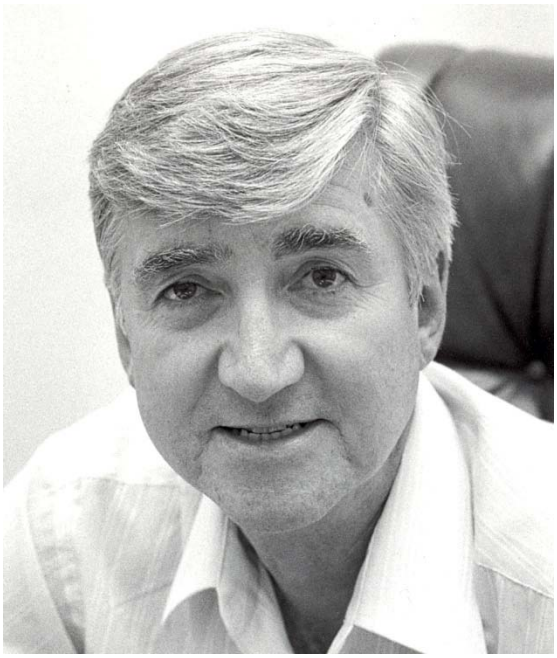

1985

FRED C. ANSON
(b. 1933)

INTERVIEWED BY
SHIRLEY K. COHEN

February 12 and 26, 1997

ARCHIVES
CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena, California

Subject area
Chemistry

Abstract
An interview in two sessions, February 1997, with Fred C. Anson, Elizabeth W. Gilloon Professor of Chemistry, in the Division of Chemistry and Chemical Engineering. Professor Anson received his BS in chemistry in 1954 from Caltech and his PhD from Harvard in 1957. That year, he returned to Caltech as an instructor in the chemistry division, becoming an assistant professor in 1958, an associate professor in 1962, full professor in 1968, and holder of the Gilloon chair in 1995.

In this interview, he recalls his early education in South San Gabriel, his undergraduate years on a *Los Angeles Times* scholarship, and his graduate years at Harvard. He describes the state of the chemistry division in the late fifties and early sixties and his experiences as executive officer and then chairman of the division (1984-1994). He discusses his role as chairman of the presidential search committee resulting in the selection of Marvin L. (Murph) Goldberger, 1978.

Recalls conflict over establishing an army research center (the Arroyo Center) at the Jet Propulsion Laboratory in the early eighties. Comments on his relationship with provost R. E. Vogt during his division chairmanship. He discusses working with the electrochemists Lucien Gierst (Brussels, 1964) and Heinz Gerischer (Berlin, 1984). Recalls establishment of the Beckman Institute. Comments on the growth of Caltech and its divisions and the consequent increased pressure on the faculty and decline in collegiality. Recalls his various awards, including receiving an honorary doctorate from the Sorbonne in 1993.

Administrative information

Access

The interview is unrestricted.

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CALIFORNIA INSTITUTE OF TECHNOLOGY ARCHIVES

ORAL HISTORY PROJECT

INTERVIEW WITH FRED C. ANSON

BY SHIRLEY K. COHEN

PASADENA, CALIFORNIA

http://resolver.caltech.edu/CaltechOH:OH_Anson_F

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CALIFORNIA INSTITUTE OF TECHNOLOGY ARCHIVES

ORAL HISTORY PROJECT

Interview with Fred C. Anson **by Shirley K. Cohen**

Pasadena, California

Session 1	February 12, 1997
Session 2	February 26, 1997

Begin Tape 1, Side 1

COHEN: Good afternoon. I'm glad you're here.

ANSON: Thank you.

COHEN: Tell us a little about your education. The floor is yours.

ANSON: Oh, you want me to be spontaneous instead of prompted.

COHEN: Of course. Tell us a little bit about your family.

ANSON: Well, I lived in one house until I was a student at Caltech. I was born and grew up in a city called Wilmar, which doesn't exist anymore. It's now South San Gabriel, but in those days it was a little city developed by John Garvey and named after his two daughters, Wilma and Martha. Wilmar was located between Valley Boulevard and Hellman Avenue, not far from New Avenue. It was a lower-middle-class neighborhood with a small local grocery store that we used to shop at, not much else. In those days, the main attraction in the area was the Alhambra Airport. There was a lot of empty land there, and we used to go up and get into mischief in the outskirts of the airport land. I lived there with my brother and sister and parents until I was a sophomore in college.

COHEN: Were your parents old-time California residents, or did they come from somewhere else?

ANSON: They were both native Californians.

COHEN: That's a rarity, huh?

ANSON: Right. They both worked when we were young, and my maternal grandmother looked after the kids, pretty much until the Second World War.

COHEN: What did your parents do?

ANSON: Well, my father, until the war, worked for the Dupont paint company. He was not really a salesman, but he worked in the local outlet for Dupont paints. And my mother was a saleslady in Rasco's Department Store, which was a predecessor of Woolworth's, I guess. They both had quite a distance to go to get to work.

COHEN: So you were already a two-car family?

ANSON: Oh, no! We couldn't afford more than one car—we could barely afford that. My mother would usually ride the bus or the streetcar. And my grandmother lived near enough to us so she could come over and look after us. There was a grammar school within two or three blocks of our house—I think that may be one of the reasons that my parents bought it—so I walked to that grammar school every day. And then I went to John Garvey Junior High School, which started with the sixth grade and which still exists. That was a longer distance away from my house, more like a couple of miles. Usually we walked or rode our bikes, crossing the railroad tracks to get there. That lasted until the eighth grade. Before the war, the only high school in the area was Alhambra High School, but then they built Mark Keppel High School, which I think opened just after the war, and that's where I went to high school. That was also within walking distance.

COHEN: Those days seem so long ago.

ANSON: That's right. And from the time I was in the sixth grade, maybe the seventh, I had a paper route, an afternoon route on a bicycle. I had it for many years. Later on, I moved up to a morning route for the *Los Angeles Times*. Eventually I saved enough money to buy a car, a 1929 Model A touring car. It was beautiful for delivering papers, because it was a great big boat. I would get up at two o'clock in the morning, go down and load it up with papers. All the way through high school, I delivered these papers. And when I got this car it was great, because then I could drive to school, even though I didn't have to. It was much nicer.

COHEN: Well, it's a big deal to have a car when you're in high school.

ANSON: Right. Those were the days when the *L.A. Times* first started their college scholarships for carriers. They were restricted to *Los Angeles Times* carriers, and it was competitive. I was lucky enough to have been there at the time that these were in force. Really, the only reason that I was able to come to Caltech as an undergrad, financially, was because I had delivered the *Times* all those years and because I was awarded one of these *Los Angeles Times* scholarships.

COHEN: But you must have been quite a good student in school.

ANSON: Oh, yes. I did well in school. But these scholarships were awarded not only on the basis of grades in school. You had to take the college boards, and you also were evaluated by a group of *Los Angeles Times* dealers. And they cared about how many subscriptions you had been able to get for the paper, how long you had been delivering, and how big your route was. I learned later that my boss, for whom I had been working for years and years, had actually transferred to my list some of the subscriptions that he himself had gotten, in order to make it look like I was a better subscription-getter than I really was. I hated to go door-to-door trying to get people to subscribe to the *Times*.

COHEN: That's hard. Was Caltech your first choice? Could you go anywhere?

ANSON: It was my first choice. I can't even remember if I applied anywhere else, although I must have applied to some other local school. But the reason I ended up here—as is often the case—was because of a high school physics teacher who was himself a graduate of Caltech in

electrical engineering. He taught general science, which the freshmen took at Mark Keppel High School, if you were interested in science at all. He also taught elementary math, a little chemistry, and physics, but I had him mostly for physics. He was a very special guy, and his influence decided me on (a) going into science and (b) coming to Caltech. I had never heard of Caltech until I was a student in his classes; he told me about Caltech. He, more than a few times, took those of his students who he thought were the most interested and talented and brought them up here for the Thursday evening lectures in Bridge—this was before it was the Watson Lectures. I came to a number of those. I remember hearing [Robert A.] Millikan give one of them, and other well-known physicists. And it was pretty impressive. And he—J. B. Forster was his name—encouraged me to apply to Caltech, so I did.

COHEN: Your parents must have encouraged you also.

ANSON: Yes, but my parents were not well educated; neither of them finished high school. I'm not sure my mother even finished junior high school. They knew it was a good thing to go to college, but they didn't know anything about Caltech, and they made it clear that if there was going to be tuition involved, all they could offer was a place to live. And that's how I managed, after I got admitted. I had this *Times* scholarship, which was worth the enormous amount of $600 a year—the full Caltech tuition in 1950. I lived at home and drove up every day—I had a somewhat newer car by then—and that was fine. That's how I could afford it.

COHEN: How many scholarships did they give?

ANSON: I think the *Times* gave about five or six a year, and they were four-year scholarships.

COHEN: That was terrific. Do they still do that?

