

Howard G. Smits, 1931 Big T

HOWARD G. SMITS (1910 - 1998)

INTERVIEWED BY
HARRIETT LYLE

February 23, 1979

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CALIFORNIA INSTITUTE OF
TECHNOLOGY
Pasadena, California



Subject area

Civil engineering, Gnomes, student life

Abstract

An interview in February 1979 with Caltech alumnus Howard G. Smits, former president of the Pacific Iron and Steel Company, who graduated with a BS (1931) and MS (1933) in civil engineering. He discusses the different focus, in Caltech's early days, of engineers vis-à-vis theoretical scientists. He was a member of the Gnomes, and he reminisces about fraternity life and the disbanding of the fraternities in 1931 in favor of student housing—a move mandated by Caltech's head, Robert A. Millikan. Comments on Millikan's motives, the change in atmosphere on campus, and the makeup of the four new student houses. Recalls his part in fostering new traditions and interhouse athletic competitions; extracurricular activities. Economics courses with Horace Gilbert and Philip Fogg; history with William Bennett Munro. Anecdote about Albert Einstein and Beno Gutenberg; bonfires before annual football game with Occidental; visits to Scripps College. Recollections of working with architect Richard Neutra. Course in structural engineering with Romeo Martel. Concludes with comments on his membership in the Caltech Associates.

Administrative information

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CALIFORNIA INSTITUTE OF TECHNOLOGY ARCHIVES

ORAL HISTORY PROJECT

INTERVIEW WITH HOWARD G. SMITS

PASADENA, CALIFORNIA

BY HARRIETT LYLE

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Interview with Howard G. Smits
Pasadena, California

by Harriett Lyle
February 23, 1979

Begin Tape 1, Side 1

LYLE: I'll ask you why you came to Caltech.

SMITS: Well, that's interesting. I had always assumed I'd go to Cal [University of California at Berkeley], because my brother went there. My very good friend one day said he was going over to Caltech to take an entrance exam and asked me to go along with him. I did, and for some reason or other, I took the exam, too. And for some reason or other, I found I was accepted; I found myself at Caltech.

LYLE: Where were you living?

SMITS: In Glendale.

LYLE: Had you studied science in high school? Or were you interested in science?

SMITS: Oh, I just took the usual courses in those days: math and science and English and foreign languages.

LYLE: So, you had no particular interest in science?

SMITS: No. We didn't think in terms of science in those days. You see, I'm an engineer. Engineers were quite a different breed of cat, in those days, from scientists. I'm not sure that is true today.

LYLE: What do you mean by that statement?

SMITS: Well, engineers were, I think, doers. And considered doers. And were expected to be doers—creators and such. And it is totally my impression that today the Caltech engineer wishes to be more of a theoretician. Engineering, at least mechanical and civil, is an applied sort of thing; once you get too theoretical, it gets a bit out of hand. Now, I know the young folks disagree with me there, but nevertheless this is my belief. In those days, there was a somewhat higher percentage of engineers—electrical, mechanical, civil, chemical, and aeronautical—[at Caltech] than scientists. Astronomy was something up at Mount Wilson. Geologists were also considered to be doers and not theoreticians or researchers. Now, I got involved in research. I thought I wanted to be, perhaps, an intellectual, for want of a better word. I took my master's degree in 1933. I think I did that principally because I couldn't find a job. There were no jobs, you know, when I graduated, in 1931. Well, I was lucky enough to be given a—What did they call it in those days? Teaching fellowship. And for some reason or other, [Frederic W.] Hinrichs [professor of mechanics and dean of upper classmen] gave me two of them. So, really, I was living off the fat of the land, I'd say. I had also had, in my senior year, a student fellowship of some kind—I taught freehand drawing, about which I knew nothing.

LYLE: Did you like to teach?

SMITS: I've always liked to do everything I've ever done, including teaching.

LYLE: You mentioned the difference between the researcher and the scientist and the engineer. When you were a student, did the students feel this difference? There was a difference?

SMITS: Oh, sure. Oh, you bet. No question about that. The engineers considered that they [the scientists] were longhairs, and I don't know what the scientists felt *we* were, but I'm sure they felt we must be dumb, or something to that effect. Which was all right with us. We didn't mind.

LYLE: You were in the Gnomes?

SMITS: That's right.



Howard Smits and George Rice [?]. Gnome Club Records.

LYLE: Did the fraternities mainly have engineering students, or did they also have this other group—that is, the people who were doing physics, the researchers?

