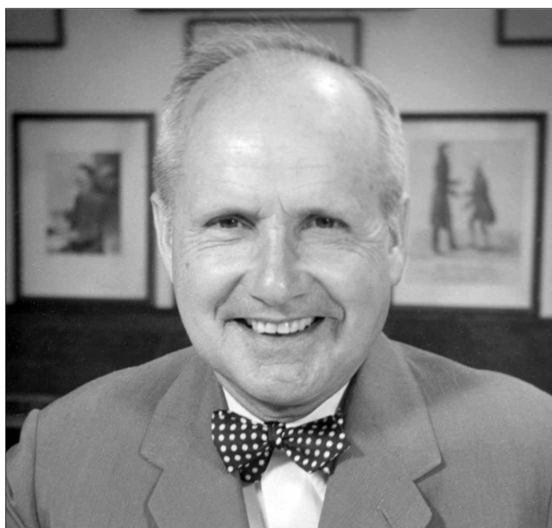


EARNEST C. WATSON
(1892-1970)

INTERVIEWED BY LARRY SHIRLEY

January 20, 1969

Photo ID GWB38.2-24

ARCHIVES
CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena, California

Subject area

Physics, administration

Abstract

An interview in January 1969 with Earnest C. Watson, retired dean of the faculty emeritus and emeritus professor of physics. Dr. Watson arrived at Caltech in 1919 after graduate work with R. A. Millikan at the University of Chicago and two years of military service in World War I. He immediately supervised the design and construction of the Norman Bridge Laboratory of Physics and thereafter became chief assistant to Dr. Millikan when the latter arrived as Caltech's first head (chairman of the Executive Council) in 1921.

Watson became dean of the faculty in 1946 and held that position through 1959, when he retired. In January 1960 he left Caltech for India, as scientific attaché to the U.S. Embassy there.

In this interview, he reminisces about his relationship with Millikan and with Arthur Amos Noyes, the development of Caltech in the institute's early years, and Millikan's carte-blanche from the Board of Trustees. He comments on the campus mood during the Depression era; the rise of Communist-leaning discussion groups; and the persecution of aeronautical engineer Hsue-shen Tsien

in the McCarthy era. He recalls Einstein's visits to Caltech in the 1930s and the Millikans' careful supervision of his contacts. He comments on industrial funding for Caltech, on the collapse of the Arthur H. Fleming trust at the outset of the Depression, and on his close relationship with trustees William C. McDuffie and James R. Page. He concludes by discussing his own role in developing and running the institute.

Administrative information

Access

The interview is unrestricted.

Copyright

Copyright has been assigned to the California Institute of Technology © 2012. All requests for permission to publish or quote from the transcript must be submitted in writing to the Head, Archives and Special Collections.

Preferred citation

Watson, Earnest C. Interview by Larry Shirley. Pasadena, California, January 20, 1969. Oral History Project, California Institute of Technology Archives. Retrieved [supply date of retrieval] from the World Wide Web: http://resolver.caltech.edu/CaltechOH:OH_Watson_E

