CHEMICAL HERITAGE FOUNDATION

JOHN H. WOTIZ

Transcript of an Interview
Conducted by

Herbert T. Pratt

at

Newcastle, Delaware and Washington, DC

on

7, 8, and 10 August 2000

(With Subsequent Corrections and Additions)

CHEMICAL HERITAGE FOUNDATION
Oral History Program
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Oral History Program
315 Chestnut Street
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JOHN H. WOTIZ

1919	Born in Ostrava, Czechoslovakia, on April 12
2001	Died in Morehead, Kentucky, on August 21

Education

1941	B.S., chemistry, Furman University
1943	M.S., chemistry, University of Richmond
1948	Ph.D., organic chemistry, Ohio State University

Professional Experience

1941-1943	University of Richmond Assistant, department of chemistry
	Ohio State University
1943-1944	Assistant, department of chemistry
1946-1947	Assistant, department of chemistry, Research Fellow
	University of Pittsburgh
1948-1953	Instructor of chemistry, Assistant professor
1954-1957	Associate professor of chemistry
1957-1962	Diamond Alkali Co. Group Leader, Senior Group Leader
1962-1967	Marshall University Professor of chemistry and department chairman
1969-1974	National Academy of Science Exchange professor, various Far East and European countries
	Southern Illinois University
1967-1989	Professor and Department Chairman
1989-2001	Professor Emeritus

Honors

1982	Dexter Award, American Chemical Society, History of Chemistry Division
1982	Gold Medal, Vysoká Škola Báňská, Ostrava, Czech Republic
1998	*Doctorem Honoris Causa*, Ostrava Technical University, Czech Republic

ABSTRACT

John Wotiz begins the interview with a description of his family and childhood years in Ostrava, Czechoslovakia. Wotiz first developed an interest in chemistry from his tutor. After graduating high school, Wotiz attended Technical University of Prague, emphasizing on chemical engineering. Due to the rising threat of Nazi invasion, Wotiz and his brother left Czechoslovakia for the United States in 1939. Shortly after arriving in the U.S., Wotiz received scholarship to attend Furman University, where he completed his B.S. degree in chemistry in 1941. Wotiz then attended the University of Richmond, receiving his master's degree in chemistry in 1943. While working towards his Ph.D., Wotiz served in the U.S. Army as a lieutenant in the Chemical Warfare Service. After receiving his Ph.D. in organic chemistry from Ohio State University in 1948, Wotiz accepted an instructor position with the University of Pittsburgh. He remained there for nine years, leaving in 1957 to become a research supervisor at Diamond Alkali Company. He returned to academic life in 1962 by becoming professor and chemistry department chairman at Marshall University. There, Wotiz worked to improve the chemistry curriculum and to build a research-oriented program. In 1967, Wotiz assumed the chemistry department chairmanship at Southern Illinois University, where he would remain for the rest of his career. In 1969, Wotiz made an extended study of chemistry education in the Soviet Union under an exchange arrangement between the National Academy of Sciences and the U.S.S.R. Academy of Sciences. Later, he visited other East European, Asian, and Pacific Rim countries. Wotiz had a deep interest in the history of chemistry. As a result, he wrote and published a directory of international chemistry museums, and beginning in 1971, he organized and conducted widely attended chemical history tours throughout Europe. Wotiz was a long-time member of the HIST division of the American Chemical Society [ACS], and served as its chairman in 1980. Wotiz performed extensive research on the life and theories of F. August Kekulé, publishing the acclaimed *The Kekulé Riddle* in 1993. Extending his interest in the history of chemistry, Wotiz with ACS began to explore the idea of establishing a national center for chemical history. Wotiz concludes the interview with a discussion of the Chemical Heritage Foundation, reflections on winning the Dexter Award, and thoughts on his family.

INTERVIEWER

Herbert T. Pratt is a professionally certified chemical engineer who holds a master's degree in history. Since retiring from the DuPont Company, he has devoted most of his time to the history of the chemical sciences. He is founder of the Bolton Society, an organization of chemical bibliophiles, which is a subsidiary of the Chemical Heritage Foundation. His awards include the Olney Medal and the Chapin Award, both from the American Association of Textile Chemists and Colorists.

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INTERVIEWER: Herbert T. Pratt

LOCATION: New Castle, Delaware, and Washington, DC

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PRATT: This is an oral history interview with Dr. John H. Wotiz, Emeritus Professor of chemistry at Southern Illinois University [SIU] in Carbondale, who is also noted for his work in the history of chemistry. I'm Herbert T. Pratt, a friend of Dr. Wotiz for twenty years or more.

John, I thought I'd like to cover your life story more or less in four stages. First the personal: childhood, growing up, education. Then your professional life in chemistry, followed by professional life in history, and finally a summation of your major accomplishments and disappointments, et cetera, with maybe some odds and ends thrown in. John, I know you were born in Czechoslovakia, but where?

WOTIZ: I was born in the town of Moravská Ostrava. Moravská means Moravian. Ostrava, because this town was divided into Moravian Ostrava and Silesian Ostrava. Consequently we were on a border with Silesia, the major portion being in Germany at that time, and the other Silesia was Polish Silesia. So a tri-state area. One interesting thing is, years later I was in Poland under the auspices of our National Academy of Sciences, I was in the city of Wroclaw, Poland, and they asked me, "Is this the first time in Poland?" I said, "Poland, it's the first time, but I've been in this city before," because I knew the city as Breslau, which is now Wroclaw. So I had to acknowledge, "Yes, I came so close, but had never been in Poland, but had been in the Polish city that is now Wroclaw." [laughter]

PRATT: Now, on what date were you born?

WOTIZ: It was on April 12, 1919. This was right after the war, World War I. Jumping ahead, I left Czechoslovakia in 1939. So I lived my European life entirely in the twenty years during the duration of the First Czech Republic.

PRATT: All right. Tell me something about your parents.

WOTIZ: My parents came from southern Bohemia. Dad was born in the town of Strakonice, my mother in a neighboring town of Vodňany. It was an arranged marriage, as I understand.

Dad studied civil engineering in Prague, at the Technical University in Prague. Mother went to finishing school and did not have any other formal education, but I don't know what they were teaching in a finishing school. Dad was, during the war, an officer in the old Austrian-Hungarian army. He was building bridges being a graduate civil engineer. And this became his specialty later on in his life. But how he happened to come and live in our town of Ostrava, I don't know. I never asked him, "Why Ostrava?"

PRATT: Were there any rivers in that town?

WOTIZ: Yes, but a very small one. It's why I am so curious. He had an army experience of re-building destroyed bridges during World War I, but he became an engineering contractor and built or developed his own company, a rather prominent one, in the post-World War I period in Czechoslovakia. He not only built bridges, but housing developments, highways, anything that a civil engineer would be competent at. He hired his own office staff and specialists in each area.

PRATT: Well then, just listening to you talk about your family, education-wise and so forth, you were certainly beyond an upper-middle-class family, I would say. You had advantages.

WOTIZ: It's very difficult to deny. My brother, Frank, born in 1914, wanted to become an attorney. Dad said, "No way. You're going to take over the enterprise. You're going to study engineering." Because Frank had a classical high-school education that included Latin and Greek but no descriptive geometry, he had to study descriptive geometry on the side so that he qualified to enter the Technical University in Prague, which he did eventually. Coming to America later on, he eventually became a director at Union Carbide in the construction area.

PRATT: Well that's interesting.

WOTIZ: He died on a golf course, as good directors do. [laughter]

PRATT: How long has he been dead?

WOTIZ: Let's see, we were living in Ohio. It must have been in the 1960s.

PRATT: Well, was he considerably older than you?

WOTIZ: Four years. When I became Chairman of the Chemistry Department at Marshall University in Huntington, West Virginia, in 1962, Frank lived in Charleston. He was very well known and liked. When I was introduced in the chemical circles in Charleston at meetings, chemistry meetings, the introduction usually went: Professor John Wotiz, Frank's brother! [laughter]

PRATT: Did you have sisters?

WOTIZ: No.

PRATT: What are your earliest memories of childhood?

WOTIZ: It sounds sort of self-serving or sort of a boast, but we had a very easy life because we were a prominent family with anything that we wanted. We had a maid, we also had just a maid for the two of us—what the Germans call "*Kinderfräulein*." There's no equivalent name in English. We had a cook and an assistant to the cook. We had a chauffeur. We were also helped in our studies by a private tutor. I had to take piano lessons. My brother took violin lessons. And since my father decided that I didn't know German well enough—our mother-tongue was Czech—I had to take special private lessons. Although German was taught in Czech schools from the first grade on, Dad thought it was better to be fluent. So I had to study German on the side also. We were bilingual. In fact, everybody in Central Europe was bilingual in both the Austrian monarchy, and later on. It was the native languages plus German, or the native languages plus Hungarian, being the dual monarchy.

PRATT: It sounds like your father was very authoritarian. What he said went, but I assume that he was a product of his own times.

WOTIZ: He was a self-made man. He was what we would now call the CEO of a thriving construction business, but he would have lunch at home. He would take a fifteen- or twenty-minute nap at home, not in his office, and then he would go again. That's not unusual. It's European. At dinnertime, the maid had to go for fresh draft beer. He wouldn't drink beer out of a bottle because it was not good enough. So she would stand in line with other maids, and wait until the foam settled, they'd put some more beer, which was foaming up, and the gossip was exchanged between all the other maids. [laughter]

PRATT: You had a tutor, but what about your early schooling?

WOTIZ: I mentioned that my dad essentially forced my older brother into engineering. I, being the younger of the two, had no pressure on me as to what I would study. I was free to choose. I had a tutor at home and he always scolded, "Well, what are you going to be? What interests you?" Playing tennis, and skiing were my primary interests. So the tutor brought some chemicals just to create an interest, and that's how I started in chemistry. I had a laboratory where I was devising experiments to impress the maids. You know—color, explosion, the conventional ways.

PRATT: How old were you then, about twelve?

WOTIZ: Yes, something like that; I was not old enough to realize the danger of the experiments that I was doing. [laughter] That tutor despaired, "Well, what is going to come of you? You are not going to follow your brother into your dad's business." I said, "Well, I might as well study chemistry and I can bear down if the times demand it."

PRATT: In your, what I would call high school, were you into extra-curricular activities? You mentioned liking tennis and skiing. But were there any organized sports?

WOTIZ: I was not an outstanding scholar or student. I maintained a B or B- average. Skiing was my primary interest—I was a racer and a downhill skier. I won many events. One event that I particularly remember was the state championship. I won the race for my high school. On Monday morning I came with a traveling trophy and presented it to the principal of the school, and he said, "Well, when was that race?" I said, "It was last Saturday." "Well, when did you arrive at the race?" "Oh, I was there on Friday." "You mean you cut classes?" And he threw me out of the office with the trophy! [laughter] Honest to goodness! And that's the appreciation that I received for winning the state championship! [laughter]

PRATT: Apparently your tutor had a big effect on your life. Were there any other teachers that you had along the way from early on that stand out?

WOTIZ: Well, our—I don't know what it's called in English, the teacher that presides over other teachers in a particular grade. What are they called?

PRATT: Oh, I think we would call them "supervisors" here. Homeroom.

WOTIZ: Well, there was a woman and she taught us Czech and French. I had always relied on my tutor to prepare me for the announced exams, except one day she gave an unannounced examination and I had to improvise. I had to write, and the examination paper came back with the note: "Excellent." It was the first time I did something completely on my own, and this really built up my self-confidence.

PRATT: That's great. I have a feeling that you might have been somewhat mischievous—especially when you were young. Were you?

WOTIZ: Well, I had many girlfriends! [laughter]

PRATT: Oh, all right. Many girlfriends. [laughter]

WOTIZ: Many girlfriends, yes. I will say something on the record. We had a city park and when the park closed for the night, the keeper would go through the park ringing a bell. That meant people had to leave because the gate would be closed. Well, we didn't leave. We stayed over. My girlfriend and I had to jump over the fence, and while jumping, she caught her dress on the fence and ripped it from the bottom up, and then she had to go home, with a ripped dress. Poor girl. I felt so sorry for her. [laughter]

PRATT: You didn't have to go along and face the music with her, though?

WOTIZ: No. [laughter]

PRATT: Is there anything else, any other story you would like to share about those early days?

WOTIZ: Well—no. It's relatively easy to respond to because I did what was expected of me, but I did not do anything more or less.

PRATT: You weren't a playboy, though.

WOTIZ: That's relative, also, because in one opinion it could be in excess, in another one, not.

PRATT: Well, let's move on to higher education. You started college in Czechoslovakia, and I would assume from what I've seen in *American Men of Science*, you did two years there.

WOTIZ: I graduated from high school [Maturum] in 1937, in the spring. I started at the—what was the official name—the Technical Institute for Chemistry and Engineering, part of the Technical University of Prague, which was an institute within a university. I started in fall of 1937 and finished two semesters in chemical engineering, which involved a lot of basic chemistry. I finished the fall 1937 and spring 1938 semesters. The political crisis started in the fall of 1938. There was a general mobilization. Czechoslovakia did not rely at that time on the Grand Alliance that supposedly protected us from invasion by the Germans—underwritten by France and Great Britain, especially France. The schools were closed because students were mobilized. I was not of army age as yet. In 1938 I was only eighteen years old—not quite eighteen. So I wasted the summer and Dad said, "The schools are not going to open. The country is going to be overrun. You're going to finish your schooling in the United States." And then he made the necessary preparations for my brother and I to come to the United States. I finished my education in the USA and my brother had employment, building the Czechoslovakia pavilion at the 1939 World's Fair in New York. It was a good move because the schools never opened in Czechoslovakia. When the Germans invaded, all higher education stopped.

Again, refreshing your memory, Czechoslovakia was partitioned after the famous meeting of [Neville] Chamberlain in Munich, Germany. The Munich Agreement separated the German-speaking part of Czechoslovakia where German had more than 20 percent representation. Our home city of Ostrava had only 19 percent German population. So consequently it was not part of the so-called Sudetenland. And here I must say, the Sudetenland in America means something. It has no meaning whatsoever historically. If you look at the boundaries of Bohemia and Moravia, they have <u>never</u> changed throughout the ages because they were natural boundaries that follow the mountain ranges. There was never any change. So the Sudetenland excised the border towns or regions that had more than 20 percent German population. The universities, after Germany took over, never re-opened the way they were before—I think it was a year before any higher education was permitted in the Czech-speaking lands. So I was able to leave for America only after the Munich Agreement because the Czechs had to de-mobilize. They had to dispose of our army. Also, I was not of military age. But the entire military age group, which I was part of, never went to military service because there was no Czech army anymore. And the Germans never trusted the Czech-speaking population with arms. So the Czech-speaking lands sat on the sidelines, and became excellent kibitzers of other people fighting. I came to America in January 1939, as soon as I got permission to leave the country for study abroad. My father's last advice or dictum was something I'll remember for the rest of my life: "Two things that nobody can take away from you: good education and good manners."

PRATT: Did you have any relatives here?

WOTIZ: Yes. I came at the invitation of my father's cousin in New Jersey who made it possible for us. I mean, at that time, people needed to fulfill a quota. Every nationality had an immigration quota. Not like it is now, when the complete quota system has been abandoned and anybody who wants to wade across the border of the Rio Grande may enter. It was originally limited quotas. Again, it was my dad who saw the European events five years in advance. The moment the Germans marched into the Rhineland he said, "Long overdue. I must make every effort for you to go to America," and he contacted a cousin, or second cousin of his. They provided the financial assurance that we wouldn't become wards of the state. Dad had the tickets for us ready and just waited for the moment I was not under the military obligation. My brother got a job building the Czechoslovakian pavilion. Our parents, incidentally, followed us one year later.

PRATT: Oh, I didn't realize that your parents came one year later.

WOTIZ: Yes. Well Dad had started liquidating his business about five years before. He said, "There's absolutely no doubt in my mind that the whole country will be overrun by Germany." His foresight was absolutely astounding. Most people said, "No way. Britain would never permit it." But it happened, of course. But he had tickets ready, mind you. The country was partitioned in October of 1938, and my brother and I crossed the Atlantic on the *Aquitania* from Cherbourg to New York in January of 1939.

PRATT: How did you feel about leaving home?

WOTIZ: Sad. Very sad. When I go back to meet some former schoolmates, we start reminiscing. "Will I obey my father's order? Or, will I stay at home?" I wanted to fight, and I did fight, eventually, as a member of the U.S. Army. [laughter]

PRATT: U.S. Army! [laughter] Did you know English when you came?

WOTIZ: Some, slightly. Now an interesting thing is, we also had an English tutor in our home, from England. He was teaching in our family. He was of my brother's age and lived with us as a guest, essentially. He was provided with spending money and a bedroom. My brother learned English rather well, but I was too young and not invited.

PRATT: What were your first impressions of America and of Americans upon getting here?

WOTIZ: I used to keep a diary, and I wrote in it going past the Statue of Liberty. It sounds very corny now.

PRATT: Very corny? Do you still have that diary?

WOTIZ: Yes. It's somewhere. [laughter]

PRATT: It's a good historical piece if you still have it.

WOTIZ: I think I still have it.

PRATT: So you left. Had your brother already come?

WOTIZ: No. We came together. My relatives, the ones in New Jersey, took it upon themselves to help us get settled. I wanted to go to school. Originally, I was to receive tuition money from my dad. But that never materialized because there were financial restrictions of exporting cash after the occupation. So suddenly I was on my own, so to speak. Well, the first thing I had to do was to learn English. Then there was serendipity. Friends of my relatives saw an article in the *New York Times* stating that Furman University in Greenville, South Carolina, had a scholarship for a student from Czechoslovakia, but nobody could come. The scholarship was administered through the International Student Service, a body for exchange studies. It was suggested that since I was already in the States, I should apply. I said, "My record is not an outstanding one and it would not merit an international scholarship." So they said, "Well, try it anyway." And I did. Sure enough, I received a scholarship at Furman University (Addendum I). The fall term had already started when I arrived around two or three weeks late. Even if I had started with the rest of the students, it would have been difficult, since I did not know the language. But it was a big event in my life because I learned what an honest, well-meaning, Christian university can do. The faculty came to my room. They helped me out. People essentially went out of their way to make me feel at home. And I'm an enthusiastic supporter of Furman, even now.

PRATT: That's most fascinating. I had in my list of questions: how in the world did you get to a Baptist school in South, and now you just explained that.

WOTIZ: It was absolutely a different life. Bible study, compulsory. Sunday, two services: at noon and evening. There were no black faces at that time. It was the first time I really understood what "Yankee" means, because <u>every</u> American in Europe was a "Yankee." But we

were eating in a refectory, in a dining room. We had assigned seating at the table, and there was one fellow from Pittsburgh. "Pass the grits, you damned Yankee." [laughter] I said, "Well, what is this all about?" With grits, I finally learned what it is about "you damned Yankee." That was one word.

PRATT: That's right. One word. I had wondered if you had culture shock in going to the South.

WOTIZ: Well, I did not know the North either! [laughter]

PRATT: So it was okay!

WOTIZ: Sure. I did not know the difference.

PRATT: You've answered my questions about that religious community. That you found the people extremely helpful, extremely kind, and extremely supportive is most interesting.

WOTIZ: Absolutely.

PRATT: They probably didn't have any more understanding of somebody from overseas than you did of them.

WOTIZ: Well, this international scholarship was started by a professor of philosophy at Furman who studied in Prague with Czechoslovakia's first President, Professor [Tomáš Garrigue] Masaryk. He became a big follower of Masaryk's philosophies, and when he came back to the U.S. he raised money and invited somebody to come from our country. He took a great liking to Czechoslovakia. Because Czechoslovakia was in the news frequently, I was invited to give talks at churches, Rotary, Lions, and other service clubs. I developed some notoriety, and if somebody had a speaker who didn't show up, I was always on call.

PRATT: You had already made up your mind you were going to study chemistry, so how did you find the chemistry department at Furman?

WOTIZ: Well, the chemistry department chairman, [John] Sampey, was a pioneer in teaching chemistry in the South. Furman had an association with The Johns Hopkins University through professor E. [Ebenezer] Emmet Reid.

PRATT: Oh, yes. Reid was a consultant to DuPont [E. I. du Pont de Nemours and Co., Inc.] for many years.

WOTIZ: And Furman boasted—possibly self-made propaganda—that they had the second-best department in the South, next to Duke University. The chemistry department at Furman was under the tutelage of John Sampey and his former student, Albert Southern. Incidentally, the history books that I gave you some time ago came from the library of Professor Southern. I completed four years at Furman in two years.

PRATT: I wondered about that. When I was looking at your record the numbers didn't add up.

WOTIZ: The point is a very simple one. In America—and that was as true then as it is now—European high schools are equivalent to junior college. So after I came to Furman University, and comprehended English well enough, and I said, "Gee, I know those subjects." I started taking proficiency exams. So I started as a freshman in 1939 and I graduated in 1941, taking a full load, eighteen semester hours per semester, plus taking proficiency examinations. People still look at it and wonder, like you did. Because, yes, I had calculus before. Yes, I had foreign languages. But I did not use my proficiency in German or French or Czech in that respect, in order to opt out from taking a foreign language. No, but I took Spanish because I wanted to learn Spanish. It's something that I did not know at that time. And I was taking organic chemistry, I was taking analytical chemistry simultaneously, and I started doing research. I was cutting grass on campus. I did some tutoring myself at that time. It was a full—very occupied day or week. Then the only way I relaxed was during Sunday morning or evening religious services. [laughter]

PRATT: You know Elijah Hicks, or Lidge Hicks as we called him at DuPont.

WOTIZ: Oh, very well. I caught up with Lidge. He also graduated in the class of 1941.

PRATT: I worked for Lidge once for a short period of time.

WOTIZ: Lidge was a very good fellow. He helped out, mind you. I got a lot of good help from him.

PRATT: Lidge had an amazing ability to remember names and faces. After he took over our organization, the first time I ever saw him, I met him on the street, away from any of the DuPont buildings, and he greeted me by name. What he had done was to study what we called the "mug shot" book of his organization of about a hundred and fifty people, and had memorized all the faces. That he could call me by name on the street was extremely impressive.

WOTIZ: When my name started appearing in journals, Lidge always sent congratulations and greetings or something like that. He was the president of our graduating class, and I saw him at one of the anniversaries, twenty-five or thirty years ago, in Greenville. Incidentally, he lives in Sarasota, Florida, now.

PRATT: Yes, I know. We have an annual Christmas party of DuPont retirees, and he attended either one or two years ago. He asked me about you, and he knew that we had some kind of a contact. He's still a very young-looking man.

WOTIZ: He must have taken early retirement.

PRATT: Like a lot of us, I'm sure that he did.

WOTIZ: Lidge had a younger brother, who also studied chemistry, and medicine later, who started with me in the class of 1943.

PRATT: I don't know anything about him. You mentioned E. Emmet Reid. Emmet Reid was a consultant to DuPont. He had of course taught at Johns Hopkins. I knew that he was a devout Baptist, but didn't know he had a connection with Furman.

WOTIZ: After he retired from Johns Hopkins, he would come to Furman on the train, carrying a little satchel. I had, several times, been asked to pick him up at the railroad station so he got to know me, and I carried his satchel when he was visiting. He gave me a research project.

PRATT: Oh, he did?

WOTIZ: That's right. I was to run Friedel-Crafts reactions in the presence of sulfur. The interesting thing was, I learned a very valuable lesson. I ran those reactions, a typical Friedel-

Crafts, which uses aluminum chloride as a catalyst, and there was something going on. I would crystallize and re-crystallize to get a pure product. I was I shocked when I sent it for carbon-hydrogen analysis, and it showed zero. I had crystallized the sulfur! [laughter] This was a valuable lesson!

PRATT: Reid was an expert in sulfur chemistry.

WOTIZ: Well, I know! [laughter]

PRATT: So was he pulling your leg?

WOTIZ: No. He just wanted to see what sulfur would do in a Friedel-Crafts reaction. He also wrote an autobiography.

PRATT: Oh, yes. I have it.

WOTIZ: *My First One Hundred Years* (1).

PRATT: Yes, and on the inside it says, "An Interim Report."

WOTIZ: Yes. A lot of humor.

PRATT: I liked Reid because he didn't give up. When he was ninety-eight and had gone blind, with the help of graduate students, he wrote a book on—I'm paraphrasing—how to read technical Russian (2). That was two years before his autobiography came out. I believe he died at age one hundred and one, or one hundred and two, something like that.

WOTIZ: As I said, he was in his late seventies or eighties when I knew him. Perhaps because of Reid the department of chemistry at Furman and in the other Baptist schools that he was visiting were in the forefront of the high number of publications that he created with a number of undergraduate students. So Hicks had some. He was influenced by E. Emmet Reid and Professor Sampey. Now, Professor Sampey, the Chairman, was also a Johns Hopkins graduate, but I will mention him again.

PRATT: All right. I'll have to look up Sampey in one of my *American Men of Science* books. Well, you graduated from Furman and now you show up at another Baptist school, which was the University of Richmond.

WOTIZ: That's the same connection. Reid was also consulting with the University of Richmond, where the department Chairman named [Garnett] Ryland was a Hopkins' Ph.D. Reid knew of my weaknesses, lack of experience, and cramming in a lot of chemistry into a short time. He recommended that Hicks to go to graduate school, I think it was Duke or one of the Ivy League schools. For me, he recommended University of Richmond. That's how I ended up there.

PRATT: Did you have any memorable experiences during your couple of years at Richmond?

WOTIZ: Well, I got my master's degree in the area of polyhydroxy amines. It was a stepping-stone because I wanted a Ph.D. degree, not a master's degree. I mean, I realized very early that a master's degree is not as valuable as a Ph.D. So later on I came to a recognition that many times a M.S. degree was a booby prize to aspiring Ph.D. students who couldn't finish their research. It's a terminal degree. I was cognizant of that. But after two years, the question came: where do you want to go next? And I said I would like to go for a Ph.D. degree.

[END OF TAPE, SIDE 1]

WOTIZ: I wrote many applications. Assistantships or fellowships were very rare. A favorable response came from Ohio State University, and an encouraging response from the University of Virginia. Being in Richmond, I decided to drive to Charlottesville and see what it was all about. In Charlottesville, because of my foreign background, I was assigned to Dr. Alfred Burger, who was Austrian. The department chairman thought we would have something to talk about, which we did. Burger said, "I understand you are a candidate for an assistantship here in Charlottesville, but since you also have an offer from Ohio State University, I privately recommend you go to Ohio State." You must realize there was only one southern school with a credible record, and that was Duke. The University of Virginia was not at the level of Ohio State or Duke University. So Burger said, "You go to Ohio State and you work with [Melvin S.] Newman. He's a new, young, up-and-coming faculty member, and I expect big things from him." So I went to Columbus from Richmond during the period when there was gas rationing. The Rationing Board gave me extra coupons to make the move, but I also wanted a vacation and I wanted to visit my family in New Jersey. I remember I was vacationing at Virginia Beach, which had nothing but ramshackle houses and sand in front of them. I liked it. And I drove my car to Norfolk; and to save gas, I put it on an overnight ferry that goes from Norfolk to Baltimore. I parked my car in Baltimore and took the Pennsylvania Railroad to New Jersey, then came back. So that gave me enough gasoline both to get to Columbus and see my family

in the East. I felt very proud of myself because I got the feel of the country and improvised, you know. I signed up with Mel Newman and did my Ph.D work with him.

PRATT: Did you find a large university overpowering?

WOTIZ: Very much overpowering, but excellently organized. Being a new Teaching Assistant [TA], I came under the tutelage of A. B. [Alfred Benjamin] Garrett. Do you know him?

PRATT: The name doesn't mean anything off-hand.

WOTIZ: A. B. Garrett used to write a column in *Journal of Chemical Education*. It was a sustaining column on history of chemistry.

PRATT: No, I don't recall it. Oh! Garrett wrote a book of short articles on the history of serendipitous discoveries (3).

WOTIZ: Something like that.

PRATT: Yes. I have the book!

WOTIZ: Garrett, later on, essentially became my model. Garrett divided TAs into classes and taught us how to teach. We had to send students to the blackboard. Everybody was solving their problem, writing individually on the blackboard, simultaneously, and he would come unannounced. He liked the way I handled my students; he became a good friend. He had an interest in Utah, and the western states. I was very blessed with friends, good friends, and he was one of them. Garrett was very well known in chemical education, the history of science, and the history of chemistry.

PRATT: You did your work in organic chemistry.

WOTIZ: Yes.

PRATT: How did Ohio State at that time compare to the University of Illinois, which was Roger Adams' legacy.

WOTIZ: They competed. The department chairman at Ohio State was a fellow named [Edward] Mack [Jr.], a gentleman and a scholar, and very down-to-earth. I know that a request came from somebody in the administration about the safety of the laboratories. Students were doing work after hours and that was not safe, you know. And he said, "That's their opinion. The building is the safest one when there are people here interested in safety." So everybody got a key to their laboratory and building. Indeed we did a lot of research in the laboratory. What else may have been going on, who knows? Others on the staff were [Wallace R.] Brode in spectroscopy, M. Wolfrom in carbohydrates, A. Henne in fluorocarbons, and [Cecil E.] Boord in hydrocarbons. Boord was responsible for securing an API project to synthesize hydrocarbons for testing octane numbers of aviation gasoline.

PRATT: API, the American Petroleum Institute.

WOTIZ: That's right. Boord had a student, [Kenneth] Greenlee, who later became his son-in-law, who was also a contemporary to me. He also played a role in my later life, and I will mention him later on. But Newman, with whom I did my Ph.D., was absolutely flush with fresh ideas. He had been born in New Orleans, got a Ph.D. at Columbia, and did post-graduate work at Harvard with Louis [F.] Fieser. Everybody recognized him because he had an endowed chair. Several of us Newman students used to get together on a biannual basis, but no longer. Newman died. He was a golfer, and after he retired and became Emeritus, still had a research group going. One day he slipped in the laboratory, hit his head, and lost his equilibrium and was never the same afterwards. His complaint was that his golfing game suffered! [laughter]

PRATT: So he didn't do anything constructive after that?

WOTIZ: Well, yes he did, but he couldn't play golf the way he used to.

PRATT: You did a lot of work on acetylene compounds and that was the subject of your Ph.D. thesis. Why did you pick acetylene compounds?

WOTIZ: Because Newman presented me with a research topic. He said, "Acetylene compounds are well known, but nobody has developed methods to make particular acetylene compounds in a relationship to another functional group." My project was to synthesize all the six normal octynoic acids where the triple bond will be all the way up and down the chain, and develop methods, so that the final product will be the acids, but you may also synthesize intermediates as well. In other words, develop methods of synthesis.

This was my research project. I was to prepare all the acetylenic acid, differing by the position of the triple bond in relationship to a carboxy acid group. Research of that type required study of the literature. Newman taught me, "Research starts in the library and ends in the library." I don't know how original this dictum was with Newman, but it's something that I used later on and applied it to other problems or projects. We wrote out many methods how such compounds could be made. The simplest one on paper was the preparation of the so-called β-acetylenic acid, the triple bond on the β-carbon. The α is next to the carboxy group. Well, this I started and I couldn't get anywhere. As many methods there were, obvious methods that should yield the desired compound, every one failed. I started this before I went to military service. I did not finish it until I came back from military service. There were interesting observations; one problem lead into other ones. That's the way, in my opinion, research should be done. If it is obvious and if everything worked, then you are doing a technician's work.

PRATT: In other words, if you're not raising more questions than you answer, then you're probably—as you said—doing technician's work. That's probably true.

WOTIZ: That's right. Well, I always felt sorry for my colleagues who came as new faculty members: "Well, what are you going to research?" "Well, I don't know." "So, you mean, you completed a Ph.D. thesis and you don't know what you want to work on? That's incredible!" Anyway, this β-acetylenic acid was eventually prepared in the method that I outlined, and this is a roundabout way. One starts with 1-hexyne, which has an acidic hydrogen. Treat it with a Grignard reagent, you form the acetylene Grignard reagent, and react it with formaldehyde to make the acetylenic alcohol. There was no problem there. Convert it into a bromide, and then with copper cyanide, you make a cyanide, but it does not hydrolyze directly. One has to do it in an indirect way. One could not use sodium cyanide to make the cyanide. It didn't work. One has to use copper. So there were a lot of steps that worked on paper—why? Why the extra work? Well, because it didn't work any other way (Addendum II).

PRATT: It didn't work any other way.

WOTIZ: The other question was why not go directly from acetylenic bromide and react it with magnesium and then with carbon dioxide, directly? I mean, all this seemed unnecessary. Why not do it the conventional way? Because it did not work. One was not able to make a β-acetylenic Grignard reagent. If this would be saturated, no problem whatsoever. Just put hydrogen in and one can make it in a jiffy.

So I have written my dissertation, which included the acid made by this roundabout way (4). Newman had a visitor. I don't remember who it was. It may have been Dick [Richard] Arnold but I'm not sure. Anyway, he had this visitor. Newman was busy and asked me, having fulfilled my requirements, if I would show the visitor around. I showed him the department, the *Chemical Abstracts* library, and went also to the API laboratory, which was housed in a separate

building, a newly constructed building where they were synthesizing hydrocarbons of known structure. No matter what the cost, they just wanted to see whether such hydrocarbons would have a high octane rating. The octane rating was important in making aviation fuel. So if we can improve gasoline, we would have a longer range of the bombers that were sent out. So it made sense.

I took the visitor to the API building. At the API building, Boord's son-in-law, Ken Greenlee, developed a method to make allylic Grignard reagents, using the so-called "cyclic reactor (Addendum III)." In other words, to avoid a coupling reaction in the method of preparation of Grignard reagents. The Grignard reagent would couple with the unreacted bromide. To avoid this "coupling reaction," one has to use infinite dilution because once you form the allylic Grignard reagent, it reacts with the starting material, and you never have a chance to react it with carbon dioxide. It forms so-called "coupled product." But in the cyclic reactor, one is gaining infinite dilution without using a large amount of ether. What happens is one has a column filled with magnesium. Into that column you will boil ether. The ether will condense, drip down, and return to the boiler. Into the refluxing ether, one adds the allylic bromide. So the bromide travels down the column, getting diluted, it reacts with magnesium, and never gets in contact with the unreacted bromide. I mean, a beautiful device, and Greenlee was making allylic Grignard reagents. I was interested in acetylenic Grignard reagents of the same type. Allylic has a double bond in the same position as the triple bond. We were interested in a triple bond where allylic has a double bond. So the reactions are similar because both are very reactive halides. I asked Greenlee to use his cyclic reactor. He instantly invited me to bring my compound.

PRATT: Incidentally, how long was the column?

WOTIZ: Oh, it was about 20 centimeters.

PRATT: All right. That wasn't extremely long, then.

WOTIZ: Something like that. Now, into the stream of refluxing ether, we added a reactive halide, which sat on top of the condenser. Allylic halides, which were used in the API laboratory, and the propargylic halide used in my research. Incidentally, the device was fitted with what is known now as the Newman Stopcock. [laughter]

PRATT: I noticed that was unusual.

WOTIZ: Well, because the stopcock lets you count the drops that you put into the reaction. So the halide was diluted with ether. It was put through the Newman Stopcock, and was flowing

by gravity over the magnesium turnings. There's one thing that should be said: the magnesium turnings had a coating of mercury, it was standing for some time with mercuric chloride and the shiny surface of magnesium turned gray. Greenlee never investigated. I did not investigate. This was perhaps empirical, but it worked. As the reaction started at the top of the magnesium packed in the column, you could see that the grayish-coated magnesium was reacting and the magnesium became shiny again. So something must have been going on. The ether actually started boiling in the column because the exothermic reaction between the halide in the ether, which was filling the column. Of course, magnesium was consumed at the top of the packing. That's why there is a side opening, because we had to add more magnesium because we never let it go below the half-point. If we exhausted half of it, we ran the chance that some halide may go through the column into the boiler. Now, that formed a Grignard reagent, which had no chance to do any coupling because as soon as it was formed, it was being pushed through the column by the addition of more ether. So the product, the propargylic Grignard reagent didn't have a chance to react with the original starting material. It was accumulated in the flask where the ether was vaporized all over again.

