Music at MIT Oral History Project

Cherry Emerson

Interviewed

by

Forrest Larson

November 30, 2000

Interview no. 2

Massachusetts Institute of Technology
Lewis Music Library

Transcribed by: University of Connecticut, Center for
Oral History, Tapescribe, from the audio recording

Transcript Proof Reader: Lois Beattie
Transcript Editor: Forrest Larson

©2009 Massachusetts Institute of Technology
Lewis Music Library, Cambridge, MA

Table of Contents

Note on timing notations:
Recording of this interview can be found either as one continuous file or as split up over two audio CDs. Timings are designated in chapter headings in both formats, with the timing on the full file preceding the timing on the CD version.

Contributors

Cherry Emerson (1916-2007) received bachelor's and master's degrees in organic chemistry from Emory University, 1938 and 1939, and a master's degree in chemical engineering from MIT in 1941. An accomplished amateur pianist, he studied for a number of years with Alfredo Barili. With William R. Cuming, he founded Emerson & Cuming, a manufacturer of specialty chemicals. Founded in 1947, the firm became a worldwide company developing products crucial to such industries as aerospace and oil drilling. Mr. Emerson's philanthropic activities have benefitted educational and cultural institutions, including MIT, Emory University, and the Rockport Chamber Music Festival. He was the primary donor supporting renovation of the MIT Music Library, which is named in honor of his mother-in-law, Rosalind Denny Lewis. Cherry Emerson died in 2007.

Forrest Larson, Library Assistant at the Lewis Music Library, has attended training workshops in oral history methodology and practice at Simmons College and by the Society of American Archivists, and is a member of the Oral History Association. He is also an active composer and violist.

Interview conducted by Forrest Larson on November 30, 2000, in the MIT Lewis Music Library. Duration of the audio recording is 1:38:30. Second of two interviews. First interview: November 28, 2000.

Music at MIT Oral History Project

The Lewis Music Library's *Music at MIT Oral History Project* was established in 1999 to document the history of music at MIT. For over 100 years, music has been a vibrant part of the culture at the Massachusetts Institute of Technology. This history covers a wide variety of genres, including orchestral, chamber, and choral musical groups, as well as jazz, musical theater, popular and world music. Establishment of a formal music program in 1947 met the growing needs for professional leadership in many of the performing groups. Shortly thereafter, an academic course curriculum within the Division of Humanities was created. Over the years, the music faculty and alumni have included many distinguished performers, composers, and scholars.

Through in-depth recorded audio interviews with current and retired MIT music faculty, staff, former students, and visiting artists, the Music at *MIT Oral History Project* is preserving this valuable legacy for the historical record. These individuals provide a wealth of information about MIT. Furthermore, their professional lives and activities are often historically important to the world at large. Audio recordings of all interviews are available in the MIT Lewis Music Library.

1. Coming to graduate school at MIT (00:14—CD1 00:14)

FORREST LARSON: This is an interview with Cherry Emerson, recorded November 30th, 2000, in the MIT Lewis Music Library. It's my distinct pleasure to welcome back Cherry Emerson for a second interview, and we're in the Lewis Music Library. So thanks again for coming; it's very generous of you.

CHERRY EMERSON: It's my pleasure. I'm glad to be here, in more ways than one! [laughs]

FL: So in our previous interview, there were some names that we wanted to clarify. And one that I have is that Alfredo Barili studied at the Cologne Conservatory. And you had a name you wanted to clarify.

CE: Yes, the famous German composer—

FL: Conductor.

CE: —conductor of whom I spoke is Otto Klemperer. And I heard him on a Christmastime hegira from Emory University to New York City and Columbia University, where my friend Ned [Edwin] Hanley was studying music. And he at that time was conducting the New York Philharmonic in Carnegie Hall. I went there and heard him perform a program that sticks in my memory perfectly to this day, which was *Leonore* 3 [Beethoven: *Leonore Overture* no. 3, op. 72], the *Eroica*—no. 3 of Beethoven [Symphony no. 3, op. 55], and *Verklärte Nacht* [op. 4, string orchestra arrangement] of [Arnold] Schoenberg. And that was quite a program! And I can hear some of the notes to this day! And Otto Klemperer was standing there, over six feet tall, thin as a rail, looked just like a soldier—and maybe he had been; I don't know. But he gave a wonderful performance. And I thought he must, at the time—I was just a college student—I thought he certainly is one of the best, and it turned out that was true!

FL: [laughs] Wow! So in the previous interview we left off talking about how and why you came to MIT. And I want to start this part of the interview off talking about Dr. Warren K. Lewis. He was also a graduate of MIT, a bachelor's degree in 1905 in chemistry.

CE: Right, yeah.

FL: And he had been chair of the MIT chemical engineering department from 1920 to 1929, and he was your principal graduate advisor and became your father-in-law.

CE: Correct.

FL: And Dr. Lewis is considered one of the founding fathers of the field of chemical engineering, and as an educator was a leading figure both here at MIT and nationally. The May 1957 issue of *Technology Review* quotes him saying, "Engineers need vision, and competence to solve economic and social problems as well as society's technical problems." So, Dr. Lewis obviously was a significant person in your life in many ways. Can you talk about him as both your graduate advisor, mentor, and also his personal influence on you?

CE: Well, I can, in many millions of words. So I will have to—

FL: [laughs] That's a hard question, I know! It's not a fair one.

CE: I'll have to cut that down a bit. But I actually, as a graduate student of Emory University, had a fellowship for one year at Johns Hopkins [University] in my pocket. And I may have mentioned in the previous meeting—I don't recall—my father wanted me, very desperately wanted me to convert to engineering. And so I finally agreed that if he would support me the first year in an institute of my choosing that I would abandon chemistry. After graduation from Emory, I had this fellowship for Johns Hopkins and intended to go there, and my father wanted me very much to study engineering.

Finally, I agreed to study chemical engineering, and I would turn back my fellowship to Johns Hopkins. And I asked him to support me for one year on my engineering involvement, with whatever institute I went to. I asked him what the best institute for chemical engineering was. He had to admit MIT, and so I said, "Well, I'll go to MIT. You give me a thousand dollars, and we're on the road." So that happened, and I came to MIT and corresponded with Warren K. Lewis before I came because I wanted to study directly under him. And I arrived in Boston on about the fifteenth of September, 1939. And thereafter I lived here with a few interruptions until 1980, after I retired from my business endeavors, and enjoyed almost every minute of it.

Now, with regard to my involvement with Doc Lewis, as everyone called him in those days, it was very intimate because I got very interested in his daughter Mary, whom I met while I was here. Dr. Lewis had a policy of inviting students whom he thought needed a little financial help, and were of the right character, to live in his home in Newton [Mass.]. Eighty-five Lombard Street is the address to this day. The family no longer owns the house; it's long gone from there. But while I was a student, in my second year, I moved out there and lived there until I finished my thesis and graduated from MIT.