SMITS: Let's see, what did a fraternity look for? First place, why did we have a fraternity? Fundamentally, it was the need for a place to live. We, as a fraternity, rented a house, got a housemother. She was a cook, as far as we were concerned. A cook, a maker of beds, and she'd clean up a little bit, too—dust and whatnot. Now then, this group was proud, like all fraternities were. They wanted to succeed competitively with other fraternities. Well now, what [sort of students] did the Gnomes select? They selected those athletes that tended to be a little more—oh, let me call it “social,” if you will. And we had our share of athletes. We looked for those who would be active in

campus politics. And we looked for those who were companionable—easy to live with. I think that's straightforward; I think that's what any fraternity would look at. We succeeded exceedingly well. Now, we naturally considered we were first on the campus, and the Sigmas considered they were first. That was an athletic fraternity. And the Pharos—well, they were down the street a ways. They had a big group. They had lots of fun—not the kind of fun that is difficult in any way. They were just a pleasant group of fellows indeed. And I've forgotten the names of the other two houses. But they, you might say, got the leftovers.

LYLE: When Caltech built the new housing, did they take a whole group, like one fraternity, and put it into one house? Or did they break up the fraternities and put them in different houses?

SMITS: No, no. [Robert A.] Millikan [chairman of the Executive Council] was a wonderful man, of course. He created Caltech. We, as undergraduates, had harsh words for him, but as alumni we have praiseworthy words for him. We can now think of all his sterling qualities, which he had so many of, and they were so sterling. As undergraduates, we tended to be very, very critical, very critical. I guess that's typical of life, isn't it? But anyway, it was very interesting dealing with Millikan.

LYLE: Why don't you describe a little bit of that.

Smits: I'll tell you about Millikan. You see, I was president of the senior class, and president of the junior class, and one thing or another, so I officiated at some functions. Now, we'd ask Millikan to a function, like a dance, and we would be quite a group, perhaps in a circle. He'd be talking to us, and I would introduce him all the way around, to perhaps twenty people, and we'd chat for a little while. When he would leave, he would say goodbye to each and every one, and shake their hands, and call each by name. Now that in itself is a fantastic feat as far as I'm concerned—I have an awful time remembering everybody's name. But anyway, that's a very small thing. Whatever he did, he did magnificently. He thought about improving Caltech in many ways besides academically. He wanted to increase its stature in terms of sociability. He wanted every

Caltech man, as far as possible, to be a whole man. He recognized that the fraternities were giving a value to the fraternity members that the rest of the students weren't getting. He conceived this idea and was aided and abetted by various members of the faculty and by society in general. He organized and got the money for the student houses. Then the job was: "All right, now what do you do?" He got the idea to have each of the fraternities move into one of the houses. We moved into Ricketts, and the Sigmas moved into Fleming. The other three fraternities were divided between the other two houses [Blacker and Dabney]. Two in one and the Pharos in the other. He hoped that that would be the nucleus of a social life—that these fraternities would provide it. Well, the fraternities felt they had been sold down the river, because they were forever kicked off the campus and disbanded as fraternities.

LYLE: What was the important thing that was lost? Why couldn't they keep it on in the dorms?

SMITS: Oh, well, that's very simple. One thing that sets a fraternity apart is its selectivity. Now then, the houses attempted to have selectivity. But selectivity almost inevitably means something, or somebody is left out. There now was housing, so everyone was taken care of. A lot of the punch and drive went out. Also, the fraternities had a tendency to select people of a particular type. Each fraternity had its own type. This is a great strength. In the dorm-selection process, you got an average of everybody. You lost this homogeneity—but not completely, because Fleming continued to tend toward the athletes and Ricketts tended toward, oh, the politicians, if you will—that kind of thing. And I think you'll find even today that Fleming is pre-eminent in athletics. Athletics has become such a small part now.

LYLE: Did it seem like a much bigger part in those days?

SMITS: Of course, it was. We had competitive sports. We had full-fledged [teams] in the major sports: basketball, baseball, football, and track. We were well represented in all of them. In fact, I've got pictures here I got out for you, if you want to see them, of our fraternity. In some of the pictures, you will see the great prevalence of varsity sweaters,

which were worn in those years with great pride. That was something. You don't see varsity sweaters around the campus anymore. That's a thing of the past, a bit of antiquity.

LYLE: You say you don't see the varsity sweaters anymore when you walk around campus. Is there anything else that seems obvious to you, that you don't see?

SMITS: Oh, well, yes. The sloppiness of dress is, to me, appalling. People going around barefooted or in just shorts. Why, that's incredible to me. Now, interestingly enough, I find that in all my pictures I have a coat and tie on. That was sort of the dress uniform for the better dressed. Everybody wore coats. Maybe 50 percent wore ties, something of that sort. But, you see, there was great competition in those days for a job. There were so few jobs. And everyone was keen to make a good impression, and besides that's the way one lived in those days.

LYLE: Did you dress that way in high school, too?