PRATT: How did you know that the ether would become saturated with it?

WOTIZ: Well, again, that was never established precisely. Like all good chemists, you develop a feel for it. [laughter] But when the halide was exhausted and the column washed through with more ether, it was accumulating and it was a clear, ether solution. It was then, subsequently, poured onto dry ice, producing carbonation. The carbonation step in its own right became quite important because as we have established several years later, the Grignard reagent produced three products: allenic, acetylenic, and a third product, which was a dimeric acid, a product of reaction of the Grignard reagent with a formed allenic acid. If you carbonated slowly, you got more of the dimeric one. If you poured it on dry ice quickly, you decreased the by-product.

We made the acetylenic Grignard reagent, in 100 percent yield, and poured the content on dry ice to carbonate. That started my new research, a completely new line of research. Where we were failing originally, we were now making in a quantitative yield and got not only the desired acid, but getting also two other acids. One acid was an allene, which had two cumulative double bonds, and the other one was a dimeric acid. So it was serendipity. Serendipity started when Newman asked me to conduct a stranger through the laboratory. I included the API laboratory, and I found, accidentally, a new field of chemistry. It comes back to the definition: what is serendipity? Was I really prepared? "Chance favors a prepared mind," using a quote from Louis Pasteur. Or was it strictly accidental? You be the judge. I don't know. [laughter] I think each is fitting.

PRATT: That's fascinating. As you probably know, I grew up in Eden, North Carolina, where the calcium carbide and acetylene processes were discovered.

WOTIZ: I didn't realize that you were raised there. I know you had an interest.

PRATT: I had an interest in it because I had heard about it most of my life. Every time I would read something about it, there'd be a little bit different slant on the story. By 1951, I had begun to try to research this historically but I was totally green at historical techniques. I learned in the process. And of course, two years ago we got the discovery site designated as a National Historical Chemical Landmark. I suppose it was in 1985 when we were together in Europe that you discovered that I had an interest in acetylene or vice versa. For a long time, I've accumulated literature on acetlyene. I cut this article from *C&E News* from 1947: Walter Reppe's Acetylene Chemistry. And this author had spent a lot of time with Reppe, sort of picking his brain after World War II.

WOTIZ: Well, he was in Intelligence. He was debriefing Reppe. I knew Reppe.

PRATT: Oh, you did?

WOTIZ: Oh, yes. Having become an acetylene chemist, everything dealing with acetylene was of interest, and I was speaking to other people. There was a government report on Reppe Chemistry. He did hazardous chemistry because cost of life didn't matter to him.

PRATT: Well I think—you're talking about the government report—this was the man that probably wrote it. The man's name is Bigelow.

WOTIZ: Oh, yes. Sure. I know the name.

PRATT: All right. Well, that was what he was doing. But it struck me that on acetylene chemistry, acetylene had been around for a long time. There'd been a few chemical applications of acetylene. Of course, it started with lighting and then in the early 1910s and 1920s, there were a few chemical applications. But then in the late 1930s, Father [Julius A.] Nieuwland from [The University of] Notre Dame, wrote a book and so it began to explode onto the market (5).

WOTIZ: Very late in the history of acetylene chemistry. Nieuwland did it as an intermediate for making vinyl acetylene and chloropene. There was a pair of other chemists at Notre Dame, a husband and wife—the name escapes me—who were doing acetylene chemistry research in the footsteps of Father Nieuwland.

PRATT: Well, it just so happened that I had one of Nieuwland's Ph.D. students, Stephen Slanina, as my organic chemistry professor. After I came to work at DuPont I discovered that a fellow employee, Bob Thomas, had also been one of Nieuwland's students and that he and Slanina had been very good friends. Something all of a sudden sparked tremendous interest in acetylene chemistry. What was it?

WOTIZ: Well, acetylene is a very accessible industrial raw material. But the chemistry as such was really the motivation that prompted Newman to the synthesis of the isomeric octynoic acids: the chemistry—it just wasn't there. He recognized it as being deficient.

PRATT: One interesting thing about your explanation is that it sort of says, you know, you go and talk to young chemists today, and everything is instrumental. The ones I talk to don't seem to have much hands-on experience. They don't visualize this kind of thing.

WOTIZ: You cannot get it on a computer! [laughter]

PRATT: That's right. Can't get it on a computer, and I think that's sort of sad. I just bought a new Eimer and Amend apparatus catalog from 1903. It is filled with pictures of absolutely beautiful glassware. I said to my wife, Mary, "You know, it's just a shame that this kind of apparatus is not used anymore!"

WOTIZ: Well, let's put it this way, Herb: we are people from a now non-existent era.

PRATT: I suppose that's right.

WOTIZ: Now, mind you, this accidental incident, which made me familiar with the cyclic reactor, changed my chemistry completely. I became an acetylene chemist and an allene chemist. I mean allenes were <u>completely</u> unknown to me and they became a major area of research that gave me, eventually, international recognition. That international recognition played a very important role when it came to the history of chemistry, and I will tell you how this sort of development went different ways.

So allenes became a major product. We got what we wanted, but we also got what we called a dimeric acid of unknown origin and structure. We had a publication where we misidentified it and it turned out to be a very interesting compound in its own right. So this molecular rearrangement took place. In the expected one—isomeric acid is completely rearranged. All right? I called the rearrangement the propargylic rearrangement, analogous to what was then known as an allylic rearrangement. Allylic rearrangements were well studied and

well recognized. Allyl and propargyl are equivalent terms with respect to each other, hence a rearrangement is also. The literature sometimes refers to it as acetylene $\rightleftharpoons$ allene rearrangement and, interestingly enough, in Europe it's sometimes called the Wotiz rearrangement. [laughter] I reviewed this rearrangement in a chapter in Viehe's *Chemistry of Acetylenes* book (6).

PRATT: I was going to ask if your name got in the book on that.

WOTIZ: Oh, no. It postdates the book as far as I know.

PRATT: I have a number of books on named reactions. I'll have to check and see if you're in any of them.

WOTIZ: Well, I was very much surprised when I gave talks in Europe. They'd say, "What do you mean propargyl? That's a Wotiz rearrangement!" [laughter] Serendipity—twice.

PRATT: Serendipity—twice.

WOTIZ: Yes.

PRATT: Now, this was done after you came back from the military or right before?

WOTIZ: No, it was after. I finished my thesis. In the last days, when I was cleaning up, and I was conducting the visitor.

PRATT: Oh, it was in the last days! Oh, all right; that's great!

WOTIZ: I was ready to leave, and I secured an appointment at the University of Pittsburgh as an instructor. I didn't have post-graduate formal education, so they hired me as an instructor. Had I had post-graduate work, they would have hired me as an assistant professor. So I had to go from the bottom of the academic scale, from a teaching assistant to instructor to assistant professor to associate, and to full professor. So I really had to produce, because every promotion required some new publications record and advancement in teaching responsibilities and research.

Something flashed in my mind and I thought back what I wanted to say. Oh, yes. How I got to University of Pittsburgh. I would like to explain if you give me a chance.

PRATT: Well, I want to hear about your military experience.

WOTIZ: Yes, that's what I wanted to say. Exactly. I was a foreigner, but foreigners had to register with the draft. We paid taxes and also were subject of military service, and at first I had a very high number, and coupled with being an alien, that kept me out of the military for two years. Then Newman accepted a grant from the Chemical Warfare Service, now known as Chemical Corps. That was to synthesize analogs of 2,4,D, which is 2,4-dichlorophenoxyacetic acid. That research was going on at the laboratories of Chemical Warfare in Camp Detrick, in Frederick, Maryland. But having a higher security classification, they couldn't do it openly. They had to farm out the synthesis of such compounds throughout the established universities who were able to buy chemicals, so nobody could reconstruct from the purchase of chemicals, what one was really working on. It was a highly classified area. Well, I was making it, but I didn't know why I was making it. As time went on, I went to the literature and I found some papers that mentioned plant hormones, and they said that such synthetic material has effect of a plant hormone. It was an agricultural journal, or something like that, 2,4-dichlorophenoxy acetic acid. I think I was the first one who made it in this country, the other one was from Britain. We wanted to make analogs, put in another chlorine, another structure, and to see how it acted as a plant hormone. The plant hormone mechanism acts by stimulating the growth of a plant, a broad-leaf plant such as dandelion, such as tomatoes, and such as sugar beet. The plant accepts that hormone and starts reproducing new cells until it dies. So it becomes a plant killer, essentially. Dandelions are a weed, and we are using it now. But during wartime it was used for the destruction of sugar beets. The Germans lived on sugar from beets. If you're spraying a plant hormone, it would not be chemical warfare. It would be agricultural warfare. So we were making compounds, they were tested at Detrick and Beltsville, Maryland, I think. I'm not sure where they were sent. Somebody evaluated it, it came back to Detrick. And so far as I know, the Air Force was spraying sugar-beet fields and testing it out in Texas. Well, anyway, among those compounds that were synthesized was also 2,4,5-trichlorophenoxyacetic acid, which was, however, not selective. It was a brush killer. It was a defoliant that became notorious in the Vietnam War as Agent Orange. So anyway, Newman had a grant, and he needed somebody to work on it. And he said, "John, you are deferred. You can do your duty. You're going to change your research to make it 2,4-D analogs." And I put acetylene on hold. Of course my mind was still on acetylene chemistry, but I started making 2,4-D analogs.

PRATT: But, you were still a civilian.

WOTIZ: That's right. A civilian at Ohio State. The status changed when people in Frederick, at Camp Detrick, realized that there is a potential draftee who can do the work directly with them. So they no longer issued deferments. They wanted me to work in Frederick, at Detrick.

So I became a draftee. They sent me to basic training in the Chemical Warfare Service in Camp Seibert, Alabama, near where the present Marshall Center for Rocketry is—Huntsville.

PRATT: Oh, Huntsville.

WOTIZ: Yes, near Huntsville. But anyway, Camp Detrick was not a Chemical Warfare Service training ground. They said, "You will not use basic training. You're going to get a uniform and you come directly to Frederick to work on those compounds." I went to Columbus, Ohio, took my military oath, and I was a "buck private" [laughter] in the U.S. Army. Never mind the special assignment. "Yes, you're going to complete basic training." So I left my car in front of the house. I mean, I thought I'd just go! [laughter] I went through the induction center, got properly deloused. [laughter] I went and started at Seibert, and I told my commanding officer in the training company, "I have a car that's not being used. It's sitting in front of my house in Columbus." He said, "Okay, we'll give you a special leave to go to Columbus to pick up your car." He bought it, eventually—my commanding officer; I also got married. [laughter] Kay would visit me from Cleveland, and we got married at her hometown in Cleveland, Ohio.

PRATT: Now, you got a commission somewhere along the line.

WOTIZ: Oh, yes. Well, I went as a buck private at Detrick to synthesize compounds. Then the announcement came that OCS—Officer Candidate School—was accepting applicants for OCS. I did apply and went to Edgewood Arsenal and I got my commission in the Chemical Warfare Service. That was in 1944-1945. I don't remember exactly. After finishing OCS, I stayed on to take advanced training in chemical warfare. After graduating from the school, I had an assignment in Bikini [Islands], the Bikini A-bomb test, as a chemical warfare officer. I established a laboratory in Hawaii and was a guest of the Navy. I went to Bikini and I stayed for the alpha test—it was an airburst. Since there was no effect on our display, not what they were looking for or were interested in, I was able to write my own ticket back to the States, because I didn't have an immediate supervisor. I had been the head of the research team and responsible to myself.

PRATT: Did you see any of the explosions or anything?

WOTIZ: Yes, the airburst. There was another plan, but they went directly to the so-called Sea-test, which was under water, and they knew everything. Since there was nothing to analyze, I was able to go after the first one and order myself back to the States.

PRATT: Did you have any ideas about the future of atomic energy?

WOTIZ: No. Well, except there was very, very great joy. The War is over! We in the military saw a way out. We won it; let's go home. The doubt that started infiltrating us, me and others as well, I'm sure, came later.

PRATT: The reason I asked that question was that some years ago, I ran across a report that was written by a man in DuPont Engineering who had been somewhere and had participated and had seen some of these explosions, and at the end of his report he said, "I have only one conclusion: there must be no more war." That sort of struck me as very interesting.

WOTIZ: Well, the interesting thing is, we observed from a distance the alpha test that was an air burst. You saw a mushroom cloud. Two days, three days later, they said, "It's safe to go and swim in the Bikini Lagoon." Three days after, the contamination—radioactivity was dissipated because they said, "Fine, go through it. No problem." In addition people said, "Well, you will become infertile and things like that." Well, I went on the beach. I didn't go in the water, as I remember correctly. And I did produce three lovely girls! [laughter]

PRATT: That's right! So you didn't become infertile. That's for sure.

WOTIZ: Yes. I wanted to come back to the States. I went to a transportation officer and he said, "We have absolutely no accommodation for officers going stateside." But he had a troop ship. I said, "I want to go home!" [laughter] They were about four or five deep sleeping in bunks above each other on the troop carrier, and I found people interested in bridge. I was always a bridge player. But anyway, there was only one table available that we were aware of. So we had a twenty-four-hour bridge game going. There were enough interested bridge players that when somebody went to eat or to the latrine or to the bunk to sleep, somebody would take the place, so that we didn't have to give up the table! [laughter] We played on a blanket too, but it just wasn't the same! I came home and I wanted to start the fall quarter at Ohio State, to go back to school, to finish my degree. I didn't have enough points, but my mother-in-law, Kay's mother, was very active in the Cleveland Republican party.

[END OF TAPE, SIDE 2]

PRATT: You had started to talk about coming back from the service, but before you get into that, when did you become a U.S. citizen? Was it in 1944? Did you get that with the military service?

WOTIZ: I was drafted in April of 1944. Not being a citizen, the military gave me a choice: become citizen or I could be interned. I said, "Well, I came to America to become a citizen, not to be interned." [laughter] So I was in an American uniform when citizenship was awarded to me in the Southern District Court of Ohio, in Columbus (Addendum IV). I had to go back from the military basic training to get my car and to become an American citizen. [laughter] When I tell the story that I was in the American army before I was a citizen, people always sort of wonder.

PRATT: That was not without precedent. I've found that they did that in the American Civil War. They gave people citizenship if they would come and serve a certain length of time.

WOTIZ: I didn't think it was unique because there must have been other people in similar situations.

PRATT: Well, if they need manpower, they work out some way of doing it. So we are back to Ohio State now.

WOTIZ: Well, my mother-in-law was active in Cleveland Republican circles. She knew a member of the House—I forgot his name—he was known as the "bell ringer." He would come to the House and ring a hand-held bell. You know, he wanted attention! He was such a buffoon. [laughter]

PRATT: It sounds like it!

WOTIZ: Known as the bell ringer. She said, "I have a son-in-law who misses one month of the necessary length for discharge." It was a number of points. He said, "No problem." So I was discharged one month before I was due in order to start the quarter at Ohio State, which at that time was absolutely chaotic. Veterans came back. There was no housing for them. Kay and I took a room that had no running water to do the cooking, and Mrs. Murphy said, "Well, I heard you walking last night." Because there were wooden floors, and you quickly had to take your shoes off and she said, "Well, I rented the room to you because you were a veteran. You came looking for housing still in uniform, you know. I consider this to be my patriotic duty." It was absolutely impossible. But anyway, I started the semester and went back to my original research. So I picked up where I left off the previous two years.

At that time, Detrick's military research project, was no longer of high priority. The War was won and we, so far as I know, did not destroy or did not attempt to destroy the German sugar-beet crop. But the war with Japan was lingering and one of those interesting sidelines: in

the process of making very selective plant hormones, they were also interested in something that was not a broad-leaf plant, a grass. Rice is a grass. In our push to Tokyo, many service men, army and navy, were left behind by the Japanese on various islands. They created havoc for harboring raiders on our shipping. We wanted to get rid of them, especially to starve them out because they were cultivating rice in their rice paddies. They developed their own supply of rice. At Detrick there was a compound developed: isopropylphenylcarbamate. Anyway, something like that. I did not work on this project. When this compound is introduced into the irrigation water, the plant will grow like mad, beautiful, but no seed, no kernel. [laughter] One of those, what you would call later, "dirty tricks." [laughter]

PRATT: It would take a whole season to know that.

WOTIZ: It's a short season for rice. I believe that they had three harvests in a year. I don't think it was ever used, but it was interesting chemistry, you know, and a combination with botany, and we really got involved. It was fun. I mean, if a war can be fun.

PRATT: Well, the intellectual stimulation of it. In fact, I wanted to ask you about the practical application of some of these things and you've already told me of them.

WOTIZ: Well, we did something worthwhile, synthesizing plantgrowth-regulating compounds. If we knew what else it could do, it was on the inside, so to speak.

PRATT: That said, I'd be tempted to ask you what you think about the current controversies over genetic engineering.

WOTIZ: Inevitable.

PRATT: That's the way I look at it.

WOTIZ: I mean, no matter what you think, it's absolutely inevitable.

PRATT: It will happen somewhere.

WOTIZ: For better or worse, yes.

PRATT: Regardless of who does it. Anything else you want to say about your work here?

WOTIZ: Chemistry?

PRATT: Yes.

WOTIZ: Well, I came back, wrote my dissertation, and discovered allenes. Now, the question was, how did it originate? Where did it originate? Dimeric acid. Remember, I said I got an acetylenic acid, allenic acid, and what is the dimeric acid? Why dimeric? Because it had twice the molecular weight but it showed only one free carboxy group, and it was formed in the sequence of reaction, a Grignard reagent added across of the double bonds in the allene. That was not known. In other words, we had the allenic carboxy acid; and are able to add any Grignard reagent. Actually the starting material, an allenic acid added Grignard reagents, and formed a di-basic acid upon carboxylation. But only one carboxy group was detectable by titration because of the steric hindrance. The whole carboxy group is surrounded so one cannot find it.

If one started with branching in the Grignard reagent that's even more so. This became an area of research to make highly sterically hindered compounds. Starting with acetylenes, we were able to prepare allenic acids, which were able to add another Grignard reagent capable of carboxylation—so a new chemistry. I became aware of the general interest because it was really pioneering work. No precedent. As I said, we misdiagnosed the structure of the dimeric acid, but eventually corrected ourselves and found a new chemistry.

PRATT: It's the joy of learning something new.

WOTIZ: Yes. Do you want me to talk more about acetylene chemistry?

PRATT: If you'd like. You obviously enjoyed it, so say as much as you want about it.

WOTIZ: We reacted the mono-sodium acetylide with butyl bromide to form 1-hexyne. Standard procedure, nothing new. The terminal hydrogen in 1-hexyne is also acidic, and when reacted with an alkyl Grignard reagent, it forms an acetylenic Grignard reagent and the appropriate alkane derived from the alkyl Grignard reagent.

Now another example of serendipity: I was, at that time, at the University of Pittsburgh. We had a custodian of chemical ware, compounds, chemicals, and he said, "We rented a

cylinder of methyl bromide for you. When are you going to finish it so I don't have to pay demurrage?" I said, "Well, I finished the type of chemistry for which I was using it, but I am too stingy to return a half empty cylinder of methyl bromide." Methyl bromide, being a gas, comes in cylinders. So he said, "Well, can you do something?" I said, "Yes, I think I can." I was using ethyl magnesium bromide, made from ethyl bromide, in a reaction with acetylenes. I can accomplish the same compound with methyl magnesium bromide. Very simple chemistry. I had a student who was able to accomplish it, and we used large quantities. I came back to the laboratory the next day and the student informed me, "The reaction still is not finished." "Well, how do you know?" "Well, when we make it, we put on a bubbler," a flask that if a gas escapes, you can see it bubbling through. When you add ethyl magnesium bromide to hexyne, the ethane comes off as quickly as you add it into the reaction flask. But here he said, "I added all of the methyl magnesium bromide and the methane still keeps coming off." I said, "That's surprising; why would the methyl magnesium bromide react so much slower than ethyl magnesium bromide? That was unexplained. There's something wrong. Repeat it." [laughter] Well, he did not repeat it, but I had a new graduate student and he repeated it. The fellow's name is Raymond [E.] Dessy. He is now a full professor at VPI [Virginia Polytechnic Institute and State University]. But anyway, let me tell you about Ray Dessy because it's, again, serendipity in the largest sense of the word.

Dessy was a graduate of the Pittsburgh College of Pharmacy. He received an NSF [National Science Foundation] pre-doctoral fellowship. Well, he had just graduated. He had a friend who also graduated from Pharmacy school, who came to me and was my first research student. And they were old buddies. Dessy, having graduated, asked for project recommendations. "Oh, you have to work with Wotiz. He's a young fellow. He spends a lot of time in the laboratory." I came one morning into my office and a chubby fellow was sitting in my office and he said, "I'm going to do research with you." I said, "Oh? You have not been admitted. You haven't taken any courses here. Come again after you finish so many lecture courses." He said, "No, I want to do research with you now because I have a fellowship and it requires me to do research right from the start." Well, when I heard he has an NSF pre-doctoral fellowship, I knew immediately that's very unusual. He must be good. He was not only good; he was excellent. [laughter] He started working with me. I said, "Well, I'll be teaching, in the fall, an organic prep course, where we teach various techniques to make preparations. I can teach that course to you in summertime. There are no graduate courses offered in the summertime, but I'll teach it to you on a private basis. You will register for it in the fall so that you can get credit, so you will complete six different laboratory techniques." Well, one was a Grignard reagent, and I said, "Well, one student reported that the reaction between ethyl and methyl magnesium bromide with 1-hexyne are very much different. Methyl being very slow. I would like you to verify whether it was done properly." And the next morning he had it all set up. [laughter]

PRATT: A self-starter.

WOTIZ: Yes. He said, "Yes, it's slower." I said, "How much? Well, let's assign some kind of a relative reactivity. Let's consider that ethyl magnesium bromide would have a value of a hundred in the reaction with 1-hexyne in ether, and some may be higher, some may be less reactive." Methyl magnesium bromide eventually turned out to be fifteen on a scale of ethyl one hundred. This started a completely new research direction. In the reaction of acetylenes with various types of Grignard reagents, there were solvents or co-solvents, with different metals, different halogens. We finished with actually proving the existence of the so-called Schlenk equilibrium. There were two of them; it was Schlenk and Schlenk. I think father and son. They represented a Grignard reagent as a mixture of dialkyl magnesium and a magnesium halide. Because you cannot represent a Grignard reagent with a simple formula. I think Grignard already showed that. And this was proposed, I mean, it was hypothetical. I said, "Well, we know so much about the relative reactivity of Grignard reagent with 1-hexyne, let's test it." We made a synthetic Grignard reagent by reacting di-ethyl magnesium, halogen-free. We added the halide. Let it sit for a while and added hexyne and established its reactivity. Ethyl has a reactivity of one hundred. Now when we made the synthetic Grignard reagent, it reacted with 1-hexyne identically, reactivity of one hundred. So what was once was an important hypothesis has now been verified by an interesting kind of laboratory work. We even used a tagged magnesium. We made a radioactive magnesium to see whether the results were the same. We precipitated it and got the same amount of magnesium in the liquid and the precipitant, equal radioactive divided—fifty-fifty (7). Grignard reagents were very interesting topics in chemistry. Of course, now the pioneering work of Victor Grignard has been surpassed by other organometallic compounds using transitional metals and God knows what. Every metal has been incorporated now. It's an old interesting reagent with high selectivity; this was always the mission of synthetic organic chemistry, selectivity. You don't want a reaction that produces a dozen different side reactions. The question was: what is the main reaction product? You'd like to have it nice and clean-cut, nothing else. Victor Grignard, in his pioneering work, knew himself that RMgX is not a proper representation. But the best way to represent a Grignard reagent is by all three components, because all three components are present in what we call a Grignard reagent.

I'm getting ahead of myself. Some years later, I was taking students in my history tour to Lyon, France, where Victor Grignard became a professor and where he did his final work at Lyon University, or the University of Lyon—I can't recall. As you very well know, I always wanted the inside story. So the inside story of our visit to Lyon was an interview with Victor Grignard's son [Roger Grignard], who was a chemical engineer. He interrupted his vacation in Switzerland to come to Lyon to talk about his father's work. In a private conversation, he informed me as to the doubt that his father had at the time he was there. Now, this also has a history, this stop in Lyon. Do you mind if I get, again, ahead of my story?

PRATT: No, go ahead. We'll double back.

WOTIZ: The first time I went with my students to France, I arranged for a lecture on the history of Collège de France, which in some ways is more prestigious than the Sorbonne. I was

in touch with a local professor, Henri Jacques. He said, "I'll be glad to talk to you but I have to speak in French." I said, "Well, no problem. I am going to hire a translator." A translator was found for me. She was a certified translator from French into English working for the United Nations. I made the initial contact through my acetylene-chemistry peers. People knew me, and they made the contact. Matter of fact, most of our lectures were developed through my friends in the field of acetylene chemistry, what we talked about earlier. Well, let's get back to what I tried to tell you.

Professor Jacques went to the front of the class, and was talking in French. The translator was translating poorly because she did not know chemistry. I mean, one cannot just translate if you don't know the chemical terms. So I had to get up and I understood reasonably well what he was talking about, and between the two of us—it took about two hours or more—we translated his remarks. Afterwards, Professor Jacques invited me and all the participants of the 1971 tour to a champagne party on the rooftop of Collège de France. It was late afternoon, the sun was setting behind the Eiffel Tower, beaming against Sacre Coeur on the other side. He also invited his collaborators in research to meet and mingle with us. After two, three glasses of champagne, Professor Jacques spoke excellent English! [laughter] Now, here he stands for two hours not giving <u>any</u> indication that he knows if our translation was correct or not! Well, at that time, I wrote—that being the first history of chemistry tour, it must have been in 1971. I wrote an article in *Journal of Chemical Education* describing the unique way how to teach the history of chemistry, where we went and what we heard and what we learned (8). I wrote "All lectures were presented in English with the exception of the one in Paris." I did not specify who it was, what we heard, or anything like that. Two years later, I wanted to go to Lyon to make the connection with Victor Grignard, and I again had my contact through acetylene chemistry. The fellow in Lyon wrote to me, "Very glad to have you." He would see if he can arrange a lecture with Victor Grignard's son. We came, and were received very cordially. We heard that Victor Grignard's son is going to speak to us, and we were very pleased that no French to English translator was necessary. They treated us to a lunch in the faculty club. They fed us appropriate aperitifs, the dishes were accompanied with appropriate wine. It was a noon dinner, and having too much to drink, I had to get up—as you well know—and thank our host for the hospitality. I said, "It's actually overwhelming. I was very much made welcome here. You went out of your way to make us comfortable by being so hospitable. I must confess that I had some hesitation of bringing my group to France because of an experience that we had two years ago in Paris." And my host got up, "Professor Wotiz, we have read your article about the lack of an English lecturer in Paris (8). Well, we want you to know, we are not reluctant to hearing or speaking English. And besides, [Charles] DeGaulle is dead!" [laughter]

PRATT: That's the story behind the story, so to speak. [laughter] I want to go back to when you got married in 1945. You mentioned already that your mother-in-law had a tie-in to the Republican politics. Well, how did the two of you meet? She was from Cleveland?

WOTIZ: I met my future wife, Kay, in the chemistry library at Ohio State. She was taking freshman chemistry. She was wearing a green pointed hat like Robin Hood, with a feather.

And that was the beginning of the conversation. "What are you doing here in that hat?" A hat in a chemistry library was never conventional. Especially with a long feather sticking out! Well, we are still looking for somebody to formally introduce us. I picked her up in a chemistry library. [laughter] That's all. There were never any formal introductions! [laughter]

PRATT: But she was from Cleveland?

WOTIZ: She was from Cleveland, yes. She was studying bacteriology, but had to take freshman chemistry.

PRATT: Oh, was she majoring in bacteriology?

WOTIZ: Yes, but she did not finish her undergraduate work. When I was in service she started working as a medical technologist in a hospital, testing milk and so forth. But she did not finish.

PRATT: Well, I have down here, I ask, "Was it love at first sight?" It must have been something there.

WOTIZ: Well, strong enough that—what's the saying—"Absence makes the heart grow fonder." That may have something to do with it.

PRATT: And did you get married in Cleveland?

WOTIZ: In Cleveland. I mean, I visited, weekends, with her when we were still students and was always received well. Her father was murdered resisting a holdup in his shop. So her mother was a widow. Kay was only fifteen years old when her father was murdered.

PRATT: What kind of shop did he have?

WOTIZ: He was a furrier. A designer of furs. What was the name? Elliott Ness was the chief of police in Cleveland at the time.

PRATT: Elliott Ness was chief of police in Cleveland? How about that!

WOTIZ: Well, the murderer was apprehended and eventually executed. Kay was around fifteen years old. The family of the murderer tried pleading for his life, and there was also threatenings. Kay was going to school escorted by the police. A sad story anyway. So her mother was on her own and she always, when met in Cleveland and when we were just visiting before marriage, was very well disposed to our relationship, and she was a Republican committeewoman.

PRATT: Did Kay have brothers and sisters?

WOTIZ: No, she was an only child. But she definitely doesn't want to do anything with the Republican party! [laughter] I consider myself an Independent. She says, "I'm a Democrat!" [laughter] At least she contributes. I know this. I don't know how she votes, needless to say, but I do know that she's sending money.

PRATT: You don't discuss politics then?

WOTIZ: Oh, we'll probably cancel out each other some of the time.

PRATT: Well, Mary and I do discuss politics and probably pretty much vote the same way. One thing I wanted to ask you—did you get any GI Bill money?

WOTIZ: That's how I finished. Yes. The interesting thing is that I had a fellowship when I came out of the service, but I also used up the GI pay. The school sent the Veterans Administration a demand for payment of my tuition as an out-of-state student. I said, "I don't understand. Why should the Veterans Administration pay out-of-state?" I was a student there before the war. I was naturalized in Ohio. I had a wife in Ohio. In what state am I a resident? If I want to establish residency, Ohio is the place." They said, "Oh, no. You have parents who are living in Pittsburgh." I said, "I am of age. I was never a dependent in America." This was a precedent-setting case. It went all the way to the head of Veterans Administration because they appealed it. The Chancellor of Ohio State had to give in, and it became a precedent, as I understand, or was told. I don't know what kind of precedent. But I claimed Ohio residency and I thought it was not proper to charge me out-of-state tuition. Besides, it was an unimportant matter because I got paid by my fellowship anyway, but I sort of reacted adversely by the Veterans Administration being billed for out-of-state tuition.

PRATT: Another windmill to tilt there! [laughter] Well, earlier on, you had mentioned the University of Pittsburgh. You told some story about that, but I don't think we covered how you

actually chose to work at the University of Pittsburgh. You just mentioned about your parents being in Pittsburgh.

WOTIZ: That's right. While I was still in Richmond, my parents came over. No, while I was still at Furman, my parents came over and lived with my brother. No. [laughter] They came over and lived with my relations in New Jersey first, and then when my brother became an employee at Union Carbide, he lived in Charleston, West Virginia, got married there, and settled in Charleston. So my parents found a position—the war already started. Dad was a civil engineer, and got a job in the West Virginia State Highway Department building bridges. [laughter] The interesting thing is that when the war started, American engineers could not construct everything in steel. They took blue prints for a steel bridge out of a drawer. There was a shortage of steel and reinforced concrete became necessary. Well, my dad was an assistant to a Professor Melan in Prague who specialized in reinforced concrete. So after about forty or fifty years after college, running a business, he did not keep up with engineering. But when he saw what the Americans do or don't do, calculating reinforced concrete bridges, it all came back to him. So he became a very valuable addition to the State Road Commission of West Virginia, and later on he moved to Pittsburgh because he had a better job in engineering. He was also conducting night courses for people who wanted to know how to calculate reinforced concrete bridges. He left everything, any belongings behind in Czechoslovakia, and he started a new life and became very successful as an engineer. At first, my brother and I were a little bit uneasy. "How is dad going to do it? After all, he's fifty years old. He cannot work as an engineer!" [laughter] He died at the age of eighty-six, in Florida.

PRATT: Isn't it interesting how, when you're young, you look at somebody fifty years old and you think they're an old man!

WOTIZ: That's right. Now that's changed. They lived in Pittsburgh. I was in school. First Richmond, then Ohio State. I used to go on vacation to Pittsburgh, which at that time was a miserable place. Polluted and everything.

PRATT: Oh, I remember.

WOTIZ: Sure. And I'd say, "How can anybody live in Pittsburgh?" Well, when I finished my Ph.D. work, I answered a blind ad in *C&E News*, and they offered me more and everything than any other school, and I said, "I guess I'm going to the University of Pittsburgh!"

PRATT: The Tower of Learning!

WOTIZ: It's more than that—the Cathedral of Learning. That's the official name. The University of Pittsburgh had a Chancellor named Bauman, and he had been in the office for years and years. The Cathedral of Learning was usually referred to as Bauman's Last Erection. [laughter] You never heard it? [laugher]

PRATT: Oh, no. [laughter]

WOTIZ: The Cathedral of Learning. But a nice place.

PRATT: I said Tower of Learning. But I believe it is Cathedral of Learning. Right.

WOTIZ: Cathedral, yes. We started our present trip to Delaware from Pittsburgh. Two days ago we were in Pittsburgh. We went to look at the graves of my parents who are buried in Pittsburgh. We looked over our home, our apartment, which we occupied when we moved to Pittsburgh and then to a house, which we bought in a township outside. It's amazing how deteriorated the inner city still is.

PRATT: I know.

WOTIZ: The apartment was then brand new. The house—well, it was a two-bedroom house and a family room when we bought it. We extended the roof and the attic, added another two bedrooms and a bath upstairs. It was a brick house. The bricks did not match, but right after the war, you didn't have the supply. So the present owner put some siding around it [laughter] to hide the bricks that did not match the lower part of the house. I couldn't speak to him. They didn't seem to be at home. It was a nostalgic trip, the last few days.

PRATT: We did something like that a few weeks ago. Went back to Ann Arbor, Michigan. I lived there for one year, attended a church I had attended, and went down to a plant where I had worked and just to look around and take some pictures of it. Yes, that's a nostalgic trip.

WOTIZ: Incidentally, I have a camera here, and I think before we are finished here, we'll take a picture of ourselves sitting here.

PRATT: Yes, all right. I have one up here too, so we'll do that. That's good. I meant to ask you, when you went back to Ohio State, of course everything—you've alluded to this earlier—the returning veterans just had everything swamped.

WOTIZ: Absolutely. The best students we ever had.

PRATT: All right. This is what I was going to ask.

WOTIZ: Really, you hear about things being hard. I was teaching them.

[END OF TAPE, SIDE 3]

PRATT: Anywhere from one to five years—four years out of their lives and they were anxious to get on with it. I think from stories I've been told, that professors were probably in more shock—older professors, for example, that always had the average high-school graduate coming, and here now you have seasoned battle veterans, and they weren't going to put up with any crap.

WOTIZ: Exactly.

PRATT: So they were anxious to get on with things.

WOTIZ: Now, my university right now, at SIU [Southern Illinois University], we have lost about three thousand students in enrollment. From twenty-four thousand to twenty-one thousand. So there is a demand by the administration to retain students, which means lowering standards. We just had a president who was essentially voted out. We don't have a vote on the faculty, but the faculty put so much pressure on him. Now they hired a black president who comes from Middle Tennessee [Middle Tennessee State University], which used to be an all-black institution. He was selected by the board of trustees. The faculty had no input. Nobody interviewed him officially. He has a reputation of bringing in a number of new students. He doubled the enrollment there. Well, we had a share of our students who did not meet the academic standards, and the faculty is very fearful that the academic standards will be lowered again. He has no research background. He has a doctorate in education.

