

An Interview with

HERBERT W. ROBINSON

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Conducted by Bruce H. Bruemmer

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Charles Babbage Institute  
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Abstract

The Council for Economic and Industry Research, Inc. was formed in 1952 to perform operations research and model building for the U. S. Air Force. In 1953 Robinson took over the project, which was designed to identify strategic bomb targets in the Soviet Union based on potential economic damage. In 1954 a public company renamed C-E-I-R, Inc. was formed with Robinson as its president. Orchard Hayes was in charge of computer operations for the nascent software development and programming business. Robinson discusses C-E-I-R acquisitions Automation Institute, General Analysis Corporation, Data Tech, ARB (a television rating company), and C-E-I-R de Mexico. He talks about the establishment of C-E-I-R operations in London and the Netherlands and the subsequent takeover of these by British Petroleum. Robinson discusses the difficulties in managing an industry that had no history. He discusses the involvement of Robert Holland and George Dick from IBM, their attempts to direct sales of C-E-I-R products, and the loss of technical personnel. He discusses the early lack of competition and the later entrance of IBM into competition with C-E-I-R. He talks of William Norris' interest and the acquisition of C-E-I-R by Control Data Corporation.

HERBERT W. ROBINSON INTERVIEW

DATE: 13 July 1988

INTERVIEWER: Bruce H. Bruemmer

LOCATION: Bethesda, MD

BRUEMMER: I'd like to get some background information from you. Are you a British national?

ROBINSON: No, I am a U.S. Citizen, but I was born in England and took a London degree in economics with a special subject of mathematical statistics, and got a first-class honors degree, got a fellowship to London School of Economics and took a Ph.D. Then I was the senior researcher of the Oxford Institute of Statistics. I also got an Oxford Ph.D., and the war broke out just as I finished the second Ph.D. It turned out that a physicist from Oxford was a personal friend of Churchill -- Professor Lindeman of Christchurch. He was invited to set up a small brain trust of young people to help Churchill in the Admiralty. They thought of me because I was one of the very few people at that time that combined mathematics, economics, and mathematical statistics in one person. There were very few of those in those days. That was 1939. So I joined Lindeman and we ended up with about six or seven young people [who were between] 25 to 30 [years old]. When Churchill became prime minister we went over to his private office. So I was there doing quick and dirty studies on the war effort and military activities and so on. Then America got into the war in 1941, and I happened to be specializing in that area on lend-lease. That was before America got into the war, helping Britain with lending and leasing equipment, ships, and other things. So I happened to be quite knowledgeable about America. I studied its military potential and that sort of thing. In England they decided to combine all the separate production departments of the three services -- army, navy, air force -- into one, called the Ministry of Production. I was loaned as assistant to Lord Layton, who was the personal advisor to Lord Beaverbrook, the minister. It turned out that a short time later everybody began to think it was desirable to coordinate world production and world distribution of scarce items. So an agency was set up in Washington called the Combined Production and Resources Board -- British, Canadian, and U.S. I was sent over as a staff member of that organization.

That's how I came to America in 1943. I fell in love with America. I emigrated to America as soon as the war was over

and I could be released from what was called the "control of engagements" -- which meant you couldn't leave your job. After working as Chief, Economic Order Trends in the Veterans Administration, for a year I was in Poland as Economic Advisor to the UNRRA Mission to Poland -- the relief organization. When I came back I was in the World Bank until about 1951. Then I joined the Defense Production Administration. In view of my background in the British War effort I was appointed as Deputy Chief of Foreign Requirements. Of course, that ended at about the end of 1953. So I was at a loose end wondering what I would do next. In the course of looking around I went to the National Science Foundation and they had heard of a company that had a contract with the Air Force Targets involving operations research, model building, and that type of thing. Somebody there gave my name to the people that were heading the company. So I got involved in that. It turned out that there were three major movers, one of which was Wassily Leontief, a Nobel prize winner, and another was... I've forgotten the names now... there were two other people from the Rand Corporation -- that type of people.

BRUEMMER: I think there was a contract moving you into the operation.

ROBINSON: Well, what had happened was that those three people had been foolish in setting up the contract. They signed a contract with no fee and didn't realize that under the Armed Services Procurement Regulations you could not claim interest as a cost. So on a \$350,000 contract they were faced with potentially losing several thousand dollars. Foolishly again, they started fighting with the government instead of trying to work something out. They said they wouldn't do anything, and so on. The government was interested in getting this moving, because, you see, it was of great importance to Targets to get his work done. And, finally, it was agreed that someone else would take over the company, the Council for Economic and Industrial Research, Inc.

BRUEMMER: Now, this contract was originally drawn up in 1952?

ROBINSON: Maybe. I don't know exactly, but anyway, by the end of 1953, nothing had been done. I think it was a two year contract starting mid-'53. So I went to them and said, "Look, I am willing to do this if you will work with us." I had two friends that I had met in the Defense Production Administration, and there was another man that was a

consultant on government contracting. The four of us decided to put up some capital and start the company -- well, really, to take over the company which already existed. I went to see the project monitor and laid out our proposal. It was accepted and we started.

The contract was really data work, but it had in mind the development of a complete mathematical model of the Soviet economy, which would be used in case of hostilities to select as targets what were the most important capacities in the economy (taking into account all the direct and indirect relationships). What this amounted to, then, was a set of simultaneous equations with literally thousands of coefficients. Although it had been well known that this was a feasible type of economic model, an input/output model, it couldn't have been used up to that time because you didn't have the computing capability to handle so many equations simultaneously. So it was only when the electronic computer began to be developed that the Air Force realized that you could actually use that type of a model usefully in Targets. So that's how it all began.

One of the first things I was asked to do by the monitor was to visit the Rand Corporation to see what they were doing. It was all top secret, incidentally. So when I went there, in the course of talking to people I was shown the computer room, and this was being used at that time to assess damage. That is, if an atomic bomb fell on a city, how could you compute the damage to the capacity of the different activities in the city? I was amazed to see that they were doing it in what you might call the hard way -- taking square inch by square inch they computed what would happen to that square inch. With the computer they could do it in no time at all, whereas if it was done manually it would have taken years just to do one example. So this impressed me and I said to myself, "This must have the capability of being applied universally in everything you can think of -- research, economics, business, accounting." I could see that since you could do so many calculations so fast and so cheaply, it was a natural.

BRUEMMER: Had you had any brush with electronic computers right after the war?

ROBINSON: No, but during the War I was lent to the Board of Trade by Professor Lindeman. What had happened was that during the war, of course, England was blitzed very badly, and they had an insurance scheme such that if

your home was destroyed you submitted a claim to the government. They said, "We don't know when we'll pay or what we'll pay, but we want to have a record of the claim; and after the war we'll have to decide what to do." They had nothing organized to start this process of collecting the claims. So, I was lent to the Board of Trade to set up a complete data processing system to take every claim in the whole United Kingdom and set it out on punched-cards. I had a whole raft of what they called in England "Hollerith machines", and I had about sixty girls that I trained to do the keypunching and verifying. I set that up, and once it was running properly I just helped them select and train their supervisor. And then I went back to the other work.

So I'd had that experience. In fact, a good deal of the textbooks I used in mathematical statistics had sections on the different calculating machines -- mechanical and electromechanical. So I was very familiar with them. Of course, when I saw this computer in the Rand Corporation... I had also seen it as an exhibit in Washington where IBM had a booth, and it had taken my fancy. Strangely enough in Oxford, I had happened to read an article which claimed that a much more effective system of arithmetic would be a binary system. So all this kind of meshed. They explained in there how you could do so many calculations more smoothly with the one, two, one, two. Anyway, I was fired up after I'd been at the Rand Corporation, and although we were only going to do data work to build the model, that is, actually search through tremendous files of material to get numbers to plug into the model -- how many tons of coal needed to produce a ton of steel, for instance, and so on. Although that was our job, I decided that as soon as possible we would get a computer, and also that I would try to see the Company would not only finish this job for the government, but offer to use input-output economics for business with the computer.

BRUEMMER: When you first took up the Air Force contract, was it in your mind to use a computer?

ROBINSON: I had understood input-output economics, of course. I was very familiar with that, and I realized that you had to have a computer to use it. But I had not thought of acquiring one for ourselves. Everybody on the job realized that the only reason they were doing it was that computers had now opened up the possibility of actually doing the work with these huge matrices.

BRUEMMER: The people associated with the original contract. I've got some names here; Sidney Alexander...

ROBINSON: That's right; he was with CBS later.

BRUEMMER: Okay, Harold Barnett.

ROBINSON: And Harold Barnett, yes.

BRUEMMER: Frederick Moore.

ROBINSON: And Fred Moore, that's right; you've brought them back.

BRUEMMER: And Robert Nathan.

ROBINSON: Well, I never met Bob Nathan in connection with this, but he may have been partly involved in the early stages.

BRUEMMER: Did these people have a continuing relationship?

ROBINSON: Only Leontief. Of course, Moore was in the Rand Corporation and I became very friendly with him, because I went to Rand quite often.

BRUEMMER: What machine did they have? Do you remember?

ROBINSON: I think it was a 704 or something like that. And the first machine we got was a very small machine -- a 650 or something like that.

BRUEMMER: Essentially they had just written a bad contract and were arguing with the government over it.

ROBINSON: Yes, well, they had refused to do the work. The government said, "Well, the only way we'll let you off the hook is if you find someone else to do it." With that same contract, we went into it knowing we'd lose money.

BRUEMMER: You had to get a chance to renegotiate the contract?

ROBINSON: Oh, no, they wouldn't think of that, no. The reason that we thought it was attractive was there were \$350,000 dollars for a two-year contract of which half a year had gone. I guess in today's dollars that would be maybe a million and a half or something like that. Anyway, we figured that if we controlled expenses extremely carefully and made sure every penny we spent was a valid expense, reimbursable on a cost-plus contract, all we could lose was any interest if we borrowed the money. So we put up in total only \$30,000. I put up about \$15,000 to \$16,000 of that, and I agreed to take all the losses myself. The others simply put up the money, but I agreed that if there were losses I would take them.

