CHEMICAL HERITAGE FOUNDATION

THOMAS W. MASTIN

Transcript of an Interview
Conducted by

James J. Bohning

at

Waitehill, Ohio

on

14 November 1994

(With Subsequent Additions and Corrections)

ACKNOWLEDGEMENT

This oral history is one in a series initiated by the Chemical Heritage Foundation on behalf of the Society of Chemical Industry (American Section). The series documents the personal perspectives of Perkin and the Chemical Industry Award recipients and records the human dimensions of the growth of the chemical sciences and chemical process industries during the twentieth century.

This project is made possible through the generosity of Society of Chemical Industry member companies.

MASTIN

THE CHEMICAL HERITAGE FOUNDATION
Oral History Program

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Oral History Program

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(Signature) Thomas W. Mastin

(Thomas W. Mastin)

(Date) Nov 14, 1994

(Revised 17 March 1993)

Chemical Heritage Foundation
Oral History Program
315 Chestnut Street
Philadelphia, Pennsylvania 19106

THOMAS W. MASTIN

1913 Born in New Castle, Indiana, on 19 December

Education

1938 B.S., chemistry, Wabash College
1939 M.S., organic chemistry, University of Illinois
1942 Ph.D., organic chemistry, University of Illinois

Professional Experience

1940-1941 Chemist, Gelatin Products Company

The Lubrizol Corporation
1942-1943 Research Chemist
1943-1953 Director, Chemical Research Laboratories
1953-1954 Assistant Director, Research and Development
1954-1956 Director, Research and Development
1956-1972 Vice President, Research and Development
1957-1982 Member, Board of Directors
1968-1972 Executive Vice President
1972-1978 Chief Executive Officer
1972-1976 President
1976-1982 Chairman of the Board
1982 Retired

Honors

1973 Honorary Doctorate, Wabash College, Indiana
1977 Honor Award, Commercial Development Association
1978 Honorary Doctorate, Heidelberg College, Ohio
1981 Chemical Industry Medal, Society of Chemical Industry

ABSTRACT

Thomas Mastin begins this interview by discussing his childhood in Indiana and the untimely death of his father. He then explains the origins of his interst in chemistry and discusses his academic mentors at Wabash College and The University of Illinois. Next, Mastin details his early career at Lubrizol and his transition from research to management. He shares his opinions on management philosophy and the place of research in the chemical industry. Finally, Mastin reflects on the changes in the industry, his receipt of the Society of Chemistry Award and his continued interest in photography and naturalism.

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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LOCATION: Waitehill, Ohio

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BOHNING: Dr. Mastin, I know you were born in New Castle, Indiana.

MASTIN: That's right.

BOHNING: Was it 1913? I'm not sure of the year and the date.

MASTIN: December 19, 1913.

BOHNING: Could you tell me something about your parents and your family background?

MASTIN: Well, my father worked in a steel mill, and he died when I was eleven years old. My mother was sort of destitute after that because the family had very little money. She had to take in washing for the neighbors, and we even had a boarder come in—it was a small house—and stay there to make enough money to buy food for the kids. That was a pretty bad situation there, for quite a while. She finally got married again a number years later, and that helped the situation quite a bit.

There were six of us children in the family. The oldest daughter of our parents died when I was young. She was twelve years older than I was. She died of pneumonia. She'd been married when she died. That's about it, I guess.

BOHNING: You received all of your early education in New Castle?

MASTIN: Right.

BOHNING: You've listed on the form that you filled out that there was a Mr. Bronson in high school who had an influence on your life.

MASTIN: That's true. He was a chemistry teacher there in New Castle High School, and I'm not quite sure how I decided to take a course in chemistry, but I did. He seemed to take a liking

to me, and he'd even take me out to his home in the evenings and teach me more than I'd learned in the class—gave me some books to read—and I really became fascinated with the subject of chemistry, primarily because of his attention to me. He was a great teacher. I don't know if he did that with other students, but he probably did [laughter] and inspired most of them very well.

BOHNING: I understand that you were contemplating leaving school at sixteen because you didn't find it very interesting until this particular course.

MASTIN: That's true. [laughter] I told my mother that I was going to quit school at the age of sixteen. I had to go that far according to the law of Indiana, but I started taking chemistry and decided, "I'm not going to quit." [laughter]

BOHNING: You then went on to Wabash College, but I'm not sure when you started at Wabash. Why did you go there?

