CHEMICAL HERITAGE FOUNDATION

ORLANDO ALOYSIUS BATTISTA

Transcript of an Interview
Conducted by

James J. Bohning

at

Fort Worth, Texas

on

23 February 1992

(With Subsequent Corrections and Additions)

THE BECKMAN CENTER FOR THE HISTORY OF CHEMISTRY
Oral History Program

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Orlando Aloysius Battista

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(Revised 20 February 1989)

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

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ORLANDO ALOYSIUS BATTISTA

1917 Born in Cornwall, Ontario, Canada on 20 June

Education

1940 B. Sc., chemistry, First Class Honors, McGill University

Professional Experience

1940-1963 American Viscose Corporation
Research chemist
Senior research chemist
Manager, Corporate Applied Research
1961-1963 Assistant Director, Corporate Research

1963-1970 Assistant Director, Central Research, FMC Corporation
1971-1974 Vice President, Science and Technology, Avicon, Inc
1974- Chairman, President, and Chief Executive Officer, Research Services Corporation
1974- Chairman, President, and Chief Executive Officer, The O. A. Battista Research Institute
1975-1976 Adjunct Professor of Chemistry and Director, Center for Microcrystal Polymer Science, University of Texas, Arlington
1976- Founder and President, World Olympiads of Knowledge
1977-1979 President, American Institute of Chemists
1984- President and Chief Executive Officer, Fastcrete Corporation
1985- Director, Avacare, Incorporated
1986- Chairman, President, and Founder, Knowledge, Inc.
1987- Director, Carrington Laboratories

Honors

1955 Doctor of Science, Honors Causa, St. Vincent College
1955 Fellow, National Association of Science Writers
1965 Honor Scroll Award, New Jersey Chapter, American Institute of Chemists
1967 Honor Scroll Award, Philadelphia Chapter, American Institute of Chemists
1969 Chemical Pioneer Award, American Institute of Chemists
1969 Fellow, New York Academy of Sciences
1971 Golden Plate Award, American Academy of Achievement
1972 Boss of the Year, National Secretaries Association
1973 James T. Grady Award, American Chemical Society
1977-1979 President and Chief Executive Officer, American Institute of Chemists
1981 Lifetime Fellow, National Association of Science Writers

1983 Creative Invention Medal, American Chemical Society
1984 Special Mention, Rolex Awards for Enterprise
1985 Anselme Payen Medal, American Chemical Society
1985 Doctor of Science, Honors Causa, Clarkson University
1986 Napoleon Hill Gold Medal for Creative Achievement
1987 Applied Polymer Science Medal, American Chemical Society

ABSTRACT

O. A. Battista begins the interview by describing his childhood in Cornwall, Canada, as one of eight siblings born to a poor, uneducated laborer and a housewife. Battista proudly details his family's hard-working nature and the many professional accomplishments of his brothers, who include a chemist and company president and a world-renowned neurosurgeon. Attending McGill University along with his younger brother, Battista earned a B.S. in chemistry while supporting his household by writing epigrams for the Saturday Evening Post. Upon graduation Battista obtained a research chemist position at American Viscose Corporation, which was owned by Courtaulds, Canada, where his brother was well established and later became president. He worked on the rubber program and other war-related projects until the end of the war, when he married Helen Keffer and began inventing successful commercial products. Later, his work at American Viscose and its predecessor FMC earned him over sixty-five patents, including patents on viscose molding, novel yarn, pure cellulose, and microcrystalline collagen. Throughout the 1950s and early 1960s, Battista wrote and published several works, including technical scientific texts, popular magazine articles on chemistry, a "human interest" chemistry text, an examination of the potential of psychopharmaceuticals, and several popular non-scientific collections. In the early 1960s, Battista realized the medical applications of microcrystalline collagen and obtained pharmaceutical backing from Alcon to license the substance as the patented hemostat Avitene. American Viscose and Alcon formed Avicon, Inc. in Fort Worth, Texas, and appointed Battista vice president for science and technology; Avicon obtained FDA approval for Avitene Hemostat, which today is used worldwide in hospital operating rooms. In 1974 Battista took early retirement from Avicon to start his own research institute and promote an Olympiad of Science that encourages and facilitates new product innovations. His institute created over fifty-five new products and publishes of Knowledge Magazine.

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: Fort Worth, Texas

DATE: 23 February 1992

BOHNING: Dr. Battista, I know that you were born on June 20, 1917 in Cornwall, Ontario. Could you tell me something about your parents and your family background?

BATTISTA: Yes, that is the correct birth date. My mother and father actually emigrated to Canada from Italy. I never knew my grandparents. They never came to this country. All I know about my ancestry is that on my father's side there was a French and Italian background and on my mother's side there was a Spanish and Italian background. That's all I know. My mother came over under the auspices of an uncle. My father came over independently. I don't know how they got together, but they got married. They never knew each other before they met in Canada.

My father was a stone mason by trade and he worked for the Canadian government all his life, patching canal walls and things like that. Neither of them had a high school education. My father could not read English until after a lot of experience. But both of them were built of unique tissue, so to speak. They emulated in the eyes of us the most wonderful virtues of parents. They were completely unselfish. They had very little money. They would stretch their money amazingly.

In the wintertime, of course, the canals in Canada were frozen, so my father had to have a four- or five-month layoff, during which he would do all kinds of manual chores to pick up some extra money. He also was a great gardener. There was a lot that we owned next to our own home and he grew the most wonderful fresh vegetables. He stocked up so that we would go through the winter with enough food. By that I mean, a pot of vegetable soup would last for a whole week. Ultimately, the entire family was six boys and two girls, so we were a family of ten.

BOHNING: Where were you in the family?

BATTISTA: I was number seven. My brother Arthur, the neurosurgeon in New York City who got his M.D. at McGill University, was eighth. Both my mother and father lived to very elderly ages, late eighties. My father was a very hard worker.

He would walk to his job. He would always be on the job one hour before working time. But he would have to walk five to six miles in the snow and, Jim, I can remember him coming home at night with icicles on his moustache five inches long from the vapor freezing. He never complained, never.

My mother was a wonderful person. She was completely dedicated to the family and to her husband. She took the back seat on everything but really delivered the goods. She would take in sewing on top of all of her family duties, patching workmen's pants. I remember so well, the insurance man would come around, and from her sewing money that she would save, she would pay him in ten cent pieces. It was ten cents every two weeks for each child's life insurance, and she would have that for him every time. They were just wonderful persons.

All they could give us was paternal love, but no money. I'll never forget the day I left to go to McGill University. My mother and father hugged me and said, "We have no money. But we are so proud that you are going to get your brain changed and increased." The facts are that I worked my way through McGill by a procedure I'll tell you about. It was McGill that gave me a bursar of three hundred dollars a year, which paid for my tuition. It's a different world we live in now.

My brother Arthur, the baby of the family, and I shared a small bedroom in Strathcona Hall at McGill. Arthur would work as a guard in the most severe mental institution in Montreal, the Verdun Mental Hospital at night, in order to get enough money to buy food while he was going to medical school. He would try to get a little nap now and then at the hospital. This is the kind of character that our parents built into us. It's remarkable. Here two completely uneducated human beings, with great, great qualities, were able to instill in us something that other parents missed instilling.

My brothers Arthur and Joseph and I had to sleep in a small bed. I usually got in the middle because I was the smaller one. For these little beds, every fall my mother would make the mattresses from the corn husks left from the corn that my father grew in his garden. She would wash the husks and soften them and make them into mattresses. There were three of us to a small bed, and often one of us would fall out. We went through that and never complained.

BOHNING: Forgive my ignorance of Canadian geography, but where is Cornwall?

BATTISTA: Cornwall is between Montreal and Kingston, along the St. Lawrence River. It's about eighty miles from Montreal and

going north it's about seventy miles from Ottawa. It's a little town right on the edge of the St. Lawrence River.

BOHNING: Did you spend all of your childhood there before you went to McGill?

BATTISTA: That's right, every bit of it. I had a newspaper route that was very important to me at that time. For eleven years I served as a caddie in the summertime. It's interesting. I developed a scientific bent as a caddie. Nobody taught me this. Muriel Lester, who was a very wealthy woman, a wonderful young lady, insisted on having me as her caddie. She would take me to tournaments in her limousine. For me as a poor boy, this was really unbelievable. But it was no secret. Many people would ask for me to caddie because when I was a caddie, I had enough common sense to line up the ball with a tree or some obstacle in the rough and I wouldn't take my eye off of it until I got there. That increased the chances of finding the ball, so they used to call me "Eagle Eye." There was a dentist who came up from the U.S. every summer to the Cornwall Golf Club on this lake to play. He always asked the pro for me to be his caddie because he said, "This fellow finds the ball. It's unbelievable." I always used a little common sense. But there's some science to it, lining your eye up and staying on it.

We were one block from the Hotel Dieu Hospital. My parents were very devout Catholics. Starting with the oldest boy, all the six Battista boys served mass in the chapel of that hospital over a period of thirty years, one after the other. I did it for eleven years at six o'clock in the morning, in the coldest weather, sometimes knee deep in snow. My parents would get us up one at a time in sequence, and the hospital nuns took a special liking to me.

They had their own farm. After mass they would let me come down to their kitchen and they would give me oatmeal, but with real fresh cream from the cows. Oh, I can remember that; it was so wonderful. Just as an aside, I was named Orlando Aloysius Battista. With a name like that, the nuns were sure that someday I would become a Pope. So I got sort of a royal treatment because of that. That was a very interesting experience. My brother Arthur followed me as I got older, and the nuns were so appreciative.

When I was eleven years old, I had a terrible amount of intestinal pain. We didn't know what it was. My mother would collect herbs in the field and make a tonic and it helped me. For years I would come home from school in great pain, and then one day the pain got extremely severe. Dear Dr. Alguire, the good home-town physician, came and felt my stomach. He said to

my father, "You get this boy over to the hospital. We must operate immediately." My father walked over, carrying me on his back. I was eleven.

Dr. Alguire operated very promptly. My appendix had burst. It was appendicitis all the time. Now, it just amazes me when I think back. Of course, the nuns were praying at my beside constantly, but in those days, 1928, a long incision was made. I was in that hospital for six weeks with appendicitis. However, I was very fortunate to have lived because usually a burst appendix prior to the discovery of penicillin meant you were a goner. If Dr. Alguire didn't operate as promptly as he did, I'm sure the infection would have spread and I wouldn't be talking to you today.

BOHNING: Where did you get your early education? Was it in Catholic schools?

BATTISTA: At the elementary level it was at the Catholic school, but for the more formal education it was at the Cornwall Collegiate Institute, because the Catholic schools didn't have high schools available yet. They only had the elementary schools. They started to have full-course high schools a little later. Cornwall Collegiate Institute was a very fine school where all of us got our complete high school training.

BOHNING: Is that a public school?

BATTISTA: Yes.

BOHNING: You've already mentioned the nuns. Were there any teachers in either your elementary or high school experience who had an influence on you?

BATTISTA: Yes, primarily in the high school area. The one teacher I told you about was Miss Tobin, the history teacher. She was doing her job, but I was just a stubborn budding scientist who was challenging everything, and they're not accustomed to that. Most leaders like that don't want young kids challenging what they're supposed to believe. There was another teacher who taught Latin. I guess I was at the adolescent stage. She was an extremely pretty woman and very helpful in my learning Latin. This is long before I met Helen, of course. I remember mulling it over, the day that she made the announcement that she was getting married and would be giving up teaching. I thought, "Oh, what a loss." They are the two main ones.

BOHNING: Would you mind relating that story about Miss Tobin again?

BATTISTA: No, I'd be happy to because I think there's something fundamentally significant in this little anecdote. A teacher is almost as important as a parent in determining the future career of students. They may not realize that, but it's true. At that age, I read a lot. As a matter of fact, my father laid the rule down very early in each of our lives that they wanted us to do everything possible to develop brain power. They would keep saying, "Without your mind, you will always be a laborer. You must study. You must learn knowledge. We didn't. We want you to." For all of us, my father made a rule that if we were studying or reading a book, he would never ask us to do manual labor. He would do it for us, whether it was to shovel the snow, cut the grass, or tend furnaces, or what not.

The two girls in our family got married, had families, and have since passed away. But look at the career of the six boys raised in a very poor environment. My God, if we ever got an unusually full-course meal, it would be once a month, as a treat or something. We had porridge every morning and we had beef soup at night and that was it.

With the six boys, I'll give you some illustrations, and then I'll tell you about Miss Tobin.

My top brother Dominic became a successful real estate agent and he stopped prior to attending high school. The second, Donald, became a professional hockey player for the Houston team in Texas. He left school and home without going to high school. In grade school, he had a horse called Sambo. I was scared stiff of him. Donald had a bread route. There was a bakery right behind our home and Sambo lived in our barn. Donald would get up at five o'clock in the morning and hook Sambo up in the wintertime and deliver bread to homes around town. Later, he left home and made his own career, first as a professional hockey player. Later, he created his own "knowledge," and became a wonderful baker. He had a bakery that was wonderful.

Then the third boy became chairman and president of Courtaulds Canada, Limited, and he really was the intellectual pioneer for the family in 1933. I remember the exaltation when he bought a 1933 Dodge because he had been appointed chief chemist of Courtaulds. He asked me if I would drive it home for him when the ship brought it in. I'm telling you, you'd think you were driving a limousine. For the whole family, it was the first break in terms of financial help coming in. He helped me in some part through McGill University, and I paid him back with interest and lasting gratitude.