ANSON: No. They stopped. They still give scholarships, I think, but they don't restrict it anymore to their own carriers; they distribute it in other ways. Many of the carriers now are well past college age. But that made quite a difference. In fact, when I graduated from Caltech Norman Chandler was on the Board of Trustees. Of course, Chandler was Mr. *L.A. Times*. So the *Times* saw to it that at the graduation I went up on the steps of the Athenaeum, where Lee

DuBridge, who was the president, shook hands with me, because I was the *Times* scholarship holder and he was the president of Caltech. And then the *Times* ran a photograph in the paper with the caption: "Former *Los Angeles Times* Carrier Graduates from Caltech." They were very proud of that.

COHEN: That's good.

ANSON: Yes. It worked out very well. In those days there were only four student houses, and after the war they were crowded. Caltech had a rule that if you lived within about thirty or forty miles of the campus, you couldn't apply to live on campus.

COHEN: Like UCLA has now.

ANSON: Right. I couldn't have afforded it anyway, but it would not have been possible for me to live on campus, because I lived too close. Later on, maybe when I was a junior, I had done well enough as a student that Caltech offered to give me a merit scholarship. I had to apply for it. I said that since the *Times* was paying for my tuition, I wanted to use the scholarship to pay for the cost of living on campus, so I could live on campus. And they said, "Sorry, we don't do that." So I lived all four years off campus.

COHEN: Did you still get attached to a house, even if you didn't live there? Because that seemed to be the center of student life.

ANSON: Well, in those days they had what they called Throop Club, which was a surrogate house for off-campus people. It sat where the bookstore does now, and it was part of what was called the Old Dormitory, where the Greasy Spoon [the campus cafeteria] was housed. There were a lot of veterans—Korean War veterans—who were then freshmen, who didn't live on campus. They had families. They were all part of this Throop Club. I was part of that. I got to know a lot of people on campus, and I had a house in mind that I thought I'd like to live in, but it never worked out. But the real reason I came to Caltech was because of this teacher, J. B. Forster, who was a fantastic fellow. And it wasn't just I—he sent people to Caltech almost every year for a large number of years. There were probably at least a dozen Caltech graduates who

came from Mark Keppel, because of him. There were three in my class from that high school. Two of us graduated, both in chemistry; the other one dropped out and ended up in medical school. It was a little bit too much for him, but most of the other kids from our school who came up here liked it. All of us owed a lot to our high school teacher, J. B. Forster.

COHEN: This man, having graduated, had a very realistic view of what went on here.

ANSON: Right. He was very paternal. He didn't just tell you to go there and then drop it. He used to invite us over to his house during high school and after high school. His wife was a principal of schools in the El Monte School District. They lived in El Monte. We used to go and see him. My parents got to know them. We were very good friends up until the end. He only had one lung—he'd had tuberculosis and had some accident while working on a power pole—he was that kind of an electrical engineer. He was never that well. Near the end, he was in a convalescent hospital. We went to see him, Roxana and I, a couple of times after he was in the hospital. He was very touched and glad to see us, but he only survived about a year and a half more.

COHEN: Well, it's interesting how these people are so pivotal in one's life.

ANSON: That's right. I don't know what would have happened if I hadn't happened to have had him. Because at Alhambra High School, where I probably would have gone if Keppel hadn't been there, and where he hadn't been hired, there wasn't anybody comparable. He told us—not just me but other kids as well—a lot about Caltech, other than that they had famous professors and they were doing science and engineering. He talked about the extracurricular things, the other students, and the whole Caltech experience.

COHEN: How did you find Caltech as a freshman? You must have had the name professors.

ANSON: Well, I didn't know who these name professors were. Names were pretty common. Linus Pauling taught freshman chemistry; I learned who he was right away. I had Beach Langston as an English professor and David Elliot as a history professor, as a freshman.

COHEN: I guess Feynman wouldn't have been here at that time.

ANSON: No, not then. I can't even remember who gave the physics lectures—maybe it was Earnest Watson. Watson gave some of the physics lectures, but it was mainly rec [recitation] sessions, and in mathematics I just had TAs [teaching assistants]. We occasionally had lectures from [Frederic] Bohnenblust or [Arthur] Erdélyi, but I didn't get as much exposure to the famous professors in physics or math as I had in the other subjects. Millikan was there—you knew about him and you saw him walking around the campus, but you didn't have much close interaction. I was very successful in high school—I was used to getting nothing but the best grades. So when I came to Caltech, as happens to so many other people, that changed very fast. I had thought I was going to be a physicist, partly because I had taken physics from Mr. Forster and physics seemed like the right kind of thing. But I struggled in freshman physics. I passed, but my grades were not sterling. I had less trouble with math—freshman and sophomore math I sort of breezed through, and chemistry just came naturally to me. I liked chemistry because it seemed fun, and I had a lot of fun in the chemistry laboratories, which I hadn't expected. The high school chemistry that I was taught in those days was really old-fashioned. It was memorization of the names of things—not even the periodic table, just memorization of reactions—if you mix this with this, what happens? Not why or how.

COHEN: Empirical to the n^{th} degree.

ANSON: Very empirical, full of memorization and rote. But here it was much more interesting in that regard. I also struggled in English—there was a lot of writing. I used to get good grades for writing in high school, but up here it was more demanding.

COHEN: Well, I imagine that a lot more was expected of you.

ANSON: Right. And Beach Langston was a stern taskmaster; he would give you back your papers full of criticisms. So my GPA [grade point average] the first year at Caltech was mediocre. It took until the end of my freshman year, or the beginning of my sophomore year, to start doing better. Ernest Swift's course I took to like a fish to water. That was one of the courses that I enjoyed the most.

COHEN: What chemistry did he teach?

ANSON: Analytical chemistry. In those days it was required of half the undergraduates. Physics majors, chemistry majors, biology majors, geology majors, and even some of the engineering students had to take his course. It was very tough in terms of laboratory work. We had to be able to do titrations and manipulate well. Most of my classmates hated it. The Swift lab was the worst course they ever went through.

COHEN: Was that a sophomore course?

ANSON: Yes, it was largely a sophomore course. You could take it at other times, but for chemistry majors it was a sophomore course. And, for whatever reason, I liked it when most people didn't. Ernest Swift was the other person who had a very major influence on what I did, because I liked his course. And he was very adroit at sensing which students liked his course, because there were so few of them. If you were pretty good at what was going on, he liked that. So he would invite the students he thought were good to do undergraduate research during the year and sometimes even in the summer. I never managed to do it in the summer, but during the school year I was doing undergraduate research in his lab, looked after by his graduate students.

COHEN: Now, was this just extra, or did you pay for this?

ANSON: This was extra. I guess I was getting academic credit—three units or six units for undergraduate research—but I didn't need the credit. I was just doing it because it was interesting, and I was learning things that you didn't learn in the class. I had seen his graduate students doing this stuff that looked very interesting. So I got to know the graduate students better, because I was in their labs. And every now and then I got to go in and talk to Professor Swift himself. That was very enjoyable, a little scary at the beginning because he had such a formidable reputation for being strict, but he was actually a teddy bear once you got to know him.

COHEN: I've only heard the tennis stories. [Laughter]

ANSON: I didn't play tennis then. If I had, I might have gotten to know him even better. From then on, things just got better. My grades got better and better.

COHEN: You were taking more and more chemistry at this point?

ANSON: Yes. Sophomore physics went better than freshman physics. Sophomore math was not a problem. And then, in those days you had to take geology, astronomy, and biology—a curriculum more like what they are trying to do now.

COHEN: I was going to say that it sounds like the new core curriculum.

ANSON: Yes, in those days it was the old curriculum, and those were interesting courses that I did do well in. Also, I played basketball, even as a freshman. I had played basketball in high school but not with a great deal of success. I was always on the first string of the team I was on, but we didn't have very good teams. At Caltech I was tall enough so that they were eager to persuade me to join the freshman team. A couple of years later, the freshmen were allowed to play varsity, but when I was a freshman I had to play on the freshman team. We did OK. Then the last three years I played on the Caltech varsity. That was very enjoyable too, because that was a diversion. It was easy to be successful, because there wasn't really very much competition. We did have these veterans who were a part of the student body, and some of them were older and good athletes, so we ended up having a pretty competitive team. Caltech was still in the local SCIAC [Southern California Intercollegiate Athletic Conference] league. We played tough schools—Occidental, Redlands, Whittier, Pomona—and we were very competitive. It was enjoyable. I practiced two hours or so a day. There was no gymnasium—you had to drive over to the Armory on Raymond, next to the Crown Theatre, to practice.

COHEN: That's right. Oh, wow!

ANSON: Our games were all played in PCC's [Pasadena City College] gym, unless we were away. Sometimes we practiced on the dirt basketball courts in Tournament Park. But that was a nice feature of Caltech—that you could participate very actively in a sport and gain satisfaction

from it, and yet not have it be so time-consuming that it took away from all the other things you were doing.

COHEN: Well, it sounds like you really had a very good balance at that time.

ANSON: Yes. But there was never enough time. There was always too much homework. And there was the driving to and from the campus. When I was sophomore, my parents sold their house in Wilmar and we moved to El Monte, where I lived for the rest of the time I was at Caltech. That was farther away, and after basketball practice it was maybe a thirty-minute commute to get home. Then I'd eat and worry about homework. And then I had to get up early. I had to be here sometimes at eight o'clock for classes. So it was a very full day. But, when you're that age, it doesn't seem to get you down.

Some of the faculty I remember from then are still here.

COHEN: Is that right?