MASTIN: Because Mr. Bronson graduated from there, and he recommended Wabash to me. I got out of high school about 1932; I don't know if it was 1932 or 1933 when I started in Wabash.

BOHNING: Well, this was in the depths of the depression.

MASTIN: Yes.

BOHNING: How did you finance your college education?

MASTIN: Well, I had to come home every summer and work in a steel mill; that's the same one that my father worked in. I earned enough money to go back and pay the tuition for the next year, or whatever. [laughter] When I graduated from Wabash, I owed them twelve hundred dollars, because they helped me out in a few cases there. I paid it off, after I made enough money. [laughter] I lived on a farm six miles from Wabash College for all five years at Wabash. In return I milked cows each morning and evening to earn board and room.

BOHNING: What was the chemistry department like at Wabash?

MASTIN: Well, Dr. L. B. Howell was the head of the chemistry department, and all of the courses I took were under him. He had the reputation of being the toughest teacher in the whole college! And he was.

We were given the first exam in the class. We came in, and on the blackboard our teacher had all the grades on a line, on the blackboard, from the highest down to the lowest. He

said, "The ones who are at the lowest here are going to get kicked out of this class," and he kicked them out, including his own son. [laughter]

He taught chemistry in a very effective way, and I did research for him for one year after I graduated. Actually, Wabash wouldn't let me take chemistry in the first year, because it's a liberal arts school. They wanted you to concentrate on the liberal arts.

When I graduated, I wanted to go to the University of Illinois, because Dr. Howell recommended that to me. One course required to get into Illinois I hadn't taken because I'd missed that first year of chemistry at Wabash. So I stayed another year and took the course and also did some research under Dr. Howell's direction.

He gave me a project that was to make a metal acetylide, and none had ever been made before, had never been reported in the literature. I can't remember if it was sodium acetylide or something like that. Well, I finally got it made, and I was weighing out the dried sample in a very expensive balance in the laboratory. While it was drying, I was turned the other way, fortunately, and the darned thing blew up and wrecked the balance and did other damage. [laughter] We wrote a paper saying, "Don't ever make this thing." [laughter] That's the first time it was ever made, and we didn't know it was going to blow up. Of course, acetyline is very explosive anyway. [laughter]

Now that's about my education at Wabash, I guess.

BOHNING: Were there many other chemistry majors?

MASTIN: About four; it was a small school, about four hundred students. I think, while I was in the lab anyway, there were about maybe three or four others with me, doing research in the labs.

BOHNING: Was Howell an organic chemist?

MASTIN: Yes.

BOHNING: And you went to Illinois, then, on his recommendation?

MASTIN: Right.

BOHNING: What was it like at Illinois when you got there?

MASTIN: Well, it was kind of interesting, because on the first day, all the new freshmen in chemistry were called together, and the dean got up and said, "We've got enough space here to

take all you people this year, but thirty percent of you are not going to be back next year, because we'll be out of space and out of room." So here I was going through the first year, saying, "Am I going to pass this thing?" [laughter] That was just as tough as Wabash, and, in many ways, more difficult. I passed it well enough to continue on there, and I did okay on my grades.

There was one experience, though, I'll never forget. I was taking thermodynamics, and the professor in that course was known as being very difficult. He gave one exam in the middle of the semester, or maybe near the end, I don't know, and that exam counted for half of your credits and your papers you'd put in, in the meantime, counted the other half.

Well, the three blackboards in that room were covered with questions, and I got through them all. I knew the questions. I knew the answers, but unfortunately—and I can't understand this—I didn't see the last question on the board. I thought I was through, and everybody was still sitting there working. I'd checked everything out and said, "Well, I might as well get up and leave." Well, I got a C on that, and when you get a C in graduate school, that's bad.

So I went back in and saw this professor. "How come I got a C?" He said, "You didn't answer the last question." I said, "Well, son of a gun; I didn't even see that on the board." I said, "I'll take the whole exam over; give me different questions." "No way." I could not talk him into doing anything to prove that I knew this course, so I was worried about being kicked out, [laughter] because they were tough over there. A C is no good in graduate school. But I hung in and stayed until I graduated. [laughter]

I'll never forget that old guy. You can't imagine anybody that mean. [laughter]

BOHNING: How did you begin your association with Carl Marvel?