SMITS: Neither ties nor coats in high school—only sweaters when needed. Back to this transition from fraternities over to the living houses. Now, it was perfectly obvious that this move was for the good of the whole. The fraternity was divided in its loyalties—all the way from 100 percent loyal to the fraternity to being loyal 100 percent to the living houses. Interestingly enough, the younger members, the sophomores, were much more relaxed about moving into the houses than the older members. They hadn't had as much fraternity life, for one thing, so they hadn't developed that loyalty. Also, I think there was a change settling in anyway, a social change. But more important, I think it's just a matter of the fact that they hadn't gotten entrapped in the fraternity idea. In any event, my class, the class of 1931, was the last class to be a senior in a fraternity. I felt that it would be nice if the class of '31 could create some traditions for the new houses. No one had moved in yet. Well, you know young fellows, they figure they can do anything, even create tradition where tradition doesn't exist.

LYLE: We're always trying to do that.

SMITS: No one seemed to say no, and I carried the day with the class treasury and all that sort of thing. Now, we did three things. What were the three things? For one, we thought it would be nice if we started the plaque idea. We had the architect who did the living houses draw this plaque up for us.

LYLE: Did you sit down as a group and say, “We’ve got to get some traditions going,” or was it mainly just your idea?

SMITS: Well, you know, I’ve never been much of a group person. Things just happen so much faster working alone. If you want to make sure nothing happens to a subject, you appoint a committee.

LYLE: You did it yourself?

SMITS: Well, anyway, we got the approval of everybody, because nobody gave a damn, really. But I liked this idea and so got the plaque. We put it up on Ricketts with some ceremony, which must have been [attended by] six people, maybe because no one was much interested except me. The plaque commemorated the completion of the living houses. It shows the keystone being lowered into place, plus the beaver, of course, to signify that it’s Caltech—all that sort of thing. Well, that tradition sure didn’t take. Also, we said, “Gee, there should be some kind of competition among the houses. What could it be?” And we said, “OK, maybe the houses should make up their own rules,” and they could compete in anything they wanted. And we said, “OK, how are we going to show that somebody has won? We need a trophy.” So, I went down to the Huntington Library and talked to whoever is head of it. They said, “Why don’t you get a bronze statue of Discobolus, the Greek discus thrower? We know of a place in Germany where you can get a real museum piece made.” So, we did it. And then we dreamed up a book, about yea big, and had it printed all very elaborately to record these games and contests and all. I remember that the bookbinder the Huntington used at the time was a nice old guy by the name of [D. F.] Bogardus. He bound the book beautifully for us. The interesting thing is that about ten years ago I happened to come in contact with the houses. The students told me of the wanderings of Discobolus. It was still circulating! I asked them about the

book; they didn't know anything about a book. They were challenging each other in the most outlandish contests you can ever imagine. You probably, in your talks with people, have heard of some of the crazy contests. But Discobolus was passing around. Now, whether it's still passing I don't know. Do you?

LYLE: I don't know either, actually. I haven't had a lot of contact with the undergraduates.

SMITS: Well, maybe they've become so serious now.

LYLE: The idea now is still that any time one house wants to challenge another house, they just set up the rules and make the challenge and then whoever wins gets—

SMITS: Discobolus. I don't know whether it's still— But ten years ago it was still circulating, and that would be after, what, thirty or forty years? So, I'd say we did start a tradition.

LYLE: It did work. Were there any other traditions?

SMITS: We started the use of a class ring designed around the Institute seal, with '31 on the side. You know, it was very interesting that in those days Caltech was, I think, an absolutely unique engineering school. Probably it was the only one where you had to take 20 percent humanities. They were more slanted that way then. For example, then you had a two-year sweep of history—one year of ancient history, and one year with medieval and modern history.

LYLE: Did the students like the history? Do you remember?

SMITS: Gosh, I don't know. In those days, it wasn't so much whether you liked something or didn't like it; we didn't have that point of view. It was: "This is the thing you do, and this is the thing you don't do." It's a concept that the younger generation

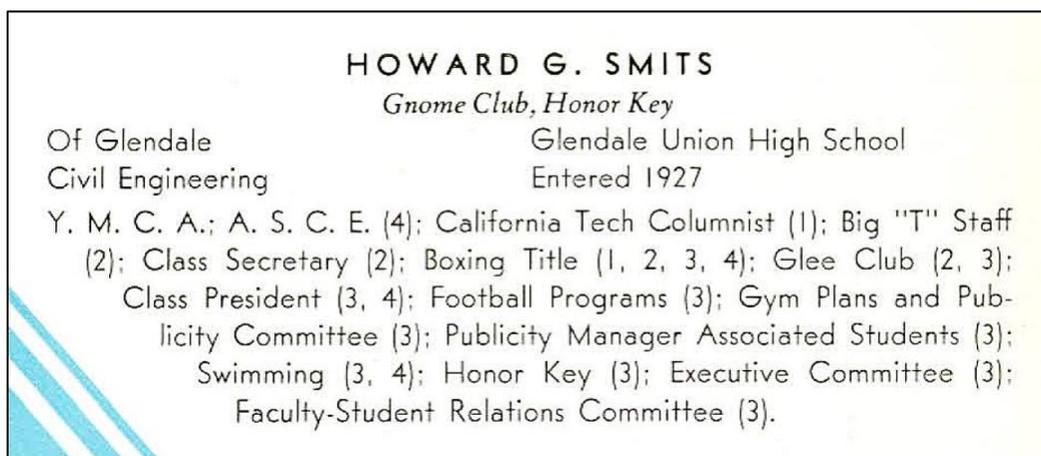
simply doesn't have. And I don't know how we can effectively communicate it to cross the generation gap.