BRUEMMER: That was a good chunk of money in those days.

ROBINSON: Yes, it was. It was my life's savings. In fact, I had to take a second trust on the house.

BRUEMMER: The people who are mentioned as part of the new board who were involved in the new contract included Stuart Miller...

ROBINSON: Miller. I wasn't going to tell you this because it was sort of a personal detour. Miller was going to do the contract and take over the Company from this group. He was told about me and he wanted me to come in with him; not in any financial way, but to run the project. And, unfortunately, he went mad. He was obsessed with the idea that he could assess everybody by numbers. And anybody with the number five connected with them was a bad guy.

BRUEMMER: My word!

ROBINSON: You know, I couldn't understand this; he seemed irrational to me many times. Every time we were talked about somebody for an advisory council he'd rush to the phone book and start look up their address and their telephone number. And this came to a head finally in the office of Dr. Coker, who was the Air Force project monitor. It was proposed that Dean Burns of Washington University be on the advisory board. Well, B-U-R-N-S -- five letters. He said, "I don't want Dr. Burns on the project." Coker said, "I don't understand that. Why not?" He said, "Because it's my money." So Coker said, "Well, if you have that attitude, I'm beginning to wonder if you're the person that should be entrusted with this project." And we parted that way. That very night he barricaded himself in a room at the Roger Smith hotel and was taken away to St. Elizabeth's hospital.

One thing that had caused him the most problem was my nickname... I was called Robbie, you see, and he was spelling it "Robbie". And I signed something "Robby" -- five letters. Anyway, he was taken away to St. Elizabeth's hospital. He dropped out of the project, and that's when I went to see Coker and see if the group I formed could take over.

BRUEMMER: Keith Berg?

ROBINSON: The name isn't familiar.

BRUEMMER: And W. W. Eaton.

ROBINSON: Oh, Bill Eaton. The four people who got together were Rudy Johnson, my boss, the Chief of Foreign Requirements, in the DPA, Malcolm Catlin, who was the Deputy Administrator of DPA, and Eaton, who was simply a consultant. He only put up about a couple of thousand dollars.

BRUEMMER: And then, how big was the operation in terms of manpower?

ROBINSON: Well, we began to recruit. We were very lucky because it just happened that the government had closed down an input-output study for the United States. I was able to get some very good people. Natreba and Sobin, and a small group of leaders from the Bureau of Labor Statistics and Department of Commerce were available, and I recruited them. And I guess we ended up with about fifty people, because we only had a year and a half. I realized that if we did a good job that this would probably be followed up with other contracts. We did not attempt to do anything else but that one contract for that period of time. We never tried to do any other business. We did the contract well, and we lost maybe \$10,000 or \$20,000 and we ended up with a staff of about fifty. Of course, at that time we were on tenterhooks whether we could continue. But they came through with an even bigger contract, and this time with an eight percent fee; so we were in the clear.

BRUEMMER: How was the labor divided in a task like that?

ROBINSON: Well, I relied on Natreba and Sobin to organize the data work, and they did it really by taking individuals and assigning them individual industry groups. There's a standard industrial classification, and they would break it up into pieces, and each analyst would be responsible for one group. We had to recruit certain people who were Russian scholars and could read Russian. We would get the data from the intelligence services, so top secret clearance was needed for everybody. There wasn't one person we could hire that was not top secret. We also put out about twenty or thirty subcontracts to scholars who were able to read Russian to write individual reports on individual industries. We produced very good results for the government. We delivered about twenty or thirty industry studies, we delivered a whole input-output matrix, and also showed that it would work -- that it was soluble. And they wanted us to continue. Later we did; we built on a transportation network, and we built on the whole defense network and the defense organization itself. They had a complete economic/transportation/military grid. And on the second contract I put in some money for a computer.

BRUEMMER: And that was the 650?

ROBINSON: Yes, because we needed to run tests. Also I encouraged them to give us some little problems to try. On my own I suggested we do a study of the question, "What if Baltimore was destroyed; could the state of Maryland survive?" There was some other work that had been done by the University of Maryland on an input-output model of Maryland which could be used. And we did that study with the computer.

BRUEMMER: On the first contract, did you lease any computer time?

ROBINSON: No, it was entirely a data job. So it was only, say, mid '56 that we actually had a computer, and that was a 650. Then we made the decision to go to Arlington (we had been in DC). At that time I said, "Let's get a 704." IBM was willing to rent one to us. But I had a terrible problem; everybody in the company was against it. The cost was so enormous, you see. So I said, "Well, you know, we can advertise that we have the computer time available. We'll hire programmers and make them available to program the software for customers. We'll develop our own special software for individual industries like steel detailing." But the risks were so high that people were very afraid of it. And, as a matter of fact, they were right. It turned out we were gobbling up the money from the contract so fast the contracting officer started to grumble and say, "You know, you're using this up too fast. It won't last." We were bailed out just by sheer good luck. It just happened that in Huntsville, Alabama, von Braun was running out of machine time. So he made a deal with us for every weekend -- 48 hours. I don't know what we were charging -- maybe \$500 an hour. And that bailed us out...

[BREAK IN RECORDING]

ROBINSON: ... and in mean time we continued developing quite a commercial business.

BRUEMMER: So, you were showing a deficit that enabled you to turn it into a for-profit corporation.

ROBINSON: Yes, we didn't think there was much payoff to be non-profit, so at the beginning of the next contract we

liquidated the non-profit corporation, and started the profit one, agreeing with the government that the contract would be continued with the new corporation. They could understand that we'd gone through a lot of turmoil to get where we had, and went along.

TAPE 1/SIDE 2

ROBINSON: We recruited a really outstanding man to head up the computer operation -- Orchard Hayes. And we had a lot of problems; I mean somebody says, "Well, the early Christians got the fiercest lions." And we did. For one thing, you couldn't find programmers, so we decided to train programmers. We had an aptitude test, and we got about twenty trainees. I had a bright idea. I reasoned that it would cost us so much to train them, and I wanted to capitalize that expense. Then, as we used them, we would count the cost in what it costs us to supply their services, and the profit would be our revenue less the total cost, including the training. We did that and it led to a big problem. The auditor we had at the time agreed to this and didn't say anything. Then, when we went public in 1954, because we needed the capital and had to have it, we brought on board Arthur Andersen, and they said, "Oh, you can't capitalize training costs. That's not done. You have to write it all off." So, here we were with all this money spent which was then taken out of our assets and caused a huge loss. However, we could, of course, recover it gradually from the Air Force -- their portion of it -- under the contract. It was an allowable expense to train people, but only the part that you get the benefit out of. So, we did that. We ran into that type of problem which the present software companies no longer face. For instance, we invested in many programs -- proprietary programs. We had what we'd called the "Kilowatt Club" for electric utilities. We had a short circuit analysis program, load flow program, and all sorts of programs. Arthur Andersen would not let us capitalize one penny. It had to be written off the moment you spent it, as if it was useless. I didn't like that, but they wouldn't agree to a clean balance sheet unless you just took all those assets out. Now, today they're able to capitalize those things, and write them off as revenue is earned from the program.

BRUEMMER: So they wouldn't recognize that software as a tangible.

ROBINSON: No, they considered it worthless until it brought in revenue, but by the time you got the revenue you'd written it off already.

BRUEMMER: Now, were you producing the utility programs in '54?

ROBINSON: Oh yes. Let's see, we had utility programs. We were the world experts in linear programming programs.

BRUEMMER: How did you get into the utility area, though?

ROBINSON: Oh, let's see. I think somebody was recruited and came up with this idea. I supported it, and we agreed to have our computer programmers develop the programs.

BRUEMMER: And did you have clients waiting out there for the programs?

ROBINSON: No. Fortunately, Rudy Johnson, who was in on this (he was my boss in the DPA), had been in business. He was with a company called Filmways. He realized the importance of marketing. So, at his suggestion, the minute we got the 704, we hired maybe half a dozen salesmen who were attracted to the idea of computers. One man turned out to be an absolute genius at selling it, Art Phinney. He stayed on the telephone almost day and night. He called up all the big companies, General Mills, General Motors, and he wanted to talk to the people in their statistical departments, and in their operations research departments, and he brought in the business like gangbusters. They all got a commission on what they brought in. We had a good sales force. As we got these proprietary programs, they would go around selling those to the utilities. They'd call on people. They'd get me involved if there was a good contract possible.

BRUEMMER: Yes. So, at this point you were selling computer time as well as...

ROBINSON: ... software, yes -- and also, of course, economics, and statistics, and operations research, and

management science. I felt that there was a tremendous market for those things, but it turned out that I was really too early. Today, those things are selling like hotcakes, and anybody can succeed, really, with the right combination of talent. But in those days it was very difficult to persuade top management that they needed a computer, that a program would help them, or that operations research could be used to solve a problem. In fact, I remember going to meetings of professionals in management science and operations research. The whole meeting would only have about 100 people present. Today there are enormous numbers.

BRUEMMER: At this point, you were based in Washington still?

ROBINSON: Yes.

BRUEMMER: Was that a good area for finding programming talent?

ROBINSON: Not particularly, they were rare birds everywhere. It was good for government contracting, and we began to get other government contracts too. We tried to get as many as we could. And people from the big companies would fly here to use our services. For instance, with our linear programming expertise General Mills sent somebody every weekend to do a linear programming study to decide what ingredients to buy for their chicken feed for the next week -- that type of thing. At that time, you couldn't do it by telephone; they had to come here physically.

BRUEMMER: Though you mentioned that programming talent was always a problem to find at that point.

ROBINSON: Yes. Of course the worst thing was, you'd train somebody, then they'd get a better offer from somewhere else, and off they'd go.

BRUEMMER: Yes. Could you steal people from the government that way?