MASTIN: He's the one I did my doctorate's degree under. I worked for him and did the research under him. I took some courses that he wasn't involved in, like this thermodynamics course and that sort of thing, inorganic chemistry, all these things, but I did my thesis in organic chemistry, working on biopolymers. Those were new in those days. And we wrote terrific papers, or he did. [laughter] You probably have them in your collections (1).

BOHNING: Did you select Marvel? Why did you select to work for him?

MASTIN: I don't know. I'm not sure of this, but I think I'd heard from others that he was probably the best teacher there, in organic. I'm not sure how I got to work for him and do my thesis, but I knew he was a good man there, and I probably went to talk with him. I can't remember the details of it.

BOHNING: And it was he who introduced you to birds, or had you had an interest in birds before that?

MASTIN: He introduced me. I went out with him a number of weekends, looking at birds.

You know, he told me one time, if he had it all to do over, he would be an ornithologist and not a chemist, because he loved birds so much. He inspired a lot of students too. I remember going out with a whole gang—maybe ten, fifteen people—from the school, along the lake, somewhere over there in Champaign-Urbana, with Marvel, looking at birds. That's how I got interested in birds, at least in part. [laughter]

BOHNING: And you've pursued that all your life, haven't you?

MASTIN: Yes. I'm not an expert at it, but I've done a lot of photographing of birds. I've been out with a number of different people on birdwatches, so-called, but I'm not like some of them who know every bird in the country. [laughter] Photography is my hobby.

BOHNING: You have a marvelous location here, too. I'm sure there are lots of birds here.

MASTIN: Yes, I see them all year long, and I know all of them, around here, anyway.

BOHNING: I noticed a number of snow geese coming out. Do they winter here, now?

MASTIN: They do come through here, migrating. I don't believe they stay over in the winter.

BOHNING: Where I'm living, outside of Philadelphia, there are a number of them that stay there all winter long.

MASTIN: Maybe some of them do that. As a matter of fact, I know I saw one in late fall at least, down on the pond—there's a pond down below here—so they may stay all winter.

BOHNING: When you were at Illinois, of course, Illinois had the reputation as probably one of the finest chemistry departments in the country. It still does, but at that time it was certainly a powerhouse.

MASTIN: Yes.

BOHNING: You got your Ph.D. in 1942, so the war had already started. What thoughts were you giving to your career, as you were working through your graduate program?

MASTIN: I graduated in 1942. As you know, the American Chemical Society has two meetings a year. I was a student member of that. I knew they had a clearinghouse for graduates

looking for jobs, so in the fall of 1942 I went to the meeting in Nashville, Tennessee and I put my resume in this clearinghouse file. I was interviewed by three or four different chemical companies, but I made up my mind, probably before I went down there, that I was not going to take a job with a big company like DuPont, Celanese, and so on. I didn't want to go with one of those companies.

BOHNING: Why didn't you want a big company?

MASTIN: Well, I know what I said to myself. I said, "In a big company, I would be just a spoke in another big wheel." I didn't want to be that way. [laughter] There was a fellow who came to interview me by the name of Carl Prutton; you may know him.

BOHNING: I studied his physical chemistry text (2). [laughter]

MASTIN: Yes, he was at Case Tech at the time, head of the department, and he was a consultant for Cleveland Industrial Research, which I'd never heard of. But he interviewed me and told me that he was looking for somebody for Cleveland Industrial Research. I said, "Well, how many research people do they have?" He said, "Seven." [laughter] Well, that's small enough. That company was doing research in the basement laboratories of Case Tech at that time. One of the founders of Lubrizol had set up that as an arm of the research department of Lubrizol. That's the only place they had to go. They were building a new lab out in Wickliffe. I was offered and accepted a job and visited Lubrizol for additional interviews.

So I worked in that basement laboratory of Case Tech for a few months, with these seven other chemists, and then we moved out to a new research building in Wickliffe. They didn't have anyone in that group who had a Ph.D. degree, but there was a head of the laboratory by the name of Dale Fry. He was my boss, and he hated my guts! [laughter] I couldn't do anything right for him. Do you want the rest of this story?

BOHNING: Sure.

MASTIN: I just couldn't please him no matter what I did. I even made a compound in the lab that was patented, but that didn't make any difference.

So I decided, if I can last for a year, I'm going to get out of this place. I didn't want to get fired before a year, then have a hard time getting another job. So I went through this mess for nine months. Then Kelvin Smith, one of the founders of the company who interviewed me when I was hired, asked me to come in his office. I thought, "Oh, I'm going to get fired!" I was sure that he was the one who would do it.

