffusion, and he ran it with an iron hand. We got together in the morning and said, "Okay, we're going to run these wafers for so long, and here's what's going to happen." He would have a big blackboard. He was a lot of fun to work with. Of course, [C.] Sheldon Roberts was making the wafers for us.

BROCK: Was he making the wafers there in the plant?

ROBSON: We were growing the crystals. That was part of my operation too. I had a girl working there where we made these machines. Gene Troyer was actually making the machines. He took this thing, heated it up, filled it full of silicon and heated it up, and then dropped this little seed down into it. It was really kind of fascinating.

BROCK: Did you have a machine shop to make those crystal pullers?

ROBSON: We had a machine shop run by Gene Troyer.

BROCK: Okay. He was making the actual pullers?

ROBSON: He made the crystal pullers, the assembly equipment, and all the jigs for the masking.

BROCK: What was Sheldon Roberts doing?

ROBSON: Sheldon was in charge of the crystal operation. He took the silicon, bought a bunch of lumps of silicon and heated it up, and then pulled a crystal out of it, and then sliced it up into wafers. He was a sharp guy too.

BROCK: Was Gene Kleiner just taking an overall view of it?

ROBSON: Gene Kleiner was primarily in charge of administration. He was a nice guy. I liked him. He hired me.

BROCK: [laughter] Did Charlie [Charles E.] Sporck arrive before you departed?

ROBSON: Yes. Fairchild decided that in addition to the place on Whisman Road, they would build a bigger place over on Bayshore Road. I stayed at Whisman Road for a while and did the wafer processing, and then I took all the wafers over and gave them to the guys on Bayshore. They would cut them up and make them into transistors, and sell them to the government. I didn't move to the new place for about a year. When I moved over there Charlie and I shared an office. I was then working for Frank Grady. Ever heard that name?

BROCK: No, I haven't.

ROBSON: He was another nice guy. Frank Grady was Charlie's and my boss. He worked for Bob Noyce. He was the manufacturing manager. I was over in the other building, I was working for him too. I took all the wafers and brought them over, and then these guys would assemble them, Ed Passa and Bill Stansbury. It was mainly a big assembly operation.

BROCK: Did the processing eventually move over there?

ROBSON: All the processing moved over during that period because it was getting to be a pretty big business.

BROCK: Did some of the problems that you faced in your direct area of responsibility start to change as the demand grew, and the manufacturing had to grow to meet that?

ROBSON: Well, I did the wafers, and in those days they were about half an inch in diameter. I guess they had about forty transistors on each one, and sometimes we would not get any good transistors on a whole lot. [laughter] Something was wrong.

BROCK: Did the type of problem you faced in your work change as it quickly went from a low volume to a high volume of production?

ROBSON: I think there were some problems. I just don't think people knew how to cope with it. We got orders for ten thousand things from the Navy and we knew we were going to have to make it. It was a research operation, went to a preproduction operation, and then it went to a massive volume operation in a short period of time. There were all kinds of—I'm not saying problems. I guess we coped with them as best we could.

BROCK: One story that I've heard about you from a couple of people, from Harry Sello, and from Gordon, was this problem with the tap test and these bad transistors. Could you talk a little bit about that?

ROBSON: What test?

BROCK: The tap test. Tapping on the cans to figure out why some of these transistors were failing?

ROBSON: We had a big problem. The stuff we were using to put these transistors in, these headers and things, they weren't clean. There was metal falling around. On these transistors, one little piece of metal from the can falls in there and it ends up destroying your transistor. [laughter]

BROCK: Right. And that was something that you figured out, that it was this—

ROBSON: I don't remember much about it.

BROCK: Okay. Was it Amelco [Amelco Corporation] that you went to after Fairchild?

ROBSON: Yes. Jean Hoerni and I went to Amelco. I guess this was probably 1961 or 1962. He wanted me with him and we went over there. We were hired by two great guys. One was George Kozmetsky. I just met up with George. He was over in Hawaii with Gordon a couple of years ago. The other one was Henry Singleton. The company later became Teledyne, one of the biggest companies in the world.

BROCK: You were hired directly by those two?

ROBSON: I was hired by—Jean Hoerni was running the Amelco operation. I was hired by George and Henry to be the manufacturing manager.

BROCK: The Amelco facility was in Mountain View [California]?

ROBSON: Yes, it was right over there not far from the—actually we would go to the same bar as the old group's bar. [laughter] It was right in the same area. It was a big operation. I remember we were making—at one time—we were making something like fifteen thousand helicopter navigation and fire control computers a month. That's when the Vietnamese were shooting down about half of them.

BROCK: Oh my gosh.

ROBSON: Yeah. It was a nasty deal. But we were making these computers as well as the transistors and microcircuits to go into them.

BROCK: Was Amelco making both transistors and integrated circuits while you were there?

ROBSON: The integrated circuit business came about this same time.

BROCK: Okay.

ROBSON: Integrated circuits has more than one transistor on a die.

BROCK: Sure. What did it mean to be manufacturing manager at Amelco?

ROBSON: I had about three hundred people working for me.

BROCK: Okay. [laughter] You were responsible, at the end, for all aspects of the manufacturing from processing the wafers through test and assembly?

ROBSON: Yeah, and Jean Hoerni was in charge of research.

BROCK: Okay. I forgot to ask you about on the sales side back at Fairchild, was it Tom Bay who was the head of—

ROBSON: Yes, Tom Bay.

BROCK: Could you tell me a little bit about him?

ROBSON: Oh, he was a great guy too. Being a salesman he was kind of a party guy. Him and Don Rogers—

BROCK: Were the two main—

ROBSON: Have you ever heard of Don Rogers?

BROCK: Yes. Harry Sello had some good stories about him.

ROBSON: Oh, I've got tons of them. [laughter] Tom Bay was at Fairchild. Then we got together later—I actually hired him one time later.

BROCK: In what context?

ROBSON: Years later I set up a company and hired him to be the sales guy.

BROCK: Was that Microma [Microma Corporation]?

ROBSON: I think it was.

BROCK: I hadn't realized that connection.

ROBSON: Tom Bay was in charge of sales there for a while.

BROCK: Going back to Amelco when you headed manufacturing and Jean was doing the research—who was handling sales and marketing for you?

ROBSON: I forget who was doing it then.

BROCK: Okay. So both you and Jean Hoerni were at Amelco for four years or so?

ROBSON: I think about four years.

BROCK: What was your next move?

ROBSON: Well, Jean and I both left Fairchild and we went to a place called Teledyne. Teledyne ended up being a great big operation and kind of a big pain in the ass operation. Jean and I both went to this place called Intersil to make a different type of transistor. Here again he was in charge of research and I was in charge of production.

BROCK: Who started up Intersil? Had it been going for some time?

ROBSON: No, it was a brand new company. It was over in Cupertino [California].

BROCK: You felt that the Teledyne-Amelco was becoming a big mess?

ROBSON: I don't know why I ever left Teledyne-Amelco, or Fairchild, but there were probably reasons—probably money or something. [laughter]

BROCK: What was Intersil trying to do technologically?

ROBSON: Make a new type of transistor, a transistor that used a little different technique. Jean came up with it. It was a field effect type deal and worked like a champ. It didn't take long to get into big production there either.

BROCK: So during this time did you maintain your friendship with—

ROBSON: Gordon?

BROCK: Yes, and the other folks from Fairchild?

ROBSON: Yes, I got along fine with him, and he lived right in the area. I'd occasionally see him, and we had a good time together. Julie [Julius] Blank, and Vic Grinich, and Jay Last.

BROCK: Was it mainly getting together for a beer, or something else?

ROBSON: Oh, we'd go for a beer. We'd see each other at parties.

BROCK: With the amount of work that these operations were taking, you didn't have too much time to go fishing?

ROBSON: No. We didn't do much fishing at all. [laughter] Occasionally I'd go down to Mexico and go fishing, or go to the Sierras or something. But no, we didn't have any fishing time at all. [laughter]

BROCK: Were you manufacturing manager again at Intersil?

ROBSON: I was vice president of manufacturing.

BROCK: Then you quickly had a very large operation working for you?

ROBSON: Yeah, it was in Cupertino.

BROCK: You were with Intersil for about another four years then, up until—

ROBSON: It was probably another two and a half, three years.

BROCK: Two and a half, three years. What was your next move?

ROBSON: A couple of the guys at Intersil set up a company to make timing circuits, watch circuits. We set up a little company for doing that. That was called Microma.

BROCK: If I'm not mistaken, that was a very early company in the digital watch business. Is that right?

ROBSON: Yes.

BROCK: Tell me a little bit about this. Was this a spin-off of Intersil?

