CHEMICAL HERITAGE FOUNDATION

RICHARD E. HECKERT

Transcript of an Interview
Conducted by

James J. Bohning

at

E. I. duPont de Nemours & Co.
Wilmington, Delaware

on

13 December 1994

(With Subsequent Additions and Corrections)

ACKNOWLEDGMENT

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Oral History Program

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Richard E. Heckert

(Date) Jan 13, 1997

(Revised 17 March 1993)

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Oral History Program
315 Chestnut Street
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RICHARD E. HECKERT

1924 Born in Oxford, Ohio on 13 January

Education

1944 B.A., Miami University of Ohio
1947 M.S., organic chemistry, University of Illinois
1949 Ph.D., organic chemistry, University of Illinois

Professional Experience

E. I. duPont de Nemours & Co., Inc.

1949-1954 Research Chemist
1954-1957 Film Department Supervisor, Cellophane Research & Development Lab
Assistant Manager, Cellophane Research and Development Lab
1957 Technical Superintendent, Spruance Cellophane Plant, Virginia
1957-1958 Technical Superintendent, Clinton Cellophane Plant, Iowa
1958-1963 Assistant Manager/Plant Manager, Circleville Mylar Plant, Ohio
1963-1965 Supporting Research Director/Director, Research and Development Division
1965-1967 Assistant General Manager, Film Department
1967-1969 Assistant General Manager, Plastics Department
1969-1972 General Manager, Fabrics and Finishes Department
1972-1973 Vice President
1973-1981 Director, Senior Vice President, Executive Committee Member
1981 President, Chief Operating Officer, Executive Committee Vice Chair
1981-1985 Vice Chairman
1986-1987 Deputy Chairman, Board of Directors
1987-1989 Chairman, Chief Executive Officer

Honors

1984 Honorary Sc.D., Miami University
1988 Honorary Sc.D., University of Delaware
1988 Honorary Doctor of Business Administration, Goldey Beacom College
1989 Chemical Industry Medal, Society of Chemical Industry (American Section)

ABSTRACT

The interview begins with Richard E. Heckert discussing his family background and childhood as the son of a Miami University of Ohio professor of education. Throughout the interview, he refers to his brother Winfield, a significantly older DuPont executive who influenced his interest and education in chemistry. The interview traces Heckert's early education and training, from high school and Miami University to Army work as a chemist at Oak Ridge, where management experience influenced his pursuit of a business career. He discusses safety considerations and atomic bomb work and reflects on dropping the bomb and developing atomic energy. Next the interview turns to Heckert's graduate career at the University of Illinois, his interest in organic chemistry, work and relationship with mentor Harold Snyder, and considerations in selecting a research chemist position at DuPont. The majority of the interview details Heckert's experience and rise through management at DuPont: early work with TCNE and tricyanovinyl compounds for dyeing; and various positions at DuPont's Spruance, Clinton, and Circleville plants and in the Film and Plastics Departments. Heckert describes management lessons emphasizing safety practices, customer relations, and decisions on dealing with product developments such as Corfam. After focusing on promotions to vice president, senior vice president and executive committee member, Heckert discusses the reasons and strategies for reducing R&D and details problems with dyes, CFCs, and TEL, emphasizing DuPont's responsibility to consider trade-offs and costs in environmental decisions. Next Heckert summarizes his involvement with environmental concerns and legislation. The final section focuses on Heckert's career as president, COO, and CEO; discussions touch on the division of labor within top management and the Board, Ed Jefferson's role, company growth and acquisitions including Conoco. Heckert describes his marketing emphasis as CEO, changes in relationships between operating departments and executive committee members, DuPont's role in global ventures, hiring from outside the company, and desire for a smooth transition to Woolard. Closing comments touch on scientific innovation, promoting creativity in personnel, major changes in the industry, chemical innovation, and the SCI award.

INTERVIEWER

James J. Bohning is Professor of Chemistry Emeritus at Wilkes University, where he was a faculty member from 1959 to 1990. He served there as chemistry department chair from 1970 to 1986 and environmental science department chair from 1987 to 1990. He was chair of the American Chemical Society’s Division of the History of Chemistry in 1986, received the Division’s outstanding paper award in 1989, and presented more than twenty-five papers before the Division at national meetings of the Society. He has been on the advisory committee of the Society’s National Historic Chemical Landmarks committee since its inception in 1992. He developed the oral history program of the Chemical Heritage Foundation beginning in 1985, and was the Foundation’s Director of Oral History from 1990 to 1995. He currently writes for the American Chemical Society News Service.

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INTERVIEWER: **James J. Bohning**

LOCATION: **Wilmington, Delaware**

DATE: **13 December 1994**

BOHNING: Dr. Heckert, I know you were born in Oxford, Ohio, on January 13, 1924, and that your father was a professor at Miami University in Oxford. Could you tell me a little more about your father and mother and some of your family background?

HECKERT: Dad was an immigrant. He was born in Germany in 1872. He came to the U.S. in 1886, when he was fourteen—alone, which always amazed me. He had an uncle here who was supposed to help him get started and I guess look after him until he was old enough to take care of himself. Somehow, that relationship didn't work out. Dad and his uncle parted company, and my father went to Minnesota, where they spoke a lot of German in those days. [laughter] He got a job as a farm hand on a German family's farm, worked there for a number of years and married the farmer's daughter, my mother.

Dad had a consuming interest in education. He finished high school in the U.S., went to college, obtained his four-year degree, and then went to graduate school at Columbia, where he obtained a Ph.D. in education. It always impressed me and somewhat amazed me that this immigrant kid would have that much interest in education and that much drive to get it.

He was a very interesting person. He liked science. I rummaged through our attic one time and found some slides that he'd prepared for a course in biology, apparently. He never talked much about that interest, but he clearly had it and maintained it all his life.

So, Mother was a farmer's daughter, and Dad met her at an early age; their marriage was a very constructive and wonderful thing. They celebrated their fiftieth anniversary about 1950—I can't recall exactly—and Dad died a year or two later in 1952.

That's a thumbnail sketch. He taught in a couple of places, but wound up at Miami University, Ohio, and spent most of his time there as director of the McGuffey teacher training school, and as professor of philosophy of education.

BOHNING: You are the youngest of four.

HECKERT: Yes.

BOHNING: The other three, it seems, are quite a bit older than you.

HECKERT: Quite a bit. I was a surprise, and whether it was a good one or not remains to be [laughter] determined, I guess.

BOHNING: We'll come back to your older brother in a moment, but what was it like growing up in Oxford at that time?

HECKERT: Oxford was a small town, and Miami, at that time, was a relatively small university, perhaps three thousand students when I attended and somewhat less as I grew up. It had all the advantages of a small town. If you got into mischief, by the time you got home for lunch your mother knew about it, [laughter] so retribution was quick. [laughter]

It was a wonderful place to grow up. Oxford is a very lovely little town; it was then and still is. The university environment was certainly conducive to learning, and just a wonderful place to spend your youth. I feel very fortunate to have been raised in that setting, compared to some that kids suffer today.

BOHNING: I understand you played football for Weeb Ewbank in high school, which was intriguing. [laughter]

HECKERT: That's true. Weeb was our high school coach, a wonderful man and a good coach, as his later career demonstrated. More than that, he was a friend of every kid he worked with, and he made a lot of them better than they were when he got them. He had a way of straightening out kids who were on the wrong path, so he was a developer of good young people, as well as a good coach. Still alive, incidentally, and still lives in Oxford.

BOHNING: Is he really? I didn't realize that. Were there any other extra curriculum activities or sports? Were sports an interest?

HECKERT: I played everything and liked everything. I loved to hunt and fish, still do. My dad, being a college professor, did have time in the summer, and he took us camping, year after

year, for a month or so, and we lived in a tent in the woods. [laughter] It was a great way to experience the joys of nature.

He never hunted much, but he didn't have any objection to my hunting, so I had a shotgun early in my life and have used one ever since.

BOHNING: What kind of academic interests were you developing in high school?

HECKERT: I suppose, because of my brother's love of science and math, I got steered in that direction. I really liked the physical sciences and math early in life, and felt challenged by them. Thanks to some very good teachers at the grade and high school level, it was easy to genuinely enjoy those subjects and to want a career in science.

BOHNING: Did you interact much with your brother? He was what, almost twenty years older than you?

HECKERT: No, because all of my siblings were out of the nest before I had any recollection of them. My sister and younger brother lived nearby for a few years, so I saw them fairly often, but Windy, as we called him, Winfield, lived here on the East Coast, and we saw him a couple weeks a year on vacation; that was it. I didn't have any extensive contact with him, but when we were together, he was always pushing a career in chemistry, and I thank him for that.

BOHNING: He was at DuPont?

HECKERT: He was at DuPont. I think he came to this company in 1928, survived the Depression, did very well personally, and thoroughly enjoyed his work.

BOHNING: Was it preordained you would go to Miami University?

HECKERT: It was cheap and it was convenient. [laughter] I think my college education cost my dad four or five hundred dollars, and that was just the right price for those days. [laughter] But it was also a good school. I have no regrets.

BOHNING: You started there probably before 1940?

HECKERT: In 1941.

BOHNING: Just before Pearl Harbor.

HECKERT: Right.

BOHNING: Did that have any influence on your college career?

HECKERT: Yes, it was kind of a sad experience to go through school in that environment. I was fortunate to get deferments until I finished, but the male population dwindled very rapidly in the last couple years. I finished in three years by attending year round. The last year and a half wasn't nearly as much fun as it would have been otherwise, but I got it done, and that was very helpful. I actually graduated after I had been in the army for a few weeks. [laughter]

BOHNING: What were some of your experiences there, in terms of the chemistry? What kind of courses were they offering? What was the faculty like?

HECKERT: Most of the faculty were very good. In math, physics and chemistry, all three, I was blessed with excellent teachers. I can't remember the names of all of them. The inorganic courses were first, then organic chemistry. I remember organic chemistry under Carl Webb very well. He was kind of a dour old gentleman. He loved chemistry and I think he enjoyed the fact that it was a little difficult. [laughter] Both he and his subject matter were occasionally intimidating, but he was a very warm person underneath, and he and I became very, very good friends.

I took analytical and physical chemistry, so those were, I guess, the four principal courses, and some others that were related—all well taught, and all enjoyable, at least I thought so.

The father of a close friend of mine was an excellent math teacher, and I had a calculus course from him which was absolutely marvelous. The other teachers I had were also stimulating, friendly, and helpful.

My next door neighbor taught physics. In that environment, you know, you really do know the faculty pretty well if you're a faculty kid; there is no excuse for not doing your best, so for the most part, it went well.

BOHNING: You've just said, with the war, the male population was dwindling. Were there many chem majors?

