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WOODS HOLE OCEANOGRAPHIC INSTITUTION

ORAL HISTORY OF JOHN FARRINGTON

Interview by Frank Taylor, July 21, 2005

Tape 7 of 8 tapes transcribed by Arel Lucas, November 2005

TAYLOR: . . . 4, 5, 6, 7. [Tape stops and starts again.] We're at the Clark Laboratory at the Woods Hole Oceanographic Institution for another session with Dr. John Farrington about his career here at the Institution. And, John, we've talked about just about everything leading up to but not including your present position, which, among other things, part of it is dean of the Graduate School of Oceanography here, and I realize that's not the correct name. But way back in 1968, Paul Fye and Howard Johnson signed a memorandum of agreement to start a program here, which was not, as I understand it, universally popular . . .

FARRINGTON: Um-hum.

TAYLOR: . . . here in the Institution. And since then, in asking people that had been here since that period, I've had several that have kind of looked at me and said, "But I was wrong" in terms of what the Institution has done. Now, you came in to take over as the current dean. Had you had any association with the Program prior to that?

FARRINGTON: Oh, yes. Right, in fact, uh I was one of the . . . one of the things that I was very happy about when I was uh appointed assistant scientist on the scientific staff here, after being a postdoc, was that there was the beginnings of this graduate program [thumps] in 1968, and by 1972 there had been uh uh sufficient enrolment that the program was really up and running and off the ground, but still having some, you know, transition problems. And there were still a lot of people on the scientific staff here who, for whatever reason, thought that this should be mainly a place for research and very

informal education and not a formalized graduate program. But that transition, and I think it began to transition with the cohort of scientists that came in about the same time I did.

TAYLOR: OK, so you did know something about it. It was growing over those years. As I understand it, it was mainly physical oceanography when it started out, and then the engineering and biological came along later?

FARRINGTON: Well, no, basically, in the beginning it was, at Woods Hole Oceanographic Institution, was physical oceanography, chemical oceanography, and geology and geophysics. And at MIT it was mainly the . . . what was then the Department of Earth Sciences and the Department of Meteorology and Physical Oceanography, and later those two departments were combined at MIT. And then shortly after the Joint Program began, biological oceanography was added—in, I believe, 1970—and then engineering, ocean engineering, and then later on—about five or six years later—expanded to include other engineering departments at MIT.

TAYLOR: OK, now, over the years, some of the difficulties I have read about revolved around things like low student interest, things like that. Had that situation been rectified when you first got here?

FARRINGTON: Right, well, it wasn't . . . I don't think it was so much "low student interest" as it was the fact that in the period of the 1980s there was a downturn in part in the population of students applying to Ocean Sciences and Ocean Engineering throughout the United States. And that had some connection with demographics of the population of undergraduates coming through, and also competition with other fields of science, and there were a series of workshops put together with funding from the Office of Naval Research that were headed up by the then dean (Charlie Hollister), Jake Pierson, who was the assistant dean at the time, and the person in charge of the oceanography program, the dean at the University of Washington, Arthur Mol[SP?]. And this brought in undergraduate professors from various colleges and universities, to get the word out to them that there were some exciting things going on in ocean sciences and ocean engineering, and they should recommend it to those students that they had who were interested in going on to graduate school.

TAYLOR: OK, so that problem had started to sort itself out by the time you came in, then?

FARRINGTON: That's correct. We did have the last of those workshops after I was appointed, but they were focused . . . that workshop, and actually the one before it was focused primarily on increasing the diversity in the graduate pool, and so there were more people from the historically minority-serving colleges and universities or large urban universities who came to the workshops, so we could try to get the word out to those faculty and explain what went on in oceanography and graduate studies.

TAYLOR: Now, it brings up an interesting point.

FARRINGTON: Um-hum.

TAYLOR: When you first came in, even though you know something about the whole Program, you're still not essentially running it, and that brings up a whole new realm of difficulties and problems and things you have to work your way through. And as I said to you before we started taping, it's always been my impression also that at the Institution you kind of have to hit the ground running here. So how did you get yourself into this? OK, John Farrington's going into this particular office now. How did you move yourself into it? Who was helpful to you? How were they helpful?

FARRINGTON: Um-hum.

TAYLOR: Those kinds of things?

FARRINGTON: Well, when you're involved in the Program as a scientific staff member, which is the equivalent of a faculty in a university, you learn a lot of things about the Program as it's going along. I mean I served on the Admissions Committee for admission of graduate students. I advised several graduate students. I taught graduate students. I'd been a member of one of the joint committees that provides faculty oversight for the Program. In my case it was the Joint Committee on Chemical Oceanography. So all of those activities prepared you—prepared me, anyway—for knowing the nuts and bolts of some of the things that went on. What I had to do was to then get a sense of all the other aspects of the Program, and I knew about the postdoc program [thumps] because I'd been a postdoc myself. And that's not a joint program with MIT. That's our own Institution program. And then we had a Summer Student Fellowship Program [thumps], but one year when both Jake Pierson and Charlie Hollister

were away for a significant part of the summer I had run that program as the chair of the Summer Student Fellowship Committee. So I had some lead-in. It wasn't a complete novice uh coming in without any understanding of the Institution or the programs. Having stated that, I mean we were very fortunate over the years to have had these programs in the education office, now the Academic Programs Office, uh mature with a steady hand at the helm on the administrative side, which was Jake Pierson. And Jake uh certainly had been there since the founding of the Joint Program and had been very much involved in the, you know, five, six years after the Summer Student Fellowship Program had been founded in '59, and the postdoc, the formalized postdoc program in 1960. And the earlier deans who'd come through had some previous experience. For example Burr Steinbach had been a professor at the University of Chicago and director of the Marine Biological Laboratory, and so [clears throat] he had some administrative experience, and together with Jake sort of put things together that uh became policies that we could build on. Then Bob Morse came in as dean, and, of course, having been president of Case Western Reserve University, he had substantive experience in leadership in the academic sector as well as in the government sector, as Assistant Secretary of the Navy for R & D before that. So a lot of policies and procedures were in place to carry out, and there were, you know, a number of good administrative people in the office working with Jake.

TAYLOR: OK, so then someone like the assistant dean plays a real role in getting you moving along here nicely.

FARRINGTON: Correct. By the time I came in, Jake had just been appointed as associate dean in recognition of his experience and long contributions, and so forth. My biggest challenge, actually, was the recognition that, you know, at some point within ten years, roughly, or so, Jake was going to retire, and everybody was worried about, you know, how do you run a program at the Institution, academic programs and education without Jake, and of course he said that wouldn't be a problem, that a number of people could do the things, but there was still a bit of angst about that, and we began in a series of operations [thumps] and uh people coming and going in the academic program and the Education Office and Academic Programs Office to begin to prepare uh for Jake's retirement by bringing in people progressively who had different skills and different backgrounds and could operate independently and had some overlap. That's not to say

the people who were there weren't very good, but several of them left [thumps], and then we [thumps] brought some other people in, and I would say one of my most significant accomplishments during that time is to be able to transition the program to a place where it is now, where it will make a difference who the dean is and who the associate dean might be, but it's relatively easier for those people to come in and take up the reins.

There is a great group of professionals uh who have experience and cross-training in the office. So the programs are well staffed right across the board.

TAYLOR: OK, so I must admit when I was doing Jake Pierson's oral history that was one of the things I wondered. He was a constant in the program over the years.

FARRINGTON: Correct.

TAYLOR: And not only having done a very fine job but also very much a corporate memory, if you will, for . . .

FARRINGTON: Right.

TAYLOR: . . . everything that occurred in this, and so someone like that, then, essentially was able to meld in with you and get a program that was still, in some respects, in the evolutionary process to kind of move along?