My brother Joseph entered the Jesuit novitiate after two years at Queen's University. Then I came along, and then Arthur. Today Arthur is one of the world's most famous neurosurgeons. He's developed some new techniques for creating nerve endings. For instance, patients are coming to him now at New York University from all over the world. In a car accident some nerves can be cut. One effect of this is that when nerve bundles are cut in certain parts of the neck, the patient's hand may remain fully extended permanently. It could stay that way for life!

Now, he's found a way of connecting the nerve endings. The minute the nerve connections are made, the outstretched arm can move again. You only need ten percent of the cut nerves to correct the injury. Nature always provides a great abundance of protection. If he can guide the severed endings so that only ten percent match, even if the other ninety percent may not, this can be sufficient for frozen organs to return to almost perfect functioning.

He did the same thing for Bell's Palsy. I watched him operate where this person's face was twisted. I hope this isn't too big a diversion. Arthur's now seventy-one. He takes a dye to locate facial arteries that are plugged. Again, nature's abundance. Now, we are talking about one millimeter arteries. I've watched this, and it's miraculous! He cuts out the artery, leading to the brain, that's plugged, literally plugged, and that's why the message isn't getting through. He takes a two-inch strip out of the abundant good part of the patient's face and stitches it to replace the plugged artery. Immediately, the person's face comes back to normal like a miracle! Unbelievable! The world doesn't know about these things. That's why I want to do more writing, as I can. I've done a lot, but I know so much more now and I can interpret it better for the public.

We were a poor family. My father never made more than fifty dollars a week when he worked. These two wonderful parents not only had eight children, but what they did for them is a story that should be told to young people today. Today, many young persons expect everything on a silver platter. That's why I'm here seven days a week, fifteen hours a day. I love my work! I would rather be here than in a palace anywhere. I wouldn't trade my little acre of heaven for anything. But if you don't learn that from first-hand experience, you can't get the thrills that I enjoy so much. I've got more thrills out of my scientific research to unearth hidden knowledge and watch little acorns grow into mighty oaks.

So there's the family background. Now we're going to return to Miss Tobin. I've sorry to have diverged, but it's part of the genesis of the whole history. Miss Tobin, like a professor that I had later at McGill University, was extremely dedicated to her

subject. She worshipped it. Her subject was ancient history. She would get into tears at times, telling us stories about ancient history. On my history exams I would say things that she didn't like. I'd say, "I don't think this is right because there's a conflict here. Two historians do not agree." Then I took the issue of the War of 1812 with her. This annoyed her very much because you are not supposed to challenge the teacher when you're in high school. I think I was in the fourth grade of high school at the time because she said she wouldn't let me graduate if I didn't change my attitude towards ancient history. Well, I haven't to date.

She made me take a summer school course to get through. Otherwise, I would not have graduated from Cornwall Collegiate Institute. I remember at the end of the fourth year she had me come up in front of the class. I was small in stature. She would point to the class and say, "Now, this boy is so stubborn he will not like ancient history. He ignores it. I predict that he has a dismal future because he does not like ancient history. He questions its accuracy. I predict that he has a dismal future, and he'll be nothing but a ditch-digger the rest of his life." To do that in front of a class is rather improper, but I don't have any malice towards her. It's an interesting anecdote, but she was still a wonderful teacher. In her own way, she was suffering from the beginning of Parkinson's disease, and that's enough to make anybody aggravated at times.

BOHNING: What was your science experience like in high school?

BATTISTA: In high school?

BOHNING: Yes. You said your brother was a chemist. I'm looking for the connection as to where the origins of your interest in science began.

BATTISTA: The best answer I can give you, and this is the truth——I don't think I've ever mentioned this to anybody before, but it comes back as a result of your question. My brother Arthur would sit in our tiny little living room, reading all the time. He was thirteen at the time. He turned to me and closed the book. He was reading one of Paul de Kruif's books. Even before that, in our mud cellar, Arthur, in the dark with a kerosene lamp, would dissect guinea pigs to develop the skill. One day he turned to me——I remember it so clearly——and said, "Landy, I've just made up my mind. I'm going to become a neurosurgeon if it takes me thirty years." Well, it took him more than thirty years to get to where he is, but that's where the spark came from.

When I was fourteen, I created an inventor's cooperative company in Cornwall. I even have letterheads from it. I wanted to get inventors in Cornwall to get together and help each other. When I was between thirteen and fifteen, I was just full of ideas. We would discuss things among the family, mostly about what we could do to make things better. Honestly, this is what happened. I wanted to be a physician, but I knew that Arthur, from what he said, also wanted to be a physician, and both of us could never get through medical school at the same time. We were only two and a half years apart. At that time, I was just full of ideas and I also was doing a lot of writing. I wrote four novels between the ages of twelve and sixteen, using a three-row English typewriter.

[END OF TAPE, SIDE 1]

BATTISTA: I paid our barber, Bob Genn, six dollars from my newspaper earnings for it. I still have it and it is a collector's item.

I typed six novels on that little typewriter on yellow paper. I still have them. One of my novels was called, The Night Before Eternity. What indeed would the world be like if we knew that the end of the world was going to occur within an hour's deadline.

Then I wrote a detective manuscript, about three hundred pages. It was Braden Cascade, The Detective Scientist, a scientist solving mysteries. This was way back in the late 1920s, and an exciting career in my memory. My mother would come down to our kitchen, sometimes at two or three o'clock a.m., to insist that I stop typing and get to bed.

When I was about twelve to fifteen years old, I developed an intense spurt of creativity. For example, the man next door used to take us out for a ride in his Model-T Ford on Sunday afternoons. I said, "Why don't you have a thing on the front of the car, so that a man can push it and a sign would go out and tell people which way you were going to turn." Then, they put out their hands sometimes, and sometimes they didn't.

I dispatched the idea to the Ford Motor Company in Canada. I told them I was fourteen, or something like that. They wrote back and sent me a Boy Scout flashlight as a gift for writing to them. I could never join the Boy Scouts because we had no money. I would love to carry that flashlight around and tell the neighborhood friends who sent it to me.

Then I wrote to the Wrigley Spearmint Chewing Gum Company and said, "Your spearmint gum sticks and it's hard to get the

wrapper off, especially during hot summer days. Why don't you coat it with some starch so that it wouldn't get sticky." Gee whiz! As a thank you, I got a huge carton of spearmint gum that I fed the neighborhood for months.

Then I wrote to the Goodyear Tire and Rubber Company and said, "The man next door has a Model-T Ford and he invites us out for a Sunday ride now and then. About every three miles he has to change a flat tire. Why don't you make a tire with two tubes in it, so that if one tube gets punctured, you'd still have enough air in the second tube to keep going." They sent me something back.

The other thing I remember very well is that I liked caramel candy, but it was sticky. So I wrote to a caramel company in Hamilton, Ontario. I said, "I don't want any money. I just want to offer you a suggestion. Why don't you dip the caramels in hard chocolate so they won't stick? Also, they might taste better and would be easier to handle." Shortly thereafter, the president sent me a delightful letter saying they liked the suggestion, and with his letter came six boxes of caramels.

I became the little inventor of the neighborhood, and I gave my treats away. So there was an inventive bent that I can't explain. Maybe it was DNA of some kind that was there. As a boy, I would help the fruit man sell his produce, going around door to door. I would do that on Saturdays to make pin money. We were always doing something. There was no laziness built into any of us. We learned to use our time valuably, thanks to the loving encouragement by our parents.

During these pre-college years, I used to write a lot. I had dreams of writing books. These were hand written or on my little typewriter. With my newspaper earnings I rented a post office box. I've been a hound for mail ever since. I can't wait for the mail to come in here; it's always a grab bag. The Cornwall postmaster would see me sitting outside on the steps of the Cornwall post office. He said, "I've never seen anything like it. The mail is going to be sorted in an hour and you're here waiting for it to be sorted. What is it you want?" I said, "Well, I'm waiting for different things." He just shook his head and said, "I can't believe that you will sit here waiting for that mail." Sometimes a week would go by and there wouldn't be anything, but I'd be there. So these are little anecdotes that give you insight into, let's say, what makes me run. The real story, however, blossomed when I went to McGill University.

BOHNING: What was your science experience like in high school?

BATTISTA: I have a poor recollection of it. The thing I

remember most in the Cornwall Collegiate Institute, being under British rule then, was the following mandatory physical exercise. Do you know what it consisted of? You'd have to wear Scottish kilts and march around the grounds in the snow, for physical exercise! You'd nearly freeze to death. I'm telling you, if you didn't have warm underwear on, you were in trouble. There we were, walking around in those open-air kilts, in temperatures as low as sub-zero temperatures. Worse yet, the man next door to our home was the head bagpiper for all the British people in Cornwall. He'd practice that sad-sounding bagpipe until two and three in the morning.

So I don't remember much in the way of science. I think I learned more among our home discussions than I did in high school at that time.

BOHNING: You said you had an older brother who was a chemist, and started as a chemist for Courtaulds.

BATTISTA: Nicholas. Nick is a chemical engineer. He's still alive. Nick was the first member of the family to become a professional. When he graduated in early 1933, he received the governor general's medal for the best grade in chemical engineering throughout Canada. But there were few jobs in 1933 for chemical engineers. The only job he could get, even with those credentials——to show you what a depression can be like——was at the Howard Smith Paper Mill Company in Cornwall, relining bricks in the kilns that they use in digesters, and so forth. He was the gold medalist for the whole of Canada, and he got twenty-five cents an hour. I remember Nick coming home and clearing his throat from the dust in it, and blood coming out of his throat; the temperature in the brick-lined digesters went as high as 115 Fahrenheit.

One day in late 1933, I answered the telephone when a call came in from Mr. Linnet, who was then president of Courtaulds Canada, Limited at the time. Courtaulds made rayon and cellophane. It was a big operation. Mr. Linnet said, "I need to talk to your brother." And I said, "Well, he's working, but I'll be glad to give him a message." Mr. Linnet had called Queen's University, where Nick got his chemical engineering degree. Mr. Linnet talked to the head of chemical engineering at Queen's University and said, "Look, our chief chemist is dying from cancer and we need to find an outstanding chemical engineer to replace him promptly." They said, "What are you talking about? Nick Battista in your own home town is the best that we could possibly recommend."

So my brother was interviewed by Mr. Linnet promptly and he

got the job. The job started at six thousand dollars a year. That was manna from heaven in 1933, and that's what prompted him to get a car. Of course, in those days you could get a car at a low down payment. He did such a good job. Incidentally, I'll mention a Battista trait. My brother hired me to do analytical lab work on a shift basis, analyzing the baths that precipitated the rayon into continuous yarn. The fumes were horrible. My brother advanced to president of the company quite rapidly, and then became chairman as well as president. He went out of his way so that no one would ever accuse him of giving me special favors because he was president. He had the lab manager see that I washed the floors and did all the dirty work so the other employees knew that there was no favoritism for me.

BOHNING: You've already touched on the Depression and I was going to ask about the effect on your family. You were twelve years old in 1929 when the Depression came, and yet you went on to McGill——

BATTISTA: In the Depression. The real thing that did it was my brother getting this income. That made all the difference in the world.

BOHNING: Had he gone to McGill?

BATTISTA: No. He got his degree at Queen's University on a Knight's of Columbus scholarship because of his very high grades in high school.

BOHNING: Oh, that's right. You did mention that. Why did you select McGill?

BATTISTA: Mainly because at the time I had dreams of becoming a physician. McGill had a good reputation in everything, but it's medical reputation was just tremendous throughout the world. That was the main reason.

BOHNING: What were your experiences like there? I'm assuming your degree was finally in chemistry. Is that correct?

BATTISTA: B.S. First Class Honors degree in chemistry.

BOHNING: When did you give up your medical hopes and switch to

chemistry?

BATTISTA: Arthur made it very clear he was going to go to McGill, and we did live together while he was at McGill and before I graduated. I'm glad I did that because he's proven to be far better than I could ever be as a surgeon.

BOHNING: What was it like at McGill?

BATTISTA: Oh, wonderful.

BOHNING: This was the first time you were away from home?

BATTISTA: Yes, it was first time I was away from home. But now I'm going to tell you some interesting stories about McGill. For some reason, I have written quotations. I have written over seventy thousand original epigrams. Two of the books are published (1). While I was a student at McGill, I was trying to write unusual little epigrams for the Saturday Evening Post. The motivation was one thing only. It had nothing to do with self-aggrandizement. It had to with earning money to eat. At the time I was sending these hand-written quotations to an editor called Peggy Dowst, an associate editor at the Saturday Evening Post. All of a sudden they began to like them. For example, "I admire tombstones because at least they always say something good about a man who's down," was one of the first ones she bought.

Each handwritten "Quotoon" they bought brought me a ten dollars check. With each ten dollar check, I could buy forty full-course meals at the Clover Leaf Inn, just around the corner from Strathcona Hall. Twenty-five cents in the late 1936-1940s bought a full course meal, including some kind of English dessert——usually it was bread pudding——a total of forty full-course meals.

Alas, sales were irregular for a long time. My brother and I would share a can of pork and beans as our supper! We would heat the beans on a small electric oven in the room we shared. We'd split it. That was all we could afford.

Peggy Dowst kept buying them. They used some of my most widely-quoted quotations. Later on, the Reader's Digest began buying my one liners for use in their "Quotable Quotes" feature——a must that appears in every issue today. I remember sending Peggy Dowst, "If you must cry over spilt milk, condense it!" She bought it. But then she wrote back. For some reason, I thought that using the byline Orlando Aloysius Battista would

catch an editor's eye at least, even if I didn't sell it. Ms. Dowst wrote back: "Mr. Battista, we have a suggestion. Do you mind us suggesting that you reduce your byline, because your byline on this quote is bigger than the quote." So from that day, I assumed the O. A. Battista byline and have kept it ever since.