LYLE: Well, I remember when I was in college, I took an American history class, which I found really exciting. Then I took a class in Biblical history, which I didn't expect to find so exciting. But both classes really fascinated me.

SMITS: Well, I wouldn't say I was fascinated, but it's left me with a lifelong hunger and fascination for history. I read a great deal of history, enjoy it, think about it, and whatnot. It's been invaluable to me. But I wouldn't say I was excited, or liked it, either one.

LYLE: So, you didn't discuss whether or not you liked it, particularly. Would the students then discuss whether or not they liked a particular civil-engineering class?

SMITS: Sure. Now, we discussed professors. Some of them we thought were great. But we didn't spend a lot of time discussing our studies. You discussed girls, and you discussed athletics mostly, and some local school politics. Besides, you would spend most of your time either studying or working or doing athletics or something. Now, I was on the football team. I sat on the bench all the time, but nevertheless I got my black shirt. And I was on the swimming team, and I was a boxer. I held the title there for a couple of years, in my weight.



1931 BIG T

Everybody was involved—at least this was the case in the fraternity. They were given a good talking-to—not as you sit down and talk, but you got the signal if you weren't active in some things.

LYLE: Did they also talk to you if you didn't get good grades?

SMITS: Oh, sure.

LYLE: So, there was the same push for that?

SMITS: Well, what good is a fraternity man if he's flunked out? Besides, we had great pride in our schooling and our standings and everything.

LYLE: OK, where does this pride come from? How does one get that?

SMITS: Well, I think merely being at Caltech is something to be proud of. I don't know if we ever framed it that way; I'm sure we didn't.

LYLE: Did you feel that way then? Did you feel special because you were here at Caltech?

SMITS: No, I didn't. I didn't give myself a lot of thought. Too busy. Just "Shucks, man alive!" and if you had a spare moment, why, you'd think of something to do. So, there was no time to be introverted, as far as I'm concerned. We considered that those who joined the YMCA were those fellows.

LYLE: Who were introverted?

SMITS: Well, we never used such a word.

LYLE: No, but that was what you had in mind.

SMITS: They needed help. They just weren't adjusted very well.

LYLE: I would like to develop the idea of pride a little bit more, because I think that's really interesting.

SMITS: Well, certainly the whole school was that way.

LYLE: Millikan certainly was proud. He was proud of what he did and of—

SMITS: Of course, he was, and he had a good right to be, too.

LYLE: Maybe that really helped set the tone. Or was it the society at the time, everybody was just sort of proud of what they did?

SMITS: Well, I think so. You put the same people today in today's society and you come out with a fantastically different result.

LYLE: Why?

SMITS: Well, gosh, now you're getting into too big a subject for your little tape.

LYLE: OK, you've just come through the 1920s, when everything was working very well, right?

SMITS: Well, no. I worked like hell all through high school. You see, there's another thing: All of us came from a work ethic. I went to work when I was ten, delivering some handbills. And I worked all the way through. But then, you know, I didn't have to work in college.

LYLE: Did you save money for college?

SMITS: No, but my mother married a second time, and [her new husband] said, "I'll pay your bills over there, if you'll keep track of your expenses." Shucks, he gave me a passbook, because he was a banker, and I entered everything in there. But anyway, we did those things in those days. And he was very proud of that. I was very happy to be rid

of that money responsibility. You see, he wasn't my natural father. I didn't take very well to having a father at that point, having lived so long without one. Because I never had a father; he died of tuberculosis when I was six months old. I earned some money in my senior year, because I had this teaching fellowship. Actually, jobs just fell into my lap. I used to make all of the cards for all of the professors, as to what their schedules were for the semester. Thus, they knew where to go and what class they were teaching. This came about because I was a very neat letterer. I enjoyed working with my fingers. When the registrar needed such a workman, she looked through her registration files for someone neat. She saw mine and called me in and gave me the job. I got a job tutoring. I had to teach a child elemental arithmetic—two and two is four, and all that kind of thing. That was the most fascinating job I ever had I think.

