

Earl R. Stadtman, Ph.D.

February 13, 2001

This is the fourth interview in a series on the career of Dr. Earl R. Stadtman. It was conducted in his office on the second floor of Building 3, National Institutes of Health, Bethesda, Maryland.

The interviewer is Dr. Buhm Soon Park.

Park: First of all, thank you very much for having an oral history interview with me. We have already a series of interviews, but today I'd like to go back to your early childhood and your educational background in secondary schools and during university training, and possibly your graduate years at Berkeley, and probably we'd better stop at that time and move on to your postdoctoral years and NIH years next time. So today I want to focus on how you got interested in science, and especially biochemistry, and your family background and who was the most influential in your decision to be a scientist and things like that. So let me--let's start with your background. Can you talk a little bit about your parents.

Stadtman: My parents were both farmers in Kansas, and my father went to the University of Oklahoma for one year, and then he signed up--he was taking a degree in engineering, and he signed up for a survey, to be part of a survey of the New Mexico territory. And he sort of fell in love with the

New Mexico country, and he homesteaded there¹. And then he came back to Kansas, married my mother, and we lived in a little town called Carrizozo, New Mexico, which had a population of about 800, and it still has a population of about 800. But then we moved to Roswell briefly, New Mexico, and then when my grandfather died, he was then located in Southern California. My father and my mother decided that we should move out to take care of grandmother, so we moved to California, and that was about 1929. I don't recall the exact year, but it was right in the peak of the Depression years. My father was an insurance, life insurance salesman, and in those days it was very difficult. In any case, I am the fourth of a family of six siblings, and my younger sister died shortly after she was born in San Bernardino, California, where we took up residence. I went to the fifth and sixth grades in a grammar school, and then went to junior high school in San Bernardino until the tenth grade. And during that time, I took up playing in the band. I played a...

Park: You mean musical?

Stadtman: I was a baritone. I played in the band. And then when we moved to high school, I also played in the band in high school, and I became very interested in debating at that time, and I did a lot of debating when I was in high school and then, after high school, I went to junior college, also in

¹ And thus owned 640 acres in Carrizozo, NM. After his Father died, the 4 Stadtman siblings each received 160 acres which they never sold. At the time of Earl's death in 2008, the annual property tax on his 160 acres was \$5.

San Bernardino.

Park: Is that the Catholic school?

Stadtman: No, no. That's a government-sponsored school. And I majored in science in my curriculum there, took organic chemistry and physics and botany. My interest in... Where was I? The reason that I became interested in science was because during those Depression years, I took jobs doing a little gardening work for people and mowing lawns and that sort of thing. And not too infrequently, someone would ask me, "Have you any ideas what I should add to my soil to make the plants grow better?" So I decided that if I could go to a university and get a degree in soil science, learn how to analyze soil, then when I graduated, I could set up a soil testing laboratory someplace and take people's samples and analyze them and tell them what kind of fertilizer they should add to make things grow better. In that regard, you might be amused that after I finished my studies and was about to graduate, I went back to my soil physics professor to get my grade for that semester. That was the last semester that I was going to be there. And he said, "Well, Stadtman, do you think you have learned anything here?" And I said yes, that I came to the university to learn how to analyze soil so that I could set up a soil testing laboratory and tell people what kind of fertilizers they should add to their soil to make things grow better. And what I have learned is that you can't do that. And his comment, I still remember, he said, "Well, Stadtman, if you learned that, then your time here has not been wasted."

Park: Do you remember the name of the professor?

Stadtman: I don't offhand, but I probably can after a while. In any case, I was later actually offered--I shouldn't say I was offered a job, but he wrote me that they were looking for an assistant professor in the department, and would I like to apply. I didn't at the time because I had other things in the fire. But that's how I got into science. And during the years as a soil science major...

Park: In Berkeley?

