CHEMICAL HERITAGE FOUNDATION

ROY G. NEVILLE

The Bolton Society
Oral History Program

Transcript of Interviews
Conducted by

James J. Bohning

at

Pebble Beach, California

on

20 and 21 June 2005

(With Subsequent Corrections and Additions)

Roy G. Neville

ACKNOWLEDGMENT

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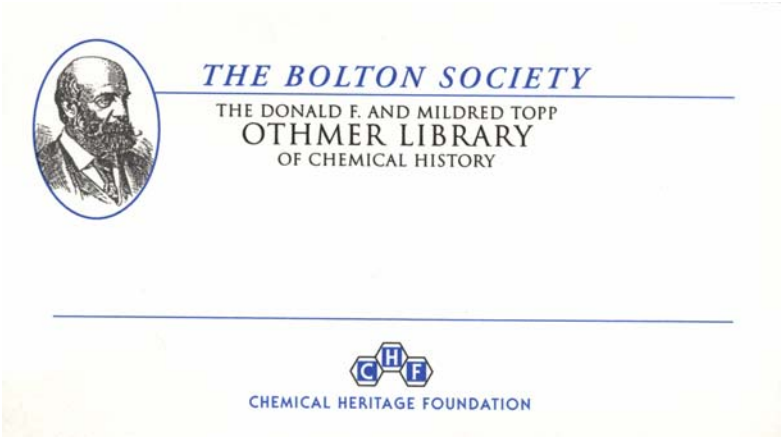

CHEMICAL HERITAGE FOUNDATION
Oral History Program
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ROY G. NEVILLE

1926	Born in Bournemouth, Dorset, England on 15 October
2007	Died in Pebble Beach, California on 26 November

Education

1951	B.Sc. honours, University of London
1952	M.Sc., University of Oregon
1954	Ph.D., physical organic chemistry, University of Oregon

Professional Experience

	Monsanto Chemical Company
1955-1957	Senior Research Chemist
	Boeing Airplane Company
1957-1958	Senior Chemical Engineer
	Lockheed Missiles & Space Company
1958-1961	Research Scientist
	Aerospace Corporation
1961-1963	Member, Technical Staff and Polymer Chemist
	North American Aviation, Inc.
1963-1967	Principal Scientist
	Boeing Science Research Labs
1967-1969	Head, Polymer Research Lab
	Bechtel Corporation
1969-1973	Senior Scientist Specialist, Science Development Department
	Engineering & Technical Consultants, Inc.
1973-2007	President and Consultant

Honors

1951	Fulbright scholarship
1951-1952	Fellow, U.S. Public Health Service
1953-1954	Fellow, Research Corporation
1963	Fellow, Royal Institute of Chemistry, London
1973	D.Sc. (hon.), Royal Institute of Chemistry, London
2004	Founding of the Roy G. Neville Historical Chemical Library at the Chemical Heritage Foundation
2004	Lifetime Achievement Award, Chemical Heritage Foundation
2004	Establishment of the Roy G. Neville Fellowship, Chemical Heritage Foundation
2006	Establishment of the Roy G. Neville Prize in Bibliography or Biography, Chemical Heritage Foundation

ABSTRACT

Roy G. Neville begins the interview by tracing his family history back to the year 700. He discusses his immediate family and his childhood in Bournemouth, England. Neville admits that he was not very impressed with his first chemistry lesson, but was intrigued by doing chemistry experiments in his makeshift home laboratory. He excelled academically and was accepted at Balliol College, University of Oxford. However, Neville was drafted into an industry of "national importance" and was unable to attend Balliol. After a brief stint at Signals Research and Development Establishment, Neville met Professor Neil Kensington Adam, who allowed him to attended the University College Southampton part-time. Neville continued to excel and was invited to do graduate research in the U.S. at the University of Oregon. While at Oregon, Neville received his master's degree and Ph.D. and met his future wife, Jeanne.

Neville goes on to describe his employment at various companies and the problem of being a chemist in industry. To combat this problem, he established Engineering and Technical Consultants, Inc. Being an entrepreneur allowed Neville to spend more of his time and money on collecting rare books. He details the start and growth of his rare book collection and his near decision to sell the collection in 1965. He discusses his competitors, how he obtained many of his rare treasures, and the start of The Roy G. Neville Historical Chemical Library at the Chemical Heritage Foundation. Finally, Neville concludes the interviews with reflections of his childhood in Bournemouth during the start of World War II.

INTERVIEWER

James J. Bohning is professor of chemistry emeritus at Wilkes University, where he was a faculty member from 1959 to 1990. He served there as chemistry department chair from 1970 to 1986 and environmental science department chair from 1987 to 1990. Bohning was chair of the American Chemical Society's Division of the History of Chemistry in 1986; he received the division's Outstanding Paper Award in 1989 and has presented more than forty papers at national meetings of the society. Bohning was on the advisory committee of the society's National Historic Chemical Landmarks Program from its inception in 1992 through 2001 and is currently a consultant to the committee. He developed the oral history program of the Chemical Heritage Foundation, and he was the foundation's director of oral history from 1990 to 1995. From 1995 to 1998, Bohning was a science writer for the News Service group of the American Chemical Society. He is currently a visiting research scientist and CESAR Fellow at Lehigh University. In May 2005, he received the Joseph Priestley Service Award from the Susquehanna Valley Section of the American Chemical Society.

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INTERVIEWER: **James J. Bohning**

LOCATION: **Pebble Beach, California**

DATE: **20 June 2005**

BOHNING: Dr. Neville, I know that you were born on 15 October 1926 in Bournemouth, England. Can you tell me something about your family background?

NEVILLE: My father came from a very distinguished family, the Neville family. The Neville name can be traced back to approximately the year 700. I know that Richard de Neuville was William the Conqueror's admiral in 1066 when he invaded England and won the Battle of Hastings. Of course, there have been many, many Nevilles in the very, very intrepid history since then.

Richard Neville was Earl of Warwick when he ran afoul of Edward IV. After he was killed at the Battle of Barnet during the War of the Roses in 1471, his wife, Anne Neville, married Richard III, Richard Crouchback, who was a hunchback according to [William] Shakespeare. The Nevilles were promptly disinherited for disagreeing with Edward IV. This, by the way, was contrary to the Magna Carta, which stated that no baron could be disinherited from his barony by the king; but it happened and nobody tried to rectify it. I am from that long line of Nevilles.

My mother was born in London, in Chiswick. Her name was Georgina Lallie Jenkins. Her mother was a very famous pianist and her mother, in other words my great-grandmother, was a celebrated harpist who played at the Royal Albert Hall in front of what used to be called the crowned heads of Europe, including Queen Victoria and King Edward VII. My mother was always very happy and very proud to tell me that.

They lived in a huge house in London, which unfortunately no longer exists because Kaiser Wilhelm sent over Zeppelins and bombed the place in the First World War. My mother's family moved down to Bournemouth in 1920. It was during that period that my mother met my father [Percy H. Neville] when they were walking along the promenade. It was a winter's day and my mother and her sister, Madge, decided to throw some snowballs at the boys. My mother was about eighteen. They struck up a conversation. My mother said that my father had "these beautiful blue eyes." He was blonde and blue-eyed. I was really born blonde, but I'm not blonde anymore. My mother had beautiful dark brown, almost black hair. She had brown eyes. As a consequence, I have green eyes. Anyway, they started dating, three years later they married, and three years after that I was born.

My father started out in the grocery trade. He did not have a formal education. He left when he was in elementary school, as so many people did in those days. He made his way in the grocery trade and eventually ended up managing a huge grocery store, Hudson Brothers Grocery & Market. He left that and then joined a wholesale grocery firm, St. Ivel, and became a salesman, driving around in a little van servicing other grocers. After perhaps twenty years, he became the manager of the local depot in Bournemouth and built that up to servicing three counties, the counties of Hampshire, Dorset, and Wiltshire. He was with that firm for about twenty-eight years.

I was born in October 1926. I had a rather horrendous birth. My birth started around six o'clock on a Tuesday evening, October 12. My mother told me that she was sitting down to her evening meal—a boiled egg and a piece of bread and butter—when she suddenly went into labor. Her older sister Addie was there. Children were born at home in those days, so my mother was escorted upstairs and I was on my way.

Well, during the course of my birth, I got stuck—as I understand it from my mother—my head and one arm were out, but the rest of me was still inside. We had this Irish doctor, Dr. McKinney, who was a lush, though we didn't know that at the time. He came around and tried to do something but couldn't do anything for about a day and a half. Another doctor was called in but he couldn't do anything. I wouldn't say my mother was dying, but she wasn't too far from it. She described my face as being bright reddish purple. We were both in a bad way. Finally, a Dr. Vernon, a really good man, came in and delivered me at 11:30 on Friday, 15 October 1926.

From Tuesday evening to Friday, I was sort of stuck, not born, and not <u>not</u> born. Because of this situation, after six months, I was below my birth weight although the doctors did everything they possibly could. I almost died. My grandfather, who lived on the next street over, always said, "Well, I passed by your place just to see if the blinds were drawn." He was always a very cheerful Charlie. [laughter] He was a nice old man, but, at the time, it was very serious. We had a nurse there—I don't remember her name—and she told my parents, "You've got to get nourishment into this boy." Finally, after about a year and a half, I started to get more or less back to normal. They used to take me to the green grocer, the village shop, because we lived on the edge of Bournemouth, and weigh me where they weighed out the potatoes. Mom said that they were so wonderful. "Roy's put on 2 ounces." Big deal! But my weight was still way below what it should have been.

To cut a long story short, I was very, very skinny and short because I could not eat very much. My mother used to plead with me to eat half a slice of bread. She said, "Please eat just a little more." I ate one or two more bites and said, "I'm full. I can't do it." I literally could not do it. It turned out that I had pyloric stenosis; my stomach hadn't properly opened.

I was enrolled at St. James's School in Pokesdown. That's the name of the little village on the edge of Bournemouth. I remember coming home one day. We used to have this big old range. My mother would always have toast on the end of a toasting fork with some strawberry jam and butter on it. Usually I was barely able to get through one slice of toast and jam. One

day I came home and I said, "You know, I'd like another slice." Mom said, "Oh, you're sure you're going to eat that?" I said, "Yes." I ate six slices. It was quite dramatic. My stomach had suddenly opened!

As a result of that, I've never looked back. I was so skinny and bony that when she took me down to the beach—although swimming trunks were just beginning to come in style—I had to wear the very old fashioned bathing costume so that my ribs wouldn't show. I looked like a washboard. My mother was so ashamed. Not that it was her fault.

When I was eight we moved to a different part of Bournemouth. We'd been renting until that time, but in 1935 we bought a little house. It was only a little two-bedroom house that cost six hundred and eighty-five pounds, which is peanuts nowadays. My father put twenty-five pounds down. You people over here [in America] had a terrible Depression, but we also had a terrible Depression. Times were tough.

BOHNING: I was going to ask you if the Depression had some effect on you as a child.

NEVILLE: Oh, it was terrible. It was awful. I started in this new, all-boys school [Winton and Moordown School] after we moved. The other place was mixed—infants, girls, and boys together. This was my first introduction to an all-boys school, and, of course, being small and rather frail, the big bullies would hit me. One would hold me and the other one would punch me. I got the usual upbringing with bullyboy kind of stuff. They used to delight in punching my stomach, which didn't help in the long run.

I remember I lost my temper once. One of those boys was laying in wait for me and I hit him. His name was Fred Hector. I knocked him over and he hit his head on the curbstone and just laid there. For a moment I thought, "Oh my gosh, I've killed him." Of course, he soon recovered because he was only momentarily stunned. He was stunned for two reasons. First of all, he didn't expect retaliation from a little guy, and secondly, the curbstone shook him up a bit. I suddenly earned a lot of respect from the boys.

I went to that school between 1935 and 1939. I took the examinations to get into Bournemouth School, which was also known as Bournemouth School for Boys, a very elite school. Normally, had I stayed on at the Winton and Moordown School, I would have left because in those days the leaving age was fourteen. I would've been put out to apprentice to a trade, whatever that might have been. The only thing I was any good at in those days was woodwork and playing about in the garden. That was hardly a thing to build a career on.

So I went to Bournemouth School and, surprisingly, I didn't particularly care for my first lesson in chemistry. It was taught by a fellow called Mr. Sewell, whose nickname was Tubby. He was right on the brink of retiring.

I should add that the war in Britain and Europe started 3 September 1939. [Adolf] Hitler marched into Poland on 1 September. We had a pact with Poland at the time that we'd go in and help them. I started on 19 September 1939. My high school years, all but one month between May and June of 1945, were during the war.

After Tubby Sewell left, another man took over and then another one. Somehow or other I became so intrigued by one little experiment; it seems laughable now. It dealt with the difference between a mixture and compound, a classic experiment. The whole idea was to take a little dab of iron filings and then a dab or pinch of sulfur, mix them together, and then add dilute sulfuric acid to it. You get hydrogen, you hold it to a Bunsen flame, and it goes pop. The hydrogen is being evolved from the iron. And then, of course, in another test tube you heat this mixture and suddenly incandescence occurs. When it's cooled you add dilute sulfuric acid, which makes hydrogen sulfide. I don't know why, but I was very fascinated by this.

I was always interested in what made things work. My father was very mechanical. He used to take clocks apart, but when I took a clock apart I usually had enough pieces left over for another clock. [laughter] I was very interested, not so much in large-scale mechanical things but in questions like what is brass made of, and what do we know about things on the atomic and molecular level. My father didn't know anything about that stuff and didn't care.

I became top of my class in chemistry in the second form, third form, fourth form, fifth form, and the two sixth forms. I was literally top of my class throughout. I was also at the top of my class in art. I was very good at drawing. I'll come to that later.

I believe it was in early 1942, during my early fourth form year when I was about fifteen or so that I thought it was my patriotic duty to try to find out how to make a bomb. In those days, the schoolteacher would buy some of the students who were very, very good at chemistry, including myself, potassium chlorate, barium chlorate, and red phosphorus. So I very carefully made a beautiful mixture—I didn't grind it or anything like that—of barium chlorate and <u>red</u> phosphorus, that particular allotrope. I filled a glass tube and carefully put a lid on it. I had previously drilled a little hole in the metal lid and put a piece of magnesium wire, which I bought from the local pharmacist, in it. Unfortunately, the magnesium fuse was so corroded that it kept going out. I completely ignored the fact that underneath all the magnesium oxide on the surface was magnesium. I got down to within about 3 inches of the bottom and there was a blinding flash and a crack like the crack of doom. My face was about a foot away from this huge explosion—it blew out some of the windows in our greenhouse and left a crater a foot and a half wide and about a foot deep. I was blinded temporarily.

I staggered out as my mother called to me to come in for dinner. It happened at about seven o'clock in the evening when my father was out on police duty. He was what they called a special policeman because most of the young policemen had been drafted. When I looked at the sky it was sort of a deep bloodred. When I looked everywhere else, it was black. I managed to grope my way back to the front door and inside the house where my mother scolded me, "Oh, you naughty boy! What have you done?" I had burned all my hair off, my eyebrows were gone, and my shirt was tattered.

You might think, because of the force of the explosion that the little shards from the glass tube would have gone in my eyes, but it was pulverized to dust, practically—fortunately for me. The doctor was right up the street so he came down and ministered saying, "Keep the boy's eyes covered." He gave me some medication. We weren't sure I was ever going to see again.

Naturally, I didn't go to school the next day. I believe it was about two days later when everyone was beginning to make noises to the effect of, "Where's Roy Neville?" This wonderful chemistry teacher, Dr. Robert E. D. Clark, came around and pleaded with my parents to let me continue chemistry because my parents had said no more chemistry, none whatever. My mother wanted me to be a commercial artist and work on posters and the like. My father wanted me to be an architect. I was interested in those subjects in a sense, but I didn't want to make a career of them.

This wonderful teacher, who was a bachelor at the time, said, "Well, look. Your son, Mr. and Mrs. Neville, is so good at chemistry that he could actually progress to get a university degree." I was so impressed with a university degree. Most of the people we knew didn't have degrees and all the schoolmasters that did wore gowns. It was sort of like a mini-university. I knew these teachers had B.A.'s and M.A.'s and one of them had a Ph.D. To hear that at age fifteen, well, I was extremely impressed.

Dr. Clark gave me two pounds and said, "We'll set him up with a little home laboratory if he will promise never to make any more fireworks or anything like that." [laughter] He taught me how to diazotize aniline, make sulfanilic acid and methyl orange, and things of that sort. And that's what I did. I promised faithfully I would never do anything like that again, which I didn't.

So, I had my home laboratory and my father had his tool shed. He moved out of that shed into a smaller shed in the back garden, and I set up my little lab. I remember carving out a piece of wood to make a balance with two cocoa tin lids, a bit of wire, and a razor blade. It was highly inaccurate, but it was better than nothing, I suppose.

I was doing experiments in the lab at school and then I'd come home and try to do them on my own. It was very exciting; thinking of what happened when you mix this with that and get beautiful precipitates which you'd heat in water. I just loved to see lead iodide, for example, dissolve in hot water and then cool down and make gorgeous little golden spangles. I thought, "This is marvelous." I was spellbound. I went on to get my school certificate set by the University of London. I got a distinction in chemistry, a distinction in art, and creditable levels in mathematics and physics and the other subjects we were required to take.

BOHNING: What year would that have been?

NEVILLE: That was 1943. I went on into the first year sixth form. There's no seventh form, just the first sixth form and the second sixth form. Of course, at that point, the boys or girls, as the case may have been, were usually showing some propensity either towards the arts or towards the sciences. It was obvious that, although I was good at art, I was much better, actually, at the sciences. So I embarked on chemistry, physics, pure mathematics, and applied mathematics. I was really good at chemistry. I don't mean to brag, but I really was. I was always at the top. I mean like 99 percent. The next students were down in the seventies. They used to dock me a point just for my writing. [laughter] They couldn't let me get away with a hundred. [laughter]

It was nice. Naturally, I went then for what they used to call the higher school certificate, which if you passed, then you were ready to go to university. I got through my higher school certificate, applied to university, and was awarded a scholarship at Balliol College, [University of] Oxford. At that time, I was eighteen and I'd been deferred from military service for nine months.

Well, wouldn't you know it, with my luck, the war ended around 20 May 1945. I took my higher school certificate in June of 1945, less than a month later. The draft age was seventeen. Well, the war ended, [Winston] Churchill was kicked out, the coalition government came to an end, and a labor government, a socialist government, pretty close to a communist government, came in. Ellen Wilkinson, an ex-Communist, was Minister of Education.

I remember I was delighted to be accepted for a scholarship. I think they paid a hundred pounds at the time to go to Balliol College, Oxford. I also received the Exhibition Scholarship. Not because I was an exhibitionist. It was for the Great Exhibition of 1851, in case there's any misunderstanding there. [laughter] So, I was armed with about a hundred and fifty pounds to go to Oxford in October. Between June, when I got these scholarships, and October I was on summer vacation.

I believe it was right around the end of August when I got a letter from His Majesty's Service, George VI, saying, "Mr. Neville, like every other young man who's been deferred, you must serve three years in military service or in an industry of national importance." We appealed to the government. Of course, they were immovable. Ellen Wilkinson was an ex-Communist. She'd been in the British Communist Party until 1923. She was some old spinster, apparently. I looked her up later. She died in 1947. So I was drafted for this industry of "national importance."

My good friend Dr. Robert Clark said, "It's ridiculous for you to go into the army." The war was over. They were being demobilized. My father said, "Why send my son into the army to do nothing but square bashing," as he put it, "and carry a rifle, only to be shouted at by a sergeant. It doesn't make any sense. And then he's supposed to forego going to Oxford?" At any rate, I was drafted into an industry of national importance. Dr. Clark knew of a Jewish doctor, Dr. Wallersteiner, who had a bombed out factory in Ladbroke Grove, North London, so he got me a job there.

My parents bought me some new clothes—new shoes, new everything—and I went to a slum in London. I stayed with my Auntie Addie. I had to take four trains there and four trains back in the rush hour; eight trains a day. When I got there I was greeted with this literally bombed out, partly burned out factory. My first assignment was to go in there and clean up boxes of bottles. The bottles had been red hot when the water from the firemen's hoses shattered the glass. The bottles looked intact until you touched them and they fell and dropped into pieces. There was an accident with some para-cresol, which was all over the floor.

[END OF TAPE, SIDE 1]

NEVILLE: I would estimate that the para-cresol was probably about an inch deep or thereabouts, and by the end of that very first day my brand new shoes had come apart. I had to get string and some heavy cardboard and tie it around my shoes to take the four trains back to my aunt's place. It was about a two-hour trip on the underground and then about a six-block walk with practically no shoes on. Of course, I didn't have an extra pair of shoes. Luckily, my cousins had feet about the same size as mine and they lent me some old shoes.

I put up with that place, working as a general flunky, for about a month when I caught a very bad cold. I was always a bit chesty and so on, but I was just coughing and wheezing. I was in very sad shape. When my father called up my aunt and asked, "How is Roy doing?" she replied, "He's not looking good." He said, "I want him to quit that job." But everyone was still afraid that I would get drafted.

So I went back down from London to Bournemouth for about two weeks. Now, there was place east of Bournemouth, Somerford, near a little old town called Christchurch, which had a beautiful priory. Out there was a place called Signals Research and Development Establishment or SRDE. My father went out there, talked to the headman, and explained the situation. He said, "Oh, yes. We'll hire your son. Sure." So I got a job there.

I went out there and there was nothing for me to do. It was what I call a typical government job—people being laid off all the time, but more being hired anyway. I sat there trying to keep my organic chemistry up-to-date. I was doing a little bit of chemistry in a mycology lab. They were growing all kinds of huge fungi under tropical dessert conditions and tropical jungle conditions. They had these great big walk-in hot closets. They were the most fearsome looking fungi you have ever seen. I reported to a person called Captain Portsmouth, a very, very nice man who used to come in his army uniform every day.

It was on one of those days that I heard this high, piping voice coming down the corridor and another fellow from the next lab came to me and said, "There's a professor coming down the hall. Would you like to talk to him?" I asked, "What am I going to talk to him about?" He said, "You might be able to go part-time to University College Southampton one day a week." It was 30 miles from Bournemouth. "Would you like to talk to him?" I said, "Yes, let's do it."

Soon, the head of the SRDE came in with the professor, Neil Kensington Adam, in tow. Along with myself, there were quite a few other boys caught in this socialist trap at SRDE. They were all qualified to go to various universities, but Ellen Wilkinson had said, "You can't do it." I talked to Professor Adam and he asked, "Would you like to go up there one day a week?"

They would give me one day a week off with pay to go to university. I rode on the back of an army truck. I rode my bike 3 miles to downtown Bournemouth, parked it behind a hotel, and caught an army truck. We had this long torturous drive all the way through the New Forest. In a direct line, it's only 30 miles, but we took probably 45 miles getting there because we picked up various people. They dropped us outside the main library and there we were for the day. We had to report back to the library at five o'clock. If we were late, we were out of luck.

I went in there and introduced myself to one of the lecturers at University College Southampton. By the way, I should explain that University College Southampton was then an outpost of the University of London, awarding London degrees—not unlike the University of California at Santa Barbara or Santa Cruz—but it was very small. The total student population was only nine hundred and fifty people and the chemistry department had only about six lecturers. It was a very small, cozy place.

I remember meeting Ishbel Grace McNorton Campbell, a very nice lady. I guess she was about fifty at the time when she said, "Would you like to make some nitrobenzene for me?" I answered, "Yes. I'd love to." I made her a couple of liters of nitrobenzene on the biggest equipment I had ever worked on. Before that, I was working in very small flasks. I also made some dinitrobenzene as a byproduct. She was very, very pleased with that. I did that for not quite a year. About nine months later there was a massive layoff at SRDE. So, out I went again, along with everybody else, due to post-war cutbacks. Everybody out, you know. Good, bad, and indifferent, even supervisors—everybody was out.

So here I was on the market again for more call-up. I thought, "Okay, how long is this going to last?" The government, of course, was very hot to call people up. About a week later, I got another letter from the government stating, "You've got to report for another two years." I thought, "Well, there's nothing going on around Bournemouth." Bournemouth is a resort town with no industry at all. I wrote a letter to a Mr. Thorne at the Poole [Pitwines] Gas Works where coal was gasified. In those days, we used to call it coal gas. He wrote back the next day—the postal system was very, very efficient—still is in fact. We still have two deliveries a day. I got this nice letter back saying, "I'm sorry. We'd love to hire you but we can't." My father said, "Look son. Don't take what they say. Despite that, don't take no for an answer. Shave, put on your best clothes, get on your bike, cycle out there, and talk to Mr. Thorne." I went out there. It was about eight miles away. I went up what they call Constitution Hill. It's called Constitution Hill because you have to have a good constitution to be able to climb the thing. I free wheeled down into Poole and went to see Mr. Thorne. He still said, "No. We really don't have anything. But have you tried the gas research board?" I replied, "I've never even heard of the gas research board."

The gas research board was kind of like a standard research institute for the coal gas industry. The British Gas Board is what they called themselves. I said, "Well, where is it?" "You see that building over there? That's the gas research board." It was about ninety feet away. I went there and met this very nice young lady. She seemed old to me at the time, she was about twenty-six. She offered me a cup of tea and said, "Dr. Moignard is in the other building. He'll be with you in a few minutes." I'd never heard of Dr. Moignard. Anyway, he came in and here was this gentleman dressed in British brown-colored dungarees with this beautiful Oxford accent, a real crackjaw accent. I introduced myself to him, explained the situation and that I was pretty good at chemistry, and he gave me a job.

I began doing gas analysis on a giant instrument called the Bone and Wheeler machine. I grew to hate that machine. It was one of those machines where you pass gases over copper oxide to absorb carbon monoxide and the CO_2 [carbon dioxide]. We slopped around buckets of mercury. [laughter] We didn't even wear eye shields. I did that for about a year. Of course, I also crushed and sieved coal. I was supposed to be at Oxford during that time, please note.

My scholarships lapsed, so I decided I would try to take chemistry at a local college. I should explain that there were two types of London degrees. There was the internal degree, when you go to the University of London, and the external degree. External degrees were actually slightly harder because you have to prove yourself to the University of London, which was every bit as good as Oxford and [University of] Cambridge, but it didn't have quite the aura. It's probably like Harvard [University] and Yale [University] who have that aura. Kind of like Princeton [University] would be or something like that.

I went to a local college and decided I was going to major in chemistry with a minor in physics. In those days there were two types of degrees you could take: either a bachelor of science general, in which there were three subjects of the same level, or a special degree, in which there was only one subject at the very advanced level and the subsidiary part of that was at the general level. So I thought, "Well, I'll take physics." We had this very antiquated physics department at Bournemouth Municipal College where I managed to electrocute myself a couple of times. It took about an hour to setup and, all of a sudden, I was just standing with hardly any time left to do any experiments. I thought, "This is no good." With the antiquated equipment—half of it didn't work or was missing—I just wasn't getting anywhere. I thought, "I'll take calculus instead. I can do that at home on my own little coffee table in my bedroom." So I minored in pure mathematics.

I put in two more years of what I call my indentured slavery. I was going to Southampton one day a week. The gas research board allowed me two days off total, provided I'd come in on Saturdays and work the whole day. I went to the gas research board on Monday, Southampton on Tuesday, gas research board on Wednesday, pure mathematics at home on Thursday, and Friday and Saturday were spent at the gas research board. I only had Sundays off. That's what I did for two years.

Then I asked Professor Adam at Southampton, "Look. I've done my two years of slavery here. Now, do you think it is possible I could come to Southampton? I should've gone

to Oxford and that's gone." He said, "Yes. Why don't you apply for a Further Education Training Grant, which is like the British version of the G.I. Bill. I filled out the forms and about four weeks later, I got this letter back saying, "I'm sorry, but we discontinued that program about six months ago. Oh, by the way, why didn't you apply two years ago because we rescinded"—now get this, this is the Socialists for you—"the three-year requirement back to one year," which meant I could've gone to Oxford two years previously.

They screwed me out of Oxford and they were trying to—pardon my language but I feel very adamant about this—screw me out of government grants, too. My father appealed to Lord Lyle of Westbourne. He was our local member of Parliament. Lots of other people all over England were being treated the same way. So the Socialists "graciously" reinstated it. Now, at that time I had graduated to five pounds a week. Five pounds a week—nowadays that'll buy you five cups of coffee—at the gas research board and I got a grant of four pounds and five shillings a week to go to Southampton full time. I went there full time, starting in October 1948, and in November 1948 I took the subsidiary exam in pure mathematics. I had to go up the University of London. I remember sitting there at what they called the Examination Hall on Imperial Institute Road, South Kensington, London, a truly fearsome place with Victorian architecture. I was ushered into this huge room and I was surrounded by nuns. Teachers were parading up and down the rows, making sure that nobody looked at anybody else's paper. I didn't want to look at those people's papers anyway. But I got through it. I went up to Southampton in October and by November I already had the first third of my degree done.

I was always interested in paleontology, fossils and things like that. I had a collection of fossils. I went to Professor Adam and said, "Rather than doing chemistry all the time, would it be all right if I went to the geology department and listened to the honors courses, not to minor in it, just to learn something." I remember him saying to me, "You know, Neville, I've often had students come to me asking for less work, but never have I had anybody come to me and ask for more work. Of course, you can go over there." I went over there for a year and listened in. I didn't take exams. It was just a diversion, you know, a chance to learn more about paleontology.

By the way, my original class at Southampton had twenty-two people in chemistry. By the time, three years later, I sat in the University of London external examination there were eleven people.