ROBINSON: Well, there weren't many in the government. There was a big shortage, and then we were so new, and commercial, and could not offer firm guarantees for the future. It was only very bold people that would join us, like Jack Moshman and Orchard Hayes.

BRUEMMER: Were there any competitors in this area at that time?

ROBINSON: Not at the beginning. Later, Computer Sciences was set up...

BRUEMMER: Computer Science Corporation?

ROBINSON: Yes. That was the first real competitor. There were a few smaller ones, and we acquired some of those, as a lot of them were willing to be acquired once they had started up. I think some of our own people left. You see, it was a successful company, and our stock was a hot stock. I really shuddered every time I saw it go up, because I knew the price was ridiculous.

BRUEMMER: [Laugh] In '55... I think it was around '55, you acquired Samuel Weiss Associates.

ROBINSON: That's right; that was our first acquisition. And that was really because we'd known Sam Weiss. He was prominent in the American Statistical Association, and did a lot of work for governments and for Puerto Rico. And he was a great friend of Mal Catlin. When he died, he had a partner who wanted to, you might say, take over the business. The widow of Sam Weiss was offered nothing. She came to Mal and said, "Look, can't you help me?" And I said, "Well, let's take it over." So we made a deal that she'd get a percentage of any profit we made. I think finally we turned that into some stock in C-E-I-R which paid off beautifully for her. So that was our first acquisition. It was before we went public. After we went public, our underwriter, Alex Brown and Company, heard that ARB, the television rating company, was in trouble, and we took that over. That was a very good merger because we could do all their computing.

BRUEMMER: Had you had work from them before?

ROBINSON: No.

BRUEMMER: Before that acquisition you acquired General Analysis, Englemann and Data Tech.

ROBINSON: Oh that's right. Well, that was after we went public. I knew Alex Mood, who's a very well known and reputable statistician. Incidentally, as a mathematical statistician, you know, I was well-known in England, but not so well-known in America because I didn't keep up with it. But I had been on the Council of the Royal Statistical Society. I was attracted to Alex, and he had formed the General Analysis Corporation, which had contracts. I felt that we should try to enlarge our geographical scope. Since ours was a business that had such a small percentage of total activity in the economy, the only way you could really get any bigger was to cover more area geographically.

BRUEMMER: So you were pretty much confined to the Eastern Seaboard in your jobs.

ROBINSON: Except for the computer and software work. I had always been attracted to operations research and management science, maybe too much, because it was a very strong side of our business. I may say there were two equal pillars of the business -- one was computers and software. The other was all the professional services -- economic, statistics, operation research, management science, and their applications. We had a very big crew. We recruited top people. That was the policy right from the beginning, to be top-class. And we started one on our own in England, C-E-I-R (U.K.); I've forgotten when that happened.

BRUEMMER: It would be right after Englemann and Company?

ROBINSON: Yes, probably. About 1959 or '60.

BRUEMMER: '60.

ROBINSON: '60, I guess.

BRUEMMER: And Englemann was acquired for...

ROBINSON: Well, he had some good business in engineering. We felt that was a compatible area, too. We had engineers on board, and did engineering studies as well. We tried to cover the whole spectrum.

BRUEMMER: Yes. So, were you actively looking for these companies, or did the situation just present itself?

ROBINSON: Well, we were looking, but we didn't sort of go out, beating the bushes for them, but as we heard of one, I'd look into it. We looked into a lot that we didn't want. As I saw one that I thought had enough business not to be a burden and where we could just issue a little stock (and our stock was well priced), it made sense to bring it on board and try to meld it into the organization.

BRUEMMER: Yes. And Data Tech, was that the Hartford based...?

ROBINSON: That was really a strange one. I had realized that insurance could be an interesting area, because it is actuarial and statistical. This man, Larry Vineburgh, had a small data processing company and approached us. It was the only contract I ever made in an acquisition where I used a new idea that he would get a number of shares of stock depending on his profits. This was because we were having a tough time making a profit, and I'll tell you why later. I thought this would guarantee a profit. Sure enough, it did for about a three-year period that he could get stock according to his profits on a formula. And he made profits. But the minute the three years were up, it was in the red.

[Laugh]

BRUEMMER: Were they the firm that was working on the motor vehicle registration system?

ROBINSON: It could have been. Larry was quite a businessman. He was really a very shrewd and capable businessman.

BRUEMMER: I thought I read somewhere where they had developed this nice motor vehicle registration system, and then after C-E-I-R bought them out it became involved with some lawsuit with the state of Connecticut.

ROBINSON: I don't recall such a lawsuit. It may have happened, because as the company got bigger, of course, I set up center directors who were responsible, and they may not have told me everything that went on.

BRUEMMER: After this, you went international and set up the London operations.

ROBINSON: That's right. London, and then we went into a partnership with a French firm -- Center for Operations Research. We set up a Mexican company -- C-E-I-R de Mexico. Later the British company did very well.

However, we expanded too fast and we had lost a lot of money. As it turned out, C-E-I-R was a bold idea, but it came too soon. I felt that we needed a huge computer, because it was much more economical to operate. The number of computations per dollar was much higher, so I said, "We've got to have the biggest computers all the time." That was a policy. And we always ordered every new machine that came out. We ordered a raft of them from IBM on their understanding that we'd take them as we needed them. I figured that there would only be room for maybe one computer of that size in a city like Washington, one in New York, one in Los Angeles, and one in San Francisco. And obviously, the costs to set a computer operation up with the staff and everything were enormous. So, what I tried to do was find partners where possible. We got into New York with a partnership with Union Carbide Corporation. We took two floors of their New York building. It was in a 709, I believe, and we had 50-50 sharing of cost. In San Francisco we went in with the Del Monte people. In Los Angeles and in Houston we went on our own. I felt that we had to have the biggest computer; that there was only room for one and we'd better get there first. So we decided to have this big program of expansion. In one of the reports, you will see a chart showing when and where we'd installed the equipment. Anyway, in 18 months we multiplied the business five times. And it was just too fast. We

were losing about 10 percent of sales volume. Obviously there was no way we could judge in advance how much business you'd get on that installation and that group of people. You couldn't predict. There was no experience to go on, really. We were, however, only just missing. That happened for two years; we lost two million dollars a year. We were down to almost a negative net worth at the end of one fiscal year, but then we dug ourselves out.

BRUEMMER: You had two reports from brokerage houses in '61 when the stock was going from 3 to 90 in one fell swoop, and C-E-I-R was regarded as *the* high-tech company of the age. If you looked at the finances of the company around that time, there had been two years where there was a deficit shown.

ROBINSON: And we couldn't budget, yes.

BRUEMMER: You were doing a lot of expanding, and anybody who's the least bit conservative would say, "Net worth is not \$91 a share."

ROBINSON: Right.

BRUEMMER: But the brokers seemed very entranced with the computer business, and thought this is going to take off.

ROBINSON: Yes, they were enchanted with the potential. They used to think of us as another IBM. Of course it was, really. Perot really made a big success of the computer services side of it. You now have in this area American Management Systems. You've got Management Science Incorporated. All of these things that have come into their own in the last 15 or 20 years we were trying to sell to people that didn't really understand what we were doing and weren't willing to entrust things to. Today they will, and it's accepted. But we had to fight that difficult period of nonacceptance at the beginning.

BRUEMMER: Getting back to the London operations, was that the result of some contacts you had back in England,

or...

ROBINSON: Yes, I had a friend, a great friend who had been helping me ever since I went to London from the provinces, Dr. George. When we made a success in Washington, I thought, "Well, you know, there's no reason we couldn't duplicate this in London with the same kind of people." So I went over and asked him to do some research, and he turned up several people that were in the computer field. Not many were available at that time. I made a big tour, and we got as a managing director a man who had been in charge of a big London operation -- an advertising agency. I explained the whole idea to him, and I wrote Maurice Kendall, who was professor of statistics at the London School, and he joined forces. He was still Professor of Statistics at the London School of Economics, but he was willing to be a consultant and help start the business in return for a few stock options. We finally got one or two of the computer people to start it off. The managing director went hog wild. He recruited about a hundred people, started running a fantastic deficit. So I asked him to fly over to Washington and I told him, "Look, we just can't do this. We don't have the money. We'll be bankrupt if you go on like this." I said, "You've got to go back, cut the staff back to where it's breaking even." And he went back and he was so chagrined, I guess, and so against the policy that he resigned. He didn't contact me at all, but my friend, Dr. George, called me and said, "He's resigned, but Maurice is willing to step into it." So I said, "Oh, boy!" I knew Maurice was a real solid, hard-headed business type, as well as probably the finest statistician in the world at that time. He had that reputation.

BRUEMMER: A nice combination of talent.

ROBINSON: Yes. He had written the main advanced textbook. He and Mood were damn good people. Anyway, he took over, and they fired about half the staff and broke even, and then gradually became profitable. When we were doing very badly, it turned out that one of our best customers was British Petroleum. They counted for about half of the revenue. That had started when British Petroleum sent a group of people over to Washington to run a problem on our computer with Orchard Hayes' help on linear programming. When we got our own London operation they used it enormously. Maurice said that British Petroleum was interested in buying C-E-I-R London. I said, "Well, we wouldn't want to sell it, but I'll come over and negotiate with them." So I went over and negotiated that they'd buy 50

percent, and we'd enter into an agreement that we'd go all over Europe together.

BRUEMMER: This was what year?

ROBINSON: I guess this was about 1965-66. I'm not quite certain. Oh, maybe it was '64. We were still in financial difficulty at that time. I mean, I was looking around trying to find big slugs of money to help us. What happened then was they took a 50 percent interest, and I kind of left the managing of it to them. I was on the board; they were on the board; and Maurice was the managing director. They did reasonably well. Later, when Control Data acquired us, they went over to talk to them and BP said they couldn't possibly continue the relationship, because they were 50 percent owned by the British government and there was a British computer company. Thus, they couldn't be in cahoots with a foreign computer company. So they took it over and it became known as Scicon. And that is now one of the largest data computer services companies in Europe today. They just merged with another big one, and I guess that giant company is one of the biggest in Europe.