And in the course of living in his home met Mary, a very attractive young lady. And so that went step by step to an engagement, and finally we were married. I graduated from here in August, I think, 31 of 1941, and we were married in 1942. And after my graduation, the very next day, I got on the train in Boston and rode out to Indian Orchard, Massachusetts, just east of Springfield, and went to live in a boarding house there, and went to work for Monsanto Chemical. Then as things progressed, I came back from there and we were married.

And then I had been transferred from Monsanto in Springfield to Monsanto in Everett, Mass., so we lived in Reading, a little town north of Everett, Mass., where the plant was. And I would ride the bus into work every day from Reading. And we lived in that fashion for about a year or more, and our first daughter, Mary Junior, was born in Reading, Mass. And we then moved from there to Cambridge, Mass., where we had a home very near Harvard Square, and I took that subway to—

FL: Park Street?

2. The chemical engineering firm Emerson & Cuming (08:49—CD1 08:49)

CE: Yes, Park Street, and then took a second subway toward Everett, and at Sullivan Square I got off of that Goodness, these things! I didn't know I'd come up with that one, even. And got on another bus, and from the south I approached the Monsanto plant in Everett. And that's where I worked for the next six and a half years, a total of seven years for Monsanto. And then—at that time—it was now after World War II, and during my time at Monsanto there in Everett I had met William R. Cuming, William Randolph Cuming, right out of Stevens Institute as a mechanical engineer; that was the only degree they gave.

FL: That was Stevens Institute of Technology?

CE: Stevens Institute of Technology [N.J.], yeah. I should have said the whole name. And he and I liked one another immediately, and so he moved into the same boarding house that at this time—wait a minute now. I may have mixed time elements up here. This was—I met Bill Cuming before I was married.

FL: Okay.

CE: And that was in the year of 1942, and we were— I was married with Mary just a few months later. [coughs] But—pardon me— but we established a good friendship when he moved into the same boarding house in Reading—not in Reading, in Everett—that I was living in before I was married. I had been transferred to Everett by Monsanto.

And then he went to war, as a Navy man, and in the radar business, and on a small carrier as a radar officer, and had a real experience out there in the Pacific where he was the—the aircraft carrier was sunk, and he was two days in the Pacific Ocean floating around before rescue by the Navy. And in the meantime had been shot at by the Japanese gun ships, who had seen him in the water and against all international laws had shot at them and didn't try to pick them up. And this was all in the battle of the Leyte Gulf out there in the Philippines.

He came back, though, and all that time I'd been working at Monsanto, helping produce ethyl alcohol, pure ethyl alcohol, for Navy gunpowder. And that was something they had to have, so I was exempt, technically, from the war and the war effort.

And then, being married in 1942, Mary and I lived in Reading, Mass., for just about two or three years during the war. And there—and then moved from there to Newton, Mass., where we had a home, and our second child was born there, Katherine Emerson. And we made a very nice home there in Newton. We had two different locations, and the last being on Solon Street, just off of Route 9, headed out toward Worcester et al., and just on the outskirts of Boston. And there we lived for a number of years because Bill and I founded the company Emerson & Cuming during those years.

FL: And they were based where?

CE: We were based at that time right in the middle of Boston. Our laboratory was on the corner of Boylston Street and Massachusetts Avenue, in a building which has since been torn down for the expressway out of the Boston to the west. And 126 Mass. Avenue was the number. That came easily! And we developed a laboratory there, and filled up several floors of the building, and then went down in the basement and filled up another floor. And we had grown to a number of researchers—this was all laboratory work—and had acted as consultants for a number of companies that needed technical help.

And one of those companies, by the way, was the Harvard Business School—not Business School—scrub that—the Harvard Medical School. And in the laboratory there, Dr. Edwin J. Cohn, who was the inventor of the processes for separating plasma from blood cells, and made that plasma available in World War II, had done this for hundreds of thousands of soldiers whose lives were saved that way. And we were developing equipment for further processing of the live blood cells that were separated from the plasma and did so for about three and a half years, I think. And we developed a centrifuge for separating the blood cells without lysing the cells, destroying the boundaries of the cells. And we did this by applying Teflon—probably the first Teflon application in America—to a moving piece of equipment, a centrifuge. We called it the Falling Film Centrifuge. And the Teflon surface was perfect for hydrophobic contact of the cells, and they did not lyse at all in this system.

And so it became a very useful device and went into many hospitals, and is still being used in hospitals to this day, 2000. It has been improved, of course, many times, and Arthur D. Little [Arthur D. Little, Inc.] was involved in one of the major improvements in the product. But it continued to be useful world-wide, for that matter. That was the beginning of Emerson & Cuming.

FL: What were some of the other notable products and inventions that came out of that company?

CE: Well, we became materials scientists and were the first formulators of epoxy resins in America. And these were designed, these formulations were designed to protect electrical and electronic equipment from the environment, be it water or heat, or whatever. And they were—we developed a wide variety of these, maybe twenty-five or fifty at the beginning, and hundreds over the years, and they became widely used under the trade name Ecco-this, that and that. E-C-C-O: Eccobond, Eccoshield, and so on and so forth.

And the uses were primarily for companies such as Raytheon and Hughes Aircraft, and people like that, who wanted to protect all of the circuitry, the electrical circuitry, that was in an airplane, say. And they had to use epoxy resins in order to protect them, to make their life certain under given circumstances, limits of temperature in particular. And they were our basic product line for a number of years. Then—I think I've wandered a little off from the subject of Warren K. Lewis.

FL: We'll come back. We'll get you back!

CE: All right. [laughs] But I think maybe I'd better go back right now, if you don't mind.

FL: Okay, sure. I have some other questions about him, but if you have a thought you want to keep going, go ahead.

CE: Well, okay. We got into many different product lines because we had a wide knowledge of plastic materials, and ceramic materials, for that matter. And one of the product lines we developed which was of real interest was microballoons. These were small, micron-sized particles, hollow, and made of plastic materials, and spherical in nature. And we made them first out of glass.

And so here we had these microscopic glass bubbles and converted the glass to quartz because, being chemists, that was easy to do. And that quartz microballoon to this day is the basic ingredient of the heat shield for NASA, for many functions now. Then it was for the insulation of the capsules, such as John Glenn went in, and others. And it was the scheme that made it possible to send those capsules out into space and bring them back through the atmosphere without destroying the capsule and the person in it.

FL: So the microballoon is a strengthener?

CE: It's a filler for silicone resin, which is then molded onto the base of the capsule. And the silicone resin, as any chemist listening to this will know, has side chains, particularly ethyl side chains—C_2H_5 for you chemists. And in returning into the atmosphere, the side chains would ablate, be destroyed by the heat and burned off, and the product then associated with the heat shield on the capsule would be a long chain SiO_2, surrounding the quartz microballoons, which were also SiO_2, silicon dioxide. And that made a very effective, lightweight, heat-intensive to 4500 degree material, and would serve as a perfect heat shield for the return from space to the atmosphere. And without it, no astronaut could ever have gone off, or they would never come back.