LYLE: You'd go once a week and work with—

SMITS: He had to get past the first grade—that was what I was told. Well, I found he was interested in the navy, so all of our arithmetic was about ships. Then he just sailed right through arithmetic with no trouble at all. Anyhow, you wanted something about school. Well, all right, do they still have *The Hot Rivet*? You see, here's the engineer again. This was a once-a-year newspaper that lampooned the school. We called it *The Hot Rivet*. I was the editor, one year. I was never a good speller, and the head of the civil engineering department called me in and he said, "Howard, I don't think you are ever going to amount to much if you can't learn to spell 'rivet.'" I'd spelled it "rivit."

Well, let's see, what else were the activities in those days? Well, we had enough of a football team such that we had spectators. The student government put out a football program, and the student body lost money on it. And so, for some reason or other, I got the concession to put it out. I got enough advertisers and whatnot and made money. So that's an indication of how much interest there was in football. I lost it all in the stock market. [Laughter]

LYLE: Did you really? Did you put the money in the stock market, and you lost it? How did you know to do that?

SMITS: In my junior year, we took elementary economics, and then in my senior year we took business economics. Horace Gilbert taught it. And Phil [Philip S.] Fogg was his assistant. Those two names the old timers will remember. I don't know if you will or not.

LYLE: We have done an interview with Horace Gilbert.

SMITS: I see. All right. Well, there were a lot of us that just thought the world of Horace, because he introduced us to all kinds of new ideas. I guess that's the reason I bought Adam Smith. I have an early edition of Adam Smith. [Horace Gilbert] instilled in us a business interest. We were all reaching out and interested in all kinds of things. Billy [William Bennett] Munro [professor of history] taught a course on the Constitution that was a required course. There was nothing but lectures and a final exam. For the final exam he gave us, I think, five questions. Each one was a legal question that had gone to our Supreme Court, and they had split four to five. He asked us to write our opinion on each. This was just before graduation, and I had all these activities and all, and, you know, I couldn't figure out a reasonable comment. So, I finally just wrote and told him, "If they can't figure it out any closer than that, then, how can I?" And I turned the paper in. And Billy called me in later. As a matter of fact, I came on the campus and everybody I saw said, "Munro wants to see you." "Munro wants to see you." "Munro wants to see you." Finally, I went to see him, and he said, "You flunked. You flunked! How could you do this to me?" Well, I didn't know how to answer. He said, "Now I've got to pass you, because you've got to officiate tomorrow at the graduation. I don't feel so bad about that; but if I pass you, I have to pass everybody else, because you're the worst." [Laughter] Munro was a great humanist, too, you know. We didn't have as much contact with him, or at least he wasn't evident to us as Millikan was, being head.

LYLE: I think that's a nice story. What did you do about that exam—do you remember? Did he really flunk you in that class?

SMITS: No, because I had to officiate the next day as president of the class, you see. There are certain things that have to go on in society, don't they? Well, we learn these things gradually.

LYLE: All right. What happened to your money that you put in the stock market? Did you learn that in the economics class?

SMITS: Well, you know, it just seemed to me that anybody who bought a stock and watched it go up with the market and down with the market was pretty slow paced. But, if you buy one of these closed-end investment trusts, as they were called, that were way underwater—and Tri-Continental was one of them—you could buy it at an eighth and it might go up to three-eighths. And you had tripled your money. I think it was at three-eighths. And I bought it at three-eighths, and instead of going up to three-quarters, it went down to one-eighth. Wiped me out. But anyway, that was that. You learn these things.

LYLE: Did you tell Gilbert that you were putting the money into the stock market?

SMITS: No.

LYLE: I'm always amazed at people who do things like that. I would like to discuss Einstein's impact on the campus.

Begin Tape 1, Side 2

SMITS: In a varied sort of way, I had heard of Einstein when I was on the campus. But he was a scientist, and I told you about scientists. So, it really didn't mean anything. Both [Beno] Gutenberg [professor of geophysics] and Einstein were on the campus about a year or two later, '32 or '33. Gutenberg was the father of earthquake science and was important in our work in structural engineering. We were some of the first students studying the effect of earthquakes on buildings. We didn't know anything about it, but anyway as a graduate student I gave a couple of lectures to the local practicing engineers

who came over to Caltech. The Long Beach earthquake happened in 1933 and the state decided to spend a lot of money repairing schools. There wasn't anybody who knew anything about that particular subject, including us. But anyway, because of Caltech and all, I immediately got a job.

LYLE: That's where you got a job after you graduated?

SMITS: Good one, too. Oh, man, I didn't earn as much as that for quite a number of years.

LYLE: Whom did you get the job with?

SMITS: Oh, Oliver Bowman. He was a structural engineer in town, a freewheeling thinker—a very successful fellow but sort of a plunger type, and he plunged on me. He hired me because he'd come over to one of the talks at Caltech that I happened to give. I was in charge of his drafting room right off—an unheard of thing in those days. The job lasted until the school board's money ran out.

[There is a break in the tape. During this unrecorded time, the conversation reverted back to the Gnomes.]