BRUEMMER: The Mexican operation seems to me to be sort of an odd area to have gotten into.

ROBINSON: Well, that arose because in Mood's organization there was a very good statistician. He had this friend in Mexico who was top-flight -- Jose de Nieto, probably the best statistician in Mexico. This Mexican was interested in starting a C-E-I-R operation; and maybe I was wrong. I felt that they'd have to have a computer. We were able to get government permission to own 100 percent of the company, which is against their law, really. It's normally less than 51 percent. We set it up with a top-flight crew. They did a lot of work for the Mexican government -- their Social Security system and so on. But they never turned a profit. It was always, "Send money."

BRUEMMER: Not even towards the end?

ROBINSON: No, they lost less and less, but we never got a penny back. I think Control Data closed it down afterwards. There was a Mexican I knew from the London School of Economics. He was from a wealthy family, and I

got him to be on the board, hoping that that would help generate business as well. They had a good board of directors. One was head of an automobile company -- a U.S. automobile company's subsidiary there. I've forgotten which one it was. And there were other noted Mexicans.

TAPE 2/SIDE 1

BRUEMMER: Then there was the CFRO.

ROBINSON: Yes, we bought a minority interest in that French operations research company. They were very upset, of course, when we entered our period of losses, and they kept asking for money too. Really, we couldn't see much benefit from it, so I resisted sending any more cash, and they didn't like that. They felt we ought to keep on sending cash. So I guess they got disenchanted. I wasn't enchanted, because we'd seen no real results out of it. Finally, we got a communication that they had found a buyer for the company and would we agree to sell it and sell our portion. So I sent over the general counsel of our company. She went over and implemented the deal that was proposed by them. I think we didn't get back what we had put in. Then, according to our counsel they had bought the stock themselves, and they walked down the street and sold it for a higher price to IT&T.

BRUEMMER: You had a half ownership in them?

ROBINSON: Something like that. Maybe 49 percent. We didn't have control. That was the mistake.

BRUEMMER: And the initial investment was made just to expand in France? How did you happen on that group?

ROBINSON: I would go to the international meetings of management science and operations research, and met the head man at one of the management science meetings. He approached me and said he was interested in forming some relationship with C-E-I-R. I said, "Well, we'd like to have a financial interest in your company if we do cooperate." I got good reports on their work. They were supposed to be very good people. And they were, but,

again, I had the feeling later that they just couldn't stomach making a profit and sending any of it to the United States. [Laugh] Their problem was they used everything to expand, and they always ended up with zero profit.

BRUEMMER: Yes. Now, that wasn't the case with the centers in the U.S., though. They were...

ROBINSON: Well, they were all absolutely under our control. They weren't separate corporations. I would try to find a good man, and try to make a profit. It was always difficult, because when we started a center we would lose money. To start up an operation you were bound to lose money. Getting over that hump was always difficult. You wondered at times whether there wasn't a certain psychological effect, that people got the feeling that it was impossible to get in the black -- the nature of the business. That comes to one point I wanted to make, too, is that I felt a great disappointment in the professional services side of it finally. I thought it would be very profitable. Today I was reading about Arthur Andersen. They have a fantastic professional services operation, and hundreds of millions of dollars a year income. It seemed to me that our people were never profit-minded. They couldn't get profit-minded; that somehow or other when you got a contract it always ended up that they put more into it than the money we got out. The professional services always had a terrible time making a profit.

BRUEMMER: Moshman commented that it never quite paid its way. He said that there were too many small programming jobs; there were not enough huge contractors out there that could really increase profit margins. Would that seem a fair assessment?

ROBINSON: The ones that did pay off were the bigger ones. For instance, we had a wonderful contract with Caltex, where they wanted us to develop for them a complete computer system to manage the company. This was after we'd joined up with Carbide, and we set up a group of about 15 people, full-time. They just paid the full freight. I mean, we were billing them full time. Well, we had problems with the professionals... including Jack's organization. Many of the people would be idle. In other words, you had maybe 30 people, but at any one time only about 20 of them were busy. The others were looking for business or making proposals. Then, when you did get a job, they proved so easy to influence that the customers seemed to be able to persuade them to do more work within the same contract.

Before you knew it, when you added up all your billings that you wanted to make, it was beyond the agreed price, so you couldn't charge any more. I found the government contracting very, very disappointing in the professional field, because you'd get a monitor. He'd give you a contract, maybe for \$100,000. You had computed that could do it for that and you would start out. Then, at the end, he would want more and people would give way to him. Then they'd come to him and say, "Look, we need another \$10,000 to break even. He would say, "I can't pay it for you. If you want more business from us don't expect me to pay extra. Although it was a cost-plus contract and theoretically they've had to pay the cost, they would say, "Don't ask us or else we won't give you any more business." So that was our biggest problem. We would try to inculcate into our people the idea, "Look, if the customer tries to expand the scope of the work, get a change order. Write it up." But they didn't do that.

The first loss we ever made was caused by this kind of thing. What happened was that Booz, Allen, Hamilton got a contract with the FAA. They came to us for the computer programming. Our people worked out what it would cost, they passed the proposal to me, and I told them, "It's got to be a cost-plus contract, a time and material contract, because, otherwise, we might lose our shirt." So I insisted in the wording of the proposal that it would be a time and material contract. They sent it back with a clause in it, "subject to a maximum of so much." Well, if it had worked out all right that would have been no problem. As it was, this was something like a \$30,000 contract, our people kept on working on it and wouldn't say no. It ended up as costing us about \$200,000. And Booz, Allen took the point of view that it was a fixed-price contract. They wouldn't give us a penny extra. Finally we got lawyers into it. I said, "Well, if it says a time and material contract subject to a maximum, all it means to me is that you stop work at that point." They said, "No, it turns it into a fixed price contract." What got me was the project manager on that job would come into my office and I'd say, "Look, what's it going to cost to finish the damn thing. Now tell me -- the maximum." And when it was \$30,000 he'd say, "Oh, \$40,000." Then when I saw that it was now over \$40,000 I'd say, "God, what's going on here?" And, "What it is going to take to finish this thing?" "Oh, it's going to cost \$70,000." You could never pin it down. This was your problem with professional work. I guess the real problem is you can not specify in enough detail to really pinpoint what you're going to do and how much it's going to cost.

**BRUEMMER:** Were the programmers also involved in sales work to a certain extent?

ROBINSON: Well, they would support the salesmen in the sense that, if the salesman turned up a requirement of a client, he couldn't really draw up the details of the contract. He would say, "Can I have so and so programmer to come out and help me write up the contract?" So the programmer would go out and participate in developing the contract. Then they would make their estimates of the cost and come back. Companies like a fixed-price contract and I don't blame them, but really, it's not appropriate. For many of the jobs we had it was not appropriate. We always had problems of that type. Another problem that developed was that the other centers would use the Washington center. So the Washington center would bill the other center. The Washington center was always profitable because it was always charging the other centers. The other centers were always unprofitable because they couldn't cover the costs and the corporate overhead. And I tried to say, "Headquarters will take the risk. We'll charge a corporate overhead of only 5%, which is very low. That's the total corporate overhead. "Now you make a profit." But it was very difficult.

BRUEMMER: So when they needed assistance on programs they would let out the contract to another center, or to the one...

ROBINSON: Well, it wasn't formally contractualized. They'd just say to the other center, "We want Joe Dokes to do it," and he would write down his billings and the accounting department would automatically charge them. So I guess our problem was that it was very difficult with a group of people that were in tremendous demand. You were dealing with a new area where customers were not willing to really pay the freight on a time and material basis. If you go to a lawyer, he just bills you for "work done", not even "ten hours." If he spent ten hours he'll charge you. In those days our customers would never look at us like a lawyer or an accountant. They would always look at us as some long-haired type that they were frightened of and they'd have to have a fixed-price.

BRUEMMER: Some of the centers were designated as subsidiaries, the ones in Chicago, Philadelphia, Palo Alto and Pittsburgh. Do you know what the distinction was?

ROBINSON: This isn't true. Where did you get that?

BRUEMMER: Oh, it was out of an annual report.

ROBINSON: They weren't called subsidiaries. We didn't have a center in Chicago. We didn't have a subsidiary there. I don't know how you would have gotten that name.

BRUEMMER: You had some sort of operation in Chicago. That wouldn't have been in connection with the franchising that you did later.

ROBINSON: No, that was a later idea we had -- franchises. I think there's something wrong there. The word was used in a loose way. The centers were not proper subsidiaries of any type. The only subsidiaries were ARB and we did acquire some other companies and kept them as subsidiaries. We had the programming training centers. What was that called?

BRUEMMER: Automation Institutes.

ROBINSON: Automation Institutes. We had the subsidiary that was overseeing defense installations. Let me see, what else did we have? There was Associated Science Laboratories. It was a separate corporation. It did data reduction. The Hague was a subsidiary of the London operation. Then the certified service bureaus was the franchising idea.

BRUEMMER: Other acquisitions -- FACTS Consolidated?

ROBINSON: That was some sort of market research, I think. Does it say?

BRUEMMER: Here we go -- '61: acquired FACTS Consolidated, in Los Angeles. Engaged in market research,

opinions studies...

ROBINSON: That's right. This was to go in with Alex Mood's operation. We just acquired that, dissolved the company and then it became part of his operation.

BRUEMMER: I see. Arbitron was bought... And that was acquired, as you said before, in an attempt to get them to use C-E-I-R's computers?

ROBINSON: Well, it was market research, really. In the line of statistics in the market research, and I felt that fitted in. And then in the bargain, the computer sales that we made to them was sheer gravy, because we had a lot of idle time on the machine. So I could see immediately there was a great potential for profit right away.

BRUEMMER: Yes. Now, you mentioned something before and I was going to pick up on that; RAMPS -- was that the...?