I should backtrack a little bit. During the war, a school had been billeted to Bournemouth School, the Taunton's School from Southampton. We took lectures in the morning and then games and labs in the afternoon. The next week it would be the reverse. About half of my time at school was spent under the playground in the bicycle shed because of the air raids, which were very, very difficult. We had more scholarships at the end of that war period than we've ever had in the whole history of the schools starting in 1901. In those days people didn't play around. They were deadly earnest to get ahead. When I see high school kids nowadays, they look like they were just pulled off a boxcar. But, we used to have our uniforms and blazers and caps. We were gentlemen.

Most of my friends in the sixth form class were a lot younger than me. You see, when I first went to elementary school, if you were born before 30 September you could start that year, but if you were born after 30 September you had to wait until the next year. I was born on 15 October, so I was always the oldest one in the class or next to the oldest. Naturally, I was a little bit behind in the schedule and yet I was ahead as far as age was concerned.

Coming back to the war, I befriended several of the boys at Taunton's School. They used to come over to the house and we'd do our chemistry experiments on Sunday afternoons. One of those boys was Kenneth Edward Hayes, a rather nice fellow, but I didn't really know him that well. It turned out that he ended up going on to Southampton. He was younger than me by about two years. He went onto get his degree at Southampton and Professor [Robert B.] Dean, at the University of Oregon, asked Professor Adam, who was one of the great surface chemists in the twentieth century, if he would like to send over a student who was interested in getting a Ph.D. in physical chemistry at the University of Oregon.

He sent Kenneth Hayes. So there was this weak link between Adam, myself, and Hayes just by virtue of my having been nice to the little lad in the 1943 to 1944 period. Who would've predicted such a thing? It was just quite by chance. Around about May of 1951 Dean wrote a letter to Adam and said, "Look. Hayes is doing very well. Do you have another student who you could send over?" Adam came in and said, "Now, who would like to go to America?" Six hands shot up, mine included. Adam was not one to play favorites so he said, "Well, all right. It all depends on how well you do on your degree examination." I thought, "Boy, I'm great in organic chemistry and I'm pretty good at physical chemistry, not bad at math. It's up to me."

By then I'd had it up to my eyebrows with Socialism because in those days, 1951, we still had rationing. In the rest of Europe you could get hams, butter, cheese, anything. But, in good old Socialist Britain you couldn't get anything. Nothing ran on time. The Socialists messed up the economy. My father went down and stood in line at the town hall for two hours. When he got to the desk he was handed a form to apply for another form. [laughter] That's Socialism. I actually detest all forms of left-wing anything. I'm very much a right-wing Republican. I detest Socialism simply because it doesn't work. It just plain doesn't work. I know. I've been there. I had friends at the University of Oregon who came from Communist countries. One came from Estonia and he said it was absolutely a nightmare. When I went, later on, to Ljubliana in Slovenia it was the same thing. Nothing worked. East Germany was the same way. It was absolutely hopeless. But that's another story.

As I said, I got my degree in 1951 with honors in chemistry and I patiently waited, wondering who the winner was. It turned out to be me. I got my degree in late July and, by God, I was on a ship by 24 August. [laughter] I could've traveled on the *Queen Mary*, but I was so anxious to get out of Socialist Britain that I traveled across the ocean on the *S.S. Washington*, which I later learned was an old converted troop ship on its way to a scrap yard. [laughter] There was a very, very severe storm in the Mid-Atlantic. We had boat drills, by the way. Boat drills in sight of the Statue of Liberty. They just didn't care. I was told at the time two plates on the ship had sprung. I had noticed there was a very slight list to the ship, but I didn't think much of it. [laughter]

I came over here and I missed my train due to not quite understanding the New York people who didn't have any time for me. I arrived at Grand Central Station and I missed my train, so I asked a man, "Where's the train for Chicago?" He said, "Eleven standard. Move on." I asked, "What do you mean, standard?" It meant nothing to me. I asked again. This was, by the way, at regular rush hour between six and seven and I believe it was on a Friday—not the best time to have hit New York.

Whenever I see pictures of that little old kiosk in the middle of Grand Central Station, I always think of the horror of that day. That's where I went up to another person and he said, "Eleven standard. Move on." So, I asked a red cap and he said, "Eleven standard." I was really tormented. Eleven standard? In England, in those days, we had summertime, double summertime, and ordinary time. The term "standard" meant nothing to me and nobody would stop and explain it.

Oh, and by the way, I mustn't forget to tell you this because it's worth recording for posterity. You were not allowed to take more than twenty pounds, or fifty-six dollars, out of Socialist Britain at that time. At the pain of having your head cut off or something, but it was just awful. Can you imagine traveling 6,000 miles with fifty-six dollars? That's what I had to do. I bought a few things on the boat, a little brooch for my mother and things like that, and I was down to perhaps thirty-eight dollars.

Anyway, I managed to get the slow train. I remember when it was finally explained to me, "Oh, that's your train," but by then the concertina gates had closed and I said, "That's my train." He said, "Nope. Can't do it. It's too late," and I watched it go out of the station. I thought, "Oh, how nice."

I was so hungry that I went over to an eatery at Grand Central and I said, "I'd like to have a sandwich, please." "What do you want? What do you want?" I said, "Well, how much is a turkey sandwich?" "Oh, toy-key?" I'd never heard of toy-key before but, anyway, there it was, toy-key, and he did something, which I'd never seen in England. He took just one piece of bread, cut it diagonally, and painted butter on it with a brush. I'd never seen it that way. Usually they spread it with a knife. I thought, "Isn't this interesting." I got some old, dried up turkey and that was my meal.

That was my introduction to New York. I was beginning to think I better not have anything else. I ordered a glass of water and that was my meal for the day—one slice of bread and toy-key. They were very impolite in New York.

[END OF TAPE, SIDE 2]

NEVILLE: Another thing. I should tell you that all I had with me was an old—practically a hundred years old—leather suitcase. It was strictly a Victorian thing, probably made about

1890, which my Aunt Minnie had given to me. I put the letters R.G.N. on the side to make sure I would recognize it. There were these very wealthy dowagers getting off the boat and going through customs with fur coats on and they were doing just fine. But there was this one customs man who I thought was a mean person. He singled me out. Here I was just standing there, obviously, not much more than a young school boy or ex-school boy with his one suitcase and he said, "Open your suitcase," and he went through it. My father was an excellent packer—he could get almost two suitcases full of stuff in one. He went through and rummaged around and then said, "Sit on this, son." I couldn't get it all back in there.

I should also add that a little motor launch had come out to greet the big liner and they paged me and gave me a ticket. I've never seen so long a ticket in my life before. It was about a yard long. So the customs man went through my bag, he pulled all the clothing out, and I just could not get it all back in. Finally, he was gone, everyone was gone except me and that suitcase. A suitcase with half the stuff that I couldn't get back in. Then I noticed this old lady. She was basically a bag lady, I suppose, to be polite about it. You see, she'd been having a few and she was laying there sort of half propped up against the wall. You must understand, this customs shed had a wooden floor and the wall didn't come quite to the floor so you could sweep all the trash into the Hudson River. I couldn't find my ticket so I opened up my suitcase again. "What's happened to that ticket?" I was tired and I hadn't had much food. Finally I said to the bag lady, "Have you seen my ticket?" She said, "Is that it over there?" And I saw this long thing that looked like a piece of toilet paper being wafted towards the edge of the shed, into the Hudson River. So, I ran over there and I stamped my foot on it just in time. I had almost lost my ticket.

Then, of course, I went outside. I'd never hailed a cab before. I had never had the occasion to, though I'd seen it done in some movies. So, I tried. And they drove past and drove past. I stood there for about two and a half hours and I couldn't get anybody to stop. There were dozens of them going by, little yellow cabs. "How am I going to get to Grand Central Station?" Finally, one of the black fellows who'd been making the beds for us on the ship said, "What are you doing here?" I said, "I'm trying to hail a cab but nobody will stop." So, he got three other black fellows together and said, "Oh, I'll stop one."

So the four of us stood together and a taxi stopped. I said, "What did you do? I've been doing the same thing." He said, "It won't stop for one guy." The driver said, "Where are you going?" I said, "Well, I'm supposed to go to Grand Central Station." They said, "Would you like to see the Empire State Building?" I'd seen it in the movies, but I'd never been close. So he drove past the Empire State and I looked at this gigantic building. I had never seen something so big in my life. We didn't have buildings like that in England. We do now, but nothing like that scale.

Finally, we arrived at Grand Central, I thanked these fellows, we said goodbye, and that's when I got the eleven standard routine. Finally, I was on the train, this slow train that seemed to stop at just about every lamp post until finally I fell asleep. I was so tired. When I woke up I had to go to the bathroom. There was a WAC—someone from the Women's Army

Corps—on my lap. The car was full of men and women soldiers. They'd gotten on, I think, in Pittsburgh or Poughkeepsie on their way to some other place.

I said, "Excuse me, madam," in my quick British prose. "Excuse me, madam. Would you please get off my lap. I have to go to the bathroom." I was very, very much a gentleman. A perfect gentleman. She did this and, of course, I expected my seat to be available when I got back. It was not. I had to stand the rest of the way until that entire mob got off. Finally, the car was empty and I got my seat back.

I got to Chicago around eleven o'clock in the morning. I didn't have any breakfast. All I could have, looking at my dwindling supply of money, was a Hershey bar for a nickel and water, which was free. So, I had a Hershey bar and a glass of water. That was it. That was breakfast.

Finally I arrived in Chicago. I don't remember what the name of the station was but I was told to ask for the Parmalee Cab Company. I don't know whether it still exists or not. A very nice cabby took me from one station to another station. I cut off a piece of my ticket for him, he took it, and I was pleasantly surprised. There was this beautiful train waiting for me. I think it was the Great Northern [Railway] or something like that. I bought myself a little cheap meal there.

I finally got on the train and as it pulled out I noticed there was another fellow from New York City sitting in another part of the coach. We sort of sat together talking because there was nobody else to talk to. He was just in awe. He had never been out West before and I certainly hadn't. He got off, I believe, in Omaha. I kept a log of what I saw and I drew little things in my diary which I reproduced to send back home. I'd say, "Do you realize I've traveled over a 100 miles and I haven't even seen a tree?" [laughter] There are lots of trees in England, as you probably realize.

Then these mesas appeared, up like that with flat tops and down there, and as we went further west I thought, "My goodness, look at these buildings." These big false fronts with a little tiny shed behind. I thought, "If it's like this in Wyoming, what on earth is it going to be like by the time we get to Oregon? It's going to be just a wee thing, tepees or something." [laughter] After Wyoming we headed towards Idaho. I remember waking up at about 6:30 a.m. and looking out my window.

I couldn't afford a berth. I slept in the coach. I learned from this other guy, and he put me up to it, that if you sit on your pillow, they won't collect it and charge you twenty-five cents for a new pillow every night. So, I sat on my pillow.

I woke up and out the window there was this blue conical majesty. "My gosh, it's a volcano!" And it was a volcano. Right out there, about three miles away, there it was. I couldn't believe it. It was big. After about an hour and a half, we pulled into Portland Station and I thought, "At least I'm almost there." I think I had about a dollar fifty left. I was just ravenous because I hadn't eaten anything on the train except eighty-five-cent dinners. I'd had a

Hershey bar for breakfast and a glass of water, a Hershey bar for lunch, because it was a nickel, and an eighty-five-cent dinner.

I went into Portland Station and I ordered an eighty-five-cent breakfast. I'd never had hash browns before and I thought they was delicious. I ate the lot, toast and the whole bit. Eighty-five cents. About two hours later I got on the Shasta Daylight and waited there until it finally took off. About three hours later we pulled into Eugene and there was Kenneth Hayes and Professor R. B. Dean waiting for me. Dr. Dean took me out to his house, which was about three miles west of Eugene in the foothills.

I was introduced to Mrs. Dean, who had made a beautiful repast for me, a beautiful piece of salmon. Now, you can imagine coming from Socialist Britain just a few days before, this was like going to heaven. I'd never seen such a piece of salmon before because we used to eat canned or tinned salmon. I'd never seen anything like that and I certainly had never tasted it. I remember I was so hungry and she said, "Have some more." I had three helpings of salmon. I was literally starving.

Dr. Dean took me back to Eugene introduced me to my landlady. This was 3 September. Payday was 10 October. That was it. Now, how does one get, with forty cents in one's pocket, from 3 September to 10 October and pay the landlady twenty-five dollars? It's impossible.

So I walked over to the registrar's office and borrowed seventy dollars from the University of Oregon. I explained I'd just arrived that day and I had to stay someplace that night and that was it. They advanced me seventy dollars against my one hundred and nine dollar a month stipend. [laughter] It took me six months to pay that seventy dollars back. So I know what it's like to be really up against it.

Next I had to take my qualifying examinations to start graduate school. I believe there were about ten of us who took the four examinations in organic chemistry, physical chemistry, analytical chemistry, and inorganic chemistry. I think that's the way it was. I was from England. There was a nice fellow, Henn [H.] Soonpaa, from Estonia and the rest were Canadians and Americans. I took it and, to me, it was a breeze, so easy. Boom, I was all the way through. I was still pretty shocked from having gotten a bachelor's degree because in England, at that time, you got a bachelor's degree and that's all you took. A Ph.D. and a master's were strictly research degrees. You had all your coursework. That was it. You were almost equivalent to a Ph.D. but without any research. That's the way it was in those days. That was what the B.Sc. special meant.

I breezed through that. I was the only one that passed all four examinations. The Estonian passed three out of four. So, both of us were allowed to start our projects. Now, going back, Dean had said, "I accept you for a Ph.D. in the physical chemistry of surfaces." Adam had worked with Irving Langmuir. Have you ever heard of the Langmuir isotherm? Now, I must tell you I was not particularly interested in that but that was Adam's pet subject, and if I wanted to get through, that was <u>my</u> pet subject. So, Dean accepted me for the Ph.D. in physical

chemistry. I burned my bridges at Southampton because I could have gone on there. My first love was organic chemistry, synthetic organic chemistry, which I was pretty good at.

It turned out, by the time I had been accepted for the Ph.D. that Dean wrote back this panicky letter to me saying, "I'm terribly sorry. My tenure has not been renewed. Do you think you can get a master's degree in ten months?" So, I wrote back and said, "Yes, I can do that." I didn't know whether I could do it or not. I had burned my bridges at Southampton. I went back and said, "Certainly I'm not up for a Ph.D. over there. Can I still get a Ph.D. over here?" "No. All the positions are spoken for. You've got to go. But maybe you can change something once you're over there." So that's what I did. I had to get a master's degree in ten months in surface chemistry (1).

BOHNING: That was 1952.

NEVILLE: Yes. Well, actually, the degree itself was conferred in 1953 because I missed commencement. But I'd done all the work for it and had completed it in 1952. I got it in nine months. I signed up, by the way, for a biochemistry class, which in England was nothing but organic chemistry of biological products. It was pretty much synthetic organic chemistry, which I was good at. Little did I know when I signed up at Oregon that it had a tremendous amount of biology in it. Now, I'd never taken a biology course. Not a lecture at all, except for some reading. I didn't know much about it at all.

The first term I remember one of the questions was, "A chimpanzee has a case of edema. What would you do?" Being a bit of a smarty, I said, "Shoot it." [laughter] Poor thing. I didn't know "edema." Where I'm from, we called it dropsy. I had never heard of the word edema. I was always putting my foot in it one way or the other because I was using the English lingo and interpretation and over here it's quite different in certain respects.

Sometime in October I thought, "This doesn't seem much like chemistry to me." He was talking about equations with A and an arrow going to B and then the word enzyme. I said, "What's this enzyme made of? What is its structure? Enzyme A and then there was a co-enzyme. What are you talking about? When do you get to chemistry? This is chemistry, isn't it?" There was a certain degree of heckling going on between myself and the professor. I thought, "When are we going to get to the chemistry, because this doesn't sound right to me." I must confess I got a C and when you get a C in graduate school, that's kind of like the kiss of death. It's the only C I ever made.

By the way, Jeanne [F. Neville] had been working at a hospital. She had a B.A. in biology. She signed up just to audit the course. This course was the last course of the morning so we would all adjourn to the student union. Tea was a penny. I could afford a penny, but coffee was two cents. So I'd get a tea bag and all the hot water I could use. Jeanne was always very nice to me. We'd talked along with the other students and it went on like that until the following May. I got a good solid B in the second term of biochemistry mainly because it was

all about sugars and all the different isomers of sugars. I did very well in that because it was chemistry again.

Anyway, by the third term it started to become very biological again, so I dropped it. I went over and took three hours of philosophy of science because I was getting my early science book list together in those days and I knew much more about it than the professor did. He knew a lot about the theories of philosophy but he didn't know anything about [Isaac] Newton and [Robert] Boyle. So he learned as much from me as I did from him. He gave me a straight A.

On 20 May, it was my turn to give the seminar, for which you get one hour of credit. Jeanne was taking this course. I, of course, had done my thesis work and was in the process of writing my master's dissertation, so I decided to give the seminar on vitamin A and related polyenes, like carotene, lycopene, et cetera. So, that's what I did. She never used to show up to these seminars at all, but just as a total fluke, I walked into the lecture room and no one was there but Jeanne, who was sitting in the front row. [laughter]

I thought, "Oh, no." I always kind of liked her. Of course, everybody discussed the girls. "What about this one? What about that one?" But I was told by a fellow student, "Oh, no, no. She's going steady. Forget about her." I wasn't going to horn in on anything like that. I didn't have time. So there she was sitting in the front row. "Oh, no. I'm going to make a complete jackass of myself right in front of this girl." Up until that time I had talked to classes of say only five or six people before. I'd never talked to about thirty of them. I got very intimidated. So I went to the board and I thought, "Well, here goes nothing." [laughter]

I covered the board with these very long-winded formulas of carotene and all these double bonds and rings, talking about the [O.] Isler, [W.] Huber, [A.] Ronco, and [M.] Kofler synthesis (2). Thank goodness it's a multi-step synthesis. I finished up very nicely and then it was question time and there were a few questions. Finally, they dispersed and there was Jeanne still sitting there. She was sort of getting her stuff together when I suddenly got a stroke of courage.

I said, "Well, I've got a mouth full of chalk dust. Would you care for a cup of tea?" On the way over to the student union I said, "Do you mind me asking you a personal question? You'll probably think I'm very bold. Are you going steady? I've heard you're going steady." She answered, "No. I'm not going steady."

I should say that I'd been collecting some rare books at the time, some general rare books. A few seventeenth century and eighteenth century books. There was an annual student private library contest and I had won first prize. I had a few illuminated manuscripts that were in a big glass display case in the vestibule of the main library. It said, "Roy Neville's Graduate Student Library." I said to Jeanne after we had our tea over at the student union, "I have a little hobby. Would you like to see my little hobby over in the library?" She said she would.

We walked across campus and looked at it. Jeanne had never seen illuminated manuscripts before or books of the sixteenth, seventeenth, and eighteenth century. She was very

impressed. When that was done we walked outside the library and I looked at my watch. Now, I ate at Straub Hall, which is a good one third of a mile away. They stopped serving at 6:30 p.m. and it was then about 6:25 p.m. I didn't know if I was going to make that distance or not in time. So I plunged my hand into my pocket, thinking I had perhaps fifty cents. I had less than a quarter. As usual I was broke, but I said, "Would you like a hamburger?" "I'm an idiot," I thought to myself.

She perceived my temporary embarrassment and said, "Why don't you come home with me. I've got an apartment just two blocks off campus. We'll open a can of Dinty Moore Stew." I said to myself, "Great. I can see what her apartment looks like." And we went back there.

We sort of took it from there. Jeanne has the same kind of background as I have. Basically, she's the same age as me and has the same politics, so we really hit it off. It was a real mesh. She loved chemistry, although she majored in biology. I knew nothing about biology, but I went on trying to learn a bit more and the end result was we clicked. On 4 June I proposed marriage, on 5 June she accepted, and on 26 July we were married. That was ten weeks later. Fast worker, huh? [laughter]

BOHNING: I didn't ask you this when we were in the car before, but how did you end up getting married in Bend?

NEVILLE: Jeanne's relatives were over there in Bend. Isn't that right, Jeannie?

JEANNE F. NEVILLE: Yes.

BOHNING: So you were from Bend originally?

J. NEVILLE: No.

NEVILLE: She's from North Dakota, actually.

J. NEVILLE: But I had some relatives there. My mother was there.

BOHNING: I see. All right.

NEVILLE: Her mother was staying with her uncle. Uncle Sherrad was his name. A big Biblical name, Sherrad. He worked at the lumber mill in Bend and Jeanne's mother just happened to be staying with him.

I had a good friend called Bob Engh, who was also a fellow chemist. I decided he would be a good best man. He drove us in this old 1948 Ford or something like that. Fords came with the big thing in the front on the grill. We headed to Bend and went over the Mackenzie Pass.

I had this watch. It was a cheap watch. I must have bought it at Woolworth's or somewhere. It wasn't much. It was a really hot day, 26 July, and Bob and I were staying in a motel. Jeanne was staying with her uncle and mother in their house in Bend. I said, "Why don't we go and try out the city pool and have a nice swim?" We went in and we splashed around the pool to keep cool. I watched the clock. I was to be at the church at four o'clock and the clock said there was plenty of time. Finally I said to myself, "That looks like the same time as the last time I looked." I went over and checked with somebody and they said, "Oh, yes. It's about ten minutes to four." I said, "Ten to four? I'm getting married in ten minutes!" [laughter] My hair was all wet—in those days I had long hair. Of course, I was damp so I quickly dashed on my clothes, went back to the motel, and then to the church. Almost missed my wedding! But we got married and it was a very, very nice wedding. Wasn't it, dear?

J. NEVILLE: Yes.

NEVILLE: Then we moved back over to Jeanne's apartment. We went on a three-day honeymoon. She'd never seen the ocean so we decided to go to a little place called Yachats, on the Oregon coast. Did I tell you, by the way, that I got a Fulbright scholarship?

BOHNING: I was wondering where that came into the mix.

NEVILLE: I'm sorry. Yes, I should tell you I won my education; from the time I walked into a university to the time I walked out with a Ph.D. it cost me nothing. I won it. I got an FET grant, a Fulbright scholarship, a fellowship for my master's, and another fellowship for the Ph.D.

BOHNING: Did you have a mentor through this period? Somebody who was guiding you or helping you?

NEVILLE: No. Roy Neville was guiding Roy Neville. I was pretty motivated. I just wanted a better life. It was kind of a weird situation. Ken Hayes said, "When you go up for a visa from the U.S. Embassy in London, whatever you do don't get a temporary visa. Get a permanent visa." The Fulbright, by the way, was a typical government thing. My father had to come up

with one hundred and eighteen pounds to get me over here. The Fulbright itself didn't come through until late October. I was already here!

I think they coughed up one hundred and thirty-six pounds, if I remember. I said, "What about my eighteen pounds?" He said, "No, I'm keeping the eighteen pounds." So, I didn't get the eighteen pounds. Good old pop kept his eighteen pounds. [laughter] Anyway, I was issued a ticket that included the train ride back from Southampton docks down to Bournemouth again, had I needed to use it. But, by then, of course, I was married and didn't need it.

BOHNING: How did your parents react to your getting married?

NEVILLE: Well, they didn't have much to say about it. [laughter] I was twenty-four and I told them I had found a beautiful American girl, I was getting married, and that's that. They were quite happy about it. We had a nice three-tiered cake. We thought, "We're going to send the old folks the top tier of the cake." We wrapped it up and sent it by air mail, but by the time they got it, it was moldy. It was a total disaster.

[END OF TAPE, SIDE 3]

NEVILLE: There was a lecturer named Russell Gaertner. The head of the department at Oregon, at that time, was an old German called Adolf Kunz. He was the real Prussian type. He was militaristic, had a little moustache, stood up straight, and he ran that place like the Prussian army. Russell Gaertner wasn't much older than I was. He was about twenty-six to my twenty-four and he was popularly known as the "man-boy from Illinois." [laughter] Gaertner was an assistant professor with this young graduate student called Doris Dowey. She was a very nice girl, but she was his student.

Kunz suspected there'd been some shenanigans going on between Russell Gaertner and Doris, but there hadn't been. Anyway, Kunz basically said, "Okay, I'm not going to renew your tenure." Russell Gaertner was all set to take me on the next year once I got my master's. Well, he was kicked out. Dean, my professor, left. Then another fellow called George Gorin came in.

He was a real character, I'll tell you. He was a young guy then. I understand he'd been a post-doc at Princeton. He died in 2004, at the age of seventy-eight. Now, I don't wish to speak disrespectfully of the dead, please understand that, but he was a holy terror. He was a hopeless lecturer; he had this high-pitched voice and a low-pitched forehead. He looked almost like a monkey, but he couldn't help his looks. It was murder trying to listen to him. And, he just didn't know his subject. He was just hopeless. And just as he didn't know his subject as a lecturer, he could not direct anybody. I used to say that that guy couldn't direct me out of a paper bag. He was just hopeless.

Anyway, I was assigned to George Gorin. When he finally showed up in early September, he said, "I've got one grant I think I'm going to get in organic chemistry and one in inorganic chemistry." So I thought, "Oh, please get the one in organic chemistry and let it be organic synthesis." He finally found out he wasn't getting the organic one. He got the inorganic one.

Now, I should also add there's one subject in chemistry I studiously avoided. Not that I didn't know anything about it, but certain things kind of grab you and certain things do not grab you. Coordination compounds did not grab me. They left me pretty cold—platinum complexes, rhodium complexes, and all that. That's a field unto itself. I remember, over in Southampton we had some big wig—I don't remember his name—give a talk on coordination compounds. We sat there being thoroughly bored when Adam got up and said, "Well, this is all very interesting, but in my day coordination compounds were usually relegated to a footnote and a very small footnote at that." [laughter]

So I thought, "Well, that's not very important, so forget about it." You know? I knew what they were. So what did I get? I got a fellowship on coordination compounds! I was studying the metal-catalyzed oxidation of the amino acid cysteine by iron and copper. That was the problem I was supposed to be working on. Suffice it to say, I started on the copper and got absolutely nowhere. It's an all aqueous solution, by the way, and I was itching to work on organic solids and things like that as organic chemists do. All I could do was work in distilled water. I felt knee high to a grasshopper. Everyone else was doing good chemistry and I was fiddling with this stuff.

After almost six or seven months of working on a copper compound, I couldn't get anywhere. It was totally unstable. It turned out to be light unstable and oxygen unstable. We didn't have the equipment to work in an inert atmosphere. Oregon, at that time, was a bit on the primitive side. I got nowhere. I had this big, thick notebook of nothing but negative results. So I said, "Look. Let's try the iron." And I got, "No. The contract called for copper." We wrote up this thing and went back to the U.S. Public Health Service. I said, "Please, let me work on iron." So I started working on iron. It turned out, though I didn't know it at the time, that iron catalyzes the oxidation of the S-H group to the disulfide group. Boy, add a bit of iron and zoom it was gone. I had added my iron solution to this sodium cysteinate and you just see a little flash of blue color and it's gone. How was I going to measure that? We had a Beckman [Instruments, Inc.] DU. You remember they were just coming into vogue?

BOHNING: Very well.

NEVILLE: It was not the type you plug into the wall with a constant source of electricity. It ran on batteries and, of course, the students would always forget to turn the thing off. We'd waste about two hours while the silly thing charged. It was murder trying to work with that stupid thing. I tried very hard to work on that and at the end of the first year I literally had

nothing to show. I thought, "How on earth am I ever going to get a Ph.D. with all these negative results? I can tell you all kinds of ways it won't work, but not one way it will work."

All this time Gorin was getting pretty ticked off at me and saying it was all my fault so he decided to work on the nickel system. You know—iron, cobalt, nickel. Even he had admitted the copper was hopeless and he couldn't get anywhere with it. He did a few perfunctory experiments in his little lab and didn't get anywhere. He went to an ACS [American Chemical Society] meeting somewhere, I don't remember where it was, in 1953 and decided to tack on a couple of weeks vacation. It must have been back East somewhere.

So I said, "Good." I wasn't going to sit and just waste away. I thought to myself, "Iron, cobalt, nickel. Nickel seemed reasonably stable, iron was hopeless. Let's try cobalt." I took a rack of test tubes and the standard solution that I used. I don't remember whether it was about a tenth or a hundredth normal. You'll have to look at my thesis to find out because I can't remember (3). I tried these various concentrations of cobalt sulfate, and by golly, I got a nice color and it stayed for a little while but gradually faded away. Depending on the pH, I'd either get a brown color, a red color, or a green color. I thought, "My gosh. I'm on to something here." It was very pH sensitive. Only about two or three units and it changed everything. I got a magnificent precipitate of cystine. We called cysteine "cystane" and cystine "cystyne," so we knew what we were talking about.

I gleefully wrote up what I call my quick and dirty, rough and ready experiments for him. I was not trying to be quantitative; I just wanted to see if there was any chance at all. I was delighted to tell him when he returned to his office. Instead of being delighted, he exploded. He just blew up at me. He went down to Kunz and said, "I want to fire this man. He's not following instructions. He's no good. He's hopeless." Kunz called me down and said, "Well, I told Gorin you're a Fulbright scholar. You came here to do organic chemistry, not physical chemistry, and you are now deep in inorganic chemistry. I know you don't particularly like it, so I'll talk to Gorin." He talked to Gorin and got him to settle down.

Gorin was warring with the whole department. He had offended just about everybody, even good old [Pierre] Van Rysselberghe, the thermodynamics professor; a perfect gentleman from Belgium. And even Hal Richter, a nice guy about a year older than me and a good inorganic chemist from Cornell [University]. He got everyone ticked off at him. He was throwing his weight about and he was such a holy terror that everybody hated that guy's guts to be blunt about it, including me. I thought, "This is horrible." Kunz said, "You're all right, Roy. Every time he blows up, come to me and tell me what's happened. I'll get him calmed down again."