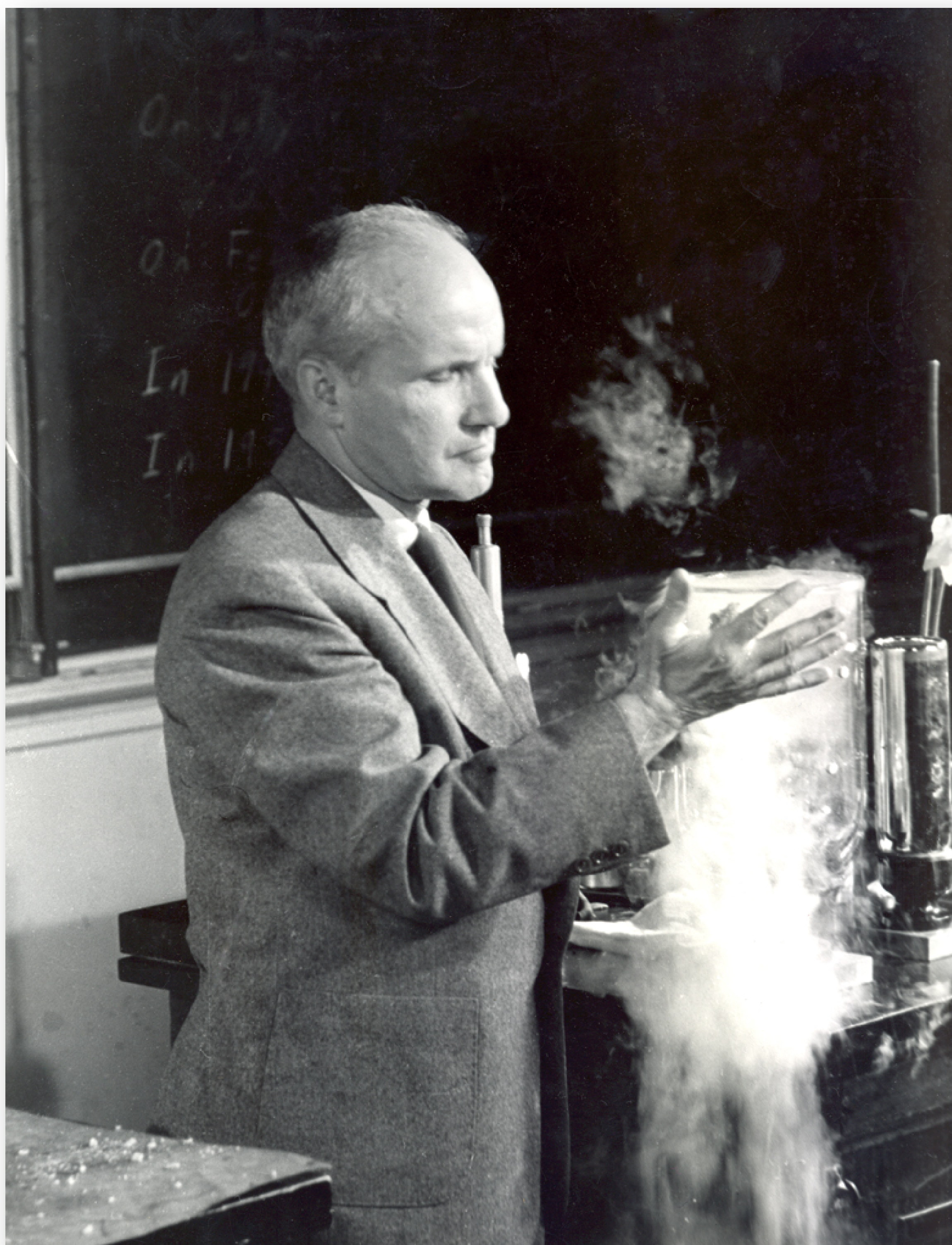
Contact information

Archives, California Institute of Technology
Mail Code 015A-74
Pasadena, CA 91125
Phone: (626)395-2704 Fax: (626)395-4073
Email: archives@caltech.edu

Graphics and content © 2012 California Institute of Technology.

Earnest C. Watson

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



One from a series of photos taken by photographer Tom Harvey, in 1953, of Watson's famous 'liquid air' demonstration in 201 E. Bridge. PR Collection

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

California Institute of Technology Archives

Oral History Project

Interview with Earnest C. Watson

by Larry Shirley

Pasadena, California

Copyright © 2012, by the California Institute of Technology

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

CALIFORNIA INSTITUTE OF TECHNOLOGY ARCHIVES
ORAL HISTORY PROJECT

Interview with Earnest C. Watson **by Larry Shirley**
Pasadena, California

JANUARY 20, 1969

Begin Tape 1, Side 1

SHIRLEY: What I'm interested in is the mood of the institute during the Depression and how it proceeded, with kind of the tight money situation, especially right after the Fleming Trust fell apart. What were some of the frugality measures that were taken?