I had a very interesting experience with Peggy Dowst. I never smoked, but I would have a pipe packed with cotton when I studied and I would just use it as a chewing thing or some divergence. I also would buy apples and with a little pen knife, I would remove the peelings, and then slice the apple and eat it while I was studying. So I got a note back from Peggy Dowst saying, "We appreciate your enthusiasm for contributing to the Saturday Evening Post, but in your last batch of quotes, we found the enclosed pen knife and we're returning it to you, thinking that this may be a little more aggressive then you want it to be."

At McGill University, there are two or three very, very important things. A Dr. Thompson, who was dean of literature, liked to give classes to the first line students coming into the university because you had to pass his exam to qualify. He was a very distinguished man. He would relate Shakespeare and tears would come to his eyes, just like Miss Tobin. I thought I was a pretty good writer, but he would always give me a C-. I couldn't understand it. One day after class, he said, "Battista, I want to talk to you." I didn't know what the heck it was. He said, "I read the Saturday Evening Post last week and I saw an epigram, byline by Orlando Aloysius Battista. With a personal name like that, it must be you. There can't be two people with that name." I said, "Yes, it is." And he said, "My God. I've been trying to sell stuff to the Saturday Evening Post for thirty years. I've never had a bite." I got an absolute A+ on everything I wrote from there on. He couldn't believe it was me. He saw these things and said, "Oh, that's somebody else. It can't be this guy I'm giving C-'s to."

Now the other professor is Professor [William H.] Hatcher, who influenced my career tremendously. One of the nice things about McGill that I remember was that we were taking the honor's course in chemistry. There were five of us in the class. One professor to five students. Can you imagine that? Professor Hatcher befriended me in many ways. He was unusual. I don't think he's alive now. He told me when I graduated, "You know, I'll tell you a little secret now that you're graduated. I never read final exam papers. At the end of the year in the final exams, I take them home. There's a landing on my stairway, and I throw them over my shoulder. Then I walk down and I pick one up at a time. Who's this fellow, Thompson? I think of his whole year and I mark it. Comes Battista. What's this fellow got? What's his potential? What's motivating him? I don't even read

the exam. That's unimportant." He looked for the substance over the whole year and how that person interfaced with him. I didn't know that and I am happy to say that maybe for other reasons, he gave me the highest graduation mark.

I think the reason he did was that a notice came out in late 1939, with the war in Britain either imminent or Hitler was already bombing England. The Canadian government talked to all the professors to get ideas. The Germans had huge nitroglycerin plants in Germany. Our government wanted somebody to figure out a way, through our own sabotage, that we could put a chemical in these nitroglycerin plants so the nitroglycerin wouldn't come to the top. It'd be useless. They would react nitric acid with glycerin and the nitroglycerin would come to the top. They could syphon that off and use it.

Professor Hatcher mentioned this to the class. I got an idea and I went in the lab and I worked on it. I said, "Ferric chloride will interact with glycerin in such a way that maybe it will prevent the nitroglycerin from separating." I did laboratory experiments, proved it, and gave it to Professor Hatcher as a formal, crudely type-written report. I think I have a copy of it somewhere. He came in and I verified it. "Look. The nitroglycerin isn't separating, whereas if I don't add ferric chloride, it does." He was so impressed that I did it on my own initiative, following up his exposure to the idea, that he sent it on to the secret war people in Ottawa. I got a letter of commendation back shortly after I graduated, acknowledging that they considered this a very important possible solution to the problem. He did that for me.

But now the most important thing, and I come to something I have dreamed of since I first though of it. It could be very controversial. I took physics under Dr. Norman Shaw, professor of physics at McGill. Again, it was a very small class. There were only four particles known in nuclear physics——the electron, the positron, the alpha particle and the neutron. Positron, electron, neutron, and the alpha particle. If anybody thought there was anything more than that, it was blasphemous. That's what the big wheels say and you believe it. It's like the Pope. Well, I don't believe in infallibility in anybody, frankly, unless it's tested.

It suddenly occurred to me: now why is it that you can get positrons and electrons and if the two come together you get a neutral particle? Here you have an alpha particle, which is really a minimum of four hydrogen atoms, heavier. Why should they be the only four particles in the structure of the universe? This is before I even knew about the Big Bang and everything. So I created a particle, which I call the infinitron, which was the first condensation of all the matter in the universe into one incredibly massive particle. It was the explosion of the

infinitron that led to all the other particles. Today there are hundreds of new particles being found all the time. They're finding that any particle that is bigger than an electron or a positron can be broken down into smaller particles. So I wrote a little paper. I got so excited I couldn't sleep. I said this thing is incredible. I called it, "The Theory of Infinitrons." I predicted that they will find thousands of sub-particles in the whole spectrum of nuclear physics, not just four. Golly, I got so excited.

I went to see Professor Norman Shaw, head of physics, and I explained to him what I was saying. He was smoking his pipe. He said, "Now Battista, you're tired. You ought to get a little rest. All I can warn you is that what you are saying is a lot of gibberish and that if you should ever put that down on your exam, you will never graduate from McGill."

[END OF TAPE, SIDE TWO]

BATTISTA: With tears in my eyes, I had a meeting with Professor Hatcher. He said, "Now, look. Try to understand Professor Shaw. He believes what his peers publish. He believes it with all the faith that some Catholics will believe what the Pope says. You're a little student at McGill University, still wet behind the ears, and you're telling a head of our Physics Department that what he's believing is all hogwash. That doesn't go over well from a student. Try to be kind to Professor Shaw and sleep on this. Don't give it up. Stick with it. Write it up. Record it in some way." So I did. I got it copyrighted just for the official record (2). But as I follow the physics environment today, it's exactly what was written in that little hand-written piece of paper in 1938 or 1939 at McGill University. But this is what I have found through all my career.

I'm going to tell you about true incidents that occurred on a one-to-one basis that in retrospect are horrible manifestations of the human nature to reject anything new. This is why the world is in the state it is. It won't listen to counter-arguments. That's not science. It's not science if you're a professor of physics and are just as blind to any new radical idea as you would be to a religious radical change. It's the same philosophy. It's ingrained somehow, maybe back to the DNA in most human beings, but not all. There's some that are very open-minded. But those are experiences at McGill that I will never forget. It was a wonderful school, with such close relationships with your professors.

Many years later, I served as a full adjunct professor at The University of Texas in Arlington, Texas, to start a

Microcrystal Polymer Science Institute, and I gave a credit course on colloidal polymer science. I couldn't take it after two years. My colleagues said, "Landy, all you think about is finding a practical way. That's not the university. You've got to have a more theoretical approach. Don't be so darn oriented to selling something to get people jobs." It's just what we need, for heaven's sakes. The university environment, where a full professor with tenure would play golf in the afternoon, give an hour's lecture in the morning, and take life leisurely the rest of the time is just not my speed. I had to give it up. I couldn't tolerate it.

The academic environment is changing, but it's a miracle that I have been recognized as I have been by the American Chemical Society, which is eighty percent professors. I've been an inventive-type scientist, a creative-type scientist, and not theoretical in any way.

BOHNING: Could I ask a little bit about the curriculum at McGill? What kind of courses did you take?

BATTISTA: Physical chemistry, organic chemistry, lots of it. A lot of lab work. The honors course is the equivalent of an extra year of advanced curriculum. You had to maintain grades to keep in it or you would be reverted back. It's a unique program. While I was at McGill, in the last summer I was there, Professor Hatcher talked to Professor [Harold] Hibbert, a very famous chemist who started the McGill Pulp and Paper Research Institute. He was trained in Germany, and was a very distinguished, full white-haired professor. He invited me to be a lab assistant in the Pulp and Paper Institute the year before I graduated. He invited me to work with his Ph.D. students. It was a wonderful experience.

I remember the story about Professor Hibbert. He gained his reputation at Yale University. The story was that one day he was coming in to work and a student met him and said, "Oh Professor Hibbert, the lab has burned down." He said to the student, "My God, I've wanted this for so long. We need a new lab so badly." [laughter] That gives you a little feeling of the solidarity of this scientist. The other thing about Professor Hibbert was the following incident. I was working on making a methyl oxide material in the laboratory. I had been alerted that it could be explosive. For some reason——I don't remember the details——this two-liter flask all of a sudden started to smoke. I had sense enough to run. Professor Hibbert was coming into the laboratory and the damn thing went up and raised a hole in the ceiling. All he said to me was, "I'm so glad you had the sense to run." There was no criticism, no anger. That's a unique quality. Those are a couple of recollections from McGill.

BOHNING: Before I interrupted you, you had started to talk about life after McGill. By this time your brother was well established at Courtaulds.

BATTISTA: He was president.

BOHNING: By that time?

BATTISTA: Yes. Shortly thereafter. They gave him the chairmanship.

BOHNING: Had you thought about what you wanted to do? Had you thought about doing graduate work?

BATTISTA: Well I did, except that again, I had no money. I had no income. Courtaulds wanted me to go to Coventry and be further trained in their laboratories, but Coventry was under attack by Hitler. Courtaulds owned American Viscose Corporation, the biggest producer of rayon and cellophane in the United States. The managing director of Courtaulds (England) told my brother, "We better send Landy over to Marcus Hook, Pennsylvania. We have an excellent research lab there. It wouldn't be safe for him to come to Coventry under these conditions."

So my brother wrote to the president of American Viscose Corporation, passing along Mr. Johnson's recommendation. I got the job immediately.

Dr. Charles Venable was the director of research at American Viscose at the time. He was a wonderful person. I have met so many wonderful people, like Dr. Wayne Sisson, who was my boss, and Dr. Sydney Coppick and many other coworkers. These scientists were really models of management at the chemists level.

I recall writing to Dr. Venable and saying, "I don't have any money. Could you advance forty dollars for me to buy a train ticket for an eighteen hour ride on a train in a coach from Montreal to Chester, Pennsylvania." They said, "Sure, and we'll deduct it from your first paycheck."

I started in June 1940 working in Marcus Hook, which is a heck of an old town. There were more darn oil plants nearby. Dust! You talk about breathing silica. I'd go to my car after work and a layer of silica catalyst would be on it every day. The poor people in Marcus Hook, if they opened their windows on

hot summer days they would be eating catalysts on their plates!

My salary was $160 a month in June 1940. I remember Mr. Bob Gunn would come around——without a gun——every two weeks with a cart loaded with cash. He would give me four twenty-dollar bills, eighty dollars, which was my pay for two weeks. Out of that I sent a $20 bill each month to my parents, and I slowly paid off the loan that my brother at Courtaulds gave me along the way. But I earned most of my way through McGill by writing Saturday Evening Post "Quotoons."

BOHNING: Just as an aside, I'm curious how you got into writing these quotes.

BATTISTA: I can't explain it. I used to use them as jokes with the family. One quote that has become famous appeared in the Saturday Evening Post about 1940. It is, "An error never becomes a mistake unless you refuse to correct it." I have the transcript, when Chet Huntley some twenty-two years later interviewed President Kennedy right after the Bay of Pigs disaster. The President said to Chet Huntley, "A wise old philosopher, O. A. Battista, said many years ago, 'An error doesn't become a mistake unless you refuse to correct it,' and I want to correct publicly my error with the Bay of Pigs disaster." He thought——or his speech writer——I was one of these old philosophers who had lived centuries earlier.

The Reader's Digest has published at least dozens of my epigrams at different times. They have paid fifty dollars each in later years. I liked to use little quips a lot when I was a kid, as a joke. I just don't know what caused me, but for many years every Sunday night, I would sit down and try to recall last week's people who I met and what I heard from them. I would write ten to thirty Quotoons almost every Sunday night. My inventory is now over seventy thousand and the demand for them continues worldwide. Since its founding in 1940, I have been a contributing editor to Quote Magazine. I'm sure they've published thousands of them to date. Every issue has a bunch of my one-line quips. They are in publications all over the world, but it's all now with that one byline, O. A. Battista.

And it's wonderful to see other people read them. I just had a letter from Florence, Italy from a little girl lived next to us at our home. Her name was Mary Katherine Nolan. When they moved next to us she was four years old. She would come over and tease me. She was a delightful little girl. Her whole family is a wonderful family that lived next to us. The Nolans have four boys and two girls. Mary Catherine lives in her own little castle in Florence.

She wrote home to her mother on one occasion and told her, "Tell Dr. Battista that I opened the Reader's Digest and I read this quote. It was a good one, and then I happened to glance and I saw O. A. Battista in 'Quotable Quotes.' It's got to be him. It's got to be him. Tell him that I enjoyed it very much."

Along the way, I have written twenty-three successful books. This one here, How to Enjoy Work and Get More Fun Out of Life has sold over eighty thousand copies by Prentice-Hall in hard-cover (3), and Putnam has published my book Quotoons: A Speaker's Dictionary in hard-cover and paper-back (1). It has five thousand of my Quotoons. The Challenge of Chemistry went into eight printings for high school (4). It is in most high school libraries in the United States. That was just way back when I was writing to try and interest high school and college students to consider a career in chemistry.

BOHNING: I wanted to talk about that. I have a date here for that of 1959.

BATTISTA: Copyright 1959. Oh my! "Dedicated to aspiring chemists the world over to whom will come the knowledge that will lighten human suffering, wipe out hunger, and aspire men to live at peace with one another." I forgot I wrote that. 1959. This says the fourth printing, but it did go through eight printings. The problem is to keep these books. I am running out of permanent copies. One way or another they go.

BOHNING: I'd like to come back to some of those later. But let's return to American Viscose and Marcus Hook. When did you arrive there? In 1940?

BATTISTA: June 1940.

BOHNING: Was this your first time in the United States?