So, I went through another year of pure hell under Gorin. He'd try to lay traps for me, he did everything he could to thwart me. By the way, he told me he was a great admirer of [Benito] Mussolini. [laughter] His parents had come from Como. He was born and raised in Como, Italy and was from a pretty good family, I understand. He was a great admirer of the Fascists. By the way, he hated English people. So I had everything going for me. [laughter] I

managed to plod through the whole thing in another year and got five papers in *JACS* [*Journal of the American Chemical* Society] out of it (4).

BOHNING: You also have two papers with Clark (5).

NEVILLE: Oh, yes. My high school chemistry master, Dr. Robert Edward David Clark. That's right. I believe we had two papers. Yes, well, I did that just to be nice to him. Basically, I did most of the work, but I was trying to pay him back. He was such a dear man. He was such a good Christian. He was one of those people who were almost too civilized for this world. I mean, a brilliant chemist, a brilliant physicist, and he still thought during the war that not all Germans were bad. During the war, my father used to say, "Son, the only good German's a dead one." You know how people were. The German people probably said, "The only good Englishman's a dead one." Clark was a wonderful guy. I can give you a reasonably complete list of my publications (6).

BOHNING: I would appreciate that.

NEVILLE: I finally got my Ph.D. and I remember everybody showed up. Gorin was basically out-voted. He didn't really want to give me a Ph.D. because he just didn't like me. We were trying very, very hard. Jeanne and I even went out on picnics with him and his wife because he got married just a little after Jeanne and I got married. But nothing was "natural" at all. He had a bee in his bonnet. It wasn't entirely my fault; I'm quite sure. I was just a face in the crowd to him. He had other students.

I remember Bob Pilmer couldn't stand Gorin, either. He was riding all his students. He was a holy terror. He really thought he was God's gift to chemistry and the reality of it was, well, I'd say he was anything <u>but</u> God's gift to chemistry. He was hopeless. I think he stayed at Oregon maybe three and a half years and the next thing we knew he went down to Oklahoma.

I was not yet a citizen—I got my citizenship in 1957. The only job I could find in *Chemical & Engineering News* was this little job at American-Marietta Company—now long out of business—up in Seattle, Washington on Harbor Island. I rode on a train. I was a little bit scared to fly because in those days it wasn't quite as easy. I remember being on the train, leaving Eugene, and going out there to meet them and get the job. After I got the job we went out to a nice restaurant. They knew I wasn't a citizen. We all agreed that I was going to get five hundred and twenty-five dollars a month. I went out with the director of research, Lou Miller, and Bob [Robert M.] Williams, the manager.

I'm very good at numbers. I came back and told Jeanne that I was going to get five hundred and twenty-five dollars a month. In 1954 that wasn't bad. It wasn't good, but it wasn't bad either. I got there finally and that first paycheck worked out to be five hundred dollars a

month. I thought, "Well, there's something wrong here." But I let it go. The next paycheck was still five hundred dollars a month. After about three or four more paychecks I got to the point where I thought, "This just is not right." I went in there and talked to Lou Miller. I said, "Do you remember when we went to that beautiful restaurant, had filet mignon steak, and you and Bob Williams said I was going to get five hundred and twenty-five dollars a month." They looked at each other and Lou said, "I don't remember that. Do you Bob?" "No, I don't remember that." [laughter] I thought, "Well, you cheap characters." But they agreed, reluctantly, to give me the five hundred and twenty-five dollars a month. They were taking advantage of the fact that I wasn't a citizen.

Shortly after that, another Englishman from London, who had been working at a research corporation in Canada for about a year—I think it was called National Research—came down and they hired him too. His name was Peter Gordon Howe and he wasn't a citizen either. We sat face to face in the same room and after I got to know Pete Howe he asked, "How much are you making?" I said, "Well, how much do you make?" He said, "I'm making six hundred dollars a month and I don't care who knows it." I said, "You're about three years younger than me. I'm making five hundred and twenty-five dollars a month. You've got the same qualifications as me. This isn't right." So I went in there and gave them my mind again and got a slight raise again, but I never got up to six hundred dollars a month.

During that time I was working, this chemist Peter Gordon Howe said, "Have you published any papers?" I answered, "No, not yet." Well, I had actually, one paper with Dean and Hayes in the *Journal of Colloid Science* (7). But, that was my only publication at the time and I kept writing to Gorin saying, "When are we going to publish my Ph.D.?" "Oh, I'm having it all checked out by so and so." I've forgotten the guy's name, but anyway, it was some student that was working there. I didn't have any respect for this guy. He was hopeless. Gorin said, "He's not quite agreeing with you and I must say, he's got to be right. You've got to be wrong" and all that. I kept writing for nearly two years. So, Pete said to me, "Look. It's your work. You publish it." He said, "He can put his name on it. You go first." So, I did. I put his name on the first two papers, they were all accepted, and they were peer-reviewed and everything (4a, 4b).

BOHNING: *JACS* was the premiere journal.

NEVILLE: That's right. But, what did I know? That was the place to go so I went there. Anyway, it came out and the next thing I knew I got this blistering letter from Gorin saying I was unethical, I was terrible, I did everything bad in the book and he had written to the editor. I wrote to the editor and explained the whole situation. I was told that the editor knew about it and was very understanding. He said, "We know about George Gorin. Calm down. Everything's fine. I would suggest that if you want to publish any more papers on the subject leave his name off." So, I thought, "Well, the editor's telling me to leave his name off, off his name comes." I published three more papers (4c, 4d, 4e). I mean, he screwed himself out of

two more papers. The man was an idiot because papers were very, very important to people in those days and maybe still are.

BOHNING: What were you doing when you were working at American-Marietta?

NEVILLE: It was a glue factory. I was hired to work on glues for wet-strength paper; in other words, toilet tissue. It was derived from formaldehyde resins. It was really fascinating, high grade challenging stuff. I'm being a little bit sarcastic here, because you didn't have to have a Ph.D. for that stupid work. All I was doing was ringing the changes between urea and formaldehyde ratios, trying to cut down the odor of the formaldehyde and so on, and trying to get as dilute a solution that I could get by with in order to make the toilet tissue come apart at a certain point in water. You don't want it to come apart too soon, but sooner or later it comes apart.

Combine that boring work with the fellow I was working for, Fredrick Horowitz, and it wasn't the best job for me. I remember when I went for my regular interview there was Fred Horowitz, Lou Miller, Bob Williams, and myself. I met about twenty-five other people at the company and I kept saying to myself, "I hope to goodness I don't get stuck with that guy." With my luck, of course, I got stuck with Fred Horowitz. He would stand there with his white coat on and his hands in his pocket, watching me do chemistry!!

He was the group leader and I was sort of his lab assistant. He had a bachelor's degree and I had a Ph.D. There was something inverted about this whole thing. He should have been working for me. He had a thick accent. The guy was a nut case. He would come up with these idiotic suggestions, chemically absurd suggestions. I was getting more and more ticked off about the whole thing. I thought to myself, "This is ridiculous. I don't belong in a place like this."

So I started looking around in the phone book and there turned out to be another place, which worked with plywood glues, phenol-formaldehyde, and things like that right in downtown Seattle. That was Monsanto [Chemical Company]. I thought, "Well, at least they're a chemical factory as opposed to a glue factory." I went there and secured the job. I went from five hundred and twenty-five dollars to six hundred and seventy-five dollars a month. It was a huge percentage increase. I stayed there for about two years and then they decided I was pretty much too high-powered for them. They were a bunch of bachelor's degrees that were perfectly happy sticking plywood together and breaking it off saying, "Well, this is a 60 percent payload." Real eyeball-type stuff. That was not science. I was working on epoxy resins and things like that. That's how I got into epoxy resins.

Monsanto had a stock room full of those beautiful old chemicals, which were still perfectly good. I started staying overtime a couple of hours every day doing my own experiments. I got some of my own papers published out of that (8). I even got a patent awarded, my first patent (9). It was on making methylureas and thioureas. It was just a little

thing, but I just wanted to keep my foot in the organic department, so to speak, instead of all this nonsense going on at Monsanto—only gunks and glues. I was fed up with gunks and glues. I used to say, "I'm not a polymer chemist. I'm a monomer chemist." [laughter] You know?

During the course of that three-year period, between 1954 and 1957, I took a course in Seattle to become a citizen. Nowadays people walk across the border and they're here; they don't speak English, they creep under the wire, and they blend into the population just fine. In my day, I had to go to school and I had to know the answers to five hundred questions about American history. I boned up on every question. I did my homework. This class was taught by a French woman who had a distinct French accent, but she knew her stuff, too. In late June in 1957, I went down to the U.S. Embassy with a sponsor. One of my wife's friends sponsored me because my wife couldn't sponsor me, even though I was married to an American citizen. I remember the man asked me a question and I gave my answer just like that, then another answer, and so on. He said, "You're through." I said, "Wait a minute. There's another four hundred and ninety-seven questions to go." So he asked me two or three more questions and said, "Get out of here." [laughter] I said, "You mean I'm through?" "Yeah, you're through."

[END OF TAPE, SIDE 4]

NEVILLE: We had a meeting at Green Lake and I shook hands with Admiral "Bull" [William F.] Halsey. He was a little short fellow. Senator Warren [G.] Magnuson was there. There was another guy also, [Henry M.] "Scoop" Jackson. I bet they're all dead now. They welcomed me as a citizen. On 27 July 1957, I became a citizen. I was born an American then.

At that point, I'd had my eye on Boeing [Airplane Company], trying to get away from these glue factories and things like that. By the way, between February of 1957, when I joined Boeing, and September of 1957, I tried to start my own company.

I ferreted out some fellow called Joe Majnarich way up in North Seattle, a place called Bothell. He was running a little outfit called Chemical and Medical Research Laboratories, Inc. It turned out to be a little one-man band. He was a biochemist extracting placentas to get steroids out of them. He peddled this as placental extract, which apparently alleviated arthritis. I asked him if we couldn't do some more chemical-type stuff instead of this googley stuff. I was totally turned off by that kind of thing. We agreed to make adrenaline or epinephrine. So we had a little business of making epinephrine. A Swiss outfit, called Rousselle, heard about us and promptly dropped their price. Then we couldn't make it competitively, so we were out of business. So we said, "Well, let's make some other chemical." We tried to do that but we just couldn't quite compete.

I've always really wanted to be an entrepreneur. I hate having people I don't respect, chemically respect, over me telling me, basically, to make mistakes, because I know I'm just wasting my time and their time too. I also know of course, when it turns out badly, <u>they</u> commit the crime, and <u>I</u> go to the electric chair! It's always that way.

Getting back to July of 1957, I'd already talked to Boeing and they said, "After we get the citizen check, we'll give you a job." So, I got the job. But, I was at least three thousand dollars a year underpaid. I started in Boeing Plant 1, which was not too far from where we lived. And I thought, "Well, what am I going to do?" I was assigned some nonsense project. I don't quite remember what it was, but it was a nonsense-type project. In those days, for every person who was on the Boeing staff, the government paid fifteen dollars in the headcount. So the object was to keep you as far away from the fifteen dollars as they possibly could because you were cutting into their profit. I soon learned about that.

They asked me what I had been doing. I'd been working with polymers. They said, "We're going to be making an SST," or what they called a supersonic transport, "we're going to need to keep it lightweight, and we'll need certain things to stick certain things together." I thought if it's going supersonically, it's going through the sound barrier and it's going to get pretty warm. And they said, "That's right. We need polymers which are thermally stable and oxidation resistant."

So I thought to myself, "What's stable and oxidation resistant?" How about tetraphenylsilane? That's pretty good. I did a *Chemical Abstracts* search on that. You can't join those together because you need some functional groups to stick them together. That's where I started. I made some monomers. I think I started off with phenyltrimethylsilane and I stuck an epichlorohydrin moiety on to that. I made that and thought, "Well, if I could do that with one phenyl group, I think I can go to diphenyldimethylsilane and get the monomer and polymerize it from there." And that's what I was on my way to doing.

I got some papers out of that (10). I worked in conjunction with Al [Allen E.] Senear—he was a good Ph.D. chemist—and another fellow, Joe [Joseph] Wirth. He wasn't a Ph.D. but he was up-and-coming. He left Boeing to take off for his Ph.D. Al stayed on with Boeing and by then I was getting pretty fed up with not being paid what I was supposed to be paid. Someone, I think his name was Jim something started and made about three thousand dollars more than me, and he was straight out of school! In those days, salaries went up about a thousand dollars a year. I was just losing ground. I had more experience but I was dropping behind. It just was not right. He said, "Yeah, I'm making ninety-five hundred dollars" or something like that. I was making about seventy-five hundred dollars. I was pretty ticked off about that. I went to the personnel department and they said, "Well, you agreed to the salary and that's what you're going to get." So I thought, "Well, all right. I can fix that all right. I'll go somewhere else."

Right about that time, I heard about Lockheed [Missiles & Space Company]. They were getting into solid rocket propulsion. I knew nothing about it but I thought it was probably pretty hazardous work. All I knew was that it involved liquid oxygen, liquid hydrogen, and things like that, not <u>super</u> hazardous. But it was pretty boring, too, chemically speaking. I applied and they flew me down. It was my first airplane ride. I came down here to Palo Alto and got the job. It was brand-new. They'd just put together the department. There was a fellow named Howard [M.] Kindsvater and Bernie Ellis. I understood much later they were under sentence to leave

because they were so incompetent, but they hastily cobbled together something to keep their jobs, and put together this sort of half-baked department of which I was a member. This is what goes on under a government program.

I was hired for eleven thousand dollars a year. I came back to Seattle and proudly told Jeannie, "You're looking at an eleven thousand dollars a year man." That was a big jump for me. Well, by the time Jeanne and I moved down to Palo Alto, we all started talking about our salaries and I found out I was about a thousand dollars short again. I went to Howard and he said, "Well, I would have given you twelve thousand dollars a year, if you would have asked for it." I was so anxious to get away from Seattle, the rain, the boredom, and everything, and I was so glad to get my hands on eleven thousand dollars a year.

I stuck that out for about a year, during the course of which I worked on some beautiful things as such as $AsIF_{12}$, $SbIF_{12}$—totally unstable things. As soon as you expose them to the air, they turn to HF and the glass was etched and quickly fell apart. It was just ridiculous. They decided they were going to work on hexanitroethane. It's one of the components of solid rocket propellant. You basically had your oxidizer and your reducer built into one molecule. What they were going to do was mix that with magnesium hydride or beryllium hydride and put them together carefully. They were compressing them very carefully in this pellet and they'd go "bang." Can you imagine some of the huge scares? [laughter]

When all this asininity was going on, I went out to a test base in the Santa Cruz Mountains. I was working in a fifty-liter flask making hexanitroethane. It's a nice, almost camphor-like compound. You could almost see it evaporate. It's very volatile. It's quite harmless unless you put it up against something that it can oxidize quickly—like almost anything with hydrogen in it. I thought to myself, "You know, I'm going to lose an eye or maybe my life doing this kind of thing, so I'm going to transfer to the Materials Sciences Department," also at Lockheed.

I went over to Harvey Crosby. Little did I know, Harvey was a drunk. I got a job there, and I said, "Well, I'll go back to my high-temperature polymers." So I went back to my organosilicon polymers and I did pretty well on those. I was starting to publish (11). Charles [J.] Hoffman, a very good chemist, and I decided to work on nitrogen fluorides, NF compounds. We decided there hadn't been any summary of the whole subject. So I said, "Why don't we write an article for *Chemical Reviews*?" So we did. About that time, 1960 or 1961, the Russians jumped right on it and translated it into Russian (12). I was pretty proud of that. Then one day, I saw this old, bald-headed man, dottering along there, who was sixty-three and a half. He looked more like ninety-three and a half. I was introduced to him. His name was Etory DaFano and he had just been let go by the Sierracin Corporation down in Pasadena.

I was told, "This is your new boss, Roy." I thought well, wait a minute. Because I'd asked Harvey before, "Do you think I'll break thirteen thousand dollars next time?" He said, "Yeah, you probably will." But anyway, this guy was a real dodderer. Not to try to step on anybody's toes, but speaking now from the point of view of a guy in his thirties, this guy was very much over the hill. He was hired at sixty-three and a half years old. He took a nap for two

hours every afternoon! I'd see him sleeping and I'd have to go and wake him up. But that didn't matter. I went into Crosby, probably with some agitation, and said, "Look, you put this guy over me and you actually gave him my raise, didn't you?" He replied, "Well, yes. I had to give him your raise, Roy." I was trying to get publications, patents, and things like that. I was getting shafted. So I thought, "I can fix this again."

I'd heard about Aerospace Corporation. They were just starting up, as well as STL, Space Technology Labs, down in Los Angeles. I thought, "Well, I'll send my resume down there." I interviewed with Hughes [Aircraft Company] and several other places in Santa Barbara. Finally I thought, "Well, Aerospace looks pretty good. It's pretty basic research and so on, it's an arm of the U.S. Air Force, and it's got a one hundred million-dollar contract. I think I'll join in." I went to STL and applied, but it was nonsense. It all sort of degenerated into stuff that any idiot could do. You didn't need a Ph.D. for that kind of thing.

I joined Aerospace Corporation, heading up their little polymer group. We were going just fine. There was another fellow called Don [Donald B.] Coyle, who was also in the polymer group. He was a skier and had been there for about two months when he said, "I'm going up skiing in the mountains." He didn't come back; he fell down a crevasse and died. So, that was the end of him.

Another fellow, Tom Dudek, came in. He was a very, very nice fellow. I hired my lab assistant and we started with our high-temperature polymer and monomer work. I worked with silicon isocyanates and tried to do something along those lines. Sol Skolnik was head of the department. I wrote papers and patent applications and Lord knows what else. I was really just doing what I was supposed to do. I really enjoyed it. We even bought a brand-new house out in Palos Verdes.

Then all of a sudden, I saw this tall fellow. He seemed very old to me—he was forty-eight at the time. I was about thirty-four. He was white-haired, very tall, and smoking a pipe. He was Marion Thomas O'Shaughnessy, a good friend of Charlie [Charles G.] Overberger, who was a good friend of Herman Mark. It was an old boy's club.

There were at least six or seven of the most senior scientists there who interviewed this guy. To the man, they said, "Don't hire this guy. He's useless. He's out-of-date. He doesn't know what he's doing." Skolnik said, "I'm going to hire him. He's a good friend of Charlie Overberger. He's a good man." This guy came in. He was one of these Irish people that just hated English people.

Here we go again. I mean it. He told me he hated English people. He's still fighting the Battle of the Boyne of 1689. He liked Dudek because Dudek had a nice, foreign name. But Neville? No. I remember Don Coyle, just before he fell down the crevasse, told me, "Don't trust O'Shaughnessy. He's not your friend. Watch your back." By the way, the aerospace industry is about 85 percent Jewish. The joke was, "This is a heck of a majority for a minority."

I said, “I’m fine with Tom O’Shaughnessy.” “Don’t trust him. He’s out to get you.” As I said, a week or two later, Coyle went down the crevasse. Then I talked to Dudek about it and he said, “Well, if I were you, I’d be very careful about O’Shaughnessy.” “Why? He always treats me nicely.” He said, “Don’t worry about that. I tell you he’s out to get you.” And I thought, “Oh, no, we’ve just bought this new house.”

And what happened? It was very sudden. I went into work on a Monday. Everything had been just fine the previous Friday. We had a seminar on Friday afternoon. Cakes were served and everything. I went in on Monday, and there was sort of a pause. I said, “What is going on? Nobody’s in the lab.” There seemed to be hardly anybody around. Finally, I’ve forgotten who it was came in and told me, “You heard the news?” “What news?” “Skolnik’s out.” “What do you mean out? He’s not coming in today?” “No, he’s out. All he’s got is a secretary and a waste paper basket and yes, he’s out.” I said, “Oh? Who’s in? Is it Logan?” He was from a rival outfit and a nice guy. “No, it’s O’Shaughnessy.” I thought, “Oh my God. Oh boy.”

O’Shaughnessy was a snake in the grass and went right around Skolnik. Realizing his own deficiencies, he stabbed Skolnik in the back, went to Hovey, who was over the whole lot of us, convinced Hovey that Skolnik was no good and that the people who were in Skolnik’s department were no good, and that he should take over. Talk about a snake in the grass.

About two minutes later. I was kicked out. Gone. History. I canvassed around. I stood in the unemployment line along with the ditch-diggers and painters, ordinary people. Finally, I ended up being hired over at North American Aviation [Inc.] in the Space and Information System Division. They were in the early stages of building the first Apollo. I looked at that thing, that great big thing, and I thought, “That thing is never going to fly. They’ll never get that thing off the ground.” It was paper-thin and was going to end up twenty-two-stories tall. I said, “Do you realize that’s like firing the Smith Tower in Seattle,” which is twenty-stories tall. I thought the thing was going to collapse under its own weight.

I was put on various sorts of non-chemical make-work projects. For example, what should they have in their medicine cabinet? Make-work stuff. I sat in this great big bullpen. You know what a bullpen is? It’s a huge area—you can hardly even see the wall. The air conditioning had broken down and there were six hundred and fifty people in this bullpen. I was doing nothing but paper shuffling. I made what I called sort of a telling remark to my supervisor. I said, “Look. It’s well over a hundred degrees in here. We’ve got six hundred and fifty engineers here and we can’t fix the air conditioning? What’s going on here?”

There was another little group called the van Driest group. Van Driest had a vast scientific laboratory. I went over there and talked to van Dreist, who was a hydrodynamicist, and another Jewish fellow, Bob Schultz, who used to look down on Dr. van Driest. I was given a nice little office there. The place was air-conditioned. It was a nice lab, but it had no budget for equipment. I was supposed to do chemistry with nothing to work with. It was a gorgeous lab; it had everything. I managed to wheedle out of them a hot plate, a stirrer, about three beakers, a bit of gum arabic, and some water out of the tap.

Now, remember, I was a synthetic organic chemist. I was told, "You're going to work on the Dolphin project." What was the Dolphin project? They wanted to coat torpedoes with some slippery materials to make them slip through the water more turbulence-free. Grease their skins, as it were. I tried to get these gum arabic gels down to about 1 percent so they would literally not gel. I worked on that for about six months. Oh God, it was just awful. Talk about boring!

That huge plant was in Downey. There was about a twenty-five-mile drive between Palos Verdes and Downey with heavy traffic on the Los Angeles freeway. Every day, I'd have to park in a different place. One day, I came out, thoroughly tired and thoroughly fed up, and I couldn't find the car. I could remember exactly where it was yesterday, but I couldn't find the car today. I wandered around for about an hour or an hour and a half. Finally, I found it about six blocks away. I drove home and thought, "I've got to get out." So, I did. I started applying at other divisions. I ended up at the Los Angeles division, which was right up against the aircraft strip—where they turn the planes turn around and gun the engines. It was an old building. All the windows were cantilevered windows, so every time a jet took off, there was a shower of stuff through the window. I'd have to take a broom and brush my desk off.

I worked with a guy called Harold Chen. I couldn't pronounce it. H-S-I-A. I believe it's pronounced "shah." Harold "Shah" Chen. He had this magic stuff called HC3, Harold Chen 3. He was a very immodest character. He wanted me to work on fluoroepoxides. I thought, "Well, this is chemistry."

There was a patent issued by a fellow called [Herbert S.] Eleuterio (13). Do you know Eleuterio at [E. I.] DuPont [de Nemours and Company]? He had a patent in which he treated perfluoroolefins with something like 40 percent H_2O_2 and something else. He claimed he made these beautiful fluoroepoxides. Then of course, there were perfluoroethers and things like that. There must have been something to it, because they do actually make perfluoroethers now, but certainly not by that patent!

I thrashed around for about three months getting nothing but perfluoroacids because with water, it goes from the fluoride right on through to perfluroacid. I must have gotten somewhere off route but you could not isolate these things. Not by the Eleuterio patent. Believe me, I worked terrifically hard on that. They paid me, so I was bound and determined to do it.

So Harold went to an ACS meeting and took another three weeks of vacation. I thought to myself, "I'm going to have a shot trying this HC3. He seems to be making it." Now, at that time, it was sort of like a brown treacle. It was not a crystalline material. I just followed directions and I got this beaker full of beautiful product. It looked kind of like dried milk, slightly off-white cream-colored little balls. It was marvelous. I washed it with dilute isopropanol. It shrank a little bit, compacted itself and so on. Then I dried it in a desiccator overnight, put it in a jar, and took its melting point. It melted pretty sharply. I took it into Norm Klimek, the boss of the place. I said, "Look, this is HC3." He said, "No, it isn't. It's supposed to be sort of a treacle." I said, "This is HC3. The other stuff is tar." I won't say what he said to

me but he swore. He said, "Well, that dirty little blankety-blank. Every time he made another batch of that tar, he jacked me up another five hundred dollars on his salary." [laughter] By then Chen was making something like nineteen thousand five hundred dollars to my sixteen thousand. He said, "Just wait until he gets back from his vacation."

It was so funny. I made several other batches and do you think I could get that darn stuff to crystallize? No. I inoculated it with the original stuff—the one challenge was to make that. I did it, but I think what it was, was that we were buying our Grignard reagents from a place in Boulder called the Arapaho Chemical Company. They're probably long-gone but I think I got a bum batch of methyl magnesium bromide. Anyway, I could never do it again. We were not set up to make our own methyl magnesium bromide there so I had to buy it.

But at least I did that and I got a patent on it (14). That was what I called a two-ringer. It was diphenyl ether with an alpha-methyl epoxyethyl group in the para positions. "Well," I thought, "This is not going to work." We tried the bend test, where it's supposed to bend over a mandrill but it cracked. I thought, "All right. I guess the molecule is too short. Let's go to the three-ringer." I had diphenoxybenzene. Then I put the alpha-methyl epoxyethyl group on that and I even went to my four-ringer. I got my four-ringer. We talk like that in industry, you know. Not very couth, but we know what we mean.

[END OF TAPE, SIDE 5]

NEVILLE: It turned out the four-ringer was not good enough. It was too open a cross-link, too hard to make, too insoluble, too everything. But the three-ring monomer was fine. It turned out, believe it or not, that this three-ring problem was turned over to the Air Force and they made it. I'm told by the people at Wright Patterson Air Force Base that they actually used it to coat those big bell-shaped things at the bottom of the Saturn-V rocket used on the Apollo, whatever they're called, those great big exhaust things, as a sort of a coating on top of the ablative material. The reason being they had to coat the ablative material because when they splashed liquid oxygen on it, the ablative material caught fire. So they started painting the ablative material. They used my stuff on that. I got the original patent for my three-ringer (15).

Of course, being a very modest fellow, I said those guys wouldn't have gotten three feet off the ground if it weren't for my stuff. [laughter] But, being much more serious now, when I was going through my North American Space and Information System phase, I was asked to sign a report about having 100 percent oxygen inside the capsule. There were about eight or nine signatures on it of various engineers and I said, "Look, whatever you do, I'm not putting my name on that. If there is a spark—and anything could combust on that—it's going to go off like a bomb." They said, "Put your name on it." "No, I'm not going to. I'm absolutely not going to. You want to fire me? Go ahead. But I'm not putting my name on that thing." They asked why. I said, "Have you ever heard of free radicals and chain reactions, things like that?" "No." I said, "Well, you're talking to a bunch of engineers. I'm not going to be part of it. It's

just too darn dangerous. It's obvious to anybody with a grain of intelligence in chemistry." What do they know? They're metal-benders.

I took my name off, and several months later I was shown that very capsule—blackened inside with three guys burned to a crisp. I'm very proud to say that I turned that down. But they went ahead anyway. When I was at Lockheed, one of my projects was for one of the early satellites. After Sputnik they were trying to get satellites up there and they had some little gizmo that was supposed to rotate once every twenty-four hours. Basically you couldn't see it going around.

They said, "Well, let's gold-plate everything." I said, "I don't know. I know enough metallurgy to know that if you put two gold strips together, they're probably going to bond in a hard vacuum. Squeeze out all the oxygen, nitrogen, any other gases, and they're going to join." But what does a chemist know about chemistry? I was told, "No, we're going to do this." I said, "Why don't you use a lamellar structure like graphite, boron nitride, or something like that. You know, something slick." But they said no and we were overruled. The engineers ruled the day. I think it cost about three million dollars a shot. After three or four shots, it was retrieved and had completely cold-welded. They said, "You know something? I think we better put some kind of barrier there between those two gold things."

They only blew maybe eighteen or twenty million dollars of tax income, but who cares about that? There's plenty more where that came from—from you and me or someone else. So finally they ended up using molybdenum disulfide, MoS_2, which I had also recommended, and it worked like a charm. You know, it's incredible. Trying to be a chemist in the engineering or aerospace industry was murder. I look back on my history in industrial chemistry almost as like a series of horrific experiences.

BOHNING: Did you have many other chemists around you or were you pretty much alone?

NEVILLE: It varied. Sometimes I was alone, sometimes there were whole labs full of people. But they were never listening to what we said, because they were always headed up by some non-chemist or some lawyer or somebody who couldn't understand what we were saying or telling them.

I was listening to a TV program the other day about when [the Space Shuttle] Challenger blew up. The O-rings, the glass transition temperature, and so on. This engineer had strongly recommended they postpone the launch. It was just too cold. The management got together and said, "Well, NASA [National Aeronautics and Space Administration] wouldn't like it, so we're going to make the decision." He and several of his colleagues, all chemical engineers and chemists said, "Don't do it." But they were completely overruled. It went up, blew up, and that was it.

You can't understand that engineering mindset unless you've been in the industry. Chemists are treated like some sort of a hired hand, much like a janitor. They don't listen to what he's saying. They don't treat him like an educated man. You can have doctorate degrees and all that, and it's still, "What do you know about chemistry?" All materials. We deal with materials. We don't deal with chemicals. I've been told that a dozen times down in Silicon Valley. Then I finally decided to get smart and become a consultant.