Well, I sat down in front of his desk, and he chatted with me a little while. Then he said, "I understand you and Dale Fry aren't making out." I said, "That's right, I can't do anything right. I can't do anything that he approves." Then he said, "Well, you think you know how to run a laboratory?" And I said, "No, I don't know how to run a laboratory. I never had any experience

like that. I just want to be a chemist at the bench and hopefully make some products that are worthwhile." Then he said, "Well, would you like to try running a laboratory?" I was still sort of upset, and I said, "I'll try anything once!" [laughter] That was not a good answer, but then he said, "Okay, you've got the job." [laughter]

They've never told me, but I'm sure that Prutton went down to Tennessee to find someone to head up that new lab. I was never told that, though, at anytime afterwards or before.

So I got to head up the research lab, nine months after all this hard luck I was having with Fry. [laughter]

BOHNING: What kind of things did he have you doing?

MASTIN: Dale Fry? Synthesizing different products that might be useful in lubricants. I was working on sulfur compounds, phosphorous compounds, things like that. I made a product at one time that didn't work in the lubricants, but since then, it has turned out to be one of the best insecticides ever made. I had it there in my lab and didn't do anything with it. [laughter] It is Tordon or something like that, a phosphorus sulfur compound. [laughter] I should have patented it.

BOHNING: But you weren't thinking about those uses for those materials at that time. [laughter]

Did Fry leave then, when you took over?

MASTIN: Kelvin Smith sent him back to Case to get some higher education. He did, and the company paid for it, but he never came back to work for Lubrizol. I think I know one reason. [laughter]

BOHNING: Do you suspect that the difficulty he had was because you had a Ph.D. and he didn't.

MASTIN: It's the only thing I can think of; he didn't have problems with anybody else. [laughter]

BOHNING: That was quite a responsibility to take on then. In a very short time, you were given a lot of responsibility. What did you do first?

MASTIN: Well, I'd been working there at the bench myself, and I knew all of the other chemists, and I knew what they were doing. We cooperated back and forth. You know, talked to each other. It was a very friendly group. All I did after that was sit down occasionally with them and say, "What do we do now, and what kind of compounds do you think we ought to

make?" You know, we worked jointly and figured out some new products, and we got some pretty good ones. The company was so successful that unbelievably, they were written up in *The Plain Dealer* as one of the fastest-growing companies in the country in the chemical industry.

In the days I was there, forty years, I can tell you that the growth was in excess of ten percent, compounded both in revenues and earnings, averaged all those forty years—and sometimes even more, fifteen or so percent—so that company really grew rapidly, very successfully. It was the first company that went into this business of trying to improve lubricants by additives to the lubricants. The military started using them, and that really boosted the company's revenues a great deal during World War II, because they bought a lot of it. That got the automotive industry into it, and so forth.

BOHNING: Well, when you joined, the war was already on, so that must have been a very busy and active time.

MASTIN: Yes, that's right.

BOHNING: You commented that you really just sort of let people have freedom in exploring different kinds of things. Were there any restrictions you placed on them? I'm talking about doing basic research as opposed to applied research.

MASTIN: No, I don't think I put any restrictions on them. We'd discuss things. I knew every product everybody was trying to make, and I'm sure that at times there was somebody who'd say, "Why don't we try this," and maybe I'd say, "No, no, that's too difficult," or something like that. I was the only Ph.D. in the group for a while there, you see, and I knew my organic chemistry better than any of the rest of them, presumably at least.

So, we'd pick out things. I had to approve anything that they were trying to synthesize in the laboratories. I knew what had already been made and what looked promising and interesting, so we continued in those areas somewhat.

One of the most creative chemists I hired later on, and still one of my best friends, was Bill [William M.] LeSuer. That fellow had more great ideas than any of us in the lab. Over the years, he was working there almost as long as I was. He obtained over one hundred U.S. patents on products that he thought were worth making—and most of them were useful. He was one of the very brilliant fellows.

BOHNING: Did you continue to do any lab work yourself, or did you stop working at the bench?

MASTIN: I stopped working at the bench, but not right away. I did some work at the bench, for a while. I don't know how long, because it wasn't far beyond that that I was given the job of directing research and development. That included a pilot plant; in fact, I was pretty busy.

After that, I don't think I did any more work in the lab.