So microballoons made that way became very important, and not only as a heat shield for the space capsules with people, but for the nuclear warheads of the ballistic missiles because they went out of the atmosphere and re-entered and would have been destroyed too without a heat shield. And so it became an important product for that purpose. But all of that was small marketing as far as we were concerned.

And the use that was very important to E & C was an epoxy resin filled with glass microballoons, and then cured, to produce blocks of material with a density of about .5, which added—which meant that they had a great degree of buoyancy if placed under water, and became the basic element, this buoyant epoxy resin, in off-shore oil well drilling, which now is big business. And that was molded by us into collars, that material, which would be clamped onto the so-called riser pipe to bring the mud that was used to drill the hole—not real mud, but a fabricated mud of clay and glycerine—and a product which had to be used to go down the inside of the drill pipe and wash the tailings out of the bit, which was drilling its hole in the ground. And it had to come back up to the surface of the earth in order to recycle it because otherwise the driller would have gone broke the first day. And now, through a blow-out preventer, that was possible. And on top of the blow-out preventer, thousands of

feet of riser pipe, bringing the mud back, in a pipe maybe three feet in diameter, with a drill pipe in the center of only four inches, say, or five, maybe.

And that system of bringing the mud back was very reliable and would never have been possible without the buoyant material on the riser pipe because it was five-eighths-inch steel wall and extremely heavy, millions of pounds, hanging on the drill ship. And it would have been impossible to position the drill ship and hold it in position if the ocean currents started swaying that very heavy steel pipe. I'm getting into much detail here, I know, but it's sort of interesting.

And that scheme of epoxy buoyancy on the outside of the riser pipes of ships drilling underwater has just gone around the world, and all the drill ships use it. And so all of the riser pipe has been covered with that material since day one. And we developed that scheme with Esso in the Santa Barbara Channel out in California, when they first heard about our product and asked, "What can you do for helping us to support this riser pipe?" And we went right to work and engineered a scheme, which they adopted and has gone around the world since. That was another product line.

A third was in microwave absorbers, because we had a lot of knowledge of microwave technology at that time and developed a wide variety of microwave absorbers—basically carbon particles, very small carbon particles—which would absorb the radiation coming onto them and convert it into heat and get rid of it, and so there was no reflection. That was what was called a microwave absorber, and it was fabricated mainly using polyurethane foam impregnated with carbon particles. And these microwave absorbers could be shaped in, say, pyramidal form of different lengths, depending on the wavelength of the radiation you wanted to absorb. And the longer the wavelength, the longer the microwave absorber, and vice versa. So we produced it from one inch for very high frequencies to twelve feet for very low frequencies.

And these things were designed into chambers, called RF shielded anechoic chambers, microwave anechoic chambers—that was it—RF shielded, radio frequency shielded, microwave anechoic chambers. And these things could be used in small size, which many were, or in tremendous size, which were used for complete aircraft. You would build a large chamber, line the walls first with metal and all the accoutrements that went with that for doors and air conditioning, and so forth. Each was a separate design of a piece of equipment. And then the microwave absorber was pasted to—cemented to—that steel wall, stainless steel, aluminum, or whatever it was in the case that you chose. And into those large chambers you could roll an airplane or a satellite or an antenna system, and test it very quickly.

For example, chambers have been built for full-size aircraft, mainly for the military, of course. And these aircraft are then rolled into the chamber, and the power was turned on, and all the antenna systems were turned on at one time. And in a few minutes, with the proper set-up, you could determine that each antenna was indeed to specifications, because there was no reflection from the walls of the chambers when they started to put out the power.

And thereby it saved many millions of dollars for testing any one aircraft because otherwise it was flown in the air with chase planes to pick up the antenna broadcast from the plane and record it. It was timely—very time-consuming, and it took hours to get a plane up in the air, check all the antennas, and bring it back down to the ground—sometimes days and sometimes weeks. And so to put it into a chamber on the ground was a very big saving in cost for the military, and that was a substantial business. But the microwave absorbers went into thousands of different uses, in small sizes and large sizes.

FL: So you really got away from your original—?

CE: Chemistry.

FL: Yes, yes!

CE: But the chemistry entered into every one of those things that I've described. But it wasn't classical chemistry, it was applied chemistry, in every sense of the word. But that was materials science in those days, and so that was the short picture of Emerson & Cuming. I will send to you a brochure which will describe the operation better than I've done here.

FL: That's beautiful, though. That's great!

CE: So that's a true [laughs] presentation of some of the things we did. But there were many others. We probably had several dozen products which were marketed for many years. And I would say that out of fifty, we had two or three phenomenally good, and maybe ten that were good, and the rest of them just so-so. You can't hit the ball on the head every time.

And that was a quick story of Emerson & Cuming. That lasted—we celebrated our fifty-third year this year, and the plants are still running round the world and larger than we left them when we sold them in 1980. So it was quite an exciting time, all told.

3. Warren K. Lewis, new MIT humanities curriculum (31:55—CD1 31:55)

FL: So moving back to talking about Dr. Lewis, was he musical, or artistic in any way?

CE: No is the quick answer, and the perfect answer to that. He [laughs]—I remember one story. He said somebody accused him of singing off-key at one time. And he said, "I'm not off-key. I'm off a whole band of keys!" [laughs] So he knew it. So no, he was not interested in music at all that I could find out. But his wife, Mrs. Lewis [Rosalind Denny Lewis], was very interested in music. She studied it historically, and she also played the piano, and she sang. And so I think that talent was in the family. Mary, my wife, her daughter, was a good pianist. She wasn't the world's best, but she was good.

FL: So did Mrs. Lewis sing in choirs and things like that?

CE: I think so.

FL: Yeah.

CE: Church. Church business.

FL: And you heard her play the piano?

CE: Yes, that's right.

FL: What kind of music did she play on the piano, do you remember?

CE: Well no, not precisely.

FL: Or even in general?

CE: Chopin, I think, and maybe even Mozart, but I'm not sure of that. A little Beethoven. Mozart, in my opinion, is the hardest of them all to play.

FL: That's what you were saying.

CE: Yeah.

FL: Now, with Dr. Lewis, did he have any interest—what kind of interest in the arts did he have?

CE: None!

FL: None? Not even the arts in general?

CE: No, and that brings up a very interesting point, to me anyway, in my life. I, of course, knew him quite well. And I knew when he undertook the production at MIT of the "Lewis Report," which was in 1949.

FL: Right. The formal name of that is The Committee on Educational Survey.

CE: Right, that's the formal report name. [Report of the Committee on Educational Survey to the Faculty of the Massachusetts Institute of Technology, December 1949] And he had a group of people, of course, all distinguished people, and he was chairman of that committee.

FL: That's right.