FARRINGTON: Well, I think it was well into . . . I mean it was out of the teenage years. It was . . . It was a mature program. There's no doubt about it, and Charlie Hollister had done a wonderful job with Jake of bringing it along and to that level of maturity, and Charlie was . . . Up to the time I was appointed, most of the deans were part time deans, in a sense, so that was only half time of his job. And when I was appointed, the number of programs had increased to the point where it was felt by the External Review Committee of the Joint Program, especially in 1968—I'm sorry, 1988-89—that there should be a full-time dean. And so I was appointed to that . . . that position. That was the position that was advertised. I was told I could still, you know, do a little bit of research on the side. Of course, that could come out of . . . I could do as much as 20 percent. I remember that discussion with uh Craig Dorman, who was the director at the time. It was a very enjoyable discussion. I got along with him fine. I understood what he meant. He said, "Sure, 20 percent's fine. You can take it out of the 120." [They laugh.] So, and that's what I've done. I have kept my finger in a little bit in research and education things.

TAYLOR: Well, that was a question I was going to ask you. That was a really a significant change for you, in terms of a researcher for a good portion of your life, . . .

FARRINGTON: Um-hum.

TAYLOR: . . . and then moving on to really a different kind of approach, and all this. And I'm wondering: was that a difficult decision for you to make?

FARRINGTON: No, not at all. As a matter of fact, I had had some previous experience on a part-time basis. Uh in the 1980 time frame here at the Institution I was director of the Coastal Research Center, which was an emerging entity and, you know, four months a year were spent being director of that, and learning things about administrative things and interacting with other folks and figuring out what to do about budgets and that sort of thing. And then when I went to the University of Massachusetts Boston, shortly after I went there, even though I was attracted there by being offered a chair as a professor, [thumps] I was presented with the opportunity to become director of their environmental sciences program, which was a half-time job, so I did that for a couple of years. So I was used to understanding I mean you had to spend a certain amount of time in meetings and trying to arrive at consensus, and there's a certain amount of paperwork and supervision of people on the administrative side that you had to undertake.

TAYLOR: About how long were your days, in terms of hours put in? And this sounds just . . .

FARRINGTON: Sure.

TAYLOR: . . . enormously complex to me in many ways.

FARRINGTON: Well, when I was . . . when I was first here uh I'd come in sometimes at 6, 6:30 in the morning, 'cause Craig Dorman, as director, was an early . . . early riser and early to work and . . . and he would have a couple of meetings. If I wanted to have a meeting with him, that was the easiest time for . . . for me to meet with him. Other people met at other times with him. And I got a lot of things done before people showed up in the office for the regular day, the eight-hour day, and then, since I still had students and a guest visitor from Japan in the lab, I used to spend, you know, late afternoon into the early evening, perhaps, over in the lab, talking with them. And then I'd spend some time with my family at home in the mid-evening hours, around dinnertime and that sort of thing, and then perhaps do a little bit of extra reading and so forth. Occasionally I'd

come back to late at night, but it was, you know, more or less It's not an eight-hour day; that's pretty certain. But it's a different type of It's a different type of work. Many of the things you're doing are—at least at that time they were to me—not routine, very exciting, new things happening, and so, even though you were doing something, you were going to a different meeting, or then you'd go to a thesis defense. Then you'd go to a faculty meeting, and then you'd be talking about research with one of the students or the visitor. Then you'd be answering phone calls. Then you'd be maybe doing a few things with paperwork and reports that had to be written [thumps], and then worry about some budget items, and then it would be on to the next day. [They laugh.]

TAYLOR: It's almost as though you have to have a passion for the work, to be able to keep up that kind of workload at the level that you were doing it with.

FARRINGTON: Well, you do, but you also have to find You know, you have to recognize when, OK, it's . . . it's not the hours that you put in that's the best metric; it's how efficiently are you using that time? And I've seen a number of people who confuse total number of hours with effective work, and I quickly figured out what my limit was on that, and I'd have to, you know, relax and take a rest and focus on something else. And, you know, there were times when I did work an eight-hour day. So I don't want anybody to get the impression that it was constant ten hours seven days a week. It was nothing like that, but the position is one in which you have to be available for various things. I mean there are evening gatherings [thumps] sometimes. You have to go to dinners for people. That's all part of the job.

TAYLOR: I want to come back to this question a little bit later. I want you to think about it. Do you try in some fashion to get this kind of thinking and ethic out to the students that come into the program—essentially, what are you really going to be facing in this field?

FARRINGTON: Oh, we talk with them about a number of different things, but not all of them become um, you know, become involved in this. But the students do have elected representatives. They do sit in on Education Council. They see us making decisions. I do talk to them about how, you know, decisions are made and what's going on. We do have career seminars for them in which we bring in other people. We have jobs, different things going on. I mean just yesterday, as a matter of fact, or the last several days, Dr.

Margaret Lyman[SP?], who is the assistant director of the National Science Foundation for Geosciences has been here. She was invited as a visiting scholar by—a Steinbach Visiting Scholar—by the graduate students, and they've had an opportunity to talk to her. What is it like to be an NSF program manager? What is it like to be higher up in the National Science Foundation? What are the decisions that you have to make? What are the difficulties you have—those sorts of things. We've had the students talk with people uh Several years ago they talked with Bob Frosch, who's one of our trustees, who was several years an associate director here for applied oceanography, and then was administrator of NASA, and then vice president for R & D at General Motors. And so, you know, they . . . they got to talk with him about how did he decide to do all of that, and what did he do, and [thumps] . . . ? You know, and they were shocked that he didn't have a plan to do all of that when he started off. [Laughs.]

TAYLOR: So then the students in the program really have a large say in their own development, sort of?

FARRINGTON: Well, I They have a large say within the confines of the oversight of the faculty. The faculty set the parameters, but these are graduate students, after all. Many of them are coming here with Obviously all of them are coming with at least a Bachelor's degree. Many come with a Master's degree. They are in their adult years, and we tell them when they come in that at least 40 percent of their learning is going to come from each other and the discussions they have, informally, and that the faculty are there to provide guidance, and to provide an understanding of what the faculty know, and to provide feedback. But a lot of what they're going, especially those who are studying for a PhD, is demonstrating that they have the capability to be an innovative thinker and to carry out a significant research project that results in new knowledge being contributed to their chosen field.

TAYLOR: Now I ask this, because, as you're aware, I came from a public school setting, . . .

FARRINGTON: Um-hum.

TAYLOR: . . . and we're really talking a totally different kind of situation. You're getting, for the most part, a highly motivated, very bright group. What specifically do

you look for—kind of pie-in-the-sky, if you get your ideal student, what you would be looking for?

FARRINGTON: Well, I have . . . I have my own idea of what we're looking for, but this is a joint choice of the faculty, OK, so it's a meld of different things. But you're certainly looking for a student who has a strong enough fundamental basis in science and math that they will be able to take advantage of the opportunities offered to them here, and that they are ready to be relatively independent, on their own, and to enter a pretty . . . pretty . . . competitive, highly charged environment, both here and at MIT, in which they're . . . they're pretty much responsible for what they do on their own. So if a person isn't quite ready for that—and people mature intellectually at different rates—I mean they may start in another graduate program somewhere else and then become completely successful. This is not the only graduate program around, and oftentimes we, or I, in talking with the students, or the potential applicants, will somehow encourage them subtly that maybe this isn't the program for them—that maybe they should think about another program which has maybe a bit more structure to guide students during the first [thumps] several months or year.

TAYLOR: OK, I must admit, in talking to Dr. Jim Luyten about the whole progression that he went through at the Institution, I was almost in the corner in a fetal position, sucking my thumb. When you say this may not be the situation for everyone, I readily understand what . . .

FARRINGTON: Um-hum.