Anyway, to cut a long story short, I went from Aerospace to North American and finally North American was bought out by Rockwell International [Corporation] and the whole lot of us were thrown out. I reapplied at Boeing for the second time. I got a job as the head of Material Sciences Laboratory in Boeing Science Research Labs. I went there when the F-15 was about to be formulated. Boeing was doing a horrible job. They couldn't decide if it should have swing-wings, swept-back wings, or delta wings. They decided on a swing-wing with these enormous hinges. This will make you laugh. To me this was so obviously a boondoggle project.

They had this swing-wing airplane with these huge bolts to swing the wings. After the thing was built, they did a calculation that the pilot/copilot and navigator could make the thing take off and there would be room for fuel of course, but no cargo! They couldn't lift anything with it. That was the maximum it could do.

I don't have much respect for the mentality of the people in [the United States] Congress. They decided that this was not a particularly good idea, so they decided to cancel the SST. We had bought a house and then here we go again. So Boeing offs the SST contract and I went on trying to do other things for Boeing until they decided to close BSRL [Boeing Science Research Labs]. Here we go again. I got sick and tired of the rain and the awful situation in Seattle because there's no place for us to go.

So I decided to go back in the aerospace industry. I still had a house down in Palos Verdes and a house in Seattle. I went down and I got a job offer at Northrop [Corporation]. The job offer was this. Some Indian guy wanted me to grow algae in glass tubes—this was about 1969, just before they actually got people up to the moon—to generate foodstuff by growing algae on the moon. I thought, "You know, this sounds like another crackpot idea. It just isn't going to work."

He was ranting on about a fellow called A.T. Stewart who had worked there. He was pretty upset with him so he fired him. A.T. Stewart had gone up to the Bay Area, which I always wanted to get back to, because I loved living in the Bay Area when I was with Lockheed. He had gone up to work at Bechtel [Corporation]. Bechtel is one of the biggest engineering companies in the world. I was used to engineering companies. So I wrote to them and said, "I understand that you have a new laboratory. Could you use a chemist who's good at all aspects of chemistry?"

I got two letters on the same day from San Francisco. One was basically a "Dear John" saying there was no suitable opening. I opened up the second letter and it said, "Oh yes, we'd be very pleased to hear from you. Please call us at such-and-such a number. Don't waste any

time in calling us." So then I said to Jeanne, "You know, which came first? Did they change their mind?" I thought, "Well, the heck with it," and I called them up. They said, "Oh good, please can you come down?" I went down and within a couple of weeks, I had a job.

I was the fifth person to be hired in that lab to go to work on all the kinds of things that Bechtel worked on, whatever came up. Anything to do with chemistry I was on it. This, by the way, was in Belmont on the peninsula in San Francisco, a little bit above Palo Alto. When I checked in with the personnel man up there, just to show you the caliber of people they hired in personnel, I showed him the "Dear John" letter and said, "Do you know you could have lost me?" "Oh," he said, "I sign all kinds of letters like that." And he just laughed. I couldn't believe it. How can someone take such a cavalier attitude towards their job? And towards people? That's what I've been concerned with all through my life.

I came down to Bechtel and worked there from 1969 to 1973. I knew that Steve Bechtel, the head of Bechtel, a multibillionaire, was looking over the whole budget. And he said, "What's this about a laboratory at Bechtel. We don't need any laboratory. It's out of the budget." By then I was taking on environmental pollution control. Not that I was particularly interested in it, but I thought if I don't do it, somebody's going to do it.

While I was in that lab, I came up with a beautiful little process of simultaneously removing stack gases, sulfur dioxide, and various nitrogen oxides. It was a variation on the brown ring test for nitrates. Instead of using ferrous sulfate, I used ferrous bisulfite, which would oxidize any nitrogen oxide to N_2O. N_2O, nitrous oxide, is just about insoluble in water, just like oxygen. So I got sort of a crash course in elementary inorganic chemistry. My good old high school chemistry out of the 1940s came very much to the fore. I invented what I consider a very good system; it worked like a charm.

At that time, Silicon Valley was polluting the air by the ton, literally, NO_X. They were getting fines practically every week for polluting the atmosphere. You'd see big brown plumes. They eventually stopped working in the daytime because people could see it, and they did all their etching at night so people wouldn't know about it.

Eventually they closed the Bechtel lab, but by then I'd filed several patents for this new process of mine and I decided to become a consultant (16). When you're working for somebody else, in one place, you're like a consultant who has only one client. I thought, "I'm up to here with working for one business and getting shortchanged in my salary. I'll be a consultant for lots of clients." That's what I did.

I contacted a little place called Krebs Engineers. They were glad to see me. I said, "You've got a beautiful gas scrubber. I have a beautiful process that goes on inside it. We're made for each other." So I did that and I got some more patents (17).

BOHNING: What year was it you left Bechtel?

NEVILLE: I left in 1973. I worked at Krebs between 1973 and 1974 as a consultant. They had the Elbair scrubber. It's one of the best gas scrubbers I've ever seen. The one I was using was basically a compartment about six feet long, with what you would call a blinding rain storm going on inside it. Anything going in one end was really washed by the time it came out the other end. But all they were doing was basically washing out soot and maybe a little of the CO_2. It never occurred to them to put some chemicals in the water, which is where I came in.

I developed a manganese system, a copper system, and an all sodium system. They were talking to the EPA [Environmental Protection Agency]—another outfit for which I have practically no respect. In those days, they had a guy running it called [William D.] Ruckelshaus, a meteorologist, basically a guy who watched how the clouds were formed. He knew nothing about chemistry. I even talked to Ruckelshaus on the phone. He had no clue. He didn't know what I was talking about. I mean he, literally, did not know. He was clueless. Hopeless.

I told him about this process and he said, "Well, if it works, we'll consider it." I had practically an all sodium system, an all soluble system. We got to looking at the prices, and my system was about perhaps one and a quarter times more expensive than a calcium system. So they said, "Well, why don't you use calcium in there to precipitate this?" I said, "Because, if you put calcium in there with sodium bisulfite and ferrous bisulfite, the bisulfite ion doesn't know whether it's sodium or iron or what, and it's going to react and precipitate calcium sulfite." Almost all sulfites are insoluble. And they said, "Yeah, but limestone's cheaper." I said, "Yeah, it's cheaper, but it's going to foul up the scrubbers." But their answer was, "Let's try it anyway."

What was the name of that place back East? American Electric Power, a huge electrical utility in Pennsylvania. They had a great big scrubber there. Anyway, they decided to run this. But instead of using my process, they started dumping in what they called "milk of lime," calcium hydroxide. It worked for about a week and pretty soon, they can't understand why the scrubbers weren't getting rid of all this stuff. Well, I knew exactly what the problem was and pretty soon they said, "No, no. Get out of here. We're not interested it that."

That, of course, found its way right back to the EPA. So I called in the Bay Area Air Pollution Control District because of all this etching in Silicon Valley. I arranged for them to come down. I said, "Look, I'll tell you what I'll do. You go across the road there and my assistant will stop blowing brown smoke. Every thirty seconds, he will turn the scrubber on with NO_2 going through the scrubber. You can time it. Every time he turns it on and lets the NO_2 blow through, every thirty seconds, we will blow smoke so you can see it." So we did this.

Do you know, the boss in charge of that wouldn't come out and see it. In the meantime he had hired two salesmen called Sullivan and Nussbaum who knew nothing at all about chemistry. I mean nothing. The boss wouldn't let me go out there with them as a chemist, who knew what he was talking about, to the various places to say, "Look, we've got a scrubber, we've got a system so you can scrub for twenty-four hours a day if you want to." Nope. He just said, "No. You're going to stay in the lab and that's it." So that's what happened with that.

So what do I know about selling things? I mean, my God, I sold the process to them when I went into Krebs Engineers. But you'd be surprised. To sell anything to engineering companies is just pure insanity. It's always some guy at the top, who doesn't know anything and doesn't even try to grasp it, overruling you. Just like this guy who said, "Don't launch this thing. It's too cold." Don't take any notice of me. I'm only the guy who knows what he's talking about. I finally got into other areas like that. I started to say the heck with scrubbing. Let them create all the SO_X and NO_X they want to, and good luck, good-bye. That was it.

Then I started getting more into other areas of applied chemistry, and I started calling up mining companies and lawyers. By then I had established Engineering and Technical Consultants, Inc. I was going to call it Chemical Engineering. But you can't call it chemistry, my God. They'll immediately say, "We don't do chemistry." That's a terrible name to give it. I talked to my attorney and he said, "No, don't mention chemistry. They don't even know they live in a chemical world." So we called it Engineering and Technical Consultants, Inc.

So I incorporated. I was in the telephone book. Everyplace I would look, people would have problems. I worked at Memorex [Corporation], Acurex [Environment Corporation], IBM [Corporation], and Sun Microsystems [Inc.], and on and on and on. All these different chemical-using companies that didn't think they had any chemical problems. I was doing pretty well and then finally I moved on to the mining industry.

I remember calling up Homestake Mining Company in San Francisco. They have this giant mine in South Dakota at Deadwood. Actually, it's in Lead, which is three miles away. When I first came in, they said, "No, no. We don't need anything."

I remember one day, Jeanne was sitting on the couch and I said, "I'm going to give Homestake one more call." She said, "Why bother? They'll just say no." I called them up and I talked to a fellow named Langan [W.] Swent who said, "I'm so glad you called. We've been told that we're within six months of being closed down because we've got an awful cyanide waste problem. We can't reduce the cyanide levels in the wastewater to levels that fish can live in. And by the way, our wastewater goes right down into the town of Deadwood, so we could be poisoning Deadwood. If we don't solve the problem, we're out of business." They had a cease and desist order is what it amounted to.

They were piping it down to what they called retention ponds and hoping that with the sunlight and the air it would go from cyanide to cyanate. That's all very well but what about the complex? My old friend the complex came in again. I thought, "Well, I've got an answer right now on the tip of my tongue. But I'm not going to tell him that, I want to get on the staff." So they hired me for three months.

I went back to Deadwood and worked with them. It worked pretty well, but I couldn't quite get it down to the level they wanted. They wanted something like 0.01 parts per million of cyanide. I thought, "Wait a minute. Can you really measure 0.01 parts per million? Is there any test that precise where you can say whether you're above it or below it?" It turned out that

the simple, standard method was fine if you had potassium cyanide or sodium cyanide analytical grade. But if you had thiocyanate in there, it was hopeless. No good at all. It wouldn't even work to 0.1.

Their wastewater was full of sulfides, thiocyanate, lead, copper, and who knows what else. So, of course, the standard method of treatment wouldn't work. I worked on it and we managed to get it down. Another fellow named Terry [Terrence I.] Mudder and I worked on it. It was a very, very complex business. He had some biological knowledge and he finally said, "If it's not going to work in chemical ways, it might be a good preliminary cleaning process, but you've got to polish it off with some cyanide-eating bacteria." So that's basically what we ended up doing.

He had what he called a rotating biocompactor, which was a series of disks, almost like an Archimedes' screw, permeated with living bacteria. The problem with that was, in the depth of winter, for every 10° F it goes at about half the rate, so they had to be very careful what they did in winter. Then it was out to the waste pond again and hope for the best. Basically, we saved their bacon.

After maybe five years I left because my boss had a series of heart attacks and he had to stop. Wouldn't you know, my luck, about two weeks before I was due to sign for another year, he had his heart attack. A new guy took over and that was it. I was out of the consultant contract with them.

Then I did more consulting for Kerr Magee [Corporation]. That was a selenium problem. Too much selenate, so I just researched how to get the selenate out of the wastewater. I mean, I worked all over the map.

BOHNING: I remember being in Lead in 1963, and as we left town we drove along the stream and it was black.

NEVILLE: Oh, yes.

BOHNING: I knew right away why it was black. But that was in the 1960s and there wasn't much concern yet.

NEVILLE: They were getting away with just about anything there. I tried my best. As I said, there was a whole raft of patents and publications. But as I said, there was no long-term stability. We were in a ridiculous situation. We left Seattle, went down to San Carlos to be with Bechtel, and we rented a place. We had a home in Palos Verdes, four hundred miles away. We had another place six hundred miles away in Seattle. Boeing was collapsing. Do you

remember the big billboard they had outside Boeing that said, "Will the last person to leave please turn out the lights?"

BOHNING: Yes. [laughter]

[END OF TAPE, SIDE 6]

NEVILLE: After Homestake, I teamed up with another fellow over in Walnut Creek. His name was Dave Cochran. He was basically an ex-engineer from a big company. He had four boys in college. I asked him when he was going to retire and he said, "I'm not going to retire until I'm about ninety. I've got to put the boys through college."

Dave and I hit it off just fine. We worked on idiotic things. For example, a Swiss bank note company called me up and said, "We have to use copper sulfate, $CuSO_45H_20$, and we're a little bit scared about putting it in water." I thought, "It's got $5H_20$ in it already." [laughter] "Can you come down and advise us?" I thought to myself, "Well why not take a little tiny crystal, put it in a teaspoon, and add a little drop of water. If it doesn't blow up in your face, you're in." But I thought that if I could make a few bucks I might as well do it.

So I worked for two days, for two hundred and fifty dollars, telling them how to dissolve copper sulfate in water. That was, you might say, practically my first class in chemistry in high school. Most of this stuff was high school chemistry that people don't know. The degree of ignorance of the general population, and particularly the so-called educated population, is just mind-boggling. It's just the most elementary of elementary chemistry. They didn't know anything. It's incredible.

BOHNING: Are you still doing consulting work?

NEVILLE: Not anymore. I've had it up to here with that. I had a case where there was some waitress in a bar who put a beer bottle down rather hard on the counter, it exploded, a shard hit her eye, and she was temporarily blinded. They got it out eventually. My assignment was to figure out why the beer bottle exploded. It was perfectly obvious to me. It was sitting in the sun for one thing, so there was added pressure inside, and it was probably a defectively-made beer bottle. Maybe it had a few more knocks en route and there were some strains in the glass so that one hard knock just blew it. That was it. I got some money out of that.

Another one was a fellow who'd bought a Chris-Craft [Industries yacht] over there near Berkeley. It was at Berkeley Marina, I believe. It was a big beautiful yacht. He somehow or other couldn't understand why a hole had developed in the gas tank. It was sitting there in salt water, and I thought, "My goodness. You know what aluminum does in salt water." [laughter]

So I went over there and made depositions in front of a whole bunch of attorneys and solved that problem for him. He was suing the person who sold him this fifty thousand-dollar boat. This was back in the 1980s when that was a lot of money. Well, I suppose it is still. But it was much more in those days. It was incredible the number of silly things I had to address. But I did it to make money.

It was during that period that I decided to get into the cell phone industry. You ask, "What does that have to do with chemistry?" It doesn't. But they were on TV saying, "If you join this and your number gets selected you can be a partner in a utility and you can make millions." That didn't sound too bad. We didn't have that much money, but five thousand dollars here, twenty-five hundred dollars there. I thought, "Chemistry is just not working out for me. I'm getting older, and nobody's going to hire a man in his fifties. I'm going to take a chance."

We scraped together just about everything we had and we went into about twelve of these things and bombed. I was losing in ten of them. Jeanne was in one of them. She won a little area called Montana 8. It was out in jackrabbit country. They wanted us to put up one of these cell phone towers but, in those days, the government wasn't so silly. They knew that six months a year, concrete wouldn't set. It was frozen and they weren't about to bend their rules. So there was just no time to put up a tower.

There was a fellow down in Texas that we learned about. He was borrowing up to the hilt. He was up to about sixty million dollars in debt. He'd been buying up all these cell phone companies from the Seattle area clear through to Minnesota, hoping he'd strike it rich somehow. So we sold him Montana 8 for about two hundred and fifty thousand dollars. Of course, along came the good old IRS [Internal Revenue Service] and the state of California, and that was it.

I think we netted, after a few bad investments in the stock market, about ninety thousand dollars. Then, of course, the stock market started doing that anyway. The other one we decided to build was Texas 9. Texas 9 was located about one hundred and eighty miles southwest of Dallas/Fort Worth. Still pretty much out in the boonies, in a place called Brownwood, I think it was. Brownwood was the big area there. Brownwood was not very big, eight or ten thousand people. It extended all the way through going east to a major highway from Houston. I've never been to Texas so I don't know. But if you look at a map, the eastern edge of our area was right on the edge of that. We decided to build it out.

One of the partners, Gary Samuels, decided to find somebody who knew how to build out an area. Samuels basically turned out to be a crook. His share of the company at that time was 6 percent. Mine was almost 6 percent, about 5.9. By the time we sold the company, he managed to dilute the shares and ended up with about 12 percent of the company; I ended up with about 4.8. He was doing it to everybody. He was ingratiating himself. He was basically a con man. But we all were pleased to do it for the eventual payoff.

After fifteen years of, forgive the expression, pure undiluted hell when we almost lost it with the misbehavior of the board of directors, I finally, so to speak, blew up. I saw that what

money we could have had was fast disappearing. We incorporated and we built it up. Samuels said, "By the year 2000, everyone will have a dividend of about five million dollars," according to the percentage equity. There were twenty-one people in the partnership.

Our dividend and our share was not five million dollars but 2.2 million dollars. I thought this thing was going to bend over. Some people started selling their shares. I sold a few of my shares and still kept going. Finally, this fool wanted to send us deeper into debt. He thought we were doing so well, that he wanted to buy the rural service area immediately below Texas 9, Texas 10, which hadn't yet been built, which meant we had to build all those towers, get burdened to death, and I just wasn't sure about it all.

Finally I said, "I've had enough of this." There was nothing but fighting and squabbling. This partnership was a terrible situation. There were three or four people there, almost like a clique, united against all the rest of us, and grabbing away everything they could from the rest of us. I said, "Look. I've had enough of this. We're heading for disaster." I went to my attorney and said, "I want you to write a blistering letter to these guys so we can get rid of this darn thing."

He wrote up a little blistering letter in legalese, and I said, "Put the following expression in the final paragraph. 'Roy Neville is not about to be financially mugged on his way out of Lone Star.'" Financially mugged. So we had this highfalutin thing and all of a sudden, it's "financially mugged."

We sent it to everyone in the partnership. I learned about a week later that there had been a huge explosion of partners who said, "We better get rid of this thing. Roy's decided to sell." I also threatened to take them to the FCC [Federal Communications Commission], SEC [Securities and Exchange Commission], and basically blow the whole gamut wide open. We sold eight shares and all we got out of that was about three hundred and seventy-five thousand dollars.

Just to show you what a rotten lot they were, they wouldn't tell us anything. The board of directors wouldn't let anything come out of the board of directors. Little did I know, when we sold our shares in July, we could have gotten seven hundred and seventy-five thousand dollars easily. By November, we all had this meeting. We went around the room and I thought, "When it gets to Gary Samuels, I know he's just going to throw a wrench in this thing." They went right past Gary. I was the last person, and I said, "Let's sell." We had an offer of one hundred and thirty million dollars. So we ended up with about a little over six million dollars. Not bad.

BOHNING: No.

NEVILLE: Oh, if you could keep it. But the IRS, which, as usual, had nothing to do with it, but wanted its share. You make one hundred thousand dollars a year and they want their piece

of the action. You lose a one hundred thousand dollars, you can deduct three thousand dollars a year for the next three, four hundred million years! They don't want to know you if you make a loss. If you make a gain, they want their piece of the pie.

We just forked over about two million dollars. We were in the top bracket. It was close to three million dollars. I don't like to think about it, it was just too painful. I thought, here we are at the end of our life, we've had a grueling business through chemistry, and now we're getting a grueling business through these people. Life was pretty tough.

[BREAK IN RECORDING]

NEVILLE: Let me tell you a little bit about my health. Jeanne and I went over to England in 1992, when I had been having chest pains. By the time we got over there, I was having severe chest pains. We had a two-hour delay in San Francisco, plus a long flight, and no sleep. I was all set to go to the book fair in London. We stood in this very, very long line at Heathrow Airport. I said, "I'm just going to go sit down. This is really hurting." I felt like about a three hundred-pound man was standing on my chest. So I sat down.

Some porter, or whatever he was, came and said, "Sir, you have to go back in line." I said, "I'm really feeling pretty rotten. The pain in my chest." He said, "You've got to go and see the doctor."

There was an Indian doctor there, a lady doctor with this big red dot on her forehead. She said, "You've got to go to the hospital right away." I said "No, I can't do that. My cousin's going to meet me here." So they whisked me out of the line, opened up a special place for us to go through, and we got checked through very fast, instead of waiting in line. I went to my cousin Norman's, and I spent about two days there. I was in pain still but less pain. I walked up the street, sat in the park, came back, and it was really awful. Finally he drove us down to Christine, my other cousin, just east of Bournemouth. I spent about three or four days there and we took a few little day trips out.

They liked to go out for a nice walk on the beach. They're younger than me. She's about eleven years younger than me and he's about eight years younger. They strode off on the beach and I thought, "Oh, this is getting awful." We went down the ramp onto the beach to my old fossil-hunting beds. He was walking on ahead, when I thought, "I'm going to die on this rotten beach. I just know it." I found a few fossils—not particularly good ones—and of course I had to walk back. There was a big ramp up. I staggered up that ramp. It was getting fierce. I got to the top, I sat down, and I eventually got in the car and went home.

The very next day we were supposed to go up to York. We went to Bournemouth Central Station, got on the train, and went all the way up to York. It's a funny curved station. There is a big iron bridge that goes over the track, and down the other side, and then up to the

town. I'd packed this great big suitcase and was all ready to go to York and then finally down to London.

I went to York, by the way, to see this very good friend [Daniel MacDowell] of mine. I lugged the great big suitcase up this iron bridge, across, and down the other side. I was almost in a state of collapse. We hailed a taxi, and he took us about six blocks right to the book place. We went in there but I didn't want to introduce myself as being practically a cripple, so I sat there in agony, had lunch, and then finally we talked about books and things like that. I took them out to dinner at the Yorvick Hotel, overlooking the ruins of some old abbey. He said, "Why don't we go for a walk along the River Ouse?"

He was a big tall man, about 6 foot 4 or 5. His wife [Barbara MacDowell] was tall. We're a couple of shorties. We took his dog for a swim along the River Ouse. They strode off, and we tried to keep up, but the pain came back with a vengeance. I said, "Jeanne, I don't know if I'm even going to be able to get back to the hotel." I finally told them I wasn't feeling all that great. I knew this dealer fairly well, but not so well as I could really open up to him.

We finally got back to the hotel and I had a pain you wouldn't believe. I sat down in the little vestibule there and said, "I can't go up to my room yet." It was only one flight up. As we sat there, all of a sudden Barbara came back. I think Daniel had forgotten his glasses because he had them at the Yorvick Hotel. She said, "What are you doing here?" I said, "I've got this awful pain." So she said, "I'll tell Daniel." In the meantime, we went up stairs and I laid down for maybe about an hour and the pain gradually subsided. It was still there, but not as intense. Finally he came into the room and said, "I brought the doctor with me." Over there, they do that. They bring the doctor to the patient. Over here, you have to drag the patient, half-dead, to the doctor. Anyway, the doctor came in and he said, "You've got to get to York Hospital right away." I said, "I'm supposed to go to the book fair tomorrow in London." He said, "No. The book fair's out. You have to go to the York Hospital and you should be there for at least four days for observation." I said, "I came all the way to England for four days in York Hospital? No way."

We talked about it and he said, "If you go back down there to your cousin on the south coast and just rest for the next two and a half weeks, then you can go back to America and see your own doctor. That's to say, if you make it."

So that's what I did. Daniel was nice enough. We took a fast train right down there, and he took us across London to the other train station at Waterloo and down to Bournemouth. We got off and Chris picked us up. I basically spent the next two and a half weeks on the couch. Wonderful vacation. We did manage to get down to the stores and places that I knew so well, but they were nothing new to Jeanne or me. We'd been there before.

Jeanne tried to cancel the flight but the airline wanted to charge more than double what they charged for one way. It was just awful. Finally I said, "I'm not going to do that." So we got on the plane and came back. They told the people at the airport to have a wheelchair ready for me. I was feeling kind of like some old dodderer. But I thought, "Who cares. No one

knows me anyway." When I got back they wheeled me off the plane. Janet [M. Neville], our daughter, was there to meet us.

I saw the doctor the next day. He said, "We're going to have to operate and give you a bypass." I said, "What exactly will you do?" He said, "We open you up like a book, we take your heart out, we do this and we do that, and we cut a vein out of your leg." I said, "How am I supposed to be breathing in the meantime?" He said, "We've got you on the machine." I said, "Well, with my luck, there'll be a power failure and I'll be dead." [laughter] He put such a scare into me, I decided not to do anything. So he said, "I can give you some medicine."

He gave me some medicine. I went in for several more EKGs [electrocardiogram] and he said, "I think it's beginning to get all right again." In the meantime, he retired. I went to a different cardiologist, two of them, Selmon and Vetter. They both said, "You know what's happening? You've got partly plugged arteries, but you're growing what we call collaterals around your partly plugged arteries." I said, "You know, I can walk up and down the street now, and I don't even have a pain." The doctors said, "Well, it's probably cured itself." How wrong they were.

That went from about 1992 to 1998. All right, picture this. I was in bed. It was four o'clock in the morning and I had to get up and go to the bathroom. I told Jeannie, "I'm feeling really rotten. I feel like I want to vomit." I went to the bathroom, came back, and said, "Jeannie, I think I'm going to faint." She said, "Okay, I'll call 9-1-1." She rushed out. I said, "I don't want people coming in here at four o'clock in the morning. No, no, no." Then I promptly fainted.

Next thing I knew, it seemed only about five minutes later, I saw this huge man walk in, a big burly guy. "What's wrong? What seems to be the problem?" I said, "I think I'm going to vomit." "Can you get to the bathroom, sir?" I said, "No, I can't." There was a little plastic wastebasket there. Anyway, I vomited two <u>pints</u> of blood! I remember saying, "Oh my God, I've sprung a leak." That was my exact quote.

Now I <u>had</u> to go to the hospital. Oh, I hate hospitals. Not one night's good sleep, they poke and prod. You know what it's like. You can't really rest in a hospital. I was whisked off to the emergency room. I was there for about two hours before I actually got a room. I was put in a room with a guy already in it. You must understand, I've got a pretty good sense of humor. I can see it even in the deadliest of situations; I always see the funny side. There was this poor old man "hocking up" the other lung. [laughter]

I hadn't been in bed more than about five minutes when I started to throw up blood again. I remember looking around and there was blood all over. There was a square yard of blood.

Dr. Vetter just happened to be passing by the door and said, "Take him immediately to ICU." Intensive Care Unit. I was pretty much given an infusion of blood. I never went back to that room. The next thing I knew, I was told I was going to have a stomach operation. I was prepared for the stomach operation. It turned out that after two and a half hours, they couldn't

find out what the problem was. I later learned through this Polish doctor that the two baby aspirin I'd been taking to thin my blood had gone down into my stomach and gotten caught in one of the ridges in my stomach. It had somehow bored its way or dissolved its way through the stomach wall and hit an artery. So with every beat of my heart, most of it was going down the artery and a little bit was squirting into my stomach. This accounted for why I burped up the blood to start with and why several hours went by and I burped up more.

When I finally got home, we measured it. It was literally about two pints of blood. As a scientist I thought, "Isn't that funny." They used agar plates to grow bacteria, but there was nothing growing on it. Nothing. No fungus, nothing. I don't know what it was. Maybe it was too acidic. I didn't know what. Maybe the pH was wrong. I remember I said to my son-in-law, "Look, you've got to empty this." He said, "You're grossing me out, man." [laughter] But he did empty it.

They managed to stitch me up. I had this great big tear in my stomach where they had opened me up. Afterwards, when I finally came to consciousness, I remember being on the gurney. Dr. Vetter said, "We're taking you for an angioplasty."

[END OF TAPE, SIDE 7]

NEVILLE: So they took me for this angioplasty. I was pretty unconscious at the time. Most of the time they ask you to be conscious, but I passed out. The next thing I knew there were two surgeons standing at the foot of my bed. One of them was Dr. [Vincent A.] Gaudiani and the other one was Dr. Corver. "Dr. "Carver," how appropriate," I thought. [laughter] Paul Newman had been operated on by Gaudiani and several others. Some sheik from Saudi Arabia had been worked on by Gaudiani also, so he's really an ace doctor. He worked at Stanford [University], as well as Sequoia Hospital. By the way, Jeanne worked at Sequoia Hospital for twenty years, so we knew Sequoia very, very well. Gaudiani said, "By the way, I've got some news for you." I said, "I certainly hope its good news." "No, I'm afraid it's very bad news. You're going to die." I said, "Well, we're all going to die." "No, I mean you're going to die in the next week or ten days, tops." "I am?" He said "Yes, you are. The arteries to your heart are about 93 to 94 percent blocked."

I said, "Oh, well, all right then. If I'm going to die, so be it. I'll go home and die." Then Corver said, "Well, if you go home and don't let us operate on you, then we want you to sign this disclaimer form so that you can't sue us." I said, "How on earth will I sue you if I'm dead?" "Oh, but your wife can." So then Gaudiani said, "We've got a bit of a problem." "<u>You've</u> got a problem? I'm going to be dead in a week, and you've got a problem?" [laughter] My British sense of humor. "Well, what's your problem?" "Our problem is that you've got to get over your first operation before you're strong enough for us to open you up and do it." I said "What are you going to do?" "What we do is cut you open…" And I thought, "Open? Here we go again." We discussed it again and I said, "Well, if I'm going to die, I guess you're going to have to do it that way." So about ten days after my first operation, I was wheeled in

again and again I said good-bye to Jeannie. It was about six o'clock in the morning. I was wheeled in and they gave me a shot in the arm and the hip, I counted from one hundred back to ninety-five, and that was it.