ANSON: Norman Davidson was Linus Pauling's helper. He was very much involved in teaching freshman chemistry in the laboratory. Jack [John D.] Roberts arrived at Caltech while I was a senior, I think, so I never had a course with him.

COHEN: Was this about the time that Linus Pauling was leaving?

ANSON: No. This was in the fifties. When I came back in '57 to be on the faculty, Linus resigned the division chairmanship within a year of my return. It was he who, in fact, hired me—the letter inviting me to join the faculty here was from him as division chair. I did not know all of the details at the time, but Ernest Swift took over as the division chairman within a year after I came back. Linus didn't leave right away, but he stopped being the division chairman pretty quickly. I guess I can't think of any other of the chemistry faculty, other than Norman, who are still around. Many of those from whom I took courses as an undergraduate were on the faculty when I came back—virtually all of the department.

COHEN: When did you start thinking about graduate school?

ANSON: Well, that was, again, Ernest Swift's influence. The research I did with him was in electroanalytical chemistry. And the year I was a senior, I guess, a professor at Harvard had written a new book called *Electroanalytical Chemistry*, which was exactly what I was doing.[1] Well, Ernest Swift said that he didn't know this fellow too well but he knew the book and thought it was a good one. He recommended that I consider this fellow at Harvard, and another fellow at Princeton, [N. Howell] Furman, whom he knew well and thought highly of. The man Swift thought was really the best of all was named Kolthoff—I. M. Kolthoff—who was at the University of Minnesota. By that time, I had decided, as had many of my classmates, that if you spent four years as an undergraduate at an institute of technology, it would be highly desirable to spend three or four years in graduate school at sort of the opposite extreme—a full-fledged university where science and engineering weren't the central focus but were part of it. And so that made Harvard seem very attractive. I had never been out of the state and thought it would be nice to go all the way East. I didn't go around and look at graduate schools the way students do now.

COHEN: That's a more recent phenomenon.

ANSON: Right. There were also five people in my senior class at Caltech who were majoring in chemistry who decided the same thing. So the five of us all went back to major in chemistry at Harvard.

COHEN: And they took all five of you?

ANSON: Yes.

COHEN: Well, you must have been very good students.

ANSON: Well, even then, Caltech's reputation was such that schools liked to get undergraduates from Caltech whom Caltech spoke well of. I think two or three of the people I went back there with had NSF [National Science Foundation] graduate fellowships. I didn't. But they did, and that's also a big attraction. If you have your own fellowship, that makes you more attractive.

[1] James J. Lingane, *Electroanalytical Chemistry* (New York: Wiley & Sons).

COHEN: You can go wherever you want.

ANSON: Right.

COHEN: So did Harvard give you an assistantship?

ANSON: Yes. The first year I was just a teaching assistant. Then I applied for another fellowship. The second year I had a fellowship from the National Institutes of Health—odd, considering the kind of research I was doing, but I had that. And then the third year the American Chemical Society had started a national competitive fellowship in analytical chemistry, sponsored by a chemical company. My professor encouraged me to apply for that, and I ended up winning it. So I had that as the fellowship for the third year.

COHEN: You didn't see Harvard until the day you arrived to start?

ANSON: That's right.

COHEN: We're in the late fifties now?

ANSON: No, this is '54. I had saved a little money from summer jobs, but I didn't have significant resources. So I packed a couple of suitcases and got on the Greyhound bus at the El Monte Greyhound Depot.

COHEN: And started for Harvard.

ANSON: I started for Harvard. And I stopped along the way, first in Utah to visit a friend from high school. Then I stopped in at the Harshaw Chemical Company main plant in Cleveland, because I had contacts there. I had worked during the summers, and part-time during the school year, at Harshaw Chemical Company near East Los Angeles. They had a laboratory that looked after the electroplating shops around the San Gabriel Valley. They sold chemicals to these shops, and they needed somebody to do analytical chemistry. And I was the guy who did that for

four years. My first summer at Caltech, I worked at the Wilson meat packing company, down near where Philippe's used to be, on Vignes Street. I was a mailboy.

COHEN: That must have been awful.

ANSON: I had to have some summer income. I think I even got that job through an agency, so I had to pay a huge fee to them. But by the second summer, I had connected with Harshaw. I was with Harshaw from then on—even during the school year for part of the time. And on the way to Harvard, I visited the main plant in Cleveland. I slept in the YMCA in Cleveland.

COHEN: I grew up in Cleveland.

ANSON: Yes. Harshaw was a chemical company that got started in Cleveland. They joined with somebody else later, but in the fifties it was Harshaw—I think they were on the lake. And then I may have stopped in New York—I can't remember. It was a hectic trip.

COHEN: All on the bus?

ANSON: All on the bus. I finally got there, and one of my friends from Caltech who had gone back with a car picked me up at the depot and took me over to the dorms. I had a graduate dorm at Harvard and lived there.

COHEN: A new world.

ANSON: Yes. It was very different. Very cold—the first time I had lived through a really cold winter. Actually, I came back that first summer—

COHEN: You didn't come back in between? You were there from September until—

ANSON: I was there from September until June. Harshaw wanted me to come back and work that summer, and my professor was a rather easygoing fellow and said OK. Well, actually there was another reason, a rather ironic one. My first research project at Harvard was, at my Harvard

professor's suggestion, a critique of a paper that had appeared by Ernest Swift, my undergraduate guru, and Paul Farrington, a Caltech graduate student of Swift's who was then on the faculty at UCLA. My professor at Harvard said, "Why don't you go back and meet with them and see what they think about our critique?" So I did go back, and I spent the summer working at Harshaw again, because I needed the money and they could give me a reasonable amount of work. Then one hot summer evening, before there was any air-conditioning, I went up to see Swift and Farrington in Gates Laboratory, with some trepidation. After about an hour and a half, they said, "Well, you know, we think you're right. We didn't have it right, but now we know what we should have done." That was nice. So we published a paper at Harvard after I got back.[2] After that summer, I stayed straight through, working that year and the next. The graduate dorms stopped being available in the summers, so some friends of mine and I got an apartment and spent the summer at Harvard. I worked the third year and managed to finish, so I got my degree at Harvard at graduation in June of '57.

COHEN: So that was three years?

ANSON: Yes, that was not so unusual in those days. And my parents, who had not traveled at all, got in their car and drove from El Monte to Cambridge.

COHEN: They must have been very proud of you.

ANSON: My mother was, particularly, but they were both proud. My father didn't like to do anything but just drive. My mother wanted to stop and see relatives in Wyoming and all, but he just wanted to go and get back. But they came. They stayed in the YMCA—that's all they could afford. They attended the graduation, and then I went with them to New York. They were on their way back home. We spent a day or two in New York—my father and I in the McBurney Y, and my mother and sister at the YWCA, because that was the least expensive. We couldn't afford to stay at a hotel.

By this time, I had the job at Caltech. My Harvard professor had been very complimentary, and Norman Davidson had actually come to Harvard for a sabbatical and was

[2] Lingane, J. J. & F. C. Anson, "Amperometry with Two Platinum Electrodes with the Cuprous-Cupric Bromine-Bromide System," *Anal. Chem.* 28:12, 1871-75 (1956).

looking around for people. Meanwhile, I had written to Ernest Swift saying that I was finishing and would like to go into academics, and that I was particularly interested in a West Coast job. And I said, "If you happen to know of anything, please let me know." Back comes a letter from Linus Pauling saying, "We'd like you to come here." Norman Davidson had been part of that. At the same time, it turned out that Jack [John H.] Richards—the present Professor Richards in the chemistry division—was a young instructor at Harvard at the same time, and Caltech was looking for an organic professor. So Richards and I both moved to Caltech in 1957. I got permission from Linus Pauling to delay my arrival at Caltech until September, and from June until September a couple of friends of mine at Harvard—both Caltech graduates, one in chemistry and one in computer science—and I went to Europe.

COHEN: And this was just vacation?

ANSON: Right.

COHEN: Your very first?

ANSON: That's right. I had just finished with graduate school. We spent three months and traveled 12,000 miles. One of the guys had a little bit of money and he bought a Volkswagen Bug. We drove it all around and then he shipped it back and sold it for as much as he paid for it. So it didn't really cost us anything, except for gas for the car. We traveled all over Europe. I had never been to Europe. That was great fun.

COHEN: You had hardly been to Chicago.

ANSON: That's right. I just drove right through Chicago in the night on the bus.

COHEN: It all sounds so smooth when you tell it.

ANSON: Well, of course it wasn't. The plane didn't land where it was supposed to. We ended up in the wrong country. One of the guys that was with me, Jerry [C.] Mitchell—he may have retired now, but I think he's still a professor at Sacramento City College—a very, very bright

chemistry major; he was the guy who had the car. He also had a movie camera; he took movies of everything. We were in Yugoslavia, and he decided he wanted to take pictures of the Yugoslav military corps, which was marching around and doing things a hundred yards or so from our car. So he had this black box camera and was taking pictures with it inside the car, because we were aware of the fact that they probably wouldn't like that. Well, the next thing we knew, a group of soldiers came over to us in our car and said, "Who's taking pictures?" Well, his black box camera didn't look like a camera, while I had an ordinary-looking camera that I was taking snapshots with. They said, "That's the camera." So they confiscated my camera, and we had to wait a day in the city to retrieve it. They didn't arrest us, but I wanted my camera back, because I couldn't afford to lose this camera, which was worth $50. And they made us wait and wait and wait and wait. Finally they gave the camera back to me, but they had opened it up and ripped out the film—and I hadn't even taken any pictures!