TAYLOR: . . . you're talking about. It is difficult here. And you do have to have motivated students and things like that. But you say you have an idealized vision of what the kind of student is. But it's a joint kind of thing with the faculty. Let's talk about the faculty a little bit.

FARRINGTON: Um-hum.

TAYLOR: How does the faculty come to be—the ones that you have? Are these volunteers? Are these people that apply for a job? How does this come about?

FARRINGTON: Anyone who is on the scientific staff of the Institution is automatically a member of the Education Assembly, and unlike other academic institutions—most of the universities and colleges—we have no requirement for any of those to be any of those

to be involved in the academic programs, either teaching or advising students. If they do get involved, it's voluntary, but then they have to be uh subject to a collective group of guidelines that they or their predecessors have put together in terms of the types of courses that are going to be taught and what's going to be expected for the thesis requirements and the degree, [clears throat] and the various milestones [thumps] that the students will have to go past. The biggest one is what we call the general examination, or it's called the comprehensive examination at other universities and colleges. The way we gather the faculty together is by, mainly by consensus, but also by leading, and . . . and that's the responsibility of the dean, in large measure—is to get up front when somebody needs to get up front and provide a little bit of leadership. Or, as is equally effective, and sometimes more effective, is pick out those faculty members who have a good idea, who are ready to take a leadership role in a particular area, and make sure they get the opportunity to do it, by structuring things. And . . . and so what I do oftentimes will be . . . talk with individual faculty in one-to-one discussions or small group discussions, then we go to Education Council, and I'll call on them to further uh elaborate on this idea and see what kind of response we get, and then if it seems to be going in the right direction, those are who are for it, and also those who seem to be a little bit uh not in favor of it at the time, I'll then pick several from each group, and say, "OK, would you be a committee on this and get together and talk this through, and then report to the larger group." And then we report to Education Assembly, which is the larger group.

TAYLOR: So then essentially here, what you've got set up is what education really should be. It's a collective thinking process as to how to develop these young folk.

FARRINGTON: Well, it is collective, but it has to provide for diversity of thinking and approaches, too, so it's not lock-step. So we have to provide enough wiggle room, if you will, for people to have some innovative thinking about how they want to do it. So the guidelines are broad, and in my principal responsibility, along with my counterpart at MIT, who's the co-chair of the Joint Committee [thumps] overseeing the graduate program, is to make sure that whatever processes and procedures that the faculty have agreed to, that they then allow people to operate within those processes and procedures, and that there's no one or two people who, by virtue of seniority, let's say [thumps], are going to steamroll the uh . . . the more junior faculty into following their guidelines or

changing their mind about what they want to do simply because the . . . the more senior [thumps] person doesn't think it's necessarily correct.

TAYLOR: This is an opinion that I'm asking you now. It would seem, then, using this kind of approach, you would have, overall, a very happy and motivated staff.

FARRINGTON: Well, not always. Uh I think they are motivated, and motivated largely because they like each other—the faculty. I mean if you ask people why are they at the Institution they'll tell you a number of different things, but usually at the forefront of that is the “colleagues that I have that I can discuss my ideas with.” The second thing is access to the exciting students and the early-career bright minds of the students and the postdocs, and . . . and so generally speaking they're happy. Right now there's some difficulty because there's not as much funding out there in the federal sector and the various agencies as there used to be, proportionately, for them to carry out the research on their ideas, and so they're frustrated by this, because it's clear that the ideas aren't any less exciting and important. And it's also not the case that . . . that the research is any . . . is in any way, shape, or form less important to society right now. It's just a problem of the federal budget in Washington and the deficits. And . . . and that's creating an angst, and we can see that cascading, for example, to the students and the postdocs, who spend a good deal of time saying, “OK,” you know, “this is different now.” Times are different than they were in the '70s, and thinking of going back to the '70s isn't going to work out. I once went to a meeting, if I might expound on this [clears throat] where--it was in the 1991-92 time frame--where it was the beginning of the initial cuts of the Office of Naval Research funding, and NSF hadn't quite caught up yet with some of that, and people didn't have enough money to travel and go to meetings. And there were people up there, sometimes, at the meeting at the first day. I was the chair of the meeting. [Thumps.] It was an Oceanography Society meeting and they were talking about: “I wish we could go back to the old days.” And . . . and so I had a sense that somebody had to say something, so I got up [thumps] in the opening remarks and said, you know, “Welcome to the conference” and a few other important things. And I said, “I noted the attendance isn't as great as we had hoped because people have problems with traveling in their budgets, and I've also noticed that people are talking about they'd like to back to the old days. And just speaking for myself, I'm not sure I'd like to go back to the old days, if it means, and

one of the[?] go back to the old days that we're still going to be under the threat of the '70s and the '80s of, you know, mutually assured destruction of the Soviet Union and the United States and nuclear weapons. And so times have changed, and the Cold War is over." And I used the analogy that was [thumps] put forward by uh Tom Malone, Sr., not the current oceanographer but a meteorologist who was a very senior person in the National Research Council at the National Academy of Sciences, who said at a meeting I was at, "Well, think of it this way: the Cold War was like a gigantic tug of war, and on one side the," you know, "the base person, the anchor person was the Soviet Union, and on the other side [thumps] was the United States, and there was this huge pit in the middle, and most of the nations of the world," you know [thumps], "sort of got on either side of that rope, and everybody was pulling back and forth, and it wasn't moving anywhere, and all of a sudden, for people in the United States, and the other [thumps] side, the . . . the Soviet Union and their allies let go—just suddenly let go. And we fell on our back side. We dusted ourselves off, and we got up [thumps], and we pick up the rope. But that's not the game [thumps] any more."

TAYLOR: So your job, then, in a large part, and I may phrase this . . .

FARRINGTON: Um-hum.

TAYLOR: . . . poorly, but it's to put things in perspective for people.

FARRINGTON: Many times, especially for the students and the postdocs. And to provide some feedback [thumps] on their ideas and suggestions, and occasionally it's also to be uh initiative, to say, you ought to be doing this.

[END OF SIDE 1, TAPE 7]

FARRINGTON: . . . going to happen in the Woods Hole community, and so we sat down together with John Bullard, the new incoming president of the Sea Education Association and people from National Fisheries (Ambrose Gerald[SP?]), the US Geological Survey, and we drafted a memorandum of understanding that was signed a year ago this summer, [thumps] which committed all the organizations in Woods Hole to do something about increasing the diversity of our work force and our students and postdocs to work together on it. And for the first time in my memory, we had the heads of all the organizations, Bob Gagosian from Woods Hole Oceanographic Institution, and Bill Speck[SP?] from MBL, and the heads of Fisheries, USGS, John Bullard from Sea,

George Woodwell from the Woods Hole Research Center, and they all sat down here in one place here in Clark 507 [??] and they were all in that place, and they all signed this together. I don't think we've ever had everybody together in one place before. That's the kind of an initiative type of thing you need to take at some point in time. I mean people aren't . . . They're just too busy. They're too worried about other things, and they know it's important, but they . . . they can't seem to mobilize themselves to pay attention to it.

TAYLOR: And yet that seems to me to be a hugely significant kind of thing, because this isn't strictly "What are you going to be taught?" and "What are we going to develop?" This is about who you're going to involve.

FARRINGTON: It's about the future and whom you involve. And it's very much like the memorandum of understanding that gave rise to the Joint Program. You can sign the memorandum of understanding, OK, but then you have to do it. Now we as an institution and MIT were able to do it. We said, "OK, we signed this memo and we mean it, and we're going to carry it out," and it's still ongoing. Now the proof is in the pudding, so to speak, if I can use that old saying, that we're going to see whether that other MOU is just a piece of paper or whether it actually is going to lead to some concrete actions. Now, it has led to concrete actions already. We have a Diversity Advisory Committee. We have engaged a number of people in discussions. We have a Web site that's up, and we're talking about action plans. And that's, you know, in one year, which may sound like not much, but for five organizations, two of which are . . . are government laboratories [laughs] federal government laboratories, and others that have similar missions but aspects of missions that are diverse, it's . . . it's very important that this is continuing. But again it's a question of will somebody be sitting there where you are and where I am, you know, 30 years from now or more and saying, "Well, that was a significant MOU." Or will it just be another piece of paper that's in the file somewhere?