HECKERT: By the time I graduated, there were half a dozen left. Many of them came back and finished later on, but our ranks were decimated.

BOHNING: How did you manage to get deferments?

HECKERT: I have no idea, but I'm grateful. [laughter] I had a good grade average, and I guess I was taking the right courses. I got two or three deferments in a row, which gave me just enough time to finish my work. Then I was drafted. I spent a little time in the infantry, but most of it at Oak Ridge, which was a great experience.

BOHNING: When you were drafted, where did you go first?

HECKERT: Texas. Camp Fannin. Infantry Replacement Training Corps, which means that from the time you're inducted to the time you're in the trenches is about thirteen weeks. [laughter] But at the tenth week, I was very lucky; Oak Ridge ran out of chemists and came looking. Half a dozen of us came from Camp Fannin to Oak Ridge, and interestingly, three of those later wound up with DuPont—Dave Barnes, Larkin Wyers, and myself.

BOHNING: What were you asked to do at Oak Ridge?

HECKERT: I started out in a tech service group, a plant methods group, I guess you'd call it, trying to improve the process by studying the practices and methods used. I didn't like that work very much. I was much more of an activist. Not many weeks after I got there, one of the process sections needed an additional member in supervision. I was brought there initially in a technical capacity, and then assigned to a management position.

That was a very important turning point in my life. I really <u>liked</u> that work. I liked the hands-on aspect of it, and of course it was new and exciting. Changes were coming very fast

because the process had never been piloted. The plant was the pilot plant, so we were learning as we did our work.

It was a marvelous experience and convinced me that maybe I should not become a teacher; maybe I ought to get into a business and work in something other than research. So that's where the derailment in career thoughts occurred. I probably would have been a teacher, had it not been for that.

I would have gone on to graduate school—I'm sure of that—but I probably would have looked at academic work very favorably.

BOHNING: Who were you working for, and in what specific group were you working?

HECKERT: I was working at Y-12, in a division called "salvage," an operation designed to recover as much of the U-235 enriched material as possible. In the Y-12 process there were two steps; first, ordinary uranium was converted to an enriched U-235 material that was further processed to make weapons-grade material.

After the first enrichment, you had a fortune invested in every ounce, and not very much of it to work with, so salvage (recovering U-235 enriched material) was very important. We did everything from cleaning old pieces of equipment to burning clothing and extracting uranium from the residue. We tried to get every gram of U-235 enriched material that got out of the system back into the system. We had a variety of chemical unit operations, counter-current extraction columns, centrifuges, filters, digestion tanks—most of the unit operations found in a normal chemical plant. It was fun. It was the only "course" in chemical engineering I ever had, but it was good, and the price was right. [laughter]

So that's what I did. As I say, initially, I was a technical assistance person, but I got into line management and ran a unit of that division for a few months.

BOHNING: How were you briefed about what the purpose of all this was?

HECKERT: Well, none of us knew exactly how the material was going to be used, but we knew we were working with uranium; we knew we were working with U-235, specifically.

There were only two logical things that could be done with that material. One was to make a bomb out of it, and that was everybody's bet, but it was not out of the question that the radioactivity could be a basis for some kind of weapon. That couldn't be totally ruled out, but most of us assumed that it would be an explosive.

We were never told that. We were only told what we were doing: producing U-235 enriched uranium.

BOHNING: What were the safety considerations like?

HECKERT: I don't think we were as concerned about radiation as people are today. We worked very hard to be sure we didn't exceed the critical mass. We didn't want too much material stored in one place, so that safety aspect was given a great deal of attention.

I never worked with the material that was processed twice; the highest U-235 content material. I don't know what precautions were taken with that, but I'm sure critical mass was paid a great deal of attention. The other handling procedures I'm not familiar with.

We dealt with the fluoride and the oxide of uranium and had the normal chemical process safety concerns and the normal safety problems, but it was pretty much, "Don't get it on you, [laughter] don't put too much in one corner, and be careful when things are under pressure or hot"—that sort of thing.

Again, we were not anywhere near as concerned about radiation per se as people are today; I don't believe that we suffered from it, but I suppose history is still working on that.

BOHNING: When the bomb was dropped in 1945, what effect did that have? What was your reaction to that?

HECKERT: My reaction was very positive, and that's never changed. There are detractors of the program, and I'm constantly told by people who were yet to be born back then that it wasn't necessary. Having lived through that period, I think it saved a very, very large number of lives, on both sides. I think that a good deal of the world's stability that existed in the next fifty years was due to the threat of this terrible material.

I don't think there is such a thing as a "humane war." I think that's a non sequitur if there ever was one, an oxymoron, however you want to categorize it. The bomb is a terrible weapon, but it did bring an end to that war, much more quickly than would otherwise have happened, and the subsequent peaceful uses of atomic energy really are very good. Some countries have done better than the U.S. France has done superbly generating power with atomic energy. We got bogged down and distracted by some things that really weren't all that important, and we deprived ourselves of a source of energy that is really very, very benign, environmentally; it's nice clean stuff, if you use it right.

We still fuss about not being able to use atomic energy safely, or store waste satisfactorily, when the French have been doing it for thirty or forty years, very efficiently. We have no excuse for the way that we've managed our affairs nationally. It's too bad.

But I have no regrets. At the time, all of us who worked on the project felt very good that we hadn't just dodged the less attractive aspects of the war, but had, in fact, made a contribution to bringing the whole terrible thing to a close.

BOHNING: Now, you were still in the service for another year after that?

HECKERT: Yes.

BOHNING: Did you stay in that same group?

HECKERT: Yes, and came close to spending another year or two there, as a civilian. They made a very attractive offer, which I found tempting. Even the army tried a little seduction. I played softball in those days, and I was a half-way decent player. In retrospect, it's really very funny, but my unit commander or somebody like that came to me and said, "You know, if you'd be willing to stay on until the end of the softball season, [laughter] life would be pretty good around here." I thanked him very much, but told him I'd better get on with it.

BOHNING: You went to Illinois then. How did you select Illinois?

HECKERT: Oh, that was easy. The staff at Miami were very positive on Illinois, and my brother Windy, even though he was an Ohio State graduate, said that if you like organic chemistry, that's the place to go. I don't think there was much doubt about that after the war.

BOHNING: Your interest in organic developed then as an undergraduate. Is that correct?

HECKERT: Yes.

BOHNING: What was it about organic? You said you loved math.

HECKERT: Yes. Well, my perception, probably gained through my older brother, was that organic chemistry was "where it was"—the basis of all the polymer work that DuPont was doing, plus it didn't take a genius to recognize that organic chemistry was the chemistry of life. The more we learned about it, the more we were going to be able to regulate those functions that are so important to us.

We could see it happening. We were learning fast and knew the process would be exponential. It looked like a field that would be very rewarding. We could see it, at the graduate-school level, merging with biochemistry and all the other branches that dealt more directly with life science. We knew eventually that we'd understand what was going on at the molecular level, and you and I have lived to see that, which is impressive and fascinating. It was easy to fall in love with organic chemistry.

BOHNING: You went there in 1946, got your masters in 1947, your Ph.D. in 1949. Roger Adams and Carl Marvel, of course, are two names that come to mind right away. Did you interact with them in any sense?

HECKERT: A bit. Well, with the whole staff. Harold Snyder was my research professor. He was a wonderful man and, again, a great developer of people in ways other than just science. [R. C.] Fuson was a good friend. They were all wonderful people. The staff were unique, both in the quality of the people and in the way in which they interacted. They were very close, very supportive of one another and very helpful to young people who were trying to find their way through grad school.

BOHNING: How did you select Snyder as your mentor?

HECKERT: I liked his mannerisms, his approach to teaching, and his approach to his students very much. Any of the senior people would have been fine, but I liked Harold's approach to life, and the way he encouraged young people. Frankly, I don't recall that the work that he was doing was much of an issue. He was good at what he did, and he was working in a general way with different kinds of organic chemistry. I thought I'd be a good fit, and it turned out to be a fine relationship.

BOHNING: Did he have a big group?

HECKERT: Pretty large. There were, as I recall, give or take a dozen. He had seminars in his home for all his research students, several times a year, so that the third-year people and the ones who were just coming into the group all met together to talk about our research. But in those sessions in his home, in a very friendly environment, we talked about a lot of things, talked about life, much more broadly than just chemistry. [laughter]

So he was a very positive and strong influence on his people, and as a result, many of us stayed very close to him, throughout his life.

BOHNING: Yes, you did. You had one paper in JACS with Snyder on sulfonamides (1). Was that your thesis?

HECKERT: That was one part. I worked on sulfonamide analogues of fatty acids. The chemistry was simple, but those fatty acids don't behave very well in the pot. [laughter] It was difficult work. Nothing very profound, but good fun.

BOHNING: During this time, were you in contact with your brother at all? Did you maintain any contact?

HECKERT: We always have been good friends, so there were some communications, but not many. Grad students don't write lots of letters—at least I didn't. [laughter]

BOHNING: Because he was at DuPont, was it preordained you were going to come here, or had you thought about the possibility?

HECKERT: My brother Don was here too, and my brother-in-law had worked for Remington for a while, so it looked a little incestuous to me. My initial thinking was that two Heckerts in DuPont were enough. I was glad to go and see them, but I really thought I ought to go someplace else.

[END OF TAPE, SIDE 1]

HECKERT: My Y-12, Oak Ridge experience with Tennessee Eastman was very positive. I thought Eastman and/or Tennessee Eastman would be a very good alternative. I interviewed

them very seriously with that in mind. I liked 3M; I had one of their fellowships. I looked at Mallinckrodt, a little different kind of a company, and I looked at an oil company.

Then I came to see DuPont, and I really liked what I saw. Somewhere in the course of that interview, people convinced me that my brother and I would not get in each other's way, and that was a very reasonable conclusion, because he was well up in the organization and I was, [laughter] you know, twenty years his junior and working in a totally different part of DuPont. It didn't take very long for me to see that it probably wouldn't make any difference if there were six of us. Particularly with the age disparity, I concluded this was not a problem. I liked the Wilmington area, and I liked the work, so I changed my mind rather completely in the interview process.

BOHNING: Whom did you interview with? Whom did you talk to?

HECKERT: Ted Cairns must have been one. I talked with several people, but I must say I don't remember which ones I met on that day; it's been a long time. I knew that Central Research Group very well, and still do—at least the ones who were peers. They were a great group.

BOHNING: Did they tell you during the interview where you would be going or what you would be doing?

HECKERT: I was being interviewed by Central Research, so that was the target and would be the first assignment.