Anyway, the trip to Europe was very nice. When I got back here to Caltech, it was only ten days or so before school started. I was assigned the job of assisting Norman Davidson, who then was in charge of freshman chemistry. Linus Pauling was still here, but he was more of a guest lecturer than a hands-on professor. My job was to run the lab. In those days, the freshman chemistry laboratory ran all year long and was required of all freshmen.

COHEN: And this was in Gates?

ANSON: The old Gates. My office was in the basement of Gates, in an area which is now part of Student Affairs.

COHEN: The remodeled area? Do you mean Parsons-Gates?

ANSON: Yes, Parsons-Gates.

COHEN: It didn't look like that then? [Laughter]

ANSON: No! My office was very unimpressive. There was no air-conditioning. The lab they gave me still exists. In fact, I teach a course right now—an undergraduate course—in that room. It was my first research lab at Caltech. It's been modernized but not reconfigured.

COHEN: In the basement of Gates?

ANSON: In the basement of Gates, 21 Gates. That's how I got started. I had a lot of teaching to do, and I had some ideas about what research I wanted to do. And I think I managed to have a graduate student in the first year—maybe not that September, but by the following year I had begun to have a graduate student or two.

COHEN: Now, did you have to go out and get yourself a grant then, or was there research money?

ANSON: There was research money available from Caltech. I didn't need very much. Ernest Swift was retiring—not fully at that time, but the reason that there was a position open was because he had announced the fact that he wanted to retire. I was to come not only to help Norman that first year while Ernest was still teaching, but then I was to take over the courses that Ernest had taught. At the same time, he gave me a lot of equipment and facilities that he had had, so I didn't have any problems in terms of resources. Holmes Sturdivant, who was executive officer, controlled the finances within the division. Whenever I needed anything, I just went to see Holmes and he would see to it that I got it, but it was not very much.

COHEN: Those were simpler days.

ANSON: Right. But then within a year, it was clear I needed more than they were going to be able to provide. So I wrote my first proposal and sent it to the army. Carl Niemann, who was here then, and I hit it off very well. I had taken courses from him when I was an undergraduate. He encouraged me to write my first proposal to the army, because he'd had money from them. He was an army research officer and thought they'd be interested in the stuff that I wanted to do. And he was right. I got my first grant from the army, and they continued to support my proposals for many years.

COHEN: They didn't bother about security and things like that?

ANSON: No. None of this was secret. The army was interested in analytical chemistry and electrochemistry. And when Sputnik happened [October 1957], the NSF wanted proposals. Ernest Swift said, "I know you have money from the army, but why don't you write a proposal for the NSF, because you can probably get some money there." So I did, and then I got the NSF funding. And then I had both NSF and army funding.

COHEN: Those were very posh days.

ANSON: Those were nice days. It didn't cost as much to do research, and the money that was available was easier to get.

COHEN: You didn't have to spend your whole time writing grant proposals.

ANSON: That's right. And I had quite a bit of teaching to do in those days. In fact, I remember one amusing time. It must have been my very first year. Linus Pauling was giving lectures in freshman chemistry to a class of about 180.

COHEN: What year are we in now?

ANSON: This must have been '57-'58. Well, Linus had to go out of town, so Norman Davidson took over the lectures. But Norman Davidson liked to ski, and it was wintertime, and he'd gone up to Mammoth to ski and had gotten snowed in. I still remember one Monday morning—the lectures were at eleven o'clock—when I got a call from Bea Wulf, Linus Pauling's secretary, who said, "Professor Pauling is out of town. Professor Davidson is snowed in. You'll have to give the freshman lecture."

COHEN: Surprise, surprise.

ANSON: Slightly. So I said, "What!?" I scrambled and went in and gave the lecture. Then Norman still wasn't back for the next lecture, and I had to give that. This was in 22 Gates, where they had big blackboards—three-level blackboards—that went up and down. When I went in to give this second lecture, I noticed that all of the blackboards had been put down. That wasn't

typical, so I suspected that the students had done something. I managed to get through that lecture without ever raising the blackboards, much to the unhappiness of the students. Then, after the lecture was over, I investigated to see what was underneath these blackboards. And, sure enough, they had put one word on each of the three hidden blackboards. It said, in great, big letters, "WE WANT PAULING." **[Tape ends]**

Begin Tape 1, Side 2

COHEN: OK. Now, you're not mentioning anything about when you met Roxana. That must have been in here sometime.

ANSON: Oh, yes. Well, all the time that I was at Harvard, I was still playing basketball. They had an intramural graduate league at Harvard, and I got connected with that. I used to play basketball every Saturday morning at one of the Harvard gyms. And when I came back to Caltech, Herschel Mitchell, a professor of biology, had put together a group of Caltech people—grad students, postdocs, young faculty—who liked to play basketball. He recruited me. I had been a well-known basketball player when I was a student at Caltech, and that was only three years earlier, so they remembered that I knew how to play basketball.

So I started playing on Herschel Mitchell's team. We would scrimmage against the Caltech varsity or another team in the Pasadena recreation league.

COHEN: Did you still have to go to the Armory, or had they built something by this time?

ANSON: By this time the Scott Brown Gym had been built. That was built, I think, the year after I left Caltech. I always regretted never having been able to play there. And so I played on this team at PCC and other places. One of the guys on the team was in applied physics, I think it was, and he told me that he had gone out with this very good-looking tall girl he thought I ought to meet, and that she worked in the library—not today's Millikan Library but the physics library, over in Bridge. She was the interlibrary loan assistant. So I took him at his word and found it necessary to get an interlibrary loan, and met Roxana.

COHEN: Subtle.

ANSON: I invited her to come to a basketball game a couple of times. She says the very first real date that we went out on was when I took her to see *Waiting for Godot*. She said, "What an uninspired first date"—heavy, heavy Samuel Beckett—but we hit it off. I must have met her in '58, I guess, and we were married in '59. And we still are.

COHEN: That was good.

ANSON: Yes, it worked out very well.

COHEN: The reason I'm asking you is that, of course, in your later, administrative life she played such a big part.

ANSON: Oh yes, she's always been very supportive. She knew that there were lots of things going on besides just research and teaching, especially when I had these other administrative jobs.

COHEN: We'll get to that. So you, at this time, were doing your teaching and your research, and Caltech was growing at this time? Lee DuBridge was president?

ANSON: DuBridge was president for quite a while after I came back, until Harold Brown took over [1969]. Things were changing at Caltech. In the division, Linus's decampment had a major impact. Ernest [Swift] took over as chairman for five years [1958-1963], but he was really just doing it out of commitment to the division. He didn't see it as his job to plan the future, because he was planning to retire. So the people who were sort of stirring things up then—trying to get the division moving in new directions—were people like Jack Roberts, who had arrived in 1953; Norman Davidson, who was very active and wanted to see more inorganic chemistry at Caltech; and George Hammond, who had been hired shortly after I was and was very influential in the future of the institution. In physical chemistry, there was Dick [Richard M.] Badger, but Harden McConnell, who was on the faculty then in physical chemistry, was even more active. Carl Niemann was also very influential, but Roberts and Hammond were most vocal in pushing for change.

COHEN: Was chemical engineering part of the chemistry division at this time, or was that something that came later?

ANSON: No, it always was part of the division. When I was an undergraduate there wasn't anything called chemical engineering; there was applied chemistry. You could get a degree in applied chemistry, but they didn't really offer a degree in chemical engineering. Then that changed. William Lacey and Bruce Sage got a full-fledged chemical engineering option and then it took off. But from the very beginning, chemical engineering was part of the division. It was a very unusual arrangement. Berkeley does it, but not many others. It just worked out that way. I think Arthur Amos Noyes probably had a fair amount to say about it. My impression had always been that it was a difficult marriage for a while. Some of the chemical engineers didn't understand that they were only part of a division. There were some testy times, but by and large it has worked out very well. There were bridges built, and there was an excellent faculty in chemical engineering that stimulated and helped chemistry, and vice versa. Every now and then people say, "Why don't the chemical engineers join the Engineering Division?" But the last people who want to do that, I think, are the chemical engineers, because they realize that being part of chemistry has its advantages.

COHEN: So when did you move up to associate professor? You got tenure right away.

ANSON: I can't remember. [Dr. Anson became an associate professor in 1962—ed.] I think I was sort of on track. I came to Caltech, actually, as an instructor, and I was promoted to an assistant professor after the first year. Meanwhile I had applied for a Guggenheim Fellowship to go to work with a man in Brussels, Belgium, in '64.

COHEN: That was before the world of postdocs, wasn't it?

ANSON: Yes. Postdocs were rarer then. They were not that unusual, but it was also not unusual for someone to come out of graduate school and go directly to teaching. I was still pretty young, because I had only been in graduate school three years, and I was about a year younger anyway. I was wet behind the ears, but by the time I went to Brussels, which was in January of '64, I had either been promoted or knew that I was going to be promoted to a tenured position. That would

have been about five or six years after I had become an assistant professor, so that was sort of normal. And we spent eight months in Brussels.