TAYLOR: I'd like to talk a little bit more about that from your viewpoint. A couple of issues: (1) present federal funding has not been particularly kind to environmental sciences, so that causes certain kinds of problems. I've always found that a lot of groups do what I call "bubblegum" issues. Like in a public school they talk about chewing

bubblegum and things like that, rather than getting to the some of the deeper issues that really . . .

FARRINGTON: Um-hum. Sure.

TAYLOR: . . . need to be addressed. And this that you're talking about it. To put several institutions together, all of which have different kinds of funding concerns and things . . .

FARRINGTON: Um-hum.

TAYLOR: . . . like this, and to get them to commit to and actually start doing something: it seems to me that takes a little bit more than being—and don't misunderstand this—just the dean of a school. I mean this is really You're not just thinking about furthering oceanographic education. This is an educational initiative that you're talking about.

FARRINGTON: Well, it's . . . it's not only an educational initiative, but it's an initiative that's absolutely essential if the Institution and the other institutions in Woods Hole are to have a future, because the demographics of our nation are such that . . . that a large proportion of our population 20-30 years from now will be from what we now call underrepresented groups. They won't be underrepresented any more, or they will be less underrepresented. Let's put it that way. And . . . and uh it's absolutely foolish to think that . . . that because somebody's skin is a particular color that they have a lock on uh . . . on the way to approach understanding nature, and to do research, and to be engaged in graduate education or other activities, or to be employed at the institutions and carry out successfully the mission of the institutions. We need that diversity of approach and background to these problems in the world today, and we're poorer because we don't have as much of that input as we should right now. And so it's It is a matter of research and education. It is a matter of the mission of the Institution. It is important to the academic programs of the Institution, and to the other organizations in Woods Hole that we do this, and not just here but throughout the nation, because all peoples live on the habitat Earth, and the oceans are extremely important to that. We all know that, but we take it for granted, living here and doing the research that we do. But many people who are engaged in other types of activities in life or have another type of experience are worried about other things, such as health, food, uh, repairing and revitalizing urban areas, environmental justice in urban environments, justice and resource uses in

reservations, a number of different things like that. And we have to point out that, in fact, ocean sciences and life sciences and geosciences of the type that goes on here in Woods Hole is an important undertaking. It is important for the underrepresented group of people to consider that's a reasonable career. It's an honorable career. It's a career that will make contributions to people as a whole, and also to the people that they come from.

TAYLOR: I must admit at this point that's a level of thinking way above what my personal look at what the Joint Program was all about. I must admit I thought of it as, OK, this is how we develop our oceanographers, so to speak.

FARRINGTON: Well, we . . . we, you know, it's an entirely different issue, and we shouldn't mix up the details or even some of the major thrusts of incorporating underrepresented groups in our activities with that that we went through incorporating women, OK. But when the Joint Program started, all right, there weren't that many women graduate students initially. And there certainly weren't women, very many women on the scientific staff. I mean Mary Sears and Betty Bunce were perhaps the only two that come to mind, to my mind. I may have missed somebody, and I apologize if I did, but then progressively, if you look at the history, what happened were the number of women coming here as summer-student fellows, as undergraduates, began to increase. And then shortly thereafter the number of women applying to graduate school increased, OK. And then shortly after that the number of women [thumps] coming in as postdocs increased, and we still haven't got to the point where it's a smooth pipeline, if we could use that word. I don't like that, necessarily, but that's the analogy people use, where the same percentage, roughly, of women in graduate school and end up as postdocs. It's still dropping off for reasons that we're still examining and trying to deal with in terms of the climate of . . . of various types at the Institution. But that was an effort that was undertaken to make sure that we did that as an institution, and it was done throughout the United States, and much to the betterment of the science and engineering [thumps] that's ongoing right now.

TAYLOR: So you're really come to a point when you're into utilizing all of the good possibilities of the planet, not just the oceans as such but the minds that can get into the oceans and . . .

FARRINGTON: Oh, sure.

TAYLOR: . . . expand on them.

FARRINGTON: And we take It's an interesting phenomenon that we take for granted, and we are very much an institution that interacts internationally, and we have lots of people on our scientific staff who are appointed and come from international arenas, OK. And we do joint projects with our colleagues internationally, and the only thing about getting involved with more underrepresented groups in the United States is tapping into a . . . a different source of intellectual approaches and different approaches to these problems. Then, one of the things that's a major challenge for us is we have to get out of the mindset that everyone thinks . . . uses the same approaches and value, in terms of intellectual capacity and capabilities and how it's expressed as we do in the majority population. And once we get over that, then we'll be OK. [Thumps.]

TAYLOR: OK. That's great stuff. I have some more things I want to ask you about the Program itself, but I'd like to continue this just a little bit more. You're doing this at the graduate level.

FARRINGTON: Um-hum.

TAYLOR: I did this kind of thing at the public-school level.

FARRINGTON: Correct.

TAYLOR: And we face many of exactly the same problems. I came from a very upper-class town that did not or was not able to take in some of the minds of the diverse groups and things like this, and just to quote one little instance, I can remember a gentleman who was going to apply for a job in the English Department who was an African-American, being questioned by the police out in the street while he was waiting for his appointment, . . .

FARRINGTON: Sure.

TAYLOR: . . . as to what he was doing in town, and interestingly enough he was already a published poet. And these are the kinds of issues that you're getting at here, all this kinds of things, using . . .

FARRINGTON: Sure.

TAYLOR: . . . people like that and giving them the opportunity. So you get these youngsters into this field and hopefully a very diverse group. Some are going to make and some aren't going to make it. In your view, what are some of the things that some

students don't have that they need to have to make it in this field, to have a PhD in this area?

FARRINGTON: Well, some of them don't have the level of passion and dedication for learning that's needed. And they've had or They've had it up to this point through their undergraduate careers, and they're—for whatever reason—not prepared to jump another level to do that. And that's fine, because they want to do some other thing. They want to get involved in application of their learning that they have already or do a different type of job, and I'm not meaning that every PhD should become a professor, because that's not the case and hasn't been the case with our own Joint Program for a long, long time, right from the beginning.

TAYLOR: The diversity here is everything from active researcher to Education Department at the New England Aquarium.

FARRINGTON: That's correct. And industry, and you name it. [Thumps.] So that I think uh what happens is that people have to What I tell them is "You're going to be picking a thesis topic." That's what the [thumps] whole degree is all about, whether it's a Master's or a PhD. And the way you're going to look upon this is that first you need to find out what is it that What are the important problems in a particular area, general area you're interested in—let's say, in chemical oceanography or the overlap between chemical oceanography and biology, or the overlap between geology and geophysics and climate and physical oceanography. So what are the important problems? You learn that from . . . from the seminars, from the classes, from reading. And we encourage them, for heaven's sakes, read the literature, OK. Then you look at those problems, and you find out which of those, you know, really turn you on yourself, you know, give you the fire in the belly, that you get excited about maybe answering some questions, and then out of those problems that really turn you on, then look at how well you're prepared—what's your background preparation up to this point? Which advisors do you have available to you? What facilities do you have available to you because you're here in the Joint Program, or what you've done in the past that give you a . . . a little bit of a better opportunity to carry out that research? And then eventually have to figure out, you know, how do you get the money to pay for it in various ways, but if you follow that pathway, then you'll come to, you know, [thumps] a series of projects. And you get started, and

then 50 percent of the time, roughly [thumps] you'll find out something that you hadn't expected to find, and you do a midcourse correction on what it is that your thesis is all about. But that'll get you going in it.