Stadtman: In Berkeley. It was during the early or late, '39, '38, something like that. I forget the exact date. It's in my C.V. In any case, while I was in Berkeley, since I had virtually... I should tell you another story before we get to that, and that is that after I graduated from junior college, I had no money to go to the university, and my family--we had very close connections with my mother's sister and her husband, who lived in Sapulpa, Oklahoma, and in the course of... They came to visit us, and in the course of the visit, they invited me to go back with them to Sapulpa to live with them and see if I could find a job in that area, which I did. I went with them and I spent close to a year living in their house. And I looked for jobs and was unable to find any. And then I got a letter from my brother saying that during the summer, he had managed to save \$50 mowing lawns and that sort of thing, and that if I was interested, I could come back and we would together go to Berkeley and register. Now, the registration fee then was \$27.50 a semester.

Park: You remember very clearly.

Stadtman: Yeah. I remember that very clearly. And he said that my sister, who was the secretary in one of the buildings there in San Bernardino, had volunteered to loan us enough money to make up the difference, and also to buy books and things like that that we would need. So we went to Berkeley and got--both of us got jobs working in a house, boarding house for students. There were about 20 people that were boarding in this house. And I washed dishes three times a day for all 20 people to earn some for my meals. And then, in addition, I got part of the government program, NYA, National Youth Administration, program, and I got a job washing glassware in the entomology department at the university, and that paid, as I recall, something around \$40 a month. So based on... Also, we took lodgings in a cooperative house that was a small group of only about 20 people who rented this house, and we did deduct the money to pay the rent, which was about a hundred and some odd dollars a month. So we survived. Then, in the course of my course work, I had to take a course in microbial metabolism, soil microbiology, and there I met Barker, who was the professor of soil microbiology, and he announced one day at the end of class, "Is there anyone"--he had a technician's position open, so was there anyone that was interested in the job, and I raised my hand, and he hired me as his technician. So I spent the last couple of, well, the last year doing work, microbiological culture work and that sort of thing for Barker.

Park: Was this in your senior year or...

Stadtman: It was the senior year, yeah. And then I got to know him very well during that period. Then the war came, and I went over to... They announced that they were looking for, the Navy was looking for individuals who had a college degree to become officers in the so-called E-7 program. I don't know just what that referred to now. But, anyway, it was an officer training program. So I went to San Francisco to volunteer for that job or one of those jobs, and I didn't pass the physical examination. I was told that I was too thin, I didn't weigh enough, and that I had--my teeth needed a lot of work on them. So I went back to Berkeley. Then, shortly thereafter, they announced that this project in road making in Alaska, the so-called Alcan Highway, was started, and they were advertising for people who had experience in soil science, and so I applied, and my brother also, and we both went to Alaska. We were the first party in Alaska doing the topography work. I spent my time with a topographer. And we were out in the country essentially. There was nothing around us. We went up the river to where our first camp was, and then did about 20 miles of survey before we moved camp. We'd put 10 miles in one direction, 10 miles in the other direction, and then move camp and start over again the same way. But we spent most of the year in Alaska. Actually, when the temperature got down to seven-degree levels, then we were not able to do any outside work anymore, so they sent us back home. And I applied to return the next year. And in the meantime, I took a job at

Cutter Laboratories², where I was on a crew that was drying blood plasma. And one day I went back to visit my old professor³ at Berkeley, in the life sciences building there, and he said that all of the professors at the university were being encouraged to become involved in war-related research, and that he had agreed to direct a program aimed at the browning of dried apricots. Now, the reason that was considered a war project was that when dried apricots are sent to warm climates, such as the South Pacific, they turn black in a matter of about two or three weeks, and they wanted to find ways and means of preventing this darkening from occurring. So I spent I guess close to five years working on the browning of dried apricots. That was in food technology, but my professor was still in the life sciences building, in the Department of Biochemistry. Then, when I finished that work, I applied to my professor if he would take me as a graduate student, which he did, and I did my thesis work, working on an organism that he had isolated from the mud in Holland. I told you the story about that research, which led to the understanding of the mechanism by which fatty acids are oxidized and synthesized.