ROBINSON: That was a proprietary program. It was connected with the idea of PERT, or Critical Path. There was quite a vogue for this technique for planning, say, a construction project. But RAMPS was our version of that? What you did was use the computer to plan the sequence of tasks that would finish the job in a certain time. You had a great big chart showing you all the jobs flowing into each other. You don't hear about it today. But, it's something that the engineers use a lot now.

BRUEMMER: Oh, so it was a sort of a resource allocation algorithm that people would use.

ROBINSON: Well, in timing. It really was the timing.

BRUEMMER: I see.

[BREAK IN RECORDING]

BRUEMMER: This is a little bit of a side subject, mainly because of our interest in the 1604 computer. We dug up a *Datamation* interview that they did with you and George Dick in '63, and you had blamed the removal of the 1604 in the L.A. center on the user-base and the inability of the 1604 to run IBM Fortran programs and that type of thing. I'd heard from a CDC engineer that the director of the L.A. center refused to have anything to do with Control Data equipment and the 1604. Do you have any insight into that?

ROBINSON: No. Of course I was dependent really on the people in the centers as to their reasons why the sales weren't what they should be and weren't improving. One just had to take their word for it that they couldn't get the customers to use the 1604. We had made a good deal with CDC on it. We had got a reasonable discount. I was very anxious for it to succeed, because I had had the idea of maybe having in the big cities a center with all the different machines; that is -- IBM, CDC, RCA, Univac; all of them -- so that any customer could come in and be satisfied. So I really welcomed the idea of changing from IBM. I always felt IBM was a problem for us; we were so dependent on them we thought that we ought to diversify. Well, I wanted it to succeed, but I had to go on the results and the reasons they gave why it wouldn't work.

BRUEMMER: Yes. On that issue, Control Data had a merger task force, and in one place they were looking at the service bureau section of C-E-I-R and speculated that they could make a lot better go in taking over the centers of it since they were a manufacturer of computers. They noted that you were at a distinct disadvantage because you were buying from IBM.

ROBINSON: Yes, we used to say we were buying retail and selling retail.

BRUEMMER: Yes. It didn't take into account the tremendous attraction to IBM machinery and maybe some of the built-in programs. I know we discussed this at lunch a little bit, but how much of a problem was competition with the IBM service bureaus?

ROBINSON: Well, in the beginning it was nonexistent. They didn't even have an electronic computer. We had them, and they were still on electro-mechanical equipment. But apparently some decision was made; if you could get research into their history you'd probably find that IBM at some point said to SBC, "Why the hell is it that C-E-I-R has got our equipment and you don't? You don't have any of the electronic data processing machines, and you've got to do it." So they suddenly went in the business, and their technique was to rifle shoot us. They killed us in L.A. They killed us in San Francisco. In both cases they came in, set up shop, and undersold us; knocked us out of business fairly well.

BRUEMMER: Now the Houston operation didn't have that IBM...?

ROBINSON: No, they were not there. Really it was a pity that we gave that up, because I felt that it had a great market with the space program there. We had gone through a long period with start-up costs and losses. And then we had these two years of losses. An outfit in Minneapolis, IDS, had bought stock and had some convertible bonds, and they were very upset that we were losing money, although they hadn't invested much, really, in proportion to their portfolio. They felt that we needed some kind of management consultants to come in and tell us what was wrong. Also Lehman Brothers was interested in this. They helped us select the outfit to do it -- Cresap McCormack. Well, they came in and they had to do something. Basically, there wasn't really much wrong with the company, except it was too early and needed a more mature market. We moved too early, and it was taking too long to develop the business. That was really the problem. Well, they had to do something. So, one of the first jobs was to look at the centers, and they had concluded that Houston was not doing as well as it should and recommended that we close down Houston. The month we closed it down it had the best result of all the centers. They also felt that we weren't marketing strongly enough; that we needed beefing up there. So they recruited for us George Dick and Bob Holland - ex-IBMers, who they felt could promote the sales. Their whole approach was really to go all-out selling, and to use the IBM approach, which was actually a marketeering point-of-view. It didn't work. I think we spent more on beefing up marketing than the increased revenue obtained.

BRUEMMER: Were there other companies that you felt head-to-head with? GE got into time-sharing and services.

ROBINSON: No, they were never really a problem to us. I don't think at that time I felt there was any real competition. We're talking about '63. I feel that our problem was that we never could have guessed the market available at that time, and there wasn't the business available. We were sending out our salesmen, and they were doing their best. But there was a limit to what you could bring in. It was improving, but very, very slowly. Later we got a lot of benefits that we'd kind of had up our sleeve. One of our problems, I think, was I had been very conservative. I depreciated the machines just the way IBM did. I think four years or something like that. I'm not sure what it was, maybe four or five, which was too fast, really, because later, you got a great big bonus. The years of our profit were largely from over-depreciating in the early years. We got the benefits from leasing. We had a leasing operation to lease out the used equipment. Then selling half of C-E-I-R (U.K) Ltd. There were a lot of assets we had built up that didn't show until we needed them. We cashed in on the depreciation by selling all the equipment and leasing it back. That way we got back a million bucks or something like that in one scoop. We couldn't see any competitor that was causing the damage. The damage, I think, was simply that we'd just gone ahead too fast.

TAPE 2/SIDE 2

BRUEMMER: I should bring up the issue of the men from RCA. In a task-force report somebody from CDC had interviewed Louis Rothchild, who railed against the management of George Dick and Bob Holland; essentially said they were mismanaging the company and feathering their own nests. Since this is for the record, I'll tone it down a little bit. Another person said they were good financial marketing people, but they alienated a lot of the talent.

ROBINSON: They alienated the professional people badly.

BRUEMMER: Right. It pointed to Dick's management of Arbitron. When he became president, a lot of the talent left there. I think from Dick's perspective, the Arbitron people who were already there were constantly demanding something more from C-E-I-R, and charged that C-E-I-R was using Arbitron's profit to reinvest in other areas.

ROBINSON: Well, you could understand their feelings, because they consistently made a profit; it was partly because we supplied computer time. Of course, C-E-I-R as a whole was in the red. We had introduced a bonus plan. Although it depended on the individual's section's profit, it also depended on the company's profit. They saw that they would have been entitled to a good bonus on their own performance but it was killed by the poor company performance. So they felt very badly about that.

I think the problem with George Dick and Bob Holland was that they were essentially marketeers. That was their basic strength and their basic drive. They had felt everything could be overcome with good selling. They had very little patience with the professional people, and especially when they saw them making these losses. "What's wrong with these weirdos?" [Laugh] This was their attitude, and it showed. We lost a lot of people as a result. In fact, when we had to let George Dick go, I went to see one of the directors. He had been one of those who liked Cresap McCormack, and he had thought they had done a great job and got us great people. I said, "The trouble with George and Bob they're pure marketeers and what we're down to doing now is selling pure machine time. It's like selling apples. All the professional know-how that we originally put into this company is gradually being dissipated. What we are ending up with is an operation that is easily competed with. There's nothing special about it. It's just selling apples." And I said, "I think we've just got to get back to essentials and build the competence of the company." That was really the problem with those two. I guess if we could have had really good, professional management that made a profit; they could have relaxed and would have done a great job for the company. But as it was, their efforts in selling was offset by their poor management of the operations.

BRUEMMER: From the looks of the financial statements, it does look as though when the RCA people came in, the books become balanced.

ROBINSON: Well, that was because we refinanced the computers. You'll see a lot of the later profits were special profits. Much of it came from leasing these old computers. See, this is backwards. See, in these years we have a lot of special losses. Then, in these later years you see the special gains really took over. This year was about the only

year we made a good profit in the operations -- 1966. In 1967 we showed losses again, because when CDC acquired us they insisted on a complete audit, and the auditors naturally subtracted everything but the kitchen sink to give it a good start. When Rothchild and Lurie came in, we sat down and went through every part of the company one-by-one. It was obvious if you actually had projected for 1967 that we were going to be enormously in the red. What we did was we took a very hard-headed approach. With each one we said, "Where are you going, and what profits are you going to make?" and so on.

BRUEMMER: That's about the time you drew up this business strategy document?

ROBINSON: Yes, right.

BRUEMMER: You do have a breakdown for the first nine months of fiscal '66.

ROBINSON: Yes, and what we did was carve an enormous amount out of our costs. I thought we mentioned it in this report but I don't see it. Yes, somewhere I wrote down how much we'd saved in paring out a lot of these things.

BRUEMMER: And some of those extraordinary gains would have come from the partial sale of the London operation?

ROBINSON: Yes, that's right. Bob Holland got the idea of getting into Puerto Rico. We got a grant from the government there. Again, we built up a division that had about 30 people programming a program to do credit checks for banks. They claimed that if we could get all the banks to use it, it would be a very profitable operation. Well, it went on for about a year and a half and it was losing at the rate of a million dollars a year, with no income. So I just said, "We're going to cut it out completely. You know, we're not in a position to keep this up. Kill it. Take all the money we've spent and just regard it as down the drain." And that was the attitude we had when we did this review, and we just cut out everything. And even then, '67 came out as a very poor year.

BRUEMMER: And even Arbitron was hurting that year.

ROBINSON: That's right. Well, we invested a lot in the radio side and all that. Also, that was an operation where it was feast or famine, because you competed against Nielson. If Nielson got this local T.V. measurement business, you got nothing; if you got it, he got nothing.

BRUEMMER: And in terms of CDC's acquisition of the company, that was probably the jewel that they received.

ROBINSON: It finally became a very good corporation. I don't know whether you want to talk about the acquisition and what they did.

BRUEMMER: I do. Well, let's back up.