WATSON: Well, the faculty deliberately took an across-the-board cut in salary, which *they* understood was to be restored as soon as the institute was able to do so. As a matter of fact—this, in a way, should be off the record, perhaps—but as a matter of fact, [Robert Andrews] Millikan [chairman of the Executive Council, 1921-1945] himself never intended to restore it. Although he gave the faculty that impression. He wanted to use it as a means of getting rid of certain people. So some people, who deliberately voted themselves a cut to help the institute, never had that cut restored. Other people, of course, went ahead, with normal promotions and with an increase in the salary, this time getting more than they had been getting at that time.

SHIRLEY: I saw in the notes of when it was announced that Millikan said something like "the faculty have generously agreed," or something like that. I was wondering how this was originally presented to the faculty—when he was suggesting it. Was it at a Faculty Board meeting?

WATSON: I think at a general faculty meeting. He presented it, and I'm not sure whether the faculty took a formal vote on it or not. The faculty minutes might show that, if that was the case. But my memory isn't clear on that. I do know that the faculty took this voluntarily, in order to help us in this difficult period.

SHIRLEY: It had come from the administration, though, hadn't it?

WATSON: Yes, yes. The need—the situation—was presented. To give you some of the background material that doesn't appear in public—by this time, Millikan was in such a position that the trustees were letting Millikan do anything he wanted to. And he was using the organization of an Executive Council, rather than a presidency, really—not consciously; I don't think he was doing it consciously—but actually as a device that made it unnecessary for him to consult his faculty. A college president realizes that if he doesn't consult his faculty, he's soon in hot water. Millikan said, "The faculty is represented in the Executive Council. And so it's not necessary to go further. I'm a faculty member, and some of the others are faculty members, so it isn't necessary to specifically refer things to the faculty." And he was at this time meeting opposition on many things from the faculty. He found that he didn't get things through when he did consult his faculty, so he used the Executive Council arrangement as an excuse for *not* consulting his faculty. So it was a much more arbitrary and dictator form of government than a presidential system would have been, because, also, the trustees just left everything, every decision, up to Millikan. If Millikan wanted it, that was fine.

SHIRLEY: What were some of the things he wanted to push through that he would have had trouble about with the faculty? Are there some specifics that you can think of?

WATSON: I can't think of a specific case at this time. Millikan, of course, was very persuasive. I've sat through many meetings in which Millikan would present things. He always did all the talking and didn't give much opportunity for other people to take a different point of view—or even to agree with him. He did most of the talking. But this would be in departmental meetings rather than in the whole faculty meetings, in which he would present something—essentially think the thing through for the group. This was his own thinking. Then he would dismiss the group with the statement, "Well, gentlemen, I'm glad to see we all agree with me." They had no chance to agree or disagree, and actually we would leave with *no one* in agreement with him at all. But his attitude was that once Millikan had thought it through, it was right. [Laughter] And it never occurred to him to question that it *wasn't* right. Having thought this through and explained it to the group, that was that, and everybody—as all right-thinking men—must agree. [Laughter]

SHIRLEY: If not, you're not a right-thinking man.

WATSON: You're not a right-thinking person! Well, I'm sorry; I'm getting off into some of these things. But instances like that were rather typical of the period. It was a period in which the trustees left it all to Millikan. There was less and less interplay between— Our faculty was being less and less consulted. But I think the most significant thing in that period was the beginnings of the difficulties that came to a head during the McCarthy era.

You see, this is just the beginning of the Depression. Well, in general, graduates of the institute did better in getting jobs than graduates of most institutions. But there were students who had to drop out because of financial reasons. There were graduates who couldn't get jobs. It was a period of great difficulty, and the younger people were questioning the economic basis of society. The Russians at that time were our allies rather than our enemies, and Communism was being discussed, and, well, a number of groups formed. Some formed because they were without jobs and they wanted to discuss economic problems. They were questioning the foundations of our society. Others were for social purposes or for music.