[END OF TAPE, SIDE 1]

BOHNING: One of the things that I'd noted about looking at the history of Lubrizol is there was always a large percentage of the employees engaged in research, probably more so than at most other companies.

MASTIN: I think that was true.

BOHNING: What was the company thinking, in terms of having that situation?

MASTIN: Well, the number one man there of the founders was Kelvin Smith—there were six founders, but Kelvin decided most all of the company's policy. He was a research person himself. He was a chemical engineer, and was a very close friend of mine. We agreed that the only way we were going to get ahead in this business is to do a lot of research, bring out a lot of new compounds and sell those that work—and many of them did not. I think that was the policy he set, and he made it succeed.

BOHNING: In the early days, how much research was, let's say, under the heading "trial and error," as opposed to a theoretical background or more of an understanding of how these additives functioned?

MASTIN: I don't know if I can answer that with any degree of certainty. We did both kinds of research.

This Bill LeSuer I mentioned came up with an idea that nobody else had before, of putting dispersants in the oil to help solubilize the other products. That turned out to be a tremendous idea. Dispersants were very useful in keeping many chemicals soluble and dispersed in the oils. Bill got a number of patents on this idea.

Some of us were thinking ahead, kind of theoretical. We followed leads that we'd find in certain products that weren't quite good enough. "Maybe if we do this to it, it'd be better." That sort of thing. Lots of sulfur compounds, lots of phosphorous compounds. The dispersions were complicated esters with nitrogen in them.

BOHNING: Can you tell me more about Kelvin Smith? What kind of a person was he to work for?

MASTIN: Well, to me, he was one of the brightest brains I've ever met! He in effect ran that

company, but unfortunately, except for me, everybody else was scared of him.

There was a Canadian who worked there and headed up the pilot plant. Tremendous fellow. He told me once that every time he was called in to Kelvin Smith's office, he'd sit down in front of his desk, and his toes curled up in his shoes. [laughter] The guy scared people, but he was the most gentlemanly person I've ever met: very polite, very quiet. I can't understand why people were scared of him, but most of them were.

His secretary once lost her voice, and she'd been around there for quite a while. His secretary just couldn't talk, and he tried everything to get her cured. There wasn't anything wrong. There were doctors who looked at her, nothing wrong. Just mentally, or something, she couldn't talk.

But one day, Kelvin came to my office and said, "Would you call this gal in and talk with her?" Of course, she hadn't talked for a week or ten days. I said, "What do you want me to say?" "Just whatever you want."

So I called her in and sat down, and I talked with her a while. I don't know what I said for sure, just idle chatter. I finally made some statement, and asked: "Do you agree with that?" She said, "Yes, I do." The first words she'd said for ten days, and from there on, I'd talk with her and she'd talk back, and everything was okay.

Well, [laughter] Kelvin was very happy about this. One day I asked him, "How come you sent her in to talk with me?" He said to me—and I'm not even sure what he meant, "You have a sixth sense about people; that's why." [laughter] Whatever that means.

He and I were very close friends, and many people were jealous of me, because he and I would go out to lunch almost every day to talk over things. He told me all the problems that the company was having, and we discussed them. Of course, I think that's why I got to the top eventually.

BOHNING: Well, he must have had a great deal of confidence in you, then, to pick you out as the person he would confide in and talk to that much.

MASTIN: Well, I've never quite understood it, but he knew that people were afraid of him, and he knew that none of them were afraid of me. [laughter] That was true. I got along with everybody. No problems.

I ran an operation there and if some officers of the company made a mistake, they'd come over and talk to me about it. As a matter of fact, a vice president would come over and say, "I goofed up here today." They weren't afraid to tell me. We'd talk about it, and I'd say, "Well, you won't do that again?" "No." So, I think that's part of it. Maybe I did have a sixth sense about people, [laughter] whatever that means.

They're all friends of mine. It was just like a big family.

BOHNING: Yes, he was what, one of three brothers?

MASTIN: Yes.

BOHNING: There was another brother who preceded him; is that correct?

MASTIN: Yes. Kent Smith was the oldest of the three brothers, and I guess he was chairman of the board for a while there. I don't think Kelvin ever took the job as chairman of the board; he just ignored that. Then Vincent, the third brother, really had his own business and didn't do a lot with Lubrizol, except that he was a member of the board.

BOHNING: One of the things that intrigued me, early on, was that there was a connection with their father and Herbert Dow. There were several attempts made to get Dow Chemical interested in making some of these things, but Dow never expressed any interest in doing that. Is that correct?