ROBINSON: Yes, let's be sure you covered the preceding. Now, I think we had a good team with Rothchild, and Lurie and me. We were much more hardheaded and we were really determined to turn it round into a profitable operation. There was another man too, who was a management guy that we'd got in through the Bob Holland, Dick operation. I've forgotten his name now. I may have included him in that memo. However, this group had a problem. They said, "If you want to go real technical on us, count us out. We're not qualified." That was their attitude. I don't know whether you saw a memo from them that was in this stuff I sent. "Well," they said, "We're not qualified. If you want to go down this path of being expert programmers, and operations research, and management science, and so on, count us out, because we aren't qualified to manage such a business." That was a problem. I felt that we could build on what we had left. We had enough money really; our balance sheet was in pretty good shape. We could have borrowed money, had some debt, and actually done things. But they were very cautious. I had a problem persuading them to take up my proposed program enthusiastically. They tended to be pessimists, though Rothchild was not as pessimistic as the other two. He had a good deal of faith in me. He felt that I was qualified to make these judgments. So he supported me. Yes, I think if you'd read on I was proposing that we "assess what we were going to be good at, and what we have been good at. And develop it more." We were lucky in a way that some operations

-- ARB, the computer leasing, and the other cost plus operations in the Defense Department -- were really carrying the company.

BRUEMMER: Yes. There was a point at which you stepped down as president for about a year.

ROBINSON: Yes. Earlier I had allowed Bob Holland to take that position, but with myself as Chief Executive Officer. Bob, again was a marketeer basically. He was a very good and shrewd businessman. He had a great deal of hard-nosed, banker-type attitude, which was very good. On the other hand, he was a little bit inclined to be reckless and do something very suddenly, without checking, or getting authority. That was a problem. An example was this Puerto Rican thing that he had started up, which was costing us a million dollars a year and not producing any revenue. He had shipped a computer down there from the mainland despite the fact that it was leased, and the leasing agreement stipulated that they not be sent out of the United States. He hadn't even cleared it with me, or with the board or anybody. He acted like that. He was sometimes a sort of loose cannon. Finally, I don't know what he did precisely, but something he did just was the last straw with me and I said, "Bob, I'm sorry. We can't go on. You've got three months. Find something else." So I took over the reins of the presidency again. I think he had assumed that being president meant he actually was more or less on his own.

BRUEMMER: Cresap and those investors were the ones that initially suggested Holland and Dick and others from RCA.

ROBINSON: They had to produce some obviously dramatic suggestions. They said that I had been too loyal to the original people I had brought in, and they would have to go; like Bill Eaton had to go. Although he was doing the marketing, he "wasn't fitted for marketing", so he had to go. Secondly, another man that I had as the financial vice president, Hal Reimers was a real solid type of person that you could rely on completely. He was no genius, and he wasn't really an accountant, CPA, or anything like that. But you could rely on him to know what was going on in every aspect -- all the figures being right. They said he was "not suitable to be financial vice president". He would have to go. So they fired, in effect, two of the senior people, and then said, "Now, we'll find two people that we think

will really jazz up the company. They're in marketing; what you need is marketing." So they made a search, and they finally had me interview both of them, and said they were their recommendations. At that time I thought, "Well, I'll take their advice. They are the experts." After meeting Dick and Holland, I got along all right with them, and I decided to give them a try. That's how they came on board. But, maybe they got a wrong idea too. They may have felt that in a sense they were taking over the company. I don't know. I don't think Cresap intended that.

BRUEMMER: So there was no objection raised from firing Holland.

ROBINSON: No, I always informed the board. They could see it coming. George Dick killed himself with the board, especially with one idea he had. We had space in Beltsville, Maryland -- a small place at that time; very humble offices, but adequate for the job. He comes along, puts in the middle of the board room a big model of a huge building, and it was going to cost several million dollars, or something like that. He said, "We ought to change our image. We should really bring our image up." I said, "Well, George, I don't understand it. We aren't making a lot of money. Why do we need to invest in a Taj Mahal?" The board was shocked. He argued so forcibly for it and so intensely that I think he ruined his reputation. They felt, well, "Is this a business proposition or just an ego trip?" That was the sort of reaction. Then Bob had this flaw, you might say. You could never tell exactly what he would do, or how far he would go. So, you know, you felt a sense of insecurity with him, and you can't have that. You've got to know what's going on. You've got to have agreement. I went to Europe, incidentally, for about a ten day vacation, and I left him in full charge. He never told me a word. We agreed to make phone calls, and he'd tell me, "Everything's going wonderfully. Oh, Robby, just relax. Everything's great." Then when I came back I found he'd shipped this machine to Puerto Rico, and things like that.

BRUEMMER: You mentioned over lunch that Watson had offered you the SBC operations.

ROBINSON: Well, he sort of raised it and I jumped on it. I thought this was a great opportunity if he would agree.

BRUEMMER: Yes. This would have been about what time?

ROBINSON: Probably '61 or '62.

BRUEMMER: And CDC had approached you in '64.

ROBINSON: Yes, they had looked into us earlier, and I was fairly interested. In some ways I'd felt that we were buying retail and selling retail. Yet, I knew that the computers at the factory cost about 30% of what they were selling for. So I felt there was a lot of profit potential in this. I was receptive to Bill Norris' approach, but I think some of his own people turned it down, especially a marketing man he had at that time. Oh, I remember going into a meeting when he was there, and he said, "Why are we interested in this at all? It's a loser."

BRUEMMER: Right during the meeting.

ROBINSON: Yes, straight out. I think he got fired afterward from that position. I don't remember his name.

BRUEMMER: I think Dick recalled that he was singularly insulted by the whole meeting.

ROBINSON: Yes. Well, I also think they were not impressed too much with George and Bob, because they recognized them as kind of pure marketeers. They were wondering what was the strength in the company. I think if you look at Apple and all those companies, the guys that have succeeded have been somehow involved technically. You have to have the technical insight, or else you're really unable to judge. In my personal investment operations today, I will not go into something that is fifty times earnings because of some technically terrific advantage it's supposed to have. I can't judge that; there's no way I can judge it. I feel I'm not qualified to judge if that's good or bad. It could be the greatest thing in the world, but I can't tell. I think they were in that position too, that they just didn't grasp technically what they were doing. They were unable to grasp the basic businesses.

BRUEMMER: Yes. In fact, at that point, CDC was more hardware-oriented anyway.

ROBINSON: Yes.

BRUEMMER: In fact, that was a problem with the 1604 -- getting programming software support in the Middle West. They had to set up an operation in Palo Alto, because there was no software talent. It was all hardware...

ROBINSON: Yes, that's another thing. Dick and Holland did recruit some people, but nearly all of them were not really highly professional people, but marketing people. One successful operation was suggested by a man called Meade and was a really brilliant idea and George Dick supported him. One of our biggest problems was the tremendous idleness of professional people. Between contracts, you'd have maybe 30% idle. That was a huge overhead. So, they developed the Institute of Advanced Technology idea. That was great, because it meant these people could go and give courses when they weren't busy. Meade spearheaded that, and he was very good, because he's a good salesman, you see -- a good marketing man.

BRUEMMER: Yes. How did you get involved in all the other acquisitions? There was Automation Institute, which seemed to me the oddest acquisition.

ROBINSON: Yes, well, that one came about through George Dick and Bob Holland. They heard of it and brought it up. I felt that it was logical, because it involved training programmers. I felt that the industry needed more and more programmers and operators -- machine operators, punched-card operators, all the rest of them. It seemed like a good idea to me to add that.

BRUEMMER: In fact, you could do what Control Data Institutes did for CDC. You siphon off the best talent.

ROBINSON: That's right. So, as soon as we merged, CDC joined them together.

BRUEMMER: Yes. McDonnell Aircraft had some interest in acquiring C-E-I-R.

ROBINSON: McDonnell, yes. Actually, I believe that George and Bob in about 1966 -- '65 or '66 (I'm just guessing the date here) -- felt that they would benefit greatly if they could get some wealthy company to acquire C-E-I-R; they had a lot of stock options. I remember when this McDonnell interest surfaced. When he thought they were interested, Bob Holland started throwing dollar bills all over the room and said, "Oh, I'm going to be rich! I'm going to be rich!" [Laugh] They tried to interest Western Union, and I had a feeling that perhaps they were marketing the company. I could never pin it down.

BRUEMMER: Beyond those, there were no other suitors?

ROBINSON: No, none that I know of, though I don't know whether they were in contact with other companies.

BRUEMMER: Jumping ahead a little bit, you mentioned Automation Institutes were folded into Control Data Institute. One of the things that has been frustrating for me is trying to figure out what exactly happened to C-E-I-R's components after it was purchased. I haven't been able to talk to Hank Forrest, who probably could shed some light on that. Actually Norb Berg was on the task force discussing Automation Institutes. They set up a meeting with the AI heads, and they all seemed to be most agitated, because Control Data's initial attitude was that, "We're going to keep the two institutes separate." The Automation Institute managers complained that in some cases AI and the Control Data Institutes competed in the same geographic area. If the same company controlled both operations...

TAPE 3/SIDE 1

BRUEMMER: Control Data would probably favor the CD Institutes. So this task force spent two more meetings coming up with different alternatives ranging from actually buying out the centers to...

ROBINSON: Well, they owned them at that point.

BRUEMMER: Right, but they felt that if they went ahead the way they proposed, the individual center's management would flee. There was some good evidence for that. A couple people commented that they didn't feel like they were getting anything out of C-E-I-R, especially the pure franchises. The proposal would be the stick that would break the camel's back; they would just completely remove themselves from it. But after deliberating for these meetings, CDC came back and they said, "Well, this is what we're going to do. We're going to set up Control Data Institutes and Automation Institute, and we're going to run them separately." And that's the last record I have. Now maybe eventually they...

ROBINSON: I mean, they must have combined them eventually. It wouldn't make sense really to have the two, unless they felt the name was valuable. Yes, I think when Control Data merged us we had so many different facets, as you see from the front of that annual report, that I think their philosophy was that they were going to take anything that was similar to what they already had and simply throw it into the Control Data operation. I think they were very wrong; in hindsight you can be very wise. Of all our operations -- running their computer centers, programming, professional services -- they left nothing really of the C-E-I-R individuality. And I think that was a mistake. I think if they had said, "Gee, now we've got C-E-I-R; let's support it and use CDC machines as far as we can, build up the profits, and keep it as a separate corporation, subsidiary corporation." Later they might have sold it. It might have been many hundreds of millions of dollars of business, and they might have sold it for a tremendous amount of money.