One of the most important of those groups was a group of young graduate students mostly, some younger faculty people, who were fond of music and who would meet for musical evenings, but it usually went over into discussion of this other sort of thing. In some cases, I think they may have taken steps to become a cell of the Communist Party at that time. In any case, they were *accused* of having done so, later, in the McCarthy era. The famous [Hsue-shen] Tsien case: Dr. Tsien was Chinese. He was one of the ablest young aeronautical engineers in the world. He came to this country to study—went first to MIT. They failed to realize his potentialities at MIT and he transferred out here to Caltech, to work under [Theodore] von Kármán. Von Kármán saw his possibilities, and gave him every opportunity to develop, and utilized him in all sorts of government committee investigations and studies. Then at the end of the 1940s the Guggenheims were setting up these three centers for aeronautical development—one in Princeton, one in the South, and one here, and Tsien was offered the directorship of the center at Caltech. But it was also about that time that the McCarthy investigations began. Tsien came to me one day and said, "I'm going home." And I said, "For heaven's sake, why do you want to go home? Aren't you happy here?" And he said, "Well, I was brought up to believe that if you're a guest you do nothing to offend your host. I'm a guest in this country. I'm an

unwelcome guest. I'm going home." He was being hounded by the FBI, who were trailing him and trying to pin something on him. The charge was that after he'd returned home to China in 1947, in the summer before his acceptance of a post at MIT, when he came back to the U.S. he had to swear, in order to get his visa, that he was not a member of any Communist-based organizations—which he did. So they accused him of having perjured himself, because he'd been a member of this group, of which—well, Robert Oppenheimer's brother, and Sidney Weinbaum, who was a very gifted mathematician of Russian extraction and had barely escaped with his life from Russia— A group of that kind, who were attracted together primarily because of an interest in music.

Weinbaum could have made a career as a concert pianist. Tsien was interested in music. His wife received a musical education in Europe, which was quite unusual for a Chinese girl. He was interested in music, and he did attend meetings of this group, at times. He said he'd never been a formal member of a group, and I think that is the case. But they hounded him, trying to prove that he'd perjured himself. Then, his friend, Dan Kimball, who was then [assistant] secretary of the navy, who knew Tsien well— When he heard that Tsien was planning to return home, he said, "You mustn't let him go home. He's too valuable to this country." He didn't mean that they should prevent him by force, but that Tsien was the sort of person we ought to have here. When Kimball said this to the Department of Justice, they at once put a tail on him to see that he didn't leave the country. They arrested him [1950]. It was with the greatest of difficulty that we could get defense counsel to him. They refused to bring him to trial, because they were faced with a dilemma: If they could convict him, then the penalty would have been deportation, which is what they were trying to prevent! So they didn't dare bring it to trial. Either he would have been acquitted and then he'd have been free to do anything he wanted to, and he would have gone home, because of the treatment he'd been receiving. Or, if they'd convicted him, then he'd have to be— But he had gone ahead with his plans to return home and packed all his goods. He had a great deal of classified material, because he'd been employed on classified work. He turned over all the classified material he had to Clark Millikan [then director of Caltech's Guggenheim Aeronautical Laboratory] to take care of. But he'd owned personal things—books and papers, and that sort of thing he did pack for shipment back home. This was all taken at the port. The FBI went through it and labeled logarithm tables as code books and all

that sort of thing. [Laughter] There was a great to-do about it—here he was shipping out classified materials and code books and all that sort of thing. It was really a messy business.

SHIRLEY: This was the early fifties?

WATSON: Well, that was—let's see. Again, I'm no good at dates. [Tsien was detained in 1950 and given a delayed deportation order. For five years he was under virtual house arrest in Pasadena. He left for China in September 1955.—ed.]. The beginning of this whole business was back there in the thirties and those Depression years, when these groups of young people who couldn't get jobs, or for other reasons, were discussing in groups the fundamental economic problems. Of course, Tsien has now gone back home; and he, probably more than anyone else, is responsible for the Chinese having the atomic bomb at the present time.