I was pretty candid in that interview, and I told them I did not think I would be a career scientist. I said I'd had too much fun doing things that are related to chemistry but are not just chemistry. "The day may come when I will want to get off into manufacturing or marketing or something else, and if that's a strike against me, you'd better know it now, because that's my predisposition." [laughter] That did not seem to be a problem. I loved the research, the five years that I did it. I really enjoyed it, but I knew all along that it wasn't going to be forever, that I'd do something else.

BOHNING: Was it your Oak Ridge experience that led you to think that way?

HECKERT: Very largely.

BOHNING: The work you did in those first five years was pretty fundamental chemistry, TCNE [tetracyanoethylene] work.

HECKERT: Yes, yes. Great fun. You know, TCNE reacts with everything. [laughter]

BOHNING: You can see that in the papers (2). Just page after page of new compounds are listed. [laughter]

HECKERT: The only thing it didn't do was make money. There are lots of jokes about that. I told Cairns I never made him any money, but I cost him more than almost anybody else who came along. [laughter]

BOHNING: Where did the idea come from for the TCNE work?

HECKERT: The original thought was that being an analogue of tetrafluoroethylene and there being some similarities between fluoro and cyano groups, TCNE might make an interesting polymer. It doesn't; at least, we never could polymerize it. We could make tar out of it, but we could not make a linear polymer out of TCNE. I don't think anybody ever has.

In the course of working with it, we discovered that it reacted in a Diels-Alder sense with virtually every conjugated diene. [laughter] It reacted with active aromatic compounds, amines and phenols and things like that, in a variety of ways. It made brilliant colors with some aromatics and was incredibly interesting. It did many, many different things and did them very quickly and very easily, so it was an organic chemist's dream. As I said, the only thing it didn't do was make money. [laughter]

BOHNING: Then your interest turned to dyes.

HECKERT: Turned to dyes. The tricyanovinyl compounds were relatively small and substantive to polyesters and polyamides. Polyesters dyed with tricyanovinyl dyes were very brilliant. Polyamides were a little dull.

The colors were incredibly bright. The dye's spectra were very simple; the absorption was strong and typically limited to a narrow band, so they were very bright colors. You could really produce incredible colors, but the compounds were not wash-fast and they were not light-fast, and those are two [laughter] fairly fundamental aspects of dyes.

That's pretty much the dye story. None of the other compounds appeared to be particularly attractive for any use that we could think of, so after a while we concluded that this was great chemistry, but it probably was not going to pan out commercially.

BOHNING: Wasn't there a patent litigation on that molecule? It seemed to me that TCNE was involved in a patent suit.

HECKERT: If there was, I don't recall it.

BOHNING: Was it about the end of that five-year period when everything died on that when you called a halt to the TCNE work?

HECKERT: I can't remember whether that was the last thing I worked on or whether I had another project or two before I left, but at the end of five years, I went to the Cellophane Technical Section in Richmond, Virginia. I worked in cellophane research for a couple of years, and then went to the plant as technical superintendent. For the next eight years or so, I worked in manufacturing, either in a technical or a managerial capacity, which I dearly loved.

BOHNING: Did you instigate the move to Richmond?

HECKERT: I was getting restless. I don't remember specifically saying, "It's time to go," but I certainly told my friends that I was interested in getting into an operating, commercial department. I suspect my supervisor read the handwriting on the wall—this guy is getting restless—so it happened. [laughter]

BOHNING: You were in Richmond about four or five years. Did this cement your idea that managing a plant or being in that kind of atmosphere was what you really wanted?

HECKERT: At that time, I thought that was exactly what I wanted. My first goal was to become a plant manager, if possible, and that happened pretty quickly. Once you got away from hands-on, it didn't make much difference to me what the function was.

BOHNING: You, of course, were probably interacting with lots of people who were chemical engineers?

HECKERT: Yes.

BOHNING: You had, as you said, one course in chemical engineering. [laughter]

HECKERT: A very practical one, but I've always been a mechanical person and done my own things around the house, so that's never bothered me. I'm as comfortable in engineering as if I knew what I was doing. [laughter]

BOHNING: Then you went out to Iowa. You were still in the cellophane plants out there.

HECKERT: Yes, a very short stint out there, nine months.

BOHNING: Again, was that at somebody else's bidding that you move out there?

HECKERT: Well, it's a practice of DuPont to move people around, give them experience in different environments, different associations. That was very good for me, because the Spruance plant was sort of the lead research plant for the cellophane business. The cellophane technical section was located there, and a lot of the plant work was experimental. As a consequence, the plant didn't run quite as well as it would have had it just been allowed to settle down and make cellophane.

And that began to bother me late in my stay there. I guess I should have been happy that I was working in such a research-friendly environment, but I thought we also were supposed to make cellophane and a little money. [laughter] We had some people in direct-line manufacturing with a technical bent who were inclined to have their own program along with the formal technical program. [laughter] That bothered me a bit.

I thought it would be interesting to work in a plant that was regarded as a first-class manufacturing facility, not necessarily a strong technical organization. In nine months, I saw what happens when you really focus on manufacturing and cost, and it was an important part of my training. It was a very different environment. Both research and manufacturing are important, but at some point, you've got to settle down and run the plant, and Clinton did that very well.

BOHNING: Then you went to Ohio?

HECKERT: In Mylar.

BOHNING: Okay. I wasn't sure about that; I didn't think it was cellophane.

HECKERT: No, it's Mylar. That plant had just started up, had been running only a few years, and the process was difficult. The learning curve was very steep, so during my first two or three years there, we had lots of process problems; we had lots of safety problems. In the four years that I was there, we made a great deal of progress on both. Safety was a real challenge, and we turned that around completely, with considerable effort. The process improved rapidly and by the time I left, it was fun managing that plant. When I first got there, it was pretty hectic.

BOHNING: When you say you had safety problems, was it an attitude problem, or was it a process problem?

HECKERT: It's always an attitude problem. It was not fundamentally the process. Making polyester film isn't any more hazardous than most of the other plants we run, but for whatever reason, the group hadn't gotten off to a very good start, and people really weren't thinking safety first.

During the first few months that I was responsible for that plant, we had two or three major injuries; that is to say, lost-time injuries. Although nobody was killed or seriously maimed, that's just unacceptable at DuPont. One of my very good friends from Richmond was then my boss, or at least at a higher level in manufacturing, and I'll never forget what he told me. He said, "When your neck gets red enough, these accidents will stop happening." [laughter].

You know, you could have stabbed me with a knife and hurt me less, [laughter] but to lay it on the line that I was the guy who had to make the change—it was my fault that we had these problems—did get my attention. There were five or six hundred people in the plant, and I talked about safety to groups of twenty or thirty at a time, until I'd covered everybody in the plant. I made it very clear that our performance was not acceptable, and we were going to stop hurting people. They believed me, because it was true.

That was a difficult experience, but a very important lesson. When the top guy believes in safety, you have a good record. If he just goes through the motions, that's not enough.

BOHNING: Well, DuPont's always had, in general, a record of being a leader in safety.

HECKERT: That's right, and I was a strong proponent of safety. I could not believe that I was part of the problem, but the results spoke for themselves. [laughter] Whether it was me or the plant didn't really matter, it was my job to turn it around. It was a real challenge, and I was pleased when we turned it around. I've been very proud of that group for many, many reasons, but particularly, for the change they made in safety. They <u>really</u> stopped having accidents, which was great. They also did a lot of other things very well.

BOHNING: By the time you left, after four years, had you worked out the technical problems pretty much?

HECKERT: We made a lot of progress. As you know, in any process, improvement is continuous. The lines ran well. We still had some quality problems—I suppose they would say that today—but I no longer had the agony of, when playing golf on weekends, seeing black smoke coming from the direction of the plant. [laughter] That told me we weren't burning waste. No, the plant ran pretty well.

BOHNING: At this particular point, were you thinking more about changing your direction within the company? You said at one point, you thought once you got to manufacturing, that was going to be it.

HECKERT: Well, I don't think anybody on the way up knows where the ceiling is. In the late sixties and early seventies, graduates with degrees in business and some technical background wanted to be vice president the day they joined the company; that was not the attitude of people of my generation. We expected to work hard at whatever we did and assumed that if we did our job well the future would take care of itself.

I never had a specific goal of reaching anything other than the next level or maybe a level beyond that. I just didn't think that way. I was always pleased when the opportunities presented themselves, but I think my earlier words are right. I was comfortable in research; I was comfortable in manufacturing. I knew I could run those operations at any level, if the opportunity presented itself, but I also worked with a lot of people whom I respected very, very much. When somebody else got the nod, as they did from time to time, that didn't upset me. That was my attitude throughout the process. I never had difficulty dealing with somebody else getting the promotion. I knew these people and they were good. Why shouldn't they?

BOHNING: In 1965 you went to be assistant general manager of the film department, and then over to plastics in 1967.

HECKERT: I'm a generalist, [laughter] whatever that is.

BOHNING: I was going to ask what that meant to you.

HECKERT: Well, it means that you've got to stop thinking in terms of one discipline or another and think about the business. By then I was prepared for that. I had attended enough marketing sessions, because of my research responsibilities, so that I was comfortable with marketing people. I liked them and I liked the interaction with customers. I had a little experience with customers, and I learned a lot about that interface, what's good about it and what can be bad about it. [laughter]

I'm laughing because there was a problem with a cellophane customer who was having difficulty with moisture protection. We sent him several improved test samples. We didn't seem to be making any progress, and we knew the last films were better. Finally, the plant manager and I talked with this customer in-depth about how they were handling the test samples. We got hold of the guy who ran the test and said, "When you get a new roll, what do you do? Take us through the process." He said, "Well, I go get the test roll and I retest it." None of us could believe what he'd just said, but he meant it. He was not testing the new material; [laughter] he was retesting material which he'd had all along.

That's an absurd thing to have happened, but it sent a very strong message to me. When you're dealing with customers, you really need to know exactly what they're thinking and saying, because what you're hearing may not be what you think you're hearing. [laughter]

Well, that's kind of a corny little example, but there were a number of such situations along the way, and I came to appreciate the fact that suppliers and customers have a very special relationship and a very unique opportunity, which they can either screw up or they can work together in such a way that they really help one another. I developed my own view about marketing and what's important. Obviously, good communication is just a piece of it. Eventually I became quite comfortable with that aspect of the business.

BOHNING: Well, later on, you made it very clear to the rest of the people in the company what the customer relationship should be.

HECKERT: Yes I did.

BOHNING: At one point DuPont had the products and said, "Here they are," and you turned that attitude around.

HECKERT: Yes, but change was coming along. In the seventies, it was clear that DuPont had to make some dramatic changes. I would say, during those years when Irv [Irving S. Shapiro] and then later when Jeff [Edward G. Jefferson] were chairmen, I had strong feelings about how we interfaced with customers and what was wrong with that relationship. With complete support from Irv and Jeff, I pursued my own agenda in bringing about attitudinal change, and I think it was helpful.