ROBSON: Yes, it was. We were just concentrating on watch circuits. We were making these timing circuits and were selling some to Bulova Watch Company, and Gruen [Gruen Watch Company], and Seiko [Seiko Watch Corporation], and places like that. But these watch companies put the muscle on you. So we hired a Czechoslovakian guy and made our own liquid crystals, and started making our own watches. That was kind of fun.

BROCK: Where was it?

ROBSON: It was down in Cupertino too.

BROCK: You got both into the watch circuits and also the liquid crystal display manufacture there?

ROBSON: Yeah. That's where I got back together with Bob Noyce, Gordon, Andy [Andrew S.] Grove, and that bunch.

BROCK: That must have been pretty early on into the history of Intel [Intel Corporation]?

ROBSON: They were around a couple of years before that. Bob Noyce would come down every day and stop at the plant. Andy would come around and Gordon would come around all the time.

BROCK: Did you sell the operation then to Intel at that time?

ROBSON: Yeah, we did.

BROCK: Okay. And then did you stay on as—

ROBSON: I stayed on about six months and then got the hell out.

BROCK: [laughter] Why is that?

ROBSON: I don't know. After eighteen years in the electronics business, there are other things to do besides work your tail off.

BROCK: [laughter] Was there a sense in which there was a similar technology at Microma and Intel?

ROBSON: We had a technology that they didn't have. Now, they probably would never admit that, but our technology was real, low current stuff. We had some really good stuff and they mainly got into the business to take that technology.

BROCK: This is a CMOS [complimentary metal oxide semiconductor] process?

ROBSON: Yes.

BROCK: Okay. That makes a lot of sense. Did you negotiate that deal with both Bob Noyce and Gordon Moore?

ROBSON: They were both there. It was a fun deal, but very nerve wracking. [laughter] But Gordon and I were, and Bob also, we were neighbors in Los Altos Hills [California].

BROCK: I didn't realize that.

ROBSON: In fact, all those years Gordon lived just below me and I could have hit his house with a five iron at anytime. I saw him on the road almost every day. We were real close neighbors. Bob Noyce was just up the hill from me.

BROCK: It's such a high density of people in that industry, at that time. It's pretty amazing.

ROBSON: Everyone lived around there.

BROCK: Yeah.

ROBSON: Bob made the deal and he and I had an agreement that I was not going to stay there.

BROCK: Was that just you letting him know that you weren't interested?

ROBSON: Noyce was letting me know, and I was letting him know, that I wasn't going to stay around. It was a mutual agreement.

BROCK: I see.

ROBSON: Gordon wasn't involved in that, it was me and Bob mainly.

BROCK: Was it Gordon who was really interested in the technology that they would gain by the deal?

ROBSON: I don't know. I really can't answer that.

BROCK: Okay. You mentioned that Gordon, Bob Noyce, and Andy Grove would stop by the operation quite often?

ROBSON: It was on the way down to Intel.

BROCK: Would you tell me a little bit about your impressions of Andy Grove in those days?

ROBSON: Andy's a terribly talented guy. I like him, but he's a no nonsense guy. He doesn't take any crap from anybody. [laughter] It was understood that I wasn't going to be around there for too long. I was there probably four or five months.

BROCK: I see. And then what did you do when you left Microma?

ROBSON: When I left, I took some money and bought the farm where I live now.

BROCK: Somebody told me that it's a nut growing operation, is that right?

ROBSON: Yes, pistachios, almonds, and walnuts.

BROCK: Had you been interested in doing that sort of work before?

ROBSON: I lived on the outside of a farm town when I was a kid. But not really. It was just time for me to get out of that electronics stuff.

BROCK: Right. Did you set up the farm on your own or did it exist?

ROBSON: No, I set it up all on my own.

BROCK: Have you been working it since that time?

ROBSON: Yeah. About that time is when Gordon and I started fishing.

BROCK: [laughter] This would be in the mid 1970s, or so?

ROBSON: Early 1970s. I think we started fishing around 1971 or so and we've gone every year since then. I have a whole bunch of CDs for you with fish pictures on them.

BROCK: Thank you. How did that start? Did that come about from working together again around the Microma deal?

ROBSON: It did. I think he was getting tired of working as hard as he did. He's a fisherman. He's a truly great fisherman. So we started going on these trips. Gordon and Betty, me and my wife, we took off with both of them. We just get along great.

BROCK: You take an annual fishing trip together?

ROBSON: One or two.

BROCK: In the early days were these more local? I know that recently you've been going to some pretty exotic fishing spots.

ROBSON: Yeah. We've got one lined up now going to someplace in the Indian Ocean that I've never been to. It's mostly salt water fishing and deep sea fishing in the Pacific—Australia, and Tahiti, and all those places. We go every year and just have a great time together.

BROCK: What kind of a fisherman is Gordon? Are there different styles? There must be. There are certainly different skill levels.

ROBSON: He's a perfectionist at it, just like in chemistry and semiconductors. I haven't tied a knot in the last twenty-five years because I let him do it, he's so good at it. He really knows what he's doing.

BROCK: And that's just—

ROBSON: Well he's got his own boat over in Half Moon Bay [California], and we go out there occasionally. But he is a truly professional fisherman, a professional deep sea fisherman, and a fly fisherman too.

BROCK: Is that both technique and experience, and also a knowledge about the fish, their behavior and things like that?

ROBSON: He reads up on all that stuff. He doesn't watch TV. He just knows all about it. Being a boy from South Dakota, I never knew much about deep sea fishing until I started going with him. He understands everything about it. He's a perfectionist at chemistry, fishing, and hunting.

BROCK: Have you gone hunting together?

ROBSON: Yeah. In fact, I have a picture here of him from when we were wild boar hunting. [laughter] He's mainly a bird shooter, but I do more big game hunting than he does.

BROCK: With both the fishing and the hunting, it seems to me that a big part of that game is patience? Do you think that's true, and does that say something about his personality?

ROBSON: I do. He's a patient guy. He's a very talented fisherman, I'll tell you. I've never met anyone better.

BROCK: Oh, really?

ROBSON: We've been all over to Tasmania, Australia, and all these places. And just have had some great times. Most of the time it's just him and me on a fishing boat with the captain.

BROCK: Then do Betty and Sharleen socialize while you are out on the boat?

ROBSON: Well, we used to go fishing all the time.

BROCK: The four of you?

ROBSON: The four of us. But Betty and Sharleen are getting so that that's not kind of their—it's actually a tough workout on most boats.

BROCK: Sure.

ROBSON: Betty especially is getting so she doesn't want to do it anymore.

BROCK: Right. To spend the hours out on the boat.

ROBSON: She has this beautiful big estate in Hawaii, and she's building a brand new place there too. But it's hard work. This deep sea fishing with all the banging and the waves and all that stuff, it's hard work, and Gordon's in fantastic shape. We go golfing a couple times a year too.

BROCK: Has it been over thirty years now that youve been doing this with him?

ROBSON: Thirty-five years.

BROCK: Certainly over that time his company has changed and his profile in the semiconductor and electronics world certainly—

ROBSON: But he hasn't, as far as I can tell, changed since I met him in 1957.

BROCK: That's exactly the question I was going to ask you.

ROBSON: No. He hasn't changed, as far as I'm concerned. He's still one of the nicest guys in the world and just a lot of fun to be with.

BROCK: It strikes me that the same would hold true for Betty Moore as well?

ROBSON: Absolutely. She's the same as she always was too. She doesn't take any crap from me, I'll tell you. [laughter] In fact, when I gave all those pictures out and they had some thing up in San Francisco for Gordon, they had this guy, some movie star up there that introduced him.

BROCK: Harrison Ford?

ROBSON: Yeah, Harrison Ford. Well, she was upset with Harrison Ford when we were over there last spring because he dumped his wife, and she liked his wife. She doesn't like anybody that dumps their wife. [laughter] I said, "Betty, are you telling me if I dumped Sharleen's ass you're not going to talk to me anymore?" [laughter] She said, "If you dump her, I'm going to have you killed." [laughter] But she doesn't take any crap from anybody and, she's a lot of fun to be with.

BROCK: Are you willing to give a sampling of some of your most notable adventures from these trips? I'd imagine with that many deep sea fishing trips there must have been an eyebrow raising experience or two?

ROBSON: We went to a place called Bathurst Island, and it's up north of Australia. You have to take an airplane and fly for an hour and a half, and then you get on a boat for five hours, and you go to this island and there's nobody there at all. This is really the end of the world. It's eighty-five degrees, day and night, rain, saltwater, everything's eighty-five degrees. [laughter] You never get a chance to be cool. We went there and went fishing. That was probably, for the four of us, probably the most—you couldn't go out in the ocean because they have these sea crocodiles and these big sharks and these terrible little things called sea urchins. It was a tough week of fishing. But Gordon has said, and I say too, it was really one of our fun times. But the weather was so miserable—you only get two quarts of water a day.