CE: And their idea was to come up with a plan for the future of MIT, Massachusetts Institute of Technology, for the next fifty years! That's quite a project. And they did it, and they did it very well! And I remember frequently talking with him about the effort he—I don't think he even asked me a question about engineering or science, but he asked me lots of questions about the arts because the committee had decided that the arts had to be a part of MIT. And as William Barton Rogers [founder and first president of MIT] claimed, when he first made his presentation to the State House [Massachusetts General Court, the legislature] in Boston there, looking for a license or whatever they called it in those days.

FL: The charter.

CE: Charter, looking for a charter to begin the building of MIT. And so I, being somewhat informed in the arts, I pushed that idea because I could see that he really was seeking information from an unbiased source. And so I fed a lot of information through him back to that project they had. And I'm sure it was digested thoroughly by the other people, whatever I said, and their version came out as The Word. But I

think I had a small influence on that report, through him, about the arts side of the report—nothing to do with the engineering or science.

FL: I mean, he seemed, in reading that report and other quotes of his, he had a broad humanistic vision of a professional engineer's life anyway.

CE: Absolutely. He certainly had that! Yes, the social side of engineering, you might call it.

FL: Mm-hm, and the social science aspect of it, yes.

CE: Yeah, right.

FL: Because he really makes a real eloquent case for humanities being an integral part of the undergraduate education here at MIT, and nationally with engineering education.

CE: That's part of the original charter now, don't forget that!

FL: That's right.

CE: William Barton Rogers was the first one to enunciate that.

FL: Right. And they had gotten away from that, and that was one of the reasons that the Lewis Report, or the committee, was formed.

CE: That's correct, they had gotten away from it. I'm not sure they're all back yet, even to this day. I told them so a few minutes ago, down there!

FL: [laughs]

CE: I thought that they had not yet fully committed themselves to the arts, and I issued a plea for them to think again about that and try to enunciate a policy that would really reassure other people that MIT truly was back on the track of William Barton Rogers's original idea. [Editor's note: William Barton Rogers, in his proposal to the Massachusetts Legislature, did advocate the integration of professional science-based training and liberal education. But his use of the word "arts" referred to the industrial or practical arts, a commonly understood meaning of the time, and the meaning implied in the MIT Charter.]

FL: I'm going to move on. I'm going to get back to that because I have some specific questions about this very subject.

CE: Sure, all right.

FL: I want to ask you a little bit about your master's thesis. It was called "Study of Reactivity of Impurities in Clay Catalysts." And I guess that's dealing with purifying a particular kind of clay called Polkville clay, for use in refining petroleum oil. Is there a way, in layman's terms, you can talk about, and briefly, what your thesis—?

CE: Yes, but hold it a minute. It's not Polkville.

FL: That's what it said in the thesis. It mentioned Polkville clay.

CE: How did it—?

FL: That's what it mentioned. Again, I might be misunder—

CE: How do you spell it?

FL: P-O-L-K-V-I-L-L-E.

CE: Yeah, well that's an error. I'll have to look into that. I can't remember it now, but it's—

FL: You were talking about the problem of certain metal impurities.

CE: Yeah, but the clay—pardon me, but the clay was named for a small town in southwest Georgia. And it's not Polkville. It's some other similar name.

FL: Oh! [laughs]

CE: And I've got to think, or look on the map, or come up with that name for you. But the clay name is for the name of the town where the clay was found and dug up and used. But yes, it was, the thesis was about the purification of that clay, to remove particularly iron particles from the clay, and purify it therefore—thereby, rather—for a catalyst for the cracking of oil into—from long chain organic particles into short chains, like C-8 and C-6, and things of that nature. Carbon-6, Carbon-8, Carbon-12, whatever. But thereby producing a gasoline which normally is hexane C6, but of a quality for aircraft, which was much higher than any other type of long chain carbon particles. And it was the—you see, the octane is eight chains, eight carbon chains. Hexane is six carbon chains. And the high octane is the kind that's now widely used in automobiles, but in those days wasn't even produced. And it was an attempt here to produce that kind of gasoline particle that could go into military aircraft. And this was foresight, before the war started.

And finally Esso [oil company], in particular, down in Texas and Louisiana, was able to do it. And it was that gasoline—and I've had contentious moments with MIT people who don't think what I'm about to say is right, but I'm standing by what I said—it was that gasoline that came from this new cracking process, these suspended clay particles in a distillery—distillation—column, and using the best clay particles to produce the high-quality gasoline, literally. It had to be fumed out; heat carried it out, and then it was condensed, and you had what you were looking for. And it was sent to England and widely used in the Battle of Britain in 1940.

And that was what my thesis was all about, back in '39. And I'm not trying to say that that thesis material had any big effect on what Esso was doing, which was on large scale, and my stuff never got past the pilot stage that I know of. So I'm not making any claim that my thesis had any real impact on the gasoline supply for high octane gasoline during the war, but whatever Esso did along those lines proved to be the big winner. And eventually it was used in all of the military aircraft that were involved in World War II.

And I'm sure the other side, the German side in particular, was trying to do the same thing. And I don't know anything about their success or failure, but they certainly came up with some good products. The jet engine, you know, came out of that war. The Germans came up with it first. And the gasoline that was used to fuel those jet engines must have been pretty good quality. I don't know many more than that.

But that was—it was an attempt to remove iron from the clay, leave it thereby more porous, and the iron would interfere with almost everything, and so you wanted

it out of anything that subsequently happened to the clay. And I got it out all right and described the process as best I could.

But Esso later claimed that they were not able to duplicate those results. And I don't know why, and I was involved in the war effort anyway, by that time, and I didn't have any time to go down to Esso and straighten them out. But run as described in that thesis, it will work every time. And what happened down at Esso in a pilot plant I just don't have any knowledge of. But that was an interesting time in my life.

4. Cherry Emerson's family (45:30—CD2 00:00)

FL: So moving on here, and getting back a little bit, we'll talk a little more about your wife, Mary Lewis; you married her in 1942. What was her academic field of study at Vassar College?

CE: Physics.

FL: Physics, wow.

CE: She was studying physics and did study physics there. But she completed two years at Vassar, and then we were married, and so she left Vassar and did not graduate from Vassar. Her class was '44, and she still gets documents from Vassar and supports the school. But it was not a full education of Vassar college courses.

FL: Did she continue any professional involvement with physics, or anything like that?

CE: Well, yes and no is the answer. She worked in the Rad Lab at MIT, the Radiation Laboratory. And of course, that has to do with all sorts of electrical and mechanical stuff. And she was what was known as a computer in those days—not that she was a mechanical object of any nature, but that these girls, and there were several—many of them in Building 20 there at MIT, who used slide rules to calculate the answers to problems that were handed to them by the engineers. [laughs]

FL: [laughs]

CE: And so they were known as computers! It is quite a name, but that was what I asked her: "What are you doing there?" She says, "I'm a computer," and she was. And there were several of them there, and they would just take a problem outlined by the engineer and calculate the results. And so she did that for several months. Then she became pregnant with our first child and so in 1943 Mary Junior was born. And at that time we were in Newton. I've corrected myself; I said it wrong in the beginning. I hadn't planned all this! And so does that answer your question about Mary?