They tried to welcome the C-E-I-R people into the organization at one of the annual get-togethers of the whole of CDC. And I had to give a speech. I said something like it was quite a new experience to me that we were being digested by CDC, and that already the molars were at work on us, you know, just as a funny statement, and everybody laughed. But it was true. What could we do? They were simply taking our pieces and putting them into their pieces and C-E-I-R disappeared. What they'd bought disappeared.

[INTERRUPTION]

BRUEMMER: Now, did CDC keep you on in some capacity for awhile?

ROBINSON: Yes. I was kept on first as an assistant to the head of marketing, Bob Schmidt. So I just did any odd jobs he wanted. They used me a lot for, you might say, public relations. For instance, they were asked to give a paper in Johannesburg, so I went and gave a paper on data storage and retrieval.

BRUEMMER: But they effectively pulled you from operation of the company.

ROBINSON: Yes, really. It was if as they had no confidence in me in any operating capacity. Later they made me a vice president, but the job was still a kind of marketing. They would send me with a team. They sent me to Russia for example with one of their other vice presidents.

BRUEMMER: Keye. Bill Keye?

ROBINSON: No, not Bill Keye. It was another one -- a marketer. I went with him to Russia. They were interested in buying machines, -- especially those which couldn't be sold under U.S. government rules. I also went to Hungary with them, and I would help in talking to universities and things like that. That was my role. I got kind of tired of it, because I couldn't see much in it. When they did reorganize I was made assistant to Bob Price, who picked up all the service bureau activity. But I got so tired of it, flying up to Minneapolis, really just to sit in on the executive meeting, but not really participating. So I finally resigned, but stayed on as a consultant to Bob Price for about two or three years.

BRUEMMER: And how did he use you?

ROBINSON: Well, just to come down there when he had his staff meeting. There was really not much I could do. I asked Elsie whether she would like to go to Minneapolis. She said no. I was thinking of going there full time. I felt part of the problem was that I was in Washington and CDC was in Minneapolis.

BRUEMMER: Sure. Did you have any dealings with Forrest?

ROBINSON: Oh yes. He was in Washington, and he had an office right in the C-E-I-R building. He was kind of in charge, really, of C-E-I-R. I was sort of just watching my child be adopted. That was my role.

BRUEMMER: Yes. He seemed from documents somewhat of a reluctant guardian.

ROBINSON: Yes. I'm sure he didn't enjoy it, because his decision making was very limited. You see, they kept C-E-I-R as a separate company for awhile, and they set up their own board of directors. I wasn't even on the board or anything like that.

BRUEMMER: So it was very much removed.

ROBINSON: So I was completely cut off from it, which I didn't mind. It was their company; they bought it.

BRUEMMER: Now, by this time the French affiliate had gone from the scene.

ROBINSON: Oh, before anything happened with CDC.

BRUEMMER: BP had taken over most of, if not all of...

ROBINSON: No, they had only taken a half interest in C-E-I-R (U.K.) Ltd.

BRUEMMER: Okay, but they refused to be associated with it.

ROBINSON: Yes, once the merger took place I went over with Bob Schmidt and we met with the top people at BP.

They explained why they couldn't continue. And that ended that.

BRUEMMER: What happened to the Holland venture?

ROBINSON: Which Holland...

BRUEMMER: The C-E-I-R Netherlands.

ROBINSON: Oh, well, they acquired that too. You see, that was a subsidiary of C-E-I-R (U.K) Limited.

BRUEMMER: And they closed out Mexico?

ROBINSON: That was not a subsidiary of C-E-I-R London; it was a subsidiary of C-E-I-R America.

ROBINSON: Right, but CDC eventually closed shop there?

ROBINSON: I think they did. I don't know exactly. I wasn't even informed what they were doing.

BRUEMMER: There was one CDC document from September, 1967, that lists these objectives: to substantially increase profitability of the CDC computer services business, immediately get additional sales coverage for Control Data, obtain personnel who are experienced in business data processing, and obtain experience in time-sharing markets.

ROBINSON: Yes. We had a very good time-sharing operation. We used a GE computer. We were leaders in that, I think. We were about the first to offer that kind of service.

BRUEMMER: They wanted to augment existing CDIs (Control Data Institutes), increase their international

capabilities (they talk about the Mexico City center as an important addition), obtain entry into computer related professional services, and obtain experience people in the military on-line data acquisition area. Now it seems to me that they did try to make a go of the professional services field.

ROBINSON: Yes. I think they valued that. Now how they did it, I'm not sure where they put it, whether they kept it as a separate entity.

BRUEMMER: In their operating plans were in 1969 they talked about the Scientific and Professional Services group (listed SPS/C-E-I-R), and divided into Advanced Technology Division, the Institute for Advanced Technology Studies. Technology, and then a basic and advanced research and economics statistics operation thing headquartered in Bethesda with offices in New York, Boston.

ROBINSON: So they did keep that side of it.

BRUEMMER: But eventually they closed down the C-E-I-R building. That's why all the records were shipped over to headquarters.

ROBINSON: You know, it didn't take long for C-E-I-R almost to disappear.

BRUEMMER: I think the Institute for Advanced Technology continues today.

ROBINSON: Oh, yes. Well, they had a problem. You see, one of the factors that made it profitable was that we could send out enormous numbers of mailings for each seminar at a very low mailing cost. Then the rules of the game were changed by the Post Office, that only non-profits could have that rate. Profit making organizations had to pay a much higher rate. And that killed it. What happened was that we had a brigadier general from the army run the IAT, and actually did the work very successfully. When this change in cost happened, I don't know exactly what happened, but Control Data said, "We're going to have to close it down, because it won't pay anymore." And he

said, "Do you mind if I pick it up?" So he picked it up as the Institute for Advanced Technology -- a non-profit corporation. It's still going. I get their brochures.

BRUEMMER: Then Arbitron was something that they've been relying on the last couple of years. Well, then, my sense may be right; C-E-I-R disappeared as a separate entity.

ROBINSON: Yes. It was formed of many parts, and a lot of them fitted with the existing CDC parts. So they just joined them up and killed the name. I don't blame them. I mean, they wanted the Control Data name. They didn't want C-E-I-R; they wanted Control Data.

BRUEMMER: Sure. I think it was Lurie who said that he was genuinely surprised that once CDC took a real close look at the company that they were still interested in it. Did you share that surprise?

ROBINSON: No, because I don't know if you know George Kosmetsky...

BRUEMMER: No.

ROBINSON: He's the dean of management sciences, something like that, at a university in Texas. He's one of the wealthiest people in America -- in the Forbes 500. He made his fortune with Teledyne. I remember meeting him at a management science meeting just after the merger was announced. He said he thought it was a great thing. He said, "This is exactly what CDC needs -- the professional backup." That was what made sense, really.

BRUEMMER: With any merger you might assume that there would be a big turnover in talent. Was that the case with C-E-I-R?

ROBINSON: I think there was a lot, yes. I think a lot of people did leave gradually.

BRUEMMER: Was there any panic at Arbitron as well?

ROBINSON: No, I think they were quite happy. You see, they had a very good man at the top. I have to tell you that story. That's how George Dick got into Arbitron. He had been a senior vice president when he came on board. Bob Holland really hadn't much admiration for George; he was junior to him. Anyway, we had this bonus plan. Each division had their bonus if it was made a profit and the company made a profit. As I said, the ARB people were very dissatisfied with that. And I had a visit from the man in charge, Mr. Seiler. He had formed the company originally. He came to see me with his first lieutenant and said, "We are very unhappy, and what we want to do is to buy the company from C-E-I-R for a million dollars." Well, we'd paid three million for it originally. He said, "If you don't sell it, the whole management is going to resign." So I said, "Oh, gee, trouble. We're going to have to play this very carefully." So I called a board meeting and asked him and his friend to join us. I asked him to explain to the board what his proposal was and why. So he made his speech, "We're willing to take the company over for a million dollars cash. Otherwise, we're going to leave en masse. We're the whole company, really." I allowed the board to have a discussion and then I said, "Well, I think this is such a serious matter, we'd better think about it. Thank you, gentlemen. I'll let you know what the outcome is." So I discussed it with the board, and I said, "I think this is outrageous. What it is blackmail, saying, 'if you don't sell it to us for a song, we're going to kill the company.'"

I was fortunate because one of my first jobs in the states was with Veteran's Administration under the Director of Research Services Pete Langhoff. He was a statistician and had done very well in the army in headquarters. When General Bradley was made head of the VA, he brought Pete Langhoff in to head his research department. I got my first job with him before I went to Poland. It was a quirk, because they were allowed to recruit aliens if they were with an allied country, but each year it would have to be in the appropriation and I knew it would be dropped pretty soon. Anyway, I was there and he respected me, and I admired him. He left there to go with Young and Rubican and became a senior vice president. So when this crisis occurred with ARB I called up Peter and I said, "Pete, I know we haven't had much contact for a long time, but I've got a problem and I want your help. Can I come and see you?" So I want to see him and asked, "Can you recommend somebody who could run ARB?" He was familiar with ARB because our sales went to the ad agencies and to all the stations. So I said, "Come and have dinner with me." "So

we went out to dinner, and I could have fallen off the chair when at one point he said, "You know, I might be interested in taking on Nielsen." So I said, "Okay, what would be your salary?" Well, the salary turned out to be about 20% more than mine. So I said, "I don't know if I can pay you that, but I can give you so many options -- 10,000 options, or something like that." I went back feeling great, because he had accepted on the spot. He said he would give his notice and come down within a couple of weeks. No, sorry, I haven't got this in the right sequence. My memory is going on this. It was George Dick who I selected to take over from Seiler. That's it; this was before Pete. With the Seiler business, George and Bob and I handled that ourselves before Pete was involved. The next morning they both went to his office and told Seiler, "You're fired," and to the other man, "You're fired. Leave your desks." They both said, "Well, we want to put out a press announcement." They said, "Sorry, you don't have the facilities anymore. You're out." They just got him out. So George took over and ran it, I guess, for about a couple of years or so. The trouble was, I think it got into some problems. Anyway, it wasn't working out right. And George wanted his Taj Mahal. It was at that point I went to see Pete and got him to come in, because I thought he could manage it and he knew what he was doing. The trouble with George was he had no idea how to run such a thing. He was a salesman. For example, he set up a sort of council, and he recruited outstanding public figures who couldn't do a thing for the company, really. But it was sort of window dressing to make out what a wonderful thing it was. He thought it would help in selling if you had this advisory council. Anyway, when we decided to let George go, that's when I brought in Pete. He was just the man for the job.