BROCK: Were you mostly on the boat?

ROBSON: No. We were on shore but our boat was stationed at this big river and they had about a twenty-foot tide come in and the boat would be way down below. I never saw another person. We saw a couple of airplanes flying over. We were there for a week.

BROCK: Wow.

ROBSON: Not one person there. We both had our boats and I remember we were out—my wife and I were out fishing. We were fly fishing for barramundi, which is an Australian fish, and you look down below the boat and here is this hammerhead shark whose hammers are wider than our boat.

BROCK: Oh my gosh.

ROBSON: I think Gordon would probably admit that it was one of the most interesting trips. Betty was sick a lot of the time.

BROCK: Do you have any other favorite fishing stories? There just must be so many.

ROBSON: I have mounted fish. Gordon was with me when I caught them all. I've got so many fish stories you wouldn't believe.

BROCK: Well, maybe we can save that until when we're actually looking at the victims.

ROBSON: Yeah.

BROCK: Great.

ROBSON: One of the people we used to go fishing with was Gordon's brother, Fran [Francis Moore]. He is another one of the nice guys of the world. He's dead now, but—

BROCK: Was he the brother who worked the ranch in Pescadero [California]?

ROBSON: No, that was Walt [Walter Moore].

BROCK: Okay.

ROBSON: And he lost both those brothers in the same short period of time.

BROCK: Right. Francis had the—

ROBSON: He had a distribution company of some sort.

BROCK: For automotive parts. Was he very much like Gordon or were they very different?

ROBSON: No, I think they were quite different. [laughter] They were great. Fran used to come out here visiting all the time and they just had different lifestyles.

BROCK: Yeah. One thing that not a lot of people have talked about but that I definitely get a sense of is Gordon's sense of humor. He really strikes me as a person who has a very dry but a well-developed sense of humor. What's your sense about that?

ROBSON: I think that he and I really enjoy a good chuckle all the time, and with me he doesn't have to worry about being politically incorrect or anything. I think that's why we get along so well, because we just have a lot of goddamn fun together, and a lot of laughs.

BROCK: There's a lot of history there.

ROBSON: A lot of laughs too. We were always joking about stuff, and he can't do that with a lot of people. He doesn't worry about me. [laughter] We just have a lot of fun together. He's one of the world's great cooks. You ever go to Hawaii there and get to have that yellow-fin tuna that he cooks on the barbecue, boy—

BROCK: I'll have to angle for that. [laughter] That sounds very nice.

ROBSON: He is a great cook. He's superbly knowledgeable about everything in fishing, and just a lot of fun to be with.

BROCK: If you were given the challenge of naming what you thought were Gordon's most important personality traits, or values, how would you try to answer that question?

ROBSON: Well, he's an incredibly honest guy. He's smart and just a lot of fun to be with. He has a heck of a sense of humor that I don't think most people ever see. I can see why they don't because he's not in a humorous business.

One thing I didn't mention is that he is really—all the natural stuff, the birds, the plants, the animals that we see on these trips—he's really knowledgeable about them. The fish, especially the fish—and we go out in a little rowboat out there and catch fish that nobody's ever been able to identify.

BROCK: Wow.

ROBSON: He's really interested in that stuff. He is tremendously interested in life, especially natural life. When he finds out something he doesn't know about, by God the next time you talk to him he's looked it up somewhere.

BROCK: [laughter] He does a lot of the conservation stuff with the Foundation [Gordon and Betty Moore Foundation]. It seems to me to be rooted in that genuine fascination with biology or the natural world.

ROBSON: I don't know how that relates to chemistry—

BROCK: That's his fascination with nature, in a different form?

ROBSON: Yeah, his fascination with—we'll walk four hours to go see this bird that nobody has seen for a long time, and things like that.

[END OF INTERVIEW]

INTERVIEWEE: **Robert Robson**

INTERVIEWERS: **David C. Brock and Christophe Lécuyer**

LOCATION: **Le Grand, California**

DATE: **16 December 2005 [Interview 2]**

BROCK: When we talked last time, we discussed your first job in the electronics industry which was with Farnsworth Electronics [Farnsworth Electronics Incorporated]. Was that the same Farnsworth who had done early television experiments or television work in San Francisco?

ROBSON: I don't know that much about it. It was right across the street from the early Fairchild [Fairchild Semiconductor Corporation]. The guy was an engineer in infrared, not television but radar. The guy was one of the great inventors before the Second World War started.

BROCK: Was the firm supplying military electronic components when you were working for them?

ROBSON: Yes. It was all military for me. I made selenium rectifiers which were from .5 Gubesto and maybe four feet long and they had different cells on them. Dave Allison—have you ever heard of him?

LÉCUYER: Yes.

ROBSON: He supplied me with all of the selenium plates and he worked in New Jersey for IT&T. Nice guy.

BROCK: Did he later come out and join you?

ROBSON: I think he actually ended up working for Gordon.

BROCK: You talked about what was going on at Farnsworth and why you were not necessarily interested in leaving the area, and walking across the street to Fairchild to get a job.

ROBSON: On Whisman Road.

BROCK: You met with Eugene Kleiner about getting the job?

ROBSON: Gene hired me.

BROCK: Let's talk a little bit more about what you recall from that episode of walking in the door?

ROBSON: I remember Gene did not know any more than I did about electronics, but I remember he gave me a color vision test, and I could not pass it because I'm color blind. [laughter]

BROCK: Why did he give you a color vision test?

ROBSON: That was just part of the deal. [laughter] I flunked the test, but he didn't give a damn. I thought he was a good guy.

It was maybe a 25,000 square foot building. Gordon and those guys sat up in offices at the top, and we had an assembly plant down below, and on the other side was our diffusion and masking deal. It wasn't really much of an operation.

BROCK: We wanted to gather your impressions of and your experiences with some of the founders of the company, at that time when you joined. Since Eugene Kleiner was the first person that you met—

ROBSON: He hired me.

BROCK: Could you tell us about what sort of a person he was, his personality, your impressions of him, any thoughts that come to mind about him?

ROBSON: He was a nice guy. He and Julie Blank ran the machine shop, and they were founders. Jay Last was a young guy like me, but a lot smarter. [laughter] Gordon and Bob Noyce and those guys set things up.

BROCK: Were they down on the production floor often?

ROBSON: Yes. Bob Noyce came down all the time. He worked at night with me on the photoresist operation. That's where you take the mask, coat the wafer with photoresist, put the mask on, expose it, and Bob Noyce was the smartest one of all. [laughter] Gordon didn't come down that much. Jean Hoerni was the guy I basically worked with.

LÉCUYER: In diffusion?

ROBSON: Diffusion, masking and making little samples. He was a wonderful guy.

BROCK: Was he also roughly the same age as you and Jay Last?

ROBSON: I was probably a couple years younger than these guys, including Jay Last. Jean was probably three or four years older than me. He was probably the same age as Gordon. They were great guys.

BROCK: A relatively young bunch in the scheme of things?

ROBSON: Yes. I would say the oldest guy was probably thirty-one or so.

LÉCUYER: I think Sheldon Roberts might have been the oldest one.

ROBSON: Sheldon might have been a little bit older, and he was in charge of crystal growing. I worked with him for many years, even at different companies. He was a good guy. I knew his wife.

BROCK: In thinking about those early days when you developed the production line to produce devices to sell—

ROBSON: The semiconductors?

BROCK: Right. What were your impressions about how the production line worked in those early days? What were the different steps and what were the people doing? How did you make a silicon transistor?

ROBSON: We had these little tiny wafers which Sheldon Roberts produced from a crystal growing machine in the back room. We sliced the crystals up with a crystal slicer, just a diamond cutter, and then we dipped them into acid so they all looked like pretty little mirrors. They were only about a half inch, maybe three-quarters of an inch round. Then Jean Hoerni would take those, line them up in a quartz boat and put them in a furnace and put some oxide on them.

BROCK: Was that in a furnace?

ROBSON: Yes. We'd turn the oxygen on, and we'd have a thin layer of oxide on top. We would take them out of there and run them through, and put a mask on them. We made most of our masks but we bought some from Merck & Company [Merck & Company Incorporated]. Merck was the company that made the photoresist material. We would end up with a little layer of oxide with a little hole in it, and then we would put them back in the diffusion furnace. We would put a different polarity thing on it, like antimony or gallium—

BROCK: Boron?

ROBSON: Boron and that sort of stuff. That would be the second layer. Then we would go back to the same process again, put a little bit of oxide on them and put another little hole in them by using hydrofluoric acid that ate through the oxide, and then we put them back and then we used some other compound, and we put another one in. Then we had three layers, the original layer or the collector base, the second layer and the third layer or the emitter. That became the transistor. [laughter] Worked like a gem.