MASTIN: I don't know that. I'm not sure. I know that the Smith brothers' father was a key individual in establishing the Dow Chemical Company. I've never really had a whole lot of knowledge about that operation or how it came about.

BOHNING: While you were directing research and then when you got into research and development, how comfortable did you feel with taking over the development aspects and setting up manufacturing?

MASTIN: No problems. [laughter] I knew everybody; it was a small company. That's one of the reasons I said I wasn't going to work for a big company. I knew everybody who worked for Lubrizol, and I was friends with all of them. I don't believe there were more than two hundred or so; I don't know how many there were when I was put into the job. It wasn't very many. It grew rapidly after that.

BOHNING: Was it in the fifties, early sixties, when the foreign expansion took place, as well? Were you involved in that?

MASTIN: Yes. We had a vice president of manufacturing who was an engineer, and the first plant that we put up out of the country was in France, and he was over there while that was built. He was the vice president of the corporation, a very capable person on building structures and all that. Of course, he was also in charge of putting the Houston plant in. That was the second U.S. plant we'd put together. He was there when that was built. Roger Clapp is his name. He's still living and a very good friend of mine. We get together once in a while and talk about the old days. [laughter]

BOHNING: That's great.

The research efforts all stayed here in Wickliffe; is that correct?

MASTIN: Yes.

BOHNING: How did you interact in the research area with the other plant locations? Did you help them in solving problems?

MASTIN: Well, I visited most all of those plants at one time or another. We had ones in England and France, also, finally in South Africa. We also had one in Japan and Australia. All of the products that we sold at this time, about seventy-five percent of them, were sold overseas and only about twenty-five percent were sold in the U.S., so we covered the whole world. We were about the first company involved in the business. That's one reason why we grew so much, so rapidly.

BOHNING: I read somewhere that when you became president in 1972—and I guess you had already figured that Roger Clapp had picked you to take that position—that you really disdained what you called the "rituals of modern management."

MASTIN: Yes.

BOHNING: You just said you didn't believe in taking managment courses.

MASTIN: That's right. I didn't believe in it. I still think it's a waste of time. Well, maybe it's changed. [laughter] No, I wouldn't send anybody to management school.

There was an article (3) some magazine published, after an interview of the company in the seventies. I can't think of the name of it. It was a business magazine. They asked these kinds of questions of me, and I told them, and I told them why. They had my views in a sub-headline in the article that was published. Les Coleman was at that time executive vice president, and they went in to interview him. He had a book on his desk by [Peter] Drucker, who was a management expert (4). When this reporter came in, he said, "Gee, I'd better take this book off my desk. Mastin might see it."

Well, they put that in the magazine article. [laughter] I got letters from all over the world, because it was an international magazine, and some of those letters said, "What an arcane type of company you must operate," and many of them said, "I'd sure like to work for this company." [laughter]

I thought that at that time—and I still think it's true, and I think it's beginning to be proved now—that management education is not really worth all it's cracked up to be. The people who get out of Harvard Business School, for example, think they're going to be the next president. It doesn't work that way. [laughter]

BOHNING: Well, in your sixth sense for people, I think that one of the keys is the relationship you have with the people who work with you.

MASTIN: It could be; I don't know. I don't even know what a sixth sense is. I thought we only had five. [laughter]

BOHNING: When I talked to Ray Boundy, who was research director at Dow for a number of years, he used the term accountable freedom in dealing with his people.

MASTIN: Accountable freedom?

BOHNING: In other words, they were accountable, yet they had flexibility to make decisions and do things and work on their own projects that would benefit the company. Would you say that kind of thing applied to your style also?

MASTIN: Yes, I think so, very much so. We had group leaders in the lab who had four or five or six working with them. They were supposed to take care of that group and come up with ideas. It was freedom, and those who worked there—and I've talked with most of them—say they just loved that work, that nobody was upset about anything. It was like a big family, really, and that was part of the reason for the success. People just loved working there.

BOHNING: That was one of my general questions: how do you nurture innovation? How do you get your people to be innovative and creative?

MASTIN: I don't know. [laughter] I was always one to go out—even as president—and talk to the research people and ask how they're doing, what new ideas they've got, that sort of thing. Research was the main reason for Lubrizol's success, no question about it in my mind, so I spent a lot of time after I was a top executive there, working with the research people. I also went to meetings with manufacturing and all the others, but research was the most interesting to me. I don't know whether I inspired them for any reason, but they knew that if they were successful, they'd be rewarded one way or another and everybody would be happy with them. [laughter] I don't really know any better answer than that.