Park: Did you not consider going somewhere else, like a university on the East Coast or a university?

Stadtman: Well, not really, because this project, which was a war-related project. Then I got so involved with the techniques and everything that were used

² It was located in Berkeley, CA

³ H.A. Barker

in my final research, and I was really very much attracted to this research project, which he offered me. And, in addition, while I was in the food technology department, I met Terry, and we got married, and she also did her thesis work with Barker, so we both worked at the same time for our Ph.D. degrees. After I finished my degree, I had a number of offers to go to various universities as a postdoctoral fellow. Barker encouraged me to go to Fritz Lipmann's laboratory in Boston, which, Fritz Lipmann was the father of the idea of so-called energy-rich bonds, energy-rich phosphate bonds, and he and Kalkar⁴ more or less simultaneously came up with this concept, and he spent a good deal of time on that. But at the time that I went there, he was just in the process of finding the function for his discovery of a coenzyme, coenzyme A. Based on some of my thesis work, it appeared likely that one of the enzymes that I'd concentrated on most would utilize co-A as an acetyl acceptor, and so I concentrated on that in his lab and I did a number of other studies relative to active acetate and the function, such as the demonstration that two acetyl co-A molecules condensed to form acetoacetyl co-A. The energy of one of the co-A's bond was used to form the linkage, and the other one was maintained to activate the acetyl acetate, and that's all described in those early papers, which, incidentally, I told you I didn't have any of the earliest, my papers.

⁴ Herman Kalkar. Lipmann was Kalkar's mentor when they were both in Sweden. (Lipmann left Germany for Sweden in 1932.) Kalkar and Lipmann independently proposed the concept of high-energy phosphate bonds as the energy currency of the cell.

Park: Oh, yes.

Stadtman: And Terry had all of those downstairs, so I have all of the early papers here now, so you can complete, you can take that.

Park: Oh, thank you.

Stadtman: Now, I might go through this problem which I have to illustrate some of the things that I was just talking about.

Park: Right.

Stadtman: This was when I was in high school and when I was a debater, and I got this certificate from the National Forensic League.

Park: Forensic League?

Stadtman: Yeah. Forensic is debating. This was 1936, May, that I got that. Then, this is the Alcan Highway survey study. I got this certificate of merit for my efforts there. This is obvious. This is some California chapter, graduate scientific fraternity that I was involved in, and this is a certificate from the quartermaster general of the army relative to the work that I did on the browning of dried apricots during the war, so this was presented by the quartermaster who was in charge of that whole program. These are things. This is the fatty acid synthesis. I had a write-up in the NIH record in 1952. Then I got the Washington Academy of Science Award, which is documented there. The New York Academy of Science selected me as a fellow in that year. And this was a big thing in those days. I was to give

the NIH Lecture, and so that's what that was all about⁵. And here, in fact, are--this is Bob Berliner and this is Shannon, James Shannon.

Park: Was he the director?

Stadtman: He was the director at that time, and he was the former director of the National Heart Institute before he assumed directorship of NIH.

Park: That's right. He was...

Stadtman: When he stepped down as director of the intramural program, he appointed him as his successor.

Park: It was taken in 1966?

Stadtman: Yeah, something like that. Yeah, it must have been '66. Then--I don't know what this is. Public Health Service. Some certificate. Here's one for superior service, Department of Health, Education and Welfare. This is 1968. And I guess this was the occasion when I got that meritorious thing.

Park: Nineteen sixty-eight.

Stadtman: I don't know who the people are. They don't--they were co-recipients, but they were mostly from the administration. I don't know any of them.

Park: I see. [This] Department award?