TAYLOR: Is that something that you think is unique about this institution, because I've heard

FARRINGTON: No.

TAYLOR: I was going to say I've heard even some of the same terminology from people that were electricians and things like that, using that fire in the belly. They knew that they could make this work on this ship . . .

FARRINGTON: Sure.

TAYLOR: . . . kind of thing.

FARRINGTON: Absolutely.

TAYLOR: Totally different level.

FARRINGTON: Absolutely. No, I think . . . I think people, you know Fortunate are the people who are working at jobs where they have felt inspired to work at those jobs, whatever those jobs might be, whatever they might be. I mean whether it's somebody who takes great pride in producing a boat in a shipyard or someone who takes great pride in making sure that the numbers in a spreadsheet [thumps] in an annual budget come out what they were supposed to be at the beginning of the year, at the end of the year, OK. And . . . and uh that . . . that's my [thumps] approach to it.

TAYLOR: Now, you know, one of the other things that I've always wondered about here, when you talk about the Joint Program, the Woods Hole Oceanographic . . .

FARRINGTON: Right.

TAYLOR: . . . Institution is one of the sets of letters in that title. The other set of letters is MIT, and how do you liaise with the person that's in your position, only at MIT?

FARRINGTON: Well, MIT comes first in the MIT-Woods Hole Joint Program, although some people here sometimes switch it around, but [clears throat] in the formal sense it comes first, because in the academic sector is in order of when was an institution founded, OK. So MIT was founded before Woods Hole. And it's also you could argue is alphabetical. [Thumps.] "M" comes before "W." [Thumps.] Whatever it is, [thumps] clearly MIT is a world-class research university with a galactic mission [They laugh.],

OK, and Woods Hole Oceanographic Institution, I think it's fair to say, is a world-class oceanographic institution with an international ocean [thumps] mission, OK. And how do you work together? Uh what happens is that we have frequent conversations on the phone—nowadays by email. It's a lot easier to do that, keep in contact. We have periodic meetings where we go back and forth. We have a schedule of activities each year. Our staff people here keep in touch with the staff people, the person in the Joint Program Office at MIT and the various departments. The faculty talk with each other. This program would not work if the faculty at both institutions weren't interested in interacting with each other—not only in supporting the students but have some common scholarly research interests. So that's how it works.

TAYLOR: OK. Now from time to time, you must evaluate the program.

FARRINGTON: We do.

TAYLOR: How do you go about doing that?

FARRINGTON: Well, we seek advice from the faculty about people who would be appropriate to ask to come in as a visiting committee, and then we take those names, and we recommend them to uh the provost at MIT and to the director and president here at the Institution—that this will be a visiting committee. We've generally done that [thumps], in the last 15 years, every five years, and we pick, you know, people who are uh [thumps] senior people in the field and have had some education experience, and we also pick uh The last several times, we've picked people who are alumni of the Joint Program who are sufficiently experienced that they can make a contribution. We've had on occasion a few trustees from both MIT—where they're called members of the corporation—and trustees from the Institution. We can have as many as 12 or 15 people on the committee, and they'll look at the reports that we prepare and the data and statistics and things like that, but they also come, and they sit down, and they talk with senior faculty, junior faculty, the administrative people. They talk with the graduate students one-on-one, without anybody, you know, none of the administrative people, myself or Paolo Rizzoli[SP?], Professor Rizoli[SP?] at MIT, the Joint Program director there, being in the room. And then they'll write a report. And generally those reports have been very laudatory, but also very helpful. You know, they've pointed out areas that if you sit on your laurels, you know, the quality of the program's going to slip.

TAYLOR: This is a delicate question. When talking quality of program and talking diversity, how do you envision maintaining the quality of program as diversity increases and initially you may have people that haven't had the advantage of as thorough an education perhaps as people that have been traditionally going into programs like this?

FARRINGTON: Well, I don't think that's a problem, and . . . and I think that there actually are well educated people out there and people who can make tremendous contributions from underrepresented groups. Now, they may not have the more traditional uh (tsk)—what shall I say—uh numerics or . . . or (I'm trying to think of the correct word. [Laughs.] This is escaping my mind here.) They may not . . . the metric They may not have the more traditional metric like, uh you know, a GPA (graduate point average) of 4.0 or something like that. And . . . and remember also underrepresented groups to us mean . . . mean people who are coming from uh disadvantaged background economically to some extent. They may be the first of their family to go to college, and so, you know, as we talked earlier in these interviews, that's me, OK. And uh I can look at some aspects of my career and say, "Well, I might not have made it into the Joint Program," and in fact there was a . . . an Admissions Committee meeting one time that embarrassed the daylights out of Jake Pierson. I was sitting in as dean, and somebody said, "Well, you know, what does a B from, you know, in physical chemistry from UMass Dartmouth mean, anyway? I mean, you know, it's just one of those regional schools," you know. And Jake says, "Well, you know, it means something." He said, "Well, no, I'm serious, what does it really mean?" and stuff. So he turned to me and he said, "Well, John, you went there, what do you think it means?" And then this dead silence and great embarrassment by everybody. And I said, "Well, when I went there, you know, a B was You know, you were thankful you got a B in physical chemistry. That was the make or break course that everybody took, and if you got a B you were doing very well. If you got an A, you were a superstar," OK. And so I don't think there's a question of quality. In fact, if anything, the quality of the program in terms of the mutual education of the students of each other will go up as they bring different backgrounds [thumps] to the study of the subject matter. Now, I may sound Pollyannaish when I say that, but I truly believe that. Is it going to take some extra effort to figure out how to help that happen? Yes. Do we have to change how we approach

admissions? Yes. Are we going to have to perhaps offer some better guidance in the early years? Yeah, maybe so. But it'll be worth it.

TAYLOR: It's interesting. In the past I've talked to some of the people that were in the Program.

FARRINGTON: Um-hum.

TAYLOR: 'Cause I was really impressed by one thing, walking across the campus one day with Jake Pierson. Some of the graduates of the Program happened to be at the Institution, and this was not a case of dignified coming up and shaking hands. This was a case of wildly running across the campus with arms flapping and great emotion being shown.

FARRINGTON: Um-hum.

TAYLOR: And in talking to those youngsters, I said, "In your thinking, what's one of the most valuable things you've done here . . ."

FARRINGTON: Um-hum.

TAYLOR: ". . . in this program. So many of them have told me literally—and this is not to denigrate any other part of the program—they said, 'To be able to sit down on a porch with a couple of beers and talk.'"

FARRINGTON: Yes.

TAYLOR: "Talk about the things. That's some of the most important things we've done."

TAYLOR: I've given a talk recently—well it was several years ago to the Trustees and the Corporation of the Institution about what I called the . . . the uh potent elixir, the combination of research and education at this institution. And . . . and of course elixir uh can mean "Philosopher's Stone," and it can mean a "cure-all," and quite frankly, you know, if we had that here at the Institution, we wouldn't be worrying about [laughs] funding. But another definition is "the essential principle," and so the essential principle of the Institution in . . . in . . . is its combination of research and education. It's in small groups. It's one-to-one. And we have incorporated that in everything we've done, whether it's for the undergraduate in the Summer Student Fellowship Program, or the graduate students, or the postdocs. The faculty ratio here, if you want to use that, of faculty to students is . . . is sometimes greater than one. Now, remember, that's faculty to

students, not students to faculty, OK. Where it is typically, you know, five or ten to one at other places.

TAYLOR: Is it difficult to maintain . . . ? Now, I've done, as you know, oral histories of some of the faculty members.

FARRINGTON: Um-hum.