PRATT: I'm surprised that SIU would be losing students, though, because I know that private schools have a difficult time because of the tuition differences. But it's a state school so why would SIU lose students?

WOTIZ: Well, I tell you. My opinion—it may not be universally accepted. SIU had a reputation of being a party school. That also meant an unlimited amount of alcohol in a fraternity/sorority house; a spring fest that brought people, mainly from Chicago, from out of town, to raise hell. Same thing on Halloween where cars were overturned and the sale of liquor certainly added to the amount of disorder. So in order to avoid disorder, the administration started to plan vacations during the spring and Halloween vacations to get the students out of town. It worked. They raised the age limit for drinking. Edicted—if there is such a word—the sale of beer in a container larger than a glass, say a barrel. And the students lost interest in SIU because the fun they had before, on which the university gained its reputation, was no longer there. So they lost three thousand students in the last two years, and now they are at a low point. They re-instituted liquor sale, because the merchants are suffering as much as the university. The university loses state appropriation because the number of the dollars comes according to the number of enrollment. So two or three years in a row, the colleges had to return money to the state because they didn't meet the enrollment predictions. I mean, I'm glad to be looking at this from the outside. The morale is indefensible.

PRATT: While you were at Pittsburgh, what was the outstanding thing you did at Pittsburgh, or was there anything outstanding? Was it just routine?

WOTIZ: Well, the highlight was my research in chemistry while I was in Pittsburgh because I certainly built an international reputation, which as I mentioned earlier, has opened doors in related fields. So I lived there for nine years.

PRATT: Yes. And you had graduate students?

WOTIZ: Oh, yes. I mentioned Dessy, by far the best. I had about twelve or fifteen students over the years. Some I took with me when I moved to Diamond Alkali Company, which was in 1957.

PRATT: I was sort of surprised that you left academia for Diamond Alkali.

WOTIZ: Well, there was a very good reason.

PRATT: That's what I wanted to explore with you as to why did you leave?

WOTIZ: Money! [laughter]

PRATT: Money! Well, I was wondering if that was it.

WOTIZ: Our third daughter was on the way, and I read in *C&E News* a call for someone to direct research in a field of acetylene chemistry. So they came down, talked to me, tried to interest me in the Diamond Alkali Company, and when we started talking turkey—money—they were not ready to offer what I was asking. I wanted to double my salary to ten thousand dollars [laughter], which eventually they paid, but I was an associate professor making less than five thousand dollars. I remember distinctly the letter that I wrote. "I can no longer afford the luxury of academic life." That's exactly what it was. The research director at Diamond Alkali was not a chemist. He was a patent lawyer who took some chemistry courses. So what enticed me was the fact he wanted somebody to do pioneering research. He said, "I don't understand chemistry. If you think this is new, I will give you permission to publish. I'm a patent lawyer. If you find something new, you will publish as soon as you submit it for review to our patent office. We published freely in the *Journal of Organic Chemistry*, and *Journal of the American Chemical Society*." As soon as we wrote it for a patent, we sat down with the patent lawyer, I sent it to the editor of the journals. So our publications were not typical of the Diamond Alkali Company.

PRATT: Well, I knew a little bit about the Diamond Alkali. So I did a little bit more reading on the company in *Haynes*, you know, William Haynes five-volume set of the history of chemistry in America (9). I thought, well I don't know why—this was making soda ash, and they were making caustic soda. You know, it's all inorganic chemistry. But then I found that in the early 1940s, or mid-1940s, I guess, they got into coke by-products, and I thought okay, here's where the organic chemistry connection comes. But I was wrong about that.

WOTIZ: No. It was a typical alkali company that would pump brine, just like Dow [Chemical Company] did from under ground. They were electrolyzing it. They would make chlorine, sodium hydroxide, soda ash, and so on. They also wanted to upgrade the value of chlorine. They wanted to introduce chlorine into organic molecules because they were sold by the weight. So chlorine, as such, sells for less than a penny a pound, but if incorporated, into what we now call chlorinated hydrocarbons, you upgrade it. They were building a vinyl chloride plant in Deer Park, Texas, based on acetylene. They were going to add the HCl to acetylene and make vinyl chloride. It's not the cheapest way to make vinyl chloride. But anyway, they were making polyvinyl chloride. So there was an excess of acetylene and excess of chlorinated organic compounds. They wanted somebody who would start new areas of acetylene chemicals. I proposed we ought to be making and adding chlorine to the unsaturation in those acetlyenic chemicals. Newly preparing a new type of chlorinated organic compounds. They wanted a research director to head this long-range research, not product-oriented, research. But anything. Mind you, I came from academia and I stayed five years in industry. I have forty-five patents to my name—or something like forty-five—domestic and foreign, and about a dozen publications

in peer-reviewed journals. We were turning the crank, because no matter what we did, it was new.

PRATT: It was new, and patentable.

WOTIZ: It was new. There were no precedents. Now, Diamond Alkali Company had a working relationship with Boyce Thompson Institute in New York to evaluate the properties of chlorinated compounds as a herbicide. So my background in my wartime research making 2,4-D was exactly along the lines of what they were doing in research anyway, and the more chlorine, the better. Of course, this came to an end when the policy became "no chlorine" in organic compounds. But I enjoyed a very stimulating industrial life. I also learned how to work with chemical engineers. I did not have the appreciation of what a chemist does and what a chemical engineer does. They are two different aspects of research because when we start producing desired compounds they always had to be upscaled. So you had a chemical engineer start working with it. The first thing that went out of any reaction was the ether [laughter] in Grignard reagents. They never would use ether. That's too volatile, too hazardous, and too explosive! Of course in academic research, that's the most convenient—making Grignard reagents, you had to use ether.

So, there was another reason why this came to an end. The research director who hired me died, and with him died the generous attitude for basic research. It became very, very standardized, industrial type of research. "No, we are not going to publish and let the competition know—no matter how original it is." It's what you refer to as industrial research.

PRATT: Yes. We had a term at DuPont, we called it, many times, "pioneering research," and the people that did this work were always at the mercy of the thinking at the top. When Milton Stein had gone into pioneering research in late 1920s, early 1930s, he was very pro-publication. I know he wrote an article in *Industrial Engineering Chemistry* once that said, "We live by this industry and therefore we are obligated to put back at least as much if not more."

WOTIZ: Who was Milton Stein?

PRATT: Well, he was a Johns Hopkins Ph.D., one of the early Ph.D.'s.

WOTIZ: Yes, but he was CEO?

PRATT: No. He was the head of research at DuPont.

WOTIZ: Oh, DuPont. The Jackson Laboratories?

PRATT: Well, he headed both the experimental station, what was called the Central Research or Pioneering Research, and he was very pro-publishing. Well, he moved up a notch, and his successor did a total flip-flop, and they said, "We're not going to publish." They just reversed everything that Stein had done, and so the research people—I'm sure there must have been a tremendous amount of turmoil at that time.

WOTIZ: When I was finishing at Ohio State, I had a job interview with DuPont. I stayed at the old DuPont Hotel. And after searching my soul, the fellow who interviewed me or brought me there for an interview said, "You cannot survive in industrial research." I mean, that was very, very straightforward. I know it was in that period when there was no basic or pioneering work or what. He said, "You will not be happy with industrial research," which now leads me to something else.

I was so successful in producing patentable material at Diamond Alkali that when the research director died, an associate who was his successor came to me and he said, "John, you have done wonders for us. Would you mind undertaking a problem that is really inorganic? Those people there don't seem to have a knack of what to do." He wanted me to undertake the synthesis of chromium hexacarbonyl [$Cr(CO)_6$]. The literature mentioned a synthesis using chromium trichloride, CO, and a Grignard reagent. So the new research director had an excuse why he came to me to see if I would undertake the synthesis or how to make it industrially. They thought that they were able to upgrade the chlorine in a roundabout way. The way you make chromium chloride is you make ferrochrome, an alloy, which is then chlorinated and separated from iron chloride. Then it's reacted with Grignard reagent and CO to make chromium hexacarbonyl. Okay—that was described in the literature.

Now, why do they want $Cr(CO)_6$? To compete with chromium plating. They thought they can just develop a method where the carbon monoxide will be thermally eliminated and chromium will stay as plating. Well, we investigated. The way it was prepared and used to be described in the literature. One starts with chromium trichloride, uses a Grignard reagent, carbon monoxide, to make chromium hexacarbonyl. That of course is not an industrially feasible reaction. But it was a starting point. We were changing—it was typical Edisonian-type of research. [laughter] Trial and error. I'm not proud of it at all. Except that it turned out to be very interesting. We started changing with reaction conditions, and the yield went from 20 percent to 40, to 70, to 95 percent, to 105, and to 110 percent. We said, "Well, wait a minute! There's something wrong here!" [laughter] What has happened? We were not making chromium carbonyl from the $CrCl_3$ ingredient. We are leeching out from the stainless steel, the chromium of the autoclave! [laughter] In the autoclave! How we survived, again, that's curious, because we were also making nickel carbonyl and iron carbonyl, and weakening the wall of the autoclave.

PRATT: Yes, sure. Whatever was in the chromium, stainless steel.

WOTIZ: Yes, 3/16 stainless steel we used, and we found out that the best source was ferrochrome to make chromium hexacarbonyl.

PRATT: That's really interesting because the whole idea of ferrochrome—that had come, you know, talking about the carbide acetylene reaction, all these high-alloy steels had come from the electric furnace, and that was sort of piggy-backed on top of the carbide reaction. So when you mentioned a while ago that using ferrochrome for that, I was fascinated with that.

WOTIZ: Never mind chlorinating it to make chromium trichloride. Just charge autoclave experiment with ferrochrome.

PRATT: Well, did you try plating with it?

WOTIZ: No. I left. By that time, when I left, they started converting into a petroleum company. They bought Shamrock Oil and the question is: did Diamond buy Shamrock Oil or did Shamrock Oil buy Diamond? I was gone at that time.

PRATT: The reason I was fascinated with that, my first job out of college, I was doing development work in electroplating, chrome plating, nickel plating, copper plating, and that was fascinating work. But it was really Edisonian. Really Edisonian. I mean, we had no control whatsoever. So that was just fascinating to me.

WOTIZ: They must have known something about electrochemistry?

PRATT: Oh, yes. Well sure, we knew that. But if for example, you were running a chrome-plating bath, well particularly a nickel-plating bath, and all of a sudden instead of getting bright nickel, it would come out as black-nickel oxide. I mean, it would just turn. It just changed. And the only thing we knew to do was, you'd put in what we called "dummies." You just put in great big blocks of steel, and you'd just plate it and plate it and plate it, and eventually it would turn back bright again. Then you'd stop. But nobody knew why.

WOTIZ: Quite wasteful.

PRATT: Well, it was very wasteful. Very slow and very wasteful. This is your interview, not mine, but there is one thing I always like to tell people. My dad had given me a new watch for graduation, a wristwatch, and the cyanide fumes were so hot in the plating room where we were, down in the operating areas, that cyanide got on the inside of the watch face and it took all the gold off of the hands. People would get it on their skin. It's a wonder people didn't die.

WOTIZ: We didn't take any precautions. I mean, I wouldn't say that I put my hands in it. I had chemists and technicians working for me. So far as I know there were no ill effects. But we christened it "autoclave carbonyl." [laughter]

PRATT: Autoclave carbonyl. That's a good name for it.

WOTIZ: But it could have blown us away because I don't know how much chromium we already leeched out of the stainless steel autoclave.

PRATT: That's right. It could have blown up. Well, you must have missed teaching because when you left, you went back to teaching.

WOTIZ: Well, when the research director died, the fun in research was no longer there. Yes, it turned out to be funny. Now I was working in inorganic chemistry where really I had no background, except the old method of using the Grignard reagent. It turned out to be successful. But now, "Why don't you do this? Why don't you do that?" The basic research unit disappeared. I was the first one that went, and I talked with people I left behind.

PRATT: How many people did you have in your group?

WOTIZ: Oh, well, I think about ten—chemists and technicians. One came with me to Diamond. That was a transition, I mentioned earlier. He was the first one. His name was Adam. [laughter] Joe Fodor came with me when I left for Marshall and from Marshall to SIU.

PRATT: The first one. Well, you go from Pittsburgh to Marshall University.

WOTIZ: No, no. Pittsburgh to Diamond Alkali.

PRATT: Oh, yes. I meant Diamond Alkali, sure. Oh, I meant to ask you: where were you physically located at Diamond Alkali? Was that Cleveland?

WOTIZ: No, in Painesville. When I came, the new research building was being finished. It was in the town just on the other side of what is now I-90. A very elegant, new research building in the country, located with easy access to the interstate, like you now see, a modern structure, nice cafeteria, very nice environment, plenty of parking. [laughter]

PRATT: All right. So now we're going to leave Diamond and we're going to go back to teaching, and so how did you end up going to Marshall?

WOTIZ: Okay. Again, serendipity. I knew that I would be leaving and I said I've been five years in industry. I learned quite a bit. Make no mistake about it. I had an appreciation of industrial research and working with engineers. Now, it was not so rosy; why don't I try teaching on an administrative level, because something also I did not know previously, I learned. Even how to write a memo. Simply said. I mean, before I went to industry, I had no idea what a memo was. [laughter] But anyway, I knew how to work within the confines of a bureaucracy. I think I was well prepared to assume a department chairmanship. I let it be known to my friend, Professor John Sampey at Furman.

PRATT: Oh, okay. Today you'd call that "networking."

WOTIZ: Networking. Sampey responded, "I just received a letter looking for a department chairman at Marshall University." Before I started there, I went back to Ohio State University as a visiting scientist to update myself in education, and I got some ideas independently developed, which turned out to be standard now, teaching organic chemistry in the second year, the sophomore year. Organic chemistry was usually taught in the junior year. I said, "Why? When are you taking physical chemistry? Why don't you take organic chemistry and teach it before they have completed the calculus?" That's why one had to wait for physical chemistry. I came. The dean at Marshall University was a chemist, and we started talking about the curriculum. "What is your vision?" I said, "One thing I would like to do. I would like organic chemistry to be taught in the sophomore year." "Impossible," said Dean Bartlett, a typical West Virginian, collector of guns, rifles, making his own powder! [laughter] We had a lengthy discussion. And I convinced him. Of course, organic chemistry everywhere is now taught in the second year, in the sophomore year. But I came to that conclusion, maybe it was not the first time, but I sort of evaluated the sequence of courses and made this change. So I came to Marshall University, which obviously was very pleasing to my brother in nearby Charleston. I found a department that was wracked with dissent. I replaced a chairman who—there was some bitter feeling between him and the dean. I started building a research-oriented department.

PRATT: Up until this time, were they offering anything beyond a bachelor's degree?

WOTIZ: A bachelor's degree. Perhaps they had something toward a master's degree. I don't recall. But the charge from Bartlett was to hire a research-oriented staff, which could lead to a doctorate degree. His argument and others at that time, was that Huntington is in the center of West Virginia population. The state university was in Morgantown. That's closer to Pittsburgh than to the center of the population, which is in Charleston and Huntington. Huntington is a bigger city than Charleston, but Charleston has a chemical industry, and they were asking for courses to be taught that might lead to an advanced degree. The supply of chemists was there. Morgantown had an extension center. It was not meeting the demand for chemists who would be interested in degree work at nighttime. So I was able to bridge that gap and I also had a relationship to Charleston through my brother. I came and I talked to chemists, and said, "This is what we want you to do with the new regime in Huntington. You will send people here, qualified people, and establish, or replace in some instances, other ones who were not in tune with this new orientation." The best recruiter that I had was Ned [D.] Heindel, a former ACS president, a gentleman, and a scholar, not to mention his outstanding personality.

PRATT: All right. That's a good segue because I was going to ask you if he came right out of Delaware to you? The University of Delaware?

WOTIZ: He had some post-doc experience.

PRATT: Okay. I knew he had his doctorate at Delaware.

WOTIZ: Of course, he went back to Lehigh [University] when they offered him an endowed chair. So I was five years in Huntington, and he came the first year and I think he left after three, not more than four years.

PRATT: I have something here that I want to read into the record, because this came from Ned Heindel (Addendum V). Are you familiar with it? Ned writes so beautifully on stuff like this. He said you had him [the Marshall vice president] "backed against the hallway wall, just outside of the departmental offices on the third floor of Marshall's Science Building. He was mumbling something about how if he gave chemistry all that money you wanted, then the English department wouldn't be able to get its audiotapes of Shakespeare. Expressing no appreciation of English's needs, you were doggedly arguing that the University's Vice President of Finance for institutional funding for a new departmental NMR [Nuclear Magnetic Resonance machine]. You were persistent. You were eloquent. You were in his face, and you succeeded. It was

1966, and this young assistant professor [Heindel] was gaining the impression that he had just seen the reason why God created departmental chairmen!" I love it!

WOTIZ: This comes from a letter Ned wrote on my eightieth birthday celebration in 1999, which my daughters arranged in Phoenix. You were present, Herb.

PRATT: Right. I'm going to read another paragraph of this because I think it's so great. It says: "In the two years I [Heindel] spent at Marshall"—oh, he was only there two years—"I learned a great deal from you [Wotiz]. Principle number one: the faculty that drinks together, squabbles less. Action Item: take the gang for a pitcher once or twice a week over occasional gatherings at home since Kay was a great hostess. Principle number two: building bridges to nearby companies returns benefits. Action Item: play bridge with Ashland Chemical leadership; introduce your faculty to the Carbide brass at the KanawhaValley; ACS section meetings. Principle number three: get to know your serious in-state competition on a friendly basis and they'll be less likely to eat your lunch at budget-making time. Action Item: schmooze with the West Virginia—WVU—chemists at joint seminars and annual West Virginia Academy of Science meetings. Principle number four: understand your customers' needs and address them. Action Item: provide graduate education at convenient times in late afternoons and early evenings for the commuting employed B.S.-holding chemists at Solvay, Monsanto, Ashland, and Carbide, and the growth in enrollment numbers can justify your request for staff expansion." So I would say from this that it sounds like they had a pretty good politician as well as a chemist there!

WOTIZ: Well, I think the most pleasant years that I spent were while I was at Marshall. We were a family. Oh sure, there were squabbles. No doubt about it. But I was very, very happy and successful in finding the right people. We just gelled. I had about six professorial rank, assistant professors. One of them didn't work out. He was a student of Ray Dessy—my "grandson." [laughter] But it just did not work!

PRATT: It didn't work out.

WOTIZ: Yes. I mean, I was very pleasantly disposed to him, but if it didn't work, it didn't work.

PRATT: Ned ends this up by saying, "Those are just a sampling of instances that I witnessed of how one transforms a small chemistry department in a former normal school"—in other words, a two-year school—"to true university status. Persistence, commitment, energy, and a defined goal worth fighting for. Old Dean Bartlett and the Marshall Administration picked just the right

man to lead the transformation, and today that university's small but high quality Ph.D. program derives directly from your initial efforts in the 1960s." I think that's a very high accolade.

WOTIZ: I mean, put it this way: this was read to me at my eightieth birthday celebration that we had in Phoenix, Arizona, two years ago, and that's Ned, all over. We actually cried when he left. We made it possible because the recommendation that he got from us represented our sentiment. He was going to Lehigh to fill an endowed chair. You don't fight anything like that. No matter how much we could have paid. Money was always a problem, needless to say. But not the primary problem. He was going home. Incidentally, if the Foundation [Chemical Heritage Foundation, CHF] ever looks for a replacement, Ned could be the one.

PRATT: Yes, I had thought about that. Yes, he's so positive in his approach. I don't know how well known it is, but you know, Mary Virginia [Orna] is retiring, at the end of August she'll be going. I just wondered, you know, if Ned—

WOTIZ: Not in her position, no. I mean, Arnold's [Thackray].

PRATT: I knew what you meant. But in other words, to get a foot in the door, so to speak.

WOTIZ: He has two feet in the door already! [laughter]

PRATT: Yes, well, I'm sure he does. But his wife teaches also at Lehigh, but also, I think she's in administration, isn't she?

WOTIZ: I think assistant dean or something. But Ned was and is a principled fellow and has ability to contribute to an organization such as a department or to the society; I'm pretty sure that it's not roses all the time. That's life. When he left Marshall, my ambition was going for the Ph.D. degree and it's been an uphill fight. We were actually fighting Morgantown. Morgantown, West Virginia, is the home of West Virginia University, which had the only law school in the state of West Virginia. The West Virginia assembly was made up of grateful alumni of the law school. They were appropriating money as an alumni gift to the University. So under those circumstances, Marshall did not have a chance. I had a friend in Charleston, Henry Kauffman, who I used to play bridge with when I lived in Charleston with my brother. Henry was thirty-nine or forty at that time, and was a member of the House of West Virginia. So I had some insight on West-Virginia politics. What I heard was unequal in any other state or assembly—at least I thought it was unequal. My sister-in-law was the confidential secretary of the Democratic party boss in West Virgnia. Arthur Koontz was not exactly a stranger when I

came to West Virginia, to Marshall. I had been exposed to gossip or truth—I don't know. Who knows in these situations?

PRATT: Well, by 1967 you were ready to move on.

[END OF TAPE, SIDE 4]

PRATT: In 1967 you went to Southern Illinois University in Carbondale. I checked a book I have. At the time you had about thirteen thousand students. What was it that attracted you to Southern Illinois?

WOTIZ: Well, number one: pay. I mean, I would not be telling the truth. And opportunity was matched by the pay, because it was a university that had a dynamic leadership under the ex-president [Delyte W.] Morris who was bringing students essentially from the greater Chicago area, and money from the State of Illinois was always combined with the number of heads. I wouldn't call it students because some of the students were sub-standard. They just came, partied, and never graduated. But the opportunity was definitely there.

PRATT: In other words, much higher prestige at a university?

WOTIZ: Well, not only that. It had a well-recognized curriculum, because I remember when I was at Marshall, we had a consultant from Southern Illinois University who was talking about the program of general studies at SIU, because we had also so many unqualified university students at Marshall that it behooved the Marshall administration to see what a general-studies program would do for the Marshall curriculum. Interestingly, the SIU curriculum had national recognition. When I came to SIU, it was in existence but it was already under scrutiny. Within ten years, this model of general studies was voted out because it was survey-oriented studies and it did not bring the necessary results. It did not elevate the deficient students sufficiently.

PRATT: And you went there as what? As department chairman?

WOTIZ: Yes. I came there as professor and department chairman; I don't know if I told you how I came there.

PRATT: No.

WOTIZ: Well, when I was at Marshall, we were building a department very successfully. We were a very coherent department and the anchor in the new faculty was Ned Heindel. At the time I left, Ned was already gone, to be sure. But during the five-year period I interviewed, or the department interviewed a fellow named Donald Slocum. Don Slocum was, if I remember, a Duke graduate. We made him an offer, which he didn't accept because he had two offers to consider, ours and the other one from Southern Illinois University. Well, he had been at SIU about two years when the then-chairman of the department, [James W.] Neckers, who was the chairman, I believe, for thirty years, was finally retiring and left the chairmanship open. Slocum recommended me, and I was invited to be his successor. Big shoes to fill, to be sure. A man who has been there from the normal university age, did all the hiring, ran a very tight ship. But retirement came. I'll digress, if I may. Neckers—I met him again before I went on this interview tour—he's ninety-seven years old and is as spry as when he retired in 1967. We occupy a building named after him, which is not so common because buildings are named after people who are no longer with us. But he's outlived everybody. But it was not unusual at SIU because our president, Morris, also built a modern seven-story-high library and named it after himself. [laughter]

PRATT: Well, you're talking about naming buildings. So many times they're named after people that give a lot of money!

WOTIZ: Yes. Morris was very, very successful. He had a very close friend from Southern Illinois who was Secretary of State. Automobile licenses had to be paid for by checks made out personally to the Secretary of State. [laughter] When he died, he left a lot of money in shoeboxes! [laughter] So he was a faithful contributor to Southern Illinois!

PRATT: [laughter] A whole shoebox full! I'm want to digress just a moment. You mentioned Ned Heindel a while ago, and I meant to ask you the other day just to comment really. Sir Humphrey Davey once said that Michael Faraday was his greatest discovery. I just wondered if you felt the same way about Ned.

WOTIZ: Oh, unquestionably. I mean, first, as a scholar and just as much a gentleman. In research: productive, an excellent, dynamic teacher. I never met anybody like him before or since.

PRATT: I don't think I have either as far as that goes. Well, back to the topic. What subjects did you teach? Anything besides organic chemistry?

WOTIZ: I was truly a department chairman who wanted to teach as many subjects I was able, I mean educationally able. So I taught not only organic chemistry but I also taught a general freshman course in chemistry, and I taught a special course for non-science majors, because I tried to motivate the students more than anything else.

PRATT: I've heard people say that teaching freshman, for example freshman chemistry, you do a tremendous amount to keep them on their toes. In other words, I guess it was the whole idea of trying to get stuff down to the level—or speak on the level—that they could understand. I don't recall why people have said that, but I've heard more than once.

WOTIZ: Well, it is a challenge to reach the mind of a non-major, because I consider this to be a citizen's duty to be well aware of a problem that has a chemistry basis. I must confess, I did not succeed very much. [laughter] But there's one additional course that I taught in my later years, the history of chemistry, as a non-chemistry major subject. It was an elective.

PRATT: The students that took the history of chemistry—did they really take it because they wanted to, or did they think it was sort of a crib course, an easy course?

WOTIZ: Both, I think. I mean, some really wanted it. Some came from a related department to hear it. Faculty as well as spouses of ones. Obviously there was a demand and a need. I don't doubt that many students took it because it was not a required course, and they wanted to fill their graduation requirement in the number of credit hours this generated.

PRATT: How many graduate students overall did you have while you were at SIU?

WOTIZ: You mean that I dealt with over the years?

PRATT: Yes. A total.

WOTIZ: Oh, about twenty or thereabouts. Some master's, and other ones were Ph.D. students. Most of the students I had during the Pittsburgh era.

PRATT: Oh, all right. Yes, I guess you had enough administrative duties that you didn't have time for them.

WOTIZ: Later on. Sure.

PRATT: What kind of research were you into? Was this a continuation of what you had done before at Pittsburgh?

WOTIZ: Allenes became my major subjects. I must also regress here, because allene was so much on my mind and there were some bets by my graduate students if I'm going to name my coming daughter "Allene," which I did! [laughter] It's spelled according to a Geneva system.

PRATT: Anything else in there that you want to cover?

WOTIZ: In the addendum? Well, I have to say that Ray Dessy turned out to be the best of my graduate students in my entire life as a researcher in the university or in industry.

PRATT: What happened to him? Where did he go?

WOTIZ: After he finished? He wanted a degree in synthetic organic chemistry. Well, what he eventually has done was physical organic chemistry. I said, "Well, no matter what, we have assigned you synthesis, you never got to the problem because you got sidetracked completely and established a new field." So I recommended that he take a post-doctoral fellowship with Professor Newman who was truly a synthetic organic chemist. Then he accepted a teaching position at the University of Cincinnati, changed later to become full professor at VPI, Virginia Polytechnic Institute in Blacksburg, Virginia. He is completely removed from organic chemistry now.

PRATT: He's still there, though?

WOTIZ: Well, so far as I know, he was still there, but he's definitely at retirement age. Furthermore, he lost a lot of weight. [laughter] He's very trim now. I had to comment on his appearance. But anyway, he's completely changed. Hardly recognizable. Well, let's continue.

PRATT: Yes, I got you off on a sidetrack.

You mentioned about using liquid ammonia as a solvent. Was it a precursor to what seems to be a growing field now of so-called critical fluids, where they're using liquid carbon oxide as an extracting agent?

WOTIZ: No. It was not a critical fluid. It was ammonia under pressure, originally supplied under pressure that was permitted to gassify and liquefy. Sodium, when it reacted, forms first sodium amide and then di-sodium salt of acetylene, and by addition of further amounts of acetylene, that will react to form the mono-sodium salt.

[END OF TAPE, SIDE 5]

WOTIZ: I was talking about the reaction of acetylene with sodium metal in liquid ammonia, pointing out that as you start adding acetylene into the suspension of sodium amide in liquid ammonia, the reaction product is quite pasty. The additional amount of acetylene converts it into what I would suspect is a solution of mono-sodium acetylide in ammonia.

PRATT: John, you mentioned somewhere back there that you had a whole series of publications in this area, a continuing series. I saw someplace that the publications were in the *Journal of the American Chemical Society*, the *Journal of Organic Chemistry*, and the *Journal of Chemical Education*. I know about this, but how many publications total?

WOTIZ: You mean total to date in various fields that includes education?

PRATT: Yes, I'm talking about everything.

WOTIZ: I would guess about a hundred and twenty. I mean, in peer-reviewed publications. There are some other ones, which I do not count that actually appeared in Chinese and in Japanese, but they were essentially translations of the other ones. I do have a collection of those exotic ones. [laughter]

PRATT: Oh, well, definitely you want to keep those. But that doesn't include the patents.

WOTIZ: That does not. There are, I think, forty-five patents, domestic and foreign. Yes. But patents deal with completely different kinds of preparation that I have not mentioned. The forty-some patents, originated while I was in industry.

PRATT: Yes, I was going to ask if those mostly when you were at Diamond Alkali?

WOTIZ: Well, I was hired by Diamond Alkali to find uses for acetylene.

PRATT: All right. Yes, we covered that earlier. One thing I didn't ask you about the other day: did you ever do any consulting work? You haven't mentioned that.

WOTIZ: Yes, I did. While in Pittsburgh, I consulted on acetylene chemistry with Air Reduction, in New Jersey. That was a research laboratory opposite Bell Telephone Laboratories. That lasted, oh, several years. I guess about three years.

PRATT: Who was your contact there?

WOTIZ: The fellow in charge of acetylene was a fellow named Lyon, if I remember correctly. But my original contact was the vice president for research. The name escapes me. Now, I did some other consulting while in Pittsburgh in a paint company that was in the process of becoming a plastics company when plastisols became of some interest. They were making polyvinyl-chloride plastisol. I think the original idea came from [B. F.] Goodrich research or something like that. It was carried out by people who really didn't understand the chemistry usage. They were formulating paints and they really didn't even know the structures of some of the basic ingredients.

PRATT: Well, probably since the whole paint industry changed to water-based paints, it probably didn't make a whole lot of difference anyway!

WOTIZ: Well, I think they were making plastisol for molding, for making molds, a product that would give them the consistency of flesh in dolls and things like that.

I also "consulted" when I was Department Chairman; people would call the department to ask for help. They also demanded free laboratory investigations and could become quite irate when asked for the financing.

PRATT: It's always interesting how these things all tie in, sort of one with the other.

WOTIZ: Do you remember my column in the *Journal of Chemical Education,* which was entitled "The Story Behind the Story (10)." This was <u>always</u> in my mind of being interesting, not amusing—I mean, very precedent-setting to students or people who were just starting out.

All you have to do is look around, be observant, and you have possibly another "story behind the story."

PRATT: That's right. Well, I had asked you before we got onto the chromium story, what year did you retire from SIU?

WOTIZ: Well, I am now retired about twelve years, so in 1989, I retired. Yes, because it was a mandatory retirement, reaching the age of seventy. I was a tenured professor who, when the age-discrimination clause for retirement was enforced. It was exempted for five years from that new law because they tried to phase in retirement of certain groups of citizens according to their need. The original anti-discrimination law exempted three categories: policemen, firemen, and tenured professors.

PRATT: Okay. [laughter]

WOTIZ: So when I turned seventy, I had to retire.

PRATT: You had to retire. Did you have what I would call a philosophy of teaching? In other words, were there certain things that you demanded?

WOTIZ: Well, you cannot be teaching without coming to some thoughts, not necessarily original ideas, <u>how</u> to teach. We tried to produce a product. We liked to see that students who come and listen to us are instilled with some kind of an objective for life. You have to balance it with an ability to earn a living. No matter how you influence students, they have to participate in society, be productive. So I was standing loose, essentially, recognizing the need of accomplishing items that sometimes were contradictory. I was a taskmaster in many instances. At least I was told that I am. [laughter] I never admitted it. I insisted that certain fundamental facts are necessary for being well-rounded. I passed through a generation where people did not know that hydrated copper sulfate is a blue solid; that descriptive type of chemistry was clashing with the idea at that time that you have to understand the principle, which indeed is essential, not only necessary. It is absolutely demanded. But they lost touch with some descriptive chemistry. I deal frequently with foreign students. They are very well versed in descriptive material. Now students are better versed in computer handling of chemicals.

PRATT: Don't you think we have moved back toward the idea of descriptive chemistry or not?

WOTIZ: Well, that's what I hear. In as much that I have not been teaching for the last eleven years. The only thing I can say, I hope so. I hope there will be a balance in how much theory and how many practical facts you are able to master during your preparatory or formal education.

PRATT: You mentioned earlier about teaching chemistry for non-science majors. I filled in one time for a fellow that had been teaching that course and he got sick. But I felt that was a very good course because it dealt with everyday things. I think that students, if they paid any attention at all, would have a much different idea of chemistry. Wouldn't be afraid of it, wouldn't see everything that says "chemistry" or "chemical" as a bogey-man, so to speak, or something that's going to be bad for people. I think society suffers from not having more people who are at least semi-literate in chemistry.

WOTIZ: Well, it sort of scares me. What scares me are people of influence who are absolutely ignorant of simple chemistry facts. The commentators that we see and hear on television sort-of blank out if they have to report on any chemistry-related material. A: they don't know how to pronounce. They know they don't pronounce it correctly; B: they freeze or panic, I would say, if anything related to chemistry has to be reported. I think we, as citizens, understand better, far better the politics of politics, than they understand the basics of chemistry.

PRATT: That's true. I never heard it expressed that way. The chemistry of chemistry. I have made remarks to people that people are afraid of chemicals, but yet they'll turn around and say there's good chemistry between us.

WOTIZ: Yes.

PRATT: You know, chemistry as a science, chemicals as being things that are bad.

WOTIZ: I mean, it has a completely different meaning now. I wonder how chemistry is defined in a dictionary nowadays. [laughter]

PRATT: I don't know. I hadn't thought of that.

WOTIZ: It would be interesting.

PRATT: It would be interesting to look at that. I meant to ask you a while ago: did you ever hear of a book called *Unit Processes in Organic Synthesis* by a man by the name of P. H. [Philip Herkimer] Groggins (11)?

WOTIZ: Yes. Groggins. It's in green colors. [laughter]

PRATT: Yes, green colors. That's McGraw Hill. [laughter] Right. Well, it's sort of interesting. In collecting the books, I think I have four different editions of that, the first through the fourth. There might have been another one. But I could find virtually nothing about Groggins as a man.

WOTIZ: I have no idea. A chemical engineer [laughter]—I had some problems with chemical engineers. Are they really chemists or are they mechanical engineers?

PRATT: Well, when I took chemical engineering, I thought it was a cross between the two. But it's not quite that way at all.

WOTIZ: As it should be.

PRATT: Well, I want to change subjects now, and I want to go to work that you did in the field of chemical education. I know that somewhere along the line you went to the Soviet Union. Having been there myself, I know it's a fairly fascinating place, but this was just sort of a tourist look, pass-through. But you were there for some while. I'd like to know how that came about and who funded it and what was your purpose in going and so on?