Stadtman: This departmental award. That's what that was. Yeah. I think he must have been in this other picture. I got this Chemical Society of Washington award, and that was in '68. And then I was featured on the Capital

⁵ He's likely referring to an article in the NIH Record about his selection to deliver an NIH Lecture.

Chemist cover here, and this was probably part of the citation. And this is a further... I got the Hildebrand award, the Washington Academy of Sciences. And here I am again with my paper chromatogram. This is Nathan Kaplan, who was featured. I don't know who that guy was. It's probably mentioned here.

Park: What are you holding?

Stadtman: I'm holding the filter paper. It's a sheet of filter paper, and then you put it in a circle, and in these jars, there's a solution down below, and you put this in and you put your samples on the bottom here, and then you chromatograph the... You had this spontaneous crawling of the water up the paper and [it separated compounds]. And that was... I, in fact, got involved in the use of paper chromatography long before a lot of other people did. Yeah. This was the big meeting. I got the Paul Lewis Award, which was considered to be one of the big awards in enzyme chemistry. I think this is all part of the same thing. This is another service award. Then I was elected to the National Academy of and Sciences.

Park: Were you a member of the study section of biochemistry⁶?

Stadtman: Yes. I was a member of the study section.

Park: Was it allowed that intramural ?

Stadtman: At that time it was, yes. As a matter of fact, there were two people on that

⁶ The committee that reviewed grant proposals submitted to NIH.

study section from the intramural program⁷.

Park: But these days it's not common.

Stadtman: That's right. These days it's not common, and only... If they need somebody with a special expertise, they can come as an ad hoc member, but just for one meeting. And this is a study of synthetase. Then they had a big...

Park: Was that a diagram?

Stadtman: That diagram was our... It's the way we viewed glutamine synthetase in those days. It's a multimeric enzyme composed of 12 identical subunits, and it existed in two states, what we called the taut and the tightened states, and a relaxed state. And if you remove the metal ion from the protein, such as would happen if you put in EDTA or some [other chelator], then you'd pull the metal ions off and the enzyme then went into this relaxed configuration. And then it was very unstable and it was easy to dissociate into the various subunits. The principal people involved in those studies were Ben Shapiro and Ann Ginsburg, who's still--she's now here as a section head. He now is, I think I told you earlier, the vice president in charge of research worldwide at Merck. But when he left here, he went to Washington University in California, I mean in Seattle, and there he became professor and chairman of the department. This was a symposium in honor of my preceptor, Barker.

⁷ Subsequently intramural scientists were excluded from regular membership on study sections. It was decided that they should not be influencing an extramural program.

Park: The term preceptor, you know, is often used in the medical school, but do you call Barker a preceptor when you were at Berkeley, or is this common here at NIH or...

Stadtman: I think it was common there.

Park: Common there?

Stadtman: Yeah. He was my advisor, and he was the one who taught me how to do science.

Park: Right.

Stadtman: This is at a Case Western Reserve meeting that I attended, Frontiers in Biological Sciences. And I don't recall just what that was. Biochemistry. So if this is depicting ...Science writer's seminar. And then this is Recreation Welfare Association at NIH. This is from a Medical College where I gave some lectures. Then I was elected to the National Academy of Science along with a number of other people.

Park: In what year?

Park: In 1969?

Stadtman: Yeah. And together with [Bernhard] Witkop elected to the National Academy in 1969.

Park: Were there many Academy members at NIH at the time?

Stadtman: No. Very few. I think there were only two or three at the most. I know that Bernie Witkop was not. He was elected at the same time I was.

Park: James Shannon was elected?

Stadtman: I don't think he was ever elected to the National Academy.

Park: He was elected.

Stadtman: He was?

Park: Yeah.

Stadtman: Well, all right. He was, and I know that the person who was head of the physiology section--what was his name--was a member at the time. He was here in this building when we came. And when I get the information you requested there, I'll have his name if I've found it. I don't remember now what his name was. National Academy of Sciences.

Park: You were elected in 1969, but the ceremony was...