BROCK: Were they going back into the same furnaces for this step or did you have a series of them?

ROBSON: No. We had separate furnaces for the P-type, and separate furnaces for the N-type, and separate furnaces for just the oxygen type.

BROCK: Okay.

ROBSON: There were three different types because there were too many ways to screw up your wafers if you stuck them in the same furnace. [laughter]

BROCK: Right. Was there one operator per furnace or was it one person moving back and forth?

ROBSON: In those days we probably had three or four girls that were running all the furnaces. They'd put them in, leave them in for twelve hours, and take them out. The girls took them out with a pair of tweezers and laid them out and then sent them to the photoresist room, and then they came out of the photoresist room and went to a different girl. That's how it worked.

BROCK: How did you find the girls to do those jobs? Was that easy, just an ad in the paper?

ROBSON: I don't know. There were lots of—we were all young in those days and there were lots of people that were looking for jobs. I remember a few of them, but I can't remember their names now. They were so good.

BROCK: Was there much training involved for them?

ROBSON: No. They got a pair of tweezers and lined them all up in these little quartz boats, and then picked them up with another pair of tweezers and put them in the oven. It wasn't really brain surgery. [laughter] They just shove them in there and a few hours later we came back and pulled them out. Jean Hoerni was the guy that set all the times.

LÉCUYER: The people who were really involved in the production were Jean Hoerni and Robert Noyce?

ROBSON: Robert Noyce set up the masking operation.

LÉCUYER: Oh, I see.

ROBSON: Jean Hoerni was in charge of the diffusion operation. Sheldon Roberts was in charge of the crystal growing operation. Jean Hoerni was the key man in this business because he had to lay the layers of oxide and layers of different negative and positive semiconductor layers out.

BROCK: What was Gordon up to?

ROBSON: Gordon coordinated. I think Jean worked for him, basically, and he coordinated all the chemical stuff. Gordon said, "Okay, what kind of chemical do we put in the furnace to get the layer of N-type deal?" We tried thousands of different things. We had to throw the furnace tubes out every time we did it differently. It was kind of interesting. Gordon was coordinating the chemistry part.

LÉCUYER: When was that?

ROBSON: 1958.

LÉCUYER: There were maybe forty or fifty people in the company?

ROBSON: I was employee number sixty-four. John Carnahan was maybe sixty-three. Dick Parker was probably sixty-two. There were the eight guys, and then the girls.

BROCK: In terms of the operators running the production line, or the manufacturing line, were they primarily women?

ROBSON: The women did all of the assembly, and they did most of the diffusion and masking.

LÉCUYER: And your job was to oversee all the production?

ROBSON: All those girls. God it was a great job. [laughter] We made it into a preproduction deal and Harry Sello was the boss. Nice guy too. Is he still alive?

BROCK: I saw him yesterday, and he said to say "Hello" to you. [laughter] With the preproduction, was that essentially getting a line up and running to be a manufacturing line?

ROBSON: Yes. We used to make these little transistors. They took the place of vacuum tubes. When I was in the army the vacuum tubes were the biggest pain in the ass in the world, and transistors took the place of them. At the last step in the production we evaporated aluminum on the transistors and then we took a little gold wire and then hooked leads to them.

BROCK: How many transistors were you forming on one of these three-quarter inch wafers?

ROBSON: I would say about seventy-five. Sometimes, with the big patterns, there were maybe forty. We got four or five good ones.

BROCK: In the earliest days, then, once you had fully formed the transistor structures on the wafer would you, in the same building, chop it into dice?

ROBSON: Chopped it up with a diamond saw or with acid and a black wax mask. That's what it was, a little diamond on the end of a thing and the girl would slice it up. It was really neat.

BROCK: Would it go into attaching the leads?

ROBSON: We took the transistor that was good. We lined them all up on a little piece of metal, a little brass plate, and checked them all out. The three or four out of the wafer that were good we attached to a metal thing called a header and then handed it to a girl and she took that one and put a little ball of gold and stick it in a little hot furnace, jig deal. She put it in there and it melted out and then she handed it to the next girl and they put these little gold leads on the emitter and the base. The collectors attached to the back. That was it. We got sixty-five bucks for them. [laughter]

BROCK: Then you'd have to put that in a can afterward?

ROBSON: We took that thing—it was already attached to a little header. They had three leads coming out of them, and they were gold plated. She put the little ball of gold on this header, and then stuck the thing in and squished it around, and then handed it to the girl next to her and she put these two leads on it, and then we went to the sealer machine, and put a little cap on it,

welded it on there and the things really worked. They were so much better than tubes and nothing could go wrong. They'd last forever. I was quite proud of it.

BROCK: Were women also performing the testing operation?

ROBSON: Oh, absolutely. Women did all the work.

BROCK: [laughter] What were some of the issues that you were working with in coordinating all of their efforts? What was a day like for you?

ROBSON: I just got married and I had all these girls working for me and I just loved it. They loved me too, I think, and we got along fine. The guys up in the office up there, they didn't get involved with these broads, because they were kind of wild. They were all young, and wild. Really, I loved them though. [laughter]

BROCK: What was a typical day like for you in those Fairchild years? What time would you get in?

ROBSON: I'd get there at seven. I only had to drive a short way. I'd get there at seven and then we'd go out to lunch, Gordon and all the rest of these guys, and then come back. Then we had two or three shifts working. It was fun.

BROCK: What time did you leave in the evening?

ROBSON: Usually we went down to the bar about seven-thirty, right across the street.

BROCK: What was the bar called?

ROBSON: There was a Rupe's and there were a couple of bars there.

LÉCUYER: All the guys would go there?

ROBSON: No, just the bosses. The girls would come in later, the ones that were on the night shift. Tom [Thomas] Bay and Charlie Sporck and that entire bunch.

BROCK: Did you have to deal with any serious labor-management issues?

ROBSON: I don't think so. No.

BROCK: Nothing stands out?

ROBSON: No. A few years later the union wanted to get in there but nobody signed up for it.

BROCK: At Fairchild?

ROBSON: Well, at Fairchild, or Amelco [Amelco Corporation], one of those places. I don't remember where.

LÉCUYER: If we could go back to Eugene Kleiner, what was his role in the business?

ROBSON: Gene Kleiner was mainly a manager of the—he wasn't the boss anymore. He had personnel.

BROCK: One person we didn't talk about is Vic Grinich. What was he doing?

ROBSON: Vic was the electronics expert. I never knew him that well. I went into his office occasionally. He was there with a curve tracer. He was checking shit out. A nice guy. Is he alive?

LÉCUYER: I think he died three or four years ago.

ROBSON: He was an electronics guy. All the rest of the guys—Bob Noyce, Gordon, and Kleiner—they didn't know anything about electronics. But Vic did. He was really good at it.

LÉCUYER: Was he the one who devised the testing and the—?

ROBSON: He did it all—he lined it all up. He came down, "Hey Bob, here's how you got to test these transistors." We plugged them into this thing and saw if they were working and sold them for sixty-five bucks. He was great. Jay Last was kind of like that too, even though he was probably a physicist. He was very good at electronics.

BROCK: If we think about the expansion in manufacturing that happened in the period that you worked there, to keep up with explosive demand for the transistors, tell us a little bit more about how that worked?

ROBSON: We were working there on Whisman Road. They built a brand new facility on Bayshore. They built a brand new big plant, and I stayed at the Whisman place making the wafers, and cutting them into little pieces, and sending them over to the new plant. Have you been there?

BROCK: No.

ROBSON: It's really a small place. Then I got sent over there and we moved our diffusion and masking operation over to the big plant. Frank Grady—have you ever heard of Frank Grady?

BROCK: I've heard the name. He was another manufacturing—

ROBSON: He was the boss.

BROCK: Of that facility?

ROBSON: He was working for Bob Noyce. Great guy. He hired Charlie Sporck. Charlie Sporck and I had an office together. I was still running back and forth to the Whisman place, bringing these wafers over, and they were cutting them up in the new place. These guys were assembling them. Once that got running pretty good, they got their new diffusion process running—remember there are NPNs and PNPs, and all kinds of different ones. Once that got set up I took over as production superintendent of the Special Products Group.

BROCK: What was the Special Products Group?

ROBSON: What we did was we took two—this was before the microcircuits—we would take two or three little transistors, hooked them together in different things, and got a hundred and eighty bucks for them.

BROCK: And put them all together in one can?

ROBSON: In one can. We got lots of money for our stuff, and I went over to the Bill Stansbury line and said, "Hey, give me twelve of those things. Are they any good?" I hooked them up in between the emitter and the base and that sort of crap.

LÉCUYER: How big was the business for Special Products then?

ROBSON: I imagine we were doing three million a year. Two million, maybe.

BROCK: Was the workforce the same in the new fabrication plant? Were women mostly doing all of the operations?