BATTISTA: This was my first. Yes. Well, there was one exception. As a little newsboy, usually a tip was a penny. Cornwall is adjacent to, with the St. Lawrence River in between, Nyando, New York. It's now called Rooseveltown. Very often, I would get together with a group of fellow newsboys and we would walk the four or five miles on the bridges and the railroad track over to Nyando, New York.

At the end of that trail was the most fascinating general store, in this little town. The Indians would come there to buy

their food, and the local people. It was "dreamland" for several newsboys. Butterfinger Bars were eight to ten inches long in those days. Cost? A nickel each.

Everything in that store was two or three times bigger than the equivalent in Canada. And I said to my friends, "I like the size, the bigness, of America, and someday I want to go there," because Canada was controlled by the British and it didn't have the economic potential. The licorice sticks seemed like a yard long. The bigness of it all. To get there we would have to go through Indian reservations, and several times the Indians came after us with butcher knives! But we were very careful to stay away from any houses. That was my first exposure to America. I experienced a feeling of liberty and bigness as a young boy of maybe twelve years old just to walk around that Nyando country store.

BOHNING: What did you think of the Philadelphia area when you got there?

BATTISTA: Well, I'll tell you. Number one, I had to stay at a hotel in Chester, Pennsylvania before I went in the next day to work because the train didn't stop at Marcus Hook. I wasn't impressed by Chester, Pennsylvania. It seemed like a very backward town. Marcus Hook was even worse, because it at the time had the world's reputation of having more bars per acre than any other city in the United States, because it was a port for oil. It was a pretty dirty old city, but that's where the original Courtaulds' rayon plant was.

BOHNING: Did you get up to Philadelphia?

BATTISTA: I really had no exposure to Philadelphia until I accidentally met Helen in Wilmington, Delaware. Helen lived in Drexel Hill, Pennsylvania, but she was a teacher in the Claymont High School.

There is an interesting story about how I came to meet Helen the first time. The key orchestrator was a little old nun who was head of a boy's academy in Wilmington, a very elite school. Mother Agatha was her name. She had been reading a lot of my writings on science and interpretation of knowledge. She had been reading a lot of my writings on science and the interpretation of knowledge. She kept asking me if I would come and do a book review of her regular meetings of parents and teachers, so I agreed to do this review for her. Unbeknownst to me, she had me sit in the front row of the academy between two girls, each named Helen. The one on one side was a redhead, and

the other one on the other side was the girl I married. The girl on my left side, Helen, invited me to come up and have dinner with her family. The other Helen very nice, but that was it. It turned out that the Helen who invited me up to dinner seemed to me to be a little too forward and aggressive for my feelings. At the time, I didn't want to get married. I was still poor.

So Helen Battista, Helen Keffer, lived in Claymont, Delaware, where I lived. I was in a rooming house. She would live nearby during the week to teach and then go back to Drexel Hill on the weekends.

My excitement to get mail in the post office box was as exciting as my in my boyhood days. I would walk to the post office in Claymont every day for mail. One day I was bundled up. It was a cold, blustery day. I was walking on the street to the post office and Helen was coming the other way. Of course, she had a heavy beaver fur coat. She thought I was freezing to death. She held my hand and said, "You must be terribly cold." I said, "Well, I'm a Canadian and I can take it a little better."

So on the spur of the moment I said, "How about having supper with me sometime here in Claymont?" And she said, "Okay." So I met her and we had dinner. I said, "You know, I'm sending money home to my parents and I'm paying off my university debt. Do you mind if we share a milk shake?" She was so gracious, and still is, just a wonderful person. That led ultimately to marriage. Of course, I never contacted the other girl. But Mother Agatha was trying to get me tied up some way with somebody, preferably Catholic, of course. That's how Helen and I met.

BOHNING: You were married in 1945?

BATTISTA: Yes, 1945. We have two children. Our son Bill is in Sacramento, California. He's the older child. He works for Allstate as a life insurance executive. Elizabeth Ann, who used to work here, has such great talent as a writer. She makes me look minuscule as a writer. She has her own little apartment at our home. I gave her computers and I told her to just write. When you get the mood, write. The rest of the time, just you and your mother have fun.

Because of their wonderful consideration of the amount of time that I spend here, they have been treated for twenty-one years to dinner six nights a week in the Cork Room of the Colonial Country Club. They don't know what it is to cook a meal. So that compensates. It's the only way I can really be with them for a couple of hours. On Mondays when the club is closed, we try some different restaurants. So they've got a

lovely routine. But Elizabeth Ann is writing. She's written two humorous articles about me and this Institute (5). If I can find them, I'll send them to you.

BOHNING: Yes, I'd like to see them.

BATTISTA: She's written a novel about Philadelphia in the year 1893. She calls it, It Matters Not. It's the sweetest, most lovable, most readable novel I've ever known. We're in the process of trying to get a publisher for her. Some day she is going to be a very, very unique author. She's got fantastic talents. She and her mother have small carburetors and they tire easily. They're full of fun for a couple of hours, but then the gas runs out. So they have to have a very leisurely life to maximize their abilities.

I think the only time in our forty-six years of marriage that Helen and I ever had the slightest disagreement in a sense was when I was foolish enough, and this was many years ago, to say such a thing as, "You know, Latin is a dead language. Why don't they give it up?" That was the only time I saw Helen get her fur up. She loves Latin and she thinks it's such a magnificent language and that it's the basis of so much of our English language. And she's right, of course. But to me, in my every day activity, if I run into something Latin, I don't know what the heck it's all about. But both my Helen and Elizabeth Ann and Bill have wonderful personalities and great minds.

[END OF TAPE, SIDE 3]

BOHNING: What was your first assignment at American Viscose in Marcus Hook?

BATTISTA: My first assignment at American Viscose of any consequence was with the rubber program. Even though I was a Canadian citizen, when the war broke out, I was up for the draft. Because I had training in polymer science, Dr. Venable, dear man——and of course he just didn't do it for me——assigned me to part of the substitute rubber program and I would get deferred. However, every six months I'd have to go up for a physical and go through everything, and then wait for Washington to give me the deferment. I sometimes think it would have been better to go in rather than, for five years or whatever it was, to have the uncertainty of it.

I did some good work there. I developed a rubber substitute made from a viscose modification, but it never got into

commercialization because the butyl rubbers replaced it more effectively.

I was involved in war-related projects until the end of the war. Then I got married on August 25, 1945. The war had just petered out then, and the draft had stopped. Then I started to create on my own. Inventions. While at American Viscose——and FMC bought them out in 1963——over sixty-five U.S. patents in my name were owned by American Viscose and FMC. Of those, two patents have been of the greatest commercial success (6). I was doing basic research under Wayne Sisson on the morphology and structure of cellulose that was academic, very, very highly sophisticated. Some of the work we did would be the equivalent of three or four Ph.D.s, easily. Then, by accident, my whole career gelled in 1955.

BOHNING: I'm looking at some of these things in a chronological fashion. I have some of your patents, but it was obvious you were doing some of your very early work in some aspects of cellulose chemistry. There was a patent on the extrusion molding of a viscose product (7). I was curious about that.

BATTISTA: The whole idea there was to extrude viscose in such a way that you could slice the tube and wash it and make a rubber gasket for mason jars in replacement for rubber. I believe that's what that referred to.

BOHNING: There was another patent on a novel yarn in 1949 (8).

BATTISTA: They were yarns that, as I recall, were extruded in such a way that a gas came off as the fiber was formed to create millions of little holes so the fiber would be very fluffy and light and very warm to wear.

BOHNING: During this period of time, up until the event we want to talk about in 1955, had you been taking any courses? You were really working in polymer chemistry.

BATTISTA: No, other than being a devotee of the American Chemical Society and attending their meetings. That's one thing American Viscose was very good about. They were very generous in letting us go to all of the six month's meetings, and that way I kept up. I began to publish papers and my first significant paper was called, "The Level-Off Degree of Polymerization" (9). That is still used today a great deal throughout the world. I think that was co-authored with two or three other people. It

was an idea of mine to measure the molecular weight of cellulose microcrystals.

BOHNING: You said that you started doing inventions on your own. How did your supervisors look at this? I'm sure they were giving you assignments, but you were still doing other things as well?

BATTISTA: That's correct. I would work Saturdays and Sundays. The inventions that were created up to 1955 were good, but they were little addenda improvements. None of them really became world-wide commercial successes.

An absolutely accidental discovery in 1955 changed my whole course of activity. I think that's a story that should be told, because it's a fascinating story. Again, wonderful people came to my rescue, or these things would never have flourished. Now, in 1955 our great competitor the DuPont Company introduced nylon in tire cord. American Viscose at that time was selling around two hundred fifty million dollars to three hundred million dollars worth of rayon in tire cord. Rayon, because of the smaller crystals than cotton, could flex more in a tire, so you'd get twenty-five thousand miles instead of ten or fifteen. It replaced cotton completely. For a good many years, American Viscose had a complete corner on the rayon tire cord market.

The announcement came out in early 1955 by DuPont that they were going to introduce nylon tire cord. The magic name nylon at that time had our management worried. Here was a three hundred million dollar investment at risk. Dr. Venable sent out a little note that said, "Can anybody come up with some idea that might help us be more competitive with the new threat from nylon?" Here's where basic research is so important. I learned most of this at the knee of Wayne Sisson and Sydney Coppick, both of whom have passed away. They were unselfish people. Wayne Sisson was an x-ray expert on cellulose structure, so was Dr. Coppick. Under their tutorship, I learned the state of the art of the morphology of all cellulose. It became the world's most famous research center for fine morphology of cellulose under Dr. Sisson.

I was sitting reading this memo from Dr. Venable to all of the staff. I had a little cubbyhole of an office, looking out on the smoke-filled Marcus Hook dust. I said to myself, "From the fundamental studies, I know that nylon tire cord has much smaller crystals and more perfect crystals than rayon. Therefore, the more hinges between the crystals, and the continuity of the molecules, the greater the flex-life." That's the only reason that nylon tire cord is on every big airplane today: because of its flexibility and the ability to absorb impact. Rayon is out. The threat was a real one, and it ultimately replaced rayon tire

cord almost entirely.

But sitting there, eating my little sandwich at lunch, looking at the sky, an idea suddenly occurred to me. It came back from my fundamental studies with Dr. Sisson, because I learned through electron microscopy and low x-ray scattering especially, exactly what the morphology was of cellulose crystals, wood pulp, rayon, and cellophane. So I said, "I'm going to try this."

I had an assistant, Pat Smith. What a wonderful person. I got all excited right after lunch, and I said, "Pat, I want you to do an experiment for me that might help us make a rayon that would be more competitive with DuPont. Here's what I want you to do. I want you to take what I call a level off-DP rayon." It could be wood pulp, but I told her rayon, which we had been working on for ten years. I said, "What I want you to do is put this in a Waring blender with water." I just picked this out of the sky. "I want you to use five percent solids and run the Waring blender for a long time but intermittently, so you don't burn the motor out. After a total of a half an hour, what I predict"——and oh, did I learn a lesson from this. Never predict in science. That's one way of putting your head in a fan, but it has some benefits, too. I said, "What is going to happen is that the sharp blades are going to cause little slivers of crystals to break away from the rayon crystal. They will be so small that they will be in Brownian motion, and they will float to the top and not settle. In those particles that weren't broken down, the crystals will settle like sand; they're water insoluble. Then we'll syphon off the supernatant, concentrate it, and seed it into the viscose spinning tire cord and let the seeds create smaller crystals in the final product. What we need to do is make smaller crystals with more hinges. That's the key."

So Pat performed the experiment. She came back to me and said, "Dr. Battista, what you told me didn't happen. All I have is this bunch of junk. So shall I throw it down the sink and repeat it?" Now, what Pat saw and showed me was something that nobody in the history of the universe looked on before. I turned to Pat and said, "Pat, you and I are looking on a phenomenon that nobody in the history of the universe could ever have seen before." What a trip! I said, "We are looking at pure cellulose, without a calorie in a carload, that looks like Crisco, smooth as butter. And therefore, edible as butter. We have the basis here of opening a food revolution to reduce cholesterol and control overweight." So Pat did not have to repeat the experiment.

I got so excited about what I dreamed could occur because of this phenomenon. Polymer chemistry missed it completely because it's the antithesis of being a good polymer scientist. You want to make long molecules that are stronger, tougher. Here, we're

degrading molecules down to sub-micron crystals that have no physical strength per se, but they have colloidal properties because they're not water soluble. They are unique.

My boss was Dr. [Everett W.] Lothrop [Jr.], who was directing a program on the rayon tire cord. I guess I've always been a bit of a maverick. I would come in to the lab on evenings and weekends, and up in the analytical lab I would make up cheesecake with sixty percent reduced calories, whipped cream with sixty percent reduced calories, custards, all kinds of things, but that had nothing to do with solving the tire cord problem. Nobody has ever tested that idea yet, and neither did I. I believe it's still as sound as when I wrote it.

Dr. Lothrop got mad, and he went to Dr. [Herschel H.] Cudd and said, "I want to fire Battista. He's using the analytical lab to cook cheesecakes and whipped cream, and he's not working on the problem that we're all supposed to be working on. He comes in here evenings and weekends, working very hard, but not on the problem that he's supposed to be working on." Herschel Cudd said, "Now wait a minute. Are you telling me that this young man is coming in here evenings and weekends on his own initiative, pursuing something he believes in?" "Yes." "Okay, I will take him away from your jurisdiction. I will give him a small laboratory with one technician and he will report to me and he can do whatever the hell he wants with what he's interested in." Otherwise, I'd have been fired. Herschel Cudd became a vice president at Amoco. He was another great person. I don't think he's alive now.