BRUEMMER: And stayed until CDC acquired them, and stayed through that.

ROBINSON: Yes.

BRUEMMER: Jack Moshman was clearly proud of his accomplishments in linear programming, and mathematical programming. You mentioned a logistical system for the marine corps, flight crew scheduling, the profit flow...

ROBINSON: Yes, and we got in with the election predicting.

BRUEMMER: And a business strategic model for GE, was that PERT?

ROBINSON: No, that was something else. I don't know exactly what it was now. It was some contract that we had with them -- with their top management.

BRUEMMER: What were some of your favorite products that came out of there?

ROBINSON: I've kind of forgotten now. In fact, as you mention these things, they all just ring a faint bell. I found them all interesting and very gratifying, because this was exactly what I had imagined our mission to be -- to bring modern technology in analysis, and model building, and then computers, and data processing -- bringing it all to bear on management problems. That was my idea of what we were trying to accomplish. So all these kinds of contracts that we got were exactly what I had had in mind from the beginning. I was always delighted when we got them. Later, with the greater acceptance of these things, we would have had some interesting projects for bigger companies. One aspect I failed to cash in on that I'm sure Perot did... As the data processing went on, within many organizations their stature demanded very high pay. I think the Perot-type of organization felt, "You know, we don't really need to pay all that much salary. And you don't need all the fringe benefits." We could tell a company, "Look if you do this yourself it will cost you x, but if we do it under a contract we can maybe do it for two-thirds of x and save you all that money." That opened up the field for very large projects.

BRUEMMER: Had CDC not purchased you, where do you think your next move would have been? You mentioned that time-sharing, at least, became important for one center.

ROBINSON: The rest of that paper was a plan. I think what I had in mind was to cash in on the opportunities developing as the acceptance grew. Another thing, our financial position was getting pretty good. Where's that report? You see, our debt was only 1.5 million and our equity was roughly 5.5 million. That was a very good ratio. We could have borrowed another couple of million without it being an abnormal balance sheet. We could have maybe used that. For instance, I always regretted missing the opportunity that was created when Computer Sciences

Corporation lost its leader. What was his name? He died in an airplane accident -- the founder of CSC (Computer Sciences Corporation). He had set up a foundation which had a lot of his stock, and the company got into difficulties. We could have picked them up, maybe, even for cash. We could have developed. For instance, at that time, too, we had bid on some projects with the government to manage complete data processing systems and communications systems. There were a lot of advantages if you stuck to your last, which was really to supply the professional competence. We really dissipated that during the Dick, Holland period. Jack would agree with me that during that period the professional emphasis was largely lost.

BRUEMMER: Yes. That was the area that he was proud of in his own division. It is interesting to speculate, because over that next two-year period IBM Service Bureau Operations would have gone to CDC. GE would have been out of time-sharing, because GE was out of computing.

ROBINSON: Yes. Well, not only that, but I think we'd have gone all over Europe with BP. The Dutch company was just an experiment to start off, and later it did go all over Europe.

TAPE 3/SIDE 2

ROBINSON: ... we can roll with the punches technically as things develop. And yet, a business must have good administrators and good managers. And getting that combination is pretty tough. The successful people that I know have had that combination, like O'Rourke and Frank Lautenberg. He was the head of Automatic Data Processing (ADP). A lot of successful people had that combination of skills. Well, today, look at Microsoft as an example.

BRUEMMER: Yes. You spoke of O'Rourke. Was Tymeshare getting to be a factor before the acquisition?

ROBINSON: Well, he was in really the communications side -- data transmission.

BRUEMMER: I think he said that the CDC service bureaus and Tymeshare just didn't participate in the same market at all.

ROBINSON: No, I never was absolutely clear what distinguished his operation. I think it was largely data transmission and data network.

BRUEMMER: You said he went with existing GE technology. He was with GE before Tymeshare. And he said it was a matter of capitalizing on things that were out there and GE did not want to pursue.

ROBINSON: Yes.

BRUEMMER: And evidently he did quite well with it.

ROBINSON: Yes. I met him again at this Phoenix meeting of ADAPSO. They had all the ex-presidents of ADAPSO.

BRUEMMER: Yes. Was he a president of ADAPSO?

ROBINSON: Yes, at one time. Well, I've given you some of the exciting events and my diagnosis of what happened. I think our problem was we were a bit early and we were too ambitious. So we dug ourselves into quite a big hole with such heavy losses.

BRUEMMER: Yes. You were disadvantaged by not having been associated with a manufacturer leasing professional services business, and it seemed that it was awfully difficult to assign programming time efficiently when you were looking for business.

ROBINSON: I used to feel very frustrated, because we had really good people -- you know, the best people you could think of. And yet you couldn't keep them busy all the time. When you added up the overhead, it would get to

an astronomical level, because you had office space, secretaries, fringe benefits, pension plan. And then, if they were idle 30% of the time, you had a multiple of three sevenths, or 42%, just from that. That cut you out of a lot of government contracting if you had that kind of overhead. It's interesting, when we started this project for the Air Force our overhead rate was 75%. By the time that we were handed over to CDC I'll bet it was 200%. So that was another big problem -- how to manage professional people in an environment that wanted fixed prices.

BRUEMMER: Yes. And one other thing, I assume Norris went looking for C-E-I-R?

ROBINSON: Yes. He wanted to see me one day, and I took him to the Cosmos Club here. We had dinner and we kept talking, and he said he definitely wanted to acquire C-E-I-R. What was my attitude? He felt that was important, whether I would go along with it. So I said, "Well, if the price is right, I would go along with it," because I thought there were some pluses to joining up with CDC. And we agreed on a price.

BRUEMMER: But you didn't anticipate the massive digestion that would take place?

ROBINSON: Well, I was wondering later whether I would have had any qualms if he had said, "This is what we're going to do." I guess he didn't know at the time what would be done. As it happened, I think in a sense they wasted a lot of the investment. If they had, instead, put what they had into C-E-I-R, then it would have always been an asset that they could sell as a separate company. As it was, they could never sell it again as a separate company.

BRUEMMER: And tried to meld in too many into their existing operations. I still don't have a sense of how successful that was.

ROBINSON: Yes. They kept ARB, I think, as a separate corporation throughout. I guess later, we could have sold that for a good profit if we'd wanted to. That was a tough one, though, to be in, because you had a sense, which has happened since, that eventually there would be some technical breakthroughs where you could get your equipment to the T.V. itself, and dispense with the diaries. We were using diaries. We had people approach us about having

gadgets that would eliminate the diaries, but nothing worked. Nothing was satisfactory.

BRUEMMER: Of course, now they've just gone to that, and I guess there's some question about the...

ROBINSON: Reliability.

BRUEMMER: ... reliability of it.

ROBINSON: Probably best to have two lots checking each other like they do with medical tests. I had always, as a young man, tried to be, you might say, thinking ahead to discern the trends, and to be swimming with the tide, because I felt that was the secret. That's why I was in mathematical statistics. When I took it there were only a handful of such people in England, and I insisted on taking it, although the university college I was in couldn't teach it. I did private study with the help of the professor in London. But it was because I was convinced it was a thing of the future. Now that I'm investing in the stock market, I try to think to myself, "What are the things of the future now?" And I find it very difficult. I spotted the computer the minute I saw it, but I haven't spotted anything in my present environment that has the same spark -- has the same promise. Yet, you look at history and you see the airplane was certainly a similar thing, and radio, and then T.V., and then the computers. Something is coming along, but what is the next wave?

BRUEMMER: Well, it may not be a technological advance as much as an advance of standards. You look at the personal computer; it brought computing to a wider audience and really dramatically changed the whole market. The standard was established when IBM and Apple stepped in and said, "This is what it's going to be like," and promoted it. You couldn't have anticipated that technology, because it wasn't a technological advance.

ROBINSON: It's funny; I could kick myself because I remember about 1972 or thereabouts reading about the advances in the chips. I began to think, well, why not have very specialized computers that were designed just for one particular job. I felt, boy, it's opened up to the point where you could very cheaply produce these things with

these kind of chips and components. I could kick myself that I didn't think of the personal computer, and also to see when the Apple came out that it would be such a success.

BRUEMMER: Well, you and a lot of other people, as well [Laugh].

ROBINSON: Oh, I think I know an area, but I don't know how to promote it. You see, the computer and its capabilities has only begun to just touch the surface of the applications, really. I think a tremendous application will be in the home. It really isn't explored much today. You look at our house. There isn't one computer. I don't think there's a computer in the house, other than the one we use for investment. Yet I have a feeling that there are applications in the home where you could have computers attached to individual things. I tried to interest Keye, who was an engineering type in CDC, way back in about 1970. They were thinking of acquiring a machine company. I've forgotten the name of it, and it fell through. I went to see him, and I said, "What I have in mind is, can't you build into a machine tool a computer so that you can actually program what the tool will do, and isn't that a field where CDC and this other company could start new products altogether? Really, automation, I guess." But he didn't seem at all enthused about the idea.

END OF INTERVIEW