BOHNING: When you were in the film department, and then in plastics, to whom were you reporting?

HECKERT: In the film department, I reported at the upper levels to Norm Copeland, who eventually became a senior vice president, and then to Walt Simon, who was head of the department. When I moved over into plastics, I was assistant manager of the department and reported to Roy Schuyler. These were wonderful people, and very, very different. Great teachers, and great doers too. [laughter]

Schuyler is a special case. He was very interesting to work with, and very effective, very much a doer. Norm was a little more laid back, but very, very proficient with people and with technology. Walt was a little on the philosophical side, very thoughtful, and you could learn a lot just listening to him talk about what the business ought to be. Each contributed importantly, to my view, to the business, but in quite different ways.

BOHNING: I'm quoting now. I don't have the source here, but I could get it if you wanted it. When you were the number two man in plastics, it said, "General Electric took away DuPont's leadership in the profitable and growing automobile plastics business. The setback instilled in Heckert a keener appreciation of marketing, but it did not seem to hinder his career" (3).

HECKERT: [laughter] I wasn't there long enough to take responsibility for that. Yes, it bothered us, and there were lots of lessons in that period that I remember clearly. One is that the worst thing in the world you can do is be defensive about mature or maturing products. If

something new is coming along and it has a place, you better decide either how you're going to deal with it or how you're going to exploit it, one or the other, because it's coming.

I think that was really the message. DuPont had a strong position in fluorocarbons and polyamides, a pretty good one in polyesters, and no position in some of the other basics that were going to be important. We elected not to take a position. We suffered the consequences.

BOHNING: Was that an executive committee decision at that point, or was it made at lower levels?

HECKERT: It would be hard to pinpoint. There was a strong underlying feeling in the company that we didn't belong in commodity businesses. The problem with that is that most businesses become commodities. [laughter] If you can invent fast enough so you'll never have to depend on commodities, that's fine. As the world became more and more competitive, and international competition became a daily fact of life, it became very difficult to be first with important new products.

As more and more companies developed the same recipe we did—strong research, good marketing efforts and strong manufacturing—we were in another world. This was an external change that we could not ignore. As markets mature, the bulk of the products become commodities. If they're going to be important, we'd better not thumb our nose at them; we'd better figure out how to be a player on our earnings terms. [laughter] Make some money, but be a player.

We let some things go that we probably should have gotten into. Some of the decisions we made were probably right. Polyethylene was one of the greatest things that ever came down the road, but it quickly became a commodity. You have to be selective; you can't do it all. We missed a couple, but we were right, in some cases, by staying out.

[END OF TAPE, SIDE 2]

HECKERT: I may be talking too much.

BOHNING: No.

HECKERT: I haven't thought about these things for a long time; it's fun.

BOHNING: Well I'm glad that you're doing so now. [laughter]

You then moved into fabrics and finishes, 1969 to 1972. At this point, you were general manager and you were no longer assistant general manager. Did you sense that you may have had some mentor or someone in the company working for your case?

HECKERT: [laughter] I had a good working relationship with most people. I didn't really worry about one more than the others. I did follow Norm Copeland a couple of steps up the road—he'd be promoted and I'd take his place. He was a great blocker. [laughter] I worked for him as director of supporting research in the film department when he was director of all research. He moved to assistant general manager; I moved to research director. Then he left that department and I became assistant general manager, so in a sense he was very helpful, [laughter] but no, I never had a feeling I had a white hat or anything like that. I just thought that I had lots of friends.

BOHNING: When you got to fabrics and finishes, that was the Corfam time, as I recall.

HECKERT: Yes.

BOHNING: That was one of the more infamous incidents in DuPont's history. Were you involved in shutting the business down?

HECKERT: Very definitely, along with John Metzger and others. It's a long, sad story, and everybody involved for a number of years has his own version of why; mine's pretty simple. When we looked at the business and our competition, part of which was synthetic and part natural leather, there were a couple of problems I couldn't see a way around. Number one, the price of leather had nothing to do with, in effect, the cost of making leather. [laughter] Leather was a <u>byproduct</u> of the meat industry, and the price of leather was whatever they could get for it—so that price was pretty spongy. [laughter] We concluded that whatever it took to move the product would be the price, so there wasn't much comfort in that direction. Leather does some things very well in the shoe industry, so it would always be a player, and a tough one from the price standpoint.

With respect to the synthetics, we all looked down our noses at vinyl-coated and urethane-coated fabrics—until they gained acceptance. Our customers, retailers and consumers, considered man-made products to be much the same. It just didn't make much difference to them. If it looked good, they'd buy it.

When we looked at our mill costs—not just the current ones, but our projections of the best we could do—we concluded we could probably make Corfam as we then defined it, for forty or fifty cents a square foot, and vinyls were selling for thirty. Now, there's a message there for somebody who has his eyes open. [laughter] The urethane products really weren't that bad; you know, they're pretty good in many applications.

Corfam was a very good, but fairly expensive product. Among the sophisticated synthetics, it probably was the best. That was borne out by the fact that Poland, after looking carefully at Corfam and the other offerings that were available at the time, decided that they wanted our Corfam plant after we closed the business down. They bought it lock, stock, and barrel, and as far as I know, it's still making product.

So it wasn't that we didn't make a good product or couldn't make a better one. Some of Corfam's earlier deficiencies were well along the way to being corrected. We could see a day when we made a material that was every bit as comfortable as leather, wore better, kept its good appearance longer, was easier to care for, and could sell for a price that could be recovered in the shoe business—which is different from saying it was competitive cost wise with all the other things on the market.

But Corfam could have remained a player. The problem was it could never be a really good earner, and tens of millions of dollars would have had to be invested before it got to this comfortable level of performance. Metzger and others concluded that it was time to quit. I agreed. The executive committee agreed, so we cut it.

BOHNING: Shortly after that, in 1972, you were made a vice president.

HECKERT: Yes, 1973. Well, vice president in 1972; they changed department head titles. I didn't join the executive committee until 1973.

BOHNING: Did that come as a surprise to you, or were you expecting it at that time?

HECKERT: No. By that time, I knew who the likely candidates were. I never took the position that there were not others in the system who were every bit as good as I was, but I also felt that I was as good as they were, [laughter] so it was a question of how it was going to fall.

BOHNING: The executive committee, of course, really runs the company. That's where the decisions are made. How many members were on it when you joined it?

HECKERT: Eight or nine, as I recall. Committee membership goes up and down.

BOHNING: Again, I'm quoting: "He distinguished himself as a team player who always shared the credit" (3).

HECKERT: Why not? [laughter] That's just being honest.

BOHNING: Okay. I think the more interesting thing to me was the fact that very shortly thereafter you picked up the research reins.

HECKERT: Yes, I had research for a while. At that point, my role was mostly advisory. There was a fairly soft connection between the committee and the various units in the company. We did begin to allocate resources at that point and encouraged people to work in certain directions, but it was a while before it became a direct managerial responsibility.

BOHNING: Well, as I understand it, you very shortly thereafter, in 1974, I guess, started indicating that the executive committee felt it necessary to reduce R&D within the company.

HECKERT: Yes, our costs were high. We'd been through a decade during which we'd launched a number of new ventures that didn't pan out particularly well. We had demonstrated convincingly that the old formula of "identify a large market and figure out a way to supply it with a synthetic material" was not enough to guarantee a successful business. People would shoot me for using those crude and simplistic words. The new venture mania which existed in the company in the sixties had produced some businesses that were attractive, but it produced a large number of expensive failures, and we concluded that we had to rein this thing in a little.

The company had been managed pretty much as the sum of its parts up until the mid-sixties or even early seventies. We needed to change. It wouldn't be all "top down," but at least the parts weren't going to spend more resources than we had. There had to be a plan that made sense for DuPont as a whole, as well as the individual departments. It was no longer just managing the company as the sum of its parts; each year we developed a business plan that made sense from the top down, as well as the bottom up.

BOHNING: Having started your career out in research, in good basic science and basic chemistry, how did you feel about having to go to these people and say, "It's time that we make some serious changes here?"

HECKERT: I didn't like it, but I didn't think it was wrong. I thought it was right. All the facts pretty much spoke for themselves; the record was what it was. [laughter] The fact is, we were in a situation where we were spending more for R&D than we could justify based on the results that we were getting from it. That wasn't necessarily all research's fault, but here's a function that had simply gotten out of proportion with the rest of the business. My message always was, "Hey fellows, if you want to spend more in research, there's one formula that will work every time. Let's make more money." [laughter] "Until we can do that, there isn't going to be more money for R&D. We simply have to live within our means, until we can demonstrate the ability to bring on new things that will be very, very profitable and generate more discretionary cash." It isn't rocket science; it's just that we had to do some resizing and make everything fit together.

BOHNING: Well, a nylon or a teflon doesn't come along all that often.

HECKERT: They generally don't. In fact, polymer science has been a fascinating thing to watch. It's gone through several phases in the thirties, forties, fifties and sixties. We had these whole new families of important materials, and then there was a period of adapting them to all the opportunities that existed. Then there was the period of combining them, composites, et cetera, so it's been reworked two or three times, and still is enormously important. I suspect there's a lot of future to it too, but it's changing. Finding a new simple combination of carbon, hydrogen, oxygen, nitrogen that's going to turn into a huge product is very difficult.

One of the examples I used when I talked about DuPont's dilemma with new businesses was as follows. "When nylon began"—I guess this was about 1980 when I was making this comment—"forty years ago, company sales were less than half a billion dollars, and nylon was a fledgling product. Today, nylon is a two billion dollar business." I said, "Our challenge today, with DuPont at forty billion, is to come along with a new product that in forty years will be well above forty billion dollars. Now, tell me what that it is." [laughter]

That's the arithmetic of this rate of growth, and the simple truth is those products are not there. At least, they're very hard to find. Although there will be new industries that will be huge, and we're seeing some of that, they will not necessarily be based on polymers or even chemistry primarily, so it's a dilemma. When you get older and bigger and your product lines inevitably are more mature, you have to change how you behave. It's not just what's happened to you—it's what's happened to the world.

In 1950, DuPont was unique in it's ability to mount a major new venture. It had the technical ability; it had the business disciplines; it had the manufacturing capability; it had the engineering capability. There weren't many companies like that in the world. By 1970, there was one, as I used to say, on every corner of every large city. Now, that's not quite right, [laughter] but what I was trying to do was to get people's attention on how much the outside world has changed, and therefore how unlikely it was that research per se was going to make us hugely successful. We had to do a lot of things well—the competitive picture had changed dramatically.