I am writing the second edition of my Microcrystal Polymer Science (10). That was printed by McGraw-Hill in 1975. It's the only book on this subject in the world! Polymer chemists considered that blasphemous, that you should degrade polymers, instead of improving them, but they missed the point because they're blind. What we're doing is opening up a whole new world of colloidal polymer science that is completely separate and independent in commercial use from fibers or films——they're coming around though.

I did a literature search since this book was published, and there are over four thousand articles published in scientific literature on microcrystalline cellulose alone! My, this book is going to be about five times that thick. All over the world, that's where everybody reads good science.

To date, microcrystalline cellulose, used in foods and pharmaceuticals, is approaching the one billion pound market worldwide. FMC has averaged two dollars a pound on a billion pounds. Worldwide they license my patents. Every pound was sold under the patent in my name, and I insisted that Pat Smith be on it (6a). That patent number was on every package and every drum

around the world. It is in greater demand today than it ever has been since that accidental discovery. Now the interesting thing is that Dr. Lothrop, who was younger than me——the only reason he has a job today is that he is a manager of quality control for the biggest plant in the world to make the product that he wanted to fire me for. Otherwise, he'd be out of a job. That's how the whole wheel of fortune turns. Isn't that fascinating? He meant well. He wanted to do his job. He was doing what he thought he had to do. But Dr. Cudd really saved the whole thing.

BOHNING: My note here shows that the patent was issued in 1961.

BATTISTA: It took that long to get it from the original. I think that was the one with me and Pat Smith. It was the basic patent.

BOHNING: Who was Pat Smith?

BATTISTA: Pat Smith was my laboratory assistant. She didn't invent it, but she was instrumental and I insisted that she be a co-inventor. I don't think she's living today. I have never heard anything in a long time.

BOHNING: Where did the trade name Avicel come from?

BATTISTA: All of the trade names——Avicel, Avitene——were originated by me. The trademark of American Viscose was Avisco. They had about one hundred fifty trademarks with the "Avi." So I just came out and said, "You'll get your trademark," and boy, has it been valuable. I created Avicel, Aviamylose, Aviamide, Aviesters at that time.

BOHNING: How soon after this did you start looking at other polymers for the same process? As you just said, it started with cellulose, but there were others.

BATTISTA: In 1963, FMC Corporation bought out American Viscose. They closed down the Marcus Hook research center and they transferred only two out of seventy-five scientists to Princeton, their central research department. Dr. [Mamerto M.] Cruz, who has since died, was a very close friend of mine and a great contributor to the whole field of microcrystal polymers; he and I were transferred to Princeton. At Princeton, they appointed me assistant director of chemical research——mainly, I guess, in

recognition of the success of my invention. No, I think I was appointed assistant director a little later. I forget the title I had, but I was sort of a free-lancer. I had been telling FMC and American Viscose, "Look, we have already demonstrated that any crystalline polymer can be adapted to what we did with cellulose——amylose starch, nylons, polyesters, polyolefins."

As a matter of fact, this phone call from Toronto that I'll be returning this afternoon is from the head of Microtech, who has licensed all the other microcrystals.

I begged FMC, since they weren't going to do anything with these microcrystals, would they please return the rights of my patents to me. I said, "If necessary, I'd be glad to pay a fee." I thought they would say, "Well, we're not going to use them. You can have them." Boy, I had to pay ten thousand dollars and go through so much legal paperwork. But they charged me ten thousand dollars to give me my own patents that they had no intention of using. They made so much money from Avicel, they didn't want to dilute that effort. They didn't know what I knew, post-FMC, about the potential. These will all be treated in depth in the new treatise. Microtech Industries hopes to have a big plant on line to produce the amylose, the nylon, and the polyesters. The biodegradability release, which I think you have a copy of, tells where we take polyester pop bottles, and you should see what we can do with that; it is much more important than Avicel because it opens up a whole world of colloidal polymer chemistry using polyester and nylon, which melt.

We can now take fiberboard that uses formaldehyde, which is in disrepute as a carcinogen, and eliminate it and make compounds of it. We can take sawdust and add these microcrystals of polyester from the jumbo Coke bottles. I could show you all these samples. Just like Crisco in water. No toxic organic solvents. You dry the sawdust and compact it by filtration. Now you have coated it. I get so excited when I think of it. These little crystals are three hundred angstroms in maximum size. When you take particle board or fibers or paper that you've coated, and you now heat it for a millisecond at the melting point of the polyester crystals, you are mechanically producing the equivalent of a covalent chemical bond, homogeneously throughout the plywood, and it's waterproof and the crystals won't melt. It's polyester; you have to go to 255 degrees centigrade! There's the whole new opportunity for microcrystal polymers, with all of them. Not a pound yet has been sold, but it's going to be a big, big business.

[END OF TAPE, SIDE 4]

BATTISTA: But it goes back to that little experiment for which

we were nearly fired. I can tell you stories like this over and over. Why? Gosh, somebody's got to address themselves. I think we're losing ninety percent of the greatest ideas because of the resistance to even consider them viable when they're presented.

BOHNING: That was a very busy time for you in other respects, too.

BATTISTA: Yes, I was writing and publishing books.

BOHNING: Yes, that was one of the things that I wanted to talk about. You had a book in 1957 which I think you just mentioned, How to Enjoy Work and Get More Fun Out of Life (3). How did that book originate?

BATTISTA: This is very interesting. I was writing quotes for the Saturday Evening Post until it was sold and became a monthly. The editors of Prentice-Hall approached me and said, "We've been seeing your byline in the Saturday Evening Post and we like your little quips. How about writing a book for us about why you enjoy life so much. That was the origin. I think they gave me a five thousand dollar advance. I had suggested the title, because that's what I experience in my own life: how to enjoy work and get more fun out of life. I wish billions of people could learn that. They can learn it if they only change their philosophy of life: "Think Simply, and Grow Rich!"

Stuart Sloan and George Costello, the editors at Prentice-Hall, called me to New York to sign the contract and they asked me to prepare an outline of what the book would be. While they were there——it must have been 1959——a hot book was one by Dr. [John A.] Schindler, How to Live 365 Days a Year (11). I think he was from Minnesota. That book was going out in carloads all over the country. Carloads! George Costello said, "Now, we don't know why. We didn't expect this book to catch on. But let me show you here." They showed me a check for eighty-five thousand dollars in royalties to Dr. Schindler for six months. That was even at the very early stages. Now he said, "We all said this book is going to do reasonably well, but we didn't know that one person would tell another, and start a chain reaction in sales. You can't predict it. We have bombed out many times when all of us believed we had a winner! Some of the ones that they say are going to go good often bomb out. The ones some of them say, 'No way,' run off like a rocket. It's a phenomenon. If anybody could figure out a sure way to estimate book winners in advance, they'd pay a fortune for the formula."

It was a very successful book; they then invited me to do

it. The other book I did, second to that, was even more successful, The Power to Influence People (12), had nothing to do with chemistry. I think there were only four books that I wrote in chemistry——Challenge of Chemistry (4), Microcrystal Polymer Science (10), Synthetic Fibers in Papermaking (13), and Mental Drugs: Chemistry's Challenge to Psychotherapy (14).

BOHNING: Yes, I wanted to talk to you about those too. But before we do, and still working in the same time period, the late 1950s and early 1960s, you wrote The Fundamentals of High Polymers (15), which you've just mentioned that you're going to be doing a second edition of. Did you approach Reinhold on doing that?

BATTISTA: No. Professor [Herman F.] Mark recommended to McGraw-Hill that they get me to write this, because he felt this was something of great importance. McGraw-Hill came to me on that. Professor Mark also has recommended me as an author for the revised second edition, and of course he was responsible for Wiley's series. Most of these publishers look to someone like Dr. Mark to tell them that there's a new science emerging, so they can get in on the ground floor. I'm sure he gets properly paid for that.

BOHNING: I guess I'm actually confusing two things, because that is the Microcrystal Polymer Science, but earlier you wrote Fundamentals of High Polymers.

BATTISTA: Oh, for Reinhold.

BOHNING: Yes.

BATTISTA: I forgot all about that. I'm sorry. An editor by the name of Dr. [Gessner G.] Hawley, who was at Reinhold——he's not living now——wrote Hawley's Dictionary of Science, or something like that (16). He approached me to write Fundamentals of High Polymers mainly because of some papers I was publishing at the ACS meetings. I forgot about it. I've maybe got one copy only. It's a little outdated because the whole knowledge of polymer science, including my own knowledge, has changed tremendously.

BOHNING: Well, then we get to The Challenge of Chemistry (4). That's an unusual book and an interesting book.

BATTISTA: This book was published by Holt, Reinhart, and Winston. It was initiated by me. I tried several publishers, until a Holt, Reinhart, and Winston editor did it. The reason I did it was, at this stage in my career in 1958 and 1959, I was an extremely prolific writer in many national magazines. My writings brought in much more income than my American Viscose salary. I had written so many articles on chemistry for the public which led to the Grady Award, which was a complete surprise to me. I don't think any other chemist has ever received the Grady Award. It's usually editors of big magazines. It came as an absolute surprise. I learned later that it was through the initiative of Dick Moore, who was chairman——he used to be a sort of a right-hand man to Peter Grace and he's retired——that my nomination was at least prepared. But at this period of my career, I was very active writing, and I've slowed down a bit since.

But I really love chemistry and I felt that this book could trigger something, like Paul de Kruif's books, if I could make it readable enough, and sort of a human interest approach, and exciting enough that if it got on the shelves in high schools, it might lead a few people into the profession. But I took the initiative on writing this book and getting the contract. I haven't read it in a long time, but I think it's quite readable. This book was a winner and went into eight printings.

BOHNING: I was looking at it and it's an very interesting book, especially for that time period. This may be a little aside, but this might be a good point for me to ask this question. You commented about all of the things you've written that are non-technical, and I want to come back to that later. Here you're talking about this particular book. You had four or five written in a three year period. How rapidly do you write? It must come easy to you to accomplish as much writing as you do.

BATTISTA: It's a good question. Writing comes in a mood cycle. Sometimes you can sit down and you can't write a word, but there are other times that it just flows. It's like opening a spigot, and then shutting it; you never know how to turn it on or off! You've got to wait for that mood. Sometimes on a Sunday night I sit down and I can't write a single Quotoon. At other times, they just gush out. I wish we knew the quantitative answer. That would be a good research project for someone to focus on.

BOHNING: I've had similar experiences; not on your level of volume, but similar experiences.

BATTISTA: I'm sure you have.

BOHNING: The first paragraph is always the toughest one.

BATTISTA: A perfect conclusion!

BOHNING: One other thing before we leave American Viscose and get to the FMC period. I think you had a number of different titles while you were with American Viscose, but I wasn't clear what they were or what dates they may have changed. I have, for example, that you were assistant director of corporate research from 1961 to 1963, which would have been the end of that.

BATTISTA: That was when Avicel was being developed. Before that I was just a research chemist at first, and then I think they made me a senior research chemist before I became assistant director of corporate research.

BOHNING: As you've described it, and if I may use the term, you certainly sound like somewhat of a maverick in the typical industrial setting.

BATTISTA: Oh, definitely. I tried to be politically observant to that. If Dr. Cudd hadn't told Dr. Lothrop, "Now, wait a minute. You're telling me this man on his own initiative is doing all this work on his own time. We're not going to fire him. We don't have anybody who does things like that. You have to kick them in the pants to do things." So if Dr. Cudd hadn't intervened on my behalf, I don't think Avicel would be on the market worldwide. Thousands of jobs wouldn't have been created. The same thing goes for the other important invention that we'll get to, Avitene Hemostat. That's even more exciting in terms of its humanitarian values.

I'm a great believer in an Italian economist by the name of Pareto. You may know of Pareto's Law.

BOHNING: No, I'm afraid I don't.

BATTISTA: Valifredu Pareto (1848 to 1923) was an economist, but I've adapted his law of economy as a general law. He wrote in 1906 in Italy that in the field of economics, "over a period of fifty years, or a lifetime, three to six critical events occur that determine in advance the future of the world economy."

The accidental invitation of being invited to give a lecture

in Texas on Avitene Hemostat was an accidental, unpredictable event. It certainly changed my whole life completely.

So Pareto's Law said that in your lifetime and mine——I'm saying this; he said it for economics, but I believe it's a more universal law than he thought——in principle, there are three to six events. Who your parents are. You and I didn't ask to be born. That's a critical event. Nobody got our permission to be born in advance! Whom you marry, what jobs you take, et cetera, are critical human events. But these events occur unexpectedly, uncontrollably. The important thing is to recognize them and do something about them.

Most people ignore Pareto events and therefore, they either run into very serious trouble financially, or they're failures because they're on the wrong track. To me, the most valuable quality that anybody can discipline themselves to is this: never think you know it all and keep an open mind when others say something that rubs you wrong. They might be absolutely right.

Now, I want to interject here something that has made my Institute unique. When I hire a person, if that person in the interview says as the first thing, "What are my fringe benefits? How much money am I going to make?" the interview stops. If the person says to me, "That's exciting. Tell me more about what you're doing here. This is so exciting," he's got a chance. I have a contract deliberately with every employee, whether they're technicians, or professionals, or secretaries, and I don't think this exists anywhere else on this planet. The contract goes back to my comment to Pat Smith. I told her what she was going to get, and she believed me. And I was wrong. So, since then I have tried to discipline myself; I tell these people, "Look, if I'm ever foolish enough to tell you ahead of time what you're going to get when I suggest something, and you can experimentally prove me wrong, I will handwrite you a one thousand dollar bonus check within five minutes!" Where in the world will you find that? Now, I did that deliberately to let these people know that they shouldn't look on me as being infallible and they shouldn't be afraid to ask for their thousand dollars. I learned my lesson with Pat, and I haven't had to give out a thousand dollars yet, but I will if I let down my guard!