FL: Sure, yeah.

CE: She's a good pianist, as I think I mentioned.

FL: Does she still play?

CE: Yes, she can still play!

FL: Great, yeah. And she was also a singer? Did she sing?

CE: No, no, she never sang.

FL: Okay, but it was her mother that was a singer as well?

CE: Yes.

FL: Did you ever play duets with her, piano duets?

CE: A little bit.

FL: Yeah.

CE: Yeah.

FL: There's some great music in that repertoire.

CE: Yes.

FL: So, what kind of music does she like? What stuff really gets her excited?

CE: I would say the real classical music of Mozart, Bach, Beethoven. That gets her excited more than anything else. But she likes a wide variety of music; I'm not saying she doesn't.

FL: Yeah, sure.

CE: But the thing that turns her on, probably most of all, is Bach. And then Beethoven and Mozart, and Schubert, possibly.

FL: So you had six children. Are any of them musicians or artistic in any way?

CE: Well, our oldest daughter, Mary, and oldest child, was a good pianist as a youngster. I don't know how she's kept it up; I really haven't followed that. But she was quite musical. And then of the boys, Ned, our youngest son, Edwin Logan Emerson, played the piano as a child. And he has a son, my grandson, and that kid is a true musician! He plays the saxophone, and he plays the trumpet, and he plays the piano. And he really loves music—just, he'll play almost anything! He can—

FL: How old is he now?

CE: He's thirteen right now, and he's been doing this for about five years! [laughs] It's amazing. So the talent got in there somewhere; I don't know from where.

FL: So he's playing in the school band and things like that?

CE: Oh, yes. He plays in the school band and all the little activities they come up with kids there that need music. And he likes best the saxophone, but he'll play almost any musical instrument.

FL: That's fantastic!

CE: Yeah, it is!

FL: Wow!

CE: So yes, it's still in the family.

5. Philanthropic activities (50:53—CD2 05:25)

FL: That's fantastic! So moving on to the subject of your philanthropic activities, seems particularly since your retirement you've been very active in a number of philanthropic activities, cultural, educational, and probably in other fields as well, both in Atlanta and the Boston area. And you've been quite generous to MIT. What inspired you to get into this kind of work?

CE: Well, that's a great question, and I will try to answer it carefully because it is a work—and it should be a work of art. And it's based, in my case, on a position which is well known to my family and friends. I would desire to die penniless. I don't see any point in trying to have a big asset when you're about to be put underground. And so I've gone about it with that idea in mind, and I have set aside a substantial sum in a trust for the children, paid the taxes on it and all the rest. So that fund is going to be what otherwise would have been an estate item of mine and subject to all the perils of the state and the eyes of the government.

And then, having done that and gotten it out of the way, I attacked the problem through institutionalized charitable giving, and have set up what are called charitable remainder trusts, both at Emory University, my original alma mater, and—well, no, I started to say, and MIT, but that's not true yet. Those gifts to MIT have been, so to speak, cash gifts, stock or cash—same thing. And I may very well set up a charitable remainder trust there before I'm dead, which may be any time now! [laughs] And I've done it in a substantial way at Emory University.

This is giving the money to the university, but with the proviso that the income from that money until I'm dead will come to me. And that's how a charitable remainder trust works. And so I have three of those working at Emory: one strictly for the children, and the other two for Mary and me. And that's how I make a living, so to speak, today, since nobody wants to hire me. And that really is it, in a nutshell.

You see, when I die I won't have anything of a substantial nature. It'll all be in those trusts, and so it'll be a smooth transition [laughs] from the house to the grave. And I think, at least for me, let's say, that's the right way to do things. And so I've been able, using that sort of scheme, or stock gifts as I've made to MIT and to Emory and to Georgia Tech and to Georgia State University—did I mention that before to you?

FL: No.

CE: Well, that's a fine school, right in the middle of Atlanta, and it's the second largest school in the state of Georgia. The University of Georgia in Athens is the largest; Georgia State University is second. Then come Emory and Georgia Tech, and MIT, and I'm associated with all of them.

And so I think I might achieve what I want to by the time I'm underground. But it was based on the idea of why just horde it? Put it out there and make it useful to a lot of people. And that's what it's doing. These are primarily aimed at the students, or my kids. And I think that's the right way to live, that's all.

FL: That's beautiful! You've shown a great deal of interest in supporting the music program here at MIT. Is there something special about music at MIT that you find particularly appealing?

CE: Well, the novelty of finding it here, for me. I didn't find it when I was here as a student. I told you that in that earlier interview.

FL: Yes, that's right.

CE: And I've found it here. I don't know on what occasion, or whatever, but I did. And it was about the time that Ellen Harris came here from Chicago to run the—

FL: Associate Provost—?

CE: —Associate Provost of the Arts business, and later, as of right now, since she's been here eleven years now, she's chairman of the music department [Associate Provost for the Arts and Professor of Music at MIT, Music and Theater Arts Section]. And it was through her, meeting her somehow—I've got to figure that one out, too, for you, and I will. She'll remember; if you really want a quick answer, just ask her. But she was, so to speak, my mentor of what I should do with the music department here.

FL: Do you remember how you met her?

CE: Oh, not right now.

FL: Yeah! [laughs]

CE: I'm sorry.

FL: It's okay!

CE: I just can't come up with that. But I may stop by her office after this interview, and I'll ask her to call you and tell you.

FL: Yeah.

CE: Because she will know. [laughs] It must have been some MIT-organized meeting, and I was invited, and she was there, or something of that nature.

FL: I see.

CE: And so I'll find out for you, but right now I'm hitting zero.

FL: Now one of the things that you have done that's had a huge impact on the students is the MIT Emerson Music Scholarship Program for Private Lessons in Musical Performance.

CE: Right.

FL: Tell me how that came about.

CE: Well, Ellen Harris was primarily my source of information on that. She told me about the program they had going there that was limping along, and just barely going, and was under the direction of Marcus Thompson [violist, Professor of Music at MIT]. You must know Marcus?

FL: That's right.

CE: And he of course is a very fine musician. And they were in desperate needs for funds. And I studied the whole thing for a while, and then I decided that was an excellent place to help students. And with that idea in mind I made a substantial gift. It was all cash. It was either stock or cash; I don't remember which one it was, but that's the same thing. MIT gets the stock and they trade it right away. They don't wait around. And it happened just that way. I hadn't even met Marcus Thompson at the time, but I knew of what he did and his association with both MIT and the New England Conservatory.

FL: Right.

CE: And what he was trying to do with the students. And today he remarked, as you did, that it had been very important for the students here at MIT, and was being successfully managed, and looked as though it was going to be a real long-term help here. So I was very pleased to hear that.

FL: And of course, you were the primary donor that made possible the renovation of the music library that we're in right now. It was completed in 1996. Can you talk about how that came about?