BOHNING: As I understand it, the company had what I'm going to call a profit-sharing kind of situation from the early days; is that correct?

MASTIN: Yes. Well, first of all, they put money away in a fund that was to be distributed, eventually, to the people, and they went on the New York Stock Exchange in 1962. Prior to that, however, they sold stock based on a formula of some sort, to what they called the key employees. The first stock I was offered was fifty shares, and the price, according to the formula, was seventy-five dollars a share. That was in 1943. I had become a key employee since I was head of research.

I didn't have enough money to buy seventy-five dollars times fifty. [laughter] I bought five shares; I was able to scrape up enough money, but after that I borrowed all the money I could from Cleveland Trust at three percent interest, and I bought every stock that I was offered from there on. I was foolish for not borrowing money to begin with. [laughter] But I'd only been there less than a year.

The stock was put on the market in 1962, so anybody could buy it. A lot of them did, including me. [laughter] We had a program of stock options also.

Roger Clapp and I decided one day, after we had taken a lot of these options, that we weren't going to take any more—we'd have the other people do it—and we stopped taking any further options. He and I had enough and didn't need it. [laughter]

BOHNING: One of the other things we touched on briefly is—and it's part of my general questions as well—was the scientific teamwork involved with your research group as opposed to people operating individually. How would you describe that at Lubrizol?

MASTIN: Well, as I mentioned, they had a group leader with maybe four or five working under him, and I would say they worked as a team. Every month or so we'd have research meetings where we discussed what's been going on, what progress had been made. I would say that almost every research person there was aware of what research the others were doing, and if they had an idea on this fellow's work, they'd go talk to him. We all knew what everybody else was working on. Pretty much. As we got bigger, however, that wasn't always true, but it was that way in the beginning. I think it was perfect teamwork.

BOHNING: Well, the company had to respond to the changes in the industry, and there were certainly a lot of those changes, in terms of the needs and the requirements. How did you keep aware of these changes?

MASTIN: The military, during that war, set up specifications for the lubricants that they would buy from us or anybody else, and those specifications were pretty strict. The products had to go through a whole series of tests. At that point, the whole industry adopted these military specifications. Anybody in the business would have to meet before they could sell products, and this meant to companies outside the military. Those specs are still in effect, and they change frequently, so I think it was the military's need that caused that major change.

From there on in, we had one of the biggest mechanical test laboratories in the country, and we still do. We had to run a lot of engine tests, a lot of gear tests, and they were all set up, initially, by the U.S. military. I don't know if the military is involved in it too much any more, but that's the way it started. We had to put in a lot of equipment to meet those specs.

BOHNING: When you were CEO I think was the time when the environmental concerns became more important, government regulations and that kind of thing. What were your experiences with that?

MASTIN: Well, we were there in Wickliffe, and some of the products we made didn't smell very good, so we had [laughter] some complaints from the neighbors around there. One woman, particularly, was always after us, so we had to be careful about leaving any odors out in the air. We did a good job, I think, in correcting that problem.

Also, we were very careful about any materials that would leave the laboratory. We would never put them out in a river, or a ditch, or anything like that. We had systems set up where they would be destroyed, or burned up, or whatever. We would never pollute anything, including the air. That was a policy, and we stuck with it.

BOHNING: So when the government started to regulate this, you were already doing these things.

MASTIN: We had no problems, except for this one woman in the neighborhood. [laughter] She wanted to give us a problem all the time.

BOHNING: How did you deal with her? Did you have to deal with her, or did somebody else?

MASTIN: Our Personnel Department did it. [laughter]

BOHNING: Is it still company policy to have such a high percentage of its employees in research?

MASTIN: Yes, I think so. We're just putting in a new research lab, as a matter of fact, right now. I don't know how many are in there now, and what percentage of the total employees it is, but it's high, and I hope it stays that way.

[END OF TAPE, SIDE 2]

BOHNING: That is sort of contrary to what's happening in the chemical industry today, isn't it?

Research and development are not receiving high priority, as they used to.

MASTIN: It could be. I don't know why that should be. Maybe it's because they spent more money, and it hadn't paid off. A lot of companies, I'm sure, wasted money on research. Lubrizol may be wasting some now, but I'm not involved, so [laughter] I don't know.