BOHNING: That's fascinating. Let me just review a few other things that caught my eye. There was one thing that I did want to talk about, and that is the book on mental drugs (14), which was also published in 1960, so there is another one in that time period. I was very fascinated by your original premise in that book back in 1960 because I've had, through some of my own personal experience, without any scientific basis, similar feelings about what you've discussed there. What was the origin of that book? It's pretty far afield from some of the other

things that you were doing at the time.

BATTISTA: The origin of that book arose from my being a maverick, questioning the efficacy of a couch to cure a chemical error in the body. I felt that this was almost a travesty of that profession, in charging very high fees for rather ineffective or transitory treatment. I believe, and have since I was a young man, that the human being is a chemical factory. We are what our chemistry makes us and for me to talk to you requires at least a hundred thousand chemical reactions in the neurons in my brain. Most people don't know this, so they grab on every little thing.

I know a psychologist, Dr. Komechak. She's got a steady stream of patients, at a hundred dollars an hour, just talk to her——husbands and wives, workmen, all kinds of people. But the science of psychology isn't quantitative. The other motivation was that I felt so sorry, having visited a mental institution way back to see in those years people chained to their beds and the shock waves they would give them. These people would go into convulsions, and that really said now wait a minute, it's time to say that chemistry is important. Now, let me tell you the truth on this. This is what gets me so mad.

Chilton is a very, very responsible publishing company in the Philadelphia area. They're big publishers on motor books. When my book was published, it started to get a lot of reviews. Hundreds of psychologists and psychiatrists wrote in to Chilton Company and said that if they published a second edition of that book, they would never buy another Chilton book! That's how prejudiced even professionals can be. And it was never reprinted. Chilton just couldn't take the risk. But if you read that today, it's exactly what these same people are doing. They're prescribing drugs, chemistry, and our mental institutions are pretty empty, only because of chemistry, mental drugs. But it shows you how prejudiced some religions professionals, scientists, and politicians can be. Anything that's a threat to their security, they just raise their fur. The publisher has to bow to it because he depends on selling the books for his living. That's what happened in the case of Mental Drugs: Chemistry's Challenge to Psychotherapy.

BOHNING: You approached them on that book, then.

BATTISTA: Yes, and a lot of other publishers turned the offer down.

BOHNING: There was one other thing also in this time period. It

had to do with a patent you had on reconstituted tobacco products (17).

BATTISTA: That never got off the ground. It was still a good idea. What we were talking about there was to take hydroxypropylmethylcellulose as a binder and formulate in into a tobacco leaf. In the hydroxypropylmethylcellulose, we would put a certain level of nicotine. It isn't nicotine that causes lung cancer, it's the benzpyrenes and the other carcinogens that a burning cigarette releases; the nicotine is, however, addictive. The idea was to make a cigarette or a pipe tobacco that could eliminate the benzpyrenes in the smoking, but permit the kick of the nicotine to get in, but nothing was ever done to commercialize this particular patent.

BOHNING: I've noticed that there are attempts to do that kind of thing.

BATTISTA: There are attempts to do that. As a matter of fact, one of the latest approaches I have tried supersedes that. I never smoked in my life. I have a pipe with batting in it, but I never smoked tobacco.

I did once, as a little boy. The only time I ever got a spanking was when a group of other little boys and I made some corn silk cigarettes. I believe I was only seven at the time. We got under the little veranda of our little home. My father was coming home from work, and he saw smoke coming out from under the house and he thought the house was ready to burn down. Well, when he extracted me and several others from under the veranda, I got a paddling. I've never touched tobacco or corn silk ever since.

BOHNING: In 1963 you moved to Princeton.

BATTISTA: Yes. We lived in Buck's County and I drove to Princeton.

BOHNING: Okay. You didn't change your residence then; you commuted.

BATTISTA: No, we sold our house in Drexel Hill and moved to a new house in Yardley, Pennsylvania.

BOHNING: Oh, you did.

BATTISTA: Oh, yes. We had a lovely home in Drexel Hill. We enjoyed Buck's County, however, very much.

BOHNING: I noticed that there are a number of patents which came out at that time that showed the application of microcrystalline cellulose to pharmaceutical preparations and cosmetics and foods and so on. How rapidly did the research effort expand on this?

BATTISTA: Slowly. The fundamental discovery was 1955 and here again, a Pareto event. Nobody supported that product at first except Dr. Herschel H. Cudd. Dr. [Frank H.] Riechel, the biggest stockholder of American Viscose, had a single son. His son, Frank, went to Yale and got a Ph.D. in organic chemistry. He told his only son to go around the company and talk to anybody he wanted to in research to keep his eyes open for anything new that he might get a handle on to help his career. Frank spent a few hours with me and told his father, "You've got to see what's going on here. This stuff is terrific." Drs. Riechel Senior and Junior met with me around 1960, and I showed samples of the products I had been developing since the April 20, 1955 accidental discovery.

What happened was that Dr. Frank H. Riechel, Jr. was appointed director of the Avicel department, and I then reported to Dr. Riechel, Jr. Frank rode the crest of Avicel Microcrystalline Cellulose, and did it well.

The Riechels were parsimonious with money, to say the least. Frank Riechel would take me to lunch in Chester, Pennsylvania; back in those days, it was one penny for five minutes on the parking meter. He would say, "Look Landy, I think we can have lunch in thirty minutes." So he would put six pennies in the meter, or whatever. He wouldn't pay for a whole hour. And he'd watch it so we got out in time.

[END OF TAPE, SIDE 5]

BOHNING: What changes occurred when FMC took over?

BATTISTA: Fortunately, the man I reported to originally was a man by the name of Sherman Kennedy Reed. He, like Dr. Cudd, sort of shielded me. He was director of research of the whole FMC Center in Princeton, New Jersey. He became a vice president, one of the most wonderful persons I've ever known. He's now retired

in Florida and I don't know how he's doing. But Sherm Reed believed in polymer microcrystals. Most members of management didn't. He gave me every possible support.

If it wasn't for Sherm Reed's support——and he reported to Oscar Johnson at the time——then probably my most significant humanitarian contribution would never have surfaced: Avitene Microcrystalline Collagen. That was the first product that I started work on at Princeton and then followed microcrystals of nylon and polyester and polyolefins. I directed all that work under Dr. Reed's supervision.

With microcrystalline collagen, I was taking the corium of beef hides. If you look at a steer, you've got the hairline, which is leather, and in between it is white collagen, and below it is the flesh. Many workmen's boots, which have thick soles, are made out of that thick collagen because they don't want to use the more valuable leather hide.

Collagen is not very crystalline, so that the crystals are not nearly as perfect as cellulose or nylon, but they still have integrity. My idea was to make pure gelatin from the collagen, in such a way that the molecular weight and the viscosity of the gelatin would be quite different from the gelatin used in photographic emulsions.

I had this jar of this white powder sitting on my desk. On a September Monday morning in 1963, I had cut my cheek fairly deeply with a razor blade in my hurry to get to work. I happened to walk into my office, and I saw this jar of white material. The thought occurred to me that here's another Pareto event. I had looked at that stuff a hundred times, but on this morning because my cheek was still bleeding, I made a minisecond connection. My face is largely collagen, and the sample on my desk was pure collagen; what's going to happen if I put some on the bleeding cut?

I took a little of the white collagen fibers and put in on. It didn't sting. That interested me because the pH is about six. So I went to the men's room and washed it off with hot water. Normally if you do that, the bleeding will restart, but what I saw was a big clot glued to the cut and it wouldn't bleed even with repeated applications of warm water.

I went to the office of Dr. Oscar Johnson, Vice President of R&D, all excited, and I said, "Oscar, this is far more valuable than gelatin emulsion. This is a life-saving." He said, "So what? We're not in the pharmaceutical business." But Sherm Reed, the Director of R&D, backed me up because he's the one who controlled my budget. Dr. Reed gave me enough budget money to go to all the major pharmaceutical companies in the hope that one of them might license the patents filed on this hemostat. I hit a

dead end until Mr. Bill Connor through David Ashburn, whose call brought me to Texas, or I wouldn't be here. This was another rare Pareto event.

But more importantly, Avicel was pretty much a confirmed worldwide business success in terms of making a lot of profit. Avitene: I could show you stories of a three-year-old kid falling off of a chair and hitting a rocker runner and suffering a bleeding spleen. My friend Dr. Charles Baxter did much of the early clinical work and was head of Parkland Hospital in Dallas. He operated on the youngster, packed the bleeding spleen with some Avitene, and sewed him up. Ordinarily he would have to remove that baby's spleen and he'd be an immunological imbecile for life, probably with a life-span of ten to twenty years at best. Bleeding spleens and pancreases and livers have been saved by Avitene throughout the world.

Dr. Baxter called me one day and said, "I thought you'd like to know this. A man came in here with a forty-five caliber bullet wound through his liver, about an inch in diameter." He said it was just cut through. "I tried to stop the bleeding with towels and everything." At the time the only form of Avitene was a powder form and he didn't know how he could pack it in there. So he got an idea. He cut off the end of a normal plastic syringe, packed it with Avitene, and then fed it into the big hole of the patient's liver after he had already used seventy pints of blood to try to save the guy's life. He said, "Landy, as soon as I plugged it with the syringe, the bleeding stopped. That man's going to live. That liver will heal. The Avitene will be absorbed and you've just saved another life."

I could tell you dozens and dozens of other stories. A young kid on a motorcycle lost control and rammed into a wire fence in Peoria, Illinois. This occurred while I was still at Alcon. A surgeon in the Peoria hospital called and explained the seriousness of the internal bleeding, and asked, "Where can we get this Avitene material? This kid's whole innards are bleeding." The only place at the time that had it was a Chicago hospital, thirty miles or more away. They called the State Troopers and they motorcycled a pound or so, or whatever it was, and that kid's life was saved. He would have died from internal bleeding, without question! The surgical potential was still under FDA control at that time. Now they're using it in open heart surgery to stop bleeding at the connection. They're using it everywhere. Originally, it was a prescription drug. It didn't have to be, but the Alcon management wanted to go all the way to meet all FDA requirements. Alcon just sold the marketing rights for Avitene hemostat to Medchem in Connecticut, who have successfully marketed Avitene to the surgical markets in the USA and Europe, at least. It's available throughout the world in major hospitals. Once again, though, I nearly got fired because of my persistence during a ten-year struggle.

BOHNING: You shared some of that with me yesterday, but off the record. Could you go back and talk about the transition from Princeton to Fort Worth and how Avitene led to your moving here.

BATTISTA: I'd like to tell you that because it's a nice story. It's a very nice story. I told you about the Chairman and CEO of FMC Corporation, Mr. James Hait, saying: "We need you down here in two weeks, and we'll move your family down" and all that. And I told you about Mr. Connor's very clever business dealings.

I came down here and was given absolutely royal treatment. They appointed me vice president for science and technology. They formed this 50/50 company, Avicon, Inc. They gave me a lovely office, a secretary, and just everything I wanted. They put me up in the Fort Worth Club for weeks at no expense. They brought Helen and Elizabeth Ann down and fussed over them. They were just outstandingly courteous people. Most chemical companies are not very well known for their social courtesy and over-generous rewards. They would let me go home about every month and pay all my expenses. Then Helen came down and we found the lovely house that we are in and we love it. It's beautiful, right in the boulevard here in the nicest part. I bought it from a vice president of Alcon, who was retiring. We paid seventy three thousand dollars for a corner, two-story colonial with forty four hundred square feet in 1971. The house is worth over four hundred thousand dollars today. You couldn't ask for a better place to live, and the Colonial Country Club, which we were accepted for membership in 1971, is a big asset. They treated me very, very well at Alcon. I told you how my salary was treated and how Mr. Connor gave me blocks of Alcon stock. I didn't ask for it. They did it voluntarily.

By 1974, early 1974, the clinical work on Avitene Hemostat included six thousand clinical tests. We mailed one hundred and eighty-six three-ring binders to the FDA as proof of the safety and efficacy required under the NDA. This expense ran into many millions of dollars. The prompt FDA approval of Avitene Hemostat required natural, pure collagen, the purest form of collagen known in the world. They use many hundreds of gallons of two hundred proof alcohol for every pound of Avitene Hemostat that's made, to be sure that there's absolutely no impurities, to prevent potential immunological shock reactions resulting from any residual impurities. Avitene Hemostat originally sold for $26 million a ton, $13,500 a pound, $32 a gram. One gram often is enough to do an operation. I do not know the current price of Avitene Hemostat, but it is used in major hospital operating rooms worldwide.

BOHNING: Is the process very complicated for making it?

BATTISTA: Yes, because of the FDA purity requirements only for internal surgery uses. I've developed a gelatin-based hemostat for external uses. My original dream in recent years was to be able to put a low-cost hemostat bandage in every glove compartment, every train, every airplane, every home medicine cabinet, et cetera, because fifty percent of all mortalities from car accidents are caused by the loss of blood before they can get injured victims to the hospital in time; they die at the site or en route to an emergency room because of excess loss of blood en route.

BOHNING: Again, I'm looking at the period before you came down here. You came here in 1971, is that correct?

BATTISTA: That's when I moved down, yes.

BOHNING: In addition to continuing the work on microcrystalline polyesters, nylons, and amylose, you also had prosthetic devices.

BATTISTA: Yes, before I started on my own institute, we were making synthetic bone and all kinds of wound and burn dressings out of collagen and gelatin, but it never took off because it was too expensive to get approval by the FDA. Now we're doing it using my own gelatin formulas. Gelatin is not collagen, even though it is so-called, often incorrectly. Collagen must have the triple helix called tropocollagen, unlike DNA, which is a double helix. It's quite unreactive as such. I spent my first seventeen years in early retirement working on an effective low-cost gelatin hemostat for external use. For example, you can make a contact lens out of my special modified pigskin gelatin because it has the refractive index of water. You can't make a contact lens out of collagen. It won't dissolve in its natural state.