TAYLOR: They talk about this in such glowing terms. I mean I sit there and I say, "These are people that are really, really happy with their position." Is it hard to keep that up as a game[?], to keep that kind of enthusiasm up? And some of these people have been in the Program for a long time.

FARRINGTON: Well, I think they're excited mostly excited about being here, as I said before, with their colleagues. They're excited about doing something that they like to do. They like to have access to the sea. They Obviously we're all fortunate to be able to live on or near Cape Cod. Uh there's There're all of those factors that enter into it. We're fortunate to have very, very bright students coming here, very capable students and postdocs. In terms of keeping the morale up, I think it's a question of do they keep their own morale up? One of the big problems, I think, for the leadership of the Institution—people like Bob Gagosian and Jim Luyten and myself, the department chairs, Bob Detrick [thumps], and others now—is to recognize when they're beginning a mutually spiraling in on themselves, where, you know, one or two are going to get down, and begin to have morale problems, and then that sort of cascades to everybody. And . . . and we seem to be going through a little bit of that right now. And . . . and you know, it's very interesting, because I suspect that in your oral histories, OK, you're going to bring out, by and large, the positive side, OK. People are going to be excited 'cause they're talking about it. They know they're talking about something for posterity, in a sense. And they'll remember the good times, on the average. And they might remember some tough times too, but when it's the day-to-day grind, and they have to get the next proposal out, or they're worried about their budget and so forth, on the daily grind, they sometimes forget to communicate to the students and postdocs and to each other, you know, what's really fun [thumps], what's exciting.

TAYLOR: I know when I was teaching I found I had to reinvent myself every few years,

. . .

FARRINGTON: Sure.

TAYLOR: . . . so that things would be new and different and something I'd get excited about again, that sort of thing.

FARRINGTON: That's why I'm stepping aside from being dean here. I've been at that for 15 years, and I think it's time that, you know I'm . . . I'm not saying that I'm old and stale, OK, but I want to step aside before that happens. [Slap as of hands on clothing.] OK, the students, the Institution, the faculty deserve something different right now.

TAYLOR: OK, but we'll talk about that in a minute, . . .

FARRINGTON: Yeah.

TAYLOR: . . . your next reinvention of yourself.

FARRINGTON: [Laughs.]

TAYLOR: One of the other things I'd like to address though. Surprisingly enough, I've been inflicting myself on you folks down here for nine years now. Time's really gone by since I started to come down, and it seems to me that there's been more of an outreach from the Education Department to entities other than the Joint Program and things like this. I saw Turnstone[SP?] Productions with their courses that they had.

FARRINGTON: The books.

TAYLOR: Yeah, I see the folks down in the Information Office, and others, Kate Madin[SP?] being an example, with teachers coming in for . . .

FARRINGTON: Um-hum.

TAYLOR: . . . work with scientists.

FARRINGTON: Right.

TAYLOR: I know you've always been a card-carrying member of the Massachusetts Marine Educators.

FARRINGTON: Not always.

TAYLOR: Not always?

FARRINGTON: No, only in the last 20 years. [They laugh.]

TAYLOR: Almost always, then, we'll go that way.

FARRINGTON: Actually, it might have been only 18 years—I don't know, some number like that, yeah.

TAYLOR: And in fact one year you were chosen as their Educator of the Year. It seems to me there's been an outgrowth in this. Now, I don't know if you have anything to do with it personally, but certainly there has to be a feeling that the attitude at the top level—and that's yourself—is for that kind of thing. What would you like to see coming out of an institution like this, in terms of oceanography, for people that are out on the general public

[END OF TAPE 7]

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WOODS HOLE OCEANOGRAPHIC INSTITUTION

ORAL HISTORY OF JOHN FARRINGTON

Interview by Frank Taylor, July 21, 2005

Tape 8 of 8 tapes transcribed by Arel Lucas, November 2005

1 FARRINGTON: . . . when. There was a time when the nation had just completed
2 several assessments, both government agencies and other organizations, that we were
3 having a serious challenge with K through 12 science and math education, and the
4 argument was that all organizations, from the universities and research institutions, to
5 public schools and museums and libraries, and so forth—all had to ramp up their efforts,
6 and in particular there was an argument presented that we needed to make better
7 connectivity between ongoing research and what was showing up in the classroom in
8 terms of science and also the use of mathematics. And as an institution which receives a
9 significant amount of funding from the National Science Foundation, and from other
10 federal agencies, it was incumbent upon us to examine what we were going to do to rise
11 to this national challenge, and I happened to be the dean at the time. It would have been
12 anybody, and up to that point, as you probably know, I mean, we had been active as an

13 institution in the local community, and people were just beginning to uh, in fact had
14 already begun Bob Ballard had already begun the Jason Project, with outreach to
15 students in response to this outcry that was coming, or these assessments about the need
16 for, you know, for improving our science and math education. And so the question then
17 was what do we do as an institution? I mean we Yes, we are a significant factor in
18 ocean research, but we're only 140 principal investigators, and, you know, and another
19 maybe 300 scientists at the most, and students and postdocs. So how can we best
20 mobilize our resources, carry out our main mission, which is research and higher
21 education, while contributing to both formal and informal education in the K through 12
22 arena, as well as the general public? And we began to reorganize and reinvigorate
23 Actually it had already begun before I came in as dean, to establish a formal Woods Hole
24 Science and Technology Education Partnership, which is, you know, called WHSTEP
25 [pronounced "westep"], and that was mainly Falmouth Schools, initially Mashpee. Now
26 it's spread to Bourne, and we also had uh interactions with the Marine Biological
27 Laboratory and all the other organizations in Woods Hole, as well as some of the
28 businesses contributing to that. And that was I just happened to say, "yeah, I think
29 that's a great idea." I came onboard, you know, right in the middle of that process, and
30 so we did agree to be a significant supporter of that, and to encourage that. Then came
31 the . . . the fact that Massachusetts as a state submitted a proposal to the National Science
32 foundation for systemic change in science and math education. That was in the probably
33 1993-94 time frame, and various institutions were asked to make a commitment to that, to
34 be involved uh throughout the Uni . . . Massachusetts, and then to sustain that
35 commitment afterwards. And we said, "Well, we've already done this locally, and the
36 idea" It was called PALMS (or Partnerships to Advance Learning in Math and
37 Science), and so I talked with Craig Dorman, who at the time was director, and said, "I
38 think we ought to do this, make a commitment to this," and we did. And . . . and our own
39 Woods Hole partnership was part of that. And we've continued to support that, by
40 putting a small amount of money, very small amount of money into that, as much
41 And that goes to small grants to the teachers for innovative things in the classroom, but
42 it's mainly the people here at the Institution who volunteered their own time, the
43 employees, the students and postdocs, in the science fairs, especially. And we still give

44 the prize and scholarships, but they were in place before I took over as dean. And then
45 we began to examine other things, so we can do this locally, and we could do some things
46 on the state level, and Ballard was already doing Bob Ballard was already doing the
47 Jason Project, and the problem was that that project was, I think, by and large successful
48 in exciting the students, but the question was, is it sustained? And to what extent were
49 the teachers actually incorporate a lot of that into the classroom. And then we began to
50 look at how much that was costing every year, and could we raise money for it, and we
51 went to NSF to try to get it funded, and when you looked at the metric, the cost per
52 student for that program was somewhere on the order of—if my memory serves—ten
53 times as much as the usual programs, and so eventually we had to discontinue our
54 participation in it. And we . . . we tried I tried to transfer it to Bridgewater State
55 College in the partnership, because it was clear that we needed to have more interaction
56 with teachers and pre-service teachers, and that school clearly was one of the . . . the
57 biggest schools nearby in terms of preparing teachers for classrooms. And they thought it
58 was a good idea, too, but then, you know, then the Massachusetts budget cratered,
59 [laughs] OK? And both organizations had to eventually say, “We can’t do that any
60 longer.” But then came along the argument that we needed to do things somehow
61 through the Web, and also through the Turnstone Project, Readable Books. But Readable
62 Books, the whole series of things got transferred into uh . . . into additional things for the
63 classroom, sort of add-on course-content material. Because what happened is Turnstone,
64 as a group, went to get financing from a large publisher, and the large publisher, and the
65 large publisher said, well, no, you have to turn this into curriculum supplements, and
66 we need it be into kits, and, quite frankly, both Turnstone and the Institution lost control
67 of what was going on. Because we couldn’t afford to fund it at the level that Step-
68 Vaughn[SP?] do, you know, the publishers that did that, but the books were very high
69 quality, but we learned a lot in that process, too. We learned the difference between the
70 textbook publishing uh sort of milieu, if you will, and culture, and how that worked with
71 our own culture at the Institution here. And that needed a lot of meshing, and we never
72 got [laughingly] it, really got it together. [Laughs.] But then, then came real success
73 with the fact that we made the strategic decision that if there were anything we were
74 going to support, we needed to support something that was unique to this institution, that