BOHNING: What kind of response did you get to this new program?

HECKERT: I'd say, generally favorable; in many respects very favorable. One of my messages was, "Hey, don't look for the committee to save you. You're the guys who make the decisions, day by day, that really build this company, that change it. You're the agents of change. If you don't like what's going on around you, just look in the mirror. Don't look at the committee. It can't do it for you; it's just not possible."

I made several speeches in which I said, "When I look back at my career, I made a lot of mistakes, but the mistakes that really bother me are the mistakes of omission, not commission. There were a lot of things that I could see and I should have done and I didn't do, and those are the ones that cause you not to sleep as well as you might otherwise." [laughter]

So, this was a message for middle and upper management that was very positive: "You're the ones with the clout. You're the ones who can make things happen." None of us are satisfied with our business performance over the last couple of decades. We all want to do better, and we can, but it's going to take input from every one of you. You're going to have to help us redefine DuPont and do those things that make it again what we think it should be, in relation to our competitors.

I think we've been through that process. No one of us did it all or even most of it, but it's been a continuum since the late sixties. [Edgar S.] Woolard has certainly had his share of the problems, and he's handled it very courageously. It is a very difficult challenge, but the results speak for themselves, and we are better.

BOHNING: Well, let's go back to the time you joined the research group at DuPont. Do you think that there was an attitude, maybe even a luxury, of, "We can do this great basic research." DuPont had a long history of that, the papers and the literature and everything—good solid chemistry going on, and maybe we'll get something good out of it. But was this really a luxury that you could no longer afford?

HECKERT: Well, I'm very reluctant to say that we can't afford it or that we shouldn't do some of it, but certainly it has to be done in proportion to its potential reward, and the fact is that the reward from that kind of a goal-less research is thin.

You know, we've had these arguments, not just in DuPont but throughout the world in industry, whether research ought to be "need oriented" or just basic research with new materials and the obvious applications that fall out of that. Well, that's kind of a dumb argument. The fact is it's an iterative process. Anything you can learn that's new and different and useful about the basic behavior of matter is fine, but it's not necessarily terribly rewarding, just to start down that road. Certainly, anything that you can do to meet a very important need of the world, in a cost-effective way, is going to be very rewarding, so you can't ignore need. It's an iterative process. You've got to do both. But we concluded, at least in the seventies and eighties, that we had to do a little bit less of this direction-less research, and a little bit more aimed at making our products or processes better. Where we can see new products, sure, go for it, but be realistic about what competitors are doing, and what the competitive response will be if to be successful you must knock somebody out. Nobody gives up easily.

BOHNING: I think the United States was probably in a unique position, after World War II, in terms of the strength of its chemical industries as opposed to the rest of the world.

HECKERT: Europe was in shambles; our plants were together. We had going what they hoped to rebuild. The other side of that is, twenty years later, they were working with new plants [laughter] and ours were aging, and they took advantage of all the new technologies that came along, so, you know, there was quite a dramatic change in twenty years.

BOHNING: You had an ad hoc committee at that time which I believe consisted of several of the research directors, if not all of them.

HECKERT: Yes.

BOHNING: And then you reported to the executive committee, and there were several recommendations. One was to cut the R&D expense by four percent per year, something like that. Central Research was to give up one-half of its budget from projects supported by the industrial departments.

HECKERT: The thought there was to try to impose a discipline on Central Research of working on things that were important to existing businesses. This was kind of an arbitrary and

not very sophisticated push to get them to do more work that the departments were enthusiastic about, that you could see some commercial value from. Fifty percent? Who knows what the right number is, but that's about where we thought we needed to get. It was kind of a negotiated [laughter] goal that everybody could live with, and I think it was very helpful.

The four percent per year—I've never been happy with the excesses that businesses go through to get their houses in order. Sometimes they're necessary; there's nothing else you can do. But I've always been upset by recruiting years when we hired two thousand, and then the next year a hundred, or something like that. I'd say, "Now, what kind of a message is that to send to the universities? That's terrible!"

We're going to be in business forever, we hope. We know we're going to have ups and downs. Why do we ever hire two thousand? And why do we ever hire just fifty? Why don't we be good enough managers so that while we can't avoid the peaks and the valleys, for heaven's sake, let's smooth them out.

Well, we eventually got some discipline in hiring, and we did get better, but to make a quick large adjustment in an R&D program has incredibly negative morale implications and results; I haven't any stomach for that. With attrition, as long as you're not bleeding to death, you can cure almost any problem, and I didn't think we were in bad enough shape so that we needed to do more than a few percent per year. Normally that is fairly easy.

BOHNING: Somewhere, I believe, Cairns came to you and said that DuPont's research image had reached a low ebb in the universities.

HECKERT: Yes, we had a lot of concern about that, and part of it was this cycling in recruiting. Part of it was the perception outside that we were really giving up on R&D, which was never true. We tried to deal with those impressions honestly and effectively. I don't know how well we did, but I think eventually the universities recognized that we had no choice but to make some adjustments, and, yes, we still love research and we're going to do it, but it had to be the right amount and generally pointed at the right goals, otherwise we couldn't afford it.

BOHNING: Well, certainly your Alma Mater, Illinois, and DuPont had a long-standing connection.

HECKERT: Wonderful.

BOHNING: Carl Marvel was a DuPont consultant. [laughter]

HECKERT: He was an amazing man and a great friend.

BOHNING: Just as an aside, did you ever pick up his love for birds along the way?

HECKERT: Well, he would not be very happy with what I do with birds. [laughter] I think quail are marvelous eating, but, yes, I love nature very very much. Even though I hunt and I fish, I am an ardent conservationist, belong to the Nature Conservancy Board and all the rest, but I don't do as much bird watching as he did. [laughter]

One thing I remember Carl Marvel telling us was, "Keep your hands busy and your eyes open," to which I would add, "Keep your head turning." During the TCNE work, I was getting only tars from the reactions I tried. One day an Erlenmeyer flask with some of this tar was left on a hot plate overnight. The next morning I saw a small white crystal in the neck of the flask and realized that this had sublimed out of the tar. It turned out to be TCNE. Thereafter we used sublimation to recover useful amounts of this remarkable chemical. It was a good example of what happens when, as Marvel said, you keep your eyes open.

BOHNING: I just talked to someone, and I'm not sure who it was, who said that Marvel told him, if he ever had it to do over, he would have been an ornithologist.

HECKERT: Marvel was that kind of person; he could do anything he wanted to, like Crawford Greenewalt. Crawford was just <u>incredible</u>, with the spectrum of interest that he had, and his ability to do well in anything he choose to try. Marvel was the same kind of a person.

BOHNING: By 1977, as this program of change in R&D was going on, you were still assuring the board of directors, who evidently were getting nervous about things as well, that while the R&D was in a period of transition, you were still spending more than the competitors in research and that research was still critical to the company's future.

HECKERT: The board was uncomfortable about some of the things that they were hearing on the outside. It's very hard to compare research programs, because people don't use the same words to describe the different kinds of research, and internationally, people lump things somewhat differently, but as best we could measure it, we were doing about as much as anybody else, and maybe more. There certainly was not a large gap.

All of those discussions were less than truly scientific. [laughter] In the first place, nobody quite knew how to make the comparison. In the second place, whether we were doing the right amount has far more to do with what we were getting out of it than it does with what anybody else does. [laughter] We tried to be comforting because we really thought DuPont was not going to fall behind. The tuning up we were doing, in fact, might very well make us more productive and in the future justify even more research, but there was nervousness. The board's discomfort was genuine, and we needed to deal with it, but I just never really worried that much about the inter-company comparisons.

BOHNING: The organic chemicals department suffered considerably at this time, for a number of reasons. They had three major businesses, all of which ran into problems, beginning with dyes. I'm not sure when DuPont finally got out of dyes. Was that during your time?

HECKERT: That was around the mid-seventies.

BOHNING: Then, of course, CFCs and TEL—at one time, three big players in the company.

HECKERT: That's right.

[END OF TAPE, SIDE 3]

BOHNING: It's something we were saying earlier—that as something matures, you need to be aware of what may be coming down the road.

HECKERT: You bet.

BOHNING: And maybe, a number of times people thought there was no tomorrow, in terms of what the future was going to hold.

HECKERT: Well, those are three very different business problems, and our response was quite different in each case. In the dye business, for whatever reason, we had simply not stayed competitive and not made the investments either in technology or in manufacturing facilities. It got in trouble at about the time when we were really understanding what international competition means, namely that some countries and some companies don't play by the same

business rules as we do. We learned all about subsidies, [laughter] and people who don't really care as much about returns on investment as they do about market share and things like that. Depending on what kind of competitors you have in a given business, you can have a variety of different problems, and the dyes business got to be not to our liking. We had not stayed abreast of the industry, so that was not a very difficult call.

The chlorofluorocarbon/ozone issue was complex. Initially, we did not know whether ozone depletion was real and if so, what the impact of CFCs was. Until we had the science, we were not in the position to make intelligent decisions. It took years for the science to be documented, safe alternatives to be developed, and the trade-offs in different courses of action to be evaluated. Several companies and many governments were involved. Without world-wide cooperation, no one company's actions would make much difference. There was wide-spread concern over the time required for DuPont and others to make the decision we did. The fact is that DuPont made the decision to phase out the worst offenders three days after the definitive study was made available to us. Prompt action was possible because of large research and development expenditures on substitutes begun soon after the potential problem was identified.

All during that period, we'd been working on alternatives. We understood the science of longevity of these molecules in the stratosphere, and we began working on things that either didn't have any chlorine in them or would come apart much quicker and would not build up and cause difficulties in the stratosphere.

That replacement program was expensive, but I think very successful. It remains to be seen whether ten, twenty years down the road we'll be happy with the business; I really don't know, but I certainly applaud what we've done. We've given the world alternatives, and good ones, and we will eventually get over the problem of ozone depletion in the stratosphere. I'm not sure that we'll see much difference here on earth, but the chemistry will clear up, and we'll be happy again. I think our response here was strong and appropriate. People may think what they want to about the time required to establish the science, but that is, in fact, how long it took. [laughter] Once we had the results, we didn't sit around.

With regard to lead in gasoline, it's hard to know whether the health trade-offs are real; I'm not sure. Lead is a problem in children, but lead gets in children largely through paint and not by kids eating dirt along the road. I've never been sure that removing lead from gas was as important to society as some of the other things we're dealing with. It may be, and I certainly agree that you can run cars without lead.

Lead did do a good job. [laughter] It made gasoline burn very well. But once you change the engines and the fuel, optimize both, you wind up with a completely workable lead-free alternative. Leaded fuels do redistribute lead in the environment and that's important to recognize. It may be we're simply better off where we are. The decision was made, and it was not difficult for us to get out of the business.