SHIRLEY: Talking about another famous man who came from a foreign country, there was Einstein. I've understood that there were various arrangements for how he came here. I guess this Oberlaender Trust, or something like that, was providing part of the finances for him. And it wasn't clear to me how it was worked out that he would come, and then why he left to go to Princeton. I'm wondering if you—

WATSON: I don't know if I can explain that. Of course, Millikan was primarily responsible in bringing him here. But how Millikan succeeded in financing many of those things, we never knew, because— Millikan had the policy of doing all those things out of his— When Millikan came here, the trustees turned over *all* their resources to Millikan to develop physics. And Millikan operated the institute out of one pocket, and he shifted funds from one pocket to the other. He never had a budget. So you *never* knew how he was— He got an awful lot for his money, but it was very difficult to know where some of the financing was coming from.

SHIRLEY: I've noticed, in a lot of the letters, that it's he who personally writes a letter to some funding agency. And I was surprised, sometimes, that that was the case. You don't know if he's consulted with the trustees or with the Executive Council or not.

WATSON: In most cases, he probably didn't.

SHIRLEY: Do you know any more about the circumstances of Einstein's leaving? Was that for lack of funds here? They couldn't support him any longer? Or were there other problems? I've heard possibly that there might be.

WATSON: Well, I don't think there was ever any intention of his staying here permanently. And there weren't funds available for a permanent post here, so it was a perfectly natural thing for him to go elsewhere. Millikan used his visits for publicity purposes, very effectively. It was a time [the early 1930s] when people were all saying that there were only about half a dozen people in the world who could understand relativity, and everybody wanted to meet the great Einstein. The Millikans just worked their heads off trying to protect him and scheduling his appearances. I think the Einsteins resented it, to quite an extent, but he was amused by it also and understood what was going on. In many ways, Einstein was a very simple, direct individual, but, well, the Millikans made *all* their social engagements for them and supervised every move they made, just as though they were children. He [Millikan] was so afraid that he [Einstein] would make a social mistake and offend some of the people that Millikan was trying to interest in supporting the work of the institute. Well, I could tell you amusing stories, but I don't know if that's what you want.

SHIRLEY: I did see, in one of the letters Millikan wrote to Einstein, that he said something about how they could work his tour out so he wouldn't have to go through New York, where he'd apparently had some problems with people, publicity people, wanting to see him and stuff. And apparently, I guess, Berkeley wanted him to go up there, too. And that was two West Coast centers of science, kind of fighting over him, too.

WATSON: Well, an amusing story— I can tell you others. At one of the big dinners at the Athenaeum, at which Einstein was a great attraction, a very prominent social leader in the community was very anxious to entertain Einstein in her home, as sort of a feather in her cap. She sat next to him at dinner at this affair at the Athenaeum. She kept pressuring him to accept a dinner invitation. She set a date, and Einstein said, "Well, I can't come at that time. I've arranged to go up on Mount Wilson at that time." She said, "Well, perhaps it will rain and then you couldn't go to Mount Wilson." Einstein quietly said, "Oh, no, it won't rain. Millikan has

arranged it." [Laughter] Which he did. Both Mr. and Mrs. Millikan worked their heads off to make *all* their social engagements, looked after them for fear they'd make the slightest slip.

They did get out of bounds once. Upton Sinclair lived in the area at that time, and Einstein had read some of his books—he had a great vogue in Europe, much more so than in this country. Einstein was interested in meeting him. Upton Sinclair phoned him and invited him to come to his home. Without consulting Millikan, Einstein accepted and went. Well, the next day at the Athenaeum, at lunch, Millikan was very angry, and he took Einstein to task like a small boy—told him he just mustn't do that sort of thing, that it wasn't socially acceptable to the group that was supporting the institute. And Einstein stood his ground pretty well. He said, "Upton Sinclair—oh, he's a real artist. And I was anxious to meet him." All right. Then, a few weeks later, Upton Sinclair invited him again, and in spite of the fact that he'd been chastised [laughter], he accepted and went a second time. And this time when he came back, well, Millikan couldn't say any more, but Einstein was a little bit sheepish. "Upton Sinclair, yes, he's a real artist, but he doesn't know what a fact is," [laughter] which is really a pretty good **[[inaudible]]**. He was a propagandist, of course, but I think he did a great deal of good.