ROBSON: All the women were the same. They just seemed like they were hornier. [laughter] But they were fine. They were all the same people, that entire bunch—they were great.

BROCK: They were the same people who moved to the new plant?

ROBSON: Yes, supervisors like me really had an advantage, but I was married and everything. There were some rough times. [laughter] There were some beautiful broads there.

BROCK: Say a little bit more about Frank Grady, what he was like and what was his background?

ROBSON: Frank was the guy that ran production. He hired Charlie Sporck. He hired Jack Magarian. He hired all these guys. I was there before he got there, and I was his production superintendent. Great guy.

BROCK: Sharing a room with Charlie Sporck—over time he developed quite a reputation for being this very hardnosed manufacturing guy. Did you see that when you were there?

ROBSON: Not really. Charlie and Jack worked in a plant in New York for DuPont [E. I. du Pont de Nemours and Company], or some damn thing. Charlie was fine. My wife and I, and Jack's wife spent three or four years together. I'd already left, but three or four years together of socializing. We were neighbors. We had a good time.

BROCK: At some point in this period, once the new factory was built, came the introduction of Jean Hoerni's new planar process for making transistors?

ROBSON: The planar process was invented by one of my buddies by the name of Paul Henchcliff.

BROCK: Tell us a little bit more about that.

ROBSON: Paul was running the diffusion operation, and Jean was the guy that had all the brains, and I was running the masking operation. Paul said, "Why do we just put oxide here and then come back and remove it?" Paul Henchcliff—you ever heard of the name?

BROCK: No.

LÉCUYER: No.

ROBSON: A great guy. I have no idea whatever happened to him. I'm sure he's dead by now.

BROCK: It was his suggestion to leave the oxide on?

ROBSON: He told Jean, "Look, let's start with a neutral, just a plain silicon deal, put the oxide on there, put in the collector, put the oxide back on and then start hooking everything up."

LÉCUYER: From the top right?

ROBSON: That was the beginning of the microcircuit.

BROCK: What was Paul's background?

ROBSON: He was one of the foremen in the diffusion department. He was the one that made the suggestion. I think Jean took advantage of it a little bit, but I don't know. And probably Bob Noyce did too.

LÉCUYER: What happened to him afterwards? Did he stay at Fairchild or did he go on to other companies?

ROBSON: He stayed at Fairchild a long time.

BROCK: When that got formalized and then introduced as a new manufacturing process, was it difficult to introduce the planar process?

ROBSON: Not really. We put the collectors on, and then oxided them, and then put the base on them, and then hooked them up with a thing and that was the beginning of the microcircuit.

BROCK: Did you ever talk to Jean Hoerni about that?

ROBSON: I said, "Hey, Paul said that's how we ought to do it." We talked all the time about it.

BROCK: What did he have to say? Because the credit for it is—

ROBSON: Jean never admitted to me that Paul invented it.

BROCK: Interesting.

ROBSON: Never did. You can ask Gordon about it, but Jean never really admitted that Paul Henchcliff's the guy that did it. He was a technician working in the diffusion operation.

BROCK: Was it about this time that Fairchild built a big diode plant?

ROBSON: About that time, when Bayshore was built, they built another plant. Bob Noyce took care of that. Built another thing making little diodes.

BROCK: You didn't have much to do with that?

ROBSON: I had nothing to do with it except for the several months Jean Hoerni and I supplied the diodes for them to assemble. One of the guys that I did deal with was Don Rogers.

BROCK: Was he associated with the diode plant at that time?

ROBSON: He was the sales manager of it. He and I worked together for many years.

BROCK: I see. Was that at Intersil [Intersil Corporation] that you worked together?

ROBSON: It might have been but I think it was probably Amelco.

BROCK: Okay. Ed Baldwin is somebody we haven't talked about.

ROBSON: I never knew the guy.

BROCK: You were there by the time that he left?

ROBSON: No. I don't think he was there when I was there.

BROCK: Okay. I guess he left to found Rheem Semiconductor?

ROBSON: I was long gone before he started Rheem. It was across the street from Amelco. It wasn't much of an operation.

BROCK: What was your sense of the competition from other semiconductor firms in those days?

ROBSON: The only competition we had was from TI [Texas Instruments Incorporated], at the time that we first started. They were tough.

BROCK: Did you have any information about how they were doing their manufacturing and processing?

ROBSON: We were always talking about it, how they were doing their processing, and how they were putting their wafers in the package and all that crap. There wasn't any conspiracy to find out how they were doing it. They were tough, though. They must have developed the process at the same time as we did, maybe a little later.

LÉCUYER: They did, I think, a little later.

ROBSON: Maybe a year later.

BROCK: Some of the Sales and Marketing people at Fairchild—Tom Bay is a name we've heard a lot about; Don Rogers, who you just mentioned; and also Bob Graham. I was wondering if you could talk about—

ROBSON: Bob Graham was a salesman, not a manager when I was there. He ended up being pretty talented but he was a tough little rascal. The guys I dealt with were Tom Bay and Don Rogers.

BROCK: Could you tell us a little bit about those two?

ROBSON: Tom Bay was great. He was a lot of fun. He was a boozer. He had a lot of fun going out. Don Rogers as one of the more unique people I've ever met.

BROCK: In what way?

ROBSON: He was just on the go all the time. [laughter] I still talk to his wife down in San Diego occasionally. Bob Noyce, one time, called him and he was in Kabul [Afghanistan]. Now, who the hell is going to buy anything in Kabul? [laughter] Don Rogers and I worked together for several years in our own company. I wrote his obituary.

LÉCUYER: What kind of guy was he? Was he extremely dynamic?

ROBSON: He was a little guy and he was just so goddamn fiery and he was a hell of a salesman. He was in charge of sales at the diode plant up there. He sold millions of diodes.

BROCK: Was that primarily for military applications?

ROBSON: It was all military.

BROCK: Did it take a special person to be a salesman? He was selling to the military officers who were his customers? Or, were they engineers from other military systems producers?

ROBSON: I don't know. One time I had a meeting with a guy that was a General in the Second World War, Omar Bradley, who ran Bulova Watch Company [Bulova Watch Company Incorporated]. Don said, "Hey, we're going to meet this guy, this general, and we're going to sell him a whole bunch of goddamn microcircuits." But we go in there and he's got all these flags and shit, and I saluted. He was a real nice guy. He lived in Southern California but he worked for Bulova on Long Island. He was the president or the chairman of Bulova Watch Company. Don went in there and we went right in and saluted the flag and told him about our stuff, and we had about a two-hour meeting with this general from Long Island. I told my dad about it and he was impressed because he was in the same army group in the Second World War.

BROCK: Did you make the sale?

ROBSON: Yes we did, actually.

BROCK: Going back to the Fairchild years, and the reaction to the integrated circuit, were integrated circuits being manufactured actively while you were still with Fairchild?

ROBSON: Well, if you call these little dual transistors things they were probably integrated circuits, but I think Charlie Sporck had a guy working for him who made the first little amplifier circuit over at another company. National Semiconductor [National Semiconductor Corporation].

BROCK: It might have been after you had left for Amelco that Fairchild started this Micrologic line of planar integrated circuits?

ROBSON: I was long gone.

BROCK: Okay. Do you remember your reaction to the integrated circuits on the single silicon die?

ROBSON: I do because I was putting them on separate little pieces of material and trying to do it all the time. I knew it was coming. When Paul Henchcliff did the work on it I knew it was all over.

BROCK: Well, it's also interesting what you were saying about conversations about this with Jean Hoerni. Did he ever explicitly talk about Paul's contribution?

ROBSON: Yes. He and Paul worked together all the time, but Paul was in charge of diffusion and Jean was in charge of telling Paul how to do it. [laughter] Paul told him one time, "Lay on another layer here," and that's how it happened. I always thought Paul got a bad deal because he didn't get credit for it.

BROCK: Over time, in the period right before you left Fairchild, was there increasing division of production responsibility into different lines for different devices?

ROBSON: Yeah, we had all kinds. We had PNP, NPNs, and all different kinds of lines lined up. I was the production superintendent in charge of Special Products, where I would go over and get all these things and make all these—it was kind of half-assed integrated circuits, you know what I mean. It was a big business then. It was starting to be.

BROCK: Let's discuss some of the details of your discussions leading to going to Amelco and the reaction of people at Fairchild when you and the others left.

ROBSON: With Amelco, I had worked at Fairchild for four years and it was beginning to be a pain-in-the-ass place.

BROCK: Why?

ROBSON: Charlie was beginning to be a pain in the ass, and I just didn't think that the management—not Gordon, or Bob, or these guys—I just didn't think these guys really knew what the hell they were doing. I went over to Jean Hoerni said, "Hey, you want to go over here? We'll go to Amelco." Henry Singleton and George Kozmetsky interviewed me. We set up our company, Amelco, which later became Teledyne [Teledyne Technologies Incorporated]. Jean was sick and tired of the bullshit too. Jean was a fun guy but he was hard to work with.