COHEN: Was that a good experience?

ANSON: Well, yes and no. It was a tough experience at the beginning. Roxana and I had two young kids. Our son was six months old and our daughter was eighteen months. We left for Belgium on January 3rd, and it was freezing. The kids were a major burden, and we didn't have any money, so we had to get very inexpensive accommodations. It was a strain to keep the furnace going in the basement and also hard to afford. After the first ten days, Roxana was ready to come home—it was just too awful. But we found a babysitting arrangement, so the kids could be looked after and we could see more of the city, and it was very worthwhile professionally.

COHEN: Now, you went there because there was someone to work with?

ANSON: Yes. There was a well-known Belgian electrochemist who didn't publish too much and who didn't travel very much, so you really had to go to him in order to benefit from what he was doing.

COHEN: What was his name?

ANSON: His name was Lucien Gierst. He's still alive, retired now. Language was a problem for both Roxana and me. I had passed a French exam—you had to pass German and French exams for a PhD in those days—but it was purely reading. I really couldn't speak any French, and in reading French I needed the dictionary. All the theses Gierst had were in French, so I had to do a lot with the dictionary. I learned more French there than I ever had before. Both Roxana and I had to learn enough French to deal with the merchants, because, particularly in our neighborhood, if you didn't speak French you didn't get bread or milk or anything else. So it was an educational experience. And the weather in Brussels is absolutely terrible. The food is as good as you can find in Europe, and the weather is about as bad, so the average is actually not too bad. We ended up enjoying it, but we were ready to come home by the time eight months had gone by.

COHEN: You came back?

ANSON: Yes, I came back. I had had a good friend here, whom I'd gotten to know pretty well while consulting for North American Aviation and who became a visiting associate at Caltech and looked after my group while I was in Brussels.

COHEN: By this time you had a group?

ANSON: Yes. I had a group of five or six people by then—graduate students, mainly. And this fellow was also an electrochemist, so he could help them out. There weren't any faxes in those days. We had to communicate by straight airmail, but it was OK.

COHEN: It's interesting that you took this opportunity right away, because there's not a particular tradition for taking sabbatical leaves at Caltech.

ANSON: No, there isn't. In fact, the policy was—it's still that way—that you don't automatically get a sabbatical after a certain amount of time. I was told from the very beginning, "Whenever you think you could professionally benefit by going away, let us know. If it's every three or four years, we'll find a way. If it's every ten or twelve years, that's OK too." It was a very enlightened policy. And we haven't gone away as much as, on average, every seven years. Brussels was the longest time we've ever gone away. After that, the next place we went was Florence, and that was for four months—to see another electrochemist I wanted to work with. But after I came back from Brussels, there was lots of research and other things to do.

COHEN: And you still weren't taking any administrative responsibility at this time?

ANSON: No.

COHEN: You were being a professor, teaching, and doing your research?

ANSON: Yes.

COHEN: Was there anything unusual going on at Caltech at that time? DuBridge was firmly in control?

ANSON: Oh, yes. I didn't know that much about what was going on at the highest levels. I was aware of the fact that some people felt the administration needed a certain amount of rethinking. There was the problem of JPL [Jet Propulsion Laboratory] and whether it was wagging the institute to some extent. And I think some of the trustees felt that it was time for the administration to sort of reconfigure itself.

COHEN: Did you have division chairs then?

ANSON: Oh yes. There were always these division chairs, but in those days they were really much more like European "Herr Doktor Professors."

COHEN: Well, they had the budget.

ANSON: They also had Linus Pauling, in those days—at least when I first came back. Essentially, if Linus decided this was the best thing for the division, and said so and gave the reasons, it just happened. He was in a position to, and in fact did, hire people pretty much on his own signature. With great results, in some cases.

COHEN: Well, that was part of the problem toward the end.

[Tape ends]

FRED C. ANSON

SESSION 2

February 26, 1997

Begin Tape 2, Side 1

COHEN: Good afternoon, Professor Anson.

ANSON: Hello again, Shirley.

COHEN: I think we can sort of pick up when you were already realizing that you were going to have some administration to do. So perhaps we could lead into that and talk about your Alexander von Humboldt Senior Scientist Award first.

ANSON: OK. I was in Berlin in '84, and it was clear I needed to come back to take over the [division] chairmanship.

COHEN: Now, were you working in Berlin with people you already knew? How was the situation?

ANSON: Yes, you had to have a German sponsor in order to be awarded one of these senior Humboldt awards. There was a man in Berlin whom I had admired ever since I was in graduate school, where I first heard of him. He was a very famous German electrochemist named Heinz Gerischer, who had been in various German cities but had moved to Berlin to become the director of the Fritz Haber Institute of the Max-Planck-Gesellschaft, a very distinguished position that had formerly been held by [Karl Friedrich] Bonhoeffer and other famous people. He knew me because we were both electrochemists, and he invited me to come. I went there and was having a great time—Berlin is a wonderful city. We really enjoyed it. But I had to come back early because of the chairmanship. So I arranged to come back to Caltech, and then went back to Berlin again to take another month of this Humboldt—in '86, I think it was—because there was a special meeting that they wanted me to come to. Then I had two more months left, which I wasn't able to take until after I stopped being chairman, ten years later, in '94. So we

went back again to Berlin for the last time in ’94. Unfortunately at that time, a week after we arrived, my host, Professor Gerischer, died suddenly of a heart problem, so I didn’t have a chance to interact with him for that last couple of months.

COHEN: Going back to your having to take on the chairmanship: You said there were problems. Is there anything you wanted to say about that?

ANSON: Well—

COHEN: This was in ’84.

ANSON: Right. I guess I knew that I was going to be chairman.

COHEN: Or executive officer?

ANSON: Well no. The executive officer was much earlier.

COHEN: Oh, OK. We didn’t talk about that. Maybe we’d better go back. When were you executive officer?

ANSON: I was executive officer for John Baldeschwieler. When George Hammond resigned as chairman and left Caltech [1972], we had to find a new chairman for the division. Jack Roberts, who had been chairman [1963-1968], stepped in on a temporary basis while we searched for a new chairman. The person who was identified to be our new chairman was John Baldeschwieler, who was then a faculty member at Stanford but who had been in Washington for two years at the Office of Science and Technology Policy. When John arrived [1973], he didn’t know Caltech well.

COHEN: That’s rather unique, because most of the people come into this office via a position at Caltech.

ANSON: In chemistry, that was the only time we hadn't done that. But other divisions had hired division chairmen from outside. And so John asked other people in the division whom he should get for an executive officer. Norman Davidson had been doing it. Holmes Sturdivant did it for years for Linus Pauling—and he was unbelievable; he did a fantastic job. He had Linus's complete confidence, and he ran the whole fiscal side of the division. But then he died very unfortunately [1972]. He had cancer and died rather quickly. Then Norman Davidson took over as executive officer, but after Hammond left as chairman, Norman didn't want to be executive officer anymore. So Baldeschwieler was persuaded that I was the one who should do it, and after talking to him, I decided I would. The executive officer under Baldeschwieler actually had responsibility for more of the academic side—teaching and committee assignments—and less of the fiscal side, because John himself was a hands-on fiscal manager. That was interesting and got me involved in parts of the division with which I had been only peripherally involved.

COHEN: Now, what year was it that you were doing that? Early eighties, or even earlier than that?

ANSON: Earlier than that—maybe late seventies. I'll have to look and see when John Baldeschwieler was chairman [1973-1978]. But toward the end of John's term as chairman, Jimmy Carter was elected president, and Harold Brown, who was then president of Caltech, was asked to be his secretary of defense. So the institute had to find a new president. The chairman of the faculty at that time was Robbie [Rochus E.] Vogt, and he—in consultation with Stan [R. Stanton] Avery, the chairman of the Caltech Board of Trustees, with whom he was very close—recommended that I be made the chairman of the search committee. I was at a Gordon Conference enjoying my chemistry when they called me and said, "You've got to come back." So I said, "All right." But in order to chair the search committee, I resigned as executive officer in chemistry.

COHEN: So you didn't serve as executive officer for very long.

ANSON: Two or two and a half years. That's when Sunney Chan became executive officer.

Robbie Vogt had the authority, as faculty chairman, to appoint the search committee, but he consulted with me before he picked the faculty members to serve on the committee. For the

next year and a half, I spent at least half of my time on this presidential search. It was interesting but very time-consuming. We were under a fair amount of pressure, because the then director of JPL, Bruce Murray, who was also a member of this committee, felt that the Caltech-JPL relationship was really drifting and that something had to be done to get a permanent president, because an acting president just didn't have the clout that was necessary to deal with NASA.

COHEN: Was there concern about getting an acting president?

ANSON: No, there *was* an acting president. When Brown resigned, it was very quick. They had to have somebody; so Bob [Robert F.] Christy, who was already the provost, was asked and agreed to serve as acting president and continue as provost. He was doing both jobs, which was a terribly tough, difficult thing to do. And everyone, including Bob Christy, wanted something to be resolved. So this committee, which consisted of a wonderful set of people—I don't know if we could ever get that set together again—met at least weekly and often more than that. We always had a dinner every week. When we finally narrowed our list down to ten or twenty, we took several trips—the whole committee—around the country and even outside the country to talk to people, and winnowed our way through the potential candidates.