WOTIZ: Well, let me backtrack a little bit. I was two years at SIU when I got myself involved in a jurisdictional dispute with the head of the physics department over the location and use of a 100 megacycle NMR machine. I offered my resignation two or three times, which eventually was accepted. I also offered my resignation because I already had been offered the opportunity to visit the Soviet Union as a representative of our National Academy of Sciences. This was during the period of was called a "detente." It was an official act of government. It was President—oh, what's the scandal of Watergate—[Richard M.] Nixon. [laughter] Gee! How can one forget? Anyway, Nixon signed as head of government to head of government—it was [Nikita] Krushchev, or whoever it was—that would break the ice of the Cold War, which had a model in bringing about cultural and scientific exchange programs. This exchange program in our country was handled by the Foreign Secretary of our National Academy of Sciences and the counterpart was the Soviet Academy of Sciences. They were bringing in scientists and artists in different fields. I will limit my remarks only to scientists.

In chemistry, I was asked to apply for such an exposure to foreign chemistry. It came to me through the dean's office, so they did not approach me directly. But my dean at that time suggested that I would be interested in accepting an invitation. It was not an application where anybody from the street was able to apply to it. There had to be some justification. In retrospect, I surmise that somebody in the government researched me rather thoroughly and identified me as somebody who would be of interest meeting the requirement. At that time, Russian chemists did quite a bit of acetylene chemistry. So I was known as an acetylene chemist, and I had a knowledge of languages. My mother tongue is Czech, and Czech is a Slavonic language just like Russian. Having an international reputation, nobody could accuse me that I was not a qualified scientist.

Before I received an appointment, I had to have an interview with a member of our National Academy of Sciences. They assigned it to one academician—the name escapes me—living in St. Louis. He wanted to interview me in the presence of my wife because one of the requirements was that I may be subject of some pressure if not some insinuation or—what word am I looking for—it'll come to me. [laughter] One question that he asked her actually, is what she would do if she were to receive a photograph with a woman in bed with me? Her answer was very straightforward and appropriate. She says, "What's new?" [laughter] Anyway, I arrived in Moscow, was met at the gate, so to speak, by a fellow who identified himself as William Smith, an employee, a chemist at the Zelinski Organic Chemistry Institute. Well, William Smith turned out to be Wilhelm Schmidt, but his English was absolutely perfect. He became my primary contact for the entire stay of five-and-a-half months while I was in the Soviet Union.

Now, I was there, ostensibly, as an expert in acetylene chemistry, but I never had any chance whatsoever to do any chemistry at all. The head of the department was Professor Kucherov. When I reported to him for a project, a laboratory, he said, "Oh, no. You need time to acclimatize." At that time I found a need to understand the educational system in the Soviet Union, which became the primary objective before I left the country. Now, shall I tell you something about the educational system?

PRATT: Yes. I'd be very interested in that.

WOTIZ: Well, in order to understand what he meant, "You have to acclimatize." I asked, "Why?" He said, "Well, you don't know your way around the laboratory. You don't know how to communicate. So why don't you just sit around and observe?" I mean, he essentially forced me to understand the educational system, and I gladly accepted. I'm very glad that I did, because it turned out to be, again, a departure from original objective and do something that I wasn't prepared to do. Well, I studied the system from the ground up. I learned that there are two doctoral degree programs. One is a university doctorate, and one is a doctorate awarded by the Soviet Academy of Sciences, supposedly leading to the same end result, however practically the best students were found in the Academy. The university got less money and had more

students to serve than the anointed ones in the Academy. So the fact was that in the Soviet Union one got paid according to your accomplishments. The base pay between a professional man or physician and a coal miner were essentially the same, very low. But the anointed ones were paid with salary bonuses by recognition of their position, by the publications they had. Incidentally, the number of publications on a given subject that the Russians had at that time is now understandable. They were publishing, re-publishing—trivially. If they made a new compound, they would publish every possible physical behavior of it, and they were peer reviewed, but were peer reviewed by friends. So, "I scratch your back; you scratch my back" type of an attitude. That was new and interesting to observe.

Now, I also found that the Soviet schools did an excellent job on a lower level of education. I also found that there were more women in the lower grades, but at the same time, there was no woman academician. When I asked, "Why is it that when you start with a preponderance of good women, why don't they rise to the elevated level of academician?" The answer was straightforward: "What do you expect? They are women!"

PRATT: I'm surprised at that.

WOTIZ: Well, that's what it was. I mean, it's a statistical analysis. How many percent graduating from high school entered the college work? How many get a candidate of science degree, which supposedly is equivalent to the American Ph.D.? How many percent got the title of Professor? How many become academicians? It decreased and decreased to zero. At that time. There may be some now. I don't know. In any field? No academicians in chemistry.

In this quest, in changing my objective while in the Soviet Union, I interviewed from the ground up. I went to public schools, what would correspond to public school, high school, university, and academy. I interviewed department heads or directors. I interviewed the regular faculty, students: graduate and under-graduate, including technicians, including the woman who was continuously mopping the floor, but not removing any dirt! [laughter]

PRATT: This was all reported back to the National Academy of Sciences, I suppose.

WOTIZ: Well, I had to write a final report, which essentially was written while there, and, striving for accuracy, I showed it to my contacts. They knew about my change in assignment and had no objection to anything that I'd written except one: because the Zelinski Institute, which I also described, I mentioned that the men's room or the toilets in the building are "beyond description." That they asked me to remove. [laughter] Now, let me finish this. I submitted my final report. It was also published in the *Journal of Chemical Education* (12). The receiver of my report, the Academy of Sciences, as well as people who debriefed me, found nothing objectionable in what I had written.

PRATT: This was in the Cold War period.

WOTIZ: Yes.

PRATT: Did you see any cloak-and-dagger? Were you ever under suspicion by anybody? Did anybody tap your telephone or anything like that?

WOTIZ: Oh, I mean, it never left my mind that that was actually the case. We had phones in our individual rooms and every so often I would get a call from some kind of a kid, giggling around, and I'd say, "I don't understand Russian." She'd say, "Well, how about English?" You know. They tried to draw me into a conversation. But I know of two, maybe three incidents where I was exposed to professionals. One was when I was traveling to—to the state of Georgia, Tbilisi. I knew the travel routine rather well at that time. I was waiting for the plane while my escort returned to his laboratory in town. I didn't find any need for him to waste time in the waiting room. When the flight was called, people in the waiting room assigned to foreigners had to be examined, a ticket agent had to look over your documents before one enters a bus to the plane that is parked somewhere on the tarmac. While queuing up at the door, a lady started talking to me in German and I said, "We have an interesting conversation. Maybe we can manage to continue on the plane." I was pretty lonely by that time. So it turned out she was sitting next to me on the plane. She was an INTOURIST guide to German-speaking tourists. She said she spoke to me because she was in the waiting room assigned to foreigners without escorting any foreigner at that time. She picked me thinking that I would know German more likely than anybody else in that waiting room. Why did she pick me? Because I was wearing a felt hat that I bought in Vienna, one of those Tyrolean-type of hats, but I took off the badger plume. [laughter] I'm pretty sure she picked me out by design and not by a hat. The "story" that she gave me and the observance of her actions, I never doubted that she's anything but an assigned person to draw me out. Which I did not mind, really. At that time, I was glad to talk to anybody. She told me that she's on vacation. She wanted to visit a friend that she has in Tbilisi but she does not know how to contact him. She sent him a telex. He did not ask how she is coming into town from the outlying airport. Having learned the routine of travel in the Soviet Union, I knew that an individual from the foreign office of the Georgian Academy of Sciences would be waiting for me with a car. They usually came also with an assistant, and took care of me because I was completely in the care of the Academy. When we arrived, my lady friend didn't look for any friend meeting her. She went straight with me into the car, which took us to the hotel. I had to follow the program that was established for me in Tbilisi. Two days later I ran into her or she ran into me by "accident" in the lobby, and she said, "I would like you to meet my friend." They were having some drinks and some snacks in the room that she was occupying with some other woman that had been assigned to her as a roomate, which is not unusual, as I learned. When I tried to go over to meet her and her friend, the woman that sat at the head of the stairs, at the entrance of corridors, a dejournia, challenged my presence in as much I was going into a territory that was off limits. When I proceeded to the room, she

followed me and when she saw the people in the room, she said, "That door has to stay open." No hanky-panky, you know. [laughter] This created a rather interesting situation. Indeed there were drinks and snacks, and after enough to drink, the friend of my friend turned out to be a lawyer who said that he has a newborn baby at home. Would I like to see his baby? And his wife was studying for an examination. I always wanted to see the inside of a Russian flat or anything like that. Well, to reach his home he needed a car. He lost his license. He told me he lost his license because of DUI—excess of alcohol and drinking. So he called a friend, who appeared with his "*machina*." That's a Russian word for automobile. "*Machina*." We drove out to those high-rise slums. The stairs were crumbling. The lighting was very poor. We climbed the steps, and sure enough there was a newborn baby and a mother who was studying, and more Georgian liquor, cognac. The tongues were loosened by alcohol, and my friend—in quotation marks, "friend," changed the subject and started talking about that *durak*, that fool, Krushchev, who was denouncing [Joseph] Stalin, and who was a fellow Georgian.

[END OF TAPE, SIDE 6]

WOTIZ: I was talking about visiting Tbilisi, Georgia, visiting an apartment of an individual in Georgia. They tried to draw me out into politics. He was referring to the *durak*, the stupid or imbecile, Krushchev, who was denouncing Stalin at that time, while a picture of Stalin was hanging on the wall of his apartment and he asked me, what do I think about this. Knowing full well where I am and who these people are, I claimed absolute ignorance of who Stalin is. "Who is Stalin? Never heard of him." That was the end of their hospitality and conversation! [laughter]

PRATT: Considering that man was a lawyer, how did he live?

WOTIZ: Oh, it's cramped quarters. I mean, the woman was sharing one bed, and the baby one bed. You had to do the cooking in the same room. It was a most-depressing sight.

PRATT: So his status as a lawyer didn't mean anything to him economically.

WOTIZ: I did not explore it. I mean, she identified him as a lawyer who couldn't drive because he lost his driver's license. I mentioned earlier two incidents where I was a target of investigation, or my opinion was being solicited. I received my mail from home at the U.S. Embassy, which required a daily visit to the Embassy, on Tchaikovsky Prospect [street], whatever it was, with two Russian guards standing in front of the Embassy. I would come back, sometimes carrying two heavy Sears and Roebuck catalogs because people in the Embassy, so-called cultural officers, said "Have you made many friends?" I said, "Oh, yes. I've met many people. I wouldn't say they are friends." "Well, here is what you can do for them. The

Russians are very much interested in American culture. Why don't you give them a token of friendship, a Sears and Roebuck catalog?" [laughter]

PRATT: That's a great idea!

WOTIZ: [laughter] Well, yes. Indeed, I brought them home to the apartment, in the hotel, belonging to the Soviet Academy. They went quickly. "Can you bring me another one?" You know. As propaganda. Sure, a nice paper one, and a subject they can only dream of. You give it to them as a token of friendship, but it was subversion.

PRATT: You know, that wouldn't have any political overtones either, like a magazine might.

WOTIZ: Oh, it had a terrific political overtone!

PRATT: Well, because they were so poor. But I mean, there wouldn't be anything, any text written in it. Yes, so far as the standard of living, sure.

WOTIZ: That's right. It was a window to the west. I have another incident in mind, if I may.

PRATT: Oh, sure. Go ahead.

WOTIZ: Coming to the Embassy, every so often, on one of those visits, one employee said, "You know where you should go? A very interesting place is the Journalists' Club." Never heard of it. The Journalists' Club is a place, a good place in Gorky Park. I mentioned it to my escort at that time, she was the friend who picked me up in my trip to Tbilisi, and I said, "Can we stop sometime, have dinner at the Journalists' Club?" She disappeared. Four or five days later, after I mentioned the Journalists' Club, she had to check it out. [laughter] We entered a well-lit club with comfortable chairs in the middle of Gorky Park. We joined a party, an ongoing party, where one participant, I don't remember which one, celebrated passing the examination to the candidate of science. People were speaking Russian, German, Hungarian. I never found out, but a lot of alcohol was being consumed, and she was sitting next to me and was translating from Russian into German, because she claimed she did not know any English, mind you. The hour was getting late and I said, "Let's go, leave." As we did we went from the well-lit club into a darkened park. Eyes really have to get adjusted before you step into that darkness. Well, while doing so, somebody jumped out of the bushes—so far as I know—in front of me, and said something. I automatically turned to her for an answer, and I asked her, "What did he want from me? What did he ask me?" She said, "Oh, that was really stupid. He

asked what time it is." Had I understood I would have gone to my watch to look at the time. Well, she said, "It was stupid because we were essentially standing under an illuminated clock." So even an agent was questioning another agent! [laughter] They did not believe that I don't know Russian, in other words. And to establish that I really don't know—

PRATT: Oh, I see. Oh, so they needed you to react.

WOTIZ: Yes. Automatically.

PRATT: Fascinating.

WOTIZ: Well, in retrospect. But to me, once she said that's stupid that he asked me for the time, I understood immediately. There was no doubt in my mind what the purpose was.

PRATT: Well, any more stories you want to tell?

WOTIZ: Well, the next one was the trip to Tashkent in Uzbekistan where I flew again, alone, but nobody met my plane in Tashkent. I didn't know who my contacts were to be. I picked my passport and went to a police station to ask for help. The policeman looked at my passport and asked for my visa. Well, I knew that I had not a valid visa for travel inside the Soviet Union, outside the 20 kilometers from Moscow. Well, here, I was in the heart of Asia with no visa. But previous to that, I always had a Soviet chemist as a guide to accompany me who took care of this, claiming that I don't need a Soviet travel visa because I'm a guest of the Academy, which overrides all the requirements that is imposed on a regular citizens and guests. Well, I knew that, but I told the policeman that I was an American professor guest of the Soviet Academy of Sciences. That put him on the defensive. They took me to the police station. They seated me, offered me tea, made frantic calls. By that time I understood Russian well enough and I saw how helpless they were to deal with me. I didn't have a visa. They had no record. But who am I? I'm a guest of the Soviet Academy of Sciences. That was a threat to their possible actions. They never interrogated me. Just looking sheepishly at me. Finally they decided that the hotel in town, which usually caters to official visitors, may know something about my presence. They called a taxi, paid the taxi—gave him an account number [laughter] or whatever—and he drove me into town. It was around five o'clock in the afternoon, I went to the "service desk" where people spoke English and did things for you. The woman there said that she's going to contact the Academy. Her husband works in the Academy and I should go and eat a meal, and come back. I returned from the dining room. She said, "I'm unable to contact anybody, including my husband, in the Academy. They're all sick and they are not in the office." I said, "Well, where am I going to stay?" Because the hotel was sold out, I was told. Well she said, "Don't worry." Some time later, a bellboy came, picked up my suitcases,

and took me to a room, while a Russian inhabitant was being evacuated. Because a foreigner cannot stay without a place. Later on, two days later, an Academy representative appeared and said, "We are sorry. We have not received the telex that came because we were all sick with the grippe." Actually, what had happened, universities and organizations were picking cotton. Whole blocks of the city were being driven out to a cotton field to take the last strands, just like sharecroppers in our country.

PRATT: Well, I had heard they used the military for that. If they needed, did they just conscript citizens?

WOTIZ: That's right. Entire blocks completely denuded of people! But a more interesting thing happened. I tried to call Moscow during this period, and the Academy. One buys time ahead of time. One has to go to a post office where one buys time for so many minutes. Then you sit and wait for a call to come in. It took more than twenty-four hours before my turn. [laughter] People communicate by telegram, not by telephone calls. Interesting. When the fellow from the Uzbekistan Academy eventually showed up, he said, "No interviews. No lectures. There are no people here. Would you like to see the city?" Of course I did. A cab came and rode me around Tashkent with the interpreter. "What else would you like to do?" "I would like to go to Bukhara." Tashkent and Bukhara are fantastic places; on the trading route during the Middle Ages were the—what they called—the silk road. These are stopping places with beautiful mosques, which were now museums of torture by the moguls. Mosques are converted to illustrate that time. And they show wax figures being beheaded and the like.

PRATT: Do you have other recollections of the Soviet Union?

WOTIZ: Yes. Let me talk a little more about my travel to the Soviet Union. Remember my "friend" from the plane? Originally, she planned to go to the Black Sea, to a place, Sukhumi. I said, "I am going to Sochi on vacation." Which is also a resort on the Black Sea. "As a guest of the Georgian Academy, they are sending me to Sochi." She said, "I'm changing my mind. I'm not going to Sukhumi. I'll go with you to Sochi." The flight originated in Tbilisi at six o'clock in the morning. She said, "I don't know how I'm going to get to the airport." "Never mind. I'll ask my people who will pick me up, who usually come with a headman and an assistant and a chauffeur. We'll pick you up and drive you to the airport at five o'clock in the morning." We boarded the plane and flew to Sochi. We arrived at seven o'clock in the morning. Nobody's waiting for me there. I had no idea where I was supposed to go. I'm supposed to be a guest. I don't know what's happening, if anybody's going to meet me. Well, people at the counter said, "Well, everything's closed right now. Why don't you take a taxi and drive to the hotel where all the foreigners stay." My "friend" and I arrived at the hotel and asked at the desk. "I'm Professor Wotiz from the United States. Do you have any messages?" "Oh, Professor Wotiz, so glad that you had a good trip. But our office is closed. The secretary of the conference will

be here at ten o'clock." I said, "What meeting?" Well, the Pugwash conference was meeting in Sochi. Herb, have you ever heard of the Pugwash conferences?

PRATT: I've heard the term.

WOTIZ: It was Cyrus Eaton, the Canadian millionaire, who was promoting these conferences for international peace. The international conference that year was going to be held in the hotel. The hotel was completely taken over by the members, the attendees. The secretary knows I'm the professor from America. Obviously I'm a member of the conference. Well, comes ten o'clock and he goes through the list of attendees and obviously doesn't find my name. "Drop dead," essentially they tell me. The hotel is completely filled by the conference. So I'm turning to my "friend" now. "What am I going to do?" She said, "Never mind." She goes to the manager's office. She spent half an hour there and came out laughing. "We found a hotel that will accept you." They ordered a taxi and drove me to the hotel. She stayed there too. She stayed in a room four or five rooms down the hall from my room. We agreed we're going to walk on the boardwalk; it resembled the boardwalk, anyway. I changed into Bermuda shorts, and we are walking, and people are looking at me. They made me very uncomfortable. Nobody wears shorts. Women in bikinis, hanging over with fat—that's all right. [laughter] But slacks, I didn't have. I said, "Well, I would like to go back to the room and change into slacks, so I don't feel so obviously out of place." We walked back, and I asked for my key to the room. The dejournia says, "Oh, we are very sorry, we gave you the wrong room. But never mind. We already transported your belongings into a new room." It was a room identical to the previous one, you know, everything is all uniform. My luggage is there, my toothbrush, everything. Identical as it was when I left. I could not tell that I was in a different room. The only answer that I was able to come up with was there was no mistake. They wanted to know who I was, and they did not want to be surprised going through my belongings. So they just moved me, but being so professional in searching luggage that they put everything in the identical places and positions. Had I not known it's a different room, I never would recognize that it was gone through.

PRATT: This woman was somebody assigned to check you?

WOTIZ: Well, I had that feeling. When I came back to the U.S. I was debriefed. I told them about this episode, and when the debriefing officer came back after a period of time, he said, "You were right. We have found out." She was an Intourist guide. That's what she said. The way she explained to me, an Intourist guide escorting German tourists. The way she explained it to me was that she was supposedly on the same plane, but she had no business waiting in the waiting room assigned to foreigners because she was not escorting anybody. Maybe. I told that to the CIA officer and he confirmed that she was in their records.

PRATT: Yes. I just found the Soviet Union totally fascinating. We were there for two weeks in 1987. We went back in 1988, and we were in the big cities: Moscow, St. Petersburg, et cetera, the first year. But the second year we went back, we just went on our own. We got tours that would go into little tiny towns, and that was fascinating.

WOTIZ: The atmosphere was much more relaxed outside of Moscow. People were more themselves and I was glad to get out of the city. I remember we were in one place where foreigners eat in a separate place, and there was a wedding in the next room. There was a glass door and they were sort of looking in, and somebody came out and started to talk to me; they offered me drinks. I was carrying a Polaroid camera. I went and took a picture of the bride and groom and gave it to them. Everybody else started converging on me. "My picture! My picture!" [laughter] However, I had a limited number of Polaroid cassettes that I brought with me.

PRATT: Yes. These have been great stories. Let's see. Now, that was 1969, and in 1972, according to the record I have, you were in several East European countries. What were those? I guess you were doing the same type of thing there.

WOTIZ: When I came back from the Soviet Union I wrote a report. In 1971 I started my tour, my history tour. And in 1972, I thought I'd do the same kind of study in the other East European countries, compare it to Russia, and compare it to American education. So I received another assignment from the Academy of Sciences. The report that I submitted, which was published, apparently created enough interest that they hired me again to do the identical study in the East European countries (13). I went to Yugoslavia, Bulgaria, Romania, Hungary, and Poland. I also wanted to go to Czechoslovakia. I was not accepted. I mean, that's an interesting thing because one needs an invitation to go, and the Czechoslovak Academy of Sciences did not invite me. Whether they or whoever looked after the security had something to do with it, I will never know. But anyway, I was not accepted.

PRATT: But your mission was the same, and you wrote the same kind of report?

WOTIZ: The same kind of a report. Compared education.

PRATT: How did they compare?

WOTIZ: Well, at that time, they were following the Russian model. The German, Central-European educational system was replaced by the Russian system. We in America inherited the German system as well, whether we understand or realize it in university education.

The mission was the same. I studied higher-education process equivalent to American, and there was a very interesting development. This visit came about because the Academy arranged invitations to each country for a period that I specified. A small country received one week. A bigger one, like Poland, received three weeks of my presence. I went to each major university and technical university to visit, to interview, to make a comparison. It also became extremely important to SIU in a roundabout way. During the period of interviews that I conducted in the university, in all of them, I learned of the desire of the local faculties to come to America to study. I knew enough about their background, which was excellent as far as chemistry. I also knew of their ability to speak English well. I said, "You know, SIU is not unique in America. We need teaching assistants and we are unable to recruit qualified undergraduate students to come to SIU and do graduate work. Why don't you apply? We accept any application. The only criterion we have is the competence." He said, "We are not permitted to apply." But I said, "I have seen, for example, Polish students." "Oh, that's different. If somebody comes and offers a student an assistantship, then that fellow can apply for permission to come and accept this assistantship. But he cannot apply for it. But somebody has to go and offer this to him." I came back home and I called a staff meeting. I was not the chairman at that time, but I arranged for a faculty meeting, and I said, "You all know that we are not getting qualified domestic graduate students. I know of a source that will provide it, provided we can offer it to them." They said, "How can you offer a position for a student that has no credentials?" I said, "I'm going to put my reputation on the line, because I know of places where they have qualified individuals who are unable to come because of the inability to apply. But if we make an offer, they'll come and they'll be first-class students. I guarantee it." That was completely to the contrary of a graduate school's admissions office. You were not permitted to invite anybody without them examining the record. So being persuasive, as they said, I bucked the system. "Let's put it on a trial period. If they don't turn out the way I described, then that's the end of it."

This itself had a history. While I was in Wroclaw—that's the Polish name of Breslau—I became friendly with the vice rector in charge of international contacts. He turned out to be a very likable fellow. He was my host. We started talking over drinks, having too much to drink, we discussed the deficiencies of our individual educational systems, and the procedure that we all have to go through. The Polish, like the Russians, had much too much bureaucracy. We had our own civil service bureaucracy. I said, "How can we short circuit the whole thing?" He said, "I will recommend you a student that I <u>know</u> will fill the position successfully, but you have to do your part. You have to invite him." We made an agreement that brought to SIU, at first, one graduate student from Wroclaw, Poland, and one from Belgrade. I tell you about the one from Belgrade a little bit more later on. These students finished their Ph.D. work in record time. We eventually changed the minds of our graduate school, and we were able to initiate contacts without going through the graduate school. It extended into areas other than chemistry. So the success of the program, the high caliber and quality, and the program went all the way to engineering, it rolled over into geography, into foreign languages, and started teaching Russian in the foreign language department; it became a model. Now, it was the first successful program that integrated East European universities into the American educational system. I received a grant from the State Department to foster this international exchange program. We

were able to subsidize their trip, so indeed it was a two-way proposition. Our people were going over there as well, and the foreigners came to Carbondale. The State Department at that time said that they were interested in my proposal, in my solution how to bring qualified people from East European countries to America, but wasn't this going to be a device for them to stay or emigrate to America? I said, "Not to my knowledge. We are not going to help them. We have no intention for them to stay, and furthermore, they are on a payroll, on leave from their respective home universities, with a paid vacation time in their own country, and returning. They have a position waiting for them after they get the American degree."

This attitude became well known in our faculty as well as to students. Now, the student from Yugoslavia—her name is Vera Kolb—was the second student who graduated in this program. Knowing that we have committed ourselves not to encourage a student to stay, she went back to Belgrade and assumed her position that was waiting for her. About three months after she left, somebody knocked on my door. I had a windowless office. I opened the door. "Vera, what are you doing here?" Vera said, "Look," and showed me her diamond ring. So her major professor, named Cal Y. Meyers, went to Belgrade to marry her. She would not marry him while in Carbondale. She had to fulfill her obligation to go back, and once you are back, you are not in our jurisdiction anymore. Well, I had some inkling of a romance going on because Vera Kolb turned out to be a very fiery sort of individual. She would talk back to her professor, and one could hear them shout at each other across a hallway—we were on the same floor. So she did not behave just like a formal student. She was standing on her position so far as mechanism of organic reactions. For a long time, she did not accept American citizenship, although she qualified because of marriage. That was during the time when there were too many "ugly Americans," and she said, "It's safer for me to travel on a Yugoslav passport!" [laughter]

Other graduates from this program are now well known professors in major universities, including Berkeley [University of California], and several Canadian institutions. They came back from Poland and drew on the relationship of the American Ph.D. I just entertained a fellow from Japan—he was not part of the program, but I recruited him while in Japan, in Nagasaki. He didn't have all the qualifications but I convinced our graduate school to let him remove some of the deficiencies. He's now a full professor at Tokyo University. He came back from a world lecture tour. We never had better quality students in our department, and everybody now praises me because this was the summit of research accomplishments when we had the East European students. They were excellent students. All this was done informally. No contract written. I knew Professor Kenja, the Wroclaw vice rector. He came and many other of his colleagues spent their sabbatical-leave year teaching in English, freshman chemistry or whatever their specialty. Never a better time.

PRATT: How long did that program run?

WOTIZ: The program ran from 1972 or 1973—I was there in 1972, so the program started operating a year later, and broke down during Solidarity. During the Communists it worked like

clockwork. When Solidarity started raising its head, in a quest for democracy, there was no discipline left. Before, the students saw the benefits of following established precedents. After Solidarity, everybody was on their own.

PRATT: What about in 1974, the Pacific Rim countries?

WOTIZ: This I visited while on sabbatical leave. The previous ones were under the auspices of the National Academy of Sciences. I felt that I was developing a feel for the chemistry in the Third World. Russia and the other East European countries were definitely in that category. What type of education can one see at that time in the Far East Asian countries?

PRATT: What countries did you go to?

WOTIZ: Burma, skipped India, went to Malaysia, Thailand, Singapore, Hong Kong, Indonesia, Japan, Australia, and New Zealand. I think, I didn't skip any. India, I felt, already had too many students in the U.S.; they were experienced enough. The other ones were really new to the research and teaching chemistry community. In Japan it was interesting to see what they had done after the war. I mean, they had a very good educational system modeled after the German educational system. I was wondering how in their defeat, how they were changing, <u>if</u> they were changing the education model. Australia—I was concentrating on the less well-known universities. We all have heard about Sydney and the National University, but there are smaller colleges, just like in America. New Zealand was fascinating, not from the educational point of view, but the beauty of New Zealand contributed to a very successful and enjoyable stay. I also wrote a report in the *Journal of Chemical Education* (13b).

[END OF TAPE, SIDE 7—SIDE 8 IS BLANK]

Let me talk about Kay and my meeting her in the Sydney airport. Qantas, which I flew from Japan to Sydney, had a scheduled strike, which was at midnight that day, and indeed they called a strike, but the voice also said, "Don't worry we are going to put you safely on the ground." That was only part of the problem. Most of the flights in Sydney at that time were Qantas flights. Everything went on strike, a lot of stranded passengers. Is Kay going to be able to meet me in Sydney, coming alone from the States, also flying Qantas? She was to arrive earlier than I did. Very happily, without any difficulty, we eventually met at the busy, chaotic airport, and we started a visit to Australia and New Zealand. While in Australia we booked a cruise to the Great Barrier Reef; it was a small tourist vessel. People were fishing. I never caught a fish in my life. The crew was baiting my rod. No fish on the hook. The last evening, they planned a barbecue picnic on shore and people went—I stayed on the ship because if one shines a light at night into the waters, one can see the fish, which are swarming in the light. I

said, “Maybe now I’m going to catch a fish.” No way. I could have put a net into the water and scooped it out. I never caught a fish in my life.

PRATT: So you never caught a fish!

WOTIZ: Never. Not that I didn’t try. But I never hooked a fish. But we met some people on board from New Zealand and we had a chance to visit with them later on. Very pleasant couple. I gave a series of lectures in many of the places, and the local hosts put us up, not in hotels, but in faculty clubs and things like that. In one place we had an apartment, including a kitchen. We said, “We will be here for several days. Let’s prepare a meal.” Well, we saw nice lamb chops in a nearby store, and New Zealand is famous for lamb. More sheep than people, they say. Anyways, we said, “Why don’t we make some lamb.” We went to the butcher shop and he wouldn’t sell it to us. “You are foreigners. This is not lamb. This is mutton, not fit to be eaten.” It looked pretty nice to me! [laughter] But to him it was mutton and not lamb. In Christchurch, we were there on a beautiful sunny day, blue sky. Snow covered mountains in the background, the luscious green meadows in front of it, and the ocean. We were very much impressed by it. Some years later, we went back to Christchurch on a cruise. But it just didn’t look so nice the second time around.

PRATT: Ernest Rutherford’s home is New Zealand.

WOTIZ: In Nelson, New Zealand. I went to look at it. I couldn’t find a plaque or anything.

PRATT: Nothing?

WOTIZ: We couldn’t find it.

PRATT: I probably told you some time that I own Rutherford’s calculus book that he used in college, I think it was Trinity College in New Zealand. I bought it from a dealer in New York.

WOTIZ: I’m pretty sure it’s called Nelson. It’s just on the edge of the strait that separates the north island from the south island.

PRATT: You mentioned a while ago about Japan. That being 1974, is that when you went to Japan? You also went to Japan in 1984, is that correct?

WOTIZ: Well, I know I was there in 1974. Also, it was my first time; I visited Japan several times since. We were on cruises. I may have been there in 1984. It was shortly after the war. In 1974, they were still recovering from the War and the atomic bomb in Hiroshima. I was there during the day there was an anniversary celebration of the dropping of the bomb. They created a peace park as a memorial. There were Japanese students picnicking around. Obviously, everybody recognized me as an American foreigner, and they were most friendly. They would come and say, "Nice American. Nice." In that place where the first bomb was used, there is a peace museum where this is recorded in photographs of that period. I could not detect any resentment. It was very much a surprise. I mean, it was of questionable taste to picnic in that park where so many houses and lives were lost, but I just did not feel any animosity.

PRATT: Now, did you go to China?

WOTIZ: At that time? No.

PRATT: Did you ever go to China to look at their education system?

WOTIZ: Yes, but not at that time when I was visiting Japan. No, the People's Republic of China was still off-limits at that time. And in 1988—

PRATT: That is what I saw someplace.

WOTIZ: That is right. In 1988, I was invited to teach a course in the history of chemistry in Chengdu. That's in the northwestern part of China, in the foothills of the Himalayas. I think I told you about one of my students who translated my lecture and later an article that he submitted.

PRATT: Yes, and got it back! [laughter]

WOTIZ: He had to delay publication because I thought, "I just don't want *Chemistry in Britain* to be scooped by a Chinese translation.

PRATT: My impression of China was, in the parts I was in, that technically they were about seventy-five to a hundred years behind us, but this was in 1988. Big changes now.

WOTIZ: Yes, it was the Third World.

PRATT: I would love to go back because today they've supposedly just come up by orders of magnitude. I was there in 1984, but they've probably changed just dramatically.

WOTIZ: Well, the fellow who translated my article wanted to ingratiate himself because he wanted to come to America to study, which he did. He got a Ph.D. degree and he's teaching now as a professor somewhere. He used me as a contact, which he needed. He turned out to be very able—no typical language difficulties.

PRATT: He's teaching over here, or back in China?

WOTIZ: Last time I heard he's back in China, but I heard also some second- or third-hand stories that he will be coming back here as a faculty professor in an American university.

PRATT: I had some real interesting impressions. See if these check out with you. Of course, China was still very much a police state, but I don't think I have ever felt any safer as I did in China. I'd go out on the streets, wade out into those people. Obviously I was different, but I didn't feel any animosity.

WOTIZ: It was the same thing when I spent time in Russia. It was the safest state I visited because they really enforce the law.

PRATT: In the technical institutes we went to in China, they were <u>so</u> apologetic about their equipment because they were working with very antiquated equipment, equipment that was fifty years old, seventy-five years old. But it was museum quality.

WOTIZ: Yes. That's what they did—they did not use it for research. They were keeping it as in a museum.

PRATT: Yes. Like show-piece stuff.

WOTIZ: Well, this is one of the observations of traveling and evaluating competency in teaching chemistry. The Third World countries received various grants from international organizations—UNESCO, international banks, et cetera.

PRATT: Like World Bank?

WOTIZ: World Bank or some foundation like Rockefeller or something. I've seen crates they never opened. They don't know what the instruments they received looked like, what it is for. Is there anybody who can use it, or knows how to operate it? No interest. It's money down the drain in many places. I took special note because instruments that we are unable to get in the States because it is a major capital expense, they were getting free but never used it.

PRATT: Had no way to apply it.

WOTIZ: Not exactly what I was talking about, but I remember in Armenia, in Yereven, I was taken to a cognac factory. They had a winery. They transported the wine in tank cars to the cognac factory where it's distilled, and the distillate is stored in oak barrels. Well, each barrel that is assembled there, it has a stamp burned in "Product of France." So it's French oak that is responsible for the characteristic label of cognac or brandy. Well, it sits from three to five to ten, up to fifty years, in those casks. The longer it sits there aging, the darker the product is. Well, if it sits in a cask for five years, and they open it, tap it, and it isn't dark enough, the color has to be adjusted. The color has to be adjusted to a five-year product. It's done with a caramel syrup. So here is a woman, who has a galvanized bucket hanging with three wires from a pipe that goes over. She puts the sugar in, has an open flame, and she liquefies the sugar. Then the liquid sugar caramel is dumped into what at one time was a white enamel bathtub. Of course a lot of caramel misses the tub and grows on the side as a stalagmite or stalactite [laughter]—just sugar icicles are formed. She adds water. Has a big wooden paddle and sloshes it to dissolve it to make the syrup. Now, the syrup goes into the distillate to adjust the color to correspond to the appropriate-year product. How is it done? With a medicine dropper, by hand, bottle after bottle. She looks at it, and estimates how many drops. There was a spectrophotometer, which was bought at one time to get the right color. Never used. She trusts more her own eyes to adjust the color. That's the Third World.

PRATT: Third World. That's right.

WOTIZ: And they don't use a cork. They use a polyethylene gasket, and that is hammered in by hand. As it comes off, one puts the cap into the bottle, and the other one comes with a wooden hammer to nail it in. It's incredible!

PRATT: It's very educational to see. I suppose it's like stepping back in time, but you have a hard time adjusting to that, how they do things like that. Well, anything else you want to say about this educational program? I've sort of run out of questions here on that.