It seemed just like literally one second later—it was actually ten and a half hours later—when somebody said, "Are you still with us?" "Oh. Yes, yes. I'm still with you. I'm just going in for my operation." The doctor said, "It's all over." I said, "No, no, no, no. I'm just going in." "No, it's all over." He convinced me it really was all over and I said, "You mean I'm going to live?" "You're going to live." I'll tell you, I got so emotional, I started to cry. I'm not ashamed to admit it. Tears came down my face. I mean, it was a very emotional moment. I thought, "Oh, isn't that wonderful." Gaudiani had originally told me he was going to do a triple bypass. He gave me a quintuple bypass. I have this huge scar all the way up from my right leg to my chest.

I was laid up for about a year and a half but I tried to catalog some of my books. I'd put in about an hour; I just couldn't take much more than that. I was too weak. That was back in 1998.

My other doctor, Dr. Heatly, had been after me to go in and have a prostate exam. I don't like the way they do it with the finger and all that. I thought, "Oh, this is horrible." So I'd been putting it off and putting it off, and then I started getting awful pains in my hips. I mean excruciating pains. I took the analgesics, you know, this, that, and the other. It would die down to some extent but not completely. It got unbearable.

Finally I said, "Jeanne, I've got to go to the ER [emergency room] and just see what's going on here." So I went to the ER, got an X-ray, and joked with the X-ray technician saying, "Well, can you find a skeleton in there?" I was trying to be pleasant, you know. She said, "Yes, but I don't like the look of it." I said, "What is the matter with it?" She said, "It's covered with spots." I said, "Well, spots. That doesn't sound right, does it?" "You'd better talk to the doctor quickly about this." I went out and talked to the doctor and he looked at the X-ray. He said, "It looks to me like you've got Paget's disease." I said, "What the heck is Paget's disease?"

When I looked at my *Encyclopedia Britannica*, it turns out that it was discovered in 1850 or so by a British doctor. It's one of these diseases where you get cancer of the bones, usually from the prostate. It metastasizes from the prostate to the bones and you die an excruciating death. It usually starts out with the long bones and you end up writhing in agony. I thought, "Oh, this is marvelous." They kept asking me, "Are you in pain?" I said, "Yes, my hip hurts like crazy."

Then Dr. Shoor came along and said, "Oh, by the way. Did you know you have a gigantic aneurysm?" I said, "No. What on earth is an aneurysm?" He said, "You've got this major artery, your aorta. It's a major artery from your heart down to your legs. You've not only got prostate cancer, which has metastasized, but now you've got to have your aorta attended to. It can't be ignored." So I said, "Well, what am I supposed to do?"

I went to an oncologist and said, "Should I have my prostate taken out?" "Too late, it's all over your body now." The next thing I knew, he said the only one thing to slow it down was to have my testes off. It's called an orchiectomy. So I jokingly said I was going to have my orchies cut off. I had my orchies cut off. That was another thing. I joked to Jeanne, "There goes your sex life. [laughter] That's the end of that." That was 2001.

By the way, my PSA, prostate specific antigen, had roared up to 126. For a man my age, it should be 8 or 9 or 10. When it gets up to around 12, they get kind of worried. Mine was 126. So even before we'd actually met the oncologist, the other person at the hospital called him up and said, "I'll tell him what the situation is. He can call through before seeing you and put it through the pharmacy so you get some Casodex®. It was originally made by Imperial Chemical Industries. British stuff. I started taking some of these Casodex® pills, about three a day. I went in for my PSA blood test about four days later, it had dropped from 126 to about 50. Obviously, we were doing something in the right direction.

In the meantime, I went into see this man and he recommended for me to stay on Casodex®. My PSA dropped back to 25 or 26. He said, "You'd better have that orchiectomy because these cancers feed on testosterone. So we need to cut out the organ that's making it." I got a quick course in endocrinology.

I realized later that not only my testes make it, but other parts also make it. So I immediately had visions of my voice going up about twenty octaves or my hair falling out. It didn't happen. I went from shaving at a moderate rate to shaving about once a week now. All my chest hair disappeared. The hair under my arms disappeared and a lot of the hair on my arms and legs disappeared.

We watched that aneurysm as it increased about 2 percent a month. Dr. Shoor said, "It's getting pretty big Roy; you'd better go down and have an MRI [magnetic resonance imaging] at Stanford." I went there and had the MRI. He said, "Oh, by the way. Did you know that there's another aneurysm on your left leg too. It's about the size of a golf ball." Oh, wonderful! I talked about what they do and they put what they call a Dacron-Y graft in there. You know what Dacron is? It's polyethylene terephthalate. Back in my territory again, you know.

Dr. Shoor showed me what it was like with an example of one of these things. I said, "What do you have to do?" "We have to open you up. There's two schools of thought. We can either do it with a stent through the groin and watch what happens on a screen, or we can just open you up and look straight at it and see what's going on." I thought, "Well, look. This is my life. I'm so close, and he's the doctor, why do I have to look at something when he can look at it straight on." We sort of debated. One surgeon said to do the stent; the other one said to do the direct approach. I came down pretty much on the direct approach. I mean it's ridiculous. It's like trying to do chemistry through a TV set. It's absurd.

He told me afterwards he'd split me from my os pubis to my os sternum. They do it just like that, take all the intestines out, get right through to where it is, and torque off the legs. I was surprised to know that you can torque off your legs for at least three hours without the

blood bothering them. I thought they'd die or something. You can't do that with the brain, by the way. So only the top part of my body was working. How many hours did it take? About five or six hours. There's an awful lot of sewing to be done.

J. NEVILLE: They got through at about one o'clock.

NEVILLE: Yes. I went in about six. I think they probably got down to business about seven o'clock, I suppose. When they actually got down to brass tacks, so to speak, and actually cut me open, that's when you really start the operation. All the rest is preliminary stuff. So I had this big Dacron-Y in me, about this much in, in a straight line, and then it torques down that way. It's called a Y because it's Y-shaped. When they repaired it, I said, "What shape is it?" He said, "It's kind of like this." I said, "Why didn't you do it this way." He said, "Well, it wasn't necessary." I said, "How do you know I'm not going to grow one down there?" And he said, "In my opinion, it wasn't necessary." "All right. You're the guy that did it." So I'm patched up so far.

But I do get tired rather easily. I'm seventy-eight; I'll be seventy-nine in October. I'm still trying to keep my sense of humor through all these traumas, possibly losing everything we have in Lone Star and all these traumas going in and out of the hospital. Oh, and then I had all my teeth out too. That dentist just could never seem to make me a denture that would work. I would salivate and they wouldn't work. So I just decided to heck with it. I'm getting along without them. I mean, who cares? You know. I'm an old geezer. Who cares? I'm just lucky to be alive since 1998.

BOHNING: If you hadn't told me this story, I would never have known.

NEVILLE: I told my oncologist about a month ago—his name is Dr. [John A.] Hausdorff—"You know if I didn't know that I had cancer, I wouldn't know I had cancer. No pain, nothing." Occasionally, I get a little twinge, but nothing serious."

He explained to me that there's two types of cancer. Well, at least two types. He said that there is the rapidly growing, malignant type which really attacks and is aggressive, but that's only about 5 percent of all cancers. One other thing I've learned about the hospitals is that they have no sense of estimating numbers. They say about 5 percent. That can mean anywhere from 1 to 15. It doesn't mean a thing to them. Like they told Jeanne's mother when we had her over to live with us. She was ninety-two when she came to live with us. Dr. Belagorski said, "She'll be gone in about six months." All right. Fine. It was five and a half years later when she had a stroke and she died. But it shows these doctors haven't got a clue about time. They're not scientists. They're basically body mechanics. They're well-educated body mechanics. But anyway, here I am. I'm still here.

During the course of this stuff, I slowed down in my cataloging. You'll be pleased to know that the second time I had this aneurysm, I got a catalog from Phil [Phillip J.] Pirages [Fine Books and Manuscripts] and it had on it one of the rarest chemistry books. It was by a fellow called William Y-Worth (18). Terribly rare. I never thought I'd ever see a copy. There are about two or three copies in the whole world. He had one there for about eighty-five hundred dollars. I looked at it and gasped.

I wanted to call from the hospital but they said, "You can't make long-distance calls." I said, "This is an eight hundred number. Can I call that?" "Yes. As long as it's an eight hundred number, but you can't make any long-distance calls from the room." I just had this operation a few hours before, I saw this wonderful book, it's so rare, I couldn't afford to lose that, so I called up from my sickbed. I know Phil Pirages so I said, "Phil, have you still got that book?" "Yes, I've still got it." So I said, "I want to order it. Please send it. I'm calling from my hospital bed. I definitely want it." I was dedicated.

BOHNING: That's for sure.

On that note, why don't we quit for today and then tomorrow we can talk more about books.

[END OF TAPE, SIDE 8]

[END OF INTERVIEW]

INTERVIEWEE: **Roy G. Neville (session 2)**

INTERVIEWER: **James J. Bohning**

LOCATION: **Pebble Beach, California**

DATE: **21 June 2005**

BOHNING: Yesterday we talked about your career as a chemist. Today I'd like to talk about your career as a book collector. I guess the first question is the obvious one. How did you start?

NEVILLE: Well, I'd always been interested in books, from about the age of twelve through the war years. I was interested in architectural books, art books, some poetry books, and general literature books that just happened to be of personal interest to me. During my school years, from 1939 through 1945, I accumulated a nice little library of very cheap books. In those days you could buy books for a schoolboy's allowance. I'd better speak now in pounds, shillings, and pence. I ended up with about a couple of hundred books in my little bookcase in my bedroom.

BOHNING: Where did you find them?

NEVILLE: There were several old bookshops in Bournemouth. There was one particularly nice one on Old Christ Church Road in downtown Bournemouth. It was called Horace G. Commin. Commin, of course, had died, but the man who took it over was Allen Graden Thomas. This was a four-story building. He sold new books on the ground floor. There was a little stairway that I used to see people going up all the time. At first I thought, "Well, it's obviously not accessible to the public." But then I noticed all kinds of people going up the stairs. I thought, "Well, I wonder if I should venture up there." So I went up there only to find a whole lot of really nice leather-bound books, obviously much older than the ones downstairs.

I went downstairs, browsed the shelves, and came across this little book by Percy H. Muir, published I think in 1945, called *Book Collecting as a Hobby in a Series of Letters to Everyman* (19). The book was priced three shillings and six pence, so I bought it. I put it in the saddlebag on my bicycle, cycled home, and read it. These letters told you how you could build up a nice little library of modern books, not-so-modern books, and just downright old books for not large sums of money.

I'd always been very impressed by the old libraries in stately homes that my mother and father took me to. Brown books, red books, huge folios, and so on. I thought I could never own

anything like that. All I could see, of course, was the outside of the books. I was introduced to the inside of some books at the Wimborne Minster's Chained Library. Wimborne Minster is a lovely old town, with a pretty Norman church, about 10 miles from where I lived. They had this little church library—it's a chained library—with a total of about four hundred books, many folios and quartos. Some of them were in glass cases; the rest were on shelves. They ranged in age from the early 1500s right up to the very early eighteenth century, pretty much all on religion, naturally, for a church library.

I was fascinated by all these old, old books. I went back the following Saturday and talked to Mr. Thomas, who to me, seemed very old although he was about forty-one or forty-two. He was a rather thin, tall man with a little goatee beard. I was eighteen at the time, armed with fifteen shillings, which to the American audience means about three-quarters of a dollar or seventy-five cents. I said to him, "I understand from this book that book collecting is a hobby and that it's possible to buy a book from the sixteenth century, seventeenth, or eighteenth century. Is it possible?" He said, "Yes, I'm always anxious to encourage a young collector."

That sort of hit me just right, being very flattered by such an appellation. He ferreted around, and sold me a book in Italian called *Cherebizzi* (20). It was printed in 1572. It's a series of love letters by the author, Andrea Calmo. I bought that and then he rummaged around in a box of books he had just purchased. There I found another one called *The English Spa,* about spa waters (21). I thought, "Oh, that sounds quite chemical," you know. As you know from yesterday's conversation, I was pretty good with chemistry. I noticed key words like sulfur and iron pyrites and thought it was very interesting. It was published in York in 1649. I bought that. And then I bought an odd volume of Laurence Sterne's *Tristram Shandy* (22). I was so ignorant of books, I would even buy odd volumes in those days.

I put those things in my saddle bag and cycled back home. I gladly showed my father, maybe I shouldn't say this about the poor old man, but he said, "Hmm. He certainly saw you coming." [laughter] Meaning, he took me for fifteen shillings.

Not discouraged, I looked at the books. I was fascinated by them. About a month later, I went down there armed with about a pound. Another box had just come in from a country library. I riffled through the box, but most of it was of no particular interest to me. There was however, one book entitled, *Pratique de Chymie*, the practice of chemistry, by Sébastien Matte la Faveur (23). Now I'd never heard of Matte La Faveur before. The book was published in Montpelier in 1671.

Anyway, I bought the book, took it back, and put it with the other books. In those days I was very interested in the civil war in England, the Cromwellian rebellion. I was also interested in what Allen Thomas was interested in, Dr. Samuel Johnson and his circle. So I bought some of Dr. Samuel Johnson's works, like the *Prince of Abyssinia* (24). I bought a set of *The Spectator* (25), not by Johnson, and several other books on poetry, history, and civil war. I remember my most expensive book was two pounds and ten shillings, which would be about ten dollars. It was called *A Chronicle of the Kings of England* by Sir Richard Baker, a beautiful

book on England (26). It had a lovely engraved frontispiece of King Charles II. It was dated 1679, too. That was the most expensive book I'd ever owned.

I got a little bookcase—I've still got it in the other room—the doors were actually from my grandmother's mid-Victorian wardrobe. In those days, they had a wardrobe where the door looked like a picture frame with an opaque cloth in it. I remember it was a dark green cloth with a nice brown surround. I bought some mahogany and built myself this nice bookcase. It's only about four feet wide and four and a half feet high, roughly. I designed it all, even the leaded glass doors. Being very interested in organic chemistry; I put the oval shield in the middle like an oval coat of arms. It was clear glass, and all the rest of it was covered with benzene rings. It was quite graphic. That was my motif.

Those were basically my collecting accomplishments by the time I left in 1951 to come to America. Fast-forwarding over to America. As soon as I was established at the University of Oregon, I went to the main library and asked if there was a rare book department. I introduced myself to the head librarian in the rare book department. He let me into his inner sanctum.

I think he was somewhat astonished that a student would even be interested in rare books. He gave me a lot of catalogs, which of course were coming in all the time. There were some from France, some from Germany, some from England, as well as various other places, including America. I eagerly browsed through those catalogs, made selections, and started collecting books by the Elsevier Press, which were at that time, so to speak, a dime a dozen. I don't mean that literally, but there were so many of them that you could almost collect nothing but the Elsevier Press of the seventeenth century.

The vast majority were in Latin. I had taken Latin in school, though I didn't particularly relish the subject. I saw very little use for it. After four years of Latin, I changed to art because it was so hard going for me. I should have mentioned that I dropped Latin in order to take art because there were two fifth forms. I was in 5A, which took Latin and not art, and 5B took art but not Latin. Since I was much better at art than I was at Latin, not to say I was poor at it, but I wasn't as good at it as I was at art, I naturally switched over. Otherwise, all the classes were the same.

I concentrated on Elsevier Press. I ended up with probably about twelve Elsevier Press items. They were nice little vellum-bound books, beautifully printed. I could make some sense of what they were talking about—the main classic stuff by Cicero and people like that. But in those days I would buy basically anything that sounded cheap and interesting. And by cheap I mean not much more than about five or ten dollars. Those books, I hasten to add, are no longer with me; I traded them in later on for more expensive books.

Then I graduated with a Ph.D. My last stipend for a fellowship was one hundred and thirty-five dollars a month. I was married to Jean and was making the princely sum of two hundred and fifty dollars a month. We weren't exactly living high on the hog. But we did had a little apartment there, and her mother lived next door to us. She used to cook the meals. I'd go

home to lunch and Jean would come home, we'd have a quick lunch, and then back to the hospital for Jean and back to the lab for me.

I got the Ph.D. in 1954 and went to Seattle. By then I had a little library. I'm guesstimating now, but I suppose it was fifty or sixty books, which you could call old books. Plus my chemistry textbooks, plus other miscellaneous books which had been sent over by my father in two big wooden boxes. One of the boxes was badly damaged when it was left on the Seattle docks and some idiot knocked a hole in the middle of the top of the box and the drowning rain leaked in. Half of the books were full of green mold so I had to throw them away.

So that was the start of my little post-doctoral collecting, in 1954. Then I started dealing with a company called Dawsons of Pall Mall in London. It was one of the Southeran companies in London, but right about then they decided not to specialize in old science books anymore. They were going for these old, beautiful sets of [Charles] Dickens's works and other people's works in nice what are now called furniture books. They look nice in a library but nobody ever reads them and they are by no means first editions. I do remember one particular Southeran catalog. I was always interested in Robert Boyle and I realized that the tercentennial of Boyle's works were beginning to come round. This was in 1954 or 1955. Right around 1960 and onwards would be when all the Boyle books started appearing. In those days, you could still buy Boyle books, original first and second editions, for a very modest sum by today's standards. And by modest I mean twenty pounds, thirty pounds, fifty pounds.

So I thought, "Maybe I'd better stock up." I referred to this 1952 catalog. Remember, in 1952, I was still a student and couldn't afford much of anything. But there was a set of the third edition of *New Experiments Physico-Mechanical Touching the Spring of the Air* (27). It was from 1682. A third edition, bound with the first edition of the first supplement of 1669, and the first edition of the second supplement of 1682. All in one volume for twenty-seven pounds and ten shillings. That was a huge sum to me. Remember, I was earning six thousand dollars a year; Jean was not working yet, and well, there was a little baby on the way. That was Laura [J. Neville].

I thought, "Can I honestly afford twenty-seven pounds and ten shillings for this?" So I wrote to Southeran and said, "I'd love to get that particular book, but could I get it for a little bit less." I pointed out that it was sitting in the catalog for two and a half years. They wrote back and said, "You can get it for twenty-five pounds." They were very glad to get rid of it. It was a lovely copy. It's now at CHF [Chemical Heritage Foundation]. I had it rebacked because the back was kind of split. I think I must have spent at least twenty-seven pounds and ten shillings just to get the new back on it, but that came many years later.

I traded with Southeran and I traded in earnest with Dawsons of Pall Mall. They noticed I was buying a lot of chemistry books. By the way, I'd built some nice big bookcases by then to accommodate my enlarging collection. One day I took a good, solid look at this and I thought that 50 percent of my library was chemistry or chemical-type subjects. Mainly background books on chemists and chemistry. The other 50 percent was everything else—all subjects. By then I was sophisticated enough to realize that if I was ever going to have an <u>important</u> private

library—also, I was beginning to think about writing articles on the history of chemistry—I'd better start concentrating on chemical books only, particularly while they were still affordable. I bought books that were printed as early as I could. Late fifteenth century if I could possibly afford it—I only bought one, 1509, and the early sixteenth century, seventeenth, and eighteenth century while there were still plenty of them around. That's what I did. This was in the period of 1954 to 1957. By 1957, I noticed that prices were starting to double every three years or so for all the books I wanted.

By the way, I should say, that just after we got married on 26 July 1952, my birthday was in October and Jean bought me a copy of Herman Boerhaave's *New Method of Chemistry* of 1727 (28). I still have it for sentimental reasons. It cost five pounds. It's a lovely copy. Now, if you can find a copy, it runs anywhere, depending on condition, for about fifteen hundred dollars to about thirty-five hundred dollars.

BOHNING: I was going to ask if your wife shared this interest or at least supported your interest.

NEVILLE: Yes, she did.

J. NEVILLE: I supported it, but I didn't know much about it.

NEVILLE: This is a little aside about Jean. She said she always wanted to marry a chemist who loved books. Well, she got that with a vengeance. [laughter]

That was my birthday present. For my Christmas present I noticed that Howell's Bookshop in Hastings, Sussex, England had a nice copy of the second edition of Newton's *Opticks,* 1718 (29). I believe for about ten pounds. We managed to struggle and put ten pounds together, plus the postage. I still have that book. It was rebound in the eighteenth century but it's a nice little copy.

It also turns out that the Boerhaave mentions Thomas Frewen, M.D. I looked him up in my dictionary of national biographies, the abbreviated one, and it turned out he was a very, very famous chemist and physician, mainly a physician and pharmaceutical chemist. So that's a nice association copy.

As I said, these books were continuing to increase in price and the tercentennial of Boyle was beginning to come around so I thought I'd better stock up on Boyle. It was then and only then that I realized just how many books Boyle published. They fell into two great categories—one was theological books and the other was scientific books. Of course the prize was *The Sceptical Chymist* (30). I couldn't possibly afford the first edition, the 1661. I was assured it was a great rarity and was very expensive if it could be found at all.

I thought I'd try to get a hold of a second edition because that was almost twice as big as the first edition. I was offered one by Maggs [Rare Books] in London for the equivalent of two hundred dollars. It was not a very good copy. It had a wormhole so you could actually see right through the whole book. It was a straight wormhole, just like a tiny bullet hole. But I bought it anyway; at least it was a copy.

I later bought another copy, a much better copy. Actually I had four copies of that second edition, one of which, by the way, is now at CHF (31). I still have another copy of it, a duplicate, which I love because I've had it so long. That one cost me, as I remember, about three hundred and thirty-five dollars. Now, if that book can be found in as good a condition as my copy, it would be around twenty or twenty-five thousand dollars.

I should say I'm almost like a rare book dealer. I used to cut out the catalog slips and keep them in the books. If I got too many, I'd keep them in an envelope, suitably labeled, so I could keep account of the prices. I was very, very up on the prices and I was knowledgeable of which books were leaping ahead. And, if they leapt sufficiently ahead and I was able to catch up with them, I'd buy them.

It turned out that after going from about 1958 or so clear through to 2004, when I stopped collecting Boyle, I believe I collected about eighty-five or eighty-six different individual copies of Boyle in various editions. Along the way, I picked up the first edition of Boyle's *The Sceptical Chymist* of 1661. It was a rather poor copy. It was a made-up copy. It cost me five thousand dollars. It was spun out of Franz Sondheimer's collection.

I'm fast-forwarding now to about 1980 or 1981. I knew about him because he was always the fellow who would outbid me in Sotheby's auctions. I'd bid maybe one hundred pounds, and he'd get it for one hundred and two pounds. I'd go, "Oh, darn it! Sondheimer. Scooped again." Finally, we had this little dialog going by mail. He was a Fellow of the Royal Society, a bigwig in chemistry, he knew Carl Djerassi and so on. He told me he was going to come over and take a sabbatical at Stanford, in the department of chemical engineering, and wondered if he could come to see my library.

Right around 1980, he decided to sell his whole collection. He had beautiful holdings of Boyle, actually much bigger than mine. I think he had around one hundred and thirty individual items by Boyle. He asked an outfit that I'd been working with called McDowell and Stern, up in York, if they would kindly sell his collection for him because he was getting more and more interested in collecting books on birds by Audubon and that kind of thing.

They put out this catalog and said, "Our next catalog, Roy, will be right up your alleyway. It's all about chemistry." So I said, "Please send me an advance copy, airmail, as fast as you can." Of course, they did and I immediately wrote back. Some of the dealers in England had swooped in first and picked up some of the plums, so to speak, quite naturally. But I noticed that a lot of prices in that McDowell and Stern catalog were dirt cheap. Others were ridiculously high for no particular reason. I later found out that McDowell and Stern didn't

know “straight up” about the value of chemistry books, which ones were really truly important and which ones were not. But I did.

I was strictly self-taught. I was reading about the history of chemistry and teaching myself as much as I possibly could during those thirty years from about 1950 to about 1980. I was also writing articles for the *Journal of Chemical Education*, *Ambix*, and other journals.

BOHNING: I was going to mention that you had at least three papers on Boyle (32).

NEVILLE: Yes, I think so.

[END OF TAPE, SIDE 9]

NEVILLE: Yes, I remember 1961 was the third centennial of *The Sceptical Chymist*, a copy of the first edition, which I did not yet own (30). I wrote this nice little paper in the *Journal of Chemical Education* bringing it to the attention of anybody that was interested [laughter] about that milestone work (32b).

The tercentennial of Boyle’s law was in 1962, so I wrote another article on that (32c). Another one was, “Was Boyle the First to Use Spot-Test Analysis?” (32a). By then I’d bought a copy of his work on colors, *Experiments and Considerations Touching Colours*, 1664, which is now at CHF (33).

I should add, going back to the late 1950s and early 1960s, there were two people in New York City contacting me. They’d heard, I suppose through the book dealer grapevine, that there was this fellow out there in Seattle who was collecting early books on chemistry. They got hold of my address and the very day that I moved down to Palo Alto this letter came from a fellow called F. Thomas Heller, whom I subsequently met. He gave me a list of books by Boyle and said, “You might be interested in these.” There were about ten Boyles, ranging in price from about fifty dollars to anywhere around three hundred and four hundred dollars. I bought the lot. They were works that I didn’t yet have—probably about 70 percent of the ones he offered me. Some of them needed rebacking, recornering, and refurbishing, and for that I had a bookbinder, who I would send these books to, back in England.

So there was a tremendous amount of back-and-forth with post offices, standing in line, wrapping books, and so on. I hated wrapping books. I hated standing in line at the post office. All the customs regulations were a big pain, so I sort of quickly scrubbed that whole idea of becoming a rare book dealer.

In those days, I was pretty tired of the aerospace industry. No sooner you go there, get going, buy a house, start to have some faith, and then the contract went to somebody else, and

out went the whole department again. I said, "I'm just getting really fed up with this." I seriously thought, around 1965, of selling the collection. One day Harry Levinson came over and I said, "Harry, how much do you think my library is worth right now?" He was a Beverly Hills book dealer. He said, "Oh, I think around nineteen or twenty thousand dollars." Now this was about 1965. To me, that was a huge sum of money. That was almost the price we had just paid for our house. The total price for the house was just about twenty-five thousand dollars. To get that, I thought to myself, was not bad. But some little voice inside me said, "No, you're not through with collecting books yet and you're going to regret this." I also thought to myself, "He says it's worth that. He might just want to buy it for that and he'll go on and probably double the price. So right now I'd better just not do it." So I didn't.

I did go through the place and do some pruning of the shelves. I typed up perhaps twenty books, put reasonable prices on them, and mailed them express out to perhaps five or six universities saying, "I'm just an individual collector. If you're not interested then don't order and please send these lists back," which they did most of the time.

Anyway, in about 1967 I went to England, and when I came back—I had a post office box—I was very, very surprised to see it was just stuffed with orders from my little lists. So I sent them off. I think one of them went to Harvard.

[END OF TAPE, SIDE 10]

NEVILLE: I sold most of them. Unfortunately, I've sold two or three, which I've never been able to replace. Minor eighteenth century works, but very rare. No great loss. It doesn't matter. They're gone.

BOHNING: You sold to university libraries?

NEVILLE: Yes, university libraries. One I know went to Harvard; I was surprised they did not already have what I had. They went to the Houghton Library at Harvard. There was another one that went to the University of Illinois at Urbana-Champaign. And several other places. One went to Utah, and one Boyle went to a physician in New Jersey.

Oh, yes, that's another thing, I bought another copy of Boyle's *The Sceptical Chymist*; I think it was my third copy. I still have my second one. The third copy was bound in Dutch vellum, so it must have gone from England to Holland. I believe I paid something like one thousand dollars for it at the time. This was way back in the early 1970s. This man in New Jersey, I think I charged him two thousand dollars. He had a copy of [Edward] Tyson's *Orang-outang* from somewhere in the 1690s (34). It was the comparison between man's structure and the structure of a chimpanzee. I didn't particularly want it but I thought, "Well, maybe I can take it and sell it myself somewhere else for good money." I doubled my money *á la* rare book

dealers. It was a nice book, but it had nothing whatsoever to do with chemistry. I finally traded that in for some chemistry books from somebody else.

But, as I say, it went on and the book prices went up and up, and then, I think it was around 1975, the books took a quantum leap. They just about tripled in a year or two at Dawsons of Pall Mall. Instead of being twenty-five pounds, all of a sudden they became seventy-five and one hundred pounds. It was just going skyward.

BOHNING: Was there any reason for that?

NEVILLE: It was just Dawsons. They had just bought out another company and a bunch of "cowboys" went in there and were out for blood. Of course, all the other dealers felt, "If they can get that kind of money, we're going to get that kind of money." [laughter] So I went into high-gear. I was literally putting out every penny or dollar I could to buy these chemistry books. I thought, "What they can do, I can do."

In the meantime, there was a dear old gentleman named Emil Offenbacher. Do you know that name at all?

BOHNING: No, I don't.

NEVILLE: Well, he was one of the early chemistry book sellers in New York. He and I became close friends so he would offer me pre-catalog offers. They were never cheap but they were fair. They were almost always excellent copies. I dealt with Heller, Offenbacher, and Lathrop [C.] Harper in New York. All these people are long dead, long out of business. There was another one called Technical Library Services in downtown Manhattan.

I remember when I was in New York at an ACS meeting I took the subway down there and I bought a copy of *Mundus Subterraneus* (35). One of the rare issues of first editions was the one first released in 1664. The second time would be 1665, so I bought that book from them. It was a huge volume, actually a classic, on the subterranean world with lots of chemistry, lots of everything. It was beautifully illustrated, full of engravings and so on. I ended up with four or five Athanasius Kirchers, which are all now at CHF.