COHEN: Just for the record, who were the people on the committee?

ANSON: Jack Roberts and me from chemistry. Fred [Fredrik] Zachariasen and Robbie Vogt from physics. Robbie didn't want to appoint himself to the committee, but we persuaded him that he really ought to—not only because he was the chairman of the faculty but because he was wise. Bruce Murray and Gerry [Gerald J.] Wasserburg and Clarence Allen from geology. Jim [James J.] Morgan from engineering. Lee [Leroy E.] Hood from biology. Peter Fay from humanities and social sciences. There were about ten people. I think that's all of them. It was a cantankerous set of very strong-willed, very smart people who were pulling in all kinds of different directions, but when we got together we eventually got the job done. Being chairman consumed a lot of time for me in that period. When that was finally finished, the chairman of the search committee had sort of an obligation to help the new president feel comfortable on the campus and help out. I didn't know Murph [Marvin L.] Goldberger [Caltech president 1978-

1987] before this happened, but I got to know him rather well after he came to Caltech. We're still very good friends.

COHEN: I was going to say that that must have been the basis for your friendship, which continues.

ANSON: That's right. We didn't know each other at all, but we remain very friendly, and that includes Mildred [Mrs. Goldberger]. Then, when I stopped being chairman of the search committee, they came after me and wanted me to be chairman of the faculty. And I said, "I've done enough already," but they kept after me, and in another couple of years I agreed to be chairman of the faculty.

COHEN: Is that a very time-consuming job?

ANSON: Oh, nothing like being chairman of the search committee, but it depends on the situation.

COHEN: If there is a crisis or not, I suppose.

ANSON: There was a significant problem with JPL during the time that I was chairman of the faculty—that is, what was going to become of JPL? There was a fear that the whole lab might collapse or that they would lose their government support. I remember a full faculty meeting where the issue was whether Caltech should agree to undertake proprietary research or other things that JPL wanted to do.

COHEN: What were the problems? Were they having projects that Caltech wasn't happy with?

ANSON: No. It was just that the federal government was cutting back, and Caltech depended heavily—as they do now—on the management fee. We had a faculty meeting where it was in fact recommended to the administration that they take a portion of the fee every year and bank it in anticipation of a rainy day when they might lose the fee and they would have something to fall

back on. That indeed happened for a year or two, but then it didn't continue. I don't think that's being done any more. But that was a contentious problem that eventually got solved.

COHEN: I can easily see how the faculty would be divided on that issue.

ANSON: Then, near the end of my term—chairman of the faculty is a two-year term—the issue of the Arroyo Center came up. Murph was seriously considering establishing this agency which was going to advise JPL and the army, mainly, about matters, some secret and some not.

COHEN: Was JASON [the advisory group—ed.] sort of a pattern for Murph on this, do you think?

ANSON: It could have been. I think he felt the Arroyo Center was (a) going to do the government some good, (b) be good for Caltech, and (c) provide some additional support for the institute. Murph was quite forthcoming about it. He told me, as chairman of the faculty, that this was being contemplated, and he asked me what I thought about it and what I thought the faculty would think about it. And I said, "Well, since the last Faculty Board meeting is over, you won't be able to announce it or discuss it with the faculty until the fall. But I think the best thing to do is to fully inform the faculty, maybe through the Faculty Board, as early as possible, so they'll know what's being contemplated," which he did. But in the meantime I had stopped being chairman of the faculty and Don [Donald S.] Cohen had taken over. Don and I knew that this was going on and had discussions about it. It was under Cohen's chairmanship that it blew up, and then there was that historic faculty meeting in the Athenaeum. I've never seen so many faculty gathered there. Cohen was in the chair. Robbie Vogt, who was by then provost, was there to talk about it. Murph was there to talk about it.

COHEN: Was Robbie in favor of this?

ANSON: Well, I don't think he was in favor of it in toto, but it had gotten to the point where he felt that the institute had made commitments and that the best thing to do, probably, would be to gracefully meet the commitments as minimally as possible and then ease our way out of it. But many of the faculty, including Kip Thorne—

COHEN: I was going to ask you about that, because I seem to vaguely remember Kip being very incensed about it.

ANSON: Kip was there and was passing a petition around. And Dick Feynman, who rarely came to these full faculty meetings, was there.

COHEN: That's historic.

ANSON: Yes, it was. Cohen had it orchestrated so that you couldn't just stand up and make a statement. You had to be recognized by him, and questions to the administration were to be delivered through him, so that the discussion was somewhat controlled. It was going along in an orderly way, but it was clear that the outspoken people were against it. Then Feynman got up, finally, and said, "I've been thinking about this, and I think it's a terrible mistake. It's not Caltech. We would be giving the wrong message. And I think we should immediately squash it. It doesn't matter whether we've made mistaken commitments. We should just not do it." And that was the vote, essentially—that was the resolution. What Feynman said carried the day. It was pretty persuasively said. The chairman of the faculty didn't allow Robbie to say anything, so Robbie was not happy about that, but at the end it was clear that the sense of the faculty was, "Don't do it."

COHEN: But what did you think? Even now, what do you think?

ANSON: I think it was the right outcome. If the timing had been such that there had been more chance for give-and-take between senior members of the faculty and Murph and Robbie and maybe some of the trustees, it probably wouldn't have gotten as far as it did. Another person who was very much in favor of this was Bill [William H.] Pickering. He had a company or a consulting group that was involved in this. The people who were in favor and the people who were concerned could have had a dialogue, so that it might have had a somewhat different outcome—so there wouldn't have been this sort of clash. It was bad for six months or so, but then it gradually faded away.

COHEN: Well, it may have been almost the biggest crisis Murph had.

ANSON: Well, it was certainly the most celebrated. It got the attention of more faculty all at the same time than anything I can remember. Presidents always have problems, but that was really something.

COHEN: He really misjudged the climate here.

ANSON: It really sounded to the faculty as if an attempt were being made, without their really acquiescing, to change a portion of the culture of Caltech. They didn't want to see that happen, and they prevailed. That's one of the nice things about the faculty at Caltech. They really do run the place. The trustees own it, and the administration runs it; but on the crucial issues the faculty really makes the decisions.

COHEN: Maybe that's good.

ANSON: That's one of the best things about Caltech.

COHEN: Now, was Robbie [Vogt] provost at this time?

ANSON: Murph picked Jack Roberts for his provost [1980-1983]. Bob Christy had been provost. Then when Murph became president, he had a search and picked Jack Roberts to be his provost. Jack had been chairman of the chemistry division earlier. Harry Gray was then the chairman of the division [1978-84]. At about the same time, Robbie Vogt had become the chairman of physics [1978-83]. I was chairman of the faculty at that time, because I remember going to the IAC [Institute Administrative Council] meetings with Roberts in the chair as provost. Then Roberts decided he didn't want to be provost anymore after two or two and a half years, for a variety of reasons. I don't know all the reasons. That was when Robbie became provost, and Ed [Edward C.] Stone, I think, became his successor as chairman of physics [1983-88]. Not too long after Robbie became provost, Harry decided that he didn't want to be the division chairman any more. I think there was some connection—one with the other—but in any case Harry said he was stepping down. Now we're at '84. I wasn't chairman, but I was a member of the committee appointed to recommend to the provost the next division chairman of chemistry, and I had a man—I knew who should be the next chairman. My man was Bob [Robert E.] Ireland,

and I was all prepared to make the pitch, but, as far as I knew, the committee never met. I never got notified about a meeting. Then, the next thing I know, the provost called me in and said, "Well, your colleagues have met, and they want you to be the chairman." That's why I never got notified about a meeting. I thought about it and decided, OK, I'll try it. That started in '84 and ran ten years—two terms. By then Harold Brown had instituted this policy of term limits for most administrators.

COHEN: Right. Now, you got on OK with Robbie? I mean, it went smoothly?

ANSON: Oh, yes. I had known Robbie somewhat from the early days when he and I were on the Faculty Board together. Maybe I was an associate professor, but I may have been even an assistant professor on the Faculty Board when Robbie arrived at the institute [1962]. He always told me that he still remembers the day when one of the other divisions—I think it was the humanities division—brought to the faculty their proposal for the approval of some kind of course. It was a course that I was in favor of. But I was part of a group that Bob [Robert F.] Bacher had put together called the Honker Group, which had been meeting with Carl Rogers, Roger Sperry, and Jim Morgan, and a bunch of other people who were fun to be with. That group had convinced us that the institute would be better off if the organization and the administration of the individual divisions was somewhat less autocratic than had been the case in the Millikan and early DuBridge days. Well, one of the divisions about which we felt this the most was Humanities and Social Sciences. So when this course came to the Faculty Board, I, this young, outrageous Turk, had the temerity to ask how many of the members of the Division of the Humanities and Social Sciences—where this course was to be taught—had reviewed the course and had voted on approving it for the Faculty Board. And the answer was, "No one except the instructor. We find meetings in that division to be counterproductive." So, having been stimulated by this Bacher-Rogers group, I screwed my courage to the sticking place and said, "I am very much in favor of this course, but I think there should be more discussion inside the division, so I move we table this." And George Hammond, who was on the Faculty Board then and who was also a member of the Honker Group, immediately seconded it. It was not debatable, because it was a tabling motion and it got tabled. And Robbie always told me he couldn't believe that a young, wet-behind-the-ears faculty member could wield that much power

and force these senior administrators to actually go back to their divisions and do things right. So I knew Robbie from those days. Then, after I became the division chairman while he was provost, he and I just hit it off. I don't know quite what it was, but we got along very, very well.