WOTIZ: Well, in retrospect, when I'm introduced in our SIU department for whatever reason, I'm always singled out as the individual who brought best-qualified graduate students to SIU. That is what my colleagues remember. Never mind the chemistry. I brought the students to SIU who studied under my colleagues. I never used a foreign graduate student that I recruited myself or. Never. Never even attempted, because my proposal was accepted at first with a considerable amount of skepticism. "Wotiz is traveling the world and he's recruiting students to boost his research group!" I never used a single one. I brought students who are now professors and did exceedingly well, but for my colleagues, not for myself.

PRATT: Well, good. For the night when somebody's voice is giving out, who's been lecturing for eight hours now, I guess need to turn it off and wait until tomorrow.

WOTIZ: Good night.

[RECORDER TURNED OFF AND BACK ON]

PRATT: I believe that you were again in Japan in later years.

WOTIZ: Yes. I went in 1984 at the invitation of the Japanese History of Chemistry Society, or something like that. A branch of the Japanese Chemical Society. There my host was a fellow who is now in this country. He's associated with the editorial board of the division of History of Chemistry for the Journal. A Japanese fellow; I've forgotten his name. He got his Ph.D. at the University of Oklahoma with Mary Jo Nye. He was assigned to me, to escort me, and to show me around, and I remember I bought a subscription for him, which I paid for several years, to the *Journal of Chemical Education*.

PRATT: I've seen his name, I know who you're talking about. I've never met him. I believe I did meet him once at the Chemical Heritage Foundation.

WOTIZ: Well, I thought he was on the editorial board.

PRATT: Maybe he's a contributing editor to *Chemical Heritage* magazine. That's who I had in mind. He was over here. He was over here as an Edelstein Fellow, or something.

WOTIZ: Well, I thought he had a position, or tenured type of a scientist or historian.

PRATT: Well, I think he is, but he's in Japan. But I'd have to look it up.

WOTIZ: He went back to Japan?

PRATT: I think he did. But I don't recall.

WOTIZ: Well, he never made contact while he was here. I wouldn't recognize his name appearing on a journal somewhere. But I have a very, very difficult time with names.

PRATT: So do I! Let's talk about some things I missed yesterday. Any graduate students who really stand out that you want to mention?

WOTIZ: Yes, a man I mentioned earlier, Ray Dessy.

PRATT: Oh, yes.

WOTIZ: Dessy was really outstanding. It should be so noted that he essentially helped another Taiwanese student in getting his degree. I'm not sure of the Taiwanese student's name. He came to the University of Pittsburgh looking for a Ph.D. degree. Well, he took some courses and did research and we gave him a "terminal master's degree," and recommended that he terminate his schooling at Pitt. Many years later, when I was in Taiwan as a guest of Taiwan National University, when I checked in, I was told that my former student is going to introduce me at a reception. I said, "I don't remember a Taiwanese student." They said, "Well, this particular fellow, after he left the University of Pittsburgh, went to Japan and essentially bought a doctorate degree." The reception was in a restaurant. There must have been some hundred-plus people. I have no idea who they were. Well, it seems that his parents owned the taxicab fleet in Taipei. So the fact that he bought his degree was not a surprise for me after I learned that. But he or his parents also bought all the instruments in the chemistry department. He was in charge of every possible instrument, which was a rather generous gift to his own department. You asked me about outstanding students. This was the least! [laughter]

PRATT: The least outstanding student, but the most memorable! [laughter] The acetylene compound research, did that continue through your whole career?

WOTIZ: From my Ph.D. work to the last minute that I was in a laboratory.

PRATT: Yes, I think we sort of hit that yesterday. Then the last thing is, what year did you retire from teaching?

WOTIZ: In 1989, when I turned seventy. Retirement was mandatory at the time. I missed the deadline by two years because there is no such a deadline anymore because of age discrimination. I was able and willing to go on, but I was not permitted. When the law changed, age discrimination, or anti-age discrimination, they exempted for five years, three categories: firemen, policemen, and tenured professors.

PRATT: Oh! I didn't know that. [laughter]

WOTIZ: Very few people it seems. Yes, firemen, policemen, and tenured professors. Not just professors, tenured professors.

PRATT: So many of us at DuPont retired young because they wanted to get rid of us. They made retirement just too attractive to stay there. One guy, a good friend mine, wanted to continue to work, and he did until, I think he was seventy-three. But he was making a great contribution and they didn't really want to get rid of him. So he stayed on; he just loved to work.

WOTIZ: The way it was explained to me is that it was a question of liability. If you're over a certain age, the University cannot carry any insurance. The State of Illinois is self-insured, but it was the State that would not assume any responsibility for any accidents that would occur.

PRATT: Did you have what you would identify as a philosophy of teaching? I don't know exactly what I mean by that.

WOTIZ: Well, let's turn it around. What am I against? [laughter]

PRATT: All right.

WOTIZ: That is simpler than what I stand for.

PRATT: All right, that'll be your philosophy then.

WOTIZ: That would be my philosophy if I can identify it like that. I admire and I respect commitment more than anything else. If a student is committed and needs help, no problem. He is gladly given it. I sort of keep up with current problems. I now eat lunch at a roundtable, which seems to be under my sponsorship because I'm the first one retired to occupy that roundtable in a cafeteria where my friends and colleagues would gather from any department and all departments. It seats, I think, twelve or thirteen people, depending how we shove our chairs away from the table and increase the circumference of the table. I hear their complaints and I would say, "Well, here, I'm sitting now on the sideline, but I heard those complaints thirty years ago!" They have not changed. [laughter] There is a general deterioration of material. There is a very rare commitment on the part of the students and the faculty. This is the most disturbing thing. But the faculty expects everything will be handed down to them. I would ask, "How many applications have you written?" "Absolutely none. Support was promised to me when I accepted the position. Why should I write any applications?" Well, times have changed. Here the ones that get promoted are the ones that raise money for their own research. There's nothing wrong with that. The other thing is the number of students they keep cramming into classrooms. There is no one-to-one contact to instruct students anymore because of the size of the classes. Our major auditorium holds two hundred and twenty. I'd be looking at two hundred and twenty faces. I don't know who they are. I used to know everybody by name. Impossible to do. I remember the early years, the names of female students because in chemistry there were few. I also remembered the names of excellent and outstanding students as well as the bad ones that kept on bitching! It hasn't changed.

PRATT: I think you might have answered this already—were you a tough grader?

WOTIZ: I had that reputation. As a matter of fact, this brings to my mind an incident I had while I was still teaching at the University of Pittsburgh. I had a student by the name of Scaife. Scaife was related to the Mellons. There was a difference of opinion—not in grading—but whether he can take an examination out of turn because he had a social commitment. I said, "No." And people from the Pittsburgh area kept on reminding me that I was, "responsible for Mellon Institute being now part of Carnegie-Tech, rather than the University of Pittsburgh," which always had a close relationship to Mellon Institute. [laughter] And it was the same Scaife who was financing the Special Counsel, [Kenneth] Starr.

PRATT: I wondered. I was going to ask you about that. It's the same person?

WOTIZ: Same person. He was a pre-medical student at that time.

PRATT: Oh, that's really interesting. All right. I was going to ask you about that. This is a totally different subject, but did you have any one or two organic textbooks that you thought were outstanding? I can tell you why I'm asking in a minute.

WOTIZ: I considered [James Bryant] Conant's organic textbook as one because I was raised on it myself (14). Conant didn't have the classical order of topics of the chapters. It was different. But Professor Sampey at Furman taught me organic chemistry and he did very little lecturing. He just assigned, "this chapter tomorrow," and we had to know everything what's in the chapter, and he would ask the questions because there's no point repeating what is better written in the textbook. So it's not Conant as such, it was the way Sampey was teaching organic chemistry. Now the other one is [Robert Thornton] Morrison and [Robert Neilson] Boyd, which also has a rather interesting history (15). A textbook that no publisher wanted to accept. It was eventually published by Allyn & Bacon, and that started Allyn & Bacon as a publishing house, building around that Morrison and Boyd textbook.

PRATT: The reason I'm asking is, you know, I was instrumental in getting the organization called The Bolton Society started. We are planning for Chicago—this is just in infancy—to have maybe a symposium on classic textbooks in chemistry. I'm not sure what form it's going to take, but I've got to get rolling on it now. I just thought I'd get your ideas on that. I already had Conant down as one.

WOTIZ: Morrison and Boyd had a paragraph on [August] Kekulé, in small print, when it came to organic aromatic chemistry, which was factually wrong in part. It took me three editions before they accepted my calling to the inaccuracy before they changed it. [laughter]

PRATT: All right. That's good. Now, let's see, I'm going to get to history in a minute, but I thought it might be worthwhile to look at professional connections. Of course, in a sense, you and I met through the American Chemical Society [ACS] because I submitted some papers, a paper anyway, to your "Story Behind the Story," and we'll talk about that in a minute.

WOTIZ: Well, I thought we met on a tour.

PRATT: Well, I remembered you. You didn't remember me! [laughter]

WOTIZ: Oh, I see! [laughter] Well, I'm glad to know now.

PRATT: But anyway, we had correspondence. I'll put it that way. We'd had correspondence about papers that I had sent, submitted, and which you published. But anyway, what year did you join ACS?

WOTIZ: While I was still an undergraduate.

PRATT: Well, you're a fifty-year member then?

WOTIZ: Oh, well past!

PRATT: All right. That's really what I was getting at.

WOTIZ: I don't pay anything when I attend national meetings. I'm way past fifty years.

PRATT: Well, I'm fifty-two or something like that—fifty-three maybe now. Of course, I know you've been involved in HIST [ACS Division of the History of Chemistry]. What about organic chemistry?

WOTIZ: Yes. I was a member from the start, a member of the organic division, which I dropped. Same thing with chemical education, I dropped it in recent years. But I'm still a member of the history division.

PRATT: Right. I saw somewhere—oh, it was in the correspondence—you were written a thank-you letter for participating in a committee on international relations. That was not a division.

WOTIZ: That was a board council, committee on international relations. The first one, the first year they created it. Bill Bailey ordained that there be such a committee and he put me on the original committee.

PRATT: Well, I would think so, with all your tours and work in education.

WOTIZ: Well, this was what they claimed, but I didn't do the touring so much prior to that time.

PRATT: Oh, you didn't?

WOTIZ: No. There was some. I wrote articles on Soviet education and the other Eastern European areas, but I did not develop the tours that you were participating in at that time. This pre-dates it.

PRATT: All right. Oh, student chapters. Did you have a student chapter?

WOTIZ: Indeed. Not outstanding ones. They didn't win any prizes or recognition in the—you're talking now ACS?

PRATT: Yes. Student affiliates is what I should have said. Another thing that I know must be near and dear to your heart. In your study at home, you have a whole wall full of plaques for speaker in local ACS sections. You must have twice as many as anybody else.

WOTIZ: No, I don't think so. I had an ambition to speak in every local section. I am sure I spoke to about one-half. In some sections, more than once.

PRATT: Oh, all right. Some of these are repeats.

WOTIZ: Furthermore, when you looked on my wall, there were many sections that didn't give us any plaques to remember us by. [laughter] So I could not tell you without my correspondence, which I no longer keep. I had to reduce everything into one file after I had to give up my office. Any correspondence on a particular tour I would no longer have.

PRATT: At any rate, I was impressed by all those plaques. Those obviously extended over some period of years. Twenty years or more, maybe.

WOTIZ: Oh, at least twenty years. That goes back to a period where they were not giving any plaques.

PRATT: Yes. Your topics would have covered chemistry, obviously.

WOTIZ: Not necessarily. I started out with chemistry, talking about the propargylic—the Wotiz rearrangement.

PRATT: Yes, I've got that.

WOTIZ: Then I changed to foreign education in the Soviet Union. That became a very popular topic. They would schedule me, even recently, to talk, not realizing it's completely out of date. I removed that listing from the tour-speaker list and I said, "That's obsolete." It took about five years to remove it from my speaker's topics. Then it changed to Museums in Europe. I made a list of places that I visited, and it was the editor of *Chemtech*, [Ben] Luberoff who said, "Why don't you write us a directory of museums?"

PRATT: I've seen that directory and it's excellent (16).

WOTIZ: Well at that time, there was no current source or anything like that, and there was an early attempt for a directory, it was the highlights only. But I covered across the board, and rated them from zero to five, or one to five, or something like that. That was written, or collected or assembled at the suggestion of Luberoff who published it. A surprising number of reprints were asked because now you can no longer judge the readership from the requested reprints. Everybody Xeroxes. There's no point in writing to the author for a reprint. So you really don't know. I don't use a computer, but a very good friend of mine said he was browsing in his computer and he came across my name, and he got a printout. There is somebody in Pennsylvania who was talking about history tours of chemistry, and the advertisement mentioned that the historic places that will be visited are in the Wotiz Directory and are five-star rated. I don't know, maybe I know that fellow, but I don't remember him writing me for my suggestions, which I received many times. He could have been included in that request.

PRATT: I've been on ACS speaking tours a number of times, four times I guess is all, but I did them for the American Institute of Chemical Engineers [AIChE] for a number of years. I just wanted to remark: the time that I came to Carbondale, I think that you were my host. I don't know whether just out of friendship or something—you probably were program committee, I'm not sure.

WOTIZ: It was friendship.

PRATT: Anyway, my treatment was five-star, six-star. I mean, you had a reception at your home. The dinners, everything was arranged for press coverage.

WOTIZ: Well, this was not unusual. I mean, there is some comradeship because I had been in a smaller section. They make it a social event. So the reception is not for the speaker, necessarily. It's also a get-together, a social event for people driving from a sixty- or hundred-mile radius.

PRATT: Well, the contrast—in fact, I have written a couple of times about it. You go there, you don't know whether you have a place to stay. You go in the room, you might have a lectern, you might not. You just don't know until you get there, and you know how it is.

WOTIZ: Well, I learned something. I like to drive. So to many places, I drove—when I lectured in the deep South, New England, the West, wherever. I carried a projector in my trunk, and a cable to connect it because I was never sure if the necessary equipment would be available. But I also remember in Utah or Southern Idaho, they wanted to have a reception and wanted to serve alcohol, and they were afraid to go to a liquor store to buy it, so they asked me if I would mind buying wine or liquor or whatever for them for the reception. [laughter] That was the oddest request I ever had.

PRATT: I know you're a member of the History of Science Society, at least you were. You dropped out?

WOTIZ: Yes.

PRATT: Anything else that you were a member of? Any other professional organization?

WOTIZ: Yes. American Bridge League! [laughter]

PRATT: American Bridge League. Oh, all right, that's a social club.

WOTIZ: [laughter] No, it's a professional one!

PRATT: It's professional. Oh, okay.

WOTIZ: And social, to be sure! But there are a lot of people who make it a profession. There are professional players. They are out for hire. If somebody would like to get a life mastership, they would hire a professional player to play with them and carry them over. They would try to hold all the declarer bids so they are the ones and not the partners who hired them.

PRATT: All right. I remember as a child, in the newspaper, somebody wrote a column. I guess it was daily. It was called, "[Charles H.] Goren on Bridge." I just remember that.

WOTIZ: Well, yes. Well, Goren was a guru of bridge.

[END OF TAPE, SIDE 9 – END OF INTERVIEW]

PRATT: I had mentioned yesterday that I was somewhat surprised. I couldn't see the connection between you coming over here and going to a southern Baptist college. I was looking through *American Men of Science* and it has you now listed as a Unitarian Universalist.

WOTIZ: Yes. I went the circle, to be sure. We were always Unitarians whether we knew it or not, even in the old country. It was not a religious connection. It was a question of philosophy more than religion. I became active. I was the president of three different fellowships and found people of similar views and backgrounds that I enjoyed meeting and knowing and working with.

PRATT: Were your parents Unitarian?

WOTIZ: Not declared because they did not know it. But they left religion, a Jewish background. I was not circumcised if that is important. It was "live and let live" type of attitude, which obviously met the philosophy because there was a Unitarian Church in Prague that owns now a historical building on one of the most walked thoroughfares in the city. The house is called "Unitas." It was a Unitarian church, which was barred from exercising their religion during the occupation. That Unitarian Church was started by the wife of the first president of the country. The first president was [Tomáš Garrigue] Masaryk, who spent quite a bit of time in the States and was a friend of Woodrow Wilson. Masaryk was supposedly the co-author of many points that supposedly resolved the post-World War I period. One was the

independence for what is now the Czech Republic and Slovakia. Well, while in America, he married a Unitarian named Garrigue, and he took her name as his initial: Tomáš Garrigue Masaryk, because he, Masaryk, was also Unitarian. He was a professor of philosophy at Charles University, and very prominent. Interestingly, I mentioned the connection of going to Furman. There was a professor of philosophy at Furman who became a friend of Masaryk and that's why he founded a scholarship for Czechoslovakian students. [laughter]

PRATT: Oh, I see!

WOTIZ: It was interesting.

PRATT: It closes the loop. I wondered about that. I didn't ask about it.

WOTIZ: Yes. I always admired our first president, Masaryk.

PRATT: I was looking for a book up here. I often tell people that I'm a Unitarian after the order of Joseph Priestley. Of course, Priestley was a Unitarian and I have a book up there someplace or other called *A History of the Corruptions of Christianity* (17). I bought it for a quarter in Springfield, Massachusetts. It was written about—this was a later edition—1808, I think. But you know, I can be, very easily, as I said, a Unitarian after the order of Joseph Priestley.

WOTIZ: Even current philosophy has not basically changed. The terms perhaps have different meanings, but it is a very well organized disorganization.

PRATT: [laughter] That's a good way of putting it. "A well organized disorganization." I have a number of friends who are Unitarians, so I discuss religion with them from time to time. You've already alluded to, mentioned bridge, tennis, and skiing.

WOTIZ: Skiing. Not as much tennis, as skiing.

PRATT: Well, at one time, apparently, you played tennis. But anything else that you do?

WOTIZ: For recreation? Well, this kind of recreation—I mean, duplicate bridge really sharpens your mind. Some people call it an obsession, other ones call it a personal disaster for

not being able to do it. I started playing bridge when I was ten years old, in Europe. My mother went to a spa for some time where she received some professional instruction. It was auction bridge, in the 1920s. She came home and she tried to teach bridge to her friends, and there would be bridge afternoons, which were more gossiping than playing. But anyway, she tried to explain the game. I was listening in as a ten-year-old youngster. They played and I had a different idea as how it should have been better played. If somebody didn't show up on time, I was a substitute. So I learned the old-fashioned way, auction bridge. I am now a life master four times over. You see, bridge evolved from whist. Bridge was invented by [Harold S.] Vanderbilt.

PRATT: I did not know that. I know nothing about bridge at all.

WOTIZ: I understand. But you've heard about the English game of whist?

PRATT: Oh sure. We have a club here called the University and Whist Club.

WOTIZ: Whist club. The one in Cleveland is a whist club. Well, but it was invented by, I think, Vanderbilt, who had guests in his mansion or estate, and said, "Ladies and gentlemen, I will teach you a new game. It has some relationship to whist, but it's a new game." He explained it, people liked the new game, started playing it, and that turned into modern bridge, auction bridge, first in the 1920s. It was Goren who changed it to contract bridge. One of the best-known bridge players was an American Intelligence friend of [Dwight D.] Eisenhower; he was also a duplicate bridge player. His name is on the tip of my tongue—[George A.] Jacoby. Anyway, this has been organized. It's a most popular sport. I did not know that it is a sport. When I traveled in Russia, bridge was considered to be a bourgeois game, not permitted to organize. Chess, yes, but bridge, no. Until they said, "Well, it's really a mental sport." Then they got permission to play at regular times and some provision for a place was provided by the state.

Let me follow-up on something that I'm reminded of. When I went to the Far East, I was there on a study of chemistry education, but I developed another trail, which I followed. Duplicate bridge in bridge clubs, which is usually played in the Far East, in the wealthiest private clubs, horse-racing clubs or something like that. As I was going from Singapore to Malaysia, they wrote a note or wired ahead of me that I will be coming. When I arrived, just like in an ACS local section meeting, people would invite me and organize a reception or party for me. So I had an insight into life of the upper crust, to be quite sure, that I would not have been able to penetrate strictly through my academic contacts. I remember—it's interesting how these things come back! [laughter] I arrived in Malaysia—it was in Penang. It's an island off the Malaysian coast. Penang. Or was it on the coast? I forget. Anyway, and I had a note already from my sponsor or contact in Singapore because I never knew what hotel the local chemists or educators were sending me to. She wrote a note of welcome and organized a bridge

party, which was held in her private home. It looked like a museum inside. A Chinese family. The husband didn't like to play, but the wife was a player who was educated at Oxford or Cambridge. Oriental treasures were in it, and you would play cards, and there would be a "boy" standing behind you, anticipating your future needs of a drink or God knows what. That fellow would show up, and bring what he thought I needed or wanted. I'm using this as an example because it helped me in my study because they also had interesting ideas; how else do you meet people like that?

PRATT: That's right. It gave you an entrée to a world you wouldn't have known.

WOTIZ: Absolutely. Now the Taiwan Chinese developed a system of playing that was top-notch in its time, a pioneering type of system, and the same thing in Poland. In Poland I was playing bridge with a Polish Olympic team, and they developed a system that you are bidding something that you don't have. [laughter] Well, in international competition this was banned.

PRATT: Well, you mean it actually is an Olympic sport?

WOTIZ: Yes. An Olympic sport. Bridge has an Olympiad, sure, the Bermuda Cup.

PRATT: I did not know that.

WOTIZ: The biggest trophy that you can earn is a "Vanderbilt."

PRATT: All right. I have a real good friend as a bridge player, and I have to pull that on him.

WOTIZ: I think you would find it very challenging.

PRATT: Well, I don't know. I don't know one card from another. [laughter]

WOTIZ: Well, that's what I mean. Never mind if you know anything.

PRATT: Well, let's turn to your life in history. I thought we'd never get there. I was just sort of doing some reflecting on history of chemistry. Thomas Thomson wrote the first book on the history of chemistry (18). It's a little two-volume set. I have it downstairs. It was 1830 and

1831. There were people like Henry Carrington Bolton, and Forrest Jewett Moore who wrote—he's was at MIT [Massachusetts Institute of Technology], I think—the history of chemistry that went through four or five editions.

WOTIZ: And titled "The History of Chemistry." Not just doing the work or reviewing.

PRATT: No. It actually has that title on it. Of course, Aaron [J.] Ihde, [James Riddick] Partington, and Williams Haynes, who did the five-volume on the American chemical industry. [D.] Stanley Tarbell and his wife. Florence [E.] Wall—she wrote but not a book. Mary Elvira Weeks: did you ever know her?

WOTIZ: Yes.

PRATT: She was an elderly woman.

WOTIZ: Very elderly.

PRATT: I guess she was at the University of Detroit. I don't know, but anyway. But I was just jotting down some of these people. My point was that every one of these people had backgrounds in chemistry. All of them were teachers, except Haynes who was an editor for *Chemical Week* and several other chemical magazines.

WOTIZ: I don't recall Haynes.

PRATT: Well, I don't know when he died. Probably he died in the, maybe early 1950s. But this five-volume work on the history of the American chemical industry could never be done again, I don't think (9). These people that were chemists that did history had a passion for it. They did it because they loved it. I mean, they thought it was important, but I think more importantly, they just loved the research. They loved getting into what I call "knowing the people." So I would put you in that class. You have to have a passion for it.

WOTIZ: Well, I always ask myself, "What motivated people in any endeavor?" Makes no difference. I happen to be a chemist. But every endeavor has a history.

PRATT: It does. Right. Everything has a history.

WOTIZ: You know, you don't have to be a historian, necessarily, but it has a history, and the question came: well, how did people react to past events? What is it doing to them? How is it influencing their own thinking? What motivated them? This is essentially a background of my column "Story Behind the Story." I mean, what exactly happened, how much "serendipity" was there, or was it a concerted effort to find the truth? No matter how they came, from what direction. What in the history of chemistry motivated them? What challenged them to become better chemists themselves by learning past events?

PRATT: All right.

WOTIZ: That's my lengthy explanation. [laughter]

PRATT: Sort of roughly, when did you really become interested in history?

WOTIZ: I will tell you—it may have been said by other ones in some way. The European textbooks that I used for study always had a paragraph, not as a footnote, but a smaller-print paragraph, telling something about the people who did it and how it evolved. They worked in history in the regular textbook. It amused me, it surprised me, and it influenced me.

PRATT: And that's gone out of all textbooks today that I'm familiar with.

WOTIZ: That's what I'm saying. You may have heard about it, but I was a product of that age. So it started very early. Even high-school texts had it. That is as far back as it goes.

PRATT: All right. Well, that's what I wanted to get. Now, when you were teaching, did you work historical events into your classroom lectures?

WOTIZ: Absolutely. The question from students usually was: Is this going to be on the examination? [laughter] I said, "No. It's something that I will tell you to put in proper perspective." But I always introduced, when I had a chance—not wasting time or getting off the subject. But yes, I used it. And that was what students remembered more than what I was supposed to teach.

PRATT: I think people do remember history. I don't like to bore people, but people are fascinating with historical events.

WOTIZ: Absolutely.

PRATT: So, I just know from talking to people.

WOTIZ: This is an educational philosophy that is coming back, I understand.

PRATT: Well, I hope so.

WOTIZ: Yes. Now, I have not been teaching for ten years. I cannot speak now from first-hand knowledge, but I understand it's now being re-introduced because this was a battle that was fought in the 1980s. There's so much new material, computer, computer-assisted learning, facts that were unknown. What are you going to do within the allotted time? Are you going to keep them up to date, or teach involving historical events? There's not so much time. Well, there is a very delicate balance that one has to observe. What can you accomplish in a given time?

PRATT: I said a while ago that we met through correspondence, and you didn't remember that part. But anyway, my earliest knowledge of you was through the "Story Behind the Story" columns, and I have a lot of those that I tore out or Xeroxed or something along the way. And somewhere along the line, I submitted a few articles and they were published.

WOTIZ: I may go back now! [laughter]

PRATT: Again, I can't even remember what the first one was. I didn't look it up. But how did that column get started?

WOTIZ: Well, it started after I started the history tours. I'd invite a foreign, local speaker, and it became quite apparent that the lecturers started in the "middle." At least as far as we were concerned, just walking in, and they told us what they thought necessary and wanted us to know. I tried to put their remarks in a proper perspective. Before you come to tell us what the story is, what preceded it? This almost became a joke with my participants. They already knew and anticipated my leading question: What is the story behind the story? And interestingly, they found it even more interesting than the message that the speaker was conveying. When I came back from those tours, the editor of *Journal of Chemical Education* was Tom Lippincott.

PRATT: Lippincott. He was an editor.

WOTIZ: Who I'd known from previous years. Maybe he was an Ohio State graduate or a faculty member or something. He was a product of [A. B.] Garrett of Ohio State.

PRATT: Oh, all right. Garrett.

WOTIZ: I said, "I have an idea for an interesting column, which is essentially a follow-up to the one that Garrett was writing for the *Journal of Chemical Education*. It would be headed or named, "The Story Behind the Story," and I will introduce topics submitted by anybody that is important but not well known (10)." Tom Lippincott said, "Well, let's try it out. Let's have in every other issue an account of your column." Well, this became, "Why don't you make two stories every two months? How about a story every month? Or how about several stories every month?" It really grew, and he kept on sending me readers' reactions. The *Journal of Chemical Education* was feeling the pulse of their readers, continuously, and as time went on the responses were more and more favorable, until it became the most favorite, sustaining feature in the journal. When Lippincott retired, [J. G.] Lagowsky took over and started changing around the sustaining columns. He said a journal requires a broader or different kind of involvement, and they dropped it.

PRATT: Well, I think things like that sort of run their course.

WOTIZ: Oh, absolutely.

PRATT: That generation dies off and another one comes along and you can start all over again.

WOTIZ: Computers became much more interesting to readers—an obvious event.

PRATT: As best I can tell—I don't know the exact dates—this ran from about 1974 to 1982.

WOTIZ: I wondered about it. Last night I woke up, "How long did the column run?" How many years?

PRATT: I think, 1974 to 1982. So it had been eight years.

WOTIZ: I was guessing six years.

PRATT: All right. Looking back, do you see any major contribution overall?

WOTIZ: No. I cannot speak with authority since I didn't make a statistical analysis. But my gut feeling is that this changed people's attitudes and contributed to re-introduction of history into present textbooks.

PRATT: This is what I would have guessed. There's been one very interesting thing: I think I joined the HIST division in 1968, and I noticed in some records that they had one member to join that year. So I figured I was the one-hundredth member. The HIST division—I don't know what it is today—but two or three years ago, we had just about a thousand members. So from 1968 until say 1988, thirty years, people were willing to put some money down in order to support the HIST division. So I would agree with you on that.

WOTIZ: In some respect, the division of the history of chemistry has to write its own history. I am not aware that anybody really summarized the whole thing.

PRATT: Jim [James J.] Bohning has, but I don't think it's ever been published.

WOTIZ: Oh, I see.

PRATT: You know Jim Bohning?

WOTIZ: Yes.

PRATT: He's done it, but I don't think it's been published. In fact, I want to ask Jim about it. I'll see him in a few weeks. I want to ask him what ever happened to that. But it should be published.

WOTIZ: The history division had a phenomenal growth. However, it's the smallest one.

PRATT: You're right.

WOTIZ: It's still the smallest one. But the percentage increases were quite dramatic.

PRATT: Doing some background reading for this interview, I looked at the minutes of the HIST division, and in 1977 I found that you proposed to start what you called a "Truth Squad."

WOTIZ: Did I? [laughter] What did I have in mind?

PRATT: Well, anyway, nothing happened in 1977, so you brought it up again in 1978 and I don't know whether anything happened then or not. That's what I asking. The "Truth Squad" was you said that you were tired of seeing so many errors in published material. So this would be like a peer—it wasn't exactly like a peer review.

WOTIZ: Oh! Yes. No. I'm glad that you reminded me, and I wonder what happened to that folder. I started collecting errors. It started with the misspelling of my name. I saw the most outrageous type of misspelling of my name. Then I broadened it to textbook errors, general errors, in historical facts. One particular individual, O. Ted [Theodor] Benfey, who is still around, gave a paper and the paper was published in that monthly journal directed toward chemistry in high school. I think that the journal no longer exsists. Well, anyway, he was talking about [Antoine] Lavoisier. Wrong. There were wrong instructions, wrong dates. I mean, a lot of things were wrong. He was—is—a well known individual who was editor of the journal, and he should have known better. And I remember I gave a paper on "errors." It was in Seattle, and he saw me before I was scheduled to give the paper. He said, "John, please go easy on me!" [laughter]

PRATT: Well, as far as I can tell, the "Truth Squad" never came into being.

WOTIZ: No. I was a one-man squad. [laughter]

PRATT: Anyway, I was amused by that.

WOTIZ: You mean, I actually proposed a "Truth Squad"?

PRATT: Well, that's what it was called. It came up twice under that title.

WOTIZ: You mean in the minutes?

PRATT: Yes, in the minutes, in 1977 and 1978, it came up that you were still pushing for the "Truth Squad." But anyway, I don't think it ever got anywhere.

WOTIZ: It would not be out of character, that's for sure.

PRATT: Well, that's what I thought. Well, I want to turn now to the tours (8). Of course, my wife, Mary, and I took your 1985 tour. I believe that was either the last or the next to the last.

WOTIZ: No, my last one was 1989.

PRATT: All right. Well, anyway, we've told you this before. It was sort of the highlight of our lives. We had a lot of fun, we learned a lot. It was a congenial group. It was just a great, great spot. Of course, we were there eight-and-a-half weeks and we drove about 5,000 miles.

WOTIZ: Kilometers. Miles, really?

PRATT: No, these were miles. I kept it in miles rather than kilometers. I think we have a count of like a hundred lectures. I don't know what we called a lecture, but anyway we kept up with that, and we I think went to about sixty museums.

WOTIZ: Oh, you're kidding! [laughter]

PRATT: Well, this might have included places—I don't know how we counted—like Stonehenge, or historical spots.

WOTIZ: Oh, touristy stuff.

PRATT: Yes. But anyway, you know, this was just great, and I estimated one time that you probably had at least two hundred people over the years. So if the impact of that article is what

we think it was, and I fully agree with you, then these tours must have been an order of magnitude or two, you know, in raising interest.

WOTIZ: Well, the tours preceded the articles and the column.

PRATT: Well, yes, I realize that now. But in other words, in increasing people's interest or awareness, you know. If the article was X, well then this must have been 10X or 20X or something, at least. How did you get the idea for the tours?

WOTIZ: Ah, "the story behind the story."

PRATT: Yes, right. That's what I want.

WOTIZ: It's very interesting. Forgive me if I try to give you the entire picture. It started in 1966 or 1967.

PRATT: Well, I have 1971 as being the first one.

WOTIZ: No, it really started in 1967. My family, at that time, was never in Europe. My youngest one just turned ten years old. My oldest, Anita, just graduated from high school. I said, "This is a good time to arrange a tour through Europe to show my family what is to be seen." At that time, if one wanted to go to Europe and save money, you had to fly on a charter. Southern Illinois University was chartering flights for the various summer programs. If there were seats available, extra seats were for the benefit of the other faculty. Now, usually half the plane was taken by other faculty. But SIU was a pioneer in studying overseas, abroad. The French language department organized a tour to France; Geography, and there were always other groups, on some kind of a mission. We joined it as passengers. We became acquainted with those various tour groups, and I also learned quite a bit from the other university efforts on summer programs. We took an overnight ferry from Brindisi in Italy to Patras in Greece. We put our car on an overnight ferry. I talked to a complete stranger and I forget what he was in charge of, a study group, on the most esoteric subject that I ever heard. I mean, completely surprising that people were interested in joining such a study abroad. I came back and I said, "Gee, SIU's organizing such study groups, what would a chemist do? What kind of a subject would he choose to make it possible to spend a summer abroad at their expense, not own expense?" And I said, "History. Why not history of chemistry?" Well, I wrote an application. That had to be approved by a committee under the supervision of adult education, something like that. I don't recall the name at that time. Well, there was a dean of adult education, I wrote an application, and the committee met. I was not present at that meeting because I was in the

Soviet Union at that time. So they had only the bare facts in my application. I could not explain what I put into my application because I did not know—places to be established. I wanted them to approve in principle my application that there should be such a thing as a history of chemistry tour, but I did not know where to go. I didn't do the research and list places to be visited. But, an application was written. I couldn't be there to explain what was in it. The committee said, "We have never heard about a summer program involving the history of chemistry. We think it's ridiculous." Well, I came back from the Soviet Union and learned of the result of my application. At that time I was still department chairman, and I raised a certain amount of displeasure with their decision. "How do you know? Just because nobody has done it? It's the best reason to have it!" They couldn't understand.

So at the next opportunity was the same application, a little bit better, because I did some thinking around, and again, the same argument. The committee met next year and said, "Well, we haven't changed our minds, but let's approve it because the group must have at least fifteen participants in order to be financially able to support itself. So let's approve it. He'll never get the fifteen participants." Well, I went to work, sent out flyers. I sent letters out where to go. And lo and behold, I had twenty-three participants. I received start-up money for advertisement for the mailing and clerical support. All the money was returned eventually to Continuing Education. I wrote letters to my professional friends, the acetylene chemists, throughout Europe. "Are you nearby, or are you aware of a historically important place, museum or potential speaker?" And the responses came back freely, and rather lengthily with the same suggestions of all sorts of places. These were the "must" points. Then I said, "We're going to drive ourselves." Well, if you're going to drive yourselves, you have the luxury of making detours to include the scenic highway and byways, the cathedrals, and the other cultural places that would make it interesting. Furthermore, since we want to use small cars or mini-buses, this gave us flexibility. I did not mind if one group went over the mountain, the other ones who were afraid to go over the Alps, they will go through the mountain. No problem. Flexibility. The main orientation of the early tours, was a program for students, for undergraduates or graduates. It turned out, there was only one who fitted that category. The rest were all teachers or professors who already had an interest in history.