BROCK: In what ways?

ROBSON: I don't know. He was a tough Swiss son of a bitch. [laughter] I got along fine with him, but he got a divorce. He was running around with a lot of broads and it was kind of a nasty deal. I enjoyed him, but he was a tough guy to work with.

LÉCUYER: You mentioned that he was very temperamental.

ROBSON: Oh terribly temperamental. In the morning it was his awful mood. He was good in the afternoon.

LÉCUYER: That was in that four years?

ROBSON: He would just go crazy He was a tough guy to work with, but he was competent. I mean really good.

LÉCUYER: He must have also been very charming.

ROBSON: We used to go out to the bars and have a good time drinking. When he got drunk he talked French, and not knowing any French I didn't know what he was babbling about. He was a French Swiss or something.

BROCK: What were your impressions of Singleton and Kozmetsky?

ROBSON: George Kozmetsky—in fact, I just heard of him a year ago or so. He's over in Hawaii with Gordon, and I didn't see him, but Gordon was having lunch with him. I said, "Goddamn, I'm going to lunch with you too." George was a good guy. He was a little go, go, go guy like Don Rogers, but a little smarter. I don't know what ever happened to Henry but he was a great big smart guy. George is still around. He's still a buddy of Gordon's.

BROCK: What was your exact role at Amelco?

ROBSON: I was manufacturing manager.

BROCK: Did you set up the first lines?

ROBSON: I set up the manufacturing, the diffusion furnaces, and masking operation, and the assembly line, and I remember that in early 1960s, we were making fifteen thousand of these little computer boxes for the helicopters. Boxes of these things that had the fire control and the how to fly control. The communists were shooting them down five thousand a month or so in Vietnam.

LÉCUYER: You had to crank up production?

ROBSON: We had to just keep building these things. Oh, it was awful. They were fire control and navigation control boxes.

BROCK: For helicopters?

ROBSON: For the Hueys. That whole company was built on that Huey helicopter deal.

LÉCUYER: And so you were making the transistors and the boxes?

ROBSON: We were making all the transistors and crap that went into it, and then we had a separate room to assemble all that stuff in one place. Then we would send them down to Southern California and they would check them all out and put them in the helicopters.

BROCK: Was this in a new facility that you moved into?

ROBSON: It was right behind the first Fairchild place.

BROCK: Your commute didn't change at all.

ROBSON: [laughter] No, it didn't change at all.

BROCK: At that time were you able to go buy the production equipment, like furnaces and wafers?

ROBSON: Sure.

BROCK: You didn't have to make any special—

ROBSON: No. In fact, all of Sheldon Roberts' stuff was done. We were buying float zone wafer, or crystals, and they were all cut into perfect little things. Applied [Applied Materials Incorporated] was doing all that stuff.

BROCK: I think they're a little bit later, aren't they?

ROBSON: I doubt it. Applied Materials was the one that was making all that crystal growing stuff.

BROCK: Was Knapic [Knapic Electrophysics] still going at that time?

ROBSON: Knapic was the main one, I think. They were giving us the crystals.

LÉCUYER: Then you would buy the stuff from them and make the wafers?

ROBSON: They sliced them up, and they gave them to us and we ran them through, and they put them in these helicopters and the people shot them down.

BROCK: Were you involved with recruiting the workforce for Amelco?

ROBSON: I was manufacturing manager. They all worked for me.

BROCK: Was it difficult finding people by that time?

ROBSON: No.

BROCK: Was it a similar deal with mostly a female workforce?

ROBSON: Yeah, it was all women.

BROCK: Was that true throughout your experience in the semiconductor industry?

ROBSON: Yes.

BROCK: Was it your impression that was how it was at all of the semiconductor companies?

ROBSON: There was only Fairchild and us. I didn't know the Texas Instrument guys.

BROCK: Yeah. [laughter]

ROBSON: I don't know about the ones in Texas. I mean, women did all the work.

LÉCUYER: We haven't talked very much about the products of Amelco today, but they were field effect transistors?

ROBSON: Field effect transistors came later at Intersil and places like that.

LÉCUYER: Oh I see. Were you making microcircuits at Amelco?

ROBSON: I don't think we were. We may have been making three or four transistors but I doubt it. We were making boxes about this size that ran the navigation and the fire control things for the helicopters. The communists were shooting them down faster than we could build them.

LÉCUYER: That was good business for you?

ROBSON: Well, it was kind of nasty. Yeah.

BROCK: How were the relationships between Amelco and Teledyne at this period? It was my understanding that Amelco was a subsidiary company?

ROBSON: Amelco was the main company, and it was set up in Southern California as Amelco. They set it up here and George was the main guy that ran it. Henry decided to make it into Teledyne, buy Magnavox and all these other companies.

BROCK: What other names stand out in your mind as people you worked closely with at Amelco?

ROBSON: Bruce Kerr.

BROCK: How was manufacturing changing over the time while you were with Amelco? If you compare it to the very beginnings of the semiconductor manufacturing game at Fairchild? What was different at Amelco?

ROBSON: I don't think there was much of a difference. I think what happened was, if a guy had a real good mechanic at Fairchild, which would make a little thing that would work better, Amelco would hire him. [laughter] Steal the stuff. That's my feeling.

BROCK: Was there a lot of poaching of talent from Fairchild?

ROBSON: Oh, absolutely. We all went to the same bars and talked every night.

BROCK: Did you get any flak from the Fairchild gang about poaching people for Amelco?

ROBSON: Not really.

BROCK: Were they doing the same to you?

ROBSON: Sure. [laughter] I don't think there was any problem at all.

BROCK: It really was concentrated in the same neighborhood, if you will.

ROBSON: Yeah, a very small neighborhood.

BROCK: You would see one another after work and at lunch out at the local places?

ROBSON: Yeah.

BROCK: It was still mostly a young man's game at that time. You all must have been all of what, thirty-three?

ROBSON: I don't think there was anyone in there that was over thirty-five.

BROCK: [laughter] I know you were working in the semiconductor industry, but I wonder if that was unusual, if you compared it to some other businesses on the peninsula?

ROBSON: If I compared it with the aircraft industry or something I'm sure it would be different. This was brand new. I wouldn't think you could compare it with anything.

LÉCUYER: There were lots of new things happening.

BROCK: I think it is distinctive in that so many of the people leading in the industry were so young.

ROBSON: Gordon told me the only time that he was ever drunk was when Bill [William] Shockley got his Nobel Prize at Rickeys. Shockley was advising Jean Hoerni, and me, and these other guys. He was a big contributor.

BROCK: Even after they left and founded Fairchild?

ROBSON: Oh, he was there all the time. I'd see him every week or two. He only worked two blocks away.

BROCK: Shockley Semiconductor was only two blocks away?

ROBSON: Or three blocks away. He was a tough guy. But I liked him. Shockley was the brains of this whole goddamn thing as far as I'm concerned.

BROCK: Of the whole silicon electronics game?

ROBSON: Yeah. Him, Gordon, and Bob Noyce.

LÉCUYER: Were there a lot of interactions with Shockley's company and Amelco?

ROBSON: No. They didn't have anything to do with each other, but Shockley came in, talked to Jean, and talked to me, and he was a hard guy to get along with. He said, "Hey, you got to do this, and you got to do that." And Jean said, "Aw, mmm, mmm, mmm." That was at Amelco, but he'd do the same thing at Fairchild and Intersil. Shockley was a big part of this operation.

BROCK: What was he doing?

ROBSON: Mainly consulting, I think. All these guys looked up to him. He was one sharp cookie, Shockley. I never knew him that much but I talked to him a few times, and he came down every week or two.

BROCK: That's really surprising because from other accounts that I read—

ROBSON: Bill Shockley had nothing to do with anything?

BROCK: Well, no, that after the eight of them left there was—

ROBSON: No, like I said, Gordon said the only time he ever got drunk was when Shockley got his Nobel Prize. These guys just worshipped Shockley. Is he dead now?

BROCK: Yeah.

ROBSON: I remember he talked to me. He came down to the furnace room and said, "I don't know, Bob, this is bullshit." He was a hardnosed guy. Smarter than a whip though. Kind of fun dealing with him.

LÉCUYER: Interesting. Then all these companies were what within a mile of each other, or so?

ROBSON: Yeah. There's Bayshore, Whisman Road—well they were all together there.

LÉCUYER: Just by walking around you would run into people right, basically?