COHEN: That's good. You're taller than he is.

ANSON: Yes. [Laughter] But not everybody did [get along with him]. You know Robbie.

COHEN: Of course.

ANSON: He's a wonderful person, but he has very strong opinions. He and I have had shouting matches, but we've always come out of them friendly. While he was provost and I was chairman, our division by and large, as far as I can tell, came out very well. We got many things that we wouldn't necessarily have had to get. He was encouraging. And then after he stopped being provost and Barclay [Kamb] became provost, Barclay was the same way. I didn't know Barclay quite as well as Robbie, but we were very good friends. He was very supportive of the things that we were trying to do in chemistry. So I had the good fortune, even though I was in the chair a long time—maybe too long—of having provosts who were very simpatico with the way I saw things.

COHEN: Well, that's probably a tribute to you.

ANSON: Well, I don't think I would have necessarily had the same outcome with other provosts.

COHEN: Well, maybe your department also was more congenial to each other.

ANSON: Well, we had a wonderful period of good feeling within the division, a lack of divisiveness, and an ability to attract and retain really superb faculty members. So they used to tell me, when I was chairman, that I was lucky because I was chairing the strongest and best division in the institute. That was true because of a variety of reasons, not just what I had done, but from the days of Pauling and the other division chairmen, when they'd attracted very good people. We were very careful about whom we would hire, and we were reasonably hard-nosed

about whom we kept. But we ended up making some changes and changing directions and ending up with a really wonderful set of people. That's one of the things we are now struggling to maintain. The better the people you have, the more time you spend fighting off other schools. I must have had to fight off six or ten serious attempts to lure away some of our very best faculty. In every case but two—in chemical engineering—we won. The provost and the president and the trustees came through in wonderful ways. So we held on to these people we could easily have lost, and that would have made a big difference.

COHEN: Did any of these new buildings go up while you were there?

ANSON: The Beckman Laboratory of Chemical Synthesis, which was a rehabilitated Church and Crellin with a new bridge put across, had been started by Harry, but it was completed after I became chairman. And most of the early planning for the Beckman Institute occurred while I was chairman. That was another major project that I was involved with, getting the Beckman Institute to come into existence. It was by no means a sure-fire thing.

COHEN: So did you finally have to make a trip to Orange County to see him [Arnold Beckman]?

ANSON: Oh, I made several trips to Orange County—not just me, but the whole administration. We all realized that there was this opportunity, and Arnold was clearly interested in doing something. But at the beginning it was to be in Orange County, down near what's now the El Toro Y. Arnold had the idea that Caltech should erect an annex down there and do the kinds of things that the Beckman Institute does here. And Robbie, who was provost, was sure that that was the wrong idea. Robbie did a major amount of negotiating with Arnold that it should be done on campus, and he sold that idea. But then we had to create a vision of what it would be, how it would be organized, who would be in it, how the space would be allocated, how it would be administered. And we had to write proposal after proposal after proposal.

COHEN: Now, were you dealing with the biology people by now?

ANSON: Well, the provost was running the planning. It was mainly Lee Hood, the Biology Division chairman, the provost, me, and then some other people who were not on the IAC but

who were key players. Peter Dervan was involved. Harry had gone on leave after he stopped being chairman; he was at Berkeley during much of this time and didn't participate. And there were two or three times that Mel Simon was involved. Once we went down to Orange County and talked to Arnold, it seemed to us that it wasn't going to happen.

COHEN: He was of good health and mind at this time?

ANSON: Oh yes, absolutely. He had a very clear vision of what he wanted to see happen, and he wasn't hearing what he wanted to hear. And so it took a lot of give-and-take to finally come up with something that Arnold decided he liked. I don't think it really became absolutely "sign on the dotted line" until after or just before the presidency changed. Arnold knew Tom [Thomas E.] Everhart [Caltech president 1987-1997] from his days at Illinois, and he had a great deal of respect for Tom. I think he felt better knowing who the new president was going to be, because, during part of this time, it was clear that Murph was going to leave and go back to Princeton.

COHEN: Do you think that Arnold was more comfortable with Everhart than he was with Goldberger?

ANSON: I think so, for whatever reason. That was the impression you could come away with, though I've never heard Arnold say anything like that, of course. Another important player was Dave [David W.] Morrisroe. Morrisroe was a confidant of Arnold's, and Arnold trusted Morrisroe. And when Morrisroe and Tom Everhart and Robbie were negotiating with Arnold, it finally gelled. So the Beckman Institute got started and planned while I was division chairman. And I served *ex officio* on the executive committee of the Beckman Institute for the first four or five years of its existence and helped design the structure that eventually got built. This idea of resource centers was invented during this period, and the fact that it was going to have space in it that didn't belong to anybody—it belonged to the Beckman Institute, and it was assigned by the executive committee with the approval of the provost for various functions—was unusual. In fact it was very different on the campus to have space that didn't belong to any division. It's still a contentious issue. I think the Beckman Institute, even today, is not regarded by all faculty as an unmitigated blessing to the institute as a whole. I think it's done a lot of good things and that we're much better off for having it than not. But it's been a source of some trouble.

COHEN: It sounds like you had a lot to do. I mean, did you continue with your own group at this time?

ANSON: Oh, yes. I told Murph and Robbie, when they wanted me to be chairman, that I wouldn't do it if I had to spend more than forty or fifty percent of my time on it, because I wanted to keep my research group going, and if it took more time than that, I just wouldn't do it. They said, "Well, you find a way to have that be the most time you can spend, and we'll help you to see that that's the case." So they did. They helped provide an extra senior postdoc to help me with the group. My group diminished in size by twenty or thirty percent, but I kept a group of ten to twelve people all the time that I was division chairman. And I found, the lay of the land being such as it was, that my office— The only office I had all this time was in Noyes. The division chairman's office had always been in Crellin. And so I just got up earlier in the morning and came into the chairman's office and worked all morning until I was finished with the chairman's duties, and if it was a good day I could get back to my research office by ten or eleven o'clock. If it was a bad day, I would go back after lunch. Some days I didn't get to my research office at all. But having two offices—one that was only for research and the other only for administration—helped.

COHEN: You kept things separated.

ANSON: At the beginning it was a little tricky, because having the Beckman Synthesis Lab meant that we had to reconfigure and rehab the first, second, and third floors of Crellin, and also Church. And that's where the chairman's office was.

COHEN: You never got any of Gates back after the reconstruction?

ANSON: No. We maintained Gates Annex—that's where my research labs were until '71—but after the [San Fernando] earthquake, we never got any of that back. It wasn't very good space anyway, but we never got any of that back. So having the two offices made it possible to wear one hat in the morning and another in the afternoon. And then, after I stopped being chairman, I was able to go back into the lab full-time and pick up pretty much where I was before. My group

is down now to maybe half the size that it was before I started being chairman, but that's fine with me. It's enough to keep me busy.

COHEN: It's more doable. I mean, when we see these biology groups, one wonders.

ANSON: Right.

COHEN: So that's where you've been since you gave all this up.

ANSON: Yes. Back in the lab. I took the last two months of my Humboldt just after I stopped being chairman on July 1st, 1994, and the first of September—Labor Day—Roxana and I went back to Berlin. We spent two months there—they always provided us with the same apartment in the same complex—and then came back. In fact, the Humboldt people had told me that they only held these awards for ten years, and that if I didn't use it by the end of 1994, they were going to take the funds and give it to somebody else. So that was the year to use it. But it worked out well, because it was what I wanted to do anyway.

COHEN: Well, you really gave a lot of years of service to the institute. How about now with Everhart, looking for a new president—how do you feel about the direction things are going in now?

COHEN: Oh, I think things are always a little fuzzy when you're facing a change in administration. It's clear that the sources of funds are not as bountiful as they once were. One of the wonderful things for me was that when I first started at Caltech, the year I came to Caltech as a faculty member, Sputnik got off. So, for the next twenty years, raising money to do research was not nearly as difficult as it is today. And also research wasn't so expensive. I had the good fortune to be in a place needing to raise money when money was relatively easy to raise. Now it's much more difficult. I really wonder if Caltech would have seemed as attractive to me now as it did then if I knew how much difficulty there would be in raising the money.

COHEN: Something else in recent years that I think must be relatively new are the big, big projects: Keck, LIGO [Laser Interferometer Gravitational-Wave Observatory].

ANSON: Yes, that's true, though even in the fifties and sixties there was Kellogg. It wasn't a big project, but it had some of the same flavor. But the big projects have changed things. The atmosphere of Caltech has gradually changed as it has grown. There must be a hundred more faculty members now than there were when I first started.

COHEN: Is that right?

ANSON: I think that's about right.

COHEN: There are certainly more postdocs, although that may be diminishing now.