PRATT: Do you remember some of your History of Chemistry Tour members?

WOTIZ: Of course I do. I only wish that I could follow their lives after the Tour was over. I keep getting Christmas cards and greetings from my former participants, whose names sound familiar but I cannot recall their faces or the year of their participation. Since every student who took the course for credit had to write a term paper, I still have the term papers in my file, but I no longer have their mailing addresses. Many of them, and I mean many, keep thanking me for arranging the most memorable period in their lives.

PRATT: I am sure that you remember many other participants beside Mary and me?

WOTIZ: You are right. You may be interested to know who the participants were. Originally, I expected that most of the participants would be of college age. That turned out to be incorrect. Most of the participants were high school and college teachers who were interested in the subject and wanted to include the history of chemistry into their chemistry teachings. The high-school teachers always took the course (Tour) for credit to help them in earning an advanced degree and thus be qualified to also earn higher salaries. With an increasing age group we had to alter the quality of accommodations. Where originally we were aiming for inexpensive student hostels, we eventually ended up staying in good but inexpensive hotels, many suggested by the local lecturers or curators. Such hotels we were unable to locate from the USA.

You may also be interested to know that about a dozen of the participants traveled with me two times and one three times. The itinerary from year to year varied sufficiently to make it worthwhile. Naturally, he was an individual who I never forgot. As a matter of fact he and his mother came from California to attend my 1989 Carbondale retirement party. In this connection I also fondly remember your presence at my 80th birthday celebration, which was arranged by my daughters in Phoenix, Arizona, in 1999.

Looking backwards I now realize the wide spread of ages in the participants. I already mentioned that we had college-age students, and once, a high-school student who was the daughter of a couple of teachers. I believe she was in your tour. But it is noteworthy that our oldest "student" was Ralph E. Oesper in 1975, when he was eighty-nine years old. You and the History of Chemistry family probably remember him as an elder statesman, professor of Chemistry at the University of Cincinnati, frequent contributor of articles and translations for the *Journal of Chemical Education*. He was also the first recipient of the Dexter Award in the History of Chemistry. When I originally started the Tour program, I turned to him for advice for the location of memorable European sites, which he gladly shared with me. Naturally, I was quite surprised when in 1975 he wanted to become participant as an Auditor. Knowing his advanced age I wrote to his son Peter who I also knew and who at that time was a professor of Chemistry at St. Lawrence University in Canton, New York. Peter responded to my inquiry stating that his father is in good health and is old enough to make his own decisions. Shortly before we were leaving for Europe I received a letter from Ralph informing me of his wishes in case of his death while on the Tour. He asked me to offer his body to the nearest medical school and in case they were not interested in his remains he wanted his body to be cremated and his ashes scattered. I shared this information with our University attorney who instructed me to ignore this request since it was not a notarized last will. Fortunately we enjoyed Ralph's presence and wisdom. He was the "darling" of the rest of the participants. He was a model student whose only handicap was walking. At about two thirds of the Tour he received notification that the Galley proofs of his forthcoming book *The Human Side of Scientists* are waiting for his return. Ralph could no longer remain and he left us for Cincinnati. I visited him there upon my return. He was living in a retirement community and, not surprisingly he was the center of attraction of the ladies who shared his quarters. I was very pleased when the *Journal of Chemical Education* asked me to review his book. He died in 1977 and left considerable money to the University of Cincinnati library and the Chemistry Department to endow a chair

for the teaching and research in History of Chemistry. I was also pleased when the Department asked to subsequently to suggest names to fill the new position.

PRATT: Very interesting. Do you recall some of the Europeans who assisted you?

WOTIZ: In retrospect, there must have been two hundred different lecturers and museum curators who participated at least once with their presentations over the span of twenty years. The Tours were scheduled for every other year. I am taking this opportunity to record again my thanks and appreciation for their input.

I would like to single out four most memorable individuals. In 1971 when I started to this unique travel and study course in the history of chemistry, we visited the Royal Scottish Museum in Edinburgh. There we met also the recently appointed Assistant Keeper, Dr. Robert W. Anderson, who was given the responsibility to prepare an exhibit honoring Joseph Black, the famous Scottish professor of medicine and chemistry. His presentation using Black's original equipment, was most impressive, well organized, and researched. He met me and our participants for many years later on while head curator in Edinburgh and when he became the head of the chemistry section in the London Science Museum. My affection for the "Anderson Touch" in the exhibits prompted me to nominate him for the ACS Dexter Award, which was awarded to him in 1986, the first and only award to a curator. In my nominating documents I predicted that he would become the head of the South Kensington Science Museum. As it turned out, I was wrong because he became the director of the British Museum, an appointment several notches higher! Shortly after he assumed his high post he invited my wife Kay and me for a luncheon in his private quarters in the British Museum. The steaks were delicious prepared in his private kitchen and served by an English butler who could have stepped right out of a Hollywood movie screen. All this was in his museum private and large dining room, wood-paneled with the life size portraits of past directors looking at us. In our reminiscences, Anderson thanked me for my contribution to the advancement of his career. For example he gave me credit for his first guest lecture that made his later lecturing possible; he thanked me for sharing with him the evaluations other European museum exhibits which he used in turn in the preparation and upgrading his later artful and easy-to-understand exhibits. He also thanked me for the information that the BASF Corporation in Ludwigshafen, Germany, is dismantling the original Haber process ammonia burners, the reaction tower where nitrogen and hydrogen are combined to form ammonia. He subsequently asked and received, at no cost except shipping, such a reactor, which now stands like an obelisk in one of the chemical engineering exhibits outside of the South Kensington location.

I also would like to mention that I also stayed with him and his family in Edinburgh and in Oxford. It seems that when he moved to London he actually lived in Oxford and commuted daily to London. He was an Oxford graduate student and preferred the life in Oxford. He left his bicycle at the Oxford rail station and used his other cycle at the London station. Naturally his wife lamented to me that she barely sees Robert between his commutes.

The other memorable lecturer was Marie Louise Hemphill, a grand niece of Louis Pasteur, who married an Englishman and was back in Paris, living the life of a grand dame of Paris society. As a Pasteur descendant she was able to open for us many doors. I remember at one of our Tours she accompanied us to travel to Arbois, the site of Pasteur's summer home. There we were met by Mr. Meyer, a wine merchant, the present owner of Pasteur's home and vineyards. He took us down to his private and past Pasteur's wine cellar where properly clad waiters, at candlelight, offered us old vintages and a selection of French cheeses. Mrs. Hemphill was so favorably impressed with our history tour that some years later she asked to whether it would be possible for her to join our travels. Naturally she traveled for several days with us as our guest. Many interesting stories was passed on to our participants. The trip was also memorable because she came accompanied with her pure-bred cat who did not always behave properly. The desire of Mrs. Hemphill to travel and learn along with our participants was by no means unique. This brings me to Wilhelm Lewicky, a descentant of Justus von Liebig. He was very much aware of his legacy and being by occupation a merchant he used his private funds to support the Liebig museum in Giessen, Germany. He used his contact with me to travel with our group thus introducing himself to other European curators. He also used his home to entertain our group for several years.

Professor Levi Tansjö of Lund, Sweden, was a gracious host during our visits of Sweden. One year he spent great amount of money to treat us to a cocktail party. As you know alcohol is very expensive in Sweden. So when he learned that we shall travel next on a ferry from Sweden to East Germany he insisted that he would lecture to us in the ferry saloon. This sounded like a generous offer until I realized that he never left the ferry in East Germany. His real objective was to buy duty free liquor on the ferry. I was most pleased that we gave him a chance to re-supply his alcohol holdings. Seriously, I was also appreciative when he opened the door for me to the Berzelius Museum in Stockholm, and the Nobel Foundation. This eventually led to an invitation to present a guest lecture about European History of Chemistry Museums, a topic that I became quite well informed by that time. The Swedish hosts asked me to explain to the attending Swedish King that a greater financial effort should be allocated by his government to the existing museums in Sweden, particularly in Stockholm and in Upsala. Such an outside pressure lecture was used in other countries and could be well used in the USA.

PRATT: Did you have any favorite places, or was there any place that the participants reacted like, “Gee whiz!” to places that you went?

WOTIZ: Again, I think it depended on the kind of a reception we received, and the personality of our principal host. People, in my opinion, appreciated more our visit to East Germany, to [Friedrich Wilhelm] Ostwald’s house Haus Energie, because of Gretel Brauer, an Ostwald descendant. I mean, she was such a lively person. It also was memorable, so far as I know, because of the difficulty in getting there.

[END OF TAPE, SIDE 10]

WOTIZ: Going into East Germany was an interesting experience: the waiting at the border, the nervousness of participants. Actually, one year we drove as far as Leningrad, St. Petersburg, on one of the tours. I tried to change the itinerary from year to year. I started getting bored, and I said there are so many other places that we have not visited or included in our tours. Well, that particular year, we drove through Sweden, put our cars on a ferry between the mainland Europe and Denmark, Copenhagen, and then another ferry to Sweden. We drove up from the ferry point as far as Stockholm. A very interesting place even if you did not visit. We went to Lund in southern Sweden, visited Upsala, and then we took the cars onto another ferry into Finland, and in Finland we drove along the coast into Leningrad. The border, crossing from Finland into the Soviet Union, had the biggest surprise to our participants. We had two nuns among the group. The car in front of us was a VW [Volkswagon] with a boyish looking driver and his girlfriend. The border guards took that car apart. Took out the upholstery, they took out the tires. They were looking for something. A VW couldn't hide a third person in there, so they must have been looking for drugs or something like that. Then they reassembled the whole car. Took the wheels off, put them back, and drove off. Now, the Russian border guards came to our car. The luggage had to be lined up next to the car, and we all had to stand by our luggage while they picked a particular one. The fellow said, "Open." It happened to be the luggage—we had only two women, both Catholic nuns, and oh, they just essentially collapsed! [laughter] She fumbled and opened her suitcase. The fellow says, "Close it." Never looked! "Close it," and the rest of us packed up. Okay, nothing happened, but a non-event became an event, needless to say.

PRATT: You mentioned Haus Energie. That was a memorable place, as many others were, but I noticed that somewhere in some of the HIST minutes—I don't remember what context this is in—that you slept on Ostwald's mattress at one time, and so I would assume that you that you spent the night there.

WOTIZ: Bed. This was during my sabbatical, when I was getting ready to write the directory. At that time, I was not there with my history group. That was during an off-year, and I was a private guest of Gretel Brauer at that time.

PRATT: Is she still living?

WOTIZ: Yes, every year she sends me a telegram, "Happy Birthday." She is probably in her eighties, as well. I visited her several times on my own and she has a standing invitation to come and stay with us, which she has not fulfilled. The last time I saw her was in 1993, I believe. She's aging, but she's as cheerful and vivacious as you remember.

PRATT: I remember her well. Anything else you want to say about those tours? Well, let me see. I think I have another question here. I talked about the favorite place. What about favorite lecturer? Did you have a favorite lecturer, or did people react to one particular lecturer?

WOTIZ: Well, again, it's Gretel Brauer.

PRATT: All right. Well, let's turn to Kekulé. I think that when we were traveling around Europe, the one lecturer that we were linked to, and this was Westmorelands and the Pratts, was in Brussels, we got lost and we didn't speak Flemish and we couldn't find any of the natives that would speak English. So we finally got there and it was the day of your lecture on Kekulé in Ghent, Kekulé's former home. So I don't think you were too pleased that we missed maybe the first fifteen minutes of it, but anyway, your passion for Kekulé really came out in that lecture. It was an excellent lecture.

WOTIZ: Serendipity. [laughter]

PRATT: How did you get into that?

WOTIZ: That's exactly where I'm aiming to address my remarks. From the first tour on, we had a regular stop in Ghent, Belgium, where the topic was Kekulé, since Kekulé accepted the professorship at the newly established State University in Belgium, in Ghent. He was lecturing there in French. Ghent was also the home of [Jean] Gillis; it's pronounced "Hill-es". He was an elderly gentleman who wrote biographies or articles or Kekulé stories. He was a professor of inorganic chemistry. He told us a particular story and people always wanted to know more. What did they want to know? Well, was Kekulé a drunk? Was he inebriated when he was talking about his vision in front of a fireplace, which was told, eventually, at the 1890 Berlin conference. In other words, did he see snakes in the fireplace, rather than pink elephants! [laughter] The answer Professor Gillis gave: he does not know. Yes, Kekulé was drinking. He enjoyed beer, especially imported German beer. Kekulé himself talked about his years in London where fellow Germans happened to travel, bringing him a supply of German beer. Kekulé married the daughter of an English family who lived in Belgium. The father was the director of a gas company. The maiden name of his wife was Drory. Gillis said that Kekulé would not have been tolerated in that family had he been a drunk or drinking to excess. That was Gillis' reason—he said he was not inebriated. That was an opinion. Gillis studied, became a biographer of Kekulé. That really didn't satisfy anybody because here was a man, a curator of Kekulé's artifacts, who really did not know, or doesn't have an answer to a question that puzzled many, many people.

Well, I was there several times. Every year I asked more questions, and started looking for an answer myself, and I never knew the answer. I wrote an article in *Chemistry in Britain*,

dealing with our initial research on Kekulé, really trying to find out who Kekulé was and was it truthful when he reported he saw a snake catching its own tail in a fireplace when he was dozing on front of it (19). So what I did, I said, "I'm going to <u>really</u> look into it, but I need a helper who can do research, laborious library research. Here comes again the serendipity. That problem I carried in my mind for many years. I was at Southern Illinois University when the then department chairman, David Schmulbach, knocked on my office and said, "John, help me." He needed help for a student who came to his office and wanted to graduate at the end of the current semester. She was lacking two credit hours. The department chairman asked me, "Can you suggest a research topic for her so that she can take it as a 'special topic' and earn two credits so she will graduate?" That was Susanna Rudofsky. Well, I knew Susanna. She took my history course. I knew she was born in Czechoslovakia. Her family was German. You would now have put them in the category of Sudeten-Germans. In an environment that was 100 percent Czech-speaking, they were a German-speaking one. The father was a physician. He later on became a physician in the German Wermacht and died from a war injury.

The mother was a Swiss-French. Susanna grew up during the time when German was the official language taught in schools. They were surrounded by Czech-speaking people, but Susanna knows absolutely no Czech. As surprising as it is, she was actually born in Prague. Her delivery was in Prague, but they lived in Southern Bohemia, not very far from where my dad was born, actually. The only thing that she remembers—somebody was in a waiting room to see the physician and—she would say, "The doctor will be here shortly," or something like that, [laughter] while people were waiting. That's all that she knew how to say in Czech. But not surprising to me, but to people who are not familiar with post-World War I German situation would understand.

Well, anyway, she needed two credits to graduate. I thought, "Here is a student who can do the work. She knows German and she knows French." I sent her to the library to make a library search of an error. No, let me correct it. Not an error. To search for the dichotomy or what looked like a misrepresentation of a factual, historical event. There was one article that secondary sources listed as being published in—forgive me while I look up the published paper. In *Annalen [Der Chemie]*, volume 137 (20). Some said it was published in 1866, and other secondary sources referred to the paper in *Annalen*, 137, as being published in 1865. These are rather important secondary sources; many well-documented, well-regarded review articles with authors giving two different dates of the paper published by Kekulé. I asked Susanna which is the correct date, because people get their information from secondary sources. If there is an error, the error will propagate by subsequent authors, never going to the original article. They will go to an accessible article, which goes to that source as well. If one is an error, which one is it and who put it there?

Well, she researched it backwards, coming from the most recent reference to that article, going to the previous ones. She knew, they referred to it in their footnotes or references and citations, and kept on going back, back, back. I remember exactly the day—I had a visitor in my office. The door was closed. She knocked on the door, puts her head in and saw that I had a visitor. She says, "Excuse me, but I must tell you something. I found it!" [laughter] She could not wait. What did she find? The source of error was Kekulé himself. Kekulé wrote in—I'm

looking now in my own chapter of my book to be sure that I get the dates right—a paper published in 1872 (Addendum VI). Kekulé published an article, which is deviously ambiguous. I mean, it's surprising. He introduced the error in the introductory paragraph. Here I'm looking at the German version and translating: "I [Kekulé] already reported in 1865 my views on the Constitution of Aromatic Compounds. I published it for the first time in 1865." This whole thing has a footnote, a double-starred footnote. He refers to a publication, volume 137, page 158. It says he published his view for the first time in 1865. Yet, the reference to it refers only to a volume and page, and no date. The article did not appear in 1865. It appeared it 1866. So any scholar who read this would say, 1865 when in truth it was 1866. An ambiguous way to handle a reference. It is the fact that he did not give the year in his footnote, in his reference citation that makes it appear 1865, when it truth it was 1866. Now the question came: unquestionably, he's the author of this ambiguous statement that misled two early historians. Susanna got her two credits, we published an article, a note in the *Journal of Chemical Education* (21), and she graduated, but I was left with a question: why did Kekulé write such a misleading reference? He was an experienced article-writer. He has published before, but he was also the co-editor of the journal. Why did he slip it in in this ambiguous way? I started planning the story behind the story. What may have prompted this careless or ambiguous way of citing one's own important article?

The reference to this paper in *Annalen* 137 appeared in a subsequent paper, which was published in 1872 where he was reporting on the constitution of aromatic aldehydes (Addendum VI). He published the aromatic aldehyde paper in a period that was right after the Franco-Prussian War. I asked myself, "Did he publish this because of some emotional involvement with the Franco-Prussian War?" Some did not realize that Kekulé was a German. Most people had the belief that Kekulé with his accent *aigu* was French. Chemistry at the time already moved from Lavoisier from France into Germany. Well, all this became a research problem. We had to find first-hand references to any opinion that may have pervaded amongst subsequent generations. Some said that he became von Stradonitz. Well, if he was French, why did he take on the name of von Stradonitz? That was an interesting story in its own right. So let me back up from this account of the ambiguous reference to the von Stradonitz one.

Stradonitz is a German name of the Bohemian town of Stradonice. The Kekulés were minor gentry. They were Protestants and had to flee the country after the Thirty Years War where the Catholics won over the Protestants. The Kekulé family fled to what is now Germany and eventually settled in Darmstadt in Hesse. So the "von" was added when Kekulé was in his later years, and wanted the Kaiser to ennoble him for his contribution to chemistry, like Sir [John] Gielgud, who just died, for his contribution in the arts, who became "Sir." Same thing with Kekulé. He wanted to become a member of the gentry in recognition of his contribution to aromatic chemistry, which was the birthplace of the famous German pharmaceuticals and dyestuffs. The Kaiser had advisors. No way would he be enobled. Then Kekulé, learning about his background, petitioned for the reinstatement of the "von" because that's what the family was several generations ago. That was approved.

Now, the French accent mark, was a self-imposed change of name done by the father of Kekulé (22). The father was a civil servant in the Hessian government during the occupation of

Hesse by the French. Napoleon conquered Hesse and imposed the French government. In order to maintain the pronunciation, he put an accent *aigu* on the second "e" because the French would have pronounced it "Keh-kyl." So now with an accent, it was pronounced "Keh-kul-eh." As always, the derivation of the name comes from Bohemia, where every letter is pronounced. There is no question how you pronounce a Czech name. His birth certificate, and we found the birth certificate by writing to a lot of archives and so on and so forth, showed that he was registered under Kekulé, with an accent mark, but the text of the birth certificate refers to him without the accent mark. Therefore, the father made a self-imposed change. It was not written by the father. It was written in the birth certificate. That's why the misunderstanding, and you see so many spellings of his name. So there is nothing French in Kekulé, except the fact that he was fluent in French and lectured and published in French. When he assumed the position in Ghent, he became head of the department, Professor Ordinarius, which means "head of the department," at the new Gand [Ghent] State University. As you know, Flemish was the language of the population. But the French language was used in the French-speaking part of Belgium, but Ghent is in the Flemish part of Belgium where people spoke Flemish, a language similar to Dutch. So there was, again, an ambiguity. Kekulé became very anti-French in 1870n when he wrote to his friend Hübner, "What a nation of sons of bitches these Frenchmen!" (Addendum VII) (24)

Now, let's come back to that reference. He was misleading in this article, giving the impression that he conceived his thoughts already in 1865 when in fact, he wrote this in 1866. The question is: why did he try to mislead the public? Well, the article, which was published in 1872, referring to his 1866 article, was written after the Franco-Prussian War. The question was: was he ashamed, referring to an 1865 article, because it was written in French? Possibility. In other words, hysteria of warring nations makes you ashamed of being part of the opposition, so to speak. But, it is correct that he published an article earlier than he actually did, that obviously made an impact on the chemistry because the same article, was somewhat rewritten and published in German also. Within six months, in 1866, the German version appeared. But to have it in 1865 would give him precedence or would give him priority over the German one. But he doesn't want to refer to it in subsequent articles. Keep also in mind the fact that the basic article, the structure of benzene, was commemorated in 1890, twenty-five years later, in the famous Berlin City Hall lecture, where for the first time he's talking about dreams. There was no mention of it in any of those articles, there is no literature references to dreams until the famous celebration.

So again, the veracity of Kekulé became in question. Double meanings, uncertainty, the ambiguity—it's not different than from other references once you are set on a trail. Is it characteristic of his writing, or is it lack of veracity, subject of close scrutiny? All this started playing into our minds, and was a subject of research. We were very mindful of going to the original source because we were <u>so</u> uncertain, and we found it very unreliable looking into the secondary sources.

I think I may have mentioned—if not I'll mention it again—a lesson that I was taught by my preceptor, Melvin Newman. He said, "All research starts in the library and ends in the library." So we did not believe anything unless we found the original source in the library, or a

first-hand account by somebody who witnessed something. Because of this, we were challenged. Putting Kekulé under a microscope we found ambiguity and not necessarily untrue statement, but ambiguity, by a fellow who used his position to his advantage. People were talking about hallucinating, they were talking about the psychology of dreams, of the veracity of creative dreaming. That's a personal interpretation, which everybody's entitled to, but in our opinion, it was an incorrect interpretation. We also published on all those erroneous interpretations by people who don't even know how to spell Kekulé, or could not identify his position or his whereabouts (23). People wrote analyses of it, and some will tell you that it's possible that there is such a thing as "creative dreaming." Some people who studied dreams in sleep clinics, defined sleep, as the presence of rapid eye movement [REM]—consequently nobody knows whether he had REM or not. Was he dreaming? There's an ambiguity in translation because the original translation of that speech is talking about "*Träumerei*." Well, "*Träumerei*" is not a "*Traum*," which is a dream. "*Träumerei*" is "dozing," perhaps, but dozing, you're not asleep. You are fully conscious and just relaxing in front of the fireplace. So there is another ambiguity in talking about the physical state of his original idea. Once we became aware of the lack of Kekulé's candor, everything fell into place.

There's still another point to be made. Why did he do it? He was laying the foundation, in our opinion, for gaining priority, because at the time of the 1890 speech in the Berlin City Hall, he was a man who was striving for recognition and priority. People were now aware of a rather interesting fact. When he supposedly conceived the concept of the aromatic structure, he did not write a hexagon, as we are used to. He wrote a "sausage" formula. Sausages with two arrows at the end of the chain, which were to mean a closed ring (Addendum VIII).

PRATT: Yes.

WOTIZ: Now, it is true that in the same year, 1865, he wrote subsequently a hexagon in a publication of the proceedings of the Belgian Academy of Sciences. But when he wrote a hexagon, he put hydrogen atoms in the corner, not carbon. That's a fact. He says, "*Wasserstoff*," hydrogen in the corner. This in itself invalidates everything. If he had a dream or he had a concept, how can he write a hexagon with hydrogen in the corner? He is the originator of the valence theory of writing appropriate structural formulas. So another ambiguity. People say, "Well he wrote a hexagon." No way. He wrote a hexagon but not for benzene. I mean, it's clear as anything. In the corner of his hexagon, he put "*Wasserstoff*." Some people say, "Oh, this is his alibi! He really <u>meant</u> this; he <u>meant</u> that." And so on and so forth.

All right. I was checking the individual alibis, but I was putting all this together and I got a different kind of a composite picture of a man who was striving for priority. I am also of the opinion that [Johann Josef] Loschmidt was much closer because he placed it in a circle and put hydrogen <u>outside</u> the carbon atom. This is another point in this. There was another question. Was Kekulé aware of the Loschmidt structure, and the answer is: yes. He referred to Loschmidt's formulations. But referred to them as "confusion formulas." Why are there

doubters, or people who don't recognize the fact that he got it from Loschmidt, because in his estate, in his library, they couldn't find any Loschmidt publications. Well, the fact that one couldn't find it there does not invalidate the fact that he had seen and referred to Loschmidt in a publication. This is [Alfred] Bader's line. Incidentally, talking about Bader, he stepped in when Bill [William Joseph] Wiswesser had died. Wiswesser wrote to me in support of our research. He was to speak in our Boston symposium, but he died before he could come. I had to ask Bader to step in as a substitute for Wiswesser, which he freely acknowledged.

[END OF TAPE, SIDE 11]

WOTIZ: I was making the point that Bader stepped in for the man who created this interest in Loschmidt. That was Bill Wiswesser, who worked for a U.S. laboratory. In Beltsville or Detrick—somewhere nearby.

PRATT: I don't know.

WOTIZ: Anyway, Bill Wiswesser was the originator of the Wiswesser notation that pre-dates the language of computers by many years, which many people find quite useful, I understand. I got to know Bill through the activity in the History of Chemistry division. He preceded me as chairman of that division, but he already suffered a heart attack by the time he assumed that office. I was the vice chairman at the time, so I spent an extra year chairing the division because Wiswesser was already in failing health. He had heart problems. And when I organized the Kekulé Symposium for the Boston ACS meeting, Wiswesser was not able to participate. He submitted a paper and Bader stepped in but also was a substitute. He carried the Wiswesser article very far—it created quite a bit of interest in Loschmidt.

PRATT: I remember that he got into quite an argument, I believe, with Bert [O. Bertrand] Ramsay.

WOTIZ: Who? Wiswesser?

PRATT: No, Bader. I remember he stood up at the Boston Symposium and he was quite emotional. He said something to the effect, "Let's face it, gentlemen. Kekulé was nothing but a god-damned thief and a liar!" [laughter] I mean, I never heard such language. But he really felt very passionately about that.

WOTIZ: Well, that does not surprise me. I think he did tried to correct Loschmidt's injustice by expounding on the contribution of Loschmidt, who was a rather interesting figure. He was a physicist. He had no idea about the subject of organic compounds, but he arrived at his conclusions, which I am certain that Kekulé knew well, because [Richard] Anschütz, Kekulé's foremost student, became a successor in Kekulé's university affiliation. As biographer, he refers to him [Kekulé] quite freely in the two-volume biography that he wrote. So whether Kekulé was a thief, as Bader called him, I—.

PRATT: I'm glad you explained about Wiswesser because in going through the chronology of what was going on, Ned [Heindel] was chairman, then Wiswesser, then yourself, and it seemed that there was no correspondence in the files, no notes in the minutes or anything about Wiswesser. In fact, I have it in one of the questions to ask you: what happened? Why wasn't he involved? And so then you've explained that. So that's good. We've already sort of fast-forwarded into the sixteen or eighteen papers that were given in Boston, and some of them weren't published, and I read through your preface again (19), and I don't know that I totally followed who gave everything.

WOTIZ: Well, here is what has happened. I submitted a proposal of a centennial celebration to [Mary] Virginia Orna, who was the program chairperson at that time. It would celebrate the hundred-year anniversary of the celebration in Berlin, 1890, and in 1990 it would celebrate the celebration. [laughter] Anyways, Virginia put it on the program. I needed money to support speakers coming from abroad, or who would not come to Boston unless they had some kind of financial support. I received an API grant. I still needed more money. When Wiswesser could not meet his obligations, Bader stepped in as a substitute lecturer, speaking on the research done by Bill Wiswesser on Loschmidt. And Bader also provided additional money in support of other speakers, which I acknowledged in subsequent articles. That made Bader very unhappy, because he said, "I never wanted it to be known that I gave money in support of this, because then other people will come and ask me for money!" So the fact that I publicly acknowledged his support created also another problem. I invited a fellow from Germany named Günter Schiemens, a professor of Chemistry at Kiel University in Germany, who wrote lengthy articles disputing Bader. There were two articles, and the dispute became very personal between those two. I, as editor, had to make a decision. I said, "Well, why don't you talk it out because it's a question of terminology." I didn't feel qualified enough to step in and make a ruling. Well, a compromise was reached. Schiemens presented two manuscripts. On related subjects—two individual manuscripts. As a matter of compromise I accepted in full what he wrote in one article, but rejected the other one because for lack of space. That's what I did with authors. There's always a press for space. That eliminated the argument because of the second article, which I rejected. I visited Schiemens in Kiel after the symposium and he said, "I'm unhappy with your rejection, and you took the side of Bader, because he gave you money for the symposium." Well, so be it! That was not on my mind, I can assure anybody and everybody. But it was sort of a sad fact that Bader was unhappy because I acknowledged his funding, and somebody else becomes unhappy because of the same thing.

There's another paper you referred to at the Boston meeting. Everybody who was there was invited to present their papers for publication. The original book, I was aiming to have it published in—oh, which was it?

PRATT: Springer [-Verlag]?

WOTIZ: No, before Springer. I was negotiating the final contract with one [Kluwer] in Holland. Before we were able to finalize, Springer approached me and they offered rather enticing terms. Why they approached me was interesting. I gave a lecture in Bonn, Germany, and in Göttingen [University] on Kekulé. The lecture in Göttingen, in particular, was attended by a handful of people in a big auditorium. I was talking in English during a time when the Göttingen chemistry faculty and students were boycotting any talks given in English. They said, "Well, look at the bulletin board. Everything is given in English. What's wrong with giving it in German? We are not going to attend any seminars or guest lectures by anybody who speaks in English." So a handful showed up. I started talking and additional people came into the auditorium. By the time I finished, they were sitting in the aisles, in a two hundred-seat auditorium or something like that, because—I was told afterwards—I was "speaking the truth about Kekulé." They told me, "What you said had to be said. We are aware of it, but nobody dared to talk openly like you did." They went out in the hall, told it, and people were coming in and coming in. That word reached Springer. The same thing happened in Bonn. There were boycotts of English-speaking lectures during that period throughout all German universities, as far as I know. But I really could understand their grief, that everything—literature reviews, papers out of journals that we given informally during the week were all given in English, and they were resisting it.

Well, exactly how the information was transmitted to the editorial board of Springer, I don't know, but I became rather well acquainted with a representative who I was dealing with, and he invited me to Heidelberg where their home office was located, and we reminisced over drinks, and that's where I learned about how they became aware of it and their interest in it.

When I had a contract drawn, I asked all participants to sign a release for Springer, required for publication of the book. This was a legal document that was sent to all, and all who had a paper in the symposium agreed to submit a release for Springer to print it. The other thing that happened, they gave me a choice: whether the editor will be in Germany, or with the Springer-Verlag representatives in the United States. I said, "Well, obviously, United States. It's so much easier to deal with communicating," and so it was transferred to Springer-Verlag in New York.

One paper was not included; the author [Alan Rocke] had withdrawn the paper. Springer-Verlag was informed or alerted by Rocke that there may be a minimal circulation for sale, supposedly because it was to be edited by an individual [Wotiz] who's not experienced in this particular area. They offered me an arrangement releasing everything into my custody. So Springer and I parted on good terms, on legal terms, which I accepted as a compromise because

otherwise they would have delayed the publication indefinitely. I had nothing to do with the timing of it, and rather than wait indefinitely and pursue our contract, perhaps in court, I said, "Agreed." They sent me all the releases they received. It was duly done through legal channels that made it an official release, a release of authors to Springer was put into my hands. One paper, as you're probably aware, was not printed. It was an unfortunate thing. Rocke asked that he would like to publish, not the paper that he delivered in Boston, but a paper that he previously published, *in toto*. He published it in another, to me, obscure journal of some proceedings of a rather small group. Anyway, he claimed it never received appropriate circulation. He would like this to be republished. Well, the instructions to authors were: papers containing previously published information are acceptable, provided it's updated. The "updated" was the official notification. Well, Rocke wanted it to be published exactly as it was previously published. I said, "Well, there's not a place in a book to publish previously printed material." An unfortunate set of circumstances. But that's history.

PRATT: Anyway, the book (24) got published and it got good reviews. But it created a tremendous amount of controversy. There were articles and letters to the editor published, sort of like, "I say," and "he says," and so forth. I remember this one article in *Chemical & Engineering News* prominently showing your picture and Alan Rocke's picture. The thing that I'm getting at is this: when I talk to people who are reasonably knowledgeable, you know, they would say, "Well, what difference does it make? You know, so it's wrong? So it's this way or that way? Who cares?" I found two things most interesting about this controversy. There were people who were not willing to take a well-researched document and examine it on its own merits, and either disprove the research or whatever. That was sort of one phase of it. There was another grouping of people, who seemed to really want to believe the idea of the dream. It was something sort of romantic about it, and they didn't really care what the facts were. You know, good, bad, or indifferent, wrong or right, they were going to hold onto that cherished belief. Now, did you find the same thing?

WOTIZ: Oh, absolutely. Again, I had to understand, because the vehemence of the objection, the lack of attempting to investigate or look for underlying motivation became rather fascinating. Here's my conclusion. Some people believe in creative dreaming. That's a question of faith. It has absolutely nothing to do—they want to believe it, they want to associate. What is probably more important than anything else, they said, "Well, I had it. I experienced creative dreaming!" No way. If they had, really, a dream of something, it was something they put into their head before. You cannot come up with completely unassociated dreaming that is not already in your head. I keep saying, "Dreams don't come with footnotes and references!" [laughter] Besides, Kekulé's "dream" account is an "Immaculate Conception" of ideas that avoids the past. The book received very good reviews, especially one in *Chem. Brit* (Addendum IX) (25). Incidentally, CHF [Chemical Heritage Foundation] recently bought a dozen boxes, with twenty-four books per box.

PRATT: That's good.

WOTIZ: Here's another point. People know exactly where they conceived something. The point of conception—you could be taking a bath, like I do—it's not dreaming. "I sat on a toilet stool when this idea came to me." Yes, it's possible. But that's not a dream. And they say, "Well, I remember the time, day, or whatever." But that is not a dream. That is not "creative dreaming." In 1890, Kekulé was a celebrated, recognized man in his field; he had many students who were followers and admirers of the teaching of the master, and he was losing out on priority, because that reference to Loschmidt certainly was undermining his position. Other people found fault, like putting hydrogen in the corner of a tetrahedron, undermined him. But he wanted to preserve his priority. He was getting older now. At that stage he was brain dead, so far as new ideas.

PRATT: Yes. How old was he in 1890?

WOTIZ: I don't remember, but he died six years afterwards, in 1896. Now, you cannot argue with religion. I always will stay out of an argument when people talk religion. That's a question of faith. That's the same thing here, in my opinion. When something comes up on religion, I know nothing, like that fellow in Soviet Georgia, talking about Stalin, "I never heard of him!" [laughter] It's a losing argument.

PRATT: You made a very good case that Kekulé's snake-benzene-dream account was really an effort by Kekulé to retain priority to the cyclic structure of benzene. Do you think that you have succeeded in discrediting the Kekulé myth?