Let me go back to Sondheimer and the sale of his library. By then, I was consulting and making some real money. Between the two of us, Jean and I were making about two hundred thousand dollars a year. I think I was making roughly somewhere between one hundred and twenty and one hundred and forty thousand dollars a year. Since I was self-employed, I set up my defined benefit pension plan. I defined the benefit that I wanted at age sixty-five, for when I retired, and paid myself accordingly. One of the reasons I receive a very low social security now is because my top salary as a Ph.D. started at thirteen thousand dollars a year [laughter] and

went up as high as eighteen thousand dollars a year. I sank about all that money into my pension plan. But my tax man said, "You know, you're not paying yourself enough. That's going to raise the red flags with the IRS." So I ended up paying myself more and, now, I don't get very much social security, less than nine hundred dollars a month. But that's all right. I've still got the other money and it's grown. I guess I was playing it smart anyway.

I tucked away every buck I could into rare books. I expanded out into not only just plain chemistry, but mining, metallurgy, and general properties of matter, which of course included physics books. I then decided, "My goodness, I'd better come along and try to get some of Newton's *Opticks*" (29). I bought a beautiful copy of a first edition from Blackwell's Bookshop in Oxford. Then I bought an even more beautiful copy from another man, George Walford, in London. They were getting up there in price. I'm talking about four thousand to five thousand dollars. Of course, it seems ridiculous now at today's prices. *Opticks* cost between sixty thousand and eighty thousand dollars, depending on the copy—if you can even find a copy. In those days, that was a huge amount of money—we're talking thirty odd years ago. I finally ended up with two copies of Newton's *Opticks*; it has some peripheral chemistry in it, discussing colors and indicators. I suppose you could call it physical chemistry or chemical physics.

I finally traded in one of the copies, my lesser copy, although beautiful, of *Opticks* back to McDowell and Stern. It actually appeared on their catalog front cover. The title was actually right there on the front cover of their catalog. For that I took in a copy of Thomas Young's works of 1807 (36), a beautiful copy of that, as well as about ten other books. It was basically a trade.

One of those was the extremely rare 1615 English edition of the works of the Piemontese Alessio (37). I don't think that they realized that particular copy was exceptional. It has, I believe, four "books" in it. They call them "books," you know, not chapters. And this one had a fifth, which is unknown in most copies, in its original binding and it's been in the same old library for centuries. I'm very, very pleased with that. All that for the one copy of Newton's *Opticks*.

Let's go back to Sondheimer. As I said, from the 1950s through to the 1980s, I was either working for somebody else or setting up my own company. Basically our savings account was my books. We had some money in an account, but nothing of the value we had in the books. That was our chief holding. We were still buying houses and so on to get equity.

Along comes 1980 and Sondheimer's books go on the market. I swooped in after the dealers and I bought probably about thirty-five to forty thousand-dollars worth of Sondheimer's books, which you can plainly see because he had his own bookplate, an eight-membered ring. Then he told me that he was going to come over to Stanford on a sabbatical. Now I didn't realize that Sondheimer was a terribly sick man, mentally sick. I don't know whether you know that or not, but he was on lithium drugs; he was a sick boy. He was a very, very nice fellow but he seemed to me like an extremely good chemist who'd never quite grown up. He wasn't quite of this world, you know?

He called me up and said, "I'm here now and I'd very much like to spend an hour or so with your library and meet you personally." I said, "All right, how about Saturday?" He agreed. He drove over in this little car that belonged to Carl Djerassi. It had "SMIP 1" on the license plate. I said, "That's a weird license plate." "It's an acronym for 'Syntex made it possible.'" He was about fifty-three, just about ready to turn fifty-four. He was very much the professorial-type with glasses. He came in and I showed him my library, which was pretty much the whole of the basement in my Redwood City house.

I'd learned from the various dealers who had seen his library of fifteen hundred books plus whatever he had in a vault, about one thousand six hundred and fifty books total, that he thought he had the biggest private collection of chemistry books in the world. He walked into our library, which was about thirty-three feet long by about twenty-feet wide, floor to ceiling, with books on chemistry and metallurgy and things like that, and his jaw dropped and he went into deep shock. He just couldn't believe it. Not that I was trying to brag about it, but I knew his library was smaller than mine. However, I also knew he had some gorgeous stuff, which I had bought or was in the process of buying. We went through the fifteenth, sixteenth, and some of the seventeenth century books.

By the way, I should add that I found out that Wing's short title catalog of books printed in England and the English colonies abroad was coming out in the second edition. Now I missed the first volume of that, so I wrote to the editor, whose name completely escapes me unfortunately, and said, "I happen to have a lot of Wing Books. Would you be interested in knowing which books I have in the Wing period? I have about a thousand. Not all that would be within Wing, but a lot of them are either listed in one or two copies of Wing or have very few copies anyway." So I put together this great big long list of things that would obviously be of interest to Wing. In volume two, I'm listed as the symbol CRN, which stands for California Roy Neville. Now, volume three was the last volume that came out in that series, which I think, was from the letters P to Z. I looked in the catalogue and my symbol wasn't there. I thought, "What's going on?" They changed the symbol and the private libraries now appear as XRN. It turned out that I'm XRN and that my library, now at CHF, was the <u>only</u> science library listed in Wing. The only one. I was rather proud of that. I've got a bit of bragging rights here, but I'm not that type of guy.

Getting back to Sondheimer, I remember, he came over again about a month later. While he was in England, he had a fellowship from the Royal Society of London. During the course of that month, due to budgetary restraints, they decided, since he wasn't going to be there, to terminate his fellowship. He had some sort of a salary from the University of London and the office next to Bill [W. A.] Smeaton, a personal friend of mine.

I wrote an article (38) on [Pierre Joseph] Macquer's *Dictionnaire de Chymie* (39). This, by the way, to me was one of the most unappreciated books of the eighteenth century because it was the first encyclopedia of chemistry. You could call it a dictionary, but it was an encyclopedia on chemistry that brought together all the pre-Lavoisier [Antoine Laurent de Lavoisier] period into one place, so to speak. It was an excellent little thing. It came out in

three editions of 1766, all of which I had. I think the article on Macquer was in the *Journal of Chemical Education*.

Smeaton came over, saw this, and he was interested. I said, "Why don't we jointly write an article?" So he and I wrote a nice article (40). I would say it was about two-thirds his work and one-third mine. Bill [William A.] Cole, another person I met in Pacific Palisades when I was down in Southern California, sort of joined in, to add his two-cents worth, so to speak. Anyway, out came this nice definitive article on Macquer's dictionary. It was in 1766 right up to, I believe, about 1803 when it ceased to be called Macquer's.

I got all kinds of requests for reprints of that because that really is kind of the definitive account of Macquer's dictionary. It had all the background. Macquer died in 1784, but it was continued on and I believe I had about twenty or twenty-two different editions in all different languages, issues, and states. All of these are now at CHF. I was always interested in dear old Macquer, he had kind of a nice background. He worked for a while with Lavoisier and his circle.

Getting back to Sondheimer; he came a second time. The first time he said he could only spend about an hour. Well, he came around two o'clock and by about seven o'clock at night, I was getting pretty hoarse. [laughter] I hadn't had anything but a cup of tea and a couple of cookies, so I said to Jean, "Why don't we take him out to dinner?" So we broke off at about 8:30 p.m. and drove down to the Velvet Turtle. We met his wife and had a nice dinner.

By the way, the first time we had only gotten to maybe about the mid-1650s and had just barely touched Boyle. He'd never seen a whole bunch of the books that I had and he seemed extremely interested. He got all excited about it. He wanted to try and get a copy of this and copy of that.

A month later he came again. In the meantime, the Royal Society discontinued his income, and for some reason or another he went into a deep, deep depression. I didn't know that until later. He came and we sort of polished off some of the seventeenth century. He wanted to be called Frank, not Franz. So I said, "Frank, when you come again, we'll 'attack' the eighteenth century." He gave me a look as if to say, "I'm not sure if I shall or not." There was sort of a distance in his eyes. His eyes sort of glazed over.

About two weeks after that, I was at the laboratory I was using down in Redwood City talking to Art Burton, who was the head of the laboratory. He said, "By the way, did you hear about your friend Sondheimer? It was in all of the papers." I said, "No, what about him?" He said, "He's dead." And I said, "Oh no, no, no, you don't know what you're talking about. It must be someone different." "No, no," he said, "he committed suicide." Did you know about this?

BOHNING: I once gave a paper on chemists who committed suicide (41).

NEVILLE: So you knew about him then?

BOHNING: Only peripherally.

NEVILLE: Well, I went into shock. I knew he had had a very surprised reaction to see my library and I wondered if that combined with the Royal Society stopping his stipend had anything to do with it. I called up Smeaton, and I'm quoting him here. He said, "That damn fool. The University of London would have picked up the difference anyway. No, he was a very sick man."

I learned through Smeaton—he's dead now too—that Sondheimer was on lithium. He married this woman who had a daughter who had died at eighteen. Sondheimer loved his step-daughter very much and her death affected him deeply. And his wife was a real, well I hate to say nasty things about people, but she was a real vixen. She was not a particularly nice person. She would criticize him and chew on him all the time. To me, it was like a chalk and cheese situation. I couldn't see Sondheimer and this woman. They were like oil and water, night and day. I couldn't see anything in common between those two. But, who am I to say.

BOHNING: Was this one of the first times you had shown your library to another chemist?

NEVILLE: Oh, no. I'd shown it to quite a few other dealers and so on.

BOHNING: But I mean historians or chemists?

NEVILLE: Well, no, no. Arnold [Thackray] came of course. I knew Arnold, not only by name, but by correspondence and telephone calls. Finally, Arnold came out to the West Coast and I said, "I know you're busy but if you could steal a few hours, you might be interested in seeing my library." I believe it was in 1984 that he came out here. I think it was right around 1980 at Christmas time that Jean had given me a log book for my desk to record a few choice words in. Sondheimer had written in that book. I'll paraphrase it because I don't know the exact words. "Thank you so much for letting me see what is probably the best private library on chemistry in the world. Best wishes, Frank Sondheimer" and the date. Then some other people came and I decided to start recording all of it.

Then in 1984, Arnold came and he said some very complimentary things. Of course the book dealers came and they were agape with what was going on. I was just shoveling these books in, realizing that these things were getting away from me so I'd better grab hold of the real big stuff while it's still available and I could afford it.

I bought things which were not strictly chemical, such as [William] Gilbert's *De Magnete* of 1600 (42a), a gorgeous copy bound together with a book by [Fabrizio] Padovani from 1601 (42b). It's the first book on winds and wind currents, sort of meteorological interest. But they're bound together in an Italian binding. *De Magnete* is the second part of that volume.

I also bought all four editions of [Georg] Agricola's *De re Metallica* of 1556, 1561, 1633, and 1654 (43). One day, Ed [Edwin V.] Glaser called me up. Ed was a wonderful book dealer. I got many, many gorgeous books from him. He said, "I've got a copy of *De re Metallica*, Roy, of 1530." "What?" That was the original. It was just a little tiny book. It was Agricola's first true scientific book on mining and metallurgy. It's usually known as a *Bermannus*. It's an incredibly rare thing. I think it was Martayan Lan [Inc.] in New York that really wanted that particular copy, but Ed was so nice, he said, "Look, I'm going to offer it to Roy." So he offered it to me, and I said, "Can you send it over to me." We negotiated a price and I believe I paid something like forty thousand dollars for it. That was a huge sum to me in those days. I beat out Martayan Lan. They would have listed it for probably one hundred thousand dollars easily.

Just to show you how rare this thing is. You know of Herbert [C.] Hoover's version of *De re Metallica*, translated in 1912 (44)? Well, they never actually owned a copy of the 1530 edition. He collected for around twenty-five years and never found a copy. He was quite wealthy, being a mining engineer, as well as the President. And he could never even find a copy. It's that rare, and now it's at CHF. The little thing, it's about three eighths of an inch thick. Itty bitty thing, with nice sturdy vellum binding. I'm not sure if it's the original one but it's very early. I was very, very pleased to add that, as well as many, many others.

Since I'm talking about mining books, I could tell you about the history of three of them.

[END OF TAPE, SIDE 11]

NEVILLE: There was a rare book dealer in downtown San Francisco called Warren Howell. He died many years ago. I struck up an acquaintanceship with him and I went in there on one of my trips to San Francisco. There sitting on the shelf were three books. Now let me see if I can remember these. There was a really nice *Bericht, vom Bergkwerck* 1617, of which I knew there were approximately only twelve known copies (45). It was a beautiful copy in a red slipcase. It had come from the Honeyman Library.

[Robert] Honeyman [IV], by the way, was a great collector of early science books. His library was auctioned quite a few years ago, and it must have been quite a sight to see, because he had slipcases made in bright crimson, gilt-edged morocco. The whole library was nothing but blinding crimson morocco. I have at least two books from that library and I left them in the slipcase. One of them is a rare Boyle.

Another one of the three was a Lazarus Ercker work; it's the first complete edition of the 1580s (46). I think it's all in German. It's the one that he probably did before he died. So you might say, this is the one by which he'd wish to be remembered, not the first, which was 1574. Then the third one [*Gründlicher Unterricht von Hütte-Werken*] was from 1738 (47). It was a gigantic volume about seven and a half inches thick and about fifteen inches tall. It was quite a hefty book; a beautiful, gorgeous copy. I think the author's name began with an S but I can't recall it [Christoph Andreas Schlüter]. I already had a French edition of that but this was the very rare first German edition. It was the very first appearance of that work.

This was right around 1970 when I was still at Bechtel. I believe it cost around five thousand dollars for all three books. I remember we were driving along over there at Half Moon Bay. I just couldn't get those three books out of my mind. I said, "Gosh, I've just got to have those books. I don't know how I'm going to pay for them. I just can't afford them." We were coming back from Half Moon Bay through Pescadero, winding through the hills there, down the other side of Redwood City. I thought, "Well, I don't care. I'm going to go for it." I talked to Warren Howell and arranged time payments. That's the way I managed to acquire these things. I should add that I'd arranged time payments with quite a few dealers. Since I always paid promptly on time, they didn't mind. They're in business to try to make money by selling rarities. And they have to eat too. I "won" the books and they "won" the money, so we worked out some kind of deal. There are all kinds of deals with rare book dealers.

There was one dealer in London who would send the books over by sea mail, but invoiced by airmail. His name was Hugh K. Elliott. He was a refugee from Czechoslovakia. I never knew his real name, because he renamed himself Hugh K. Elliott. He kept writing letters complaining—this was back in the 1950s—"Why haven't you paid for that book yet?" And I'd write back by airmail saying I hadn't yet received the book. I reserved the right to see the book before I actually paid for it, so he used to get kind of irritated. The guy was obviously under financial pressure, and that's the reason he was trying to shake the cage a bit. Apart from that I had a very good reputation with dealers. I paid promptly and always within a month. I said, "I'll never keep you waiting longer than thirty days and I'll honor that." I gained a reputation of being very dependable and, of course, then they not only would trade with me a lot but they would find books and say, "Did you know about this book? Would you be interested in that book?" If it was a book I had never heard of I would trade or buy it. If I could pay for it immediately I did, if not, I did time payments.

Another thing I should say, I absolutely detest debt, so I never went into debt. I never borrowed on my credit card. I'm still the same way. My father said, "Son, if you can't afford it, don't buy it." I've always lived by that precept.

Let's go back to Sondheimer, again. That was a terrible shock to me. Of course, I was invited to the funeral but I couldn't attend. I was doing consulting work and I just couldn't take the time. I thought, "Well, I hardly knew this man. I only met him a couple of times, apart from correspondence." Anyway, that was the end of Sondheimer. It really disturbed me a lot. He's the only person I've known that actually came in and then went into a deep depression. I think the reality was he was in a terrible state anyway, psychologically, and this was just one of

the straws that broke the poor guy's back. I'm mixing metaphors here, but he was not healthy psychologically.

BOHNING: You talk a lot about dealers and it sounds like most of your dealers were in England at first, but then you started working with dealers in this country.

NEVILLE: Oh, yes. I had started working with New York dealers.

BOHNING: Were there any dealers on the West Coast?

NEVILLE: Yes, in San Francisco, and Jake Zeitlin down in Los Angeles. Everybody called him Jake.

BOHNING: Did you interact with other collectors?

NEVILLE: Yes, I soon heard about Bill Cole, who died a couple of years ago. I lived then in Westchester, which is just by the L.A. airport. He lived in Pacific Palisades. He was a school master. He didn't have that much money, but he also didn't have any children. He was married to Nora Cole, whose mother apparently was, I don't want to say wealthy but not poor, so their house was paid for. He was about twelve years older than me.

I was eager to go over and see his library. We drove there and the first thing that impressed me was just how dilapidated his copies were. You've seen my library. I've done my best to get good-looking copies on the shelf, and I can't stand horrible looking dilapidated things. Loose boards, no spine, cracked spines—that's what Bill had. He never polished his books, he never glued the leather back onto where it's supposed to be. If there was a label missing, he wouldn't get a label made. It was everything, just as is. I don't think he ever dusted his books. He never took an eraser and erased thumbprints, but I did. I didn't take off any signatures or anything important, but if I could lighten some dirty thumb prints with a light eraser, I did it, without raising the nap of the paper. I really looked after my books. I was impressed that he had been collecting—not longer than me chronologically, but he was twelve years older, so he had a jump on the prices. But his collecting sphere was mainly from about 1700 to about 1850, right around the birth of modern chemistry or pre-modern chemistry.

As I remember, he had about four or five books by Boyle in pretty dilapidated condition. I think he had one sixteenth century book. What was that now? Oh, yes, *The New Jewell of Health* by [Konrad] Gesner (48). Apart from that he had nothing. I was both impressed as well as unimpressed. I was impressed by the number of books he had, but singularly unimpressed with their condition.

Jake was known for that. Some dealers have a view that, "If it's old, its got to be valuable and I'm going to stick it to you." Other dealers, who were more reputable, a poor copy is a poor copy, and they're going to charge for it accordingly. I bought some books from Jake, which I've subsequently replaced because they lacked plates and things like that. He wasn't altogether an honest man. Although he was known in the trade as the doyen of American dealers, you had to be very careful with Jake. He was a little bit twisted; crooked is the word one would use. He can't sue me for that. He's dead too. What I'm saying is something that a lot of people have said.

I know that when Bill came over and saw my library he said, "My goodness, what gorgeous copies you've got. Where'd you get them?" I, like a fool, told him that I was dealing with Richard Gurney in London. Richard, by the way, was the son of a very, very wealthy banking family. He didn't want to go into banking and he loved old books, particularly old chemistry books. When we went to Kensington, London, he took us out to a lunch at a local pub; we had sausage and mash. He was a very, very nice man. He's still alive, by the way, as far as I know. But he went out of business when he was seventy-three.

I wrote to him and said, "You're still selling books. Why don't you go on?" He must be about eighty-three or eighty-four. He said, "Well, Roy, I keep making these silly mistakes." He was very accurate in his descriptions. His prices were reasonable and if something was missing he would tell you. But he told me, "I keep making these silly mistakes. I'm getting old. I'm not going to put out any more catalogs." So one day I got one of the catalogs that said, "Unfortunately dear ladies and gentlemen, this is my last catalog." Basically, he was going to hang it up. He didn't. He went on selling books to a few people, including myself. But it was all over with him and I was very sorry about that.

However, Bill Cole started trading with him and, of course, C comes before N. They were mailing out things in alphabetical order and very often he scooped me by a day, and that irritated me a bit. But that's all part of the game. Sondheimer scooped me at some of the Sotheby's and Christie's auction and then there was Bill Cole. But I was always willing to share my information.

BOHNING: Did you scoop anybody?

NEVILLE: I'm sure I must have. I thought, "Well, if they're going to scoop me, I'll get advanced copies of an auction." I bid and sometimes I was lucky and sometimes I wasn't. Jeremy Norman was another person in San Francisco I became quite associated with. He'd go over to London to the auctions and say, "Oh, I heard the name Neville called out again." Yes, well, good. [laughter]

Where did my books come from? I bought a lot of very, very lovely books by auction. Many books came from my own browsing in various places. I'd base that on my travels as a

consultant or going to ACS meetings. I would go to some lectures, but I must confess that if I was in a strange city, the bookstores sort of took precedence. I went scouting.

I remember finding a good Thomas Thomson book on mineralogy in Dayton, Ohio of all places. I think it was ten dollars. It needed rebacking so I had it rebacked. I got a beautiful copy for ten dollars (49).

BOHNING: Did you have any serendipitous experiences.

NEVILLE: Oh, yes. There was a place down in Long Beach called Acres of Books. All the books were priced between one and two dollars. I said, "Hey, now you're speaking my language." [laughter] Yours too, probably. I picked up one book. It was a modern book, around 1900 or 1910. It turned out to have the signature of Lord Kelvin. It was Lord Kelvin's book. I couldn't believe it.

Another one I picked up, again from Gurney, was the second edition of F. W. Aston's *Isotopes* (50). And then there was Ludwig Mind, inventor of the nickel process. I picked up a book that came out of his library. "From the library of Ludwig Mond." It had a nice bookplate. I think you have at least two or three of those now at CHF.

Then I picked up another book, an older book. It was an eighteenth century book that said, "Julius B. Cohen." He was rounded up for being Jewish and died in a Nazi concentration camp. This is one of the books my mother bought me in 1942, so I was pretty young. I had checked it out at the local lending library, where you could borrow a book for a week. Julius B. Cohen's *Practical Organic Chemistry* (51). I kept it out for about six weeks and paid the fine on it. I said, "Mom I wish you'd just buy me this book." It was seven shillings and six pence. Finally for my birthday she bought me a copy of Julius B. Cohen's *Practical Organic Chemistry*. I kept that in my little lab on my bookshelf with chemistry books and practical books. It has a few splashes and stains like lab books have and it was by Julius B. Cohen, so that name became very familiar to me. When I looked up the biography of Cohen, I found out the poor guy died in a concentration camp. I wrote something about that when I described the book, about the bestiality of the Nazis. I didn't go on too long about it. I made the point that I strongly disagree with their philosophy. Have you read any of my descriptions in my catalog?

BOHNING: I have an excerpt here somewhere.

NEVILLE: That's another thing. About my cataloging. I have the entries in seven or eight three-ring binders about three or four inches thick. I made a decision that each book would only get a maximum of one page.

BOHNING: Here is the excerpt about a Priestley book.

NEVILLE: Can I see that? Oh, yes. That's my writing. I recognize it.

BOHNING: Elsa [Atson] tells me that you like Denis Duveen's style.

NEVILLE: Yes, it's a combination of [John] Ferguson and Duveen.

BOHNING: Did you ever meet Duveen?

NEVILLE: I wrote to him. I have some correspondence, probably about six or seven letters. That was about the time I started to correspond with [Sidney M.] Edelstein. I met Edelstein in New York. He invited myself and Sister St. John Nepomucene to his home. She was a garrulous old nun. You couldn't get through this "wall" of talk. Anyway, he took her, Sister St. John Nepomucene, and I over to his beautiful mansion in Englewood Cliffs in New Jersey. It was like a Tudor mansion with huge rooms. I saw this big room, even bigger than this one, lined with bookshelves. He had so many books. The walls were just lined with shelves that had big ones in the back and small ones in the front. He said something about his wife not wanting any more books in any other rooms so that was the room. [laughter] He took us out to a very, very nice dinner. I really enjoyed visiting his library very, very much, but I thought his catalog was a disaster. It was a mess, mistakes with spelling, mistakes of date. It was just grossly mismanaged. He didn't note the first edition or the nineteenth edition. I've tried to do a lot better than that.

BOHNING: Here is a copy of a brief biography of Duveen that was written by Aaron Ihde in the 1980s when he wrote up the history of the first twenty-five years of the Dexter Award [for Outstanding Achievement in the History of Chemistry] (52). There are only three original copies in existence, and since I knew you had an interest in Duveen, I thought you might like this copy.

NEVILLE: As I say, I wrote Duveen. This was back in about 1957, I think. I proudly told him about some of the books that I had, about [John] Gerard's *The Herball* (53) and a few other things like that and he wrote back. I was obviously just some young guy to him. He was sixteen years older than me. He was very polite, a nice older guy, but hardly worth keeping up with. I think he wrote me about three or four letters. I've got about three of the letters perhaps, but then he fell out with his wife Patricia Duveen. There was an article, by the way, in *The Book Collector*, in about 1951 or so, which described some of his high spots. Of course, I used

that as a guide too. But then apparently they had a divorce and the next thing I knew he was in Brazil.

BOHNING: Yes, I think that's mentioned by Ihde (52).

NEVILLE: The next thing I knew he was married with a baby on the way. I never did write to him again—not because of that, but because I didn't know where to write. He was born in 1910 and I was born in 1926. There was a sixteen years difference—a different generation completely. But he was a nice fellow.

But, there again, some of his books were not very good copies. I know because I actually bought some duplicates from his library. They have his little red book plate—the little one with the faded, not gold, but brass printing. In fact, I think I have at least one Boyle from Duveen. It went through Heller and eventually ended up with me. I even got some duplicates from the Houghton Library in Harvard. I thought, "They're crazy, selling things like that."

BOHNING: When Sidney became active in the history division, these people—Duveen, [Herbert S.] Klickstein, and others—were all involved in that division and I think what brought them together was their book collecting. They had an interest in the history of chemistry, as you did, but their common bond was book collecting.

NEVILLE: That's right. There was the Duveen and Klickstein bibliography of Lavoisier, a big thick volume (54). That was written by Klickstein, with Duveen looking over his shoulder. Most of it was Klickstein's work, even though it was called Duveen and Klickstein. There was a subsequent one by Duveen himself, much thinner (55). Duveen decided to concentrate on everything written by and about Lavoisier. I think he probably assembled the biggest library that's ever been assembled on that subject.

[END OF TAPE, SIDE 12]

NEVILLE: Yes, thank you for that information on Duveen.

I was hoping one day I might get the Dexter Award, but I'm to the point now where who gives a hoot. But they don't call it the Dexter Award anymore.

BOHNING: It's the Edelstein Award [for Outstanding Achievement in the History of Chemistry]. The company [Dexter Chemical Corporation] doesn't exist so there is no financial backing available from them.

NEVILLE: Well, I did get a very nice award from the CHF. Did you know that? The Lifetime Achievement Award. It was signed by Arnold Thackray and Harold [A.] Sorgenti. They also said that I'm the founder and director of The Roy G. Neville Historical Chemical Library. Incidentally, why did I call it that? It was because of the Wellcome Historical Medical Library. I thought, "Well, if you can have a medical library, you can have a chemical library. There is the Wellcome Library, why not the Neville Historical Chemical Library?" I noticed the Wellcome Library had all kinds of stuff—history books, geography books, and anything to do with a modicum of anything, not necessarily always on medicine or chemistry or any of those subjects. The main thrust was medical work, but it had all kinds of peripheral stuff, too.

That's the reason I started thinking to myself, "Well, is it so bad to include some of these other books which could hardly be described as chemical books—books strictly on photometry and things like that, and books on Newton's philosophy and Descartes. Descartes wasn't a chemist. Kirchers work. All these different books of secrets, of course, are full of chemistry; what we now call how-to books—how to do this, how to do that, recipe books, and things like that.

I was particularly interested in the dear little recipe books of the seventeenth century called *The Queen's Closet Opened* which has an interesting subtitle (56). I bought one of those at the book fair up in San Francisco. It's on every second year and the other alternative years. It's the same thing down in Los Angeles. Usually I find that those book fairs have either books that the dealers can't really get rid of any other way or something like that. I've never found much at a book fair.

I did find a copy of the 1531 edition of Geber's work (57). It was a gorgeous thing. I believe it cost me eighty-five hundred dollars after negotiating with the dealer who wanted ten thousand dollars. It was off the market. Offenbacher just happened to be there. This was right around 1982. I showed it to him immediately and he said, "Oh. You are the one that bought that." I said, "I paid eighty-five hundred dollars for it. Was that a fair price?" He said, "Roy, I would have asked for twelve thousand dollars." [laughter]

[END OF TAPE, SIDE 13]

BOHNING: What was one of your more difficult acquisitions, something you wanted but it took you a long time to find?

NEVILLE: Martayan Lan, in New York City, was a very ritzy, high-priced dealer, very much in the style of H.P. Kraus. I bought some books from H.P. Kraus, too. They were always sky high, but sometimes you have to spend a high amount in order to get the book that you can't find anywhere else. Jonathan Hill put out a catalog quite a few years ago in which he came

across a little cache of very early books. I believe he bought them from some monastery in Bavaria. He had been over there and they sold him a whole lot of alchemy books, sixteenth and very early seventeenth century. He had about seven or eight unfindable books by [Andreas] Libavius. I had never even heard of these books and as usual he caught me, so to speak, with my financial drawers down. [laughter] I had to have these books, but I could not afford them all. I did get about five or six of them, but the one I really and truly wanted went to Harvard. I ordered the other ones. To answer your question, the one I really wanted was kind of like a glaring gap. The ones I did succeed in getting are now fortunately at CHF. Now, I have fifteen different editions of the Libavius. They are all terribly rare.

About two years after that, Seyla Martayan Lan said to me, "Oh, I do have a book you might just be interested in." She sent me the description. It was the very title I had missed from Jonathan Hill, so we negotiated a price. It was a beautiful copy and actually a little bit cheaper than Hill's copy, about two hundred-dollars cheaper. So I plugged that little hole in my collection.

Now, talk about plugging holes, the first textbook of chemistry is Libavius' *Alchemia* from 1597 (58). And there's also a sequel to it. The complete *Alchemia* is comprised of two books. One is called *Alchemia* from 1597, and also in 1597 there was *Commentationum Metallicarum* or Commentary on Metals (59). Well, wouldn't you know it, Offenbacher came out with a catalog. I was in South Dakota consulting at the time. It always seemed to happen that way. I was always somewhere where I couldn't reach a phone or write a letter. So I called Jeannie, "Did we get anything in the mail today?" She said, "Yes, you got a catalog from Offenbacher." I asked her to read the catalog and she read it through and I said, "No, no, no, no, yes. More on that." And she read more and she came to *Alchemia* 1597. And I said, "Ah. How much?" "Three thousand dollars." "Oh, my gosh."