SMITS: Robert Lehman and I are great friends—always have been. As you know, he was chosen by Millikan to go over to England and come back and sell the fraternity members on disbanding. Well, everybody liked Bob at the fraternity, and we knew that he was the fall guy. We didn't hold it too much against him.

LYLE: I was wondering if he had trouble.

SMITS: Well, no, we all understood, as I say, that he was the spokesman to sell Millikan's idea. Bob reported that he recommended no more fraternities. Millikan could then smile benignly and say, "The students did it."

LYLE: The students were all aware of this, right?

SMITS: We were. He was our fraternity brother.

LYLE: I know, but at the time the students all figured this out?

SMITS: Oh, everybody liked Bob, what the hell.

LYLE: No, no. I mean, they understood what Millikan was doing?

SMITS: Yes. Well, anybody who thought about it. No one encouraged the students to think about it. That was not Millikan's method of administration.

Back to the earthquake. That was in the spring of 1933. And I invited Gwen Laurie, whom I hadn't yet married, over to the old dorm for a dance. I was up there shaving, in the late afternoon, and gee, the old building started going sideways. Everybody rushed down. We noticed Einstein and Gutenberg walking down what is now the Olive Walk towards the Athenaeum, deeply engrossed in something. As they came by, they said, "Why is everybody out?" We said, "Gee, didn't you feel the big earthquake?" And Gutenberg said, "Earthquake? Was there an earthquake? I've never felt an earthquake." He was the father of earthquake study but had never felt one. Anyway, you see, they were off in the clouds. That's all I know about Einstein.

LYLE: Did you consider Millikan a scientist? Did you think of him as a physicist, or did you think of him as the head of Caltech?

SMITS: I just didn't think about scientists. I knew he had something to do with some kind of a drop experiment. We had our physics class over in that physics building [Norman Bridge Laboratory of Physics], but we were only slightly exposed. We kind of felt that he was a renegade, because he spent so much time with the bankers, and he was so money conscious.

LYLE: You didn't really approve of that activity.

SMITS: You see, you get all kinds of crazy dumb ideas. But we thought that was kind of bad. He wasn't what you might call a pure scientist. That's a very interesting thing, when you come to think about it—how provincial a student can be. There's the broadest man you can find, and we looked down on the fact that he was broad. Now, that's provincialism! It's the very thing that Millikan was trying to bring the student body out of. I'm sure he wouldn't have said it in those words. He had broad and great ideas for the school, and he planted them well.

LYLE: Did you have any contact with [Arthur Amos] Noyes [professor of chemistry]?

SMITS: No. None whatsoever.

LYLE: Did you take any biology?

SMITS: No, but [Folke K.] Skoog was a biologist. He was in my class, and he became very well known in plant biology.

LYLE: Did the undergraduates go camping or go on any field trips? Did the students go out at all?

SMITS: Four of us took a week's trip back here in the local mountains with a mule. There were no roads except the old toll road up Mount Wilson. There wasn't any great saving grace in packing your own things. Today that's a badge of achievement—to pack everything yourself. Well, there was no such idea in those days. The idea was to get there. And if you could have somebody carry your gear, why, that was great. So we got a mule.

LYLE: Did you ever go up to the observatory?

SMITS: Mount Wilson? I don't know. I might have.

LYLE: What was your relationship with Pasadena?

SMITS: Well, we built bonfires before the Oxy [Occidental College] game, and the city would try to keep such activity on the campus; but we liked to build them out in an intersection. We could make a much bigger one than on the campus. Gee, we made some big ones. Wow! Maybe two stories high. Where we got all the crud, I don't know. But we'd get more stuff to pile and burn. Oxy was our great competitor. We aimed for them in football, basketball, and track. Also, we used to have exchange programs with them. Girls would come over and put on some kind of a program, maybe sing to us, and then we'd try to corral the pretty ones and take them up to the fraternity house for lunch.

We put on a show over at Oxy one night. I had the liquid-air event. I don't know where I got these tricks to do, but I did a bunch of them. Take mercury, you know, and make a hammer out of it by freezing it solid and then pounding nails with it. You'd let the air boil for a while until it's pretty near pure oxygen. Then I would put some liquid on my tongue—it's just liquid oxygen by then. Then, I'd light a cigar and then blow through it. The dang thing would explode, you know. Great show. We had more fun with liquid air. I took some eggs, for example, and put them in liquid air to boil. They'd get frozen hard. Over at Occidental, there was always, in the first row, these tough guys. Well, at the end of my act I'd take out the eggs and break them. They'd break into a million pieces; they were so brittle. I'd hand the pieces down to them. Of course, the pieces would melt, so they all had raw egg to contend with. But anyway, I escaped immediately, so I never was around to see what happened. We had lots of fun. Some of us in the fraternity commuted to Scripps to see the girls out there. Funny thing, Guy Chilberg—who became high up in the telephone company [AT&T]—was studying as a graduate student. Every night he'd go out there to study with Louisa Marie. Then he'd come on back again. Every night. The guy was crazy. My roommate had a girl out there, so I got a blind date and became interested. I had free rides back and forth to Scripps.