WOTIZ: Yes and no. If yes, it will be a slow process and perhaps it will not be in my lifetime. I would like to explain my answer using different examples. The famous *Organic Chemistry* textbook by Morrison and Boyd had several errors in the pages where the benzene structure was presented (15). For example the statement: "In 1858 August Kekulé (of the University of Bonn)" was incorrect. In 1858 Kekulé was a professor of chemistry in Ghent [Gand] in Belgium and remained there until 1867. The textbook reference to the snake-dream account ends with: "(August Kekulé; 1865)." In fact the benzene-snake-dream account was first mentioned at the 1890 celebration meeting of his 1865 publication. It took two subsequent editions of the textbook before the errors were corrected. The Morrison and Boyd errors were by no means unique. The general misinformation prompted us to publish in 1988 in *AMBIX* the paper "Psychologists and the Dream Accounts of August Kekulé (23)." In the publication we surveyed the world literature and concluded that most of the authors had faulty basic information, which did not stop them from reaching conclusions. Because the Kekulé account impacted on the psychologists interested in dreams, the *AMBIX* paper was reprinted by request of the journal *in-toto* in the *Journal of Human Behavior and Learning*, also in 1988. Naturally the reprinting was with our and *AMBIX* permission. I should also note that some of our other

Kekulé publications we translated and published in Japanese and Chinese Journals. Furthermore, in 1988, readers of articles were still requesting reprints from the authors. Judging from the unusually high volume of the requests, I concluded that we made inroads with the interested parties. Incidentally, I noted that the recent [2000] Dexter Award citations to "a prominent Kekulé researcher" [Alan Rocke] did not mention his Kekulé papers.

Now let me conclude by describing an interesting event. In 1984 the PBS TV network ran a multi-week series *The Brain*. In Episode 8 the series dealt with the "State of Mind." The narrator made some statements from which I'd like to quote: "Vienna, Austria, 1865, the chemist August Kekulé was faced with a scientific problem; determining the structure of the compound benzene. Kekulé knew that benzene contains six carbon atoms, but how were they arranged? For years he worked on the problem. But one night he dreamed of snakes, six of them. They withered and twirled through his fantasy, then each snake bit the tail of the snake ahead of them and they formed a circle. When Kekulé awoke, he had the answer. The carbons, like the snakes, were joined one to another. Benzene was shaped like a ring. Why did the answer appear in his sleep, and can we explain his triumph in the terms of the brain?" Beside the obvious misstatements of the Kekulé dream-snake-benzene anecdote, the text also mentions "Vienna, Austria, 1865." The fact is that Kekulé was never in Vienna, and the producer probably had him confused with Sigmund Freud, and furthermore the dream episode was told in 1890. I have written to the producer manager of WNET-TV in New York where the program originated and I pointed out the several errors.

In due time, I received a letter from Richard Hutton the TV producer of *The Brain* series. Some passages are worthy of repeating because they perfectly illustrate the problem: "Dear Dr. Wotiz, thank you for your letter of December 7, pointing out the error in our segment on Kekulé. I went to our sources: *Organic Chemistry*, 4th edition, 1983, [that was Morrison and Boyd]; the *Kekulé Centennial* from *Advances in Chemistry Series*, 1966; and found to my chagrin you are perfectly correct; Kekulé spoke of one snake biting its own tail, not six-joining in a ring. I [Hutton] suppose I succumbed to selective blindness. There are two more points I [Hutton] would like to make. First, your [Wotiz] scholarly and well-original piece i.e., I think, a denouncing argument that Kekulé might never have had the dream in question. At the same time I [Hutton] applaud your caution in stating: 'We believe we have made a reasonable case based on circumstantial evidence…for nobody will ever really know whether the event in question took place or not....' My [Hutton] journalistic instincts want me to run to the footage and text, rip it out, and insert accurate picture and copy. Unfortunately, Dr. Wotiz, that is not possible.... So it will be around for a while, a shining example of how human beings—even the most well meaning and diligent ones—sometimes make mistakes." Now Herb, you know why I responded to your question, "yes and no."

PRATT: I'm quite fascinated with arguments in religion, but we've never had one. So I don't guess we will.

WOTIZ: As a Unitariarian, we accept that.

PRATT: Yes, anything goes! I meant to ask you, are you active with the Unitarian fellowship?

WOTIZ: Well, for several years I was the chairman of two different Unitarian Fellowships. I became active again and stopped again, on and off. The first time was when Kay and I divorced, temporarily, we were separated, divorced, we dropped out simultaneously. And we did not resume when we remarried, but the last year or two we became active again, and started paying dues.

PRATT: Well, I believe that you don't have to give up one in order to embrace the other—religion or science. I want to say just a little bit, or ask you a little bit about the law suit that came. Anything you want to say about that at all? Or can say? I know it was settled.

WOTIZ: Well, there were two lawsuits. The controversy with Alan Rocke and the lawsuit with the editor of the *Bulletin* of the HIST division who was responsible for his activities. The procedure was not followed and that violated the standard procedure of peer review, and that has been resolved appropriately. I think that Rocke and other people know now what the proper procedure is. I know Rocke is receiving the Dexter Award, but Kekulé is not mentioned in any of the abstracts of the justification or award consideration. How did the whole controversy start? That may be of interest. What is the name of the fellow in Baton Rouge?

PRATT: You mean Jim [James G.] Traynham?

WOTIZ: Traynham, yes. He invited me to a symposium that he was organizing. He called it the Mardi Gras Symposium. That particular year, the history of chemistry was the subject. He also invited Alan Rocke, Bert Ramsay, and many others. I spoke on Kekulé and Rocke also spoke on Kekulé. We did not know each other. At least I did not know Rocke, although later it turned out that he wrote to me asking for a position with me at Southern Illinois University. I said we had no faculty position because I teach history of chemistry on an independent basis. We had no department that teaches it as a required course. So there was hardly room for additional representation as a historian of chemistry, which his inquiry supposedly was. So when we came to Baton Rouge, he knew me. I did not know him. I had no recollection of that exchange of letters.

But anyway, in that paper I presented at Baton Rouge, I was essentially presenting what I already submitted for publication in *Chemistry in Britain*. The beginnings, the early part of our research. At the end of my delivery, Alan got up and he said, "If you publish this, I will attack you." I said, "Who is this fellow?" Alan Rocke. Indeed he was subsequently attacking me by writing letters to the editor, which required a response back and forth. The letters

became—people have said—quite heated. I never considered them to be heated. This could stand on its own legs, on its own merit. I wanted to present facts, and that's what it is. In a letter, there were some completely erroneous items written. I never wrote an article about this particular subject. I wrote only in response to some of his attacks. You will never find one that starts a new or repeats an old argument. It was only in response, but being as it may, it created quite a bit of interest at one time. I've been told by the *C & E News* staff that they are sick and tired of printing exchanges of an opinion. The last straw was when an article in the journal, the *Bulletin of the History of Chemistry* was published without due peer review. I had written everybody on the HIST board at that time: "I will object. I think this was not the proper way that articles are being accepted for publication." Everybody on that board knew it. This violated established practice, lack of peer review. I asked Bill Jensen, the editor, "Who reviewed it?" The answer was, "I did." He, Bill Jensen, reviewed it. I said, "Is this appropriate? You're a schoolmate of his. You are certainly close friends." He said, "No. I'm the editor and I reviewed it." It was not a satisfactory answer. We have learned, indirectly, and I cannot say for sure, that Rocke was writing to Springer-Verlag, not to publish the book (24). And Springer-Verlag was willing to hand over the correspondence. But it was an unfortunate situation. It created a lot of interest, however.

PRATT: It sure did.

WOTIZ: In an advertisement of the sale of the books in the *Bulletin*, I used shock treatment (Addendum VIII). I put an outrageous kind of statement "the Emperor [Kekulé] had no clothes," or some such thing. [laughter] That was my needle. If this offended some, I do apologize.

PRATT: Of course you asked would I sort of get in between and see what we could do to smooth things over without going to court. You made some very simple proposals of things that you'd like to see, as I recall. You wanted an apology, and you wanted some ads for your books, and I believe that's the only thing you asked. So I passed that along to the Chairman who passed it back to Washington, and essentially was told, "He has no case. Stonewall it." You know, "Don't do anything. Don't reply. Don't write." Of course, in frustration, you went ahead with your suit and you won it. I don't know how that was settled.

WOTIZ: Well, the settlement is off the record.

PRATT: Well, we don't need to mention that here. However, I am told—I don't know anything for a fact—it left a very large hole in the division's finances, so large in fact that some people have said or rumored that the division might fold. Now, I don't know whether that's right or not. But that is being said. Well, go ahead and comment on it.

WOTIZ: This is very disturbing to me because I worked for the health and well-being of the division for a long time. My response would be: this was not done in secret. Meaning, I think I exhausted my appeal to the division without any response whatsoever. Nobody responded. Nobody turned out to do anything. They had a deaf ear, because I remember attending the executive committee meeting in Chicago, and I followed up by a written report of the status that it leaves me no choice to make good on my intention to seek some corrective measure. It was not forthcoming. I also wrote to Thackray. No follow up. That's the unfortunate thing. Apparently, the division is now trapped financially. CHF bears some responsibility, in my opinion. They were going to publish the notes of CHOC [Center for the History of Chemistry] or whatever the name was at that time, which became the Beckman Center [for the History of Chemistry], which became CHF. It worked for a period. I don't remember for how many years or months. There was always an item in *CHOC News* from the division, but that got buried. Lately, I haven't seen anything that resembles the newsletter that the division had. So if the division is now strapped, we can very well look back into the history how it evolved, and where the money, the contribution, shifted from one side to another one. I think that there should be a subsidy from CHF.

PRATT: There might very well be, a small subsidy. For example, well, with the death of Sidney [M.] Edelstein, his company was sold and the new owners apparently have no interest in supporting the Dexter Award. So there may be some help there. I don't know. But the newsletter, *per se*, in the division, either I was very loose in saving material, but it seemed to be a very erratic. I came in 1968, and it seemed that some secretaries would come in and do a great job with the newsletter; the next secretary would do nothing.

WOTIZ: Well, that's true with volunteer work in anything. But why only a small subsidy? After all, CHF owes its existence in part to HIST.

PRATT: Yes, it is true.

WOTIZ: Well, my response would be, if CHF would support it, it should not be a small support. It should donate the services of a permanent secretary who will solicit items for the newsletter.

PRATT: Right. A very good idea.

WOTIZ: I think the division should count on a <u>major</u> contribution from CHF. Because the support comes from members, probably members of HIST as well as CHF. After all, CHF wrestled it away from HIST and its success.

PRATT: Well, there used to be on the board, there was a distinct person or persons, and I believe there were two people—at least one—who was marked: this is the HIST representative. Normally it was the chairman that would come. But that person has disappeared, and as I understand it from the literature that I've seen, I think it's just pretty well recognized that you originated the idea for the Center for the History of Chemistry. It seemed to start small with the idea of oral histories, as best I can tell now. How did you get that idea? Well, let me say this: the earliest record I found—this was in some correspondence you loaned me some time ago—was a response from Ned to you in the spring, March or somewhere along there, of 1978 that said he thought it was a good idea about oral histories. I'm paraphrasing. But you had written him obviously some time earlier than that.

WOTIZ: Well, it started with an article that Steven Brush wrote about the early history of the Center for the History of Physics, where people approached the ACS to create a joint Center for History of Physics and Chemistry. They were turned down because the chemists wanted to do it on their own terms. Consequently, nothing was done. This sort of reawakened, or made me aware of something that I felt for a long time. I did not know that the physicists actually approached the ACS some years prior to that. I said, "Why don't we update our request of a possibility of the creation by starting this oral history program, because famous people die and the story behind the story is going to be lost forever." I gave a paper at the ACS Miami meeting. The paper was apparently favorably received. The executive committee heard a motion by Ned Heindel that I be given funds—I think it was five hundred dollars—to explore the feasibility. Well, five hundred dollars was then a generous gift, but obviously, it had to be augmented as time went on because the project grew as we were exploring the possibility, feasibility. It really involved a tremendous amount of lobbying. I never knew and understood what a Washington lobbyist was. Well, I became one, and you have to sit on a doorstep of the ones who receive your lobbying efforts. But anyway, we were successful in pursuing the feasibility. We brought all the knowledge of the individuals together in a symposium that was held in Houston. That photograph, incidentally, was published in the *CHF News Magazine* without properly explaining why it was taken, you know? Also, the "CHF Story" has a completely erroneous account of its early history (26). This had to be corrected in a subsequent issue (27).

PRATT: Right.

WOTIZ: But we heard various opinions, various solutions. One that intrigued the members of the informal committee, which I was chairing, was one that this be done in conjunction with the Edgar Fahs Smith Library, at former times, a professor of History of Science at the University of Pennsylvania [Penn].

[END OF TAPE, SIDE 12]

WOTIZ: I was explaining the origin of the Center for the History of Chemistry, which eventually became CHF. In the early years—and I don't recall, in the 1970s?

PRATT: Well, it was in 1978. That was the earliest correspondence that I found. And your Miami talk was in September of 1978.

WOTIZ: Well, at that Miami meeting, the executive committee, I think Ned Heindel was chair at that time. I think he also proposed the endorsement of the thought that I expressed in my paper about starting something. The members of the division voted five hundred dollars from their meager treasury. That was a large amount of money, for a division to spend. It showed the considerable interest there was amongst the members that something should be done to preserve the history of chemists by conducting oral history interviews. The lobbying in Washington was another chapter in it because everybody was in favor of motherhood and apple pie. Everybody in Washington among the board members were encouraging, but when it came to allocating money, that's a different story. So to be financially resourceful, we had to formalize our application for support, giving assurances that this would be an essentially out-of-pocket type of financial support. That was successful. We were told that Washington is an expensive place to locate any offices. The ACS board would not recommend the collection of instruments or starting a museum; they would not invite foreign chemical societies to participate. I mentioned the things that we were told <u>not</u> to do because all that has been done now under the present set-up of the CHF, but at that time, they said impossible to do it in a major city such as Washington. Too much money.

PRATT: Right. But one difference, though, is that CHF now has assets of well over a hundred million dollars.

WOTIZ: Well, that's the point I am aiming at because when it came out of the money of the ACS, which was partly subsidized by the contribution of the University of Pennsylvania, that was one thing. Thackray as a director, the first and only director, was very skillful in soliciting money from the [Arnold O.] Beckman Estate or the [Donald F.] Othmer sources. Definitely a magnificent job in building his empire. But, you know this created resentment within the ACS because he did not coordinate his solicitations with ACS money drives. I was informed that at one time the ACS was considering withdrawing their support.

PRATT: Well, you mentioned lobbying, and when I went through that two-and-a-half inch thick stack of correspondence, it was pretty obvious that there were two phases to this. In fact it was marked on one of your folders before Houston, and if you looked at all that correspondence,

this was correspondence within the division, for the most part; there were people on the outside that, for example, that came in to speak at Houston. You had been on a fact-finding mission with Heindel, and Leon Gortler. And I don't think Wiswesser was involved at all.

WOTIZ: No.

PRATT: It just named the three of you. Then after Houston, it looked like from the correspondence that the lay interest, the membership interest just exploded. But then I see paper after paper, letter after letter after letter, of you soliciting money, soliciting smaller funds, and you had to get <u>everybody</u> and his brother on board. You had to cover every aspect of it. I told Mary about that the other night. I said, "You know, he really knocked himself out to gain support for this thing."

WOTIZ: Well, it was dribbling in. As I said, anybody we talked to was in favor of motherhood and apple pie, and it didn't mean we got apple pie, and Gortler, incidentally, wrote to me, "I am a professor at Brooklyn College on sabbatical and spending it at the University of Pennsylvania with the faculty. If you are interested, why don't you get in touch with correspondence," which was done immediately. I think within a year we had it all worked out.

PRATT: Well, there were two letters in the files. I found these very interesting. Gortler wrote to you, but he was not a HIST member. He became one, but he wasn't when he wrote you. But he was interested in oral history. In fact, he had all these plans to do oral history, and he said that he mentioned this to Arnold, and said, "Arnold was—" I think his words were—"quite taken with the idea." Something like that.

WOTIZ: Damned right. [laughter]

PRATT: There is a very short letter in there from Arnold saying, "If you get this thing going of oral histories, then the E. F. Smith Collection," which he was curator of, "would be a good place to store these." It was just a little short thing. You wrote him back and said, "Thanks for your offer." Well, then, as the thing circulated and you began to do your fact-finding mission with Gortler and Heindel, it seemed like there was another person in there.

WOTIZ: A fellow, I think, from Washington who was in charge of education

PRATT: Oh, yes, Chapman. Right. He went around with you some. Now location became a problem, money became a problem because it looked like—before you had been calling it just

an “oral history” project—I’m paraphrasing. Now you began to say it, in your correspondence, “Center,” or “Office of Contemporary History of Chemistry.” It was obvious that you were groping for ideas; ideas were coming.

WOTIZ: I would say that’s typical me. I mean, I run my department or anything else by consensus. I mean, showing leadership and creating ideas, but I try to inform anybody and everybody, and updating the necessary people in the evolution—that’s my style.

PRATT: Well, there’s even a little history, little newsletters in there, to people who were most intimately associated with this. You would just have a little informally written thing.

WOTIZ: I did the same for the symposium. I don’t know whether you were receiving our newsletter for the Boston Symposium?

PRATT: No, I didn’t.

WOTIZ: People who signed up, I put them on a mailing list, because I wanted to tell the story of all the development and be timely. This became some record of our activity in some way, these newsletters.

But you were a student of history on the history tour, too. You were receiving newsletters. Do you recall?

PRATT: Oh, yes. Of course! Sure.

WOTIZ: That’s the way I operate.

PRATT: Sure. Yes, we got those. Well, anyway, in the whole process of this fact-finding mission, there is a very interesting letter in there from Arnold to you. It’s about three pages and a paragraph long, and he lays out a mission statement. “What are you supposed to be doing? How will this be staffed? How much money will this cost? Where will this be located?” I told Mary, “I want you to just listen to some of this.” I said, “You know, this is uncanny!” It’s uncanny, what a great grasp he had of what was needed to set up an organization. All of a sudden what had been sort of in low-case letters, I’ll say, center for the history of chemistry, now became sort of capital letters. It all of a sudden exploded!

WOTIZ: Uncanny is the exact term. In other words, he had the greater vision. But we were already told by the Washington ACS board what we can and cannot do.

PRATT: Vision is the word. Right. He had the vision.

WOTIZ: Unquestionably.

PRATT: He had fifty thousand dollars from ACS and fifty thousand dollars to be raised from other people.

WOTIZ: The University of Pennsylvania, who was providing the space.

PRATT: It's just the way it worked out!

WOTIZ: Well, the question is, if he had the vision, why didn't he do something about it when he had a chance, prior to being contacted by me? He hadn't done anything. And another thing: at the time we contacted Arnold at Penn, we already had our contacts in the ACS in Washington and they informed me on what they will <u>not</u> support.

PRATT: Well, I don't know.

WOTIZ: Not that I'm aware.

PRATT: Well, I guess, maybe he just never thought about it.

WOTIZ: Why did our contact create an awakening?

PRATT: Well, I don't know.

WOTIZ: That's a question that I ask myself.

PRATT: It was an awakening. It was like the grain of sand that gets in the oyster, you know, that creates the pearl. But really, that three-plus page letter in there was positively uncanny how well that he saw the thing would be governed, and how it went along from there.

WOTIZ: Well, it was uncanny, it was precedent-setting, and it was successful. Arnold did not fully appreciate our position and our limitation. We did the work and he did the dreaming—successful as it turned out.

PRATT: And it was successful. That's right.

WOTIZ: No doubt about it.

PRATT: You know, Penn did come through. Penn supported people's salaries. Well, fringe benefits in particular.

WOTIZ: Well, people associated with the library. Now, the library became a focal point. Before the project that was history, oral history, you needed a library. That sold it more than any other point, plus location. Philadelphia is not so far from Washington, and there is already a place.

PRATT: Right, and it's not too far from New York, and you have places like the American Philosophical Society.

WOTIZ: And it already exists.

PRATT: So it happened. Of course, once it's on its feet, it's functioning—

WOTIZ: Yes, but, HIST as a division was incorporated in the initial plans.

PRATT: Yes, and HIST someway lost, and I don't know exactly how it came about.

WOTIZ: When it got changed from CHOC to Beckman Center.

PRATT: Yes, well, here again, you're appealing to people's vanity. How do you get six million dollars out of somebody? You appeal to their vanity. So they put your name on it.

WOTIZ: It doesn't surprise me, and I'm not refusing to recognize success.

PRATT: Well I just wish you could be over there looking at this success. But anyway, it has been extremely successful. I think, you know, money draws money. I think that, for example, we just finished the one building, and there's a building starting up now. There's a fellow by the name of Glenn [E.] Ullyot who used to be Director of Research for Smith-Kline Beecham [GlaxoSmithKline], and his health is not too good anymore. He was always there at board meetings and so forth. Now he's given money to build an auditorium and so there's going to be a big lecture hall put into what was a vacant lot next door to the CHF building. I believe the ground has been broken on that. Another thing that's been done, there's a big building on Third Street, an 1850s or 1860s building, it came up for sale, and they bought that, stabilized it, and eventually they hope to turn that into dorm space for students to come in.

WOTIZ: Well, it's a grandiose accomplishment. Not a vision. An accomplishment.

PRATT: Accomplishment.

WOTIZ: But I do ask a very important question: how is it possible that an organization devoted to history forgets its own history?

PRATT: I think this—you're talking back to the *Chemical Heritage* issue, the timeline (26). I don't know. I haven't asked who worked on that. I have not asked. I might not be told.

WOTIZ: It's immaterial who worked on it. There is an editor. If the editor did not write it then is was Arnold. In my opinion, it was by design, not a clerical error. Just like Kekulé, it was Thackray's quest for priority. He wanted to eradicate the past. As you know, nothing at CHF is done without Arnold's knowledge or input.

PRATT: There is an editor, that's true. But I personally think that there were so many irons in the fire to try to get the building open. I really think it fell through the cracks. I think it happened by some inexperienced person that probably didn't know a lot about CHF's history.

WOTIZ: I know, but this organization [CHF] cannot tolerate a blunder like that. It was an insult. CHF or Arnold never provided an explanation or regret. It was unprofessional. That, I believe, was by design.

PRATT: Well, I think the point has been made. I think it's been established pretty well. I feel that that kind of blunder is not going to be made again.

WOTIZ: Well, that's a very valuable lesson, unfortunate valuable lesson that could have been avoided, because I have seen this going on year after year. After we realized our original concept, it grew, and it grew from year to year, which is for the better of the institution, CHF now. But every time it grew, they rejected the past. The newsletter, the publication of the newsletter, a joint one and everything, should have been an alarm that involved the chairman of the HIST division. Were they part of it? Did they give up?

PRATT: I don't know how the chairman of the HIST division got cut out. But I have a hunch that it might have been a compromise in this whole thing of trying to settle who was going to have the upper hand in the administration and handling of the money. That's my view.

WOTIZ: That's why I say the foundation, CHF, owes HIST. If HIST is stuck for money, they should look to CHF to provide the money. Do you realize that you just confirmed my thesis by your statement: "…got cut out?" In my opinion, it was not gentlemanly.

Dame Margaret Gowing had an endowed Chair as Professor of History of Science at Oxford. When she heard that Arnold was getting involved with our history of chemistry center, she arranged for a meeting with me in Oxford. It seems that Arnold unilaterally declared himself as her successor at Oxford. She informed me that she would rather die in her Chair than to see Arnold as her successor. She referred to him as the "scoundrel." This was before Arnold renounced his British citizenship and became director of CHOC.

PRATT: I think overtures will be made if they haven't been made already.

WOTIZ: Let's hope so.

PRATT: We'll see. I mean, as I said, I think this is going to be discussed at the meeting. I haven't been invited to come, but I have raised the question and I've given good evidence for it. But I hope that it will get discussed, and I hope that it will be a positive solution to it.

WOTIZ: Maybe I'm an old-timer and I'm not willing to acknowledge that I'm an old-timer. [laughter]

PRATT: Who, other than yourself, were the major contributors of what I call the "blood, sweat and tears" in getting the idea of the Center off the ground? Heindel?

WOTIZ: Without dispute. Ned Heindel.

PRATT: Gortler had something to do with it on the fringes.

WOTIZ: Well, Gortler became chairman of the division. He joined the division and shortly after became chairman. He introduced me to Thackray, or vice versa, so he's certainly bearing some responsibility. The appointment of Bohning to do the interviews in some ways was a surprise, not that Bohning was appointed. It was the fact that there were so many changes in the editorship. Who was the editor of *CHOC News*?

PRATT: I can't think of who you mean.

WOTIZ: He retired from the editorship.

PRATT: Oh, Ted Benfey.

WOTIZ: Ted Benfey. [laughter] I can tell you all about him, except the name. [Jeffrey L.] Sturchio, Benfey, and Mary Virginia Orna were there. There were some people who I never knew personally who were there. There was a real rotation in personnel, a surprising number of people.

PRATT: Well, I think there were a number of reasons. First of all, the pay was not very high. Another is, Arnold is extremely demanding, in a good sense, of his people. As we talked earlier, it's hard to get people who want to burn the midnight oil to get a job done, and so I think that—to younger people—I think that contributed some.

WOTIZ: I sort of react differently. If the organization is so well heeled, why does the salary not reflect it?

PRATT: Well, this has changed radically over the last three or four years. It's hard to remember. I don't think that in the early stages Arnold put much time, thought, and effort on personnel. His thoughts were elsewhere. It's just that he has twenty-four hours in the day; like himself, like everybody else, he just has a certain amount of time. He was fortunate through some contacts, through DuPont connections, people who'd been at DuPont that he got a fellow named Bill [William E.] Taylor. We had no money. They all had retired from DuPont, and came to work for CHOC to straighten out its financial affairs and set up some personnel policies, so forth. He had been good at this. He was a graduate of Naval Academy or West Point, one or the other. He was doing very well at DuPont; had been in charge of DuPont's European Operations. He knew how to get things done. So when Bill Taylor came on board, things began to happen in a much more structured fashion. So today, I think many of the problems that you've just mentioned have disappeared. I think salaries now are competitive. We have the money. It's a matter of now finding a right person to fit into the job.

WOTIZ: I always was of the opinion it was started with awarding stipends, and stipends are not salaries.

PRATT: Well, it might have been. I don't know.

WOTIZ: Well, anyway, volunteer help was essentially what they started out with, but now the financial resources should put it on a good business structure, foundation.

PRATT: Well I think it may not be there yet, but I think that it's getting there. You don't see the turnover in personnel that, you know, that you used to see. It's just not there.

WOTIZ: There are a few things I believe you wanted to ask me—personal things.

PRATT: All right. I want to end on history: I want to read about the Dexter Award, and this was put into the newsletter for the HIST division for September 14, 1982 when Tonja [A.] Koeppel announced that you'd been the Dexter Awardee (Addendum X). It said, "In selecting Professor Wotiz as this year's Dexter Award recipient, the Award Committee recognized his outstanding contributions in five areas: his authorship of original research publications; his originating and editing "The Story Behind the Story" column, which appeared in the *Journal of Chemical Education* since 1975." I think it was actually earlier than that. "His authorship of the *Directory and Guide to European History of Chemistry Museums and Exhibits*; his founding and direction of the European History of Chemistry Tours, a summer course for American science professors and teachers offered by Southern Illinois University; and his authorship of the proposal to establish a center for the history of chemistry operated by the American

Chemical Society. This latter proposal finally received funding in 1981, and is the first of its kind among world chemical societies. The Division of the History of Chemistry is honored to acknowledge the indefatigable spirit, the vigorous vision and the dedication to the importance of history of Dr. John H. Wotiz." So I wanted to read that into the record.

WOTIZ: Well, thank you so much for reminding me of it. I vaguely recognize the cover of this source of information, but I do have a question. Did you ever meet Tonja Koeppel?

PRATT: Yes, I did.

WOTIZ: She's still alive then?

PRATT: Oh, yes. Well, I met her some years ago because they have a thing over in New Jersey, and I always saw "T. A. Koeppel," and she did not write her name out. It was just T. A. Koeppel. So I went over, and I was the first person to arrive at the lecture room, and there was this woman standing up there, and she introduced herself as "T. A. Koeppel." Maybe she said Tonja Koeppel. But anyway with initials, you know, automatically, with bias, you just expect a man, and I was somewhat surprised. So I will always remember that.

WOTIZ: Well, as I recall, she was working and earned a degree with Arnold Thackray in the history of chemistry.

PRATT: I didn't know that.

WOTIZ: Yes, and she wrote the thesis on Kekulé.

PRATT: Oh!

WOTIZ: In the initial stages, I was checking out my ideas and sources, and asked her whether she was aware of the discrepancy, and she turned me over to Arnold to verify that there were not. As far as she knew, they were never aware of the discrepancy.

PRATT: I haven't seen her name recently in anything.

WOTIZ: That's why I was asking if she was still alive.

PRATT: I just haven't seen her name. She sort of dropped out of sight. That's the Dexter Award. Then somewhere along the line, you were named an outstanding scholar at SIU.

WOTIZ: I was nominated, and as matter of fact, those two big binders that I brought down were done in fulfilling the information background. No, I did not receive that award, but it made me collect all the necessary information for the nomination. So that's why I brought it with me in case I have to refer to some dates and so on.

PRATT: I see. Okay.

WOTIZ: I did receive, however, an honorary doctorate [*Doctorem Honoris Causa*], and that honorary degree was awarded by the Technical University in my hometown, in Ostrava, Czech Republic.

PRATT: I was fascinated with that because this is not one of the places that you would go on history tours, but your fame had spread back to your hometown.

WOTIZ: Well, it has also a story behind the story. [laughter] If we still have time. I told you about the Polish students and Yugoslav—mostly Polish students. The exchange program, which brought our best-qualified graduate student to SIU; students and the faculty were truly outstanding. Well, in 1989, there was a peaceful overthrow of government in Czechoslovakia, now the Czech Republic. The intelligentsia, the people in universities, and students initiated the overthrow of the Communist regime, peacefully. That changed the entire attitude in the country. I have a friend, the former dean of our college of engineering, a Chinese fellow, Juh Wah Chen, a personal friend, bridge player among other things. [laughter]

PRATT: You bridge players hang together, I can see.

WOTIZ: He said, "John, I have unspent money in my account. I'm retiring. I can spend that money any way I want. But I want to do something for the College of Engineering, and I would like you to assist me in bringing people from the Czech Republic—from Czechoslovakia at that time, 1989—just the way you brought over students from Poland. Do you have any suggestions?" I said, "Let's go and talk to people." We went to several ones. We got instantaneous offers from the Bratislava Slovak University and they were well prepared to receive us. Everything lined up. They knew how many dollars it would take, and this project

here, this project there. My friend, Juh Wah Chen, was ready to accept the offer of the Slovak University, and I told him, "That was too slick. I mean, they wanted us to finance their research, but I didn't see any indication of exchange. I have a better idea. Let's go and talk to the University of Mining and Metallurgy located in my home city of Ostrava," an institution that was located in several other cities prior to moving to Ostrava. We did. I already had some contacts there through my fellow student while in Ostrava. He introduced me to the faculty. Still the old Communist faculty, held-over into the new regime. We had a meeting of minds that we were going to examine the possibility of exchanges, because at SIU we have a coal research center. Carbondale means we are sitting on southern Illinois coal. Ostrava is part of the Silesian coal-mining region. In the ancient time, the orgin of the mining University traced it to Jáchymov, Joachimsthal, where they mined silver and discovered a byproduct, pitchblende, incidentally. I'm quite sure you're familiar with that story.

Well, anyway, we started exchanging professional ideas. We visited. All this was done with our SIU resources. A lot of hospitality was extended to us. Eventually, the administration changed. There was a fellow named Tomáš Čermák who became rector who went to the same high school as I did, and the vice rector was Professor [Václav] Roubiček who became vice rector in charge of foreign relationships. In the meantime, Čermák's term expired. He had two terms. And Roubiček became the rector, the president of the university. We developed excellent personal relationships. What intrigued them so much was the fact that I attended the same school, and they became quite aware that this relationship came to their attention because of my intervention, needless to say. They repaid our kindness, which was more than kindness, it was a business relationship, but personal kindness as well, by awarding me the honorary doctor's degree. It was one of the most memorable incidents in my life. Not that I received it, but because my family and SIU friends from the USA attended. An official invitation was sent to several members of my family and friends, but when my oldest daughter received it, she decided she was going to finance the visit of her sisters, and it was to be a secret. They were going to surprise me by showing up. Well, you cannot hold the travel of three persons a secret from me because they had to know where to travel, how to travel, who to meet. So I knew that and I met the girls in Prague and the university provided transportation to Ostrava, which takes about four-and-a-half hours on an interstate type of a highway. If we have time, I have a videotape with me, which a professional photographer took, and you can see us there. You don't have to listen to my acceptance address because I started in English and lapsed into Czech, and actually read it because I could not speak any more extemporaneous Czech, saying what I wanted to say.

PRATT: You just mentioned your daughters, and I have met them. We haven't talked about them at all, I don't think. Anything you want to say about the girls?

WOTIZ: Well, the oldest one, Anita, is now fifty-one years young. They're all four years apart. Now Anita is with Lucent Technologies in California, and she lives in Portola Valley, which is in the center of the Silicon Valley. Anita has an undergraduate degree in mathematics, and a master's degree in computer science. One of the early graduates of our department dealing with

computers, exclusively. She is a well thought of individual. She started in Detroit. When her then-husband was transferred to California, she wanted to quit Ford Motor Company—she worked in Detroit—Ford had a subsidiary in San Jose for aerospace, which since then was sold and the name was changed. But anyway, they wouldn't let her go. They found a job for her in California. Her husband was transferred to San Francisco. Now she works for Lucent, is well sought after, as I mentioned earlier. She changed her job with quite a bit of a raise and sign-up money, sign-up bonus. I never knew that computer people received bonuses. I know that football players do [laughter], but she lives among the redwood trees in California.

The second, the middle one is Karen. She got a degree in English and a master's in Fine Arts, MFA, in theater, a playwright. Unfortunately I was not able to persuade her to change her mind so far as her major. Unfortunately, I predicted a dead end, and the dead end turned out to be. She works now as a faculty advisor in the College of Business at Arizona State University [ASU] in Phoenix. But before getting into the College of Business she was fifteen years academic advisor in the ASU athletic department, an impossible job. An academic advisor to professional athletes in a university is most frustrating, and it unfortunately it showed on her.

The youngest one, Vivian, also studied at SIU, graduated with a degree in business. Marketing was her specialty. She is now Vice President of Bank of America in San Diego, in charge of credit cards. The title "Vice President," I understand, is handed out rather lightly in the Bank of America. [laughter] But anyway, that's where she is.

Karen has a boy and a girl, and Vivian has a boy about five or six years old now. Anita doesn't have any children.

PRATT: That covers it; a good family.

WOTIZ: Well, I also would like to acknowledge my wife, Kay—Kathryn. I met her while students at Ohio State University. I was a teaching assistant and she was a freshman majoring in microbiology, who had trouble with chemistry. I helped her by talking to her in the chemistry library. I regret one event in my life that there was a time where we parted company because I paid more attention to my bridge partner. When I married and divorced my bridge partner, we remarried after three years because the problem when we separated was no longer a problem.

PRATT: That's good to put in. What do you see as your, say, greatest accomplishment? As we get older we tend to start reflecting about life.

WOTIZ: Well, this is a good question, so I'm glad that you asked it. [laughter]

PRATT: You've thought about it. Okay.

WOTIZ: My biggest accomplishment are my three daughters.

PRATT: Well, that's very good. They're lovely girls, and so that's a good answer to that.

WOTIZ: Well, yes, and professional recognition. Ability to contribute in the selected field and teaching is indeed a very pleasant recollection. The award of the honorary degree in a very ostentatious ceremony in my hometown in the presence of my family was very rewarding.

PRATT: "Local boy makes good" would be the headline on that.