BOHNING: You've mentioned, several times, problems with the public arena and media interpretations and the idea that while to the outsider it appeared you may have been dragging your feet on the fluorocarbons, you in fact only took a few days, because you waited for the science.

Dow chemical went through something similar when they found the leaking mercury cells. All the science indicated mercury under water was fine, that there was no problem, but the moment the science showed that that was a problem, Dow took care of it and shut the plant down, so it's a matter of the science. We're working within the confines of the science that you know at the time, and we can't do much more than that.

HECKERT: That's exactly right. In fact, that's our responsibility; at least, we always thought so. We can do anything the public wants us to do, but we add in, "Our responsibility is to point out the tradeoffs and the costs," so that we, all of us, really do understand what we're doing to ourselves. Industry can't always decide. When I say I don't know exactly what the lead problem is in the environment, I mean that I don't know. I don't really know how kids get overdoses in a farm environment. I know how some get it in an urban environment, when they're living in houses with old paint. But clearly, the automotive decision was based on the perception that if you use lead long enough, you won't like the end result, and that may be right—but I didn't know that. So, we are constrained by the science, and sometimes that dialogue with the public is labored; it's very difficult.

BOHNING: Not too long ago, I saw an advertising poster at the far end of the car on the commuter train I take. It showed some youngster sitting off in a corner, and it said, "If your child's mind isn't on history and mathematics, perhaps it's because it's on chemistry." When I walked out, I looked at it and it was an ad for a drug rehabilitation center.

HECKERT: Oh boy. [laughter] Yes, that's a problem we have.

BOHNING: When I first saw it, I said, "Gee, they can't be advertising chemistry. What could it be?" It's scary when those things happen.

About this time also, the environmental situation arose in the seventies, and there were increasing government regulations. How did you respond to those?

HECKERT: I had a full belly of that, because I represented DuPont in CMA, the Chemical Manufacturers Association, during the seventies. At the time toxic substances legislation came

along, I was asked to lead that charge for that group, with lots of help from my friends, but I sort of spearheaded it. I spent a year or so working with Congress, trying to craft legislation that we could live with, that made some kind of sense and did in fact deliver some benefit along with the obvious added cost. That experience was a real eye-opener.

My favorite expression, to those who want to hear it, is that before I went to Washington, I was apprehensive about how the place worked, and after I found out, I was terrified. [laughter] That's still true, because most decisions are not made the way that scientists are used to.

Whether you like the toxic substances bill or not, it was the best that we could do, and the industry has, in fact, learned to live with it. Some aspects of it are not very constructive, but there's no question that all of us are concerned about materials that wind up in effluents, and we all need to be careful, to be good stewards of the earth. The chemical industry has finally gotten out front on that, I think, and is doing a very good job.

Plant source emissions now are really not much of a problem; that's a tremendous change from a couple of decades ago and it will get better. It costs a lot. That's all right; that's a decision society has every right to make. Sometimes it has not delivered benefit in proportion to cost, but nobody's perfect. There are lots of things that you and I can fuss about, but my view of where we're headed is fine, very comfortable. The process by which we found direction and by which we move in those directions is really pretty crude and in some cases not productive.

The landfill problem and the cleanups have been a disaster, and not because somebody doesn't want to do it. It's because of the concept of joint and several liability and the unwillingness of people to spend a hundred million dollars cleaning up a dump when their contribution to the problem was a fraction of one percent. They just happen to be the only deep pockets around, so they get the job.

The Superfund approach conceptually might have been all right, but it was terribly flawed in implementation. The chemical industry tried to straighten that out, but it's still waiting for a sensible resolution.

Most of the environmental laws are somewhere between okay and very good. Again, some of the implementation has been crude and not cost effective, but I don't think anybody really wants to go back to messing up our streams and rivers, and nobody likes dirty air, and that's right; we should not let those things happen. We still have a problem with doing it intelligently and cost effectively, and I suppose we always will.

BOHNING: At the time of Silent Spring, the chemical industry started to get its reputation by stonewalling; its initial response to Rachel Carson was really a stonewalling response, which probably hurt them for a long time.

HECKERT: Yes.

BOHNING: What was DuPont's attitude at that time?

HECKERT: I don't remember much about that. We came in a little later; we didn't have many of the products that were initially involved in the discussion. DDT was not one of ours, and I've forgotten what the others were. Partly, because we did understand the chemistry of DDT and the biology of DDT, we weren't all that concerned, because the impact on people was minimal. You could damn near put it on your cereal and it won't do you in, but birds are another matter. It was very effective against malaria, mosquitoes, and things like that.

I'm guessing now, because I don't really remember that we discussed it much, but the technical community within DuPont recognized that there could be a problem with indiscriminate use of pesticides, but that some of these were very useful, [laughter] and we shouldn't throw the baby out with the bath water. That probably was where we were.

Later on, when the cancer scare got to be the center of the public concern, we played an important role in trying to articulate where we thought we were as an industry and as a society. You remember the chemical horror-of-the-month story. Chloromethylether was one of those. There were half a dozen others, vinyl chloride, et cetera.

The perception was that this was the tip of the iceberg, and that when we really understood how bad chemicals were, we'd shut down the industry, or at least some people would be inclined to do that. [laughter] At that time, I was working on toxic substances, and I told a number of people in Congress, "You know, you're exactly wrong. This is not the tip of the iceberg, this is the iceberg. We're at a time in history when we have learned most of what we're going to learn about toxicity of materials like this. We know most if not all of the major bad actors right now, and we can deal with them. So be careful about coming up with rules and regulations that cause mass confusion and generate enormous cost with no commensurate benefits."

Now, they didn't believe me at the time, or at least a lot of them didn't, but since 1975, there have been very few new stories of that sort, almost none. I'd be hard pressed to come up with one. We went through that period when everybody was convinced that every man-made chemical was going to do you in, that they were the primary cause of cancer, which they are not. Now we've settled down to the realization that we have a pretty good idea of what the cancer risk from manufactured chemicals is, and it's very small in terms of the total problem.

Most cancers are caused by food, and lifestyles, and heredity and a few other things. [laughter] The industrial input is certainly less than five percent and maybe less than one or

two. I'm not sure what the current view is, but for a while it was sixty percent, and everybody could "prove" that—but it was never true. That was a very big concern, but that's largely been put to rest now, I think, and people are a little more rational.

Without question, the environment has been a major burden for industry in the last twenty years—costs and distraction, whatever—but without question, much of it is important, useful, desirable, and in any case, it's the only acceptable way to go in our populous democracy. I think we've coped reasonably well, and I think we'll get better at it with time, and eventually we'll be glad we did.

BOHNING: One thing the people at Dow used to say is that being in a small town, all executives and everybody else lived right there by the plant. They weren't far away, and they used that as a testimony to their safety.

HECKERT: Well, I think we all have a little of that feeling. I worked in atomic plants for a couple years, and I've worked with carbon disulfide, hydrogen sulfide, hydrogen cyanide, and all those bad actors. I think those of us who have worked for responsible companies think that industry did it well—very, very well in fact. Our people were safer at work than they were any place else, but people still get upset when we have a misadventure, an accident, and they really wonder whether we're as diligent as we ought to be. That's what keeps us hopping.

BOHNING: May of 1981 was the time when Ed Jefferson became chairman and CEO. According to one source, that came as no surprise. You became president and chief operating officer, and the source says, "There was no obvious signal that Heckert had the inside track to the presidential office" (4).

HECKERT: That's interesting. [laughter] I don't know why there should have been any strong signal one way or the other. I'm a little surprised at the comment, because at that point in time, I don't know what people would have had in mind.

The problem that existed between Jeff and me had nothing to do either with Jeff or with me. It was that we were virtually the same age. He's three years older than I, and a very close personal friend, a great guy, and a marvelous leader, so I never had any problem with his appointment. I'm sure I would have been disappointed not to become president, but I have to tell you, I thought I would, so I can't really deal with that comment. [laughter]

BOHNING: Okay.

At that time, from what I've read, Jefferson was to focus on research, manufacturing, and general management. You were going to be concerned with marketing, pricing, and that aspect of the company.

HECKERT: Those are the things you say to make people believe you've got a plan, when we both worked on everything. [laughter] But yes, we divided up in a general way; it was just a matter of focus, but we were partners in every sense of the word.

BOHNING: A quote, which I think comes from you at that time: "DuPont's growth rate should be fifty to one hundred percent faster than the overall economy" (4).

HECKERT: That's what the chemical industry was doing in those days. We were growing about twice the GNP, and the fifty was a concession to the fact that we were becoming large and mature. Most of us really hoped that it would be one hundred percent.

BOHNING: Now the other change at this point was that you felt a lot of this could be done by acquisitions.

HECKERT: Yes, there were some areas that we thought we could do well in, that we probably would approach initially by acquisition, token acquisitions, if nothing else. We certainly did that with Conoco. [laughter]

BOHNING: I was going to come to that. Before Conoco, there was New England Nuclear.

HECKERT: Yes, and a few others. We were trying to develop a profitable business in health care. We did some good things, some excellent research which I think may eventually be recognized, but we never really made a good business out of it. In a sister business, agrochemicals, we did well. Those were two areas that we expected, at that point in time, to expand dramatically. We did in the case of crop protection chemicals. The pharmaceuticals, we found another answer, which has turned out very well—our joint venture with Merck. But it's clear that DuPont per se is not going to be, near term at least, a major player in health care, except through the venture.

BOHNING: There was some consideration given to pharmaceuticals. I was surprised to see that you had looked at Merrell Richardson before Dow did.

HECKERT: We looked at a lot of companies. We were probably conservative on estimating values, and maybe a little too cautious because of legal problems associated with some products. It's hard for me to look back and judge what might have been. It's hard to say; I won't speculate.

We had some experiences with acquisitions that weren't all together pleasant. We had come to realize that melding companies can be hard work. When you acquire somebody, you'd better have a clear view how they've been managed, how they'll fit, how much pain is going to be associated with digestion, and how good the end result will be—otherwise you'd better not touch it. We were more conservative than we might have been, but I'm not upset about the way it turned out. I think we have a real contribution to make in agrochemicals, and not being directly involved with pharmaceuticals, at this point in time, doesn't give me great pain.

BOHNING: That brings us to Conoco—in a very short period in time, from May of 1981, when you and Jefferson took over, until October of 1981.

HECKERT: It was shorter than that. [laughter] That battle began in about two months, behind the scenes.

BOHNING: Okay. Was Jefferson the driving force behind that?