SHIRLEY: Sinclair ran for governor, I guess in '34. How did the fact that he was living in your community affect things? Was Pasadena for him?

WATSON: Ah, no. The institute community—that is, the supporters of the institute—were just scared to death that he might be elected. And he very nearly made it. Well, I'm not giving you a history of the institute, I'm messing around like an old man—which I am.

SHIRLEY: Anecdotes are nice; they add color to the stories. Were there any specific cuts from prominent givers because of people associated with the institute—or what they said? What Millikan was fearing? Did that ever—? Were any of his fears—?

WATSON: There must have been, yes. I don't think there were too many cases. I'm sure there were, though.

SHIRLEY: I read a few letters—apparently crank letters—from somebody about various speeches by an economics professor. I think his name was [Graham Allan] Laing?

WATSON: Laing.

SHIRLEY: I could never understand whether he was—this Laing—was giving speeches representing the institute or just on his own. That they were just concerned about—

WATSON: It was the same sort of thing. Well, Linus Pauling was part of that [inaudible]. I think a faculty person has a right to engage in political activities, as long as he's not saying that he represents the institute in any way. He has a right to express his own personal opinions. And Graham Laing was a very liberal economist—didn't agree with most of the other economists in the department, but he was a very interesting speaker—very witty and amusing and told very funny stories. So he was popular as a speaker. And in general, I think people are encouraged to take part in community activities; they're asked to speak at clubs and various organizations; they are usually urged to do so. Laing was very effective as a speaker, but he would make remarks that would offend the economic group that Millikan was cultivating to get support for the institute.

SHIRLEY: One thing I noticed, it seemed that especially in the late thirties there was an increasing amount of industrial gifts. For example, four major oil companies were giving fellowships to geology or engineering or something. Do you think there was an active effort made to reach out to industrial groups?

WATSON: Oh, yes. Yes. Which ultimately developed into the Industrial Associates scheme, and things of that sort, which is now an effective, valuable source of support for the institute.

SHIRLEY: Do you think the Depression had anything to do with that? In the twenties, they almost seemed to scorn getting money from industrial groups, as though they wanted to work in pure science or something, instead of applied work. And yet in the thirties, they seemed to—This is just what I gathered from the reading, and I'm not sure if I'm getting the attitudes right or not. Was there kind of a change, just because of the extra need for funds?

WATSON: Well, certainly there was something of that. I think in general the sort of funds that the institute sought were industry funds. That's always been the great need of an educational

institution. It's much easier to get funds for a specific purpose; that is, an industry wants certain studies made for the industry, and if they can get an educational institution to make them, they'll finance that. Of course, government is doing that all the time. But the policies of the institute have been pretty clear-cut in that regard. If these projects are things that [inaudible] himself wants to do, and an industry or branch of the government is interested in financing it—all right. But in general, we don't take funds or contracts to do things just because an outside organization offers us money. I don't know whether you know, but there's a very effective faculty committee that screens every proposal of that sort, as to whether it's appropriate for the institute, whether it's something that the institute itself may be properly doing and there are people who want to do it. But not simply because funds are available from outside.

SHIRLEY: Of course, the big thing now, which wasn't especially strong in the thirties, is government money.

WATSON: Yes.

SHIRLEY: And yet I see in the thirties there was kind of beginnings of that already. I saw that you were doing some work for the Department of Agriculture on soil erosion, and Los Angeles County was giving some grants, too. And yet Millikan, in his letters to associates, would stress the fact that this was a private institution, as opposed to some of the growing number of state universities.