BOHNING: You also wrote a whole series of articles for Chemistry magazine and The Chemist in 1969 (18). Did you submit them or were you approached to do them?

BATTISTA: Many of my published articles on chemistry were by invitation. However, since I have authored over one thousand articles largely relating to chemistry, I would estimate that seventy-five percent of my published articles were by invitation following queries on my part.

Incidentally, do you remember Walter Murphy, the editor of Chemical & Engineering News for many years?

BOHNING: I know the name.

BOHNING: When Walter Murphy was editor, almost every issue carried three of my quotoons. If you go back to that period, they're all about chemists. But then when the new editor came in, he thought they weren't appropriate, so he dropped them. Walter sort of took me in hand and got me to write. I don't know whether he was editor of Chemistry or not; I can't recall. I was writing these kinds of articles for popular magazines ever since I graduated from McGill University in 1940.

BOHNING: Maybe Ted Benfy was editor then.

BATTISTA: I think he was, yes. Maybe he's the one I was dealing with.

BOHNING: I'll have to ask him, because he's at the Beckman Center now.

BATTISTA: Oh, he is?

BOHNING: Yes, he's our editor.

BATTISTA: Is he really? Well, maybe it was he who got me to write those. As I recall, I did it gratis. There was no payment.

BOHNING: We talked about your receiving the Grady Medal in 1973; that's still in the Avicon days. I wanted to ask you about your talk when you received the Grady Medal because it was then that you talked about the National Olympiad of Science. I wanted to ask you for more information about that and what developed from that.

BATTISTA: Boy, you've really asked a good question. It's the real, most important priority of my whole life. Anticipating that, I want to read from the book, Research for Profits (19), so I won't misread what actually was said or written. When I learned that I was getting the Grady Award, I was overwhelmed

because it was the last thing I expected as a chemist. I had attended many Grady Award presentations, so I considered it a very great tribute to have been selected. These ACS awards are very prestigious because of the rigidity of the selection rules. As of this writing, I have received at least four national ACS Awards.

My Grady Award lecture was delivered at the Fairmount Hotel in Dallas. Dallas was where the national meeting was held in April of 1973. It was very well attended, and among the audience was Nobel Prize winner Harold Urey. He would always go around and sit in on things. He was a great person.

I got the idea for "Olympiads of Science" coming back to Forth Worth on a plane, from either New York or Philadelphia, because I was wondering what I was going to talk about at the Grady Award. This idea came to me at 37,000 feet. I was pushing myself to pick something that would be worthy of the award.

Very briefly, what happened, Jim, was that the following headline sort of went by my brain. The thought was, we have Olympiads of sports, and we spend hundreds of millions of dollars on them. There's nothing wrong with them. I'm all for it. But what we need is something more than just pleasurable physical prowess. So the thought occurred to me: we could have Olympiads of Brain Power, not just physical power. The brain is the most valuable asset on this planet. It's being completely neglected by over-indulgence in leisure activities.

So I surmised, "wouldn't it be wonderful?" The dream was this——the details would have to be worked out——to have something that paralleled sports, maybe every four years. We would bring together competition for brain power in each field of discipline and reward the winners by giving them, if they wanted, an institute like mine with a low budget and complete freedom. I have estimated that for only one hour, or maybe one hour and a half, of the budget of the United States of America——I'm talking twenty-four hours a day——that it comes to about three hundred million dollars. Three hundred million dollars. With that, you could fund anywhere in the world, one thousand institutes like mine, patterned on this philosophy. With eliminating burdensome paperwork that can smother creativity in the vast majority of commercial and U.S. Government R&D facilities, I dreamed, would come so many new products, new GM's, and new silicon valleys, unlimited! My dream was and still is that through Olympiads of Science or Knowledge, new product innovations will be developed.

The dream is that we could create jobs with a paycheck for every human being on this planet, whether they're in Africa or India or Fort Worth, so that they would have, like my father, the great dignity of earning a check, paying his taxes, feeding his children; without begging for it, but earning it. I said, and I

still say, that until that is reached——and it may be thousands of years away——you will never have peace on this planet. All the religion in the world, all the science in the world, will not correct the fundamental defect of the human race. They're not using their heads to take care of their bodies or livelihoods.

There's no reason why this can't occur. I've seen what happened with Avicel Microcrystalline Cellulose, a simple little invention. Not very important, but it did provide thousands of jobs. Conservatively, I believe that with this dream of putting brainpower to work by initiating institutes like mine having unrestricted intellectual freedom, the world would be a much happier place for all mankind. We would have enough taxable income money to take care of the sick, over and above. Now we've got billions of people who are lucky to make twenty cents a day, under extremely severe control. But that's thousands of years away.

After my talk, Harold Urey came up to me. Incidentally, he had spent the prior evening visiting over a cocktail or so with Helen and me and Elizabeth Ann; we loved the man. He was such a wonderful person.

"The award lecture was a plea to create World Olympiads of Knowledge. These were projected as cerebral competitions to prove the overpowering efficacy of brain-power versus brawn-power..."

[END OF TAPE, SIDE 6]

BATTISTA: "...to solve the problems besetting mankind. The late Nobel Laureate Harold C. Urey extended this inspiring challenge to me after hearing my Grady Award lecture. Here is his quote. 'Don't let anyone or anything ever stop you from carrying the torch to create the magnificent dream of your Grady lecture.' Later, an equally prominent peer, Professor Herman Mark, dean of polymer chemistry world-wide, wrote this, and I have this in letter form. 'A few days ago, I received a booklet on the Olympiad of Knowledge. What a beautiful document and what an excellent idea. What you are doing now goes far beyond into a new dimension for the well-being and benefit of mankind. There can be no doubt in my mind that your ideas will prevail, and I am entirely at your disposal if you feel that I can be of any help'" (19). Now that letter is in my formal file.

These are two people who saw what I was trying to communicate. Most didn't. I have made a substantial income from my institute. For a couple of years, my consulting rewards were over seventy thousand dollars alone, with two people. People were paying me a minimum consulting fee of ten thousand dollars a

month under contract for three years, with royalties on products. It has decreased now because of the recession, but I still have many clients. What I have done is published Knowledge Magazine. I think you may have a copy?

BOHNING: No, we don't.

BATTISTA: I sure want you to have a copy. I'd like to put you on our subscription list. I've spent several hundred thousand dollars of my consulting income since 1976. I have a registered trademark on the magazine. I have to write it, mostly. We get such miserable submissions that don't have the quality. It's normally published four times a year.

Now, here's the sad state of affairs. I think you have a copy of that. That was my dream that didn't come true. That was my hope to create in 1990 the first crude Olympiad of Knowledge. That's a whole application form and it tells all about it (20). All right. Now here's what happened. The reason I proceeded was the following. You've probably heard of W. Clement Stone? He is so taken by this that he has come here to this institute three times. He's about eighty-nine or ninety. He's an incredible person. He's very short, about five foot one or two. He created what's now called Aon. It used to be the Combined Insurance Company of America. Twenty-six insurance companies with seven billion dollars in assets. He became so taken by this that he said, "You can put me down as the advisory board chairman for the Olympiad of Knowledge. I want you to use my name in any way you can. This is a great dream."

As our relationship developed, he said, "Landy, you go ahead. I think that I can commit to provide up front two million dollars to help fund this for you for the first time." Because that's what I told him I thought it would be, minimum, to do it right. So I went ahead and invested in a lot of literature and promotional material. Now here's the sad story. This began in 1976. Despite all the money I have spent and the articles that people wrote, I have fifty paid U.S. subscribers. Fifty. It doesn't even cover anything. No interest whatsoever. Even science teachers won't buy the concept. They're too ingrained in their own interest. They can't do what Mark and Harold Urey did: see the future. Certainly I feel that way.

I paid six thousand dollars for a full page in London's New Scientist to invite interest. We got hundreds, hundreds of forms back with tremendous ideas to be in competition and to be screened, but they all came from third world countries begging to send them complimentary copies of Knowledge Magazine. They were begging, "Please, Knowledge Magazine is so wonderful. It's manna from heaven, but we have no money. We can't get any U.S. funds

to send out of the country." This came from every country in the world, Russia, the whole European continent, Africa, Nigeria. We received mail that came in a foot high on mail deliveries. I'm trying to give them free subscriptions, but I'm running out of money to do so. They have no money at all, but they know the value of Knowledge, and the Western world as a whole doesn't. I was heartbroken to see the complete indifference of many of my U.S. friends. They think it's a wild idea, I guess, or something. I don't know, and I cannot understand why so many Americans will spend billions a year for passing entertainment and ignore the greatest assets of the human being locked inside the brain.

I had to go to Denver to get the award for applied polymer chemistry from the ACS, sponsored by the Phillips Petroleum Company, and I told Clem Stone that I would be able to stop in Chicago en route to Denver and bring ourselves up to date. He reserved a room in the Admiral's Club and his chauffeur brought him up to our private room. He had tears in his eyes. "Landy," he said, "I'm going to have to renege on my promise. What has happened is I guaranteed loans of up to $2 billion to my son-in-law." His son-in-law was a physician who had formed a corporation with the famous heart surgeon, Dr. [Michael E.] Debakey. His son-in-law was not a professional businessman, but his father-in-law supported him, mainly because he had married his only daughter.

The idea was that they would build elite structures near famous universities' medical schools. The idea was that these centers would be like Mayo Clinics in different big cities where they have prominent physicians and surgeons. What they failed to realize is that the number of people who can afford a Dr. DeBakey is very low to support such a worldwide undertaking. They built many of these outpatient buildings. They committed billions of dollars around the world, and Clem Stone had guaranteed to back them up with major financial support.

He said, "Landy, it's a disaster. It's devastating my resources. I have to come good on those notes. I just can't see under these conditions risking even two million dollars to help your dream get started." So that just fell through, and I've been struggling to keep it going. I'm going to be writing more and more about it.

Despite my great disappointment of a promise I had counted on, I still send a hundred copies of every issue via the Napoleon Hill Foundation, which is run by Clem Stone. The Napoleon Hill Foundation feeds positive thinking to many eighteen-year-old prisoners who are in jail. They made a mistake. They got mad and they got into jail. You should see the mail I get from such inmates; it includes mostly confessions of people having made a terrible mistake. Again, the prisoners have no money to pay for

the subscriptions. Our advertising has never brought in any benefits.

I have sent five hundred copies to the Presidential Awardees for the teachers. I haven't received one reply, not a single answer from one of the five hundred personalized letters to teachers who have received a Presidential Award for teaching in high school science. Not a single one! And I can tell you most of my paid subscribers are friends of mine. They're fine, but they're not the people we want to reach. So there's where we are. I don't know where we're going to go. I'm not going to give the idea up, but I can't see it happening in my lifetime. A thousand years from now, maybe, but I thought Harold Urey's comments, and Mark's, were so comforting because here were two people who realize the importance of this Pareto event. So that's the story on the Olympiads.

BOHNING: The year after you received the Grady Medal you took early retirement. Is that right?

BATTISTA: Yes. It was officially July 1, 1974, and the reason I retired was the following. Mr. Conner called me in. I had a five-year contract, renewable, very generous. He said, "Now Landy, you know you've got so many other wonderful ideas, but we've got to get some of our money back from Avitene before we take the next one. That's going to take a few years. We'd be glad to renew your contract and give you some more stock options. You can keep your Cadillac and your office. All we want you to do is sit in your office and read the literature. When we need you, we'll call on you. Your salary will remain fixed."

I said, "Gee, Bill, I would vegetate under those conditions. I just think, if you don't mind, that I'd like to take early retirement at fifty-seven and start my own research institute. It's something I've always wanted to do. I have certain ideas about how to create an atmosphere that would accentuate the efficiency of creativity." He said, "That's fine. We'll help you set up your lab. We'll keep you as a consultant for a while and we'll back you up in any way we can."

However, I took the initiative to resign. I had fifteen thousand shares of Alcon stock, but it was 1974. I had the option at seventeen dollars, but the stock was down to eleven dollars when I retired. I only had three months to exercise the options. I lost them all. Three years later, Nestle bought out Alcon and paid forty-six dollars for every option and every share. They wanted one hundred percent ownership. So I lost fifteen thousand times forty-six, if I hadn't had to sell my stock. But that's fine. That's the price you pay for doing what you want. No regrets.

My seventeen years here have been heaven. I tell that to everybody who comes here. I don't know whether there's a heaven or not, but I'm telling you, I'm happy to say that I'm living it here and now as a real thing. If it's there, it's a bonus. If it isn't there, I haven't missed anything. I only wish that many, many other people could have the opportunity that I have exercised here through my dream of creating World Olympiad of Knowledge Institutes. These "Brainpower Olympiads" could change this planet, and every human being on it! The big companies are so uncreative. They have become so burdened with fringe benefits and taxes and high salaries. Many of them are now more concerned with paying high taxes and overloaded payrolls than they are about making new products. It's sad. So that's why the Olympiads of Knowledge, first proffered on April 9, 1973, remains the focus of my prototype, proven, Research Institute.

BOHNING: Have you been in this location since 1974?

BATTISTA: No. I bought this building in April 1983. I was located about a half a mile from here in the Wedgewood shopping center with very modest offices. It was nothing like this. This building happened to become available. It's 14,000 square feet. My activities cover about half of it. Some of it is rented out, but it isn't a hundred percent. But we're making it because of my consulting and my writing. There's still a great demand on my writing, but it's a question. There's only so many hours in a day. I have some new consulting licensing agreements in the picture that are very encouraging. The Saudia group that was here yesterday, I feel sure will sign a consulting licensing retainer. Of course, Microtech Industries, which is going to pioneer all of the new polymer microcrystals, that's the gentleman who called me this morning that I have to talk to. That's a Canadian company that is expanding worldwide.