HECKERT: Yes, I think Jeff was. He had been involved with several studies of how acquiring a position in petroleum and products derived from oil might work to DuPont's advantage. There was a time in the seventies when we had trouble getting petroleum fuel stocks, and this was one way to cure that. By the time we got around to looking at Conoco, we had concluded that we'd be able to buy on the market everything we needed, but that the oil business, per se, might be attractive to DuPont. The Conoco acquisition took place because Conoco was a well run and profitable company, not so much because we were back-filling and assuring supply.

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HECKERT: That was a consideration, but nobody thought it essential. Conoco looked good to us in part because of our view of what was going to happen to crude prices, which was wrong, [laughter] and how the combination of Conoco and DuPont might work. I'd say most of that turned out as we saw it.

The really good news in this acquisition was that the Conoco people were a very good fit with DuPont, and the business was one that we understood. We didn't pretend to know where to look for oil or how the market would behave in the future, but we did know it was an important business. We found out that we'd gotten in bed with very good people. We expected the merger to be counter cyclical, which it has turned out to be. When the oil company has a good year, chemicals don't necessarily, so it smoothed out the earnings curve. It's been a very successful marriage. I think if you talk with the Conoco people, you'll get pretty much the same story. If DuPont had not acquired Conoco, I do not think Conoco would have lasted very long as a free-standing company. If an oil company had picked them up, obviously their ranks would have been thinned quite a bit. [laughter] That's a different kind of marriage.

BOHNING: Yes. Did you have much selling to do with the executive committee?

HECKERT: The committee came together very nicely at the end of the day. There were some concerns among committee members, whether we really wanted to do this, and some conviction that we didn't have to, and I think both were valid positions, but at the end of the day Jeff made it very clear. "Look, gang, either we are going to unite on this thing and do it as a happy family, or we're not going to do it." Put that way, the committee felt, on balance, we ought to go ahead.

It wasn't a hard sell particularly, but when you do something on that scale, everybody better be reasonably comfortable, otherwise you'd better not do it. [laughter] I think we reached that level of comfort fairly easily.

BOHNING: Let's come back to R&D a moment. What was R&D's perception of this? How did they react?

HECKERT: They probably thought we'd lost our minds, at least some of them, but I think when they got a chance to think about it, there was no great concern. Nobody perceived this as a threat; at least they shouldn't have.

Conoco's R&D turned out to be pretty good, obviously different, but they had some capabilities which we took advantage of—good pilot plant facilities and things like that. There was quite a bit of synergy between the two companies that was uncovered as we lived together, and a lot of trading of product back and forth, so it turned out very well.

BOHNING: Were there other possibilities considered before Conoco?

HECKERT: There were other kinds of ventures. We proposed to build a refinery and had a project on the table which the finance committee turned down. That was during the late sixties, early seventies. We had various long-term contract arrangements with suppliers. We kept poking at it, [laughter] because we were concerned about the cost of raw materials, the availability of raw materials, and concerned that the tremendous cash flow generated by the oil companies could lead to very well financed competitors in chemicals. There was a little bit of, "Maybe we had better have one foot in this boat, just in case it turns out to be the way to get things done that we want to do." We had worried over these issues for about ten years, so we were not approaching it cold.

BOHNING: Okay.

In 1986 then, Jefferson retired, and you finally did move. I think I read a quote from Shapiro that said if he had had his way, he would have liked to have seen you in that position earlier (3).

HECKERT: I didn't hear that. [laughter]

Yes, I know, but that doesn't belong in this discussion.

BOHNING: Okay. Around that time, I'm quoting again: "His passion is marketing and he is revamping a company that has always emphasized R&D. Wall Streeters say his strategy has helped make DuPont healthier than it has been in years" (5).

HECKERT: Well, that's very generous, but a lot of people worked to achieve that. What took place was a natural evolution of a company that I and my predecessors had been trying to change for years. Now, I go back to the word partnership; I'd never worked with a chairman I didn't feel was my partner. That began with [Charles B.] McCoy, followed by Shapiro, and Jefferson, certainly, and I think Woolard would say the same thing; it's a continuum. I had the best part of the ride, I have to tell you, because those three years were good; [laughter] not because I was that much different from anybody else, but because that's where we were in this evolution.

Woolard, on the other hand, caught the period when the economy went sour and when downsizing and cost cutting were the name of the game. So you take the oars when they're given to you, and you row the waters that you are in. [laughter] I think if you talk with any one of us, as you have and will, you'd discover that each of us has enormous respect for the contributions of others along the way, and we're a little reluctant to take credit for much of anything, except not letting it get out of control. [laughter]

We all felt good about those years, because we had been working in that direction for a long long time, and a lot of the things that each of us individually and collectively had stressed were beginning to pay off.

BOHNING: The message you sent to employees, and we've mentioned this earlier, is that the breakthrough products once sold themselves, but now marketing is crucial because the competition is stronger.

HECKERT: That's very true.

BOHNING: And your quote was: "We have to learn to win without all the aces" (5).

HECKERT: That's exactly what I said.

BOHNING: How did people respond to that?

HECKERT: Well, market people loved it. [laughter] Technical people might have been slightly bruised, but I think they understood where we were, and manufacturing, likewise. No, that was not a problem. That really worked into the concept that I'd been stressing with all our senior managers. "You fellows can make the difference. It's not going to be just products or just anything else; it's how we run this business and you're the guys who make the calls. You can have enormous impact on what happens."

BOHNING: You also attacked the inward focus at management retreats.

HECKERT: Consistently and appropriately in my view. [laughter] When you fall in love with what you're doing internally, you forget that the customer, when he buys a product, wants to pay for a <u>product</u> and nothing else. He doesn't want to pay for things we do that have no value to him. He wants to pay for value, for goods and services <u>received</u>.

People who work in large organizations are in grave danger of falling in love with what they do, and expanding their part of the enterprise becomes the number one goal. That may or may not be good for the business. [laughter] You really have to look outside and ask, "Does the customer give a damn about what I do, and if he doesn't, should I have this job?" [laughter] I

told our legal people, "If you can't see some reason why you're useful to the customer, you've got a problem." [laughter]

Now, every one of these divisions, in fact, does in one way or another serve the customer, but the question of how much the customer wants to buy of that is one we have to constantly keep in front of us. That really was the thrust—just remember, if the value isn't there, in fact or at least perceived, we have a problem.

BOHNING: Another quote: "In just over a year, Heckert has bought one billion dollars worth of new businesses and peeled away layers of management to get executives closer to their customers" (6).

HECKERT: That had been going on for quite some time. Some of those businesses were okay, some weren't. [laughter] At least they weren't total winners.

BOHNING: Did you have a strategy in what you were looking for?

HECKERT: Most of the proposals for the acquisitions we made, other than Conoco, were generated at departmental level; the interest in them was generated at departmental level, usually with prior discussion with the executive committee on logical ways to expand the business. I've forgotten exactly which. I think we had three in that period of time, and they were largely departmental initiatives, supported in principle by the committee.

BOHNING: Something we also just talked about, but another quote: "Management by committee can lead to hardening of the corporate arteries" (6). [laughter] I think this was the time when the relationship between operating departments and the members of the executive committee changed—less advisory, more direct.

HECKERT: That's correct.

BOHNING: Was that your doing?

HECKERT: Well, that started under Jeff, but it was a continuum, again. We had long discussions about what the committee ought to be. I had some problem with that. My problem was not that the committee members couldn't run the businesses, but I worried about whether we

could maintain what I had worked so hard—along with Jeff and others—to build in the way of committee member relationships.

When nobody has a special stake in one of the departments, it's easy for us to come together as a managing group. We're not protecting turf; there are no turf issues between us. I questioned whether, if we went to a straight line management arrangement, we would maintain this rather extraordinary climate that had developed over two decades, and which DuPont didn't always have. We had learned to disagree without being disagreeable, and we respected one another and were clicking as a management team. I thought we'd disciplined the committee and made certain changes in relationships with the rest of the company, so that the committee system had finally gotten close to perfection, or at least it was much better than it had been in a long time. Now that we'd finally learned how to do it, here we were deciding to change. That bothered me, but I've lived with the change. It has not turned out to be a problem, but it is important.

You see this again and again. When the top three or four people in a company don't get along, that can lead to disaster. It's an enormous distraction, an impediment to making good decisions, so I wanted to preserve what we had. There was no question in my mind that the members of the committee would be good at running the individual pieces of the company. I had no problem with that, but I did want to preserve the ambiance that we had worked so hard to create, and I think that was largely done. That was my only concern about the change.

BOHNING: You talked about getting closer to the customers, and at one point the automotive products group moved to Detroit.

HECKERT: Right.

BOHNING: That actually led to new developments, because they were in closer contact with the customer.

HECKERT: It was excellent, excellent to see.

BOHNING: That brought them almost back neck and neck with GE. I don't know where they are today; this was a few years ago.

HECKERT: I'd say we've evened it up a bit. I really don't know either. I'm not that close to the numbers anymore, but we're a player, for sure.

BOHNING: This moving of groups, let's say, out of this area to being closer to their customer, like the automotive group—was that your decision?

HECKERT: I don't recall whose decision it was, but it was the kind of thing the departments were considering, as a result of this focus on customers and markets. DuPont had a large presence in Detroit. We recognized that under the old arrangement, DuPont people from different departments were calling on GM, sometimes vying for the same piece of business. It was a ridiculously inefficient way to market. From the customer's perspective, we sometimes looked like several competing suppliers.

For automotive finishes we had color development and paint research laboratories out there as well as a large plastics department contingent. Finally we said, "Why in the hell do we have all those people out there and not one boss? Why don't we make one person responsible and put him out there where he belongs to see if we can't get a little better coordination." As a consequence, our service to automotive improved very dramatically. I don't remember who first said the words, but it had been taking place piecemeal for a number of years, and everybody knew that this was right.

That's one of the problems of the committee system; nobody can remember who said it first, [laughter] but nobody cares.

BOHNING: One thing we haven't mentioned that I'm not familiar with, and that is DuPont's role in global ventures and when that occurred.

HECKERT: We invested in North and South America sixty or seventy years ago. I've forgotten how old those units are, but we've been outside the U.S.—Canada, Mexico, Argentina, Venezuela—for a long, long time. In addition, we had some activity in Europe, but virtually nothing in the Far East.

About 1960, we realized that the Pacific Rim was becoming very important, and in the next several years we established five or six joint ventures in Japan, which was the only access available to us at that point. We began pushing hard in Europe, not just with marketing but with manufacturing facilities, and all the other service aspects of the business, so I'd say DuPont became "an international company" around the beginning of the sixties. It was clear then that Europe was going to be a very big market, and the Pacific Rim also, so it was time to get going.

BOHNING: What was happening in the international area during your term?