WATSON: Well, Millikan, before he came here, had learned to raise funds from government and industry. He, more than most people, realized that this was a possible source of funds for a developing institution. He certainly did an outstanding job raising funds. Actually, George Ellery Hale taught him most of what he knew about raising funds. Hale was one of the people in the history of science who could see the things that needed to be done, conceive of the big projects, getting just the right people to do them and raising funds in an adequate way.

SHIRLEY: The telescope was really spectacular, I guess.

WATSON: Well, the Hale telescope was only one of a dozen projects of that sort that, yes, he was responsible for.

SHIRLEY: Well, were there any problems in reconciling accepting government money with some of these rather conservative private donors, who would be appalled and think of it as government intervention or something like that?

WATSON: Yes, there would be discussion of things of that sort. But, there again, it was at a time when the trustees were so sold on Millikan that he was allowed to do almost anything he wanted to do. As I say, he never really had a formal budget that the trustees approved. He would shift money from one pocket to another to get done what he wanted to do. He usually wanted to do good things. [Laughter] And he got *a lot* for the little money that he had. But any accounting firm would throw up their hands in horror at the way in which he manipulated the funds—which weren't his own, of course; they were institute funds. Well, most of the early funds for the institute came from the Flemings, and Mr. [Arthur H.] Fleming was chairman of the Board of Trustees. So the other trustees said, "Well, it's his money. He's chairman of the board. Why should we question how he wants to spend the money?" And in the event, the whole Fleming Trust failed and that was a very serious blow to the institute. But by that time Mr. Fleming was just in a haze, dreaming wild dreams that he thought would make hundreds of millions of dollars for the institute, and he was just not a mentally responsible person.

SHIRLEY: I get the feeling that there was a little bit of a hard feeling, perhaps, or a fear of hard feelings, when they tried to make him into a president emeritus of the board and let [Allan] Balch in as the new chair.

WATSON: Those were difficult times. Well, they didn't want to alienate the Fleming heirs and the Fleming family. Well, I don't know much of the details of the dealings with the trustees. Although, as time went on, I did have quite close relationships with individual trustees.

SHIRLEY: Who, in particular?

WATSON: Well, I think in my time probably the most valuable trustee we ever had [from 1933 to 1961] was William C. McDuffie, whom you don't see much about in the official records, but he was a *very* effective trustee. I have a weekend place up in Santa Barbara; and Jim [James R.] Page had a house nearby, and I would have breakfast with him when he was up, and we would talk about all sorts of things. I knew some of the trustees more than Dr. [Lee A.] DuBridge [Caltech president 1940-1969] ever did. These were just individuals, and I wasn't involved in any formal actions of the Board of Trustees.

SHIRLEY: When you said that McDuffie was an especially valuable trustee, in what way was he—?

WATSON: Well, he had such sound judgment. You could go to him for advice and get sound advice, and then he would do more than that. He would roll up his sleeves if you had a problem, he'd work it out—as very few of the trustees would.

SHIRLEY: I guess [Henry M.] Robinson [1868-1937] is pretty high up in the trustees.

WATSON: Robinson was a very, very great benefactor of the institute—had great interest in the institute—and certainly deserves a great deal of credit for the developing of the institute and the way in which it is has gone. Robinson is unquestionably one of the key figures.

SHIRLEY: I didn't understand exactly what your position was. You became a dean about halfway through that decade. Is that right?

WATSON: Well, my position was just a perfectly informal thing. I was a student of Millikan's, a graduate student, at the University of Chicago [1914-1917]. After I got out of the service in World War I, I was looking for a job. And the institute, at that time, [George Ellery] Hale—Well, the institute was just beginning. Hale was trying to get work in physics and chemistry started here at the institute. He got Noyes [Arthur Amos Noyes] to come out. I've described a little of this in the talk I gave at the dedication of the A. A. Noyes Laboratory [of Chemical Physics] a few months ago; it's published in *Engineering and Science* [October 1968]. But Hale was trying to get Millikan to come out here. Millikan at that time had no intention of doing it,