BOHNING: When you started this in 1974, there were two different names, as I see it. The Research Services Corporation, which is your consulting work. But then you have The Research Institute, and I would like to go over some of the things that you've done here during that time. How many people did you have, or have you had working at the institute over this period of time?

BATTISTA: Over the past eight years, until this summer, I've always had two professionals and two technicians. Deliberately no more than that. I'll never have more than that. I try to pick the people in the most careful way. Two of them have gone on for doctorate degrees. One had a B.S. degree in zoology from the University of Texas and he couldn't get into graduate school for chemistry. That was David Harris. After two and a half

years of his working with me, I wrote to the chairman of the department of chemistry at the University of Dallas in Texas. I told him that this young man had a brilliant mind, and that he had done such fine work for me for two and a half years, it should certainly, in my opinion, replace any deficiencies of the official curriculum for acceptance. And by golly, the chairman of the department agreed, and David earned his Ph.D. in Biochemistry.

Jerry Taylor was a Captain retired from the Marine Corps. He's the man who did the most to help make my artificial ivory. It was eleven or twelve years ago that Jerry made these two man-made decorative ornaments: a Bolo Tie and a lapel pin. I wear them practically every day. He went on, believe it or not, to become a chiropractor, to get a doctor's degree as a chiropractor. Howard Callahan was a ministerial student at the theological seminary, a chemical engineer. I got him a salaried job at twice what I could pay him. At the time, I was a director of Carrington Laboratories and an opening occurred and I got him the job. Scott Lee, who was with me six and a half years, had a degree in chemistry and was a most competent member of my staff.

Right now, I'm down to two technicians and I'm phasing out because I want to have more time to write and lecture. I've now got a stable of over fifty-five new products that have great potential for creating thousands of jobs!

I might point out that I am getting away from filing patents because of their great expense. Instead, I've just filed about fifteen trademarks. A trademark is more valuable than a patent in many respects. I'm going to be putting out a brochure, but here's the table of contents of more consumer-oriented inventions that I'd like to give you, and I'll see that you get the whole package, with pictures and everything when they are available. Everything here, except Avicel and Avitene, are brand new inventions that I think have immediate commercial potential.

I have deliberately shifted gears to go to consumer products with no FDA costly delays. The minute you must meet costly FDA regulations, you must have extensive monetary backing or your inventory will never reach the marketplace. A big company cannot afford to take on more than one or two FDA-controlled products, let alone a small company. The brochure that's going to be coming out will have detailed descriptions of these inventions plus more appropriate photographs, and this will bring many new clients to my Institute.

BOHNING: This will be excellent because I was going to ask you about some of these. There's quite a variety of products on here. You have disposable contact lenses and artificial ivory, for example. Those are about as far apart as you can get.

BATTISTA: And metallic concrete, and other super concrete formulas! This is the idea of the institute. If we feel like it, we'll work on concrete the morning, and then on contact lenses in the afternoon. It's the motivation of the moment that we encourage maximum freedom of the brain. This is the key to the extent of innovation here. It's just like writing. Write when the mood's there. If an idea gets you excited this morning, go do it, reduce it to practice, enter it in the notebooks, and then go back to what you were doing before, if you still want to. In most very big companies or government R&D Laboratories, this kind of unbridled brainpower is extremely rare and unlikely.

BOHNING: What is your budget?

BATTISTA: About three hundred thousand dollars a year.

BOHNING: It's amazing. I also noticed that you have three R-100 awards.

BATTISTA: Oh, yes, that was way back. I know that many of these things would have qualified, but I've never entered the more recent competitions. I did that while I was at FMC. You have to put up a booth, and it's expensive. They're not as important as a ten-thousand-a-month consulting contract.

I can tell you that money——not medals——is the surest resource [laughter] with which to pay your bills and your payroll.

BOHNING: You were also president of the American Institute of Chemists. You've been very active in the AIC for a long time. Are there any particular experiences there that were important?

BATTISTA: Very good question. Number one, they gave me the Chemical Pioneer Award in 1969, at Saddlebrook, New Jersey. The man behind it was Herman Mark. Unless your peers will take the initiative, no one knows what you've done. But Herman Mark and Harold Urey, and people like them——and they are rare——do what they can to lend their prestige to bring small "diamonds" out of the rough to pinpoint the work by members of their profession that may otherwise never be recognized. You can't do it yourself. For instance, I didn't ask to be interviewed. You invited me. It's only because you and your associates said, "This candidate deserves our attention." You have to depend on other persons with genuine unselfishness to be recognized.

Success seldom comes from excessive self-praise.

BOHNING: You've also written some songs.

BATTISTA: Oh, yes. I wanted to be sure to talk to you about this because I'm a member of ASCAP. I can't play a piano. I don't know the first thing about reading music, but I love easy-listening music. I've now written nine songs. I've put a lot of money into having them professionally prepared. I've received one royalty check so far from ASCAP. It came from Belgium, via ASCAP, for the repetitive use of my song, "Come Along With Me."

This will interest you. A wonderful man, Mr. Renee Grandperret, cofounder with his father, created Essilor of Paris, the biggest producer of spectacles in the world. He licensed my contact lenses over a period of six years and paid me generously. He would come visit me, and I would visit Essilor in the outskirts of Paris. Among the songs, he liked two especially. One was "Fort Worth." The other was "Come Along With Me." I can remember the two of us, hand in hand, walking down the Champs Élysées on our way to a gorgeous French dinner, singing together the two of my songs he knew by heart: "Fort Worth" and "Come Along With Me."

But the song that brought the royalty is "Come Along With Me," a song that I think is the best one, mainly because of the music and the lyrics. I write the lyrics and music on a synchronizer to try to get the tune. I've spent over seventeen thousand dollars having these cassettes made, and they need further improvement. But I've been too busy with more pressing matters. Should I ever retire——which I doubt——I might put on my "earned" ASCAP and try to find a music publisher that might take over the rights to some of my music.

Kemmons Wilson, the founder of Holiday Inn, has come here, and I've served as a consultant to him. He's a remarkable man. He built more than twenty-three thousand Holiday Inns, sold them, and now at seventy-four, he's building "Wilson Worlds" all over the country. He just can't stop doing it.

[END OF TAPE, SIDE 7]

BATTISTA: He listened to a four song cassette. It's called "Come Along With Me." I had to write a Dallas one as well as a Fort Worth one, or I'd get shot. And then the other one is called "Arm's Length." It's easy listening. He listened to "Come Along With Me" and he was dancing all over the office as it was played. He thought it was tremendous. Whether it is or not,

time will tell. But I had given Mr. Grandparret copies of "Forth Worth" and "Come Along With Me." He must have given a copy of "Come Along With Me" and it somehow reached the Belgian restaurant and apparently they played it and ASCAP in there picked it up and I got a royalty of $26.75 for its playing in a Belgian cabaret.

I have worked on all nine songs strictly as a side issue, but I enjoy listening to them occasionally when I'm alone. ASCAP is a great organization, but you have to have your music played publicly to become a member. Brad Wright, a local man who came to do a story on my man-made Ivory, was so pleased with my "Fort Worth" cassette that he played it on Channel 5. So that gave me the commercial playing that I needed. Otherwise I could not have qualified to become a member of ASCAP.

BOHNING: That's very interesting.

BATTISTA: Yes. It's quite a diversity of my professional research and writing careers.

BOHNING: It's fascinating, absolutely fascinating. Let me pose two last questions, one retrospective and one looking ahead. Over your long career in chemistry, what would you say have been the major changes in the discipline of chemistry over the time that you've been active?

BATTISTA: It's hard for me to relate the experience of the past seventeen years with my thirty-some years in corporate life. If corporate life could be made somehow the way my present way of doing chemistry is, it would revolutionize the profession tremendously. The one thing that I've found in the past was that working in a corporate environment, and this includes government activity, and despite people saying it to the contrary, you don't really have the same satisfaction when you walk into your office or your lab that I enjoy, which I didn't have when I was working at FMC. Such things as this. I have my own rest room, for one thing. Even at Alcon, as a vice president, you didn't have any privacy. That's a little plus, not too important.

But the main thing is that I don't have to go to meetings. Most of the people I try to contact are tied up in meetings eighty percent of the day. They're chemists. I don't have that. Furthermore, Bausch & Lomb, for example, one of my big clients——it's the most difficult company. They just sweat blood out of their executives. They put them under so much pressure, and the turnover then gets very high. If their budgets ever go over, they're dead. How are you going to think creatively if you

suddenly realize that you're going to go over your budget and you're going to lose your job! You're worrying more about that than trying to create something new. It's a sin, the wastefulness. I can tell you the wastefulness in the government is even more than in corporate life. We're pouring billions of dollars of wasted money down a rat hole because we're just not using our common sense.

That's why I want to create Olympiads of Knowledge. I want hundreds of institutes patterned on my experimental institute. I can prove that the institutes can be very profitable, but they've got to have the right director. They've got to be flexible enough to adapt the attitude and the environment that we've deliberately created. Otherwise, it's no good. "We're going to set a little group over here." No, they can't be on the same premises. There's so much back-biting and jealousy and being scared of losing your job. We don't have any of that here. We need companies whose vice president will say, "Boy, if you can prove me wrong, I'll give you a bonus in five minutes." We've got to create an environment of no fear of the boss. My God, when a boss in a big corporation, or the president, comes around, there's hysteria. That's awful and it's there. It's in the universities, too. When the head honcho comes around, everybody clicks their heels. So we've got a big problem in the profession of chemistry ahead of us.

The other thing that I find, and I think almost every profession is guilty of, is that there are too many professionals——even with the best credentials——who are comfortable being followers but not innovators. They'll jump on anything good that somebody else publishes and work on that when they should be trying to initiate something new that other people can benefit from. The whole field of biotechnology: my god, there are more graduate students on DNA and antibodies; it's supersaturated.

The other thing is that I'm convinced that what we need are very simple ideas. The simpler, the better. Once you get into the more complicated things, you may have to wait a hundred years to find out the true value or lack of value of a new drug. How many new drugs, like Prozac and other things, have injured millions of people because they got it on the market. They have data that looks good, but every human being is a different chemical factory. That's not good science. That's just good marketing, to make money. So these are some of the things.

I couldn't say these things if I was employed by a corporation. I'd be out the door in a minute. What I like is my freedom to be able say it, and I'm not afraid of being quoted. They can't hurt me. I'm not on their payroll. They need my knowledge, so I have a feeling of independence. Nobody in the world has a greater feeling of independence than I have, and I

won't give it up as long as I live. I only wish I could light a torch for other people to experience this. Gosh. When I get a letter from an eighteen-year-old person in jail for some minor thing, and the fellow admits, "It's terrible. I was wrong. I really made a mistake." But he's still going to have to serve his sentence. Tragic.

BOHNING: Is there anything else you think we should cover?

BATTISTA: Well, just one other thing is, I believe very strongly from my experience in hiring professionals and non-professionals that what the world is really missing is the tremendous potential in young men and women who are called cop-outs. I have taken cop-outs, deliberately, and converted them into very creative people. But a cop-out occurs because they hate the educational bureaucracy. They revolt, like David Harris. Because he had a degree in zoology, he was blocked from going on to do what he wanted, which was biochemistry. How much of this is going on? Somebody should analyze this. They'd save more money, and get the deficit off in no time. We are not in an advanced state of logical reasoning in 1992. I'm afraid it's true all over the world. The solution they're trying to create for them are band-aids. They're not getting to the fundamentals. What I mean by fundamentals is experimental data. I don't believe anything, truly, unless other people can repeat it in other parts of the world independently. That's science. But a hell of a lot of non-science is nonsensical. You can quote me on this, if you want. I really mean this strongly.

I am going to be putting together something I've been planning for many years, and that is a book I want to write called Uphill All The Way. I have had to fight uphill for every success I've achieved. I'll tell you, as president of the American Institute of Chemistry, I admired such people that I had occasion to meet, like Max Tischler and Norman Hackerman. They're wonderful people. But I was at least part of the process of them being recognized.

But, Jim, the politics of a professional organization like the ACS or the AIC is enough to nauseate you. It's absolutely nauseating. That was my biggest problem. I spent thirty thousand dollars a year of my own funds for three years, travelling for AIC and trying to get it straightened out, and I did succeed. When I took over, it was thirty five thousand dollars in the red. When I finished, it was about forty thousand dollars in the black, but that was because I paid all of my own expenses. I could have taken it and put them in more debt. I thought I was trying to help the profession, but there's been no appreciation. Oh, man, I worked so hard for those three years. There was back-biting at board of directors meetings, and an

absolutely unsavory relationship between some of the key members of the profession. It's not nice. It's not good. Chemists need to learn more than chemistry. A profession is not just the subject of your expertise. It's the interfacing with all the other variables. Chemists are very lacking in that regard. They've got a very narrow track that they follow. I'm talking generally. There are many wonderful people. We've discussed so many wonderful ones. But I'm talking the mass, the average people. There's plenty of room for improvement, I can tell you.

It's been a delightful three hours, having you visit with me, and please tell your associates of my appreciation.

BOHNING: Thank you very much. I certainly appreciate you spending the time.

[END OF TAPE, SIDE 8]

NOTES

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18. For a complete list of these articles, see Chemical Heritage Foundation oral history research file # 0103.

19. O. A. Battista, Research for Profit (Fort Worth: Knowledge, Inc., 1989).

20. For a copy of this document, see Chemical Heritage Foundation oral history research file # 0103.

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