"Well, I wonder if I can wait until I get back," which was two days later. I had no way of calling from there because I was way out in the boondocks and, of course, in those days cell phones didn't exist. I was basically *incommunicado*. So I thought, "Well, I bet you Bill Cole has grabbed that thing" because I knew he was after that as well. Even though he concentrated on 1700 to 1850 roughly, he wasn't allergic to buying a key book if he could find one and could afford it. Well, it turned out that I was right. Bill had, in fact, grabbed that book.

When Bill described his copy, it was only <u>half</u> of the book because sometimes that particular book was bound in two volumes. The second part had its own title page and for all intents and purposes it looked like there was another volume. But the way you could tell it was issued together was because on the verso of the title, the first part had a table of contents for the second part. You don't do that unless there's one volume. So I thought, "My gosh, he's bought only half the volume." Good. [laughter]

Perhaps seven or eight years went by and finally Emil Offenbacher came across another copy. I don't remember exactly what the price was; it was about six or seven thousand dollars. That was a lot of money for the late 1970s. He offered it to me and said, "You know, Bill bought the other copy, but this has got the extra volume." He pointed out the fact that the table

of contents described the second part that was on the verso of the first title page. He hadn't even realized it with the other copy. So he offered it to me and I worked out a time payment, got it, and now it's at the CHF. It's a book of legendary rarity. It's a fantastically rare book. So CHF has now got the first edition of both parts, a lovely copy.

I've got a lot of little tales I could tell you about individual books. Oswald Croll, I got with Kraus. They offered me a copy, a first edition, 1609 of the *Basilica Chymica* (60). The copy that I bought years before had a somewhat slightly mutilated engraved title page; dampness had affected the top part and part of it was just plain missing. It had just fallen off, but most of the title page was still there. It had a beautifully engraved title. But they came along and offered this book for sixty-five hundred dollars. Now, remember, I already had another copy in beautiful condition except for the slightly defective title page. I thought, "Gosh, sixty-five hundred dollars." I had only paid perhaps nine hundred dollars to one thousand dollars for the other one, so I wrote to him and pointed out that it had been sitting for about four years in four different catalogs, obviously not moving. I asked, "Well, would you please send it to me?" So he did. It wasn't quite as good of a copy. The title page was intact, but the rest of it was kind of dull and a little flecked and spotted and overall kind of grayish looking. So I said, "Look, it's really not worth that. You've had it for at least four years, maybe five. Would you take five thousand dollars for it?" "We don't normally do this," the man said, very uppity. So after a few minutes of holding on the phone, he came back and said, "No, the price is as marked. We don't do that." This was despite the fact I had dealt with these guys for about twenty-five years. "Okay, I'll send it back." About a year later, they decided to sell all of their stock and it went for about fifteen hundred dollars. [laughter] What idiots! I mean, they could have gotten five thousand dollars out of me. Somebody got it and I don't know where it went or where it is now.

It's nice to see this again [referring to the Priestley page from his catalog]. I was very careful to annotate my books, and in some cases I had so many references I couldn't get them all on the one page, so I gave a selection. Usually my cut off point in the number of references was thirteen or fourteen.

BOHNING: How did you manage this collection? How do you keep track of titles?

NEVILLE: I had a little card file. At first I would handwrite the thing. So there was card file set number one. Eventually that got to be too much, especially with little three by five cards. It just wasn't big enough so I went up to the next size. I would just do the same thing as with the three by fives. And finally, I thought to myself, "This isn't working." By then I'd bought myself a Cannon copier so I would just copy and glue this part on the front side and the second part on the backside and then I put everything in alphabetical order. Then I got awful tired of gluing using Duco Cement. I had never heard of Elmer's Glue so I was using rubber cement. I got high from the solvent! [laughter] I really didn't like that and thought, "This is not good for my liver." I filled a huge card file. Finally, I started using Elmer's Glue. After that I thought it

would be much easier just to have a ring binder, so I went to a ring binder and forgot the cards. So this is really the third version of my catalog.

BOHNING: Do you still have the cards?

NEVILLE: Oh yes, downstairs. In my catalog I try to explain the difference between a first edition, the enlarged second edition of an important work, the additional plates, and so on. I think it's a pretty straight forward system. Bill Cole tried to be a super bibliographer-type but I thought his catalog was so turgid as to be almost unreadable. Do you know of Bill Cole's catalog?

BOHNING: I've seen it.

NEVILLE: He published two hundred copies and inscribed one to me, but he charged me a hundred and seventy-five dollars for it. [laughter] He wouldn't even give it to me. I thought, "Well, what the heck! I had better have it." So I paid him a hundred and seventy-five dollars and he wrote some nice inscription. It was kind of useful. I did a review of it (61). It might have been in *Isis*.

Unfortunately it had nothing to do with Boyle. I tried to be kind to him in my review because he was still alive. He'd gone back so far, I don't even remember. I kind of wish I hadn't given that to CHF because it's very hard to come by now. I suppose I could always ask for it back. [laughter] Do you happen to have that review?

BOHNING: I believe so.

NEVILLE: Oh, yes. Great.

[reading] "Although his influence on the early eighteenth century was significant, sadly none of Robert Boyle's important chemical works are included, not even the collected editions edited by Peter Shaw (London, 1725; 2nd ed., 1738) (62)" a book which I have "and Thomas Birch (London, 1744 and 1772) (63). With this solitary omission—which is adequately covered by John F. Fulton's *Bibliography of* [*the Honourable Robert*] *Boyle* [*Fellow of the Royal Society*] (64)—I believe that Cole's bibliography will rank as one of the most valuable works on early chemical literature that has yet appeared." I was kind. I thought it was a nice review, but I thought it could have been a lot stronger. He's a nice guy so I tried to be kind. [laughter] I'm sure there will be all kinds of reviews of my catalog when it comes out saying, "Well, sadly, Neville didn't include this and that." Well, the reason was I either couldn't afford it, couldn't find it, or didn't think that I had to.

BOHNING: You had to have spent an enormous amount of time in doing this.

NEVILLE: Yes, fifty-nine years.

BOHNING: And yet you kept your chemistry career going at the same time this enormous collection was being built up.

NEVILLE: Oh, yes. I used to go and do my research, come home, have my dinner, and then spend at least two hours writing articles on the history of chemistry. In the beginning, I bought books so I would have the original source material right at my fingertips. But you can't have everything and even though I'd find background books, books about books, I quickly realized that what I was doing was impossible, really. I did the best I could; fifty-nine years of it.

BOHNING: What would you say the rate of growth of the collection was?

NEVILLE: Oh, boy. It's hard to say. In the early years, very slow, due to a lack of money. I was still in training, you know. During the kids' early years, I had two little girls to buy shoes and dresses for, which they outgrew very quickly. My salary was not very good. Bench chemists don't make much money. I tried to publish as much as I could, but I was in the kind of industry where they actually prohibit you from publishing because they didn't want any trade secrets to get out. They said, "If you want to publish, you get a patent on it." So I was published by that means.

Answering a question about my rate of growth is very difficult. It was very sporadic; that's all I can say. In the early years, it was pretty slow, for the reasons I have given, but once I stopped working for somebody else and started working for several clients instead of one employer, who basically set my standard of living, things were different. I worked for about thirty thousand dollars a year way back in the early 1970s and went on to much bigger incomes, three to five or six times as much. It didn't come in the form of a regular paycheck, but if you look at it on a year to year basis, I could say I had a good year or a not so good year, but any year that I was a consultant working for myself, I was making much more money than working for some joker. At least I had stability which I seldom had working for an employer.

BOHNING: You have thousands of books now. How do you manage, especially when you're spending this much money on a book, to store it, preserve it, and house it? Did you have them in your home?

NEVILLE: Yes. They were in the home.

BOHNING: Did you have them insured?

NEVILLE: Funny you should ask that. Years and years ago when we got back to California, we had a lot of money tied up in books and not much in the bank or in real estate. I approached various insurance companies—I think I ended up with Fireman's Fund. I gave them a typewritten list of all the books and the amounts I paid for each book and we totaled the whole thing up. I believe it came to something like three hundred and eighty thousand dollars or something like that. That was years and years and years ago. That's what I actually spent on them.

BOHNING: That's the purchase price?

NEVILLE: That was what I spent. I included the fifteen-dollar books and the fifty-dollar books and the two hundred-dollar books. Then I added an addendum to that, about another three or four hundred thousand dollars and I was told, "We can't do that unless you take a gigantic deductible of like twenty or twenty-five thousand dollars," which to me was a lot. It was either the huge deductible or store them in a bank vault. I said, "What are you talking about? I can't rent a bank vault." Basically I said, "The heck with that. I'm just going to go on and take a chance," which I did. So, I never went past three hundred and thirty-eight thousand dollars for insurance and now the whole shooting match is at CHF. [laughter]

We're nonsmokers. We wouldn't allow smoking in our house because of allergies and we don't like the smell of it, and we're not carousers. We don't have wild parties or anything like that. But I do believe sincerely that I had a theft. It was a unique manuscript. It was the lab notebook by the man [Josiah Spode] who invented the willow pattern chinaware. I've now forgotten his name. There were all these experiments on cobalt compounds to create that cobalt blue willow pattern. I'm not going to name that person—he was a New York dealer—but I know that that book was there before he came and it was missing after he left. It was folio, too, about this tall, this wide, this big, and he had a nice little briefcase. It would easily fit into a briefcase. Arnold came about a week or so later, and I went to right where it was supposed to be to show it to him and it was gone. I've never found it since. He disposed of that somewhere, I guess. That really ticked me off. I paid ten thousand dollars for that book. You have to be so careful with some people.

BOHNING: Is that common in the book collecting world that you have to watch your collections?

NEVILLE: I usually monitor people. I don't leave the room, for example. If I need to go to the bathroom, they come with me. I'll say, "Why don't we take a break. You go to that bathroom and I'll go to this one." I'm always sort of careful about things, but I didn't think there'd be an outright theft.

BOHNING: I'm sure.

NEVILLE: I shall not name this fellow. You can guess all you like. But I can't really prove it. All I know is before he came it was there and after he left it was not.

BOHNING: That's pretty strong evidence. [laughter]

NEVILLE: Well, you can't take that to a lawyer. It's a "he said, she said" situation. The only other case bordering on theft involving one of my books had nothing really to do with me. I bought a copy of a Boyle work—I think it was one of those 1673 editions—through Warren Howell, but it had been stolen by some fellow in Chicago from the John Crerar Library. There was a big theft back sometime in the 1970s. Anyway, I met Warren Howell at the book fair. He's a big man, and he said, "We're in trouble." I said jokingly, "What did I do?" He said, "You know that Boyle that you bought from me about a year or so ago? You have got to give it back. It's stolen." He told me it had been stolen from John Crerar Library. I said, "All right." I got my money back and I thought, "Well, I'm not going to find another copy of that." Fortunately, I found another copy with an English dealer for about the same price. It was a nice copy. That is also at the CHF. But that's the only outright dishonesty I've encountered. You have to watch out. People stole from Stanford. You remember they stole a lot of very rare maps, which were found in a dumpster behind a Safeway up in San Mateo. People are crazy.

BOHNING: The rare book collection at [University of] Penn [Pennsylvania] had an original Ben [Benjamin] Franklin stolen. It was a very small and very thin book.

NEVILLE: Oh, gee.

BOHNING: They actually didn't realize it, because there are so many books, until somebody went to look for the book and there was a fake in its place. It turned out, I don't know how much later, some book dealer called and said, "I think I have something you want." Somebody had tried to sell it to him. It was somebody who worked in the library and knew that this particular Ben Franklin was worth a rather large amount of money.

NEVILLE: I don't like any kind of dishonesty. I always deal very forthrightly, openly, and honestly with everybody because I'm not a good liar, to be honest with you. I tend to open up and I'd probably say more than I should and I know I'd trip myself up. I have always believed in honesty as being the best policy. I've never stolen a book. I don't expect anybody to steal from me, but it does happen. It really infuriated me. I'm still kind of burning about that occasion. It happened several years ago. I was getting ready to start cataloging my manuscripts and I wanted to do that one.

By the way, I never tried to collect many manuscripts but I did have two [Louis] Pasteur manuscripts. One was just an old letter signed L. Pasteur. Then I bought a two-page document describing some chemicals, again by Pasteur, which I think is gone already to CHF.

I'll tell you another little story, too. When we first moved down in 1958 to Palo Alto, when I first joined Lockheed, I scouted out the rare book scene in the Palo Alto area and the Stanford area and I came across a fellow called William P. Wreden. He lived in Atherton; he's long gone now. I'd been looking for this little book by Christophe Glaser, the English translation, called *The Compleat Chymist*, 1677 (65). I walked into this old Victorian house and right up at eye level was this book. I couldn't believe it. It'd been rebound. I said, "Oh, my gosh." It was seventy dollars. I couldn't afford it then. That was a large amount for me in those days, but I thought, "I have got to have it. It's so rare." So I bought it. Then another one I bought was [Robert] Fludd's book, *Utriusque Cosmi* (66). It's from 1617. It's bound with another volume on the same subject. It's one of a series of seven volumes. You'd never find the seven volumes together because they were published until about 1635. They're all basically individual things, although part of a long set. I bought that one for ninety dollars. It's now at CHF. It's a very, very rare book worth many thousands now. Oh, let's see. I found a whole lot of other books for about five and ten dollars that I had him put away for me. Bill Cole happened to go through town and he bought the whole box right out from under me! Well, you can't blame him. I was kind of long-winded in getting my act together, but the whole lot couldn't have cost me more than twenty-five dollars so I missed out on about five or six really nice early nineteenth-century books.

[END OF TAPE, SIDE 14]

NEVILLE: Talking of manuscripts, I bought an odd volume of Joseph Black's chemical lectures (67). I think it was from 1778. Just an odd volume, all handwritten. We don't know who wrote it. And not more than about three years ago, I was offered a set of his <u>complete</u> chemical lectures at Edinburgh (68). The dealer said it was undated. Now, let me tell you: I found a date. [laughter] I went through all six volumes, all beautifully handwritten. It came from the library of a manuscript collector of the early nineteenth century who lived on the Isle of Anglesey off northwest Wales. As I was going through this thing, looking for references to oxygen—there were none—I finally found in one of the lectures towards the end of the third or fourth volume, "5 December 1773." Oxygen was a year later. Now this must have been a

lecture just leading up to the discovery of oxygen, so I consider that a rather significant set. It's delightful to find things like that.

Another thing. Gurney said, "You might be interested in this, Roy. I've got a prospectus announcing the publication of [John] Dalton's *New System of Chemical Philosophy*" (69). It was just a little single sheet bound together with a letter written to a Dr. John Bostock of Liverpool, signed beautifully by John Dalton. Bostock must have received this letter in 1808. I think it was 8 June 1808. I think you might find this of interest. Dr. Bostock was a physician at this time and was still working on early physics. Anyway, he must have gone over to Liverpool. Bostock obviously replied to Dalton, and then about ten days later Dalton sent a copy of the first volume of his three volume set together with a letter saying, "I think that you can hardly withhold your assent of my theory of atoms." Have you seen that letter?

BOHNING: No.

NEVILLE: Go to CHF—you will find that original letter (70). I thought it was important because they published my paper on this in *Ambix* (71). Now *Ambix*, at times, didn't want to publish much after about 1750 or so, but apparently they thought it was important enough to stretch the point and went up to 1808. I even had a photograph made of that, because it's probably unique. As far as I know that is the only known copy. It's just a prospectus.

BOHNING: Here's a copy of that paper.

NEVILLE: That's the one, I believe. When did that come out?

BOHNING: The first page has the date on it.

NEVILLE: Yes. It's February of 1960. That's forty-five years ago. Good Lord. This old brain box is still working I guess. [laughter] That's a long way to look back. But, yes, there it is. There's the picture of the prospectus. It's unique.

Another thing I bought, again from Jeremy Norman, was a copy from 1827 of Dalton's last lecture on atomic symbols (72). Apparently there are two variants of that. It varies in the lettering at the top of the page. Simon Finch had a dilapidated, worn out copy, torn all the way around with creases. It was a rotten copy. However, I knew that there were two because I was photocopying the catalog and I compared that with mine. All the typeface was the same, but the lettering at the top was a little different, so he must have had two strikes of that. Although why Dalton would do that for just a lecture, I don't know. Unless it was considered, and this is pure hypothesis, by people at the lecture that those symbols were so important, maybe he should run

it off again for people who were not at the lecture. I don't know, but yes, I wrote this up for *Ambix* (71). It says here, "I hope you will not be all together disappointed in my book. You will find several things in it that have not been published before. When you see how happily the atomic system in the sequel, part two, of volume one will accommodate itself to the neutral salts, the oxides, et cetera, I think you can hardly withhold your assent." [laughter] Marvelous. Don't you think it's worthwhile?

BOHNING: Oh yes. Absolutely.

NEVILLE: I sent them over to be bound by Sangorski & Sutcliffe. They deal with the Buckingham Palace Library and places like that. It cost me probably about as much to get them bound by those people as I paid for the original. The prospectus with the first letter was forty pounds and the second letter was also forty pounds for a total of eighty pounds plus about another eighty pounds to get them bound.

BOHNING: When did you reach the decision that you wanted to part with the collection?

NEVILLE: Oh, dear. That was an agonizing decision. I realized I was getting older and I was beginning to get heart pains in about 1990 or 1991. I thought, "Well, I don't want this library to be broken up." Several book collectors had come to see the library but I felt it was just far too important to break up. It would be a crime to break it up. Not the kind of crime you go to jail for, but a scholarly crime.

I thought, "Well, I'm going to die one of these days; I want the books to stay together." I spoke to several dealers in the 1990s and they gave me various estimates. In about 1990 some of them said it was worth five million dollars. Some four million dollars and some dealers who were not "up" on science books were lower than that, depending on what they thought it was worth. It was just their opinions. Finally I found a dealer whose name is Bennett Gilbert down in Los Angeles. He came to see the library and he tried very, very hard to sell it to Stanford. I thought, "Well, that's nice. I live in Redwood City. I'm about seven miles away from Stanford. I can always go down and visit. He tried very, very hard with Stanford. Stanford had bought the [Samuel I. and Cecile M.] Barchas Collection [of The History of Science and Ideas], which has never been a really high spot. It's not a research library at all. It's got Newtons and Lavoisiers, but you can't do research in it. I mean, as soon as you dive in, you're at the bottom and there's nowhere to go. It's like what I call a once-over lightly—high spots but no depth. You can <u>do</u> research in my library. So we met with the head of the library at Stanford. They laid on this beautiful lunch of prawns and things like that. The head librarians were there and the special collection librarians were there. There were three or four of them.

We discussed it and he said, "How much do you want for this library?" "Oh, well, I don't know. I think it's worth at least six million dollars." And he said, "Well, I think it's

worth six million dollars, yes." "Hey, great. Marvelous!" So I said, "Are you prepared to go forward?" He said and I'm quoting now and it's the truth, "I can write you a check right now for one million dollars. The problem is the other five million dollars. [laughter]

I said, "Well, what good is that?" So we negotiated for a little while. I could see that they were basically dancing around the whole subject. They basically wanted me to give it to them. They wanted to give me one million dollars, but I'd spent much more than that on it, so much, much, much, much more than that. It's all very well getting your name on a plaque, but what am I going to retire on? This was our life savings. So, I thought, "I had better find another library." We cast around and Bennett worked with me for about three years. We tried this one and that one. We tried the University of Cambridge. I've got a good friend at the University of Cambridge, Peter Wothers, and he told me, "It's pathetic what they've got. There's just nothing there." They mostly had minor seventeenth century plays that nobody ever bothered to look at and little itty-bitty poetry books. I mean, just nothing. No science to speak of. Of course they've got Newton's *Principia* [*Philosophiæ*] and all the big stuff, but they didn't even have the first Lavoisier of 1789 [*Traité Élémentaire de Chimie*] (73). I mean, pathetic. I think I had four editions or something like that.

He talked to the head librarian there and asked how high they would be willing to go and they put this thing at about one million pounds. Well, forget that. Here we go again. They were all pleading poverty. I contacted Southampton University and got a nice letter back. They said, "It's hopelessly beyond us." The universities are just crying, pleading for money, closing departments of chemistry over there. You've probably heard about that.

Then I talked to a book dealer, Daniel MacDowell. He said, "Forget about the English universities and the Scottish universities. Ireland is really booming and there's a new university at Limerick." It'd been founded by a fellow called James Walsh. He, apparently, was a wonderful engineer with patents worth millions. He decided twenty years ago to found this new university in Limerick. He was in the process of buying things and establishing things. So he and his wife pulled up in front of our house in this big stretch limo and we showed him the library. He came with a comptroller so I thought, "This looks pretty good." We gave them a lovely lunch, talked about it, and it looked like we had a "go" situation, but there again, five million dollars; that just wouldn't work. They couldn't raise it. I could understand that—they're still building and it's much more important to build buildings than to sequester this library of old chemistry books.

Later on the Earl of Lismore contacted me because he was trying to establish a science library there and thought this might fit. Well, he couldn't afford it. After about four years of diddling around, on again, off again, the whole thing foundered. Bennett was trying all the way along here to interest various universities and libraries in general in the United States. Then my book dealer friend in York said, "The University of Stuttgart might be interested." I said, "Oh, maybe so. I'm not averse to taking marks as long as long as there are enough of them. [laughter]

He made contact and we diddled around with that and eventually they couldn't afford it either. I was basically stuck. Finally Bennett came up with the idea of the Linda Hall Library in Kansas City, Missouri. I knew about Linda Hall. I had some books highlighting their acquisitions and their holdings. So I thought, "Well, I'll let Bennett do that." A fellow came out and we met with him. His name was Lee Jones. What a dapper little guy. Always talking about the airplane he'd just bought and things like that. I think the library was founded in 1946 by some lumber baron. They were well-connected with a billionaire called Sutherland, I believe it was. They had a little write-up and we were sitting around the table having a nice lunch. I read it while we were eating. It was three or four pages. What it boiled down to was they were willing to pay five million dollars right up front, but the fine print was what turned me off. I was supposed to get five hundred thousand dollars in money and then donate the 4.5 million dollars back to Linda Hall. [laughter]

I remember just blurting out, "I read this twice. What's in it for poor old Roy? This is my life's work. My life's savings." So he said, "Wouldn't you feel honored to give us this library? We'll put a nice plaque up." I said, "Well, you can't buy groceries with a plaque. Look, if you are interested in buying this library, I want some hard cash—much more than this." I was a little bit miffed by the whole thing. They came into my house, sat down, ate my food, and insulted me. My back was up about that. So he said, "Let me go back and see what we can come up with money-wise."

So a month or two went by and he came back and said, "We're prepared to offer you six million dollars" or something like that. Now at that time the business with Stanford was overlapping, please understand. I didn't know whether I was going to get six million dollars with a struggle out of Stanford, six million dollars with a struggle out of Linda Hall, or if the whole thing was going to blow up. I had no idea. So I thought, "We still have well over four million dollars in cash from selling Lone Star. We've got a lot of money." It was close to five million dollars or so. I'm not going to be diddled down by these people and end up taking it in the shorts, as my stockbroker liked to say. So I said, "I really don't need the money but I'm not about to donate my life's savings to any place so you've got to make a reasonably fair offer."

So Jones went back again. He came back a month or two later and said, "We'll go higher than the five million dollars. What do you want?" I thought, "Wow?" So just like that, I put it up to seven million dollars and I thought, "Oh, you fool, why didn't you say 7.5 million dollars?" I would have made a profit, but not that much because you have to figure in the IRS. The IRS had been sort of my "baptism of fire" during the selling of my share of the cell phone business. I mean, those guys were just brutal. So he called up Sutherland and I could hear Sutherland say, "Do it," just like that. I thought, "Well, I just made another two million just by asking for it. This guy is obviously willing to go much higher than that."

So he said, "Okay, seven million dollars." He was operating through this dealer in southern California, and the dealer said, "I think we've got a go here." This was about October when he called Bennett and Bennett said, "He's told me that he intends to cut a substantial check by next January to Roy Neville." That's an exact quote. Great, the money's coming, we

can sign documents, and we're on our way. So January came and went. February came and went. March came and went. I said, "When's this guy going to do something?"

Finally he said, "I don't know. I'll keep after him." He kept asking but he was out of town or on the moon, I don't know, but he wasn't there. Nothing happened until about May. Then we got this letter from Linda Hall. "We are withdrawing our offer. We can't afford it right now," our budget and this and that. But remember the stock market just went down.

BOHNING: What year was this?

NEVILLE: Around 2001.

So I thought, "Well, there that goes. I'm stuck with it." I didn't really need the money. I had the four million dollars. The house was all paid for. I'll go on and enjoy my books."

I was in the middle of one operation after another during that period, and every time I went in the operating theater I said, "Oh God, poor Jean. If I die, she's stuck with all those books. She's going to get some dealer to come around and they'll say, 'Well, I'll give a few hundred thousand for the lot' and there goes our life's savings." So I thought, "I've just got to survive. I've just got to do something." One afternoon, I remember sitting at my desk down there in the basement and thinking, "Why don't I just give CHF a call. The person on the switchboard answered. I just explained why I was calling and she said, "I think you'd like to talk to our Ms. Elizabeth Swan."

So she got Elizabeth Swan on the phone. I described that I had this beautiful library, probably the biggest library in private hands in the world on early chemistry. I'd been collecting for about fifty-eight years or so, it was really quite unique, and that they might be interested in acquiring it. It was all very tentative. So she said, "Yes, I'd like to talk to Dr. Thackray about that." So I said, "Oh, Arnold. Yes, well, I <u>know</u> Arnold. He came to see my library in about 1984 and was very impressed with it."

Arnold got in touch with me and he came on out and he saw it. Of course, it had just about doubled since 1984, plus there were all these much more important high-cost, extremely rare, wonderful books that I couldn't possibly have touched in those days when he first came. Everything had magnified about tenfold, in terms of value. So he said, "Roy, I can't raise more than 4.5 million dollars." So I said, "Well, I'm just going have to go to Linda Hall." I didn't tell him at the time that they had said no, but, on the other hand, there was the possibility that the deal might have been resuscitated.

What happened is funny. Right about the time that Arnold got sincerely interested—he was starting to talk to his board and all that—I suddenly got this nice letter saying, "Oh, by the way, our finances at Linda Hall have suddenly improved." I thought, there's that billionaire in the background and they can offer me more money. So Jones came out and he offered me a

little more money. I think he offered me about eight million dollars. I told Arnold and he said that he might be able to raise a bit more than the 4.5 million dollars, so he came up to about six million dollars. It was kind of like playing catch up all the time. By then I particularly didn't like Lee Jones. I was civil to him. But I thought that it made more sense for this early chemical library to go to the Chemical Heritage Foundation. It's the logical place. Also Lee Jones said, "What we'll do if you allow it, Roy, is we'll sort through it and any duplicates we'll compare with our copy. If yours is not as good as ours, it'll go on the market."

So I thought, "That means it's going to be broken up. This is not good." Also, it'd be kind of like a small duck in a big pond as opposed to being a big duck in a smaller pond. I'd rather go for the latter. Also, the Linda Hall people showed me a diagram of where it was going to go. It was going to go in the basement where it would be basically forgotten. Lastly, I said to them, "Are you in Tornado Alley?" He said, "Oh, no, no, no." Well, apparently, they are right in the middle of Tornado Alley and all they needed was a tornado and a rainstorm.

There was lots of back and forth, back and forth. Arnold was sitting on the couch there, in the basement, surrounded by all these beautiful books and I was always referring to Linda Hall as the "other library." I said, "You've got a competitor." Arnold said, "Well, I don't want that." I also told the other library, Linda Hall, that they had a competitor. Lee Jones said, "I'm not interested in competing with anybody." I said, "Well, whether you are or not, you've got one." And he said, "Why did you do that?" And I told him, "Because you turned me down. I got a standard "Dear John" letter. As a chemist, I'm used to getting "Dear Johns" and I thought that was a polite way of saying no." "Oh, no, no. We didn't mean that at all." But what he really meant was he wanted us to give it to him.

[END OF TAPE, SIDE 15]

NEVILLE: Arnold mentioned Gordon [E.] Moore. I thought Gordon Moore was some sort of physicist or was in the electronics industry. I didn't know he was a chemist. He said, "Yes, Gordon is a chemist and he's a multibillionaire." I'd already seen him. I think he was on the *Forbes* 400 list. Seven years ago he was worth 3.3 billion dollars. Isn't that wonderful? What is that, thirty-three thousand million dollars? I can't even get up that high in my brain, but anyway, he had what we call deep pockets. [laughter] And he was a chemist. I said, "Look, Arnold, why don't you approach Gordon Moore?" I don't know whether Arnold was a little scared of Gordon or what, but he seemed a little reluctant. So finally I said, "I'll tell you what Arnold, invite Gordon over. He's a chemist. He's got to be interested in a chemical library. Invite the guy over. He lives like two miles down the road."

So he invited him over. And when the day came, Gordon was a very nice gentleman. I met him. I took him around, showed him some of the nice books on magnetism and pretty much all of the beautiful high spots, and he was extremely impressed. He didn't say much at the time, but obviously he was interested. He started asking questions. "What about this?" and

"What about that?" I assumed he was only going to stay about maybe half an hour. He stayed at least two and a half hours. He was interested.

He said, "Would it be all right if I bring my wife back to see this library?" I told him, "Of course it is, Gordon." About three or four weeks later, he and his wife, Betty [I. Moore], and Arnold came over, and I went through some of the books that he'd seen but that he wanted to see again and some more books that I hadn't had a chance to show them the first time around. They were so impressed. I had no idea that they were going to come up with the money.