CE: Well, I heard about the library through Ellen Harris. And that was not the first time I knew her, though; it was earlier than that. And I had always wanted to do something for the Lewis family, which indicated my love for them and all that sort of thing. And this seemed like an ideal situation for me to step in and help the library and get it named for Mary's mother.

FL: That's Rosalind Denny Lewis.

CE: Rosalind Denny Lewis. Rosalind Denny Kenway was her original name. She was a Kenway, and Mary's grandmother was a Kenway. And that Kenway man came from England, directly, as an architect, to New England, and worked in the Boston area. And at the age of thirty-nine, he—I think it was heart trouble—he went back to England and died there at the age of thirty-nine. And of course, Mrs. Kenway went with him and came back from there. And he's buried over in Wales, England somewhere.

My daughter Mary knows the whole story on that one. She's been there to the cemetery and gotten all the documentation. She knows more about the Kenway family than the Kenways ever did, that's for sure! That's our daughter Mary. And so Mrs. Lewis's mother came back, and she had all those four children: Herbert Kenway, Edward Kenway, and then two girls—oh, I'll fill in that blank for you easily, if you'll just give me a little time.

FL: Sure.

CE: And it was Rosalind Denny Kenway who married Warren Kendall Lewis. And they had four children also. And that was H. Clay Lewis, Herbert Clay Lewis. Herbert was an old family name of the Kenways, too. As a matter of fact, the fellow who came and died was Herbert, went back to England and died. And so, Herbert Kenway was Mrs. Kenway's brother. Have I made that clear?

FL: Yeah.

CE: And Edward Kenway was her brother also. And her sister, I think, died then. Yeah, that's right. She had a sister who also died young, and I'll have to come up with her name, too. I didn't really prepare myself for this. But Mrs. Kenway—I'm sorry, Mrs. Lewis—was really just a wonderful woman. I got to know her as a college student, when I lived at their home, as I told you about.

And I really loved the woman, before I even married Mary, you know. And she was just running that house, and she ran it right! And she made her children shape up. It was really a first-rate organization, that's what it was! And Mary was one of them and so I was attracted immediately, and we made out all right.

FL: So what were Mrs. Lewis's professional interests?

CE: Oh, she was not a professional in any way, outside of the home.

FL: Had she gone to college?

CE: Oh, yeah, she was a graduate of Radcliffe [College]. You have her portrait right here [on permanent display in the MIT Lewis Music Library].

FL: That's right.

CE: And that portrait is her graduation day portrait.

FL: I see. What did she major in, do you know?

CE: I am not certain, but I'm pretty sure it was English and associated subjects.

FL: Mm-hm.

CE: Languages. But if you want me to be precise on that one, I'll have to check that also.

FL: Okay.

CE: I think—I have a good source on that one. Mary knows about what her mother did at Radcliffe. But she's a Radcliffe graduate.

FL: So moving on here, when did you first meet the pianist David Deveau, who's on the music faculty here? When did you meet him?

CE: Well, it was one of my trips to MIT. And I would guess it's ten years ago. And they just introduced me to him there at MIT, and we hit it off right off, telling stories about piano players and music and things of that nature. So I've known him, I'd say, for ten years now.

FL: And what do you find compelling in his piano playing? It seems like you've really bonded as pianists. When you first heard him play, what were some of the things that attracted you to his playing?

CE: Well, in the first place, I was startled at how good it was! I'm a fair judge of piano players, and I knew I was listening to a real genius at the keyboard. I knew that. And he is! That's what he is!

FL: He certainly is!

CE: And so I didn't—it didn't take me long to figure out that here was a guy who ought to be better known. And then I found out that he really was pretty well known and had played around the country, I think out on the west coast in particular. He was well

known in academic circles, anyway, as a real musician. And so I tried to arrange a contact between Emory music and MIT music, and I did. And it was an exchange of music. We'd send some people up there, and they would send some people down here.

But that was not a very successful effort, because it was too expensive for what it produced. It didn't have enough value in it to either side, and so it went down the drain after about three years, and neither side wanted to commit any more money to it. And I don't blame them; I think that was the right decision. But that's when I really got to know David because he was the first one they sent down to Emory, and he did a wonderful job of a recital there, and talking about music. And so that was more or less my whole introduction to David, and since then I've found out he's running the Rockport Festival [Rockport Chamber Music Festival, Rockport, Mass.].

FL: Right.

CE: And so I've helped them out financially. And it's turned out to be a real good thing and I think will continue to succeed now. He's got lots of people helping him now.

FL: Do you get to any of the concerts there at the Rockport Chamber Music Festival?

CE: Oh, yes. We go every summer up there from Duxbury [Mass.].

FL: Yeah.

CE: And once a group like that starts to succeed, then all the people want to get in on it, so to speak. And you've got to create success first, and they've done it. And that's a find. Do you get up there occasionally?

FL: Occasionally. I want to do more.

CE: Yeah. They're good.

FL: I feel a little guilty not getting there more often! [laughs]

CE: Right. But that's about the story. It was pretty clear from my first meeting. He played the piano for me, and I can't remember the circumstances exactly, but I knew I was with a winner there. [laughs]

FL: David has talked to me at times about your real deep love of chamber music. How did you—where did that particular love for chamber music come from?

CE: Well, from hearing it, first occasionally live, and over the radio, and later on, the television. But I liked it from the start because I can follow the music so much better than I could an orchestra. People will say, "Well, an orchestra, a lot of it is playing the same note." Well, [laughs] that's true enough for a short time, but it's not characteristic of orchestral music.

And so instead of the complex, sometimes noisy presentations of orchestras, I just like the chamber music because, well, to me it was more soulful. You can hear almost everything, and it just fulfilled my interest in music. That was basically it. So I decided to support chamber music, and I have done it, both at MIT and at Emory University, and the Atlanta Chamber Players, and at Georgia State University. And it's been a rewarding effort.

FL: So do you have any particular favorites in that wonderful repertoire?

CE: Oh, it's endless!

FL: That's an unfair question!

CE: Well, I will answer that fairly readily because Mozart is my favorite. And given that fact, the conclusion is obvious that his chamber music is also my favorite.

FL: Things like the G Minor Piano Quartet and stuff like that?

CE: Yeah, right.

FL: Yeah.

CE: Yeah, and it is marvelous, there's no question of that. So I would say as a starter that Mozart was. But I love all kinds of chamber music! We just heard [Ernö] Dohnányi over here at—

FL: Oh, yes!

CE: You know that sextet? [Sextet, op. 37, for piano, horn, violin, and cello]

FL: Yes, that sextet, yes!

CE: Right. And they just played it yesterday over there at the meeting [MIT Corporation Visiting Committee, Music and Theater Arts Section] I was attending And it was so well done! They had two professionals, and the other four were students.

FL: I've heard that. They did that in October at a concert here, too, so yes.

CE: The horn and the violin, I think, were professional. Is that right?

FL: No, Marcus played the viola on that.

CE: That's right.

FL: Yes, right.