Stadtman: In 1970. That's when it is conferred upon.

Park: Can you explain this picture?

Stadtman: I think these were people that were on the committee that received me. Here I am, and I don't know any of these people. They were on the committee.

Park: So in each field only one scientist elected to be a member, do you remember? How many scientists were elected?

Stadtman: That year? Fifty.

Park: Fifty.

Stadtman: But that covers every field of science. And there were, as far as I know, Witkop and I were the only ones from the NIH, and there were--I guess I really don't know any of the others that were elected because they were in other fields altogether from mine. This was the National Academy of Science Award in microbiology, which I received a few years later. What

is that date there?

Park: Yeah, 1970.

Stadtman: And then in 1980, I got the National Medal of Science. That's Carter, Jimmy Carter, congratulating me. And I got the Presidential Rank Award, which was given by Reagan. I didn't go to the ceremony. It's a head crowns, White House crowns, because I was then in Europe attending a conference. ABC Biochemistry Prize. And this was Bernie Horecker. And that's the prize that he gave me. Well, this gives you a little bit of information, the highlights of my career.

Park: Yeah. It's wonderful.

Stadtman: This is now the anaerobic laboratory, and I have more on that in another album, but this is good enough.

Park: Did you work in the anaerobic lab at all?

Stadtman: Yes. You wear a mask, oxygen is fed in, air really. Somebody has to be outside to watch and see if anything happens. That's me, and this is Mike Poston⁸, who resigned recently, retired NIH. And that's Joe Davis⁹, who just died. And this is inside, and that's the guy outside watching him.

Park: You.

Stadtman: No, that's not me. That's somebody else. So that's history, if that's of any use to you.

Park: Oh, yes. What's the most prestigious award you received? Academy

⁸ A scientist in the Laboratory of Biochemistry.

⁹ Terry Stadtman's long-time technician.

member?

Stadtman: Oh, no. I guess really the National Medal of Science. That's the most prestigious. Arthur Kornberg, who you may know, and I got the prize at the same time. We were both given the National Medal of Science Award. And my preceptor, as I refer to Barker, got the, was also awarded the National Medal of Science many years before. Well, now I only have two other things that you might find of interest. This was 1991, when I got the Robert Welch Award. It was a rather prestigious award. So those are two additional awards. I don't know what you're going to do with those, but, anyway.

Park: Do you want me to put one of the awards' picture or medal on the exhibit?

Stadtman: Yeah. I think the one with Jimmy Carter shaking my hand would be a very appropriate one. I have here also--this is some letters, and these are letters, 60th birthday. This is on the occasion of my 60th birthday. They had a symposium in my honor, and I have an album, and these were letters that people wrote me at that time. Arthur Kornberg, and Osamu Hayaishi was a Japanese scientist who spent some time here¹⁰. Dan Lane is professor and chairman at Johns Hopkins University. I've had good contact with him. Well, these are just a number of letters that were on the occasion of my 60th birthday.

¹⁰ Actually, he was born in Stockton, CA. His family moved to Osaka, Japan when he was 3. He was educated in Japan, returning to the US in 1949, initially as a post-doctoral fellow. He was a section chief at NIH from 1954-1958, when he returned to Japan.

Just to show you, Terry says that we should first identify the people that are involved in some of these pictures. This is where Terry got some award. There's Dan Lane right there. He was also at Johns Hopkins. This is the Passano Foundation, and I became chairman of the board of the Passano Foundation. This is when Terry got the Rose Award.

Park: Do you know this one?

Stadtman: That's Gunsalus, Irwin [Gunny] Gunsalus. He's a long-standing... He was actually an advisor when Terry went to Cornell.

Park: Right. You mentioned that. Do you have any picture of Barker?