LYLE: Every night?

SMITS: Oh, no. No, we were lucky to make it once a week. That would be very fortunate. You know, in those days we didn't have any money to speak of, and about

once a year we'd get enough money together to go down to hear the Biltmore Trio. We'd go down to the ballroom and dance and then at intermission you'd go into the next room to hear the Biltmore Trio. It was composed of three Hawaiians with very, very high voices. My God, we thought they were out of this world. Like our kids with the Beatles, and I don't know who they go for now. But anyway, they were it. We loved to go there and dance, but we could only afford it about once a year. In those days, why, we had to get some liquor from a bootlegger. [John F.] McGarry, a redhead who went to work for Shell Oil Company, knew a bootlegger down on Wilshire Boulevard. He somehow made contact and got a bottle of what they called gin and had that at the table there at the Biltmore. But that was what you did in those days, instead of smoking marijuana. Fortunately, none of us went blind. [Laughter]

LYLE: I bet that was exciting to do.

SMITS: That was the thing we did.

LYLE: So, after you got your master's degree, you went to work with these earthquake people who were building the schools—or fixing the schools. Why were you interested in civil engineering? Did the problems interest you, particularly?

SMITS: Oh, they were easy.

LYLE: OK, but was that why you were interested—because they seemed fairly easy to you?

SMITS: Oh, I think it just has to do with the fact that I became interested in water projects, and I became terribly interested in structures. I don't know. I think fate has a large part to do with all of our choices and what we do.

LYLE: Did you stay in structures, then?

SMITS: Oh, yes, I got into the business. I tried hanging out my shingle, as I told you. Did you ever hear of [Richard] Neutra, the architect? Well, I was his structural engineer for a spell.

LYLE: Well, that must have been exciting. Tell me a little about it.

SMITS: Oh, I tell you, there are so many Europeans that come to this country who are exhibitionists. Sure, they'll have an idea, but to me they are just plain exhibitionists, and certainly Neutra was one of them. As a man, I didn't have much use for him.

LYLE: You thought he was egotistical?

SMITS: Oh, he was certainly that, 100 percent. I first ran into Neutra when I was in school. I guess we all dabbled in a lot of things. I went to Chouinard [Art Institute] to a lecture on art. Here was this crazy guy saying that he could see a pyramid in every shape in life. No matter where you looked, here were pyramids. And it *is* interesting. If you want a drawing technique, try it sometime. Just use triangles, of all sizes, shapes, and whatnot. Just try to make a human figure out of a triangle, either simply or with millions of them. It works. It's a wonderful media, triangles. Anyway, that was Neutra. And then I happened to become his engineer later on for a little while. He would con students, because he was so great, to do the jobs for him—work free, mind you, doing the drafting. However, I worked for a fee.

LYLE: And did that really bother you? You didn't think that was fair for him to do that?

SMITS: I thought they were suckers. But then I got into the business end of engineering. I got into the steel-fabricating business.

LYLE: What then did you learn in school?

SMITS: There are two things I learned in school which are preeminent. One is, don't be dependent on formulas. Always be able to develop any formula that you want. I don't know if you know enough about formulas to know what that means.

LYLE: I do.

SMITS: Then the second was, and both of these are from [Romeo] Martel [professor of structural engineering]—that's [professor of electrical engineering Hardy C.] Martel's dad that's here now. I'm very fortunate, because I run into these great, great men. Romeo Martel was a great teacher; never ran into a greater teacher. We always had to develop our own formulas. If you couldn't do that, you'd flunk any test—of his, I mean. The second was, “the indestructibility of error.” And we loved that. At least I did. Wonderful word flow—“indestructibility of error.”

LYLE: I don't even understand that. “There always will be error.” Is that what you mean?

SMITS: Yes, sure. The world is full of errors. You don't trust anything. He would ask us to take out our steel handbooks and turn to page so-and-so. Now, he'd say, “Figure the constant that's given in the handbook.” And we'd figure it, and by gosh, we couldn't get that constant no matter what we'd do. He let us stew on that for days, just to make sure. Then he'd say, “You've got the right answer. That's the ‘indestructibility of error.’” He also required that we always guess the answer to a problem before we worked it out.

LYLE: I want to just trace a little bit the contact you've had with Caltech through the years. Do you go back once a year? Or once every ten years? What's been your relationship?

SMITS: Well, my biggest contact has been with the [Caltech] Associates.