BOHNING: What would you say were the major changes in the chemical industry that you saw during your career?

MASTIN: That's a hard one; I haven't given it any thought, frankly. Of course, I know that there's been a lot of new compounded type of materials, in recent years. For example, synthetic rubber, that started way back. Speed Marvel was involved in that. And the plastics industry is a very important one. That's chemistry. All of these polymers that I was working with, and Speed Marvel there. We now make all kinds of products out of polymers.

I think that was one of the major changes, when we learned how to polymerize vinyl materials. As you know, that's a major industry now, all over. They're made not only by chemical companies but by everybody else. [laughter]

BOHNING: What do you think is important for the future of the chemical industry, especially in terms of chemical innovation, new ideas?

MASTIN: I've never asked that question of myself. Since I left Lubrizol and retired, my major activities are my hobbies, and that is not connected with chemistry at all. I go back and visit some of the people once in a while. I had lunch out there not too long ago with a number of the research people, but I think I'd have to answer that by saying, after I retired, I forgot chemistry and went back to photography and nature studies. I've traveled all over the world and taken photographs of many animals and birds, and I've collected birds. This has kept me very happy, and I don't think I've paid much attention to what was happening in the chemical industry. [laughter]

BOHNING: When you received the SCI [Society of Chemical Industry] Medal in New York, your talk was somewhat unusual (5).

MASTIN: It was?

BOHNING: Well, in the sense that if you look at what others had to say, this was quite different. I think I have it here somewhere.

MASTIN: If not, I've got a copy here, in my file. "The Intelligence of Life."

BOHNING: Yes. Why did you select that particular topic?

MASTIN: Because I was interested in DNA, for the first time, and the whole subject, as I recall it, had to do with the code of life. DNA is a chemical, and I thought that someday it was going to be a major area of chemistry.

When I gave that talk, a friend of mine, who worked for Johnson and Johnson, asked me: "How did you ever learn all about that stuff?" I said, "Well, I read about it." [laughter] So it was a new area. "The Intelligence of Life." I don't know if that was a good title, but I meant to say, by that title, that DNA is the key, or is the code of life. Of course, intelligence has to do with the brain; and there is a lot of DNA in there. There's about ten billion neurons in the brain, and every one of them has DNA in it, so that's how it was tied together.

BOHNING: What did receiving that award from the SCI mean to you?

MASTIN: Well, the only thing I can remember about it, offhand, is that my wife and I stood there in the doorway and shook hands with about six hundred people, and I had to have a stool to sit on before I got out of there. [laughter]

I don't know that it meant a great deal to me. I was glad to get it, of course, but I don't think I would say it was a key feature of my life, by any means. It was just one of those things that happened, and I went out and accepted it. [laughter]

BOHNING: Okay. I've sort of reached the end of my question list. Is there anything else you'd like to add?

MASTIN: Well, I will say that I consider myself, now, as a naturalist and not a chemist, but I read three or four technical magazines of significance, through which I keep up with what's going in chemical areas. But as a retired chemist for twelve years now, I would say that is of less interest to me than it was back in the days I was at Lubrizol. [laughter] That's quite a bit, so I don't know; I concentrate on certain things.

BOHNING: Well, I'd like to thank you for spending time with me this morning.

MASTIN: Well, it was a lot of questions; I didn't know what you were going to ask. [laughter] I hope I answered them all right.

BOHNING: It was fine. I've got some good information here.

MASTIN: Well, I was lucky to have taken a job at Lubrizol.

[END OF TAPE, SIDE 3]

NOTES

1. C. S. Marvel, H. W. Johnson, J. W. Meier, T. W. Mastin, John Whitson, and Chester M. Himel, "Dissociation of hexaarylethanes. XVI. Alkyl and Halogen Derivatives," *Journal of the American Chemical Society*, 66 (1944): 914-918.

2. Carl F. Prutton and Samuel H. Maron, *Fundamental Principles of Physical Chemistry*, 2nd. ed. (New York: Macmillan, 1951).

3. Peter Vanderwicken, "Lubrizol Ignores the Management Manuals," *Fortune*, 91 (1975): 132-140.

4. Peter F. Drucker, *Practice of Management* (New York: Harper, 1954).

5. Thomas Mastin, "The Intelligence of Life," *Chemistry and Industry*, (21 November 1981): 805-807.

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