HECKERT: We were growing, faster in the Pacific than in Europe, but we were growing in all international areas. The committee was spending a lot of time on the international aspects of the business. We were predicting that by the middle of the nineties or shortly thereafter, more than half of our business would be outside the U.S. Don't hold me exactly to that frame and the number, but it's roughly that, I think, and certainly by the turn of the century, we'll have a bigger stake outside than inside the U.S.

That's another one of those things that nobody in today's management started, but we've all worked hard on growing the overseas business, and Woolard's continuing to push.

BOHNING: Another aspect was your willingness to go outside the company for talent. For example, somebody from IBM was hired. He had designed the process of creating ceramic circuits, and you wanted to get into that technology, and actually hired somebody away from IBM. Were there other examples of that, and how was that received?

HECKERT: Yes, there were a few in pharmaceuticals, some new areas of R&D related to life sciences primarily, and some, I guess, in the computer area.

It's fine to grow your own management when that's possible, but if that becomes a limitation on human resources, that's dumb. [laughter] I'm not sure this doesn't go way back. I don't know because I wasn't there, but ever since I've been on the committee, we've been willing to go outside, and I would say we became more and more impressed with the importance of going outside. Particularly if you're getting into an area you don't know very well. One of the most dangerous things you can do is to acquire a business that you don't really understand, serving a market that you don't really understand. That's a dangerous step, so you've got to bring in people who know the territory.

BOHNING: Well, again, I'm quoting, and this is 1986. "But Heckert may not be able to bring in enough new blood to make a difference" (6).

HECKERT: I never really handled the analysts very well, perhaps because the analysts never really recognized what my agenda was, and my agenda wasn't very saleable. We'd been through a period of enormous change, and it was continuing. I knew I had three years and no more. My view of life was, "Let's give DuPont a breather. Let's do everything that we're doing now that can make the business better, but let's not thrash around and try to reinvent the company in a three-year period." I was much more concerned with making sure that Woolard got off to a fast start and that he had every opportunity to test himself before he took over. He was the heir

apparent. I didn't do what some people who have the prospect of serving five or ten years do; that is, reinvent the company in my own image and set out to make it happen.

In the first place, I'd been part of the management team for thirteen years. I identified myself completely with where DuPont was and where DuPont was going. Now, I'd had thirteen years to influence the process, and if I wasn't happy with it, there must have been something wrong with me, [laughter] so why should I, in the beginning of my term, come out with a bunch of pronouncements about what DuPont was and where it ought to go. I thought we were headed in a very good direction, and in any case, I wasn't going to be around long enough to make any huge difference.

You may evaluate that attitude any way you choose. I think it was realistic, and in any case, I really was not dissatisfied with where we were and where we were headed. I was very anxious to see us continue some of the changes that were underway, without interruption, without distraction. We had three very good years, so in my view, that was just the right approach.

Woolard had every opportunity to think long and hard about what he wanted to do. He came to the chair with plenty of preparation, and really, with a head start on doing what he wanted to do, which is just the way it should have been. I think both transitions were smooth. Jeff to me was easy, and from me to Woolard was smooth and positive with no rancor and no philosophical difficulties. [laughter]

BOHNING: It's very important for a company that's undergoing transition to have that.

HECKERT: I think so. I've never apologized for my view of life, but the analysts don't think that's very impressive. "Here's a guy who's new in the chair, and he doesn't want to turn the company upside down. What's the matter with him?" [laughter] It just might be that he has good sense.

BOHNING: I hadn't realized, but I think it's an interesting point, that the experience you have on the executive committee for all those years really puts you in a different position when you take over as opposed to somebody who all of a sudden is in that position.

HECKERT: Absolutely, and particularly the way the committee was run. I was a bona fide player from 1973 until 1986, and certainly from then until 1989, so I had sixteen years in that council, which is enough for anybody. [laughter] I didn't feel put upon because I only had three years at the top. I was as close as I needed to be for a long, long time.

BOHNING: I've come to the end of my list of notes. We've covered a good part of the agenda that I sent you. I just wanted to touch base on a few other things here. Scientific innovation—what does it mean to you, as exemplified from your experience?

HECKERT: Well, I'm afraid that I'm on the pragmatic side of that one. I love exploratory research in new areas—we mentioned tetracyanoethylene earlier. It started out to be a promising new vinyl monomer, but after we learned that it didn't make a polymer, we had a huge amount of fun with it. [laughter] I understand the joy of just exploring this earth and its yet to be discovered secrets, but innovation to me is inevitably linked to society and to new products and/or new services that are going to make society better. It has to be useful; it has to be commercially important, or it's just a curiosity. Now, that doesn't make it unimportant. Curiosity, like good fiction, is important to life, but the innovation that I am concerned about is the innovation that does change the way in which we conduct our affairs, physically. That's new products and new processes, whole new sciences and new markets, but always linked to something that somebody in the street benefits from.

How you make people innovative is an interesting question. [laughter]

BOHNING: That was my next one. [laughter]

[END OF TAPE, SIDE 5]

HECKERT: To me, the links between the different branches of the business are extremely important in this process. It is an iterative process; it can't be anything else. In order for young people to be creative, they must have goals. They have to have direction of some kind. In a business, it's market orientation. Scientists don't have to be bathed in all the problems of the market. They just have to have some ideas, some concepts, some dreams about how something they might do in a particular area might be useful.

When I joined DuPont, need-oriented research was highly respected. I understand that well. I also practiced research in an environment where people were given considerable freedom to explore how some new branch of science might possibly be useful, without knowing exactly how. I appreciated that, and I support it. I think a certain amount of that is fine. In the university, it's great. In an important large research facility like ours, it has a place, but it isn't ninety percent of the work. [laughter] It's more like ten, or five, or whatever, so innovation has to do with product, process and new markets, new concepts, new branches of science that clearly are going to change the way the world works.

BOHNING: We've talked about team work. We've talked about changes in management agendas. Let's look at the chemical industry in a more general sense. What would you say have been the major changes in the industry during your career?

HECKERT: Without question, globalization and competition, and, of course, those are not separate issues. I told you earlier the difference between DuPont in 1950 and DuPont in 1970 was at least as much outside the company as inside. In that period of time, strong competitors developed in all parts of the world. They had up to date technology, were well capitalized and interested in serving markets world wide. They were competitors, not just in their countries, but throughout the world. That's a huge change.

The recognition that markets were going to be opened, and that businesses, if they were going to be large and important in a discipline like chemistry, would have to be global, represented a huge change. Those are things that transformed us. Environmental concerns are there, but they relate to how we do our business, not what the business is and what the new challenges and opportunities are—well, to some extent, but it's a different category.

But globalization and the emergence of competition, on a scale that you could not have imagined in 1950, are the things that transformed this industry. U.S. companies have responded well. The chemical industry in this country is a net exporter, partly because of the good fortune of having the resources, very good universities, and good people to work with. We're fully competitive. The only situation in which we're not competitive is when an overseas competitor has one hand in his federal till, and that's tough. [laughter] We still haven't learned how to cope with that.

BOHNING: I guess the airline industry has had its own problems with that. [laughter]

HECKERT: In spades. [laughter]

BOHNING: What do you think is important, in terms of chemical innovation? We've talked about how you changed R&D within DuPont, but in general, what's important for new ideas to come in the future?

HECKERT: More than anything else, with the existing business, is a right kind of dialogue between marketing, manufacturing, and R&D. It takes lots of different forms. When research people really <u>know</u> what the problems are in the plant and they're really convinced that marketing cares about it, good things happen. When they're not sure that anybody gives a damn,

nothing happens. There's nothing more important than the right kind of communication within the company. I would submit that some exposure outside the company is good for innovators, and certainly, some focus on what's going on in major markets is important to them—what the competition is doing. Nothing's quite as sobering as hands-on experience with a competitor's product that's a little better than yours. [laughter] That does focus the mind.

BOHNING: Do you think that in the earlier days the R&D people were pretty sheltered from the outside world?

HECKERT: Oh, in some places, yes; in some places, not. Some DuPont departments were very good, very good at going out and finding out what the problems were in the marketplace; some were defensive, or at least not very offensive. Generalizations are just that—they're not really very helpful, but I'd say we did go through a period, between about 1950 and 1970, when many of us believed that we could specify the agenda for the chemical industry and for the markets we served. [laughter] It would be our new products that were really important, and all we had to do was to use the right venture techniques, make a good analysis of the market and turn our technical people loose.

Well, that's great, except that you're not operating in a vacuum, and the difference between the environment that existed in 1950 and 1970 was overwhelming. We had to stop being internally focused, or at least so weighted on that side. At no time did DuPont ignore the markets in the rest of the world, but there was a period when we did have a preoccupation with what went on within the company and were not quite as sensitive as we should have been to what was going on outside. Pure and simple.

BOHNING: One last minor question that I have, and that is, when you won the SCI medal, what meaning did that have to you?

HECKERT: Well, in some respects not much, because those things happen to people who are in the right place. In many respects it was very special, because my view of DuPont and the chemical industry is that those two entities are a reflection of very honorable, very bright, and very nice people, people with whom you may compete tooth and nail but you respect and you like when you get to know them. Maybe it's an old fashion view of life, but I really liked the business I was in, and I liked the competitors I had and the markets we served. Having your friends say nice things about you is always very agreeable.

I've mused about this process of honoring somebody, what that really means. You don't bring honor to them; they've earned the honor. The rest of their world knows that they're unusual contributors or have been unusually fortunate, whatever, so your recognition is after the

fact and perhaps not very important. Awards, per se, well, they are what they are. But to have your friends appreciate that you're a player is nice, and it was pleasant for me. I don't think it made me better. I don't think it made me worse. [laughter]

BOHNING: Is there anything else that I haven't covered that you'd like to add at this point?

HECKERT: I think I've had diarrhea of the mouth for two or three hours. [laughter] I probably overdid it.

BOHNING: No, not at all.

HECKERT: I think this is a pretty good crash course in what's happened in the last thirty or forty years. Chemistry is a very honorable profession and we are part of a wonderful industry. I hope our society will eventually learn how important we are and be a little more appreciative. [laughter] They should.

We haven't talked about the academic relationship, and I won't get into another tirade, but I want to tell you how important I think our superior colleges and universities have been to this industry, and how impressed I am every time I go back to visit. The kids are wonderful, the professors are great. Their understanding of what's going on around the world is, in many respects, as good or better than mine. We are blessed to have their support. We need to take good care of those institutions. That doesn't mean they don't have to change. They've got cost problems of their own, but we've got to avoid throwing the baby out with the bath water. They're tremendously important.

BOHNING: Well, on that note, I'll thank you very much for spending the morning with me. It's been very enjoyable.

HECKERT: My pleasure, Jim.

[END OF TAPE, SIDE 6]

[END OF INTERVIEW]

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