but he *had* come out for a visit to deliver a few lectures. And at that time, I was looking around and got out of the service, and Millikan asked me if I wanted to come out to Pasadena. I was more or less his student representative; I didn't know if he had any idea of coming. Very soon, however, he made the most of the situation—and he was very astute in this. Millikan had gone to Washington during the war, so he had to be down there organizing scientific resources [inaudible]. He wanted to go back to [the University of] Chicago and organize a great center of critical research there. He could have done it, but the University of Chicago wouldn't let him. Not that they didn't have the funds. The funds weren't required, because Millikan would've raised the funds, as he did out here. But they felt they couldn't allow a development of that sort in one department without doing it in all departments at the university, and there just wasn't money for that. So Millikan was faced with a wall there, and Hale realized this and said, "Come out to Pasadena and do what you want to do at Chicago [and we'll put] all the funds of the institute into physics," and he did it, literally. Well, I arrived [in 1919, as] Millikan's representative. Noyes was on the ground, and I looked in on Noyes. I was responsible for— In order to get Millikan out here, they had to promise him a laboratory. My first job was to get the Norman Bridge Laboratory [of Physics] going, so I—

SHIRLEY: I think I saw something on that.

WATSON: So, in a way, the people who were making the institute were Millikan, Noyes, and Hale, and I was an in-between. [Laughter] I worked very, very closely with Noyes. Yet my primary responsibility was to Millikan. So I did much of the detail running of the institute, and helped, as far as I was able, with the planning and policies and things of that sort. So I had that informal relationship right from the start. As time went on, as the organization of the administration of the institute was becoming more and more complex— Well, during the war [World War II], I administrated the large rocket project, which was spending a million dollars a week, instead of a million dollars a year, [inaudible]. I had administrative charge of that and then became dean of the faculty [1945]. I refused a strictly administrative job, because I wanted to be a faculty member; and so for fourteen years I was dean of the faculty; but [inaudible sentence].

SHIRLEY: So you were kind of floating around the administration for a lot of that time, before leaving Pasadena [in January 1960, to become scientific attaché to the U.S. Embassy in India]?

WATSON: Well, I was consulted primarily by Noyes, but I was actually doing a great many things to relieve Millikan so that he could carry on his research as well as administration, which he astonishingly did, managing to keep up his research program and carry the administrative load that he did.

SHIRLEY: And I know that when he came, that was one of his key things: He wanted to have time for his research and be in administration on the side. And yet I guess he became more and more of an administrator.

WATSON: Yes.

SHIRLEY: Did you say he did keep up research pretty well?

WATSON: He kept up his research on the side, yes. And he was in the laboratory. Well, he was just one of the persons who never took a vacation and worked all hours. He had graduate students up until almost the time of his death. But if you wanted to see him, usually it would have to be after twelve o'clock. He'd go out to social engagements in the evening, come back to the laboratory afterward and work till early morning. I couldn't stand the pace, but he seemed to thrive on it. He got along on a surprisingly little amount of sleep.

SHIRLEY: Well, I hear you have an appointment at four.

WATSON: Yes, I have a few more minutes, but I don't really see that you can—as I say, I'm just gossiping away here, which doesn't fill the function of history. I'm venting some of my own prejudices, things of that sort. My memories of much of the details— I suppose I could dig something up if I went back through the record, read correspondence, and that sort of thing, I could amplify, give some of the background of it. But without that, I just can't start digging up anything but these superficial, more or less emotional memories. [Laughter]

SHIRLEY: Well, that's partly what I'm wanting, because I have been able to see some of the official records. I've read trustee minutes and letters, and it's hard to get an emotional feel out of those, really. This has been very helpful.

WATSON: Well, Millikan did have the complete support of the trustees in a very remarkable way, much more so than DuBridge has ever had. And of the faculty, too—at least in the early days. It was a young, able group that was interested in doing research and in their own work, not interested in the administration problems. They were willing to leave that to Millikan, and he did it with a minimum of cost and of assistance. Either way, the overhead of the organization and administration in those days was remarkably small. **[Tape ends]**