ROBSON: [laughter] Well, you'd go up to—they had a thing called the Prime Rib House. It was on the corner of El Camino and San Antonio Road. Right there on the corner was this Prime Rib House, and for one dollar and thirty-five cents you could get a prime rib. All you could eat. If you kept going back for more, a goddamn broad would throw gravy on you. [laughter] We all went there. All of these guys from Intersil, Amelco, and Fairchild.

BROCK: There's also the Wagon Wheel Bar. It was Jean—

ROBSON: The Wagon Wheel was right next to it. There was Rupe's. Wagon Wheel was over by Fairchild, I guess. There was another little bar called the—there were two little bars over there next to Rupe's. Tom Bay and I, and Charlie Sporck, we'd always just go from bar to bar on Friday. Our wives would pick us up.

LÉCUYER: Would you go to bars every weeknight?

ROBSON: No. We'd normally just go on a Friday night. Then at seven o'clock at night, "Let's get the hell out of here" and, boom, we'd go to Rupe's. Gordon was never a part of this thing.

BROCK: Who was?

ROBSON: Charlie Sporck, me, Tom Bay and four or five others.

LÉCUYER: Was this when you were at Fairchild or afterwards, when everybody would just still go out Friday night?

ROBSON: No, it was before Amelco. After Fairchild my wife and I and Magarian and his wife and some of these guys went for years together up to San Francisco to plays, and musicals, and crap like that.

BROCK: In thinking about your time after Amelco, there's this group that put out this big poster-sized wall chart that's a genealogy of Silicon Valley semiconductor firms.

ROBSON: I haven't seen it.

BROCK: It's interesting because it's Shockley, then goes to Fairchild and then, there's about four hundred companies that come out of Fairchild. And we were—

ROBSON: I only know about what I was involved in.

BROCK: We were looking at this chart and we saw that there's a company listed on this poster called Caldeck.

ROBSON: I had a little assembly plant.

BROCK: Tell us a little about that.

ROBSON: It was nothing. I just assembled transistors.

BROCK: For other people who were making the transistors?

ROBSON: For other people, mainly for amplifiers. I sold out to a company in the East Bay. It was kind of fun, but that was only about three or four months.

BROCK: At that time, if you had the capital, was it relatively easy to start something like that, because you could buy the manufacturing equipment that you needed from suppliers?

ROBSON: It was terribly easy. For twelve thousand bucks you could buy all the equipment and they have it assembled on an Indian Reservation, or some damn thing, and it was fairly easy. But there was more to it than that. You have to have some goddamn marketing, and you have to have guys that really know what they're doing and I didn't.

BROCK: [laughter] You did that for a time after you left Amelco and then you got in discussions pretty soon thereafter?

ROBSON: With Jean Hoerni.

BROCK: To go into Intersil? Had he founded that already?

ROBSON: Jean set it up. He and I got along fine. He was screwed. He didn't have anybody to run the thing, and he's a hard guy to work with, so he hired me to be the production guy, the manufacturing manager, and vice president. I did it and it worked out pretty good.

BROCK: What was the strategy for the company when you joined Intersil? What particular area were they looking to specialize in?

ROBSON: Jean had an idea about field effect transistors. Goddamn, they worked well. It was his idea, as far as I know. I came out of the Army where all the little tubes would only last about twelve hours in the field. Now you got a transistor that will last for a thousand years. Jean had this field effect transistor idea and goddamn it really worked. He also had another thing with the CMOS idea.

BROCK: Could you tell us about it?

ROBSON: It just worked like a champ and Jean was very good at it. He was a lot of fun to work with.

BROCK: At Intersil did you set up the entire manufacturing operation from the ground up?

ROBSON: It was all from scratch. I was vice president of manufacturing.

BROCK: And where was—?

ROBSON: That was in Cupertino.

BROCK: I'd imagine it was the same sort of deal where the equipment was available from others?

ROBSON: Knapic and Applied Materials. Gene Troyer is one guy I haven't mentioned before from Fairchild. I don't know if he's still alive but goddamn he was good.

BROCK: What did he do?

ROBSON: He was in charge. He worked for Julie Blank and he was in charge of putting all that equipment in there. He might be alive.

LÉCUYER: Did he work for Intersil afterwards?

ROBSON: He worked for Fairchild.

LÉCUYER: Fairchild? He just stayed there?

ROBSON: Yeah, I think he always worked for Fairchild. When they set up the plant up in San Raphael they also set up the research plant in Palo Alto. Even though we were living next to each other, that's when Gordon and I kind of separated paths.

BROCK: It was a function of the firm getting larger?

ROBSON: He was already there in Palo Alto and I was down in Cupertino. Even though I could hit his house with a two iron.

LÉCUYER: Underneath?

ROBSON: He lived right below me there.

BROCK: It seems like a lot of people working in the semiconductor industry moved to Los Altos Hills in the early 1960s. Was that your impression?

ROBSON: Well, it was one of the world's greatest places to live. [laughter] It was better than this. Los Altos Hills is one of the most beautiful places. Bob Noyce lived above us, and all kinds of guys lived around me.

BROCK: At Intersil, we learned that there was an NMOS process that was developed there to make memories, before the development of that CMOS process. Do you remember how all that happened?

ROBSON: I don't remember anything about it.

BROCK: It seemed that pretty early into the evolution of the company that CMOS watch circuits became a focus for Intersil? Is that right?

ROBSON: It didn't work out that way. What happened was they had an even more efficient bipolar circuit that was even more efficient than the CMOS. The bipolar thing was a lot more efficient for running timing modules, with the crystal.

BROCK: Was there a competition in Intersil between people pushing the bipolar approach and people pushing the CMOS approach?

ROBSON: I think there was. The bipolar guy was very talented and his name was Boyd Watkins.

BROCK: What was the main product line that you were focused to at Intersil?

ROBSON: I think it was on this bipolar stuff and the CMOS stuff. We'd get them—I don't know anything about NMOS stuff. The CMOS stuff was very low power crap and really worked like a champ.

BROCK: Who was involved in developing that?

ROBSON: I think Boyd Watkins and Jean Hoerni did it. But don't forget Paul Henchcliff in this thing. That whole microcircuit business was his deal.

LÉCUYER: Why was the CMOS process at Intersil working so well? What were the secrets of the process?

ROBSON: I don't know. You can run a microcircuit with the battery for fifteen years and never have to worry about it. But that wasn't the main deal. The main deal was making the displays, the liquid crystal displays that run the thing.

BROCK: How did those discussions start with you and the group who eventually left Intersil to form Microma [Microma Corporation]?

ROBSON: The bipolar technology belonged to Intersil. Boyd Watkins and I hired a Czechoslovakian liquid crystal guy and the CMOS worked like a gem. We were working on it before that, so we probably stole the technology. [laughter]

BROCK: There was a lot of technology transfer going on all over the industry.

ROBSON: Oh yeah.

BROCK: Because people had it in their minds?

ROBSON: Yeah. The CMOS stuff just used less power, except for the timing circuit. The bipolar thing used less power than the CMOS. But we developed a CMOS driver that ran a liquid crystal display, and then we went over to Intel and said, "Hey, we got a great deal and we want you guys to buy it," and they did. [laughter]

LÉCUYER: You had the bipolar process for making the circuits?

ROBSON: For making the timing circuits.

LÉCUYER: Then you had another process to—

ROBSON: For making the display circuits.

LÉCUYER: Were you also manufacturing the watches at the same time?

ROBSON: The problem was when we started out—this general I was talking about, the Bulova Watch guy—we had all these great circuits for their electronic timing circuits. We had Seiko [Watch Corporation] and all the other people in Japan and all these other people who we were selling them bipolar circuits. They'd buy a few circuits and put out a fancy watch and then that's all that would come to us. So, we said, "Well, fuck it. We'll put out a whole watch." That hurt those guys.

BROCK: Your customers?

ROBSON: Bulova, Timex [Timex Corporation], and the rest of them. I told Bob Noyce, "Look. We can sell a whole bunch of shit here." I had a meeting with him at his place on Bayshore.

BROCK: You must have had the idea of going after a complete watch before you left Intersil?

ROBSON: We actually were only interested in watch components. That's where Don Rogers came in. He spent all his time going to Switzerland and trying to sell these bipolar watch components, and CMOS drivers, and finally we just got together one day and said, "Fuck it. We'll make the whole watch." [laughter]

BROCK: Did you have your own facility?

ROBSON: We had our own deal.

BROCK: You're manufacturing the displays there?

ROBSON: It was about a block from Whisman Road down there in Palo Alto.

BROCK: You're right back to where you began? [laughter]

ROBSON: Right back where we started. My God.

LÉCUYER: Where was the money to finance Microma coming from?

ROBSON: We got some money from Gene Kleiner. We got some money from other guys. And we had some money.

LÉCUYER: Was Sheldon Roberts involved in financing Microma?

ROBSON: I think he was a little bit.

LÉCUYER: It was really funded by your friends, and your acquaintances?