WOTIZ: Something like that.

PRATT: What about plans for the future?

[END OF TAPE, SIDE 13]

WOTIZ: In 1980, Kay and I were vacationing in French Lick, Indiana, in a big hotel. I suffered my first heart attack. Very much of a surprise. It was a big resort hotel. But, no access to a physician. The nearest one was about 15 miles away in a small community. So we got in a car and Kay was driving, and she was giving me another heart attack. [laughter] So by the time we reached the interstate I got behind the wheel and drove myself to the Carbondale Clinic where they put me into Intensive Care. Eventually I was moved to the Barnes Hospital in St. Louis for an angioplasty. Well, you look at yourself on a monitor and they couldn't get through, so they put me under and I woke two days later with a double heart bypass. Ever since, I'm on probation. I had a fainting spell connected with my poor blood circulation ten years later. While driving home from St. Louis, I felt faint. I was in the presence of a friend of mine who is a physician and she gave me first aid. She's a physician from my hometown of Ostrava, needless to say. Her husband was a visiting professor at SIU, and she's learning English to be able to practice medicine. That ended up with a catheterization and a stent was put into my heart.

Last problem with my heart was in 1999, two years ago. I was on a world cruise and fell down fainting in Durban, South Africa. I went back to the cruise ship and two days later I experienced a similar fainting spell. The physician on board was an obstetrician. He wanted me off the cruise ship in a hurry. So when we anchored at East London, South Africa, they transferred me to the local hospital where they did not have a cardiologist. So subsequently,

they flew me to Capetown, South Africa, to a private hospital with an excellent cardiologist. They examined me and found out that the stent in my heart, which was inserted in the Barnes Hospital in St. Louis, was either growing together, collapsing, or not wide enough to enable proper blood circulation. So they blew up the stent and two days later I was on a plane for home. I mean, the original stent that was inserted as an outpatient, although I did stay overnight, and enlarging it, blowing it up in South Africa was a procedure that my cardiologist here in Carbondale keeps shaking his head, "How was it done?" I received an x-ray picture that shows where the location was, but they did not explain to me exactly the technique that was used to blow up the wire mesh screen that has been placed into my heart.

Right now, I still have problems with blood circulation. I am unable to walk for any length. Lactic acid keeps accumulating in my leg muscle now. When I get home next week, they're going to try to locate where the blockage is. Ultrasound located the blockage, but not precisely enough. Which keeps me sort of on edge because I'm scheduled to travel to China and Tibet starting in October. The physician, so far, has not objected to my next travel, but we shall see what the tests will reveal. One thing that concerns me about the projected trip is that Lhasa, the capital city of Tibet, is very high in the mountains and people suffer altitude sickness. But, again, the physician did not object to my trip yet.

PRATT: Maybe you could get one of the little oxygen cylinders and carry it with you.

WOTIZ: Well, this has been suggested and we've done a lot of traveling with a commercial outfit out of Boston, the Grand Circle Travel. They are also aware of my physical condition and they're looking very, very well after the guests and travelers.

PRATT: I know you've been on a number of world cruises. I know you've traveled a tremendous amount. Is there anyplace left on the face of the earth that you haven't been that you want to go?

WOTIZ: Well, interestingly enough, the reason why I am going to China and Tibet is because I have not been in Tibet. I've been in China several times, but Tibet is one of those places that I have not seen. Now, surely there are a lot of places, the Middle East, Iran, Iraq, Lebanon. But that is not recommended by our State Department at this time. I've been in several places in Africa and Egypt many times, South Africa, Kenya, Morocco, and so on. All of Europe I know better than Europeans. The far East, Australia, and New Zealand I visited several times. I was in India and Nepal. But Tibet is sort of intriguing to me, so let's hope it's possible. Travel for the last ten years since I retired, personal travel, became a major occupation. In some years we spent as many as five months in a year away from home.

PRATT: I think we've just about covered every question that we have here. Anything else that you can think of you want to add to this?

WOTIZ: Yes, I never learned to type and I am computer illiterate. [laughter]

PRATT: Okay. There's one thing though that I think you ought to put together to append to this, and that would be a list of your publications and patents.

WOTIZ: I have it here.

PRATT: Oh, you already have it. Oh, that's great. Thanks again for telling me your life history. It will be a valuable addition to the CHF oral history library.

WOTIZ: My pleasure.

[END OF TAPE, SIDE 14]

[END OF INTERVIEW]

ADDENDA

TELEPHONE: LONGACRE 5-5935

CABLE ADDRESS: INTERSTUD, NEW YORK

INTERNATIONAL STUDENT SERVICE

8 WEST 40th STREET
NEW YORK CITY

October 5, 1939.

John H. Wotiz,
Plaza Hotel,
Charleston, W. Virginia.

Dear Mr. Wotiz: -

I have just sent you a night-letter-telegram to inform you that Furman University at Greenville, South Carolina has agreed to grant you a full scholarship, including board, room , tuition and expenses, for the full scholastic year 1939-40. In order to take advantage of this scholarship, it is necessary that you go to Furman University as soon as possible - that is, within the next few days. On arrival there, you should report to the Dean, R. N. Daniel, who will see that all necessary arrangements are made.

While the scholarship is for one year only, it has usually proved the case in the past that students for whom we have obtained such scholarships, through good academic work and meritorious behaviour, have been able to find further scholarship help to enable them to complete the studies they desire to follow.

The scholarship of which you are the recipient has been made possible through the generosity of both students and staff at the University. In a sense, you will be a symbol of much greater things to these people, and we would only ask you to do your best to reflect credit on the other newcomers to the United States whom we are all trying to help.

It is some time since we last heard from you, and I am therefore a little worried about your whereabouts, particularly since we have had no answer to a card I sent you a short time ago. Will you therefore please inform me immediately when you have received this letter, and what your plans are.

We are very happy to have been able to obtain this opportunity for you, and will feel amply repaid if your work at Furman is well done.

Yours sincerely,
Harper W. Poulson

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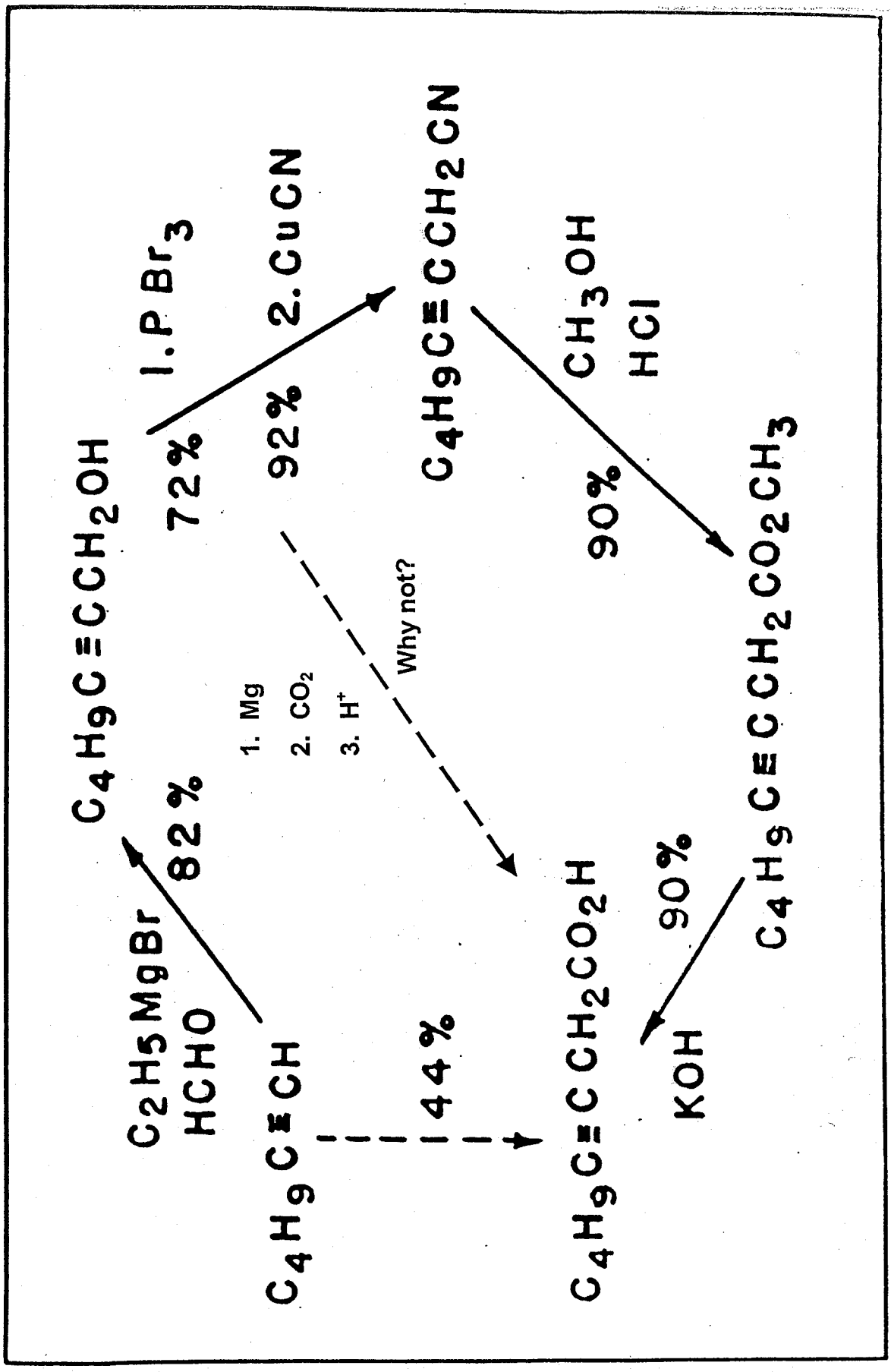
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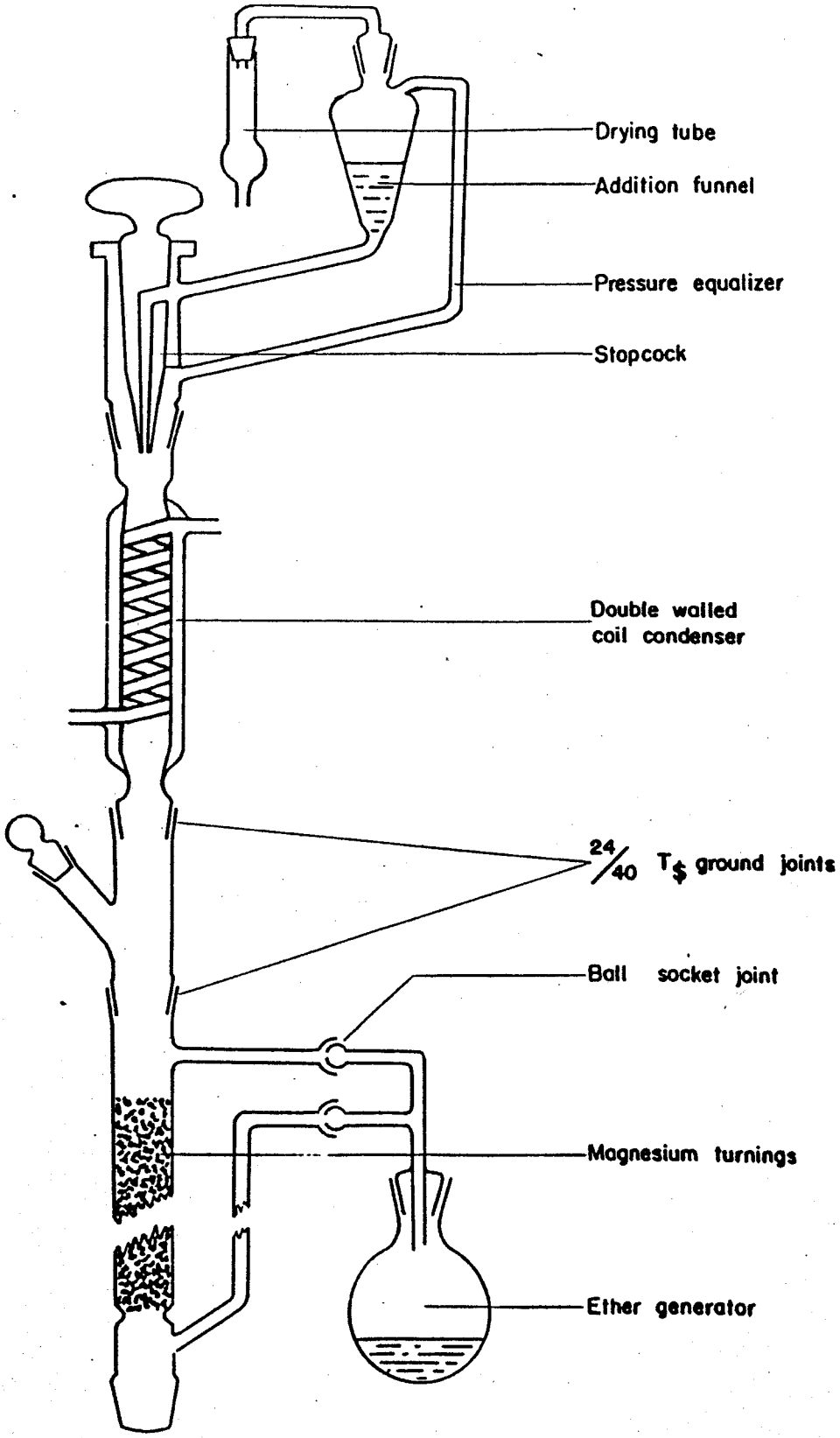

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CERTIFICATE OF

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NATURALIZATION

Petition No. 6000

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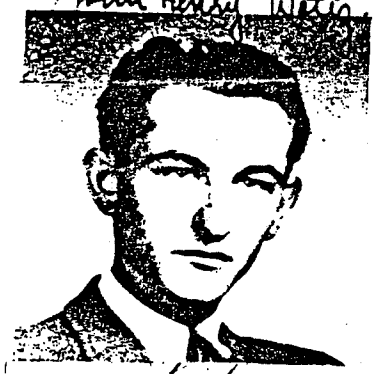
sign here

John Henry Wotiz

(Complete and true signature of holder)



Seal

United States of America } ss:
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Be it known that at a term of the U. S. District Court of Southern District of Ohio held pursuant to law at Columbus, Ohio on December 4th, 1944 the Court having found that JOHN HENRY WOTIZ then residing at 221 West 10th Avenue, Columbus, Ohio intends to reside permanently in the United States (when so required by the Naturalization Laws of the United States), had in all other respects complied with the applicable provisions of such naturalization laws, and was entitled to be admitted to citizenship, thereupon ordered that such person be and (s)he was admitted as a citizen of the United States of America.

In testimony whereof, the seal of the court is hereunto affixed this 4th day of December, in the year of our Lord nineteen hundred and Forty-four and of our Independence the one hundred and Sixty-ninth

Harry F. Rabe,
Clerk of the U. S. District Court.

By Jean Doste Deputy Clerk.

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Fax (610) 758-3461

Lehigh University

Dr. John H. Wotiz
% Anita

March 31, 1999

Dear John,

FIRST... Congratulations!

Also, hope some of your African memories were pleasant ones. You needn't have traveled so far or put so much at risk just to check out the local coronary health care systems. Frankly, though, it's prototypical "John"!

****

You had him backed against the hallway wall just outside of the departmental offices on the third floor of Marshall's Science Building. He was mumbling something about how if he gave Chemistry all that money you wanted, the English Department wouldn't be able to get its audio tapes of Shakespeare. Expressing no appreciation of English's needs, you were doggedly arguing with the University's VP-Finance for institutional funding for a new departmental NMR. You were persistent. You were eloquent. You were 'in his face.' And, you succeeded. It was 1966 and this young Assistant Professor was gaining the impression that he'd just seen the reason why God created Department Chairmen.

In the two-years I spent at Marshall I learned a great deal from you. Principle #1, the faculty that drinks together, squabbles less. Action item: take the gang for a pitcher once or twice a week, hold occasional social gatherings at home (Kay was a great hostess!). Principle #2, building bridges to nearby companies returns benefits. Action item: play bridge with the Ashland Chemical leadership, introduce your faculty to the Carbide brass at Kanawha Valley ACS Section meetings. Principle #3, get to know your serious in-State competition on a friendly basis and they'll be less likely to eat your lunch at budget-making time. Action item: "shmooze" with the WVU chemists at joint seminars and the annual W. VA. Academy of Science Meeting. Principle #4, understand your customers' needs and address 'em. Action item: provide graduate education at convenient times in late afternoons and early evenings for the commuting/employed BS-holding chemists at Solvay, Monsanto, Ashland, and Carbide and the growth in enrollment numbers can justify your requests for staff expansion.

Those are just a sampling of instances I witnessed of how one transforms a small chem department in a former normal school to true University status. Persistence, commitment, energy, and a defined goal worth fighting for. Old Dean Bartlett and the Marshall administration

picked just the right man to lead the transformation and today that University's small but high quality PhD program derives directly from your initial efforts in the 60's. Whether it was carving a first-class chemical research reputation in alkyne syntheses, propargylic rearrangements, and organometallic chemistry; envisioning and creating what became today's Chemical Heritage Foundation [$130M corpus, $4M annual budget, 50 employees]; implementing one of the most successful foreign travel history-of-chemistry educational tours ever known; digging out some of the most fascinating historical scholarship about Kekule and the origins of the benzene structure theory; earning the Dexter and delivering one of the best acceptance addresses ever; or battling the ACS over a copyright issue on which they should have had the sense to capitulate... you've always been a class act.

John, you continue to be a "teacher" of a unique, successful approach to addressing and meeting life's challenges!

I'm really sorry I can't be with you and Kay on this occasion but, in truth, I'm practicing some of the principles you've taught me. From April 8-10 we're inaugurating a newly arrived Lehigh president, a materials chemist who was formerly Dean at the University of Pennsylvania. His decisions will have a lot to do with our Department's future. So, as his base department we're staging an open-house (with wine, cheese, and hors d'oeuvres...remember ..."the faculty that drinks together...") on Friday and an all-day symposium just for him on Saturday with luminaries, his PhD grads, and our faculty giving papers on his research area, materials chemistry.

Knowing your fondness for fresh oysters, the large ice chest that just fits your car trunk, and how New Orleans is merely a short commute (at the speed you drive!) from Carbondale....perhaps we can get together at the August ACS Meeting.

Meanwhile, CONGRATULATIONS! and ENJOY!

Cheers,

Ned

Ned D. Heindel

Ueber einige Condensationsproducte des Aldehyds *);

von *Aug. Kekulé.*

(Mittheilung aus dem chemischen Institut der Universität Bonn.)

(Eingelaufen den 14. Februar 1872).

I. *Theoretische Betrachtungen und historische Notizen über die Constitution des Benzols.*

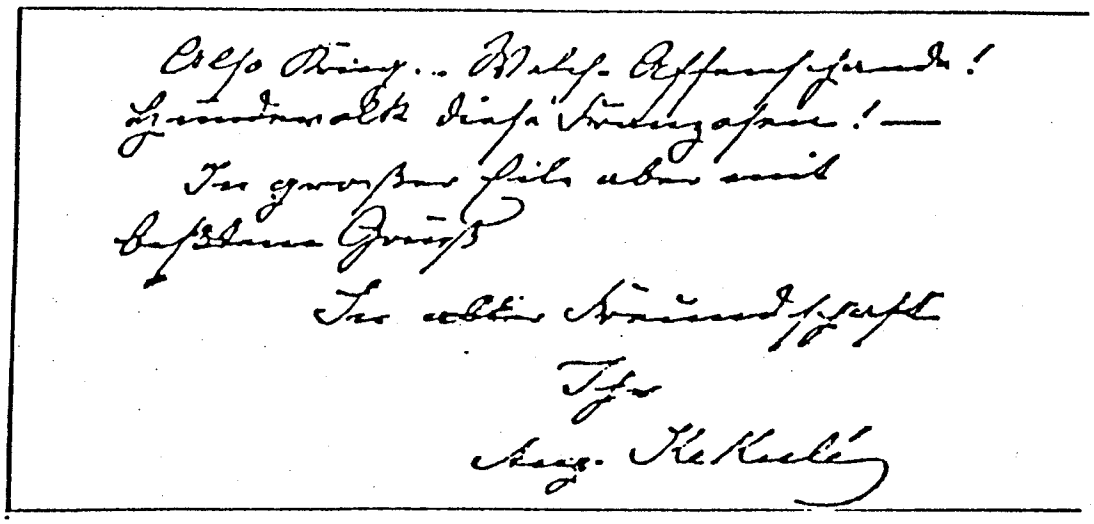
Die Versuche, über welche ich im Nachfolgenden berichten will, wurden durch gewisse Betrachtungen über die Constitution des Benzols veranlafst, und ich halte es um so mehr für geeignet, wenigstens einige Andeutungen über diesen Gegenstand hier zu geben, als es mir vielleicht möglich sein wird, die Geschichte der Entwickelung unserer Ansichten über das Benzol durch Mittheilung einzelner wenig bekannter Momente zu ergänzen und meine eigenen Ansichten vollständiger darzulegen, als ich es seither für zweckmäfsig gefunden habe.

Als ich im Jahre 1865 meine Ansichten über die Constitution der aromatischen Verbindungen zuerst veröffentlichte **), stellte ich im Wesentlichen folgende Sätze auf, die freilich damals, der Natur der Sache nach, nicht so bestimmt gefafst waren, als wir sie jetzt auszudrücken gewohnt sind.

1) In allen aromatischen Substanzen kann eine gemeinschaftliche Gruppe, ein *Kern*, angenommen werden, der aus sechs Kohlenstoffatomen besteht.
2) Diese sechs Kohlenstoffatome sind so gebunden, dafs noch sechs Kohlenstoffverwandtschaften verwendbar bleiben.

*) Vgl. die vorl. Mittheilungen: Berichte d. deutsch. chem. Gesellsch. **2**, 362, 365; **3**, 185, 604.

) Diese Annalen **137, 158.



Also Krieg...Welche Affenschande! Hundevolk diese Franzosen! [So it is war..What a rotten shame! What a nation of sons of bitches these Frenchmen!]–*Excerpt of a letter of Kekulé to Hübner, July 15, 1870.*

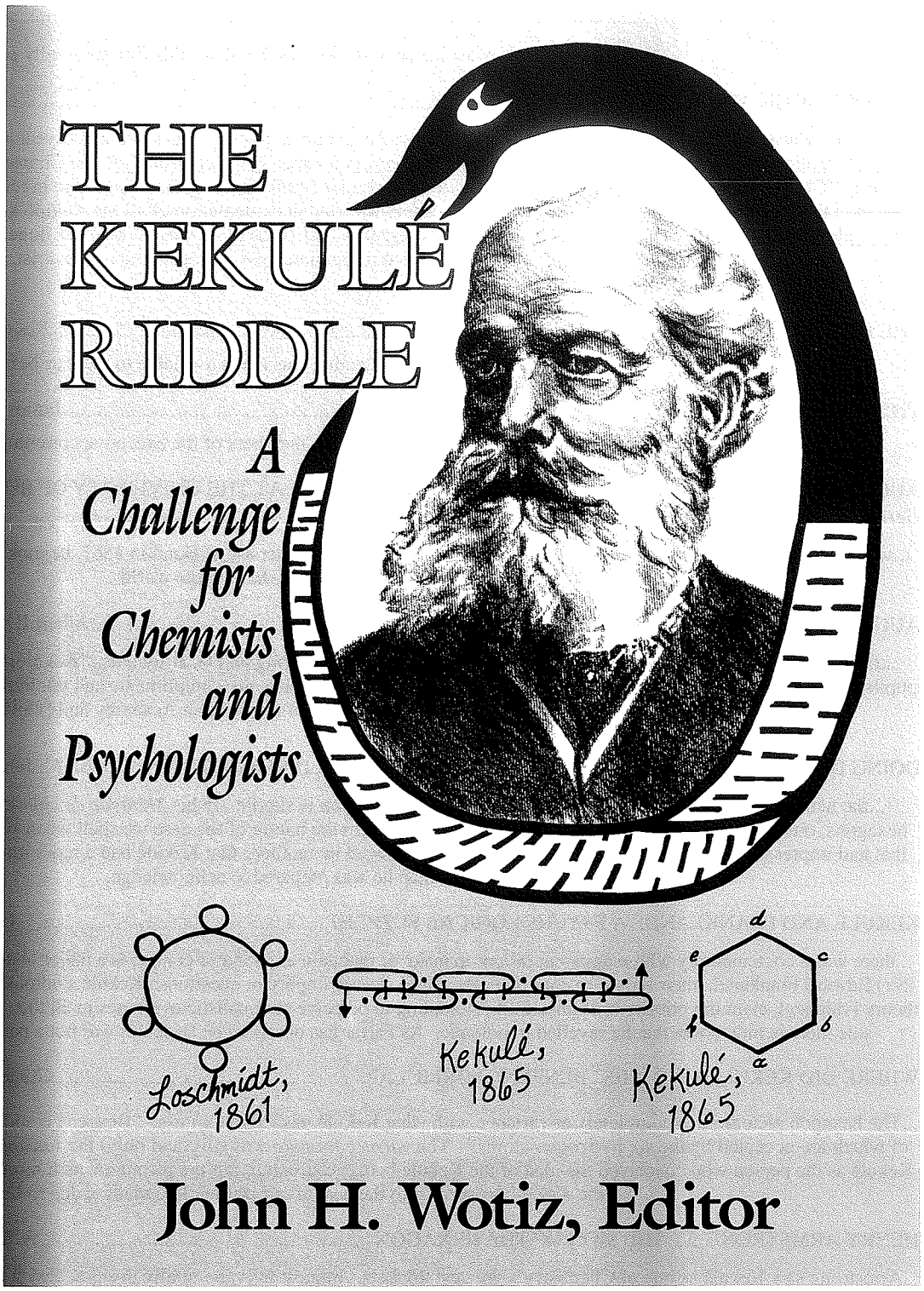
"The Emperor Has no Clothes!"

Did August Kekulé conceive of the benzene ring in his dream as he has claimed–or was it simply scientific fraud? Should Kekulé be given the credit as the father of structural organic chemistry? Read how experts on the topic solve **The Kekulé Riddle.**

◆

This book is dedicated to the knowledge that truth will eventually prevail and shows that the *Emperor had no clothes.*

◆



About the Editor:

Dr. JOHN H. WOTIZ is Professor Emeritus in the Department of Chemistry Southern Illinois University in Carbondale, Illinois. He is past editor of the Journal of Chemical Education column, *The Story Behind the Story*. Dr. Wotiz is recipient of the international Dexter Award for outstanding contributions to the history of chemistry.

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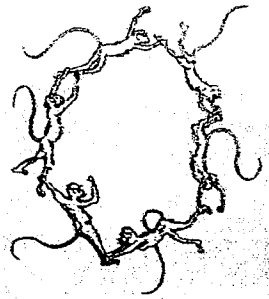

The Kekulé riddle: a challenge for chemists and psychologists J. H. Wotiz (ed)
Vienna, Illinois: Cache River 1993 Pp 329 $78.00
ISBN 0 9627422 2 8

The riddle in the title of this book refers to the question: were all the lavish honours and praise bestowed upon the German chemist Friedrich August Kekulé towards the end of his life justified in terms of his actual accomplishments? The setting is the so-called *Benzolfest* (Benzene Festival) held in the Berlin City Hall in 1890 to celebrate the 25-year existence of the hexagonal benzene formula. It was reported that the festival was 'of a magnificence perhaps unparalleled in the history of science'.

The villain of the piece, according to most of the international team of contributors to this book, is Kekulé himself. He is found guilty of misconduct in claiming to be the founder of structure theory in organic chemistry, to have drawn the first structural formula for benzene, and to have had a dream of a snake biting its tail which supposedly led him to the hexagonal structure. Unfortunately for Kekulé, a lot of the evidence adduced in this fascinating book is against him. For instance, it is shown that Kekulé had seen earlier representations of the benzene ring by Laurent (1854) and Loschmidt (1861) before he put forward his own formula in 1865. Even the psychologist contributor to this book concludes that Kekulé did not have a real dream. Moreover, this book tells of international intrigue, rampant chauvinism, the adoption of extravagant public postures, and much bitter wrangling behind the scenes. This is all pretty heady stuff and for me it made chemical history come alive. It was difficult to put this book down—I recommend it to anyone who is interested in the history of chemistry.

D. H. ROUVRAY

uate, postdoctoral worker or faculty member, and each would take away something special and insightful from it. Its price is very reasonable and the production generally excellent.

Usually, conference volumes represent the dreg-ends of publishing—a quiet, trouble-free, low-volume, overpriced sale (mostly to conference attendees and large libraries), with poor production quality and little evidence of editing and scientific discrimination. This book is an exception—despite its dreadful title and unforgivable lack of an index. In a short review, it is difficult to do justice to this outstanding volume: it should be in every academic and industrial library, and also purchased by individual researchers. If you are a coordination chemist, buy it: if you are not, beg, borrow or steal it, and discover what you are missing in life!

K. R. SEDDON

Perspectives in medicinal chemistry B. Testa, E. Kyburz, W. Fuhrer, R. Giger (eds)
Weinheim, Germany: VCH 1993 Pp 645 £84.00
ISBN 3 527 28486 9

This substantial book derives from the 12th international symposium on *Medicinal chemistry*, held in Basel, Switzerland, in September 1992. The decision to restrict the book to the invited lecturers has led to a series of major reports on topics, rather than the hot new data that would have come from over 350 proferred communications. The opening chapter, *The future of medicinal chemistry*, is written by David Triggle in his usual dashing style. He introduces medicinal chemistry as a derivative science central to chemistry and to the traditional and new biologies. The 38 remaining chapters are grouped together into six main sections covering enzyme inhibitors, receptor-active drugs, drugs with actions on nucleic acids, ion-channel modulators, drug targeting, and a short section on miscellaneous therapeutic approaches.

In their preface, the editors set the goal of providing an up-to-date vision of medicinal chemistry. They achieve this goal to a large extent but not completely. Most of the areas important to modern medicinal chemists have been covered by the contributors, who are mainly well known figures in this science. However, some topics of current interest are notable for their absence, such as radiosensitisers and DNA intercalating antineoplastic agents.

The quality of editing and presentation is very high, with errors almost undetectable. The text and illustrations are easily legible and the indexing is accurate and useful. Although the cover price is high, this book would make valuable reading for an organic chemist moving into the medicinal field, for practising medicinal chemists and, particularly, for scientists who interact with medicinal chemists.

M. D. THREADGILL

Asymmetric synthesis
R. A. Aitken and S. N. Kilényi (eds)
London: Chapman & Hall 1992 Pp 233 £59.00
ISBN 0 7154 0059 9

Many monographs have been published on individual topics in the field of asymmetric synthesis, notably S. Hanessian's *Total synthesis of natural products: the 'chiron' approach*, but there was a need for a cohesive text that addressed all the diverse methods available. The editors, who have written most of this book, have made a worthy attempt at this by subdividing the interwoven strategies into four 'generations'—chiral pool, auxiliary, reagent and catalyst—which are then compared to one another.

This book is highly comprehensive and each 'generation' is illustrated by relatively recent total syntheses. While generally sound, the allocation of space is at times erratic—in particular, catalytic asymmetric oxidations are rather passed over relative to other less important methods. The chapter on *Analytical methods* merits special mention, addressing many widely held misconceptions about the accuracy of certain protocols. Most chemists interested in asymmetry would benefit from reading this.

This book would make valuable reading to any newcomer to this field, from graduate level upwards, and would also be of interest to many experienced practitioners. It is a shame that it has not been priced to achieve such a wide readership.

A. G. SUTHERLAND

British Crop Protection Council monograph no 53: Lysimeter studies of the fate of pesticides in the soil
F. Führ and R. J. Hance (eds)
Bracknell: BCPC 1992 Pp 192 £25.00 (incl p & p) (softback)
ISBN 0 948404 64 7 (SB)
Available from BCPC publications sales, Bear farm, Binfield, Bracknell, Berkshire RG12 5QE

The EC maximum limit of 0.1 μg L^{-1} for an individual pesticide in drinking water may be widely disliked within the agrochemical industry, but it has been responsible in part for the increased use of lysimeter studies. Lysimeter studies are also unpopular in parts of the industry, because of reservations about the cost and extrapolation of these data to the field. However, since there is a growing requirement for lysimeter studies to provide data on the environmental fate of pesticides, this monograph is timely and allows some of these fears to be assessed. It is the outcome of two workshops held in Germany in 1989 and 1990, and the 17 research and three discussion papers deal with several aspects of lysimeter studies.

Most lysimeters are undisturbed soil monoliths, typically 1–2 m deep with 0.5–1 m^2 surface area, encased in a fibreglass or metal cylinder. This book describes a selection of methods for their collection. The results of studies with radiolabelled pesticides are presented, and their role in obtaining environmental information is discussed together with their relevance to field and laboratory experiments. This monograph is the first to be dedicated entirely to lysimeter studies and it contains contributions from many of the leading scientists in the field. It is essential reading for people working in this area and it will have a wider audience among those who have an interest in the environmental fate of pesticides, especially with regard to regulatory issues.

T. JARVIS

Studies in organic chemistry, vol 45: Crown ethers and analogous compounds
M. Hiraoka (ed) *Amsterdam: Elsevier 1992 Pp 485 Dfl 400*
ISBN 0 444 88191 3

This is another text on crown ethers and related compounds stimulated by the award of the 1987 Nobel prize in chemistry to D. J. Cram, J.-M. Lehn and C. J. Pedersen. The eight chapters discuss various aspects of crown chemistry covering the literature up to mid-1989. There is a sparse index but each chapter is fully referenced. The authors of each chapter are well-respected figures in crown chemistry, for example, S. Shinkai, E. Kimura, T. Shono and K. Koga, and they all remember to cite their own work.

Separate chapters discuss the synthesis of crown compounds, some of their peculiar characteristics, their application in analytical and separation methods, and attempts to model enzyme behaviour with them. Chromogenic derivatives are also discussed as are photoactivated, electrostimulated, pH responsive and thermosensitive derivatives, and finally there is a chapter on the diverse behaviour of functionalised macrocyclic polyamines.

The book will be a useful source of information for researchers interested in supramolecular chemistry, although it is already four years out of date. It will be an asset to personal and institutional libraries, despite the price being rather high.

D. PARKER

SOFTWARE

Beaker 2.1: an expert system for the organic chemistry student (Macintosh)
J. Brockwell, J. Werner, S. Townsend and N. Tea
London: Chapman & Hall 1992 £40.00
ISBN 0534 15973 7

An expert system is a set of knowledge-based rules which can be applied to novel problems to try to develop the 'answer' in the light of previous experience. *Beaker* attempts to use this approach in the field of organic chemistry, though it is not strictly a 'real'

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April 15th, 1982

Dr. John H. Wotiz
Department of Chemistry
Southern Illinois University
Carbondale IL 62901

Dear John:

It is my privilege to announce to you that you have been chosen by the selection committee as the candidate for the 1982 Dexter Award. Your selection from seven nominees was based on your many activities for promoting and popularizing the History of Chemistry. In addition the committee has mentioned especially your creation of European Tours, your editorship in the Journal of Chemical Education and last, but not least your great efforts in the establishment of a Center for the History of Chemistry. As you know, the award will be presented to you at the Fall Convention of the American Chemical Society in Kansas City.

On behalf of the Division of the History of Chemistry I would like to extend to you my sincerest congratulations.

With best wishes.

Sincerely,

Tonja A. Koeppel

Tonja A. Koeppel, Ph.D.
Associate Professor of Chemistry
Chairman, ACS Division
History of Chemistry

TAK:fkm

cc: Professor A. Ihde
Professor N. Heindel
Professor O.T. Benfey

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