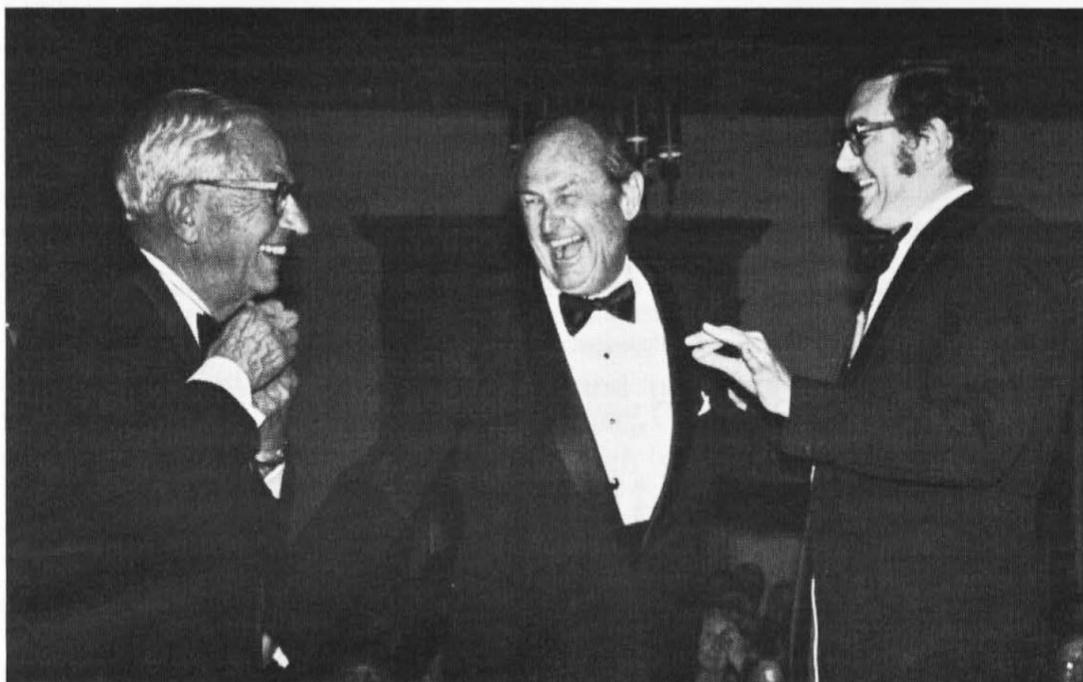
LYLE: Have you been in the Associates for long?

SMITS: I've been in a long time.

LYLE: Can you tell me a little bit about that?

SMITS: I got to know Lee DuBridge [Caltech president, 1946-1969] because of my being an Associate. I enjoyed that very much. Lee is the most human fellow you can ever find in a technical school. Golly, he's marvelous. It was through the Associates that I had some brief contact with Harold Brown [Caltech president, 1969-1977]. But I don't think anybody knows Harold Brown; he's a tough one. As president of the Associates some years ago [1976], I had an interesting time in arranging one thing and another with him.

Associates' 50th anniversary



The Associates of Caltech celebrated a 50th birthday in May. To commemorate the occasion, some 375 members and their guests met for a festive black-tie dinner in the Athenaeum. After dinner, they enjoyed a light, memory-filled dialogue between two men who have shared more than a little of the Institute's history: President Emeritus Lee A. DuBridge, left, and Harry B. Gray, William R. Kenan, Jr. Professor of Chemistry, right. Here DuBridge and Gray are joined by Howard Smits, center, president of The Associates. Additional coverage is presented on pages 4 and 5.

June 1976 Caltech News, pg. 1

LYLE: Do you think the Associates have much effect on Caltech?

SMITS: Well, of course they do. An interesting thing, I think, is that Caltech has a reciprocal effect upon the Associates, which hopefully rubs off. Well, of course it rubs off in many ways. But we hope that it rubs off financially, and generally it does. The Associates, as you know, are members of a very old organization. Millikan started the Associates in the middle twenties.

LYLE: But when you were a student, you were not aware of this.

SMITS: Of the Associates? Well, sure, because the Athenaeum was built during my time there, and I aspired to be an Associate. The Associates were more associated with the very successful than [is the case] today. You can be only reasonably successful today and be an Associate. A thousand dollars in those days was like, I think, the equivalent of ten thousand dollars today.

LYLE: So, your contact with Caltech through the years has been through the Associates, right?

SMITS: I think that you want to talk about Caltech, so let's talk about Caltech for just a minute. In those days, Caltech was a very different school than it is today, because it still had a hangover from the old Throop technological days, when it was Throop College. It was heavily engineering oriented. Now, the group that was turned out during that general era, I think, has done its part in supporting Caltech financially.

LYLE: But you think your group had an effect?

SMITS: If you are writing a history of Caltech, why, then, of course it's interesting to trace the changes. I'm sure that any historian would be immediately struck by how it got from a Throop College, which was a routine technical school, into the world's leading scientific institution in many areas. My group was present in the transition period. It was a great period, too. We had one whale of a time.