In the meantime, Lee Jones was sort of racing along behind. The last time he showed up it was up to about 9.5 million dollars. By that time, Arnold had talked with the CHF board and he told me, "Yes, I'm very pleased to tell you that the board has approved ten million dollars." In the meantime I'd betrayed a bit of a confidence. I don't know whether Arnold really thought I was bluffing or not about the 7.5 million dollars. All I said was, "If you promise to swear yourself to secrecy, I'll show you the offer." I saw Arnold's face and he kind of went a little ashen, and it was, "Oh, this guy is not bluffing."

I said, "Well, I told you I wasn't. I tell the truth. This is it. I'd much prefer it to go to CHF, but money's important. This is our life savings and I have to pay a huge amount of taxes anyway, so I'm not going to end up with anything like that figure." The net result was that he approached Gordon Moore. Gordon came up with ten million dollars. Then Linda Hall came up with about 10.5 million dollars. I thought, "I'm so sick and tired of dealing with Linda Hall and this fellow who only wants to talk." He wasn't a book man at all. He was kind of a salesman-type, almost like a used car salesman. Although he was head of the library, of course, and in with this multibillion-dollar lumberman, who apparently was not particularly interested in books. He just wanted to get his name on a plaque or something.

Anyway, they offered me about 10.5 million dollars. I thought, "Ten is enough. Arnold really wants this and I really want it to go there, so I'll tell him it's a go." We had previously had Jonathan Hill over twice to evaluate the library and he said verbally it was worth about thirteen to fourteen million dollars, but he said <u>conservatively</u> it's worth ten million dollars. No, I think he said <u>conservatively</u> worth at least 10.5 million dollars. I thought, "Well, 10.5 million dollars. CHF will come up with about ten million dollars. They're stretched to the limit, the breaking point. I'm going to let them have it and I'll <u>donate</u> the rest of it." So that's what I did. I've given them probably at least two million-dollars worth of books. Wouldn't you know it, of course, I was getting these catalogs where the books suddenly went up in price, whoosh, like this. Oh well, *c'est la vie*. But the main thing is that I got a reasonable figure. The prices going the way they are, this collection is worth more like fifteen or sixteen million dollars right now. I think in another few years it's going to be worth twenty million dollars, if you can find the books at all.

BOHNING: What drives that market? Is it demand?

NEVILLE: Well, I think it's because the libraries around the world, not only in America, but also in Europe, suddenly realized their history of science holdings are just pitiful or non-existent. Also, the history of science is becoming more and more important. This is the science age and some scientists take an interest in their history. Not many, but some. Enough to get them all excited in the libraries. And also, of course, there's scarcity. Books are obviously a terrifically good investment. Not all books, but the really important ones. And that's what drives the market, I think. To me, personally, what's driving it is the fact that you can't find them anymore. Oh sure, you can always find a *Principia* lurking around somewhere (73a). Somebody's always got *Principia*. If you wait a year or two, you'll find one.

Jeremy Norman, the son of a brilliant psychologist or psychiatrist over at [University of California, at] Berkeley, Haskell Norman, is a book dealer. He collected the great classics of medicine. He had a Vesalius and other old and marvelous books. He published his catalog and he actually presented me with a copy of it, which is now back there with the CHF. Jeremy said that my library's worth at least thirteen million dollars. Jeremy Norman and I have been very good friends for many years. I said, "Jeremy, would you like to help me sell it?" He said, "Roy, I don't know anybody in this world who's got that kind of money." I said, "Well, you're a book dealer and you sell to multimillionaires. You sell to Bill Gates. Maybe Bill Gates would like it." He said, "I don't think Bill Gates is interested in this kind of subject matter." "He's got the money. He bought that Leonardo da Vinci manuscript which was something like thirty million dollars." "He just would not be interested." But Gordon was, so I thought, "Well, okay, great."

Believe me, I agonized for maybe two or three months over whether I should take the high number and say the heck with it. But the CHF seemed more—

J. NEVILLE: Scholarly?

NEVILLE: Yes, well, not scholarly so much. I'm trying to search for this word. I guess I'm getting tired. I thought, "No, I would rather it go to a place with a whole bunch of chemists and where there are very few books before 1850." So that's what I did. So it was done.

But then I thought to myself, "Oh my gosh, when I take that whole ten million dollars in one lump the IRS is really going to love me." So Arnold suggested we do it in two different tax years. It was November then. So we agreed, "Let's do it that way. Five million dollars this year and five million dollars next year." So that's the way we did it. You're privy to all this stuff anyway. At least, I hope you are. Am I letting too many cats out of the bag here?

BOHNING: I don't think so.

NEVILLE: No, I don't think so either. I mean, that's just the way it was. So I hope I've answered your question. I generally disliked Lee Jones. He started off on the wrong foot with

me completely, just tried to smarm me over and be nice, and sort of have his hand in my pocket at the same time.

BOHNING: You just made this comment about CHF's collection sort of being Civil War era and later.

NEVILLE: That's right. I mean not completely, but not too much earlier.

BOHNING: Back in the early days of CHOC [Center for the History of Chemistry], when they were associated with the [Edgar Fahs] Smith [Memorial] Collection, it was the Smith Collection that had many of those earlier works.

NEVILLE: They did, yes.

BOHNING: As I understand it there was a point where they said, "All right, the Smith Collection's that part and so we will go with the latter part," but then the separation was made with the University of Pennsylvania.

NEVILLE: Yes.

BOHNING: You told me the other night that you had visited the Smith Collection. What was your impression of the Smith Collection?

NEVILLE: First of all, I should set the scene on that. I was at an ACS meeting right around 1965 or 1966 and, of course, that was a period when I didn't have very much money. I was a bench chemist. You know how that was. But I was in Philadelphia so I thought I should visit the Edgar Fahs Smith Memorial Collection. I had this beautiful big red catalog. It was a raging hot day in July. I went way up to the top of the building where all the heat went. It was un-air conditioned. I met this lady in a dark gray dress. She was very pleasant to me. I'd contacted her by letter, letting her know I was going to be there, and she showed me around. I remember it all being in kind of cupboards. I think they were in dark cupboards or something like that.

BOHNING: I never saw it in that location. But I think that is where it was moved after they moved it out of Smith's office.

NEVILLE: I see, yes.

BOHNING: But there are pictures of Smith sitting at his desk with these cupboards behind him and with the books and the portraits.

NEVILLE: Yes, he was great at collecting engravings, probably ripped out of books. Not to say out of his books, but other peoples' books. I, too, still have my little collection of engravings, not only of chemists, but of other people too because I am interested in art and the visual arts.

There's this painting over here. I'd always wanted to own a David Teniers alchemy painting. I struck up an association with a man in Pasadena. He's actually an antique dealer, but he's specializes in seventeenth century Dutch paintings. He's got a name that a lot of people know. He came across this very famous, again, lumber man who just died in New York City, a multibillionaire, who was dispersing his collection of paintings. I bought that one over there, I believe it's a [Philips] de Koninck.

BOHNING: The one on the left?

NEVILLE: Yes, with the men sitting around the table. It's a gorgeous painting. I paid an arm and a leg for that one. And the dealer said, "He does have this picture of a kitchen, of a man leaning over a stove and he's got bellows. It's a Teniers. I'll have a Polaroid made of it. I found it in a Miami antique fair." I said, "Is it still there?" He said, "Nobody was interested in it, but it's a nice picture. I'll contact the dealer," who was then back in New York.

So he contacted him and got this Polaroid. I looked at this little Polaroid and I said, "That's not a kitchen. That's an alchemical laboratory from the seventeenth century." He said, "It's definitely a Teniers. It's got a monogram there with a typical D with a little T inside. It's dated 1649." I thought, "Well, that's perfect." So I asked, "Is it in good condition?" He said, "Yes, it's in pretty good condition, except it's not framed. You'd have to get a frame for it." So I said, "How much does he want for it?" He quoted me some outrageous number. I said, "Well, could we negotiate a bit on that?" So we negotiated a bit. Anyway, I still ended up with a slightly less outrageous number. So I bought it and I put an almost one thousand-dollar frame on it. A typical sort of seventeenth century-type frame. And there it is.

BOHNING: It's beautiful.

NEVILLE: Actually, it happens to be one of the biggest Teniers ever did. I've got another Teniers upstairs that's about this long, typical Teniers. Again, D with a little T inside it. It's a

little kitchen scene, with men sitting around, smoking a pipe, a little girl in the doorway, but not chemical. But this is definitely chemical.

That's the only chemical picture I have. I also like Dutch landscapes. I'm a very great admirer of Dutch painters. I have an original Rembrandt drawing in the other room. It's very small. It's only about that big, but it's not an engraving or an etching, as they call it. I do have a Rembrandt etching too, of 1635. The other one was done around 1631 when he was teaching himself how to etch. So it's just a beautiful little thing, but it's done on a piece of vellum. They didn't print etchings on vellum. It's too crinkly. So I was very, very pleased to get that.

I also happen to like eighteenth century French paintings. You know, François Boucher, all these cupids and things floating in the air—all the airy, fairy stuff. But it's so pretty and nice. And I like seventeenth century Dutch paintings. Landscapes, seascapes, and interior scenes. So that's what we've been doing since we gave up collecting books. I haven't bought one rare book since.

BOHNING: That was my next question. Do you still buy any books?

NEVILLE: No. Actually, I should say the answer is yes I do, but not chemistry books. I have built a nice little art library. Basically, I can't stand modern art. You see this stuff going for millions of dollars and I just don't understand it. Like Nelson Rockefeller. I saw his collection and he had this great big painting, about 6 feet by 4 feet. It was basically a big, huge piece of canvas, but it had been whitewashed. Somebody had taken a tar brush and just sort of slapped some paint on it. He paid about 2.5 million dollars for that piece of junk. To me that's idiotic. I could have done it. You could have done it. A kid could have done it. Anybody could have done it. It's just like somebody wiped their brush on a piece of canvas.

BOHNING: I thought maybe you were going to describe the one I saw in a museum in Washington. It was a very large canvas, all white, and there was one pencil line drawn down from top to bottom.

NEVILLE: Oh, I've seen those.

BOHNING: It wasn't centered. It was off center, which I suppose had some significance, but that was the entire painting.

NEVILLE: And they give it a title like, Opus 14, Soul in Torture. It's just complete nonsense. Of course, what isn't? In my way of thinking, and as W.C. Fields said, "Well, that's just one man's opinion." But, by golly, I think it's junk. I think it's absolutely nonsense—a con job.

BOHNING: One of the things we didn't talk about yesterday was your children.

NEVILLE: We have two daughters. My elder daughter is Laura Jean. She is a full professor at California State University, down in Los Angeles. She's a very, very good artist and she got a master of fine arts at UCLA [University of California, Los Angeles]. She teaches video filmmaking, a subject about which I know just about nothing, but she knows a lot and she has a class that varies in size from about twenty to twenty-five people per year. She makes these brilliant films, that's her hobby, and she likes to draw and paint. She's not married. She's a very good-looking girl, but she just decided she couldn't find anybody. She lives down in Los Angeles, North Hollywood, as a matter of fact. We only see her about once or twice a year. We keep in touch—about every other week or so she gives us a call.

Our younger daughter was born 28 January 1957. I was present at the birth. Her name is Janet Marilyn Neville. She is currently in Los Osos. We bought a house for her. But she wants to go down to Southern California with her husband, Dennis; she wants to be with his children. She married a man with two teenage boys. Now they're grown up and they've got their own little electrician business. He'd like to go down there and sort of work along with them. He's very handy. He's not a scholar or anything like that, but he's really a very good carpenter, electrician, plumber. He's Mister Fix-it, basically. I am anything but that. I can change a light bulb and I can do simple jobs. I told you earlier in this conversation, my father was like that fix-it type; he could take clocks apart and put them all back together, but if I'd take a clock apart, the joke was that I'd have enough parts left over to build another clock. I don't know anything about it.

I'm really not mechanically inclined. I think, on the molecular level, I don't like machines. They never seem to work with me. I don't know where to plug anything in. I'm just not that type, not like some people. I'll admit it. I'm a klutz where machines come in. That's one of the reasons I like being a chemist because I can look through the flask and see what's going on inside. I don't like to deal with machines. I don't know whether they're right or wrong. I've dealt with lots of machines. Of course, I can use them if I'm shown how, but I'm basically not a machine person. Are you a machine person?

BOHNING: Not like my father was.

NEVILLE: Well then we're the same.

BOHNING: Yes. I can do things, but my father was all self-taught.

NEVILLE: Well, I'm not a complete idiot. I can usually figure things out, but they're not my first love. I usually say to people, if I can't see what's going on inside there, I'm not quite sure what is going on. And right there I've got a real red flag. I don't know what's going on in there.

Did you want to ask me some more questions?

BOHNING: Last night at dinner we were talking a little bit about your experiences during the war.

NEVILLE: I can give you a thumbnail version. In 1938, the Munich Agreement occurred. Neville Chamberlain was a nice man, but very naïve, I thought. He came back home brandishing this piece of paper that said, "Peace in Our Time." And my mother said, "Well, what a poor man he must be." Here was Hitler armed to the teeth, with the super highways, the autobahns, mostly running east to west. My father said, "Oh no, Hitler doesn't want war. He doesn't want Germany all smashed up again. They're still nervous from the last time." It was shortly after Munich that we heard that we were woefully unprepared, militarily.

There'd been a Socialist Prime Minister called Ramsey MacDonald, who had been saying, "Disarm, disarm, disarm." My mother had more political sense than my father did, as far as that was concerned, and she said, "Why are we disarming while Hitler is arming?" In 1937 Mussolini went over and bombed Abyssinia, just right out of the blue. Abyssinia didn't do anything to Italy, but he was trying out his new air force. Hitler and Mussolini were getting together and it was obvious there was a war shaping up. In 1939 they were issuing the whole population gas masks, so we knew it was coming.

I can well remember sitting in class. There were perhaps about twenty boys in the class. I was about eleven at the time, I suppose, and we were making some awful noises with our gas masks. We were always joking around. We were all like a bunch of pigs, you know. There were these long extensions on our gas masks and you could make awful noises with the air coming out the sides of those rubber gas masks.

Mr. Morley, the teacher at the elementary school was talking about submarines; he was a sergeant in the First World War. I was beginning to get a glimmering of an understanding of how horrible war was. My father fought in the 1914 to 1918 war. He had been wounded in the leg. He still had the piece of shrapnel that was about the size of my index finger, a piece of bent metal. It was from a bomb casing. He brought home a lot of shells, which used to stand in our other house. He had cut them up and made them into ornaments; you know, to stand on a mantelpiece. I even had a hand grenade, believe it or not, which my father managed to take apart without it going off. He was pretty sharp in the mechanics department.

[END OF TAPE, SIDE 16]

NEVILLE: He also had two bayonets—a French bayonet and a British bayonet. I used to love to throw that bayonet a long distance to see it stick in the lawn. All of this happened while I was still pretty young.

By then it was obvious that Hitler didn't mean to keep his word at all. I remember we were down on a beautiful part of the Dorset Coast, called Durdle Door, otherwise known as the Barn-door. It's a piece of limestone. A piece of stratus tilted almost vertically and the sea had punched a hole in it. It's kind of like a big inverted horseshoe. The other end of the horseshoe is joined to the mainland, but there's this big horseshoe sticking out in the sea. They said on the BBC that at 11:00 a.m. Mr. Chamberlain would be making an announcement. This was 3 September 1939. No one had a TV, but somebody there did have a little portable battery operated radio. So we all crowded around listening to this little radio. We heard Big Ben strike, which is always a symbol that something bold was going to happen. We heard Mr. Chamberlain on the radio saying that he had asked Herr Hitler—we used to call him Herr Hitler—to withdraw his troops from Poland after 1 September. Hitler had taken Poland and Warsaw, but we'd not heard back from him and this was the deadline and still nothing. Therefore a "state of war" existed between Great Britain and Germany.

Everyone's blood sort of ran cold, because there were so many memories and so much talk, at the time, about the last war, which had ended in 1918. We went back home and nothing much happened. We tested our air raid sirens, and still nothing. We thought, "Nothing much is happening." We had several warnings with air raid sirens. None of us had air raid shelters, although they were mass producing these things. There were two types of air raid shelters. There was one called the Anderson shelter, named after a minister in the Parliament called Anderson, which was basically kind of a steel box with a little entranceway about two feet tall with just a pile of sand and earth over it, and you could just hope for the best. It stood above ground. There was not much to be done if you were in the snow or outdoors and freezing to death.

The other one was called the Morrison shelter, which was basically four pieces of angle iron lined upwards with a big piece of sheet steel about three quarters of an inch thick, reinforced steel, to sit on top. It weighed an awful lot. You just sat that down in your living room and used it for the table to sit around when you're eating, but when the siren went, you all went underneath this thing. We had one of those. It made a marvelous piece of furniture. There was a wire screen all the way around in case the house came tumbling down on you.

The war started and pretty soon there was [the Battle of] Dunkirk and the British were just hopelessly outnumbered. The Nazis surged through and the French didn't want their country all battered down, so they capitulated. And pretty soon we had Dunkirk. As I told you in the earlier tape, the war started 3 September 1939. I was going to a brand new high school on 19 September. It was around May, I think, that Dunkirk occurred and those poor soldiers, half-starved, worn out, hungry, some of them wounded, were suddenly in our town and in our houses.

We had some evacuees, two boys, from Southampton. The government came along and said, "You will take these two boys and the next time you'll take two girls and you'll take a boy and a girl." There was no arguing about it. They were just dropped on you. If you had a bedroom at all or even a sitting room, that was it. You had to take them. You couldn't argue about it. You could, but it wouldn't do any good.

So we got stuck with these two boys. One was named Graham Stacy and the other one was Peter Gray. He was very quiet. Graham, on the other hand, was a little older—sixteen—and he was very boisterous. Not a scholar, a nice fellow, but noisy. Anyway, we had them and then I was off from school about six weeks, while the soldiers were redistributed from our school. The school was pretty much ruined. The walls had holes knocked in them, they were marked up, and we had to repaint the school. It was a big mess.

In about the middle of 1940, we heard the Nazi planes coming over and bombs dropping. We heard that familiar whistle of the bombs. On some of the German bombs they would attach whistles. They would come down with this horrendous screech to strike terror in the population, which they were very successful at doing. You'd hear this terrible whistle and then you'd hear "boom." They might be four or five miles away, but you could certainly hear the high-pitched whistle.

Then they came around with butterfly bombs. Have you ever heard of butterfly bombs? They were nice, devilish little devices. They'd come down on a little parachute. They looked little dolls and little toys. They would fall in the hedges and the little kids would go around and go, "Oh look, I found a nice little dolly." They'd pick it up, and it would explode and kill the kid. Thousands of kids in Britain were killed or had their hands blown off or eyes blown out. It was just a devilish thing, but that's the way the Nazis were. They were barely human as far as we were concerned.

Then they had these little magnesium bombs, these fire bombs. Incendiary bombs would come down by the millions. Fortunately, our house did not get hit, but several in our neighborhood did get hit. In the schools there were lots and lots of water buckets and sand buckets and what they called stirrup pumps. I don't know whether this means anything, but they call them stirrup pumps for some reason. A stirrup pump was for pumping water out of the bucket, in case of an actual fire. We were lectured by the school masters never to pour water on a magnesium fire because it would blow up on you. There were sand buckets and spades in every room and every corridor. There were nothing but buckets and spades and water everywhere.

Every night they would have the older boys—I later became one of those people—on fire watch. It started up, as I remember, at a shilling a night and graduated as war progressed to half a crown. That's two and a half shillings. Pretty soon we heard these bombers coming over and going for the industrial towns in Britain. I can remember one night standing there in Bournemouth with Southampton thirty miles away. The flames were so tall. There was a range of hills, not high hills, but tall enough, maybe about a couple of hundred feet. We could see the red glow in the sky and we could see flames flickering from thirty miles away. The whole town

was on fire. It was just horrendous. We could hear the anti-aircraft—we called them ack-ack guns—blasting away. We'd see these tracer bullets going up and things raining down all over the place. We were right in the middle of the south coast. The Germans were just seventy miles across the channel.

There was one night when I remember going out there some time in the summer. I don't remember anymore which summer, because so much was going on. It's pretty hard to keep it all straight. I went out in the garden to look at the stars, because I was interested in astronomy. I looked towards the English Channel. We were about a couple of miles in from the English Channel. The houses were down the road, but the whole channel was rather lit up. I thought, "I wonder what is going on." There was flickering and so on. My father was on special police duty because he was a deputy policeman, as the younger policemen had been drafted. I asked my father why there was this bright light in that direction. He said, "I can't talk about it. It's classified." Everything was classified in those days. Nobody could talk, not even to their own family. He couldn't tell my mother because she would have probably blabbed it to the boys. You know, it gets around.

I didn't learn what happened until much later, towards the end of the war. I know that my father knew about this, but because they didn't want to alarm the population, it never got into the press. There had been a German invasion on the south coast of England. They had gotten in their little rubber rafts and floated these people, in many dozens of rubber rafts, all the way along from Dorset through Bournemouth, where we lived, clear up to practically the Southampton area. There's a place with shallow water down there, about twenty or thirty feet deep, almost like a big bay. The story goes, according to my father, and he heard it through the police, who of course knew all about it, that there was a little plane, a biplane, unarmed, flying over the channel at moonlight. It was basically a weather plane. The pilot happened to look down and radioed, "Why are all those little fishing boats down there?" This was about four to five miles off of the actual beach. Apparently the people he had radioed to said, "There are not that many fishing boats down there. Go down and have a closer look."

So he took his plane down. He was probably up about 3,000 or 4,000 feet. He went down and shot across at a few hundred feet. They weren't fishing boats at all. They were landing craft full of Germans. So he radioed back. We took some of our British bombers, loaded them up with gasoline cans or airplane fuel or whatever it was and went over the place from one end of these little dots in the water to the other and dropped these big cans of gasoline, which of course exploded on impact and then dropped some incendiary flares down. They set the whole channel on fire.

After the war, I remember going with my girlfriend down on the beach there. We sat there in the sand and dug around trying to find some seashells and things like that. We kept coming across these big pieces of rubber raft all singed and burned. By the way I should say, you couldn't get to the beaches during the war. The first 100 yards were all cordoned off. You could not get to the beaches, even though we lived right on the coast. The idea of going down there with a bucket and spade and swimming trunks was out. You couldn't go there. If you wanted to swim, you had to go to the river or a swimming pool, but not to the beach.

The beaches were covered with all of these metal spikes and they were mined. Until they'd been de-mined and de-spiked you couldn't go there. You've seen pictures of the D-Day landing, with all these things to stop the tanks from landing. It was not a pretty sight and it would have been very dangerous to go down there. They de-mined all those places. As I say, I dug up one particular area not far from where we lived. There were these big hunks from the outside of the rubber raft, the dingy. What do you call it? I don't know. Like a big flat boat, a rubber boat, but it was all singed. I remember they were gray and they were all burned and torn up, I suppose, but that's what it was. I thought it was a German uniform.

My father told me, toward the end of the war, that the reason they didn't want anybody coming in, that they cordoned people from further back in, about half a mile back in, was because there were so many dead bodies scattered up and down the beaches. They were burned. It must have been an awful way to die out there in a rubber boat.

The sea was sometimes rough and carried a corpse up on the sand. Pretty soon the only way you could discover them was with dogs and the foul aroma coming out of the sand. They'd dig and there was another one. That was as close as we got to being invaded on the mainland of England. However they did invade the Channel Islands and they took those over.

I can well remember standing on the roof of our garden shed watching literally hundreds of planes, Messerschmitts, Juncker, Heinkels, Fokkers, and some American planes, and the beginning of the jet planes, spiraling around up there in the sky. It was kind of thrilling in a way. I was standing out there without what we called a steel helmet. I suppose I should have been wearing one, but I wasn't, and I could hear the machine gun bullets and shell cases rattling down on the roofs. My father built one air raid shelter out in the garden, well away from the house. We used to cower down there. Can you imagine sitting down in winter, frost all over the ground, on a brilliant moonlit night, shivering in this awful British winter weather? During the early 1940s we said, "Where's the clouds, where's the rain, where's the fog." Nothing. We had brilliant weather, full moon, and the Germans could look down and see everything.

We were out there at about two or three o'clock in the morning, dressed in several overcoats and several layers of socks and several layers of everything, still cold, until dawn, with <u>no</u> sleep. We were supposed to have hours and hours of homework we were laden down with. My father said, "This is no good. I'm going to build a much bigger, better, safer air raid shelter, but something you can approach from the inside." So he and my grandfather and a few friends and I pitched in. Fortunately, due to the glacial action of the south coast of England, we have roughly about 3 feet of really wonderful good black earth. Then you come to gravel and then you finally come to what must have been sand dunes. So it's relatively easy to dig down through. Here it's nothing but solid rock and granite. You couldn't do that here.

So he built this shelter. As I remember, it was about eight feet long, about six feet wide, and about six and a half feet high. He had a friend in the building business so we gathered up all of the old bed irons and all the old metal bedsteads we could find for rebars. He had concrete, which we poured on all of this stuff. He had heavy railroad ties to put across the roof and seal it

all up. Finally all of the dirt and gravel was piled back on top. Our garden was ruined. We cowered down there for a couple years. It was awfully cold. One night I can remember sitting there at about 2:30 a.m. We heard the bombs coming, "boom," and the ground shook. "Boom." I remember thinking, "Oh god, this is very close." Then we heard another "boom, boom, boom" and we thought, "Uh oh, there's an unexploded bomb around here."

What had happened was that it was a bomb all right, but it hit the corner of the house of our next door neighbor and the nose somehow got bent. It was a phosphorus bomb. It was a thousand-pound, yellow phosphorus bomb. I suppose it was dissolved in heavy oil. Had it exploded and scattered all over the neighborhood, the whole neighborhood would have caught fire as the phosphorus dried out. The oxygen in the air would have set it going.

My father went over there and quickly discovered where it was because it was glowing. These were not particularly new houses. They were built in the 1920s, I suppose, or maybe even the teens of the last war. They had these big cornerstones. The bomb had hit right on the corner of the cornerstone. It was a limestone corner so it bent the nose of the bomb. I saw it. Instead of being straight up, it was kind of tilted, so the mechanism had gotten misaligned and didn't detonate the thing.

My father brought rubber boots and stood them in the hall. I had only gotten about two hours of sleep and it was still dark. I went downstairs and saw these boots glowing an iridescent sort of bluish green color just by the front door. I said, "Pop, that's yellow phosphorus. You should not have it in the house. For heaven's sake, put it in a bucket of water. It's going to catch fire." He said, "Well, I didn't think there was any harm to it." So, being a chemist, I said, "You'd better get it out." We had a little pond in the garden so I stuck it in the pond, which took care of the situation, but we could have inadvertently burned our house down because Pop didn't know yellow phosphorus from anything.

I could go on and on about many, many experiences.

BOHNING: I think you've given me a pretty good flavor of what you went through.

NEVILLE: It was terrifying. The Messerschmitts would fly in fifty feet over the waves, up over the cliffs by about one hundred feet and maybe about one hundred and fifty feet above the house and spray the street. You could hear them.

I'll give you one more bloodcurdling true account of what happened to me. There'd been a number of houses bombed in the area. I had a good friend, who was a very good chemist. He was one form ahead of me. He had a home lab. I went around one Sunday morning. His name was Tony Last. We did a few little experiments in his laboratory, in the garden there. He said, "Well, my Sunday dinner is about to be served so we'd better go in." We walked back up the garden and stood by the front gate talking for about another five minutes. I had my bicycle

with me. I said, "My goodness, I'm sure my mother's got my dinner ready." I was about two miles away from my house so I thought I'd better get on my bike and go.

I bade him farewell and took off. I went down the road there, down the hill. I was about perhaps a half mile away. I heard a plane flying over. No siren, so I thought it was probably one of ours. All of a sudden I heard this slight whistle and a terrific explosion. I looked back and saw this brown, dirty cloud going up and I thought, "My goodness that was awfully close to Tony's house." Well, it was. I cycled back up this short hill and went right to his house, where I had been standing, right to the front gate, but there was no front gate. There was a crater, at least twenty feet wide. I'd say it was six feet deep. The front of Tony's house was missing and all the windows, of course, were gone. The tile was off the roof. You could see all the rafters on the roof. I guess it was either a two hundred and fifty-pound bomb or a five hundred-pound bomb.

In the interim Tony had gone upstairs to take a quick bath, apparently. He came down with just a towel around him, he was still wet, covered with brick dust. He was trembling terribly. He handed me this piece of hot metal. When I say hot, it was the still warm. It was metal from the bomb casing, as jagged as could be and about a foot long. He'd been just lowering himself into the bathtub and apparently a piece of bomb casing had just whistled through and could have sliced his head right off. He took me up and showed me what was left of the bathroom. It was in ruins. There was this great big piece of wall that he'd taken this piece of bomb casing out of.

That poor man. He went back to school about a week or so later and his nerves were so shattered. He would have made a darned good chemist, but he just couldn't concentrate on anything anymore. The poor man had barely survived.

J. NEVILLE: Did he drop out of school?

NEVILLE: No, he went as far as a higher school certificate. I don't know what happened to him after that.

There was another fellow, but I don't remember the name, when I went into the fifth form. His name might have been Maitland or Middleton or something. I know it began with an M. His house was hit and he was almost killed. His hair turned white. It's hard to imagine. That's what war does to you.

BOHNING: Before the tape runs out, let me thank you again, both of you for your hospitality and spending the time with me for the last two days. I really appreciate it.

NEVILLE: Well, we've enjoyed it, going down memory lane.

[END OF TAPE, SIDE 17]

[END OF INTERVIEW]

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