ANSON: Yes, probably. In chemistry, we are holding our own in postdocs. There are certainly many more graduate students. The group sizes are bigger. Our faculty in chemistry is bigger. The fact that you have to work so hard to raise money means that you have to spend much more time thinking about things that you don't want to think about. You want to think about your research. And the pressures on the faculty are greater—the things they have to do to maintain their groups, and to serve on committees, and help out in Washington—are greater. Maybe it's because I'm getting old, but I have the sense that—and I say this with some regret—some of the younger faculty in particular don't seem to see their relationship to the institute in the same way that we did back then, in the sense that now the institute seems to some of them more as a way of serving their own needs. You don't get the feeling as much anymore of "All for one and one for all;" "This is Caltech—the greatest place there is," and anything that Caltech needs you'll do everything you can to help with.

COHEN: Do you think it's the terrible competition for money?

ANSON: That's part of it. It's also that we're bigger and that there doesn't seem to be enough time in the day. The greater chances for the faculty to interact with each other used to be very helpful. You knew so many on the faculty, and you could see how all their attitudes were the same about Caltech. Caltech was a great place. Now it's rare to see more than a handful of young faculty at lunch at the Athenaeum. Within another ten years, the Athenaeum is going to have more non-faculty eating lunch than faculty, and that's too bad, because when I first came

here I started eating lunch—I don't know why—at the Athenaeum, sitting with these famous people whom I had heard about, and it was wonderful. You learned things you otherwise wouldn't have known. You met people from other divisions. You saw the attitudes of people.

COHEN: Do you think that's also because some of these things—I suppose, biology, for instance—they have such big groups that they feel they had better conduct their own world?

ANSON: Well, the groups in biology are not any bigger than the groups in chemistry. Some of them are in fact pretty small. But they have a lot of demands on their time, and the culture is just not there. If the senior faculty in a division don't go to the Athenaeum, or don't encourage their younger colleagues to join them in going to the Athenaeum, then the incentive's not there. When I used to be on the Athenaeum House Committee, we tried all kinds of ideas to try to find ways to encourage younger people to come to the Athenaeum and enjoy it and stick with it, but none of them gelled. Even now, when we invite, or I invite, or one of my colleagues invites young people in our division to go to the Athenaeum, they'll go and have lunch and sit at the round tables and participate in the conversation, but they don't come back on their own. They just don't find it that agreeable. And the ones that sometimes do come tend to go downstairs and grab a quick sandwich and race back to their offices. And that's really regrettable, because that setting in the Athenaeum is so unique, it's a shame that more of the faculty don't recognize it and take advantage of it. Some do, but not nearly the fraction that used to. My division chairman, and other division chairmen, now tell our divisions when we have division meetings, "When you guys who eat at the Athenaeum are sitting around those round tables, see if you can get this idea across." [Laughter]

COHEN: They send you on missions.

ANSON: They recognize that something's happening there, but—

COHEN: But they don't go. I know; I'm on the House Committee now. They don't discuss that much there. Somehow it's the bottom line in money all the time.

ANSON: Yes. Well, we probably don't have any young people from the faculty on the House Committee.

COHEN: Actually there are a few.

ANSON: Really?

COHEN: And they're good and outspoken.

ANSON: Good. Well, I saw that the House Committee is now offering a discount for faculty on one night.

COHEN: Tuesday nights.

ANSON: I'll be interested to see how that comes off. Well, I think Caltech's got a good future. I think that when the new president arrives and new plans are in place and announced, the faculty will get excited. And this recently announced campaign for the biological sciences is going to be, I think, very important and beneficial to the whole institute, even though it's going to be focused mainly on biology and chemistry. Because that clearly moves the institute in a direction it needs to expand in.

COHEN: So, if you had things to do differently, you wouldn't.

ANSON: Well, probably not; no, not given the context. If I were a graduate student now, about to finish and having to decide what to do, I don't know whether I'd opt for becoming an assistant professor or an instructor, as I was, at a research institute. But Caltech has so many uniquely positive things about it that I think I probably would. One of the things that brought me back here was the quality of the people. I had seen very good people at Harvard, but they didn't impress me as much as the ones at Caltech—not because they weren't as smart but because they were more insular and separate in their viewpoints. When I was in the division, even as a student, you could see that it was a team and that everybody got together and helped each other. That's rare and precious.

COHEN: Maybe life has gotten too competitive.

ANSON: Maybe, as the fiscal forces exert themselves, downsizing will be inevitable.

COHEN: And society is different, Fred. There used to be two people working on a career. Now it's two people working on two careers.

ANSON: That's very true.

COHEN: Well, this is still a place where people want to come.

ANSON: Oh yes. We turn away far more graduate students and undergraduates than we can accept. And by the time we make up our minds we want to hire somebody on the faculty, they tend to accept.

COHEN: Well, we've got one more thing to talk about.

ANSON: What's that?

COHEN: That's all these nice honors and awards you've gotten.

ANSON: Well, those are all written down somewhere.

COHEN: Well, which of them has given you the most pleasure? That's always a good place to start.

ANSON: They were all nice. One of them that I enjoyed was the David Grahame Award. There was a very famous physical chemist named David Grahame, who actually was educated at Berkeley, but then, because he liked to teach so much, he went to teach at Amherst. He did some research with undergraduates at Amherst that was very fundamental in the field of electrochemistry and is still regarded as the best data on a particular area of the electrical double layer that was ever gathered. He died early. Some years ago at the Electrochemical Society, we decided to try to create an award in his honor from the physical electrochemistry division, and

we got it started. I nominated some people who I thought would be good candidates. The next thing I knew, they gave it to me as the first recipient, which was really very nice, because I had thought a great deal of the man.

COHEN: When would that have been? **[Tape ends]**

Begin Tape 2, Side 2

ANSON: It was before I was chairman. Then the other honors have all been nice. Another one was named after a good friend of mine who was a professor at the University of North Carolina, who died much too early because he was a chain smoker. That was the C. N. Reilley Award in electroanalytical chemistry. They gave that one to me rather early. Then there were some awards in analytical chemistry. Then, getting elected to the [National] Academy was quite an honor, of course. The branch of chemistry I'm in is not widely appreciated in the field as a whole, or hadn't been. And the academy didn't recognize very many fields in chemistry—in fact, for a while there was only one—

COHEN: Electrochemical chemistry?

ANSON: No, analytical chemistry. My work was a subset of that. But then they created these committees or subsets to look into underrepresented fields. I wasn't there at the time they were doing my election, but since then a couple of other people in the same general area have been elected, so we have a decent representation there.

COHEN: Now, you seem to have a French connection.

ANSON: I have a very good professional colleague who is in Paris, who is a spectacular electrochemist. He has been here as a Fairchild Scholar and visits us as often as we can arrange it.

COHEN: Now, who's that?

ANSON: His name is Jean-Michel Savéant. He is a wonderful fellow. I have had joint research projects with him. Every time I go to France, we always stop and see him. I've spent two or three weeks with him, and he's been here. He's the one who arranged an honorary degree from his university in Paris for me a couple of years ago or so. That was quite surprising and also a rather interesting episode, because there is a room in the Sorbonne which is only used on occasions when they are awarding honorary degrees. They opened it up, and it is a luxuriously decorated room.

COHEN: It goes with the costumes.

ANSON: They promised me a costume, but when we got there they didn't have a costume, so I didn't wear one. But the setting was very nice, and the ceremony was traditional. We had lunch with the president of the university. There was a set of us—half a dozen getting the degree. One was Toni Morrison, who received the Nobel Prize for literature [1993] a couple of months later. We all agreed at lunch—at the request of the president—that because the ceremony was going to be rather long, it really would be fine if the honorees didn't respond after they accepted their awards. We said that that was fine—that we had absolutely nothing to say. Everybody agreed. Well, one of the first people to receive this degree was a fellow from Germany who was decked out in an enormous costume with badges and medals and things. He was so formal that it never occurred to him that he wouldn't speak, so he did. And then of course everybody else had to speak. I think I was the next to the last one. There was another American, from Arkansas, and we were scrambling to decide what to say. Of course, you had to respond in French—well, you didn't have to, Toni Morrison spoke English—but everyone else spoke in French. So I got up there, finally, and stumbled through some French that I had pulled out of the air. Apparently they understood what I said, because they politely applauded. After it was over, my friend Jean-Michel Savéant, who had been there and introduced me to the president, came over and said, "*Pas mal*, except for one thing. You have a terrible Belgian accent."

COHEN: You didn't even know that, huh?

ANSON: No. I learned my French in Belgium, so I guess—

COHEN: [Laughter] Well—

ANSON: But it was a very nice occasion.

COHEN: Good. And then, of course, there was the Von Humboldt?

ANSON: Oh yes. That was nice too. Those are more common—there are lots of people at Caltech who have had those. But it was nice, because I had this good friend in Germany, and Germany was a good place to go for what I wanted to do. We really found Berlin, somewhat to our surprise, to be an exciting city. I still regard it as the most exciting city that I know in Europe, next to Paris—especially after the wall came down. We were there the first two times with the wall still up, and that made for tension, but it was interesting to cross over. But now, having been there before and after, we really find it very, very exciting. It's got downsides too, but on average we enjoyed it.

COHEN: That's it. Very good.

[Tape ends]