Stadtman: Yes, I do. I'll show you in a minute. But this is one, and this one is the one that was taken for our 60th birthday. And, as Terry mentioned, we...Jack Orloff, and I need some help on some of the others. Tom Duell. And you know this guy. That's Ochoa¹¹. He gave a talk here. This is [Hermann] Eggerer who was formerly in my lab briefly. This, of course, is [Stanley] Prusiner. You know this guy, Ira Pastan, Bernie Horecker. They had a Manchester Quartet¹² that came and played on this occasion.

Park: Where is this building?

Stadtman: This was the building that's up the highway here on 355, to the right, just

¹¹ Severo Ochoa. Awarded the Nobel prize in 1959.

¹² Four members of the National Symphony Orchestra who form the Manchester String Quartet. The performance was in the mansion at Strathmore – decades before the current concert hall was built there. The Quartet continues to perform concerts at NIH. They were originally sponsored by the Merck Foundation and currently by the Foundation for Education in the Sciences.

across from where that school¹³ is.

Park: Oh. The FAES school?

Stadtman: No, it's not FAES. This is way up 355. It's a big house that sits up on a hill, and they got permission to hold this reception there. So...Now, then. You asked about Barker. He's in here. There he is, but that's not a good picture of him. There's one of him here talking to Terry that gives a good view. But we'll go through this and put the names of people...

Park: That would be great.

Stadtman: It looks like a Korean. I don't recall her name. I recognize a lot of the people, but I don't... This is Bob Hohman. This is the woman next door here and her husband. This is Barbara Berlett. There is Barker. Of course, you know him. He's [Herbert] Tabor. This was a famous German scientist¹⁴. There were three or four Nobel Prize people here. This is a meeting. This is a woman who's very famous, Marianne Grunberg-Manago¹⁵. There she is again. There's Rodney [Levine]. There's Lipmann, Fritz Lipmann.

Park: Yes.

Stadtman: And Charles Wittenberg was a postdoc in the lab, and this was his wife [Mary], who became my technician. This is Barker again. And this is Gerri Wolfle, who was a secretary, and then she moved into the

¹³ Georgetown Preparatory School

¹⁴ Helmut Holzer

¹⁵ She was the first woman to be elected President of the French Academy of Sciences.

administration, was assistant to Claude Lenfant¹⁶ before she went back to Texas. Now she's in North Carolina. But she was responsible for organizing this whole program.

Park: Oh, I see.

Stadtman: Here's Gunsalus again. She's talking to him. This is the thing which they gave us. It was signed by everybody that was--not this... Yeah, it is. You can see signatures there. They're very faint.

Park: Did you keep this at all?

Stadtman: We still have it at home.

Park: I'd like to...

Stadtman: You don't have it. You want to put it on the...

Park: Put it on the exhibit.

Stadtman: Yeah, you can have that. You know Howard Schachman?

Park: No.

Stadtman: And this is Roy Vagelos. Here's Lipmann again, Lipmann, Gunsalus. This is Sidney Colowick, a very famous enzymologist. Most of these people are not alive anymore. How many _____?

Park: This is the first time that I saw this picture.

Stadtman: This is Harlan Wood, who's at Case Western Reserve, a very famous person. Bob Hohman. And [Helmut] Holtzer. That's the German biochemist that I was telling you about.

¹⁶ Director of the National Heart, Lung, and Blood Institute

Park: So people are coming around the world.

Stadtman: Yeah. They came from all over. It was a fantastic symposium.

Park: How many people came? Do you remember?

Stadtman: Oh, I don't remember the numbers, but...

Park: It was quite a lot.

Stadtman: Yeah. They pretty well filled up the auditorium.

Park: And it looks like there was an after-dinner talk by the people?

Stadtman: Yeah. Several people gave little comments afterwards. He was one. Roy Vagelos also gave a talk afterwards.

Park: Do you have, by any chance, to record them or...

Stadtman: I think this was all recorded¹⁷. There's Roy Vagelos [sp.].

Park: Yes.

Stadtman: A very famous Japanese scientist¹⁸.