CE: The viola. Marcus played the viola, and the lady [Jean Rife] played the horn. And the other four were students when I heard it. And that was a marvelous exhibition, I thought.

FL: So just before the interview started you mentioned that you knew David Epstein [Professor of Music and conductor of the MIT Symphony Orchestra]. I was pleasantly surprised. Tell me about that.

CE: Well, I've been associated with music at MIT for a long while, and I wouldn't know exactly how I got started. It was peripheral, though. But I got to know him as the conductor of the symphony orchestra there. And he and I spoke, and we set up a correspondence, and I wrote him letters, and he wrote me letters. You should be able to find them over there in the music department somewhere, some of those letters. And he thanked me more than once for supporting his effort on the orchestra.

FL: So you've been supporting music even before the time that Ellen Harris was here?

CE: Oh, yes, yeah. Absolutely! And, but not in as big a way, financially.

FL: Yeah.

CE: But David was one of my first real contacts with music at MIT.

FL: So do you remember how you met him, or when?

CE: Oh, boy.

FL: Maybe not so much when, but how did that come about?

CE: Not right now. I can't tell you.

FL: So it goes way back?

CE: It goes way back.

FL: Because he's been here for a while.

CE: Oh, yeah. Well over fifteen years. Could be twenty or twenty-five, even. But he and I have been good friends for a long while. We met last time at the Rockport Chamber Music Festival. Didn't I tell you?

FL: You mentioned that before the interview started, yeah. Tell me about that occasion?

CE: [laughs] Well, I knew that David had written this quartet [written in 1971], and it was going to played up there. It was—

FL: A string quartet?

CE: —a string quartet. It was described in the program that I had, and so I got tickets, and Mary and I went up there, and we—you know the building, the Arts Center building there where they do this work, this performance work? We walked in the front door from up above, and he walked in the front door, David Epstein, from the other direction. And we saw one another, and we stopped and had a real nice talk. And he, I remember, said, "Why are you here?" And I said, "I came to hear your quartet!" And he said, "Oh, that's great!" And so we went in and heard it. And it was similar in many techniques to [Béla] Bartók. Have you heard it?

FL: Yeah.

CE: Yeah, do you agree?

FL: Yeah.

CE: And so I'm pleased you do. And after it was all over I told him that, and he said, "Yes, that's right. Bartók had a big influence on that quartet." And he had studied Bartók's music and really liked it, and so he just tried to push it along a little further. And that was my last time that I saw him, but I've seen him on this visiting committee [MIT] bit that I've been on several times, before he retired. He only retired last year, I think.

FL: Two years ago [1998].

CE: Two years? Yeah. That's right. That was at that two years ago meeting I saw him for the last time. And that's about the story. But I've been associated in a small way with music here at MIT for a long while.

6. Music and the arts at MIT (1:17:31—CD2 32:05)

FL: Wow! So moving on to another big subject that's not fair to cover in a short amount of time, but we'll try anyway—the whole subject of music , the arts, and MIT, from an educational standpoint. Do you think the flowering of music, the arts, and humanities here at MIT today would be a surprise to the administration, say, back in 1941 when you were here? Do you think that, or were they envisioning—do you have a sense that they were hoping something like this would flower this way?

CE: Well, that's asking a question of me which I am not capable of answering—

FL: Yeah.

CE: —what they thought back in those days. But I think that the principles of William Barton Rogers had gotten lost in the woods, or wherever they got lost, and it took that Lewis Report to bring them forth again. And that was in '49. And I don't think they have fully executed on that report to this day! And I just an hour ago, as I told you, I said that was my concern over these matters that the [visiting] committee was visiting about—major concern—was that had MIT truly committed itself to the principles of the arts as an integral part of the education of MIT students, and it's pretty hard to answer yes to that, just on the financial basis. Because MIT turns out a stream of engineers and scientists, and even economists, and so on. And they become the alumni of MIT. But there may have been two alumni of music in MIT's history!

I may be exaggerating a bit, but I'm making a point. It does not turn out a stream of musicians, or artists from the theater. And what does that mean? They don't have any graduate work in the arts at all. Maybe in the social sciences, so you could put it under the term humanities if you want, but in the arts, theater and music, there is no graduate work. And there is no stream of alumni. You'd have to search high and wide in the USA to find the music graduate from MIT. There've been a few, I know. You know better than I do.

But that's not my idea of a commitment. It sets up a group of students learning interesting things about the arts within the context of MIT, but it does not set up a stream of professionals going out into the field to propagate that information over again to other people elsewhere. And that's the basic difference between MIT and UCLA and Stanford and Berkeley. They do those things. They have graduate work, Ph.D.'s. Chicago [University of Chicago] is a prime example. They have Ph.D.'s in the arts, and that go out as teachers, and pass it along to other people.

FL: One of our recent graduates actually got a Ph.D. in music from the University of Chicago, and he's now teaching: Adrian Childs [MIT class of 1994], a very fine composer and music theorist.

CE: Yeah, well that's wonderful! But that's not MIT, that's Chicago.

FL: He was a graduate of MIT, though.

CE: Yes, I understood that perfectly. But he was a graduate of MIT at the undergraduate level, and MIT doesn't give a master's or a doctor's degree in the arts. It just doesn't.

And so, is that a full commitment? Because why not? If you want to really make them equal in stature to the sciences?

FL: Which the Lewis Report talks about, yes.

CE: Yeah! Why do you deny, how can you deny, that there isn't a total commitment there? And so, well, I'm concerned with that, and I think that in the long run, in order to prove their adherence to William Barton Rogers, they're going to have to do graduate work in the arts there—right here, I mean—I'm sorry.

FL: Yeah, yeah.

CE: So that's a concern of mine. I tried to make it clear to the—you know, the end of the visiting committee meeting, the hierarchy marches in. And there's the President and the Provost, and Chancellor, and whoever else might be there. And they are listening to the committee make its report. So I took the occasion to bring that up, not as a confrontation, but as a plea to them to consider what MIT was doing in light of its commitments. And they—the budgetary situation, in music in particular, is not good.

FL: Yeah.

CE: It's just too bad, but it's a fact. And so I think they've got to make a commitment of money as well as just moral rectitude and try to make a real music department out of it. But that's only one man's opinion, and lots of people would disagree.

FL: Moving back in time a little bit, you mentioned your friend Edwin Hanley.

CE: Edwin Hall Hanley [b. 1916].

FL: Yes, he's a scholar of Alessandro Scarlatti and is a violinist. You mentioned that he knew Klaus Liepmann, who was the first professor of music at MIT and founder of the music program in 1948. Can you tell me a little bit about that relationship that they had?

CE: No, between the two. But I know that Ned Hanley and I got to talking about it one day out in California, where I visit him. Usually I try to go once a year. And he said, "Well, the beginning"—we were discussing MIT. He said, "The beginning of good music at MIT was when Klaus Liepmann left UCLA and went to MIT." [Editor's note: Liepmann's academic position prior to MIT was at Yale University.] And so I know that he knew him, but their actual relationship—I can easily find out by calling Ned Hanley on the telephone.