ROBSON: Our friends and relatives.

BROCK: Who established that early contact with Intel [Intel Corporation] by getting in touch with Noyce?

ROBSON: I think it was me and Don Rogers.

BROCK: What was their reaction? By then their company was only two or three years old?

ROBSON: It was a little company. I remember going in and talking to Bob Noyce, and he said, "You know Bob, these fucking watches will be selling for three bucks apiece, that we're selling for three hundred bucks." I said, "You have got to be kidding?" He said, "No." Sooner or later they were. He was a sharp cookie. But he wanted it for a commercial type of deal.

BROCK: I'm not sure what you mean?

ROBSON: He wanted to move out of the semiconductors and get into the microcircuit, or the end product kind of thing. And he did.

BROCK: Were they also interested in getting the CMOS process?

ROBSON: Actually, they bought it mainly to get the CMOS deal, I think. I wouldn't tell Gordon that, but I think they did. Because CMOS was driving the use of low power on everything. That's what they used it for.

BROCK: How long did Microma exist before you sold it to Intel?

ROBSON: Two years, I suppose.

BROCK: What was your primary role during those two years?

ROBSON: I was the president of the company and the founder. [laughter]

BROCK: So doing everything?

ROBSON: Yeah. Big deal. [laughter]

LÉCUYER: Who did you hire?

ROBSON: Don Rogers. All those guys. It was a fun time.

BROCK: Well, that was an amazing time for the digital watch, because that was right at the very beginning of it.

ROBSON: It was fun.

BROCK: We talked before about the deal that you made with Noyce, about you letting him know that you weren't interested in staying on long-term.

ROBSON: I went up to Bayshore and I said, "Hey, I'm kind of burnt out on this stuff." I had hired a guy who was pretty damn good. I forget what the hell his name was. Noyce said, "You'll let him take that over." I said, "I'd be glad to." I had sixty thousand shares of Intel stock, and at the time it wasn't that much. But right now I'd be a billionaire.

BROCK: After you made the deal and they decided to purchase the company, what happened? How did they integrate it into—

ROBSON: What they started doing was making CMOS microcircuits that were fantastic. They made them for everything. They were unmerciful and really good. I don't know if they're any good anymore, but boy they were really good then. They made CMOS microcircuits for everything from bomb supplies to—it's unbelievable how good they are. Andy Grove was the guy that did it. Tremendously competent.

LÉCUYER: So that would be the timing circuits again—

ROBSON: The timing circuits had gone by the wayside. The CMOS stuff ended up running the entire—I mean it only takes a touch of battery power to run the thing for five years. These guys did it.

BROCK: Just extending it to all the devices they were making?

ROBSON: They're probably still doing it. I have no idea.

LÉCUYER: You mean starting to make memory circuits with CMOS and doing all these things?

ROBSON: Yeah. Everything—that takes no power, those guys knew how to do it. We showed them how to do it. So, they might think they got screwed, but I doubt it. [laughter]

LÉCUYER: I doubt it too.

BROCK: We were talking earlier about some of the vagaries in this business, when somebody walks out the door and walks to a new company they can't help but take their knowledge with them, in terms of stealing technology. Were there a lot of lawsuits in this period between the different firms?

ROBSON: I don't remember one.

BROCK: It seemed like an accepted part of the business at the time?

ROBSON: I don't remember one. I don't remember anything I ever stole. It's part of your brain, I guess. You put that thing in the oven for twelve hours and you put this mask on.

BROCK: Having played the electronics game for long enough, did you come right out here to where we are today?

ROBSON: I sold a lot of my Intel stock and bought this thousand-acre ranch, and much to the dismay of my wife, left Los Altos Hills. That's what I've been doing the last thirty-five years.

BROCK: Did you have connections to the area out here before?

ROBSON: No. But right now my business is spectacularly good. [laughter] Last year we did 1.8 million pounds of pistachio that we sell at two dollars and seventy-five cents, plus all the almonds and other stuff. This year is going to be just as good. So, I'm just a plain farmer now. But it's big business. That's why I got my kids working for me, and my sister doing the filing. [laughter]

BROCK: It's a big area of land to deal with.

ROBSON: We have it all set up, my foreman is now going down to Mexico. He's going to be gone for a month. We don't have any farming. But I want you guys to stop down and see that big Mickey Mouse operation my wife runs down there. I mean, she's got these boxes three or four hundred an hour go out of there now.

LÉCUYER: Wow.

BROCK: We sure will. We talked a lot last time about your friendship with Gordon and your activities together, and your impressions of him and Betty over the years. That was a very revealing and informative discussion. I realized one thing that we didn't spend enough time on was fish stories from thirty-odd years of fishing together. I was wondering if we could spend some time to talk about some of your favorites.

ROBSON: Gordon is one of the world's great fishermen and a great cook. His BBQ tuna is the best thing I have ever eaten. He's also a scientist and he kind of takes himself a little too seriously sometimes. [laughter] His wife, Betty, is also a great fisherman, I've seen her catch five fish in one day. I remember the last time we were out there he had this beautiful fishing vest, like a shirt. It had these big pockets on it and he'd have the sunscreen and stuff, and his glasses and stuff. We were coming in through this thing and I said, "Hey, that thing looks kind of goofy to me." He reached over and grabbed his pole, because legitimately the mates can't touch the pole or it doesn't count. So his big pocket reaches up and puts the reel on free spool. Here's this marlin, pulling the line off at fifty miles per hour. You should have seen the thing. I'm laughing so damn hard and he is so pissed off. I said, "Hey, don't tell me where you got

that goddamn shirt." [laughter] He's a lot of fun to be with. He and I have always had fun fishing, for thirty-five years.

Our greatest trip was to a place—and Gordon will admit this too, I'm sure. We flew into a place called Darwin [Australia], and from Darwin we took an airplane and flew about an hour north. There's an island, Batthurst Island. It's about the size of California it looks like to me, anyway. [laughter] We flew out there and spent a week on this island, and I want to tell you, this is the most miserable place you ever want to go in your life. Everything's eighty-five. There's no seventies or anything, the beer, the air temperature, the humidity, the water temperature, the rain temperature, the day temperature, and the night temperature. Everything is eighty-five, so you're always completely sweating no matter what you're doing. And there are no people. [laughter] But it was one of our best trips, because we caught all kinds of fish. Betty was sick the entire time. Once you get around that equator there you have got to be careful because it's miserable. If you think it's miserable out here now, eighty-five for seven days is terrible.

BROCK: What was the wildlife like, the fish?

ROBSON: I don't think anybody had ever been fishing there before. What we did was we flew into this town called Polerumpe and then walked down to our boat. In Polerumpe they had a big sign saying they "served more beer to less people than anyplace in the world." [laughter] It was neat. We went out to where the boat was and these aborigines—they didn't have any clothes on. None of them had clothes on. [laughter] And they were cutting up this sea cow. They were cutting this thing into pieces and handing it to the other people, and all this blood and guts was—these women had tits that hang to their knees and the blood was running down them—it was awful! [laughter] I said, "Betty, you want me to leave you here?" [laughter]

We took that boat for five hours, went back into this place and spent seven days back in the bush back there. Never saw anybody, but there was smoke occasionally and sometimes you could see footprints on the beach. It was kind of scary. [laughter] The fishing was fantastic. Gordon's a fantastic fly fisherman, and we went fly fishing all the time and tried to catch these big fish on fly equipment.

BROCK: Have the two of you also gone hunting? Is that a thing that you do regularly or was that more in the past?

ROBSON: We used to go hunting, occasionally bird hunting and pig hunting. We've gone pig hunting a few times. When you go down to Sharleen's place, stop there and go into the boys' bathroom and you will see some of the pigs that we've killed.

LÉCUYER: The pig hunting was around here?

ROBSON: It was down in Paso Robles. Gordon's mainly a bird hunter. His brother Fran used to come out here all the time for pheasant hunting, but Gordon's mainly a quail hunter. But he shot a wild pig while quail hunting last year.

BROCK: That he surprised?

ROBSON: No. The thing attacked him. He killed the pig with the shotgun, a twenty gauge shotgun. [laughter] The one thing that we do a lot of is deep sea fishing. We've been all over the world deep sea fishing, but Gordon does a lot of river fishing too. I'm talking up in Montana and Wyoming. He's got a place in Wyoming where he goes fishing. He's one hell of a fisherman. Is Lew still around?

BROCK: Lew Coleman? Yes, he's still in the area.

ROBSON: But he's not running the Foundation?

BROCK: No. He's on their board now, but he's not actively running it. Was he also a fisherman?

ROBSON: He is actually a lot better than me, as far as fly fishing goes. His brother, John is a lawyer from Sacramento California, and is also a lot of fun to fish with.

[END OF INTERVIEW]

INDEX