75 we could contribute to the nation, and we could only do it if we had a good Web group
76 here, and only if we had a couple of, you know, our scientists were willing to take the
77 leadership roles. It couldn't be done by me. It had to be done by some of the scientists,
78 and so we focused on deep submergence. We run the National Deep Submergence
79 Facility here—*Alvin* and other things. And so we went about as an institution first getting
80 people in the Web group and then we went, and the request came out for proposals from
81 NSF for larger reference on the Web, and Dan Fornari and . . . and Susan Humphris
82 stepped up to the plate, interactively with people out in Ohio—Katherine[SP?] Sullivan,
83 the former astronaut, who was a marine geologist by training, the Moody Institution, who
84 is a corporation member here, and the combination of that interaction they had with
85 teachers out there at the Columbus, Ohio Center for Science and Industry, and the Deep
86 Submergence people here, the Web group we had here, and a lot of Institution money as
87 well as NSF money, started “Dive and Discover.” And that's been a tremendous success.

88 TAYLOR: I know. Even a teacher in my daughter-in-law's school . . .

89 FARRINGTON: Right.

90 TAYLOR: . . . was involved with that.

91 FARRINGTON: And along the way, as you know, we kept hosting every year the
92 National Marine Educators, and we also started some programs in which we had uh
93 fellowships for teachers to come in the summertime, but mostly from the nearby
94 Massachusetts area, because we had problems where were we going to house them?
95 [Clears throat.] And then, one year, after several years of running that program, we sort
96 of ran out of applicants. Uh you know, there were people who were We were really
97 asking them to spend too much time, eight weeks out of the summer, when they only had
98 10 weeks of vacation, OK. So then we evolved that into the teacher workshops that
99 we're doing right now, which have been, I think, reasonably successful.

100 TAYLOR: Oh, they're sold out every time.

101 FARRINGTON: Yes. Things like Kate Madin[SP?] and the people and Andrea
102 Thorrold and Stephanie Murphy. I mean, this is This is uh you know, one of those
103 little jewels in the Institution, and I've looked at the surveys, and I know people are
104 enthusiastic, you know, when they fill out surveys sometimes, but even for people
105 enthusiastic, these are very positive feedback.

106 TAYLOR: Yeah, I'd like to get your reaction as an educator to this, still thinking about
107 public education. I always felt there were two big problems that we try to deal with as
108 teachers. One of them was lack of knowledge about what cutting-edge kinds of things
109 were.

110 FARRINGTON: Um-hum.

111 TAYLOR: I've found that many of my colleagues were doing wonderful, wonderful jobs
112 teaching slide rule, but the computer age was already here, and they didn't have the
113 wherewith

114 FARRINGTON: Right.

115 TAYLOR: Do you see the analogy I'm making?

116 FARRINGTON: I do. I do.

117 TAYLOR: That was one issue that I always saw, and the other issue I always saw was
118 that there were so many programs that were earmarked for elementary school. You could
119 do a lot of interesting things. But not too many people wanted to tackle the secondary
120 school, where [laughs], for lack of a better term, you really had to teach 'em something,
121 in terms of chemistry . . .

122 FARRINGTON: Yes.

123 TAYLOR: . . . and physics and things like that, and you couldn't—or people didn't think
124 you could—have as much exciting kind of thing. You got any thoughts on either of those
125 issues?

126 FARRINGTON: Well, I think that . . . that from the perspective of the oceans, I think
127 earth sciences—and the oceans as part of earth sciences—[clears throat] is part of the
128 experiential phenomenon leading up to the middle-school years and into the middle-
129 school years, and then when you get into high school, generally speaking you still are at
130 the biology-chemistry-physics level. And unfortunately, in many school systems—not all
131 but many—earth sciences is for the people who just barely made it through biology and
132 they have to take another science. Uh and there are a number of people out there in the
133 past five or six years in the United States who said, “Well, in order to increase
134 understanding of ocean sciences, to raise the level of oc . . . we should have a curriculum
135 in ocean sciences.” And certainly there are some high schools where ocean sciences is
136 taught as a science in addition to the others. On the other hand, I'm of the school of

137 thinking, and I advocate, along with several of my colleagues, that what we really need to
138 do is to look at the current mapping of guidelines and standards for things in chemistry
139 and physics and biology, say. So instead of using examples from agriculture or from
140 medical research, or from astronomy to illustrate various principles, let's . . . let's show
141 using ocean principles how you can demonstrate some fundamental principles of these
142 various sciences that can be incorporated, and to make these available, you know, self-
143 contained units, make them available to teachers who want to use them. And that's what
144 we're trying to do, is get teachers familiar with some of those things as they come to
145 these workshops, and that's what we've done elsewhere throughout the nation. And we
146 now have NSF-funded centers of ocean science and education excellence that both NSF
147 and NOAA have put money into, and perhaps some other agencies. I don't want to leave
148 all those out. I don't know the total number. But they're now exchanging experiences
149 and ideas of how this could work, and what we have is a . . . is a sense of pioneering
150 efforts that are going on in these different areas in terms of Let me see, how can I
151 explain this? Let's think about the underwater vents. You see this hot water streaming
152 out, and the typical picture you see is maybe black smokers, OK. Well, why are they
153 black? It's because precipitation is going on. Chemical are precipi They're hot.
154 Water is coming out into cold seawater. There's oxygen involved, and you're getting all
155 sorts of precipitation reactions. You're also getting oxidation-reduction reactions.
156 You're also getting dilution, OK. So you have all of these neat chemistry things going on
157 in that . . . that system that you can talk about, you know, show the films from the bottom
158 or show them on the computer in the classroom in chemistry and then have a few
159 experiments, and one should do the same thing, in a sense. Take a warm solution, pour it
160 into the cold water, one that's been a lot of sulfides in it, and then pour it into the
161 oxygenated water and see what happens. At the same time that warm-water plume is
162 rising because of buoyancy, so you've got a principle of physics there. And if you talk
163 about the ocean circulation, clearly there's a lot that can be done with temperature and
164 salinity and just simple things, like how dense is it? If you add more salt to this water,
165 does it become denser? If you cool it down, does it become denser? OK, well, then, you
166 could turn that and look at . . . actually build a small (not perfect, of course, but the
167 principles are there) North Atlantic circulation in a typical aquarium, you know, with

168 some vegetable dye in the water. I've done it myself with high-school teachers . . . high-
169 school students actually, when I was a . . . a graduate student. I was in the last round in
170 1968 of NSF funding of K through 12 education, and that's what I did one summer for
171 eight weeks—worked with high school students.

172 TAYLOR: Well, I personally think oceanography is a wonderful vehicle . . .

173 FARRINGTON: Yes.

174 TAYLOR: . . . to teach the other sciences.

175 FARRINGTON: Correct.

176 TAYLOR: And that's why I'd asked that question. I've always been kind of surprised
177 that when groups like You may have heard of the boat *Envirolab* at one time or
178 another.