FL: I'd be very curious to know.

CE: You would?

FL: I would.

CE: Well, at the end of this conversation here, we can call him on the phone and see.

FL: Wow! Wow! [laughs] So you never met Klaus Liepmann yourself?

CE: No, never. I didn't even know his name until Ned Hanley told me. But I heard it from Ned before I heard it from MIT.

FL: So this next question is quite unfair, because it's so big and so nebulous, but I want to ask anyway because you're a scientist and engineer. You hear a lot of talk in the media about the relationship between math, science, and music. Do you have any thoughts about that?

CE: Absolutely.

FL: You know, people saying that—you know what I'm talking about?

CE: Oh, yeah! Look, music could not exist without mathematics. Let's have that clear first! [laughs] Could you write a bar of music, even, without math?

FL: Right.

CE: You couldn't. And so, they are fundamentally allied, and I know [laughs], well, I don't know, but I surmise that music in, say, singing, far preceded the knowledge of true mathematics in humanity. You know people have been singing since people were around, and it took a long time for mathematics to develop. But music is what we're talking about, the complex music that we have today. And that just could not exist without math. So it was after math became available to at least the intellectual group of civilization, whatever it was—civilization? That's questionable, whether there is any!

FL: [laughs]

CE: But the—only the making available of math techniques to humans so you could teach it to them as youngsters and have them use it through their lives—only at that time did it become possible to write, compose, music, such as symphonies and even choral works, and so on and so forth. Well, prime example I use is Mozart. He was a genius at math as a kid. And he did pretty well in music.

FL: To non-math people, or people who aren't particularly adept at math, like myself—I used to be puzzled by that, until I started talking with mathematicians. And I understood from them that math is a creative process. It's not just a pedantic counting of numbers, or making things in proportion, but it's a creative process. And then I began to see the connection. Do you want to elaborate on that for yourself? Because you know better than I what math as a creative process is.

CE: Well, I would never deny that math is a creative process. It is, and new math is being developed every day! I mean, math today is a lot different from what it was even fifty years ago, Forrest, and you certainly know that. But the math relationship to music that I was talking about is more on the pedantic side.

FL: Uh-huh.

CE: You have to have a certain bar with a certain number of notes in there, and all the rest. You give a time schedule to the music, three-quarter time, or whatever rhythmic time. And that is elemental mathematics. But still, you have to have it in order to create music. And I think the mathematicians you were talking to were thinking on the big side, without thinking of the musical side. Did you try to relate the two for them?

FL: Well, this gentleman that I mentioned earlier, Adrian Childs, he was a graduate of MIT in both mathematics and music.

CE: Yeah.

FL: And he was explaining to me that there's a certain point that with a mathematical mind, that you're not just thinking of strings of numbers, but it's more of a creative process because it's so imbedded in their psyche. And that for him, it's a creative process, even though it's a logical process. And that's when I—and my father was a scientist, and I saw that in his work as a scientist, the creative side to that.

CE: Yes.

FL: And so now I'm beginning to see the connection, but as a child I certainly didn't.

CE: Yeah, yeah. Well, it is a big subject, and I'm sure some day somebody's going to write a book on it. But the relationship as far as I'm concerned, of music to math, is very tight. It's very real.

FL: Are there any final thoughts you want to express about things that we've covered in these interviews?

CE: No. I've enjoyed them, and I hope you have. And I hope they are coherent enough for you to find use for them. I know you're going to edit them, and good luck! But I think you're doing both a good and necessary job on this scheme.

FL: Thank you. And do you have any final thoughts about MIT in general? You have a long connection with MIT.

CE: Yeah, I have had. Something you don't know—I was the academic delegate from Emory University for MIT's Mid-Century Convocation of Science and Engineering, and the Arts, and everything else. [Mid- Century Convocation on the Social Implications of Scientific Progress, 1949.] And that happened because I was about thirty years old at the time, and MIT invited the presidents of every university on this planet that they could think of as worthy of the occasion. And the academic parade, by the way, was led by the oldest university, and who do you think that was?

FL: Probably Oxford?

CE: No, Padua [University of Padua, Italy].

FL: Oh, uh-huh!

CE: And the President of Padua was at the head of the parade. And I was the academic delegate back there for Emory, in 1836, but it was surprisingly close to the front! So there was one thing I learned from that was that the great majority of colleges were made between 1273 or whatever that was, '36, or whatever, Padua, to about 1836. By then they were all in there, pretty much. I could be wrong on that; that was just an impression I got from that academic parade. But I got there because the President of Emory University, whom I knew, Goodrich White, had been invited. And he called me up and said he didn't want to go, would I represent Emory? And I said yes, of course. So that's how it all happened. And I don't know how I got into this with you, but that was a reestablishment of a relationship with MIT that started fairly early in my career.

FL: One more question that I had meant to ask earlier: many of the musicians that I know, many of the amateur musicians that I know, are scientists and engineers who are quite proficient and very serious in their pursuit of music, even though it's at an amateur level. Do you know, are many of your scientist and engineer friends practicing musicians?

CE: Well, I would say that your impression may be a little bit enlarged past the truth there. I would guess—it's a guess—I think it's an educated guess—I would guess that no more than ten or fifteen percent fit that category.

FL: Mm-hm. That's still pretty significant.

CE: It's significant, absolutely significant! But I don't think it's fifty percent or anything.

FL: Yeah, I'm just amazed at how many of the musicians that I know are—

CE: Interested in art, right.

FL: Right. My start in chamber music was with a cellist who was a graduate of MIT from the fifties, and he had played professionally for a while, even though he was a biophysicist. [Karl Kornacker, S.B. 1958, Ph.D. 1962, MIT]

CE: Yeah.

FL: And he told me about many of his MIT colleagues who were also musicians.

CE: Well, I'll say one thing right off. I think that the undergraduate student of music here at MIT is outstandingly proficient!

FL: Yeah.

CE: Most college kids who are taking music, even studying it seriously, are nowhere near the quality of some of these kids.

FL: There are some real artists here.

CE: There really are! And that's because you let in only the best people. And that's true. They've got to be really good to get in here, today, I don't know about my time. But they are just outstanding human beings! And that's, I think, the reason that the quality of the musicians—the quality of the musical life of MIT graduates tends to be so good.

FL: And I'm really impressed at the dedication they bring to the real highest musical ideals, even if they're not planning to pursue it professionally.

CE: Oh, absolutely! Very few are.

FL: There's a way that MIT celebrates and supports, in the best sense of the word, amateur music-making.

CE: Yes. I couldn't agree more.

FL: Well, I want to thank you so very much for your generosity of thought and spirit and time for these interviews.

CE: Well, I was delighted to do it, as you know. I just hope that it comes out well for you and MIT.

FL: It’s been just really great, so thank you so much!

CE: All right, thank you.

[End of Interview]