Park: That's Lipmann.

Stadtman: That's Lipmann again, yeah. But we'll put the names to these people, and then, if you're interested, you can have that too.

Park: That's great. That's a very important part of the history. Probably, I guess, not only me, but other historians would like to take a look at this album because of the number of famous biochemists.

Stadtman: There were a lot of very famous biochemists. In fact, almost everyone who was recognized as a lead biochemist came to that meeting.

¹⁷ Unfortunately, it was not. [I was an organizer--*comments by Rodney Levine, Ph.D.*]

¹⁸ Likely Osamu Hayaishi

Park: Right.

Stadtman: It was held right after the National Academy of Sciences meeting. A lot of people just stayed on and came to this meeting.

Park: Oh, I see. That's wonderful.

Stadtman: But many people from abroad: Italy, England, Spain.

Park: Japan.

Stadtman: It was a well-attended symposium. These are more letters.

Park: Fantastic.

Stadtman: And this, I think, is letters again. Yeah. I think was on the occasion of the 60th. That's where that party was. And a lot of people wrote. See?

Park: Yeah.

Stadtman: From all over the world.

Park: Very nice.

Stadtman: Here are the letters. And this also is interesting because this is the Laboratory of Biochemistry, from the early days, the different people. There's Roy Vagelos. This is Phil Majerus. That's Lin Tsai. That was my secretary at that time. And there I am. This is the fellow that worked with Roy Vagelos when he was in my lab. He came from the University of Maryland. I gave a course out there and I announced that I needed, had a position open for a postdoctoral fellow, and if anyone was interested, they should apply. He applied, and he worked with Roy while I was in Europe on a sabbatical. And then he continued to work with him. Pauline Smyrniotis was the first one of the early technicians that I had.

Park: I see. So, are there many technicians, female technicians?

Stadtman: There are really not many technicians. He was a technician, she was a technician. She was a dishwasher, I believe. And this is Joe Davis, who just died. And then a year or so later.

Park: That was 19...

Stadtman: Oh, I don't recall the exact date, but it would be in the '50s.

Park: Fifties.

Stadtman: Late '50s. I know because she was my first secretary, and she came in the middle of the '50s. And there she is again. Again, we can get names of most of these people. Yeah. These were taken several years apart. I think on the average of once every other year, we had pictures taken of the lab, so we got chronological...

Park: Is it common to wear a black coat?

Stadtman: Yes, it was in those days, very definitely so. And here's Terry and me. This is Gerri Wolfle, a new secretary. Here's some in 1980, this group. This is the lady next door. This was a postdoc, Emily Shacter [sp].

Park: You know, this kind of group picture, I tried to get when I was studying on the laboratory of molecular biology at NIDDK, and they seemed to have no group picture to give me.

Stadtman: We had this as a kind of a tradition. Here, for example, Sue Goo Rhee, Ann Ginsburg, Barbara Berlett. And--I can't think of his name offhand. There's [Lin] Tsai. This is Pamela Starke-Reed.

Park: So it's kind of tradition to have a picture...

Stadtman: Yeah. Well, we haven't done it in the last couple of years, but it was. In those days it was a tradition. And this now comes into the, some of the pictures that were taken of me earlier.

Park: Is this early '50s?

Stadtman: Yeah. And then the anaerobic lab again, nice pictures of the anaerobic lab.

Park: Yes. That's nice. What's this?

Stadtman: This is a nitrogen tank. It fed the nitrogen into the building. Since this anaerobic lab was bathed in nitrogen, we needed a source of nitrogen.

Park: Right. It's still there? I didn't see that.

Stadtman: Yeah. It's still out here. So, that's that. But... So that may be of some interest. But maybe we ought to keep it and get some names put in.

Park: Okay, yeah. That's great.

Stadtman: I guess that's about it. If you have some specific questions...

Park: That's good enough for today. I will end it.

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