179 FARRINGTON: Yes, I know that *Envirolab*, yeah.

180 TAYLOR: I told them one time, "Well, why don't you take kids out that are high-school
181 age, that are taking chemistry. They can do titrations. They can do . . ."

182 FARRINGTON: Right.

183 TAYLOR: ". . . things like this." So that you can say to a teacher, "This is an
184 oceanographic experience that you can make part of your . . ."

185 FARRINGTON: Right.

186 TAYLOR: ". . . program." I guess maybe, like diversity, it's another area we just have
187 to keep plugging at.

188 FARRINGTON: Well, I know that when I was at UMass Boston uh *Envirolab*
189 Well, actually the predecessor to the *Envirolab* there, Project Oceanology, which was in
190 Connecticut at the time, would come up to the harbor, and they'd go out, and they'd take
191 the teachers out, and it was mainly middle-school students, but also some teachers were
192 there during the summer. And I remember they wanted to have uh, you know, not just
193 the teachers and so on, they wanted to have the teachers in a real research laboratory. So,
194 it was all this contrived stuff, with "Good Morning, America," you know, to come into
195 my [thumps] lab, and to do a titration to determine organic carbon in sediments, when, of
196 course, in our lab, we didn't do it that way. We did it with . . . with a [thumps]
197 combustion oven and the determination of CO₂ that was combusted. But in any event,
198 they insisted and I tried to help out, you know. Would I . . . would I, you know, show

199 them how the titration [thumps] was done and talk to the teachers and explain the
200 principle. And so I did that, and I'm titrating away, and of course, you know, the vehicle,
201 the flask, is getting warmer and warmer, and I knew it was. We all had our glasses on,
202 but I didn't have a, you know, a glove on, or anything, you know, and so I'm swirling it
203 around, and they've got the cameraperson saying, "Great!" You know, they'd done the
204 sound part, so now, "We just," you know, . . . "We need you to have, you know, keep
205 swirling it like that. Keep swirling it like that." And I'm saying, "It's getting hotter than
206 heck here! Come on!" "Just a little bit longer!" Finally, I said, "I can't do it."
207 [Thumps.] You know, let go. [Laughs.] But you know, there is a segment, then, you
208 know, getting out to the general public on "Good Morning, America." OK, these
209 teachers are doing this. Now I don't know what impact that would have, but I do know,
210 for example, that *Oceanus* Magazine, as it used to be published, now online, and some of
211 the publications that we've had from the Institution here, and especially the Web site, I
212 think this is a tremendous resource that is being ramped up. It has been a tremendous
213 resource in the past. I mean *Oceanus*, I think, was a great resource—still is. We're
214 It's being transformed by Jim Kent now, [thumps] our director of communication, and his
215 staff.

216 TAYLOR: And I think much more palatable to a larger segment of population.

217 FARRINGTON: I agree with you. But it was very What it was very good for, and
218 I know that from feedback that I've had from a number of people, was for undergraduate
219 education for non-science majors. In other words, the previous *Oceanus*, let's say, was
220 uh a little bit more along the lines of *Scientific* [thumps] *American*, OK. And that was its
221 intent, actually. And it had a tremendous influence on undergraduate education,
222 especially. Now I think we're getting a broader impact, uh, more useful in high schools,
223 and perhaps more useful for those students, and for the general public.

224 TAYLOR: One more comment on this.

225 FARRINGTON: Sure.

226 TAYLOR: Several years ago there was a Congressman came to the Institution, spoke at
227 Redfield, and the place was jammed, and I remember one of his comments was that we
228 have to keep getting money so that we can continue to produce exceptional people. And
229 I remember sitting there thinking to myself, "You know, by most peoples' measurement,

230 this room is filled with exceptional people.” What I really wanted to see was a much
231 more astute civilian.

232 FARRINGTON: Yes.

233 TAYLOR: That’s what I would And I never tried actively to develop scientists as a
234 science teacher. I wanted an informed citizen.

235 FARRINGTON: Thank goodness.

236 TAYLOR: [Laughs.] Well, does that sound like a reasonable goal to you?

237 FARRINGTON: Oh, yes, no, I think what our goal should be is an informed citizenry,
238 because if we do that, then the other will follow naturally. Because there will be people
239 in that informed citizenry who really get more excited, perhaps, than others about ocean-
240 science education, and will want to come. And we’re prepared for that. We’re ready to
241 have them come in, OK? We just need We need to make sure that there are also
242 people out there who understand the oceans, who may become, you know, the senators or
243 the congressmen or the business leaders or whatever it might be.

244 TAYLOR: Or the guy that casts the vote for the senator that’s in favor of funding for this
245 kind of thing.

246 FARRINGTON: Absolutely, absolutely, absolutely.

247 TAYLOR: You know, John, you still talk with such enthusiasm about what your career
248 is here, and you’re stepping aside in the not too distant future.

249 FARRINGTON: Right.

250 TAYLOR: You’re not really retiring, are you?

251 FARRINGTON: Well, not in the traditional sense, no. I mean I have to step aside from
252 the Institution and most likely I will retire right after that. But I haven’t definitively
253 given my [laughingly] notice of retirement yet. But then, of course, because of my age
254 (I’m only 60 [thumps] years old now.), I will be not eligible to continue at the Institution
255 [thumps], you know, to be here and to do other things, and receive any compensation for
256 it, obviously. And I do have some ideas of things I’d like to pursue, and so I’m probably
257 going to go somewhere else and take another position—part-time position, maybe, or
258 maybe a full-time position in some sort of education/research/leadership type of thing.
259 And if nobody wants me [thumps], or it doesn’t seem to work out, then I’m going to
260 write some books [thumps], and then when I get a little bit older, I may see if some of my

261 colleagues here will have me back. One of my former graduate students—she'd be
262 embarrassed that I'm saying this now, but I think it's a really neat interaction I had with
263 her: Dr. Elizabeth Kujawinsky[SP?] is a new assistant scientist here, and I . . . I was
264 kidding with her, and I said, "Well, you know, (tsk) I may want to come back and, you
265 know, just volunteer in your lab. Liz, what do you think?" And she smiled, and she said,
266 "Do you take instruction?" [They laugh.] And uh . . . and so, you know, I . . . I'm glad,
267 you know, that she said that, because, quite frankly, by the time I come back to do
268 something hands-on at the bench in the lab, I'm going to have to get retooled, 'cause
269 science What's really exciting is that I see that science has moved way beyond
270 where I was for awhile, and I've got to catch up on some of it. I recently wrote a review
271 article which I thought I agreed to write it after having my arm twisted a number of
272 times, on chemical contaminants in the coastal ocean. And I thought it was going to be
273 relatively easy. [Laughs.] Just in the five years that I haven't really been able to keep up
274 with the literature, I got so far behind that I had to spend, you know, lots of late nights,
275 you know, reading papers on the computer and checking things out, and But still it
276 felt good. So I've still got some of that left in me, I hope. [Laughs.]

277 TAYLOR: Well, I'd like to thank you very much for taking the time to do this oral
278 history, and it's been very interesting for me, and I always kind of end off saying: a week
279 or two from now you're liable to be sitting there, thinking, "You know, we really should
280 have talked more about this." Or we should have talked more about that. I'm just a
281 phone call away. We can always spin some more tape.

282 FARRINGTON: Right, well, I appreciate that, and of course I'm one of the many people
283 who appreciate all the efforts that you put into this. I think it's great we have this
284 program of oral histories. And you know me. You've got to be careful about giving me
285 an opening like that, because I love to talk with you. [They laugh.]

286 TAYLOR: You know, you

287 [